March 19th, 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 1 SERVICE ROAD, MIDDLEBURY, CT 06762 – CT33XC532 (lat. 41° 32' 08.8" N, long. -73° 05' 21.3" W)

Dear Ms. Bachman:

Sprint Spectrum, LP ("Sprint") currently maintains wireless telecommunications antennas at the (153-foot level) on an existing (197-foot self-support tower) at the above-referenced address. The property is owned by TOWN OF MIDDLEBURY, and the tower is owned by PHOENIX TOWER INTERNATIONAL.

Sprint's proposed work involves antenna replacement and tower work. Sprint intends to replace three (3) antennas and add six (6) 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 EDWARD St. JOHN, FIRST SELECTMAN, and CURT BOSCO, INTERIM ZONING ENFORCEMENT OFFICER of the Town of MIDDLEBURY. A copy of this letter is also being sent to Jackie Donahue the manager for PHOENIX TOWER INTERNATIONAL who owns the tower and a letter is already being sent to TOWN OF MIDDLEBURY who owns the land.

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

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

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

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).

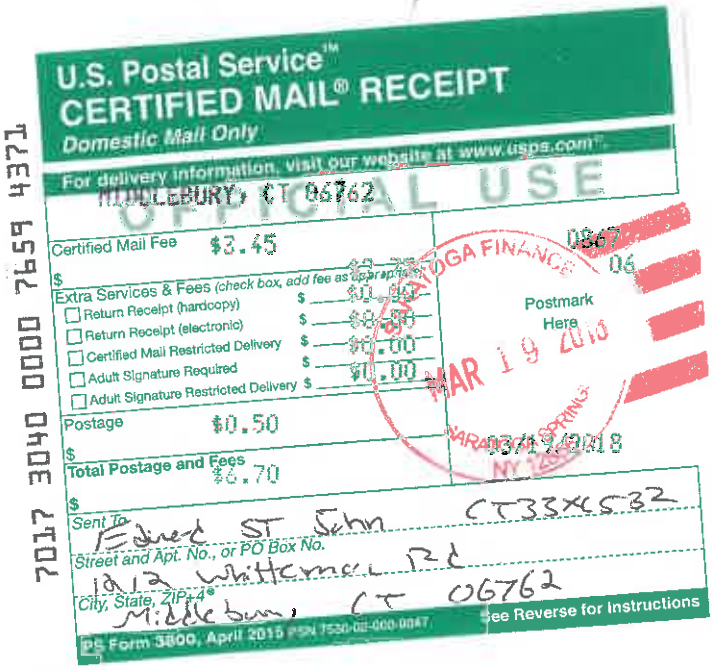
If you have any questions or require any additional information regarding this request, please do not hesitate to give me a call at (518) 350-4222 or email me to aperkowski@airosmithdevelopment.com

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: EDWARD St. JOHN (FIRST SELECTMAN, MIDDLEBURY, CT)
JACKIE DONAHUE (Manager, PHOENIX TOWER INTERNATIONAL)
CURT BOSCO (INTERIMZONING ENFORCEMENT OFFICER / MIDDLEBURY, CT)
TOWN OF MIDDLEBURY (Land Owner)



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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
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City, State, ZIP+4® Boca Raton, FL 33431
PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions
SARATOGA FINANCE 0867 06
MAR 19 2018
SARATOGA SPRINGS NY 12866
03/19/2018
7017 3040 0000 7659 4395

Town of Middlebury, CT

Property Listing Report

Map Block Lot **4-06/425** Account **M0336100**

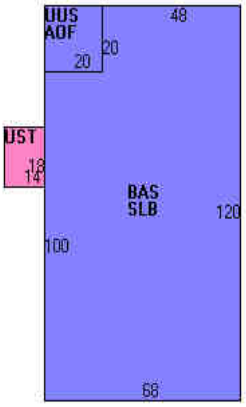
Property Information

Property Location	1 SERVICE ROAD
Owner	MIDDLEBURY TOWN OF
Co-Owner	(TOWN GARAGE/DOG POUND/TRANSFER/PUBLIC W
Mailing Address	1 SERVICE RD MIDDLEBURY CT 06762
Land Use	931 Mun Garage
Land Class	E
Zoning Code	CA40
Census Tract	3441

Neighborhood	C100
Acreage	4
Utilities	Electric
Lot Setting/Desc	Level
Additional Info	

Photo

Sketch



Primary Construction Details

Year Built	1991
Stories	1
Building Style	Pre-Eng Garage
Building Use	Comm/Ind
Building Condition	C
Floors	Concrete
Total Rooms	

Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	Gable
Roof Cover	Enam Metal

Exterior Walls	Pre-finsh Metl
Interior Walls	Minimum
Heating Type	Hot Air-No Duc
Heating Fuel	Gas
AC Type	Partial
Gross Bldg Area	16572
Total Living Area	8160

Report Created On **3/19/2018**

Town of Middlebury, CT

Property Listing Report | Map Block Lot **4-06/425** | Account **M0336100**

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	935900	655200
Extras	48800	34100
Improvements	1450300	1015300
Outbuildings	465600	326000
Land	592000	414400
Total	2042300	1429700

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Unfinished Upper Story	400	0
First Floor	7760	7760
Slab	7760	0
Office	400	400
Utility Storage	252	0
Total Area	16572	8160

Outbuilding and Extra Items

Type	Description
Implement Shed	286.00 S.F.
Implement Shed	360.00 S.F.
Sprinklers- Wet	8160.00 S.F.
4' Chain Fence	5000.00 L.F.
Sprinklers- Wet	952.00 S.F.
Partial AC	3242.00 S.F.
Sprinklers- Wet	17621.00 S.F.
Paving-Asphalt	20000.00 S.F.
Implement Shed	200.00 S.F.
Guyed Tower	295.00 L.F.

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
MIDDLEBURY TOWN OF	40/ 13	7/21/1944	0

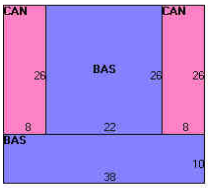
Report Created On **3/19/2018**

Town of Middlebury, CT

Property Listing Report | Map Block Lot **4-06/425** | Account **M0336100**

Photo

Sketch



Primary Construction Details

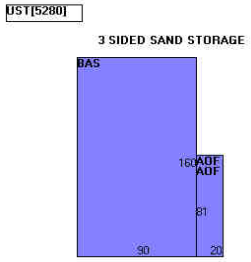
Year Built	1991	Kitchen Style	
Stories	1	Roof Style	Gable
Building Style	Vets Office	Roof Cover	Enam Metal
Building Use	Commercial	Exterior Walls	Pre-finsh Metl
Building Condition	D+	Interior Walls	Minimum
Floors	Concrete	Heating Type	Hot Air-No Duc
Total Rooms		Heating Fuel	Gas
Bedrooms		AC Type	Central
Bathrooms		Gross Bldg Area	1368
Bath Style		Total Living Area	952
Half Bath			

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	952	952
Canopy	416	0
Total Area	1368	952

Photo

Sketch



Primary Construction Details

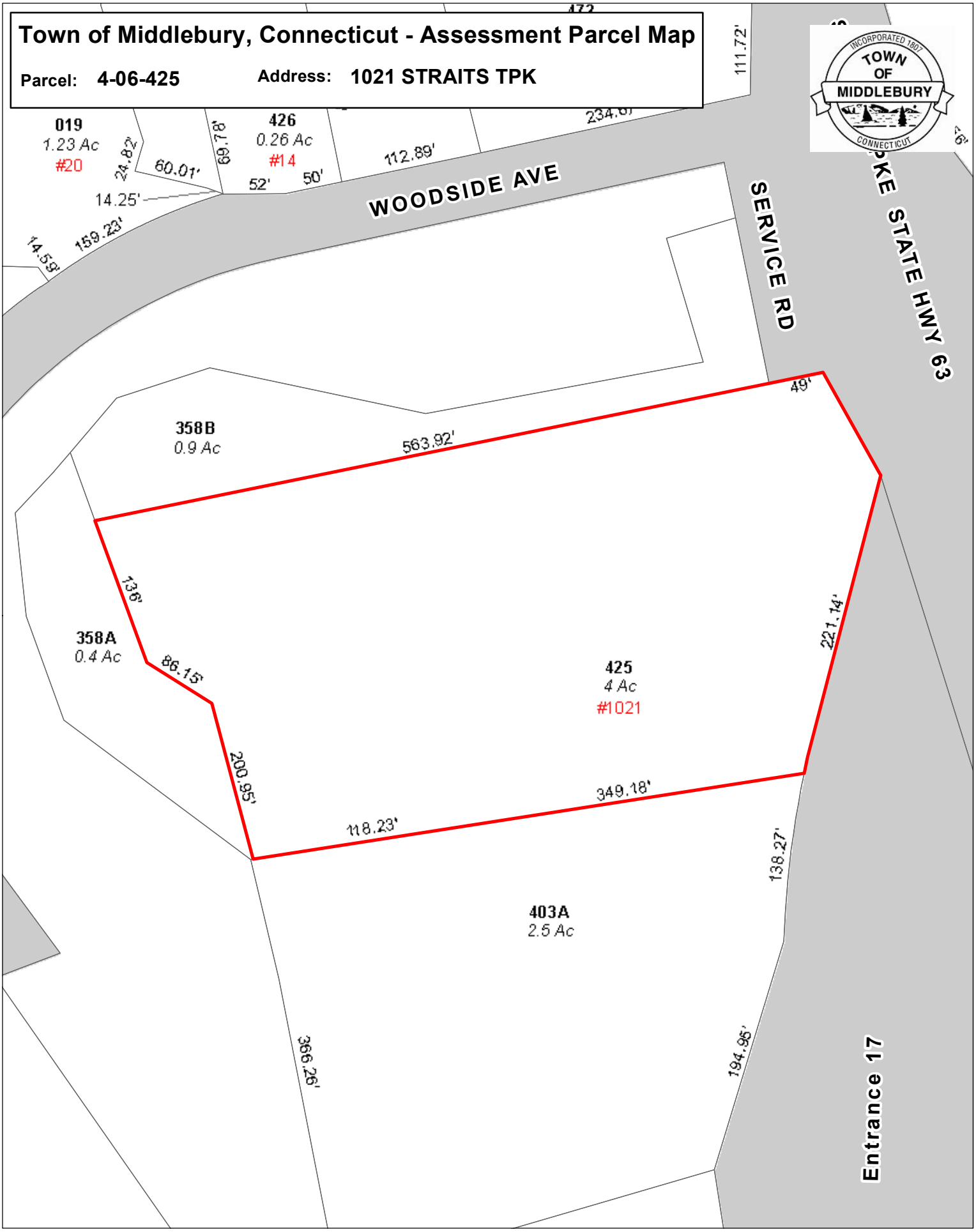
Year Built	1991	Kitchen Style	
Stories	1	Roof Style	Gable
Building Style	Pre-Eng Warehs	Roof Cover	Enam Metal
Building Use	Commercial	Exterior Walls	Pre-finsh Metl
Building Condition	B	Interior Walls	Drywall
Floors	Concrete	Heating Type	Hot Air-No Duc
Total Rooms		Heating Fuel	Gas
Bedrooms		AC Type	None
Bathrooms		Gross Bldg Area	22920
Bath Style		Total Living Area	17640
Half Bath			

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	14400	14400
Utility Storage	5280	0
Office	3240	3240
Total Area	22920	17640

Report Created On **3/19/2018**

Town of Middlebury, Connecticut - Assessment Parcel Map

Parcel: 4-06-425 **Address:** 1021 STRAITS TPK



Map Produced December 2014

Approximate Scale: 1 inch = 100 feet

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1033 WATERVLIET SHAKER RD, ALBANY, NY 12205

January 3, 2018

Terri Burkholder
Project Manager
Airosmith Development
tburkholder@asdwireless.com
www.airosmithdevelopment.com

RE: **Sprint DO Macro Project Mount Analysis**

Sprint Site Number:	CT33XC532
Sprint Site Name:	MIDDLEBURY/OMNIPOINT
Site Address:	1 Service Road Middlebury, CT 06762
Building Code:	2012 IBC / 2016 Connecticut State Building Code
Design Standard:	ANSI/TIA-222-G
Result:	**Pass**
Usage:	**43.0%**
Note:	**--**

Dear Ms. Burkholder:

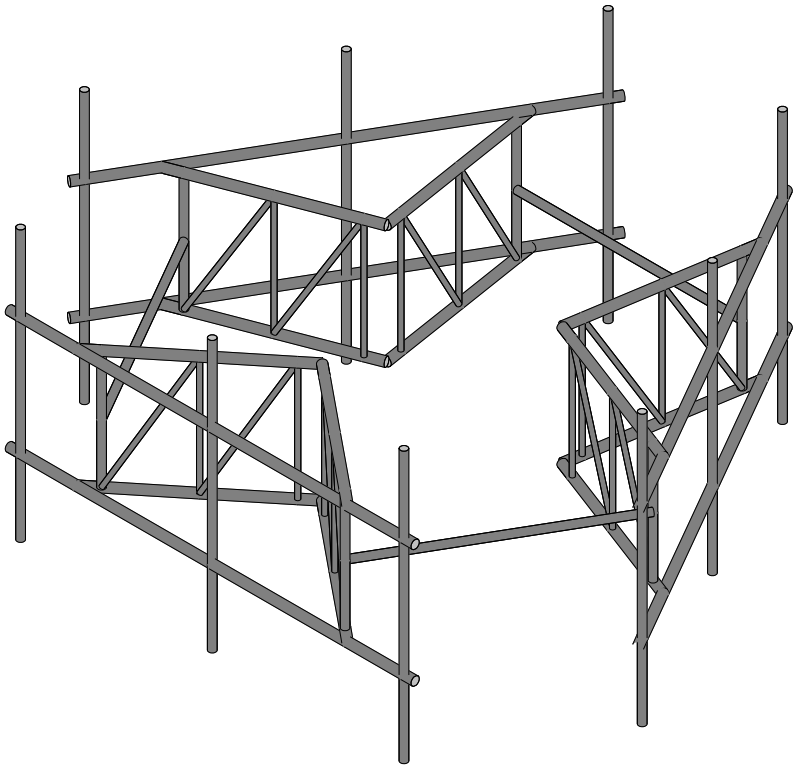
At your request, Infinigy Engineering, PLLC has reviewed the existing Sprint tower mounted equipment supports at the above referenced site for adequacy to support the existing and proposed loads for the referenced project. This evaluation is based on a review of the information from the Photos (dated 11/13/17), Colo Application (09/15/17) and Construction Drawings (dated 12/06/17) provided by Infinigy Engineering, PLLC.

This evaluation assumes that all structural members are in good condition, have not been altered from the manufacturer's original design, and have been installed per the manufacturer's requirements. Prior to installation of any new appurtenances, the contractor shall inspect the condition of all relevant members and connections and shall tighten all connections. The contractor is responsible for the means and methods of construction and shall notify Infinigy Engineering, PLLC immediately if any field conditions differ from those listed above.

Should there be any questions, please do not hesitate to contact us at (518) 690-0790.

Sincerely,

Joseph R. Johnston, P.E.
VP Structural Engineering/Principal
structural@infinigy.com
Connecticut P.E. License Number: PEN.0029460
BB/BDA



Infinigy Engineering PLLC	CT33XC532	Existing Configuration
BA		Jan 3, 2018 at 1:14 PM
526-104		Existing Mount.r3d

Site Name:	CT33XC532
Client:	Airosmith
Carrier:	Sprint
Engineer:	BA
Date:	1/3/2018

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INFINIGY WIND LOAD CALCULATOR 3.0.2

Site Information Inputs:

Adopted Building Code:	2012 IBC
Structure Load Standard:	TIA-222-G
Antenna Load Standard:	TIA-222-G
Structure Risk Category:	II
Structure Type:	Mount - Sector
Number of Sectors:	3
Structure Shape 1:	Round

Rooftop Inputs:

Rooftop Wind Speed-Up?:	No

Wind Loading Inputs:

Design Wind Velocity:	93	mph (nominal 3-second gust)
Wind Centerline 1 (z_1):	153.0	ft
Side Face Angle (θ):	60	degrees
Exposure Category:	B	
Topographic Category:	1	

Wind with No Ice		
q_z (psf)	Gh	F_{ST} (psf)
23.47	1.00	**28.17**

Wind with Ice		
q_z (psf)	Gh	F_{ST} (psf)
6.78	1.00	**21.22**

Ice Loading Inputs:

Is Ice Loading Needed?:	Yes	
Ice Wind Velocity:	50	mph (nominal 3-second gust)
Base Ice Thickness:	0.75	in

Input Appurtenance Information and Load Placements:

Appurtenance Name	Elevation (ft)	Total Quantity	Ka	Front Shape	Side Shape	q_z (psf)	EPA (ft^2)	Fz (lbs)	Fx (lbs)	Fz(60) (lbs)	Fx(30) (lbs)
Commscope DT465-2XR	153.0	3	1.00	Flat	Flat	23.47	9.10	213.56	140.21	158.55	195.22
Alcatel Lucent TD-RRH8x20	153.0	3	1.00	Flat	Flat	23.47	3.70	86.95	30.37	44.51	72.80
Alcatel Lucent RRH 800 MHz 2x50W	153.0	3	1.00	Flat	Flat	23.47	2.06	48.31	45.34	46.08	47.57
Alcatel-Lucent 1900 MHz 4x45 RRH	153.0	3	1.00	Flat	Flat	23.47	2.31	54.28	55.75	55.38	54.65
Alcatel Lucent RRH 800 MHz 2x50W	153.0	3	1.00	Flat	Flat	23.47	2.06	48.31	45.34	46.08	47.57
RFS APXVSPP18-C-A20	153.0	3	1.00	Flat	Flat	23.47	8.02	188.35	124.01	140.10	172.27

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M6	N18	N22			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
2	M7	N17	N21			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
3	M8	N19	N21			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
4	M9	N20	N22			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
5	M10	N25	N26			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
6	M11	N28	N27			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
7	M12	N32	N31			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
8	M13	N25	N27			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
9	M14	N28	N31			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
10	M15	N24	N23			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
11	M16	N29	N30			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
12	M17	N33	N34			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
13	M18	N24	N30			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
14	M19	N29	N34			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
15	M15A	N20A	N22A			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
16	M16A	N19A	N21A			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
17	M17A	N35	N31A			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
18	M20	N36	N32A			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
19	M21	N41	N110A			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
20	M20A	N38	N37			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
21	M21A	N39A	N43			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
22	M22	N38A	N42A			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
23	M23	N40A	N42A			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
24	M24	N41A	N43			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
25	M25	N46	N47			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
26	M26	N49	N48			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
27	M27	N53	N52			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
28	M28	N46	N48			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
29	M29	N49	N52			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
30	M30	N45	N44			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
31	M31	N50	N51			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
32	M32	N54	N55			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
33	M33	N45	N51			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
34	M34	N50	N55			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
35	M35	N57	N59			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
36	M36	N56	N58			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
37	M37	N66	N64			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
38	M38	N67	N65			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
39	M39	N70	N112			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
40	M40	N73	N72			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
41	M41	N76	N80			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
42	M42	N75	N79			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
43	M43	N77	N79			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
44	M44	N78	N80			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
45	M45	N83	N84			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
46	M46	N86	N85			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
47	M47	N90	N89			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
48	M48	N83	N85			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
49	M49	N86	N89			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
50	M50	N82	N81			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
51	M51	N87	N88			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
52	M52	N91	N92			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
53	M53	N82	N88			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
54	M54	N87	N92			Rohn Tubes	Beam	Pipe	A500 Gr.42	Typical
55	M55	N94	N96			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical
56	M56	N93	N95			Main Horizontal	Beam	Pipe	A53 Gr. B	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
57	M57	N103	N101			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
58	M58	N104	N102			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
59	M59	N107	N111			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
60	M60	N110	N109			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	Hot Rolled Steel				
2	A500 Gr.42	Rohn 1 1/2x16GA	24	1088.9	.1
3	A53 Gr. B	PIPE_2.0	18	1355.8	.4
4	A53 Gr. B	PIPE_2.5	18	1606.2	.7
5	Total HR Steel		60	4050.9	1.3

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Self Weight	DL		-1			18			
2	Wind Load AZI 000	WLZ					18		1	
3	Wind Load AZI 090	WLX					18		1	
4	Ice Weight	OL1					18	60		
5	Wind + Ice Load AZI ...	OL2					18		1	
6	Wind + Ice Load AZI ...	OL3					18		1	
7	Service Live 1	LL				6				
8	Seismic Load AZI 000	ELZ								
9	Seismic Load AZI 090	ELX								
10	BLC 2 Transient Area...	None						60		
11	BLC 3 Transient Area...	None						57		
12	BLC 5 Transient Area...	None						60		
13	BLC 6 Transient Area...	None						57		

Load Combinations

	Description	Sol...	PD...	SR...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
1	1.4D	Yes	Y		DL	1.4																				
2	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	1.6																		
3	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	1.386	W...	.8																
4	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	.8	W...	1.386																
5	1.2D + 1.6..	Yes	Y		DL	1.2			W...	1.6																
6	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	-.8	W...	1.386																
7	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	-1.3...	W...	.8																
8	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	-1.6																		
9	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	-1.3...	W...	-.8																
10	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	-.8	W...	-1.3...																
11	1.2D + 1.6..	Yes	Y		DL	1.2			W...	-1.6																
12	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	.8	W...	-1.3...																
13	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	1.386	W...	-.8																
14	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	1.6																		
15	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	1.386	W...	.8																
16	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	.8	W...	1.386																
17	0.9D + 1.6..	Yes	Y		DL	.9			W...	1.6																
18	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	-.8	W...	1.386																
19	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	-1.3...	W...	.8																
20	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	-1.6																		
21	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	-1.3...	W...	-.8																

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
22	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	-.8	W...	-1.3...														
23	0.9D + 1.6..	Yes	Y		DL	.9			W...	-1.6														
24	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	.8	W...	-1.3...														
25	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	1.386	W...	-.8														
26	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1																
27	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	1														
28	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	.866	OL3	.5												
29	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	.5	OL3	.866												
30	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1			OL3	1												
31	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	-.5	OL3	.866												
32	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	-.866	OL3	.5												
33	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	-1														
34	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	-.866	OL3	-.5												
35	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	-.5	OL3	-.866												
36	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1			OL3	-1												
37	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	.5	OL3	-.866												
38	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	.866	OL3	-.5												
39	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	.104														
40	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	.09	W...	.052												
41	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	.052	W...	.09												
42	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5			W...	.104												
43	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	-.052	W...	.09												
44	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	-.09	W...	.052												
45	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	-.104														
46	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	-.09	W...	-.052												
47	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	-.052	W...	-.09												
48	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5			W...	-.104												
49	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	.052	W...	-.09												
50	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	.09	W...	-.052												

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N22	max	208.624	16	1665.253	27	606.802	14	-.083	14	.257	19	.269	28
2		min	-1053.11	36	417.116	21	-2029.492	33	-.58	33	-.295	13	.054	20
3	N21	max	1042.596	30	749.215	32	2027.931	27	-.005	20	.309	7	.157	33
4		min	-182.093	22	187.176	25	-647.955	20	-.31	27	-.271	25	.016	14
5	N42A	max	1280.036	30	749.237	36	298.171	25	.281	31	.656	10	.194	31
6		min	-537.518	24	187.118	17	-1840.292	33	.057	24	-.618	16	-.018	24
7	N43	max	523.427	18	1665.274	31	1852.344	27	.516	36	.604	22	.37	37
8		min	-1287.085	36	417.146	25	-317.217	20	.116	17	-.642	4	.035	18
9	N79	max	540.199	17	749.227	28	455.277	14	.046	10	.38	12	-.04	16
10		min	-2223.393	36	187.214	21	-479.204	8	-.042	16	-.343	18	-.341	35
11	N80	max	2227.849	30	1665.261	35	498.832	2	.082	41	.35	24	-.12	22
12		min	-518.546	23	417.194	17	-473.546	20	-.029	22	-.389	6	-.632	29
13	Totals:	max	4422.2	17	7241.406	34	4483.966	14						
14		min	-4422.2	11	1821.774	14	-4483.966	8						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc ...	phi*Pnt [...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	M16	Rohn 1 1/2x...	.430	13.263	38	.004	0		33	3577.137	17240.92	.64	.64	1....	H1-1a
2	M31	Rohn 1 1/2x...	.430	13.263	30	.004	42		35	3577.137	17240.92	.64	.64	1....	H1-1a
3	M51	Rohn 1 1/2x...	.429	13.263	34	.004	42		27	3577.137	17240.92	.64	.64	1....	H1-1a
4	M45	PIPE_2.0	.251	21	3	.043	0		3	27741.09	32130	1.872	1.872	1....	H1-1b
5	M25	PIPE_2.0	.250	21	11	.063	0		11	27741.09	32130	1.872	1.872	1....	H1-1b

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

	Member	Shape	Code Check	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc ...	phi*Pnt [...	phi*Mn ...	phi*Mn ...	Cb	Eqn
6	M10	PIPE_2.0	.250	21	7	.053	0		7	27741.09	32130	1.872	1.872	1....	H1-1b
7	M30	PIPE_2.0	.241	21	9	.059	21		10	27741.09	32130	1.872	1.872	1....	H1-1b
8	M50	PIPE_2.0	.233	21	13	.040	21		7	27741.09	32130	1.872	1.872	1....	H1-1b
9	M15	PIPE_2.0	.225	21	5	.039	21		6	27741.09	32130	1.872	1.872	1....	H1-1b
10	M11	Rohn 1 1/2x...	.189	0	27	.005	42		33	3577.137	17240.92	.64	.64	1	H1-1b*
11	M26	Rohn 1 1/2x...	.189	0	31	.005	42		35	3577.137	17240.92	.64	.64	1....	H1-1b*
12	M46	Rohn 1 1/2x...	.189	0	35	.005	42		27	3577.137	17240.92	.64	.64	1....	H1-1b*
13	M24	PIPE_2.5	.187	61.847	28	.084	61.8...		31	50604.8...	50715	3.596	3.596	1....	H1-1b
14	M44	PIPE_2.5	.187	61.847	31	.084	61.8...		35	50604.8...	50715	3.596	3.596	1....	H1-1b
15	M9	PIPE_2.5	.186	61.847	33	.084	61.8...		27	50604.8...	50715	3.596	3.596	1....	H1-1b
16	M16A	PIPE_2.5	.157	121.263	2	.072	121....		8	49575.1...	50715	3.596	3.596	2....	H1-1b
17	M58	PIPE_2.0	.151	68.211	31	.030	25.2...		17	27741.09	32130	1.872	1.872	2....	H1-1b
18	M20	PIPE_2.0	.150	68.211	35	.034	25.2...		20	27741.09	32130	1.872	1.872	2....	H1-1b
19	M38	PIPE_2.0	.150	68.211	27	.030	25.2...		17	27741.09	32130	1.872	1.872	2....	H1-1b
20	M15A	PIPE_2.5	.146	121.263	8	.060	121....		2	49575.1...	50715	3.596	3.596	2....	H1-1b
21	M56	PIPE_2.5	.136	121.263	10	.061	121....		4	49575.1...	50715	3.596	3.596	2....	H1-1b
22	M36	PIPE_2.5	.134	121.263	6	.061	121....		12	49575.1...	50715	3.596	3.596	2....	H1-1b
23	M35	PIPE_2.5	.132	121.263	12	.056	121....		6	49575.1...	50715	3.596	3.596	2....	H1-1b
24	M55	PIPE_2.5	.131	121.263	4	.058	121....		10	49575.1...	50715	3.596	3.596	1....	H1-1b
25	M17	Rohn 1 1/2x...	.125	0	33	.002	42		10	3577.137	17240.92	.64	.64	1	H1-1b*
26	M32	Rohn 1 1/2x...	.125	0	36	.002	42		11	3577.137	17240.92	.64	.64	1....	H1-1b*
27	M52	Rohn 1 1/2x...	.125	0	29	.002	42		10	3577.137	17240.92	.64	.64	1....	H1-1b*
28	M23	PIPE_2.5	.109	61.847	35	.051	4.883		38	50604.8...	50715	3.596	3.596	1....	H1-1b
29	M43	PIPE_2.5	.108	61.847	37	.052	4.883		30	50604.8...	50715	3.596	3.596	1....	H1-1b
30	M8	PIPE_2.5	.105	61.847	27	.052	4.883		34	50604.8...	50715	3.596	3.596	1....	H1-1b
31	M57	PIPE_2.0	.101	68.211	49	.012	68.2...		50	27741.09	32130	1.872	1.872	2....	H1-1b
32	M17A	PIPE_2.0	.101	68.211	42	.012	27.7...		47	27741.09	32130	1.872	1.872	2....	H1-1b
33	M20A	PIPE_2.0	.100	70.737	8	.018	70.7...		8	30169.2...	32130	1.872	1.872	1	H1-1b
34	M41	PIPE_2.5	.097	61.847	31	.049	61.8...		29	50604.8...	50715	3.596	3.596	1....	H1-1b
35	M21A	PIPE_2.5	.096	61.847	28	.049	61.8...		37	50604.8...	50715	3.596	3.596	1....	H1-1b
36	M22	PIPE_2.5	.095	61.847	10	.033	4.883		42	50604.8...	50715	3.596	3.596	1....	H1-1b
37	M60	PIPE_2.0	.093	70.737	5	.016	70.7...		5	30169.2...	32130	1.872	1.872	2....	H1-1b
38	M40	PIPE_2.0	.093	70.737	11	.016	70.7...		11	30169.2...	32130	1.872	1.872	2....	H1-1b
39	M6	PIPE_2.5	.092	61.847	33	.049	61.8...		33	50604.8...	50715	3.596	3.596	1....	H1-1b
40	M18	Rohn 1 1/2x...	.076	24.372	29	.005	48.7...		4	3901.933	17240.92	.64	.64	1....	H1-1b
41	M53	Rohn 1 1/2x...	.076	24.372	37	.006	48.7...		12	3901.933	17240.92	.64	.64	1....	H1-1b
42	M33	Rohn 1 1/2x...	.076	24.372	33	.006	48.7...		8	3901.933	17240.92	.64	.64	1....	H1-1b
43	M39	PIPE_2.0	.075	0	10	.008	0		35	18870.3...	32130	1.872	1.872	2....	H1-1b
44	M19	Rohn 1 1/2x...	.069	24.372	29	.006	48.7...		7	3901.933	17240.92	.64	.64	1....	H1-1b
45	M54	Rohn 1 1/2x...	.069	24.372	37	.008	48.7...		12	3901.933	17240.92	.64	.64	1....	H1-1b
46	M34	Rohn 1 1/2x...	.068	24.372	33	.012	0		10	3901.933	17240.92	.64	.64	1....	H1-1b
47	M42	PIPE_2.5	.068	61.847	12	.030	61.8...		35	50604.8...	50715	3.596	3.596	1....	H1-1b
48	M59	PIPE_2.0	.068	79.949	4	.008	0		38	18870.3...	32130	1.872	1.872	2....	H1-1b
49	M47	Rohn 1 1/2x...	.064	0	29	.002	42		5	3577.137	17240.92	.64	.64	1....	H1-1b*
50	M12	Rohn 1 1/2x...	.064	0	33	.003	42		8	3577.137	17240.92	.64	.64	1	H1-1b*
51	M27	Rohn 1 1/2x...	.064	0	37	.003	42		11	3577.137	17240.92	.64	.64	1....	H1-1b*
52	M21	PIPE_2.0	.056	0	7	.007	0		31	18870.3...	32130	1.872	1.872	2....	H1-1b
53	M7	PIPE_2.5	.052	61.847	28	.030	61.8...		27	50604.8...	50715	3.596	3.596	1....	H1-1b
54	M14	Rohn 1 1/2x...	.045	24.372	37	.010	0		2	3901.933	17240.92	.64	.64	1....	H1-1b
55	M29	Rohn 1 1/2x...	.045	24.372	29	.014	0		4	3901.933	17240.92	.64	.64	1....	H1-1b
56	M49	Rohn 1 1/2x...	.045	24.372	33	.007	0		7	3901.933	17240.92	.64	.64	1....	H1-1b
57	M13	Rohn 1 1/2x...	.042	24.372	37	.012	48.7...		8	3901.933	17240.92	.64	.64	1....	H1-1b
58	M28	Rohn 1 1/2x...	.041	24.372	29	.011	48.7...		12	3901.933	17240.92	.64	.64	1....	H1-1b
59	M48	Rohn 1 1/2x...	.041	24.372	33	.010	0		4	3901.933	17240.92	.64	.64	1....	H1-1b
60	M37	PIPE_2.0	.030	68.211	45	.008	68.2...		35	27741.09	32130	1.872	1.872	2....	H1-1b

December 12, 2017

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Subject: Structural Analysis Report

Carrier Designation:	***Sprint* Reconfiguration**	
	Carrier Site Number:	CT33XC532
	Carrier Project Name:	DO MACRO
Phoenix Tower Designation:	**PTI Site Number:**	US-CT-1003
	PTI Site Name:	Straits Turnpike
Engineering Firm Designation:	**TEP Project Number:**	25628.147080
Site Data:	**1021 Straits Turnpike, Middlebury, New Haven County, CT 06762** **Latitude *41° 32' 8.78"*, Longitude *-73° 05' 21.27"*** **195 ± Foot - Self Supporting Tower**	

Dear David C. Rodriguez,

Tower Engineering Professionals is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

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

LC1: Existing + Proposed + Future Loading **Sufficient Capacity**
Note: See Table 1 for the existing, proposed, and future loading

Structure Capacity	Foundation Capacity
94.7%	71.6%

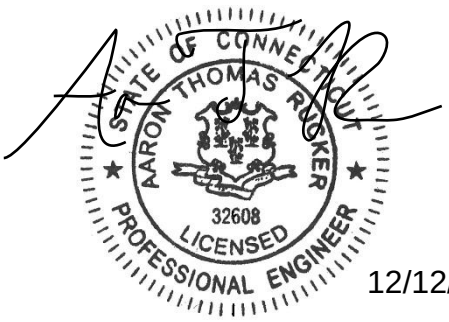
This analysis has been performed in accordance with the ANSI/TIA-222-G-2-2009 Structural Standard for Antenna Supporting Structures and Antennas – Addendum 2 and the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Risk Category II was/were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with the appurtenances listed in Table 1 for the determined available structural capacity to be effective.

We at *Tower Engineering Professionals* appreciate the opportunity of providing our continuing professional services to you and *Phoenix Tower International.* If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Maria Lopez

Respectfully submitted by:



Aaron T. Rucker, P.E.

12/12/2017

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 195-ft Self Supporting tower designed by Fred A. Nudd Corporation in May of 1998. The tower was originally designed for a wind speed of 85 mph per ANSI/EIA/TIA-222-F. TEP visited the site in June of 2010 to gather existing steel and appurtenance information. This tower has been modified multiple times in the past to accommodate additional loading. All other information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

The analysis has been performed in accordance with the ANSI/TIA-222-G-2-2009 Structural Standard for Antenna Supporting Structures and Antennas – Addendum 2 and the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph with no ice per section 1609.3.1 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1, 50 mph with 0.75 inch ice thickness, and 60 mph under service loads. Risk Category II was used in this analysis with the following design criteria:

Type of Analysis: **Rigorous**
Classification of Structure: **Class II**
Exposure Category: **Exposure B**
Topographic Category: **Category 1**
Earthquake Category: **Not Considered**
Earthquake effects may be ignored per this standard for site locations where Ss does not exceed 1.0. (Site Location Ss = 0.195).

Table 1 - Existing, Proposed, and Future Antenna and Cable Information

Existing/ Proposed/ Reserved	Mount Level (ft)	Ant CL (ft)	Qty	Antenna Model	Mount Type	Qty Coax	Coax Size	Coax Location	Owner/ Tenant
Future	***195.0***	***195.0***	***-***	***T-Mobile Future Loading[1]***	(3) 12.5' Sector Frames	***5***	***1 5/8***	***AB Face***	***T-Mobile***
Existing	195.0	195.0	3	Ericsson KRD-901146-1		1	Fiber	AB Face	T-Mobile
			3	RFS APX16DWV-16DWV-S-E-A20		18	1-5/8	AB Face	T-Mobile
			6	Ericsson KRY-112-71					
		193.0	3	Commscope LNX-6515DS-A1M					
Existing	185.0	185.0	3	Powerwave 7770	(3) 15.0' T-Frames with Catwalk and MT195-14 Handrail Kit	12 1 2	1-5/8 7/16"Ø Fiber 3/8"Ø Power	CA Face	AT&T
			4	Powerwave P65-17-XLH-RR					
			6	Powerwave LGP 21401 TMA					
			3	Ericsson RRUS-11					
			2	Raycap DC6-48-60-18-8F					
			6	Ericsson RRUS-12					
			3	Ericsson RRUS-32					
			6	CCI TPX-070621					
			2	KMW AM-X-CD-16-65-00T-RET					

Table 1 - Existing, Proposed, and Future Antenna and Cable Information (Continued)

Existing/ Proposed/ Reserved	Mount Level (ft)	Ant CL (ft)	Qty	Antenna Model	Mount Type	Qty Coax	Coax Size	Coax Location	Owner/ Tenant
Existing	169.0	169.0	2	Antel BXA-70063-6CF	(3) 15.0' T-Frames with Catwalk	12 1	1-5/8 Fiber	AB Face	Verizon
			4	Decibel DB844G65ZAXY					
			1	Antel BXA 70080/6CF					
			2	Decibel DB846F65ZAXY					
			6	RFS FD9R6004/2C-3L					
			3	Alcatel Lucent RRH2x60-AWS					
			3	Alcatel Lucent RRH2x60-PCS					
			1	RFS DB-T1-6Z-8AB-0Z					
			6	HBXX-6517DS-A2M					
Proposed	***153.0***	***153.0***	***3***	***Commscope DT465B-2XR***	(3) 12.0' Sector Frames	***1***	***1-1/4" Hybrilflex***	***BC Face***	***Sprint***
			3	***ALU TD-RRH8x20-25 w/Solar Shield***					
			3	***ALU RRH2x50-08***					
Existing	153.0	153.0	3	RFS APXVSPP18-C-A20		3	1-1/4" Hybriflex	BC Face	Sprint
			3	ALU RRH 1900 4x45 65MHz					
			3	ALU 2x50W 800MHz RRH					
Existing	75.5	75.5	1	GPS Antenna	4.5' Standoff	1	5/8"Ø	BC Face	Unknown

Notes:
1) T-Mobile Future Loading consists of 5,934.05 in^2 wind area and (5) feed lines at 193-ft elevation.

Table 2 - Detailed Future Loading Information[2]

Existing/ Proposed	Elevation (ft)	Wind Area (in^2) (includes Ca factors)	Weight (lb)	Qty Coax	Coax Size	% Capacity	Owner/ Tenant
Existing/ Proposed	195/193	16,065.95	2,258.86	18 1	1 5/8 Fiber	77.9	T-Mobile
Future	***195***	***5,934.05***	***834.32***	***5***	***1 5/8***	***-***	***T-Mobile***
Total	195	22,000.00	3,093.18	23 1	1 5/8 Fiber	90.8	T-Mobile

Notes:
2) % Capacities based on T-Mobile SA by TEP dated February 1, 2017 (TEP No. 25628.106778).

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Source
Tower and Foundation Drawings	Fred A. Nudd Corporation, dated May 5, 1998 Project No. 5974.	TEP
Structural Modification Drawings	Fred A. Nudd Corporation, dated April 30, 1999 Drawing No. 99-6726-1	TEP
Steel and Appurtenance Mapping	Tower Engineering Professionals, Inc., dated June 3, 2010 TEP No. 102056	TEP
Post-Modification Inspection	Tower Engineering Professionals, Inc., dated April 21, 2011 TEP No. 102056	TEP
Geotechnical Report	Dr. Clarence Welti, P.E., P.C., dated April 17, 1998 Project No. 25628	TEP
Structural Modification Drawings	Tower Engineering Professionals, Inc., dated August 29, 2011 TEP No. 102056	TEP
Structural Modification Drawings	Tower Engineering Professionals, Inc., dated July 26, 2012 TEP No. 102056	TEP
Structural Modification Analysis	Tower Engineering Professionals, Inc., dated August 1, 2013 TEP No. 25628.4865	TEP
Previous Structural Analysis	Tower Engineering Professionals, Inc., dated April 12, 2017 TEP No. 25628.106778	TEP
Structural Modification Analysis	Tower Engineering Professionals, Inc., dated August 24, 2016 TEP No. 25628.93911	TEP
Structural Modification Drawings	Tower Engineering Professionals, Inc., dated April 19, 2016 TEP No. 25628.47301	TEP
Post Modification Inspection	Tower Engineering Professionals, Inc., dated October 26, 2016 TEP No. 25628. 58752	TEP
Correspondence	Correspondence with Phoenix Tower International with regards to the existing, proposed, and future loading.	PTI

3.1) Analysis Method

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

3.2) Assumptions

1) The tower and foundation were built in accordance with the manufacturer's specifications.
2) The tower and foundation have been maintained in accordance with the manufacturer's specification.
3) The configuration of existing antennas, transmission cables, mounts and other appurtenances are as specified in the tower mapping report by TEP.
4) Unless specified by the client or tower mapping, the location of the existing and proposed coax is assumed by TEP and listed in Table 1.
5) All tower components are in sufficient condition to carry their full design capacity.
6) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance. See Table 6.
7) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not analyze antennas supporting mounts as part of this structural analysis report.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ϕP_{allow} (lb)	% Capacity	Pass / Fail
T1	195 - 180	Leg	PIPE 2.5 STD (SCH 40)	3	-36210.60	70532.50	51.3	Pass
T2	180 - 175	Leg	PIPE 2.5 STD (SCH 40)	45	-40342.30	77102.10	52.3	Pass
T3	175 - 170	Leg	PIPE 2.5 STD (SCH 40)	57	-51081.10	77205.80	66.2	Pass
T4	170 - 160	Leg	2.5SCH40 w/ 3SCH80 Half Sleeve	69	-74198.10	72967.00	71.3	Pass
T5	160 - 150	Leg	Pipe 3.5 Std (SCH40)	90	-96284.10	126932.00	75.9	Pass
T6	150 - 140	Leg	3.5SCH40 w/ 4SCH40 Half Sleeve	111	-120397.00	184209.00	63.3	Pass
T7	140 - 133.333	Leg	5 STD w/ 6 XH Half Sleeve	132	-133779.00	306442.00	49.4	Pass
T8	133.333 - 126.667	Leg	5 STD w/ 6 XH Half Sleeve	141	-147405.00	306442.00	49.4	Pass
T9	126.667 - 120	Leg	5 STD w/ 6 XH Half Sleeve	150	-160852.00	306442.00	49.4	Pass
T10	120 - 113.333	Leg	Pipe 6.625" x 0.280" (6 STD)	159	-171750.00	268817.00	63.9	Pass
T11	113.333 - 106.667	Leg	Pipe 6.625" x 0.280" (6 STD)	171	-184438.00	268848.00	68.6	Pass
T12	106.667 - 100	Leg	Pipe 6.625" x 0.280" (6 STD)	183	-196295.00	268875.00	73.0	Pass
T13	100 - 80	Leg	6 STD w/ 7 XH Half Sleeve	195	-233094.00	412800.00	53.0	Pass
T14	80 - 60	Leg	Pipe 8.625" x 0.322" (8 STD)	225	-268048.00	391613.00	68.4	Pass
T15	60 - 50	Leg	Pipe 8.625" x 0.322" (8 STD)	246	-280233.00	401143.00	69.9	Pass
T16	50 - 40	Leg	Pipe 8.625" x 0.322" (8 STD)	258	-297250.00	401194.00	74.1	Pass
T17	40 - 20	Leg	Pipe 8.75" x 0.500" (8 EH)	270	-330803.00	559858.00	59.1	Pass
T18	20 - 0	Leg	Pipe 8.75" x 0.500" (8 EH)	285	-361363.00	560492.00	64.5 64.9 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ϕP_{allow} (lb)	% Capacity	Pass / Fail
T1	195 - 180	Diagonal	5/8	12	9418.12	9940.20	94.7	Pass
T2	180 - 175	Diagonal	L1 1/2x1 1/2x3/16	48	-4335.78	7609.55	57.0 76.2 (b)	Pass
T3	175 - 170	Diagonal	L2x2x3/16	60	-3463.98	13320.20	26.0 51.2 (b)	Pass
T4	170 - 160	Diagonal	2L1 1/2x1 1/2x3/16x1/4	84	-5409.95	22761.40	23.8 60.2 (b)	Pass
T5	160 - 150	Diagonal	2L2x2x3/16x1/4	93	-6165.84	34011.90	18.1 71.7 (b)	Pass
T6	150 - 140	Diagonal	2L2x2x3/16x1/4	115	-5854.19	31842.70	18.4 69.9 (b)	Pass
T7	140 - 133.333	Diagonal	L2 1/2x2 1/2x1/4	135	-6050.81	17991.90	33.6 46.8 (b)	Pass
T8	133.333 - 126.667	Diagonal	L2 1/2x2 1/2x1/4	144	-6248.89	16560.40	37.7 47.9 (b)	Pass
T9	126.667 - 120	Diagonal	L2 1/2x2 1/2x3/16	153	-6063.53	11588.10	52.3 76.6 (b)	Pass
T10	120 - 113.333	Diagonal	L3x3x1/4	163	-7149.80	22905.00	31.2 51.0 (b)	Pass
T11	113.333 - 106.667	Diagonal	L3x3x1/4	175	-7245.35	21667.80	33.4 52.9 (b)	Pass
T12	106.667 - 100	Diagonal	L2 1/2x2 1/2x1/4	187	-7359.89	11556.70	63.7	Pass
T13	100 - 80	Diagonal	L3 1/2x3 1/2x1/4	199	-7461.70	25335.60	29.5 31.1 (b)	Pass
T14	80 - 60	Diagonal	L3 1/2x3 1/2x1/4	229	-7902.08	21768.60	36.3	Pass
T15	60 - 50	Diagonal	L3x3x5/16	250	-9827.10	13914.00	70.6	Pass
T16	50 - 40	Diagonal	L3x3x5/16	262	-9590.64	12883.30	74.4	Pass
T17	40 - 20	Diagonal	L4x4x3/8	274	-9484.67	28952.00	32.8 38.2 (b)	Pass
T18	20 - 0	Diagonal	L5x5x5/16	289	-10147.00	38842.60	26.1 40.8 (b)	Pass
T1	195 - 180	Horizontal	L1 1/2x1 1/2x3/16	17	-5332.57	7191.11	74.2	Pass
T2	180 - 175	Secondary Horizontal	L2x2x3/16	53	-699.62	15868.60	4.4 10.2 (b)	Pass
T3	175 - 170	Secondary Horizontal	L2x2x3/16	65	-885.85	15324.60	5.8 13.0 (b)	Pass
T4	170 - 160	Secondary Horizontal	L2x2x3/16	77	-1286.75	14254.80	9.0 18.8 (b)	Pass
T5	160 - 150	Secondary Horizontal	L2x2x3/16	98	-1671.54	13230.80	12.6 24.5 (b)	Pass
T6	150 - 140	Secondary Horizontal	L2x2x3/16	119	-2088.30	12187.10	17.1 30.6 (b)	Pass
T10	120 - 113.333	Secondary Horizontal	L3x3x3/16	168	-2979.26	19380.60	15.4 38.0 (b)	Pass
T11	113.333 - 106.667	Secondary Horizontal	L3x3x3/16	179	-3200.33	18683.90	17.1 40.9 (b)	Pass
T12	106.667 - 100	Secondary Horizontal	L3x3x3/16	191	-3405.53	17991.70	18.9 43.5 (b)	Pass
T13	100 - 80	Secondary Horizontal	L3x3x1/4	203	-4042.34	20777.30	19.5 29.1 (b)	Pass
T15	60 - 50	Secondary Horizontal	L4x4x3/8	254	-4859.84	44960.90	10.8 39.1 (b)	Pass
T16	50 - 40	Secondary Horizontal	L4x4x1/4	266	-5154.95	28993.60	17.8 35.9 (b)	Pass
T1	195 - 180	Top Girt	L1 1/2x1 1/2x3/16	5	-1526.46	7191.11	21.2	Pass
T1	195 - 180	Bottom Girt	L1 1/2x1 1/2x3/16	8	-3149.68	7191.11	43.8	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ϕP_{allow} (lb)	% Capacity	Pass / Fail
							Summary	
						Leg (T4)	75.9	Pass
						Diagonal (T1)	94.7	Pass
						Horizontal (T1)	74.2	Pass
						Secondary Horizontal (T12)	43.5	Pass
						Top Girt (T1)	21.2	Pass
						Bottom Girt (T1)	43.8	Pass
						Bolt Checks	76.6	Pass
						RATING =	**94.7**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	-	71.6	Pass
1	Base Foundation - Soil Interaction	-	36.8	Pass
1	Base Foundation - Structural	-	53.7	Pass

Structure Rating (max from all components) =	**94.7%**

Notes:
1) See additional documentation in "Appendix B - Additional Calculations" for calculations supporting the % capacity listed.

Table 6 - Dish Twist/Sway Results for 60 mph Service Wind Speed

Elevation (ft)	Dish Model	Beam Deflection		
		Deflection (in)	Tilt (deg)	Twist (deg)
-	-	-	-	-

4.1) Recommendations

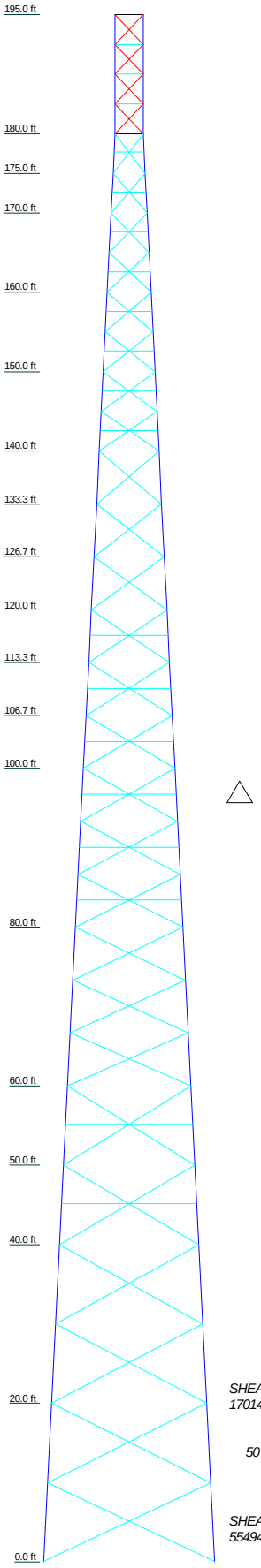
1) If the load differs from that described in Table 1 of this report or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
2) The tower and its foundation have sufficient capacity to carry the existing, proposed, and future loading. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18
Legs	PIPE 2.5 STD (SCH 40)			A	B	C	5 STD w/ 6 XH Half Sleeve						6 STD w/ 7 XH Half Sleeve		Pipe 8.625" x 0.322" (8 STD)			Pipe 8.75" x 0.500" (8 EH)
Leg Grade	A572-55			A53-B-35	A572-55	A500-50	A500-46				A572-55		A53-B-42			A572-55		
Diagonals	SR 5/8	D	E	F	2L2x2x3/16x1/4		L2 1/2x2 1/2x1/4		G	H	L3x3x1/4		L3 1/2x3 1/2x1/4		L3x3x5/16		L4x4x3/8	
Diagonal Grade	A36																	
Top Girts	L1 1/2x1 1/2x3/16												N.A.					
Bottom Girts	L1 1/2x1 1/2x3/16												N.A.					
Horizontals	L1 1/2x1 1/2x3/16												N.A.					
Sec. Horizontals	N.A.				L2x2x3/16		N.A.				L3x3x3/16		L3x3x1/4	N.A.	L4x4x3/8	L4x4x1/4	N.A.	
Face Width (ft)	21.5	19.5																
# Panels @ (ft)		2 @ 9.95833			8 @ 5							12 @ 6.66667				4 @ 10		
Weight (lb)	30602.5	5499.9	2140	707.8	817.6	1040.7	829.5	842.1	788.4	839.1	862.9	820.6	4304.0	3370.0	2013	1912.1	5106.5	

	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18
Section																		
Legs	3.5		4	4.5	5.5	6.5	7.5	8.16667	8.83333	9.5	10.1667	10.8333	11.5	13.5	15.5	16.5	17.5	19.5
Leg Grade	4 @ 3.75																	
Diagonals	484.2	183.8	214.0	707.8	817.6	1040.7	829.5	842.1	788.4	839.1	862.9	820.6	4304.0	3370.0	2013	1912.1	5106.5	5499.9



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Sector Mount [SM 802-3]	195	DC6-48-60-18-8F	185
HSS Top Mount	195	DC6-48-60-18-8F	185
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	195	(3) Sector Mounts 169-ft	169
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	195	(2) BXA-70063/6CF w/ Mount Pipe	169
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	195	(2) DB844G65ZAXY w/Mount Pipe	169
(2) KRY 112 71	195	(2) DB844G65ZAXY w/Mount Pipe	169
(2) KRY 112 71	195	DB-B1/T1 w/ Mount Pipe	169
(2) KRY 112 71	195	(2) HBXX-6517DS-A2M w/ Mount Pipe	169
AIR -32 B2A/B66AA	195	(2) HBXX-6517DS-A2M w/ Mount Pipe	169
AIR -32 B2A/B66AA	195	(2) HBXX-6517DS-A2M w/ Mount Pipe	169
AIR -32 B2A/B66AA	195	RRH2x60-AWS	169
TMO Future Loading	195	RRH2x60-AWS	169
LNX-6515DS-A1M W/ Mount Pipe	193	RRH2x60-AWS	169
LNX-6515DS-A1M W/ Mount Pipe	193	RRH2X60-PCS	169
LNX-6515DS-A1M W/ Mount Pipe	193	RRH2X60-PCS	169
(3) Sector Mounts 185-ft	185	RRH2X60-PCS	169
Miscellaneous [NA 510-1]	185	BXA-70080/6CF w/ Mount Pipe	169
7770.00 w/ Mount Pipe	185	DB846F65ZAXY w/Mount Pipe	169
7770.00 w/ Mount Pipe	185	DB846F65ZAXY w/Mount Pipe	169
7770.00 w/ Mount Pipe	185	(2) FD9R6004	169
P65-17-XLH-RR w/Mount Pipe	185	(2) FD9R6004	169
AM-X-CD-16-65-00T-RET w/ Mount Pipe	185	(2) FD9R6004	169
AM-X-CD-16-65-00T-RET w/ Mount Pipe	185	TD-RRHBx20-25	153
P65-17-XLH-RR w/Mount Pipe	185	PCS 1900MHz 4x45W-65MHz	153
P65-17-XLH-RR w/Mount Pipe	185	PCS 1900MHz 4x45W-65MHz	153
P65-17-XLH-RR w/Mount Pipe	185	PCS 1900MHz 4x45W-65MHz	153
(2) TPX - 070621	185	TD-RRHBx20-25	153
(2) TPX - 070621	185	TD-RRHBx20-25	153
(2) TPX - 070621	185	800MHZ 2X50W RRH	153
RRUS-12	185	800MHZ 2X50W RRH	153
RRUS-12	185	800MHZ 2X50W RRH	153
RRUS-12	185	Sector Mount [SM 502-3]	153
RRUS-12	185	APXVSPP18-C-A20 w/ Mount Pipe	153
RRUS-12	185	APXVSPP18-C-A20 w/ Mount Pipe	153
RRUS-12	185	APXVSPP18-C-A20 w/ Mount Pipe	153
(2) LGP21401	185	DT465B-2XR w/ Mount Pipe	153
(2) LGP21401	185	DT465B-2XR w/ Mount Pipe	153
(2) LGP21401	185	DT465B-2XR w/ Mount Pipe	153
(2) RRUS-11	185	RRH2x50-08	153
(2) RRUS-11	185	RRH2x50-08	153
(2) RRUS-11	185	RRH2x50-08	153
RRUS-32 B30	185	GPS0015	75.5
RRUS-32 B30	185	1.75" Dia x 5-ft Pipe	75.5
RRUS-32 B30	185		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	2.5SCH40 w/ 3SCH80 Half Sleeve	E	L2x2x3/16
B	Pipe 3.5 Std (SCH40)	F	2L1 1/2x1 1/2x3/16x1/4
C	3.5SCH40 w/ 4SCH40 Half Sleeve	G	L2 1/2x2 1/2x3/16
D	L1 1/2x1 1/2x3/16	H	L2 1/2x2 1/2x1/4

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-55	55 ksi	70 ksi	A500-50	50 ksi	62 ksi
A36	36 ksi	58 ksi	A500-46	46 ksi	62 ksi
A53-B-35	35 ksi	60 ksi	A53-B-42	42 ksi	63 ksi

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 369301 lb
SHEAR: 35808 lb

UPLIFT: -318014 lb
SHEAR: 31240 lb

AXIAL 180157 lb
SHEAR 17014 lb *MOMENT 2098645 lb-ft*
TORQUE 4338 lb-ft
50 mph WIND - 0.7500 in ICE

AXIAL 65095 lb
SHEAR 55494 lb *MOMENT 6472272 lb-ft*
TORQUE 13369 lb-ft
REACTIONS - 93 mph WIND

Tower Engineering Professionals, Inc.
326 Tryon Road
Raleigh, NC 27603
Phone: (919) 661-6351
FAX: www.tepgroup.net

Job:	US-CT-1003 - Straits Turnpike
Project:	TEP #25628.147080
Client:	Phoenix Tower International
Drawn by:	SJJ
App'd:	
Code:	TIA-222-G
Date:	12/12/17
Scale:	NTS
Path:	T:\25628\91075_147080_US-CT-1003 SA-Structural Analysis\tnx\US-CT-1003.eri
Dwg No.	E-1

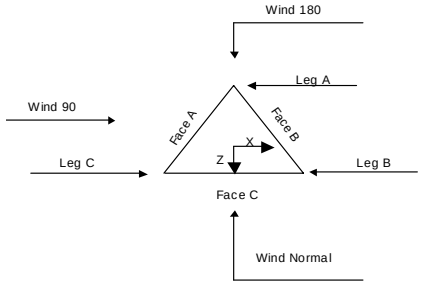
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 195.00 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 3.50 ft at the top and 21.50 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
Basic wind speed of 93 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	195.00-180.00			3.50	1	15.00
T2	180.00-175.00			3.50	1	5.00
T3	175.00-170.00			4.00	1	5.00
T4	170.00-160.00			4.50	1	10.00
T5	160.00-150.00			5.50	1	10.00
T6	150.00-140.00			6.50	1	10.00
T7	140.00-133.33			7.50	1	6.67
T8	133.33-126.67			8.17	1	6.67
T9	126.67-120.00			8.83	1	6.67
T10	120.00-113.33			9.50	1	6.67
T11	113.33-106.67			10.17	1	6.67
T12	106.67-100.00			10.83	1	6.67
T13	100.00-80.00			11.50	1	20.00
T14	80.00-60.00			13.50	1	20.00
T15	60.00-50.00			15.50	1	10.00
T16	50.00-40.00			16.50	1	10.00
T17	40.00-20.00			17.50	1	20.00
T18	20.00-0.00			19.50	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	195.00-180.00	3.75	TX Brace	No	Yes	0.0000	0.0000
T2	180.00-175.00	5.00	X Brace	No	Yes	0.0000	0.0000
T3	175.00-170.00	5.00	X Brace	No	Yes	0.0000	0.0000
T4	170.00-160.00	5.00	X Brace	No	Yes	0.0000	0.0000
T5	160.00-150.00	5.00	X Brace	No	Yes	0.0000	0.0000
T6	150.00-140.00	5.00	X Brace	No	Yes	0.0000	0.0000
T7	140.00-133.33	6.67	X Brace	No	No	0.0000	0.0000
T8	133.33-126.67	6.67	X Brace	No	No	0.0000	0.0000
T9	126.67-120.00	6.67	X Brace	No	No	0.0000	0.0000
T10	120.00-113.33	6.67	X Brace	No	Yes	0.0000	0.0000
T11	113.33-106.67	6.67	X Brace	No	Yes	0.0000	0.0000
T12	106.67-100.00	6.67	X Brace	No	Yes	0.0000	0.0000
T13	100.00-80.00	6.67	X Brace	No	Yes	0.0000	0.0000
T14	80.00-60.00	6.67	X Brace	No	No	0.0000	0.0000
T15	60.00-50.00	10.00	X Brace	No	Yes	0.0000	0.0000
T16	50.00-40.00	10.00	X Brace	No	Yes	0.0000	0.0000
T17	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T18	20.00-0.00	9.96	X Brace	No	No	0.0000	1.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 195.00-180.00	Pipe	PIPE 2.5 STD (SCH 40)	A572-55 (55 ksi)	Solid Round	5/8	A36 (36 ksi)
T2 180.00-175.00	Pipe	PIPE 2.5 STD (SCH 40)	A572-55 (55 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 175.00-170.00	Pipe	PIPE 2.5 STD (SCH 40)	A572-55 (55 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T4 170.00-160.00	Arbitrary Shape	2.5SCH40 w/ 3SCH80 Half Sleeve	A53-B-35 (35 ksi)	Double Equal Angle	2L1 1/2x1 1/2x3/16x1/4	A36 (36 ksi)
T5 160.00-150.00	Pipe	Pipe 3.5 Std (SCH40)	A572-55 (55 ksi)	Double Angle	2L2x2x3/16x1/4	A36 (36 ksi)
T6 150.00-140.00	Arbitrary Shape	3.5SCH40 w/ 4SCH40 Half Sleeve	A500-50 (50 ksi)	Double Angle	2L2x2x3/16x1/4	A36 (36 ksi)
T7 140.00-133.33	Arbitrary Shape	5 STD w/ 6 XH Half Sleeve	A500-46 (46 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T8 133.33-126.67	Arbitrary Shape	5 STD w/ 6 XH Half Sleeve	A500-46 (46 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T9 126.67-120.00	Arbitrary Shape	5 STD w/ 6 XH Half Sleeve	A500-46 (46 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T10 120.00-113.33	Pipe	Pipe 6.625" x 0.280" (6 STD)	A572-55 (55 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T11 113.33-106.67	Pipe	Pipe 6.625" x 0.280" (6 STD)	A572-55 (55 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T12 106.67-100.00	Pipe	Pipe 6.625" x 0.280" (6 STD)	A572-55 (55 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T13 100.00-80.00	Arbitrary Shape	6 STD w/ 7 XH Half Sleeve	A53-B-42 (42 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T14 80.00-60.00	Pipe	Pipe 8.625" x 0.322" (8 STD)	A572-55 (55 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T15 60.00-50.00	Pipe	Pipe 8.625" x 0.322" (8 STD)	A572-55 (55 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T16 50.00-40.00	Pipe	Pipe 8.625" x 0.322" (8 STD)	A572-55 (55 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T17 40.00-20.00	Pipe	Pipe 8.75" x 0.500" (8 EH)	A572-55	Equal Angle	L4x4x3/8	A36

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T18 20.00-0.00	Pipe	Pipe 8.75" x 0.500" (8 EH)	(55 ksi) A572-55 (55 ksi)	Equal Angle	L5x5x5/16	(36 ksi) A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 195.00-180.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 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 195.00-180.00	None	Flat Bar		A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 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
T2 180.00-175.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T3 175.00-170.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T4 170.00-160.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T5 160.00-150.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T6 150.00-140.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T10 120.00-113.33	Equal Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T11 113.33-106.67	Equal Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T12 106.67-100.00	Equal Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T13 100.00-80.00	Equal Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T15 60.00-50.00	Equal Angle	L4x4x3/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T16 50.00-40.00	Equal Angle	L4x4x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 195.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T2 180.00-175.00	0.00	0.2500	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T3 175.00-170.00	0.00	0.2500	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T4 170.00-160.00	0.00	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	0.0000	36.0000
T5 160.00-150.00	0.00	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	0.0000	36.0000
T6 150.00-140.00	0.00	0.2500	A36 (36 ksi)	1	1	1	Mid-Pt	0.0000	36.0000
T7 140.00-133.33	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T8 133.33-126.67	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T9 126.67-120.00	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T10 120.00-113.33	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T11 113.33-106.67	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T12 106.67-100.00	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T13 100.00-80.00	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T14 80.00-60.00	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T15 60.00-50.00	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T16 50.00-40.00	0.00	0.3750	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T17 40.00-20.00	0.00	0.4375	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000
T18 20.00-0.00	0.00	0.4375	A36 (36 ksi)	1	1	1	0.0000	0.0000	36.0000

Tower Section Geometry *(cont'd)*

	K Factors[1]									
Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 195.00-180.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 180.00-175.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T3 175.00-170.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T4 170.00-160.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T5 160.00-150.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T6 150.00-140.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T7 140.00-133.33	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 133.33-126.67	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 126.67-120.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T10 120.00-113.33	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T11 113.33-106.67	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T12 106.67-100.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T13 100.00-80.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T14 80.00-60.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T15 60.00-50.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T16 50.00-40.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 0.5	1 1
T17 40.00-20.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T18 20.00-0.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 195.00-180.00	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 180.00-175.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 175.00-170.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower 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
T4	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
170.00-160.00														
T5	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
160.00-150.00														
T6	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
150.00-140.00														
T7	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
140.00-133.33														
T8	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
133.33-126.67														
T9	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
126.67-120.00														
T10	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
120.00-113.33														
T11	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
113.33-106.67														
T12	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
106.67-100.00														
T13	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
100.00-80.00														
T14	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
80.00-60.00														
T15	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
60.00-50.00														
T16	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
50.00-40.00														
T17	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
40.00-20.00														
T18 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1	Flange	0.7500	4	0.0000	0	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	0
195.00-180.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2	Flange	0.7500	0	0.5000	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
180.00-175.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3	Flange	0.7500	0	0.5000	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
175.00-170.00		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T4	Flange	0.7500	6	0.5000	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
170.00-160.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T5	Flange	1.0000	0	0.5000	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
160.00-150.00		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T6	Flange	1.0000	6	0.5000	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
150.00-140.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T7	Flange	1.0000	0	0.6250	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	0
140.00-133.33		A325N		A325X		A325N		A325N		A325N		A325N		A325N	

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T8	Flange	1.0000	0	0.6250	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	0
133.33-126.67		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T9	Flange	1.0000	8	0.6250	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	0
126.67-120.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T10	Flange	1.0000	0	0.6250	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
120.00-113.33		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T11	Flange	1.0000	0	0.6250	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
113.33-106.67		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T12	Flange	1.0000	8	0.6250	1	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
106.67-100.00		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T13	Flange	1.2500	8	0.6250	2	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.7500	1
100.00-80.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T14	Flange	1.2500	8	0.6250	2	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.7500	0
80.00-60.00		A325N		A325N		A325N		A325N		A325N		A325N		A325X	
T15	Flange	1.2500	0	0.6250	2	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	1
60.00-50.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T16	Flange	1.2500	8	0.6250	2	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.7500	1
50.00-40.00		A325N		A325N		A325N		A325N		A325N		A325N		A325X	
T17	Flange	1.2500	8	0.6250	2	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	0
40.00-20.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T18 20.00-0.00	Flange	1.5000	8	0.6250	2	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	0
		A36		A325N		A325N		A325N		A325N		A325N		A325N	

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
LDF7-50A (1-5/8 FOAM)	B	No	Ar (CaAa)	169.00 - 8.00	-2.0000	0.35	12	12	0.5000	1.9800		0.82
HB158-1-08U8-S8J18(1-5/8)	B	No	Ar (CaAa)	169.00 - 8.00	-4.0000	0.29	1	1	0.5000	0.0001		1.30
WG Rail 1.5x1.5x1/4 ****	B	No	Af (CaAa)	170.00 - 8.00	-2.0000	0.35	2	2	36.5000	1.5000		2.40
1 5/8" Hybrid	B	No	Ar (CaAa)	195.00 - 8.00	0.0000	0	1	1	0.5000	1.6250		0.75
LDF7-50A (1-5/8 FOAM)	B	No	Ar (CaAa)	195.00 - 8.00	0.0000	0	23	9	0.5000	1.9800		0.82
WG Rail 1.5x1.5x3/16 ****	B	No	Af (CaAa)	195.00 - 0.00	0.0000	0	2	2	36.0000	1.5000		1.81
5/8" dia. coax	C	No	Ar (CaAa)	75.50 - 10.00	0.0000	0	1	1	0.5000	0.6250		0.15
1 1/4 Hybriflex Cable	C	No	Ar (CaAa)	153.00 - 10.00	0.0000	0.04	4	4	0.5000	1.2500		1.44
WG Rail 1.5x1.5x3/16 ****	C	No	Af (CaAa)	160.00 - 0.00	0.0000	0.1	2	2	35.0000	1.5000		1.81
LDF7-50A (1-5/8 FOAM)	A	No	Ar (CaAa)	185.00 - 8.00	0.0000	0.3	12	6	0.5000	1.9800		0.82
7/16" Fiber Cable (24 fibers Max)	A	No	Ar (CaAa)	185.00 - 8.00	0.0000	0.375	1	1	0.5000	0.4375		0.03

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
8AWG7	A	No	Ar (CaAa)	185.00 - 8.00	0.0000	0.35	2	2	0.5000	0.3750		0.15
WG Rail 1.5x1.5x1/8 ***	A	No	Af (CaAa)	185.00 - 2.00	0.0000	0.3	2	2	34.0000	1.5000		1.23
Safety Line 3/8	A	No	Ar (CaAa)	195.00 - 0.00	0.0000	0.5	1	1	0.3750	0.3750		0.22
Step Pegs (5/8" SR) 7-in. w/30" step	A	No	Ar (CaAa)	195.00 - 0.00	0.0000	0.5	1	1	0.3500	0.3500		0.49
Step Pegs (5/8" SR) 7-in. w/30" step	B	No	Ar (CaAa)	60.00 - 0.00	0.0000	0.5	1	1	0.3500	0.3500		0.49
Step Pegs (5/8" SR) 7-in. w/30" step *****	C	No	Ar (CaAa)	60.00 - 0.00	0.0000	0.5	1	1	0.3500	0.3500		0.49
Rung L1.5x1.5x1/8 (36.25"w, 34"s)	B	No	Af (CaAa)	170.00 - 8.00	-2.0000	0.35	1	1	0.5000	0.0001		1.31
Rung L1.5x1.5x1/8 (36"w, 34"s)	B	No	Af (CaAa)	181.00 - 0.00	0.0000	0	1	1	0.5000	0.0001		1.29
Rung L2x1.5x1/8 (35"w, 48"s)	C	No	Af (CaAa)	160.00 - 0.00	0.0000	0.1	1	1	0.5000	0.0001		1.05
Rung L1.5x1.5x1/8 (36"w, 34"s) ****	A	No	Af (CaAa)	180.00 - 2.00	0.0000	0.3	1	1	0.5000	0.0001		1.29

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C_AA_A ft²/ft	Weight plf
****							
****							
****							
****							
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Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight lb
T1	195.00-180.00	A	0.000	0.000	16.061	0.000	73.75
		B	0.000	0.000	78.248	0.000	349.75
		C	0.000	0.000	0.000	0.000	0.00
T2	180.00-175.00	A	0.000	0.000	15.336	0.000	73.16
		B	0.000	0.000	26.083	0.000	122.63
		C	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight lb
T3	175.00-170.00	A	0.000	0.000	15.336	0.000	73.16
		B	0.000	0.000	26.083	0.000	122.63
		C	0.000	0.000	0.000	0.000	0.00
T4	170.00-160.00	A	0.000	0.000	30.673	0.000	146.32
		B	0.000	0.000	78.549	0.000	406.64
		C	0.000	0.000	0.000	0.000	0.00
T5	160.00-150.00	A	0.000	0.000	30.673	0.000	146.32
		B	0.000	0.000	80.925	0.000	417.78
		C	0.000	0.000	6.500	0.000	63.90
T6	150.00-140.00	A	0.000	0.000	30.673	0.000	146.32
		B	0.000	0.000	80.925	0.000	417.78
		C	0.000	0.000	10.000	0.000	104.11
T7	140.00-133.33	A	0.000	0.000	20.448	0.000	97.55
		B	0.000	0.000	53.950	0.000	278.52
		C	0.000	0.000	6.667	0.000	69.41
T8	133.33-126.67	A	0.000	0.000	20.448	0.000	97.55
		B	0.000	0.000	53.950	0.000	278.52
		C	0.000	0.000	6.667	0.000	69.41
T9	126.67-120.00	A	0.000	0.000	20.448	0.000	97.55
		B	0.000	0.000	53.950	0.000	278.52
		C	0.000	0.000	6.667	0.000	69.41
T10	120.00-113.33	A	0.000	0.000	20.448	0.000	97.55
		B	0.000	0.000	53.950	0.000	278.52
		C	0.000	0.000	6.667	0.000	69.41
T11	113.33-106.67	A	0.000	0.000	20.448	0.000	97.55
		B	0.000	0.000	53.950	0.000	278.52
		C	0.000	0.000	6.667	0.000	69.41
T12	106.67-100.00	A	0.000	0.000	20.448	0.000	97.55
		B	0.000	0.000	53.950	0.000	278.52
		C	0.000	0.000	6.667	0.000	69.41
T13	100.00-80.00	A	0.000	0.000	61.345	0.000	292.64
		B	0.000	0.000	161.851	0.000	835.56
		C	0.000	0.000	20.000	0.000	208.22
T14	80.00-60.00	A	0.000	0.000	61.345	0.000	292.64
		B	0.000	0.000	161.851	0.000	835.56
		C	0.000	0.000	20.969	0.000	210.54
T15	60.00-50.00	A	0.000	0.000	30.673	0.000	146.32
		B	0.000	0.000	81.275	0.000	422.65
		C	0.000	0.000	10.975	0.000	110.48
T16	50.00-40.00	A	0.000	0.000	30.673	0.000	146.32
		B	0.000	0.000	81.275	0.000	422.65
		C	0.000	0.000	10.975	0.000	110.48
T17	40.00-20.00	A	0.000	0.000	61.345	0.000	292.64
		B	0.000	0.000	162.551	0.000	845.30
		C	0.000	0.000	21.950	0.000	220.96
T18	20.00-0.00	A	0.000	0.000	40.387	0.000	203.77
		B	0.000	0.000	101.811	0.000	550.40
		C	0.000	0.000	16.325	0.000	162.02

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight lb
T1	195.00-180.00	A	1.785	0.000	0.000	36.049	0.000	552.51
		B		0.000	0.000	77.878	0.000	1686.64
		C		0.000	0.000	0.000	0.000	0.00
T2	180.00-175.00	A	1.775	0.000	0.000	29.879	0.000	496.13

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight lb
		B		0.000	0.000	27.570	0.000	603.68
		C		0.000	0.000	0.000	0.000	0.00
T3	175.00-170.00	A	1.770	0.000	0.000	29.831	0.000	494.60
		B		0.000	0.000	27.541	0.000	602.31
		C		0.000	0.000	0.000	0.000	0.00
T4	170.00-160.00	A	1.762	0.000	0.000	59.515	0.000	984.46
		B		0.000	0.000	111.136	0.000	2129.35
		C		0.000	0.000	0.000	0.000	0.00
T5	160.00-150.00	A	1.751	0.000	0.000	59.308	0.000	977.86
		B		0.000	0.000	115.400	0.000	2185.66
		C		0.000	0.000	19.658	0.000	356.40
T6	150.00-140.00	A	1.739	0.000	0.000	59.089	0.000	970.88
		B		0.000	0.000	115.143	0.000	2173.09
		C		0.000	0.000	29.239	0.000	495.74
T7	140.00-133.33	A	1.729	0.000	0.000	39.264	0.000	643.17
		B		0.000	0.000	76.610	0.000	1441.36
		C		0.000	0.000	19.429	0.000	328.33
T8	133.33-126.67	A	1.720	0.000	0.000	39.156	0.000	639.75
		B		0.000	0.000	76.483	0.000	1435.18
		C		0.000	0.000	19.375	0.000	326.52
T9	126.67-120.00	A	1.711	0.000	0.000	39.042	0.000	636.18
		B		0.000	0.000	76.350	0.000	1428.72
		C		0.000	0.000	19.319	0.000	324.63
T10	120.00-113.33	A	1.702	0.000	0.000	38.923	0.000	632.45
		B		0.000	0.000	76.210	0.000	1421.96
		C		0.000	0.000	19.260	0.000	322.65
T11	113.33-106.67	A	1.692	0.000	0.000	38.798	0.000	628.53
		B		0.000	0.000	76.062	0.000	1414.86
		C		0.000	0.000	19.198	0.000	320.57
T12	106.67-100.00	A	1.681	0.000	0.000	38.666	0.000	624.40
		B		0.000	0.000	75.907	0.000	1407.38
		C		0.000	0.000	19.132	0.000	318.38
T13	100.00-80.00	A	1.658	0.000	0.000	115.130	0.000	1846.31
		B		0.000	0.000	226.699	0.000	4173.25
		C		0.000	0.000	56.967	0.000	940.90
T14	80.00-60.00	A	1.617	0.000	0.000	113.582	0.000	1798.87
		B		0.000	0.000	224.878	0.000	4086.76
		C		0.000	0.000	62.182	0.000	986.75
T15	60.00-50.00	A	1.579	0.000	0.000	56.066	0.000	877.55
		B		0.000	0.000	115.094	0.000	2045.38
		C		0.000	0.000	35.031	0.000	532.36
T16	50.00-40.00	A	1.547	0.000	0.000	55.476	0.000	859.97
		B		0.000	0.000	114.338	0.000	2011.73
		C		0.000	0.000	34.613	0.000	520.28
T17	40.00-20.00	A	1.486	0.000	0.000	108.642	0.000	1652.20
		B		0.000	0.000	225.711	0.000	3893.24
		C		0.000	0.000	67.590	0.000	994.11
T18	20.00-0.00	A	1.331	0.000	0.000	74.332	0.000	1065.37
		B		0.000	0.000	143.758	0.000	2343.56
		C		0.000	0.000	47.740	0.000	684.45

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	195.00-180.00	1.9178	-2.0119	1.3964	-1.9596

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T2	180.00-175.00	1.1665	-2.6957	0.9107	-2.9422
T3	175.00-170.00	1.2681	-2.9493	0.9933	-3.2123
T4	170.00-160.00	2.5976	-1.7645	2.6089	-1.7627
T5	160.00-150.00	2.8264	-1.4904	2.6142	-1.0611
T6	150.00-140.00	3.1252	-1.4663	2.8712	-1.0631
T7	140.00-133.33	3.4306	-1.6008	3.2295	-1.2104
T8	133.33-126.67	3.7152	-1.7274	3.5037	-1.3103
T9	126.67-120.00	3.9963	-1.8523	3.7742	-1.4084
T10	120.00-113.33	4.0715	-1.8821	3.8638	-1.4387
T11	113.33-106.67	4.3236	-1.9940	4.1083	-1.5264
T12	106.67-100.00	4.6400	-2.1355	4.3819	-1.6244
T13	100.00-80.00	4.9006	-2.2477	4.7434	-1.7501
T14	80.00-60.00	5.7392	-2.5753	5.5993	-1.8956
T15	60.00-50.00	6.2508	-2.7129	5.9487	-1.5805
T16	50.00-40.00	6.5975	-2.8594	6.2981	-1.6674
T17	40.00-20.00	7.2624	-3.1420	7.0568	-1.8548
T18	20.00-0.00	6.1005	-2.9238	6.1304	-2.3073

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	6	1 5/8" Hybrid	180.00 - 195.00	0.6000	0.3995
T1	7	LDF7-50A (1-5/8 FOAM)	180.00 - 195.00	0.6000	0.3995
T1	8	WG Rail 1.5x1.5x3/16	180.00 - 195.00	0.6000	0.3995
T1	18	LDF7-50A (1-5/8 FOAM)	180.00 - 185.00	0.6000	0.3995
T1	19	7/16" Fiber Cable (24 fibers Max)	180.00 - 185.00	0.6000	0.3995
T1	20	8AWG7	180.00 - 185.00	0.6000	0.3995
T1	21	WG Rail 1.5x1.5x1/8	180.00 - 185.00	0.6000	0.3995
T1	29	Safety Line 3/8	180.00 - 195.00	0.6000	0.3995
T1	30	Step Pegs (5/8" SR) 7-in. w/30" step	180.00 - 195.00	0.6000	0.3995
T1	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	180.00 - 181.00	0.6000	0.3995
T2	6	1 5/8" Hybrid	175.00 - 180.00	0.6000	0.4444
T2	7	LDF7-50A (1-5/8 FOAM)	175.00 - 180.00	0.6000	0.4444
T2	8	WG Rail 1.5x1.5x3/16	175.00 - 180.00	0.6000	0.4444
T2	18	LDF7-50A (1-5/8 FOAM)	175.00 - 180.00	0.6000	0.4444
T2	19	7/16" Fiber Cable (24 fibers Max)	175.00 - 180.00	0.6000	0.4444
T2	20	8AWG7	175.00 - 180.00	0.6000	0.4444
T2	21	WG Rail 1.5x1.5x1/8	175.00 -	0.6000	0.4444

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			180.00		
T2	29	Safety Line 3/8	175.00 - 180.00	0.6000	0.4444
T2	30	Step Pegs (5/8" SR) 7-in. w/30" step	175.00 - 180.00	0.6000	0.4444
T2	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	175.00 - 180.00	0.6000	0.4444
T2	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	175.00 - 180.00	0.6000	0.4444
T3	6	1 5/8" Hybrid	170.00 - 175.00	0.6000	0.4600
T3	7	LDF7-50A (1-5/8 FOAM)	170.00 - 175.00	0.6000	0.4600
T3	8	WG Rail 1.5x1.5x3/16	170.00 - 175.00	0.6000	0.4600
T3	18	LDF7-50A (1-5/8 FOAM)	170.00 - 175.00	0.6000	0.4600
T3	19	7/16" Fiber Cable (24 fibers Max)	170.00 - 175.00	0.6000	0.4600
T3	20	8AWG7	170.00 - 175.00	0.6000	0.4600
T3	21	WG Rail 1.5x1.5x1/8	170.00 - 175.00	0.6000	0.4600
T3	29	Safety Line 3/8	170.00 - 175.00	0.6000	0.4600
T3	30	Step Pegs (5/8" SR) 7-in. w/30" step	170.00 - 175.00	0.6000	0.4600
T3	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	170.00 - 175.00	0.6000	0.4600
T3	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	170.00 - 175.00	0.6000	0.4600
T4	1	LDF7-50A (1-5/8 FOAM)	160.00 - 169.00	0.6000	0.5462
T4	2	HB158-1-08U8-S8J18(1-5/8)	160.00 - 169.00	0.6000	0.5462
T4	3	WG Rail 1.5x1.5x1/4	160.00 - 170.00	0.6000	0.5462
T4	6	1 5/8" Hybrid	160.00 - 170.00	0.6000	0.5462
T4	7	LDF7-50A (1-5/8 FOAM)	160.00 - 170.00	0.6000	0.5462
T4	8	WG Rail 1.5x1.5x3/16	160.00 - 170.00	0.6000	0.5462
T4	18	LDF7-50A (1-5/8 FOAM)	160.00 - 170.00	0.6000	0.5462
T4	19	7/16" Fiber Cable (24 fibers Max)	160.00 - 170.00	0.6000	0.5462
T4	20	8AWG7	160.00 - 170.00	0.6000	0.5462
T4	21	WG Rail 1.5x1.5x1/8	160.00 - 170.00	0.6000	0.5462
T4	29	Safety Line 3/8	160.00 - 170.00	0.6000	0.5462
T4	30	Step Pegs (5/8" SR) 7-in. w/30" step	160.00 - 170.00	0.6000	0.5462
T4	39	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	160.00 - 170.00	0.6000	0.5462
T4	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	160.00 - 170.00	0.6000	0.5462
T4	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	160.00 - 170.00	0.6000	0.5462
T5	1	LDF7-50A (1-5/8 FOAM)	150.00 -	0.6000	0.5278

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			160.00		
T5	2	HB158-1-08U8-S8J18(1-5/8)	150.00 - 160.00	0.6000	0.5278
T5	3	WG Rail 1.5x1.5x1/4	150.00 - 160.00	0.6000	0.5278
T5	6	1 5/8" Hybrid	150.00 - 160.00	0.6000	0.5278
T5	7	LDF7-50A (1-5/8 FOAM)	150.00 - 160.00	0.6000	0.5278
T5	8	WG Rail 1.5x1.5x3/16	150.00 - 160.00	0.6000	0.5278
T5	11	1 1/4 Hybriflex Cable	150.00 - 153.00	0.6000	0.5278
T5	12	WG Rail 1.5x1.5x3/16	150.00 - 160.00	0.6000	0.5278
T5	18	LDF7-50A (1-5/8 FOAM)	150.00 - 160.00	0.6000	0.5278
T5	19	7/16" Fiber Cable (24 fibers Max)	150.00 - 160.00	0.6000	0.5278
T5	20	8AWG7	150.00 - 160.00	0.6000	0.5278
T5	21	WG Rail 1.5x1.5x1/8	150.00 - 160.00	0.6000	0.5278
T5	29	Safety Line 3/8	150.00 - 160.00	0.6000	0.5278
T5	30	Step Pegs (5/8" SR) 7-in. w/30" step	150.00 - 160.00	0.6000	0.5278
T5	39	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	150.00 - 160.00	0.6000	0.5278
T5	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	150.00 - 160.00	0.6000	0.5278
T5	42	Rung L2x1.5x1/8 (35"w, 48"s)	150.00 - 160.00	0.6000	0.5278
T5	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	150.00 - 160.00	0.6000	0.5278
T6	1	LDF7-50A (1-5/8 FOAM)	140.00 - 150.00	0.6000	0.5518
T6	2	HB158-1-08U8-S8J18(1-5/8)	140.00 - 150.00	0.6000	0.5518
T6	3	WG Rail 1.5x1.5x1/4	140.00 - 150.00	0.6000	0.5518
T6	6	1 5/8" Hybrid	140.00 - 150.00	0.6000	0.5518
T6	7	LDF7-50A (1-5/8 FOAM)	140.00 - 150.00	0.6000	0.5518
T6	8	WG Rail 1.5x1.5x3/16	140.00 - 150.00	0.6000	0.5518
T6	11	1 1/4 Hybriflex Cable	140.00 - 150.00	0.6000	0.5518
T6	12	WG Rail 1.5x1.5x3/16	140.00 - 150.00	0.6000	0.5518
T6	18	LDF7-50A (1-5/8 FOAM)	140.00 - 150.00	0.6000	0.5518
T6	19	7/16" Fiber Cable (24 fibers Max)	140.00 - 150.00	0.6000	0.5518
T6	20	8AWG7	140.00 - 150.00	0.6000	0.5518
T6	21	WG Rail 1.5x1.5x1/8	140.00 - 150.00	0.6000	0.5518
T6	29	Safety Line 3/8	140.00 - 150.00	0.6000	0.5518
T6	30	Step Pegs (5/8" SR) 7-in.	140.00 -	0.6000	0.5518

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		w/30" step	150.00		
T6	39	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	140.00 - 150.00	0.6000	0.5518
T6	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	140.00 - 150.00	0.6000	0.5518
T6	42	Rung L2x1.5x1/8 (35"w, 48"s)	140.00 - 150.00	0.6000	0.5518
T6	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	140.00 - 150.00	0.6000	0.5518
T7	1	LDF7-50A (1-5/8 FOAM)	133.33 - 140.00	0.6000	0.6000
T7	2	HB158-1-08U8-S8J18(1-5/8)	133.33 - 140.00	0.6000	0.6000
T7	3	WG Rail 1.5x1.5x1/4	133.33 - 140.00	0.6000	0.6000
T7	6	1 5/8" Hybrid	133.33 - 140.00	0.6000	0.6000
T7	7	LDF7-50A (1-5/8 FOAM)	133.33 - 140.00	0.6000	0.6000
T7	8	WG Rail 1.5x1.5x3/16	133.33 - 140.00	0.6000	0.6000
T7	11	1 1/4 Hybriflex Cable	133.33 - 140.00	0.6000	0.6000
T7	12	WG Rail 1.5x1.5x3/16	133.33 - 140.00	0.6000	0.6000
T7	18	LDF7-50A (1-5/8 FOAM)	133.33 - 140.00	0.6000	0.6000
T7	19	7/16" Fiber Cable (24 fibers Max)	133.33 - 140.00	0.6000	0.6000
T7	20	8AWG7	133.33 - 140.00	0.6000	0.6000
T7	21	WG Rail 1.5x1.5x1/8	133.33 - 140.00	0.6000	0.6000
T7	29	Safety Line 3/8	133.33 - 140.00	0.6000	0.6000
T7	30	Step Pegs (5/8" SR) 7-in. w/30" step	133.33 - 140.00	0.6000	0.6000
T7	39	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	133.33 - 140.00	0.6000	0.6000
T7	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	133.33 - 140.00	0.6000	0.6000
T7	42	Rung L2x1.5x1/8 (35"w, 48"s)	133.33 - 140.00	0.6000	0.6000
T7	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	133.33 - 140.00	0.6000	0.6000
T8	1	LDF7-50A (1-5/8 FOAM)	126.67 - 133.33	0.6000	0.6000
T8	2	HB158-1-08U8-S8J18(1-5/8)	126.67 - 133.33	0.6000	0.6000
T8	3	WG Rail 1.5x1.5x1/4	126.67 - 133.33	0.6000	0.6000
T8	6	1 5/8" Hybrid	126.67 - 133.33	0.6000	0.6000
T8	7	LDF7-50A (1-5/8 FOAM)	126.67 - 133.33	0.6000	0.6000
T8	8	WG Rail 1.5x1.5x3/16	126.67 - 133.33	0.6000	0.6000
T8	11	1 1/4 Hybriflex Cable	126.67 - 133.33	0.6000	0.6000
T8	12	WG Rail 1.5x1.5x3/16	126.67 - 133.33	0.6000	0.6000
T8	18	LDF7-50A (1-5/8 FOAM)	126.67 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			133.33		
T8	19	7/16" Fiber Cable (24 fibers Max)	126.67 - 133.33	0.6000	0.6000
T8	20	8AWG7	126.67 - 133.33	0.6000	0.6000
T8	21	WG Rail 1.5x1.5x1/8	126.67 - 133.33	0.6000	0.6000
T8	29	Safety Line 3/8	126.67 - 133.33	0.6000	0.6000
T8	30	Step Pegs (5/8" SR) 7-in. w/30" step	126.67 - 133.33	0.6000	0.6000
T8	39	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	126.67 - 133.33	0.6000	0.6000
T8	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	126.67 - 133.33	0.6000	0.6000
T8	42	Rung L2x1.5x1/8 (35"w, 48"s)	126.67 - 133.33	0.6000	0.6000
T8	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	126.67 - 133.33	0.6000	0.6000
T9	1	LDF7-50A (1-5/8 FOAM)	120.00 - 126.67	0.6000	0.6000
T9	2	HB158-1-08U8-S8J18(1-5/8)	120.00 - 126.67	0.6000	0.6000
T9	3	WG Rail 1.5x1.5x1/4	120.00 - 126.67	0.6000	0.6000
T9	6	1 5/8" Hybrid	120.00 - 126.67	0.6000	0.6000
T9	7	LDF7-50A (1-5/8 FOAM)	120.00 - 126.67	0.6000	0.6000
T9	8	WG Rail 1.5x1.5x3/16	120.00 - 126.67	0.6000	0.6000
T9	11	1 1/4 Hybriflex Cable	120.00 - 126.67	0.6000	0.6000
T9	12	WG Rail 1.5x1.5x3/16	120.00 - 126.67	0.6000	0.6000
T9	18	LDF7-50A (1-5/8 FOAM)	120.00 - 126.67	0.6000	0.6000
T9	19	7/16" Fiber Cable (24 fibers Max)	120.00 - 126.67	0.6000	0.6000
T9	20	8AWG7	120.00 - 126.67	0.6000	0.6000
T9	21	WG Rail 1.5x1.5x1/8	120.00 - 126.67	0.6000	0.6000
T9	29	Safety Line 3/8	120.00 - 126.67	0.6000	0.6000
T9	30	Step Pegs (5/8" SR) 7-in. w/30" step	120.00 - 126.67	0.6000	0.6000
T9	39	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	120.00 - 126.67	0.6000	0.6000
T9	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	120.00 - 126.67	0.6000	0.6000
T9	42	Rung L2x1.5x1/8 (35"w, 48"s)	120.00 - 126.67	0.6000	0.6000
T9	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	120.00 - 126.67	0.6000	0.6000
T10	1	LDF7-50A (1-5/8 FOAM)	113.33 - 120.00	0.6000	0.6000
T10	2	HB158-1-08U8-S8J18(1-5/8)	113.33 - 120.00	0.6000	0.6000
T10	3	WG Rail 1.5x1.5x1/4	113.33 - 120.00	0.6000	0.6000
T10	6	1 5/8" Hybrid	113.33 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			120.00		
T10	7	LDF7-50A (1-5/8 FOAM)	113.33 - 120.00	0.6000	0.6000
T10	8	WG Rail 1.5x1.5x3/16	113.33 - 120.00	0.6000	0.6000
T10	11	1 1/4 Hybriflex Cable	113.33 - 120.00	0.6000	0.6000
T10	12	WG Rail 1.5x1.5x3/16	113.33 - 120.00	0.6000	0.6000
T10	18	LDF7-50A (1-5/8 FOAM)	113.33 - 120.00	0.6000	0.6000
T10	19	7/16" Fiber Cable (24 fibers Max)	113.33 - 120.00	0.6000	0.6000
T10	20	8AWG7	113.33 - 120.00	0.6000	0.6000
T10	21	WG Rail 1.5x1.5x1/8	113.33 - 120.00	0.6000	0.6000
T10	29	Safety Line 3/8	113.33 - 120.00	0.6000	0.6000
T10	30	Step Pegs (5/8" SR) 7-in. w/30" step	113.33 - 120.00	0.6000	0.6000
T10	39	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	113.33 - 120.00	0.6000	0.6000
T10	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	113.33 - 120.00	0.6000	0.6000
T10	42	Rung L2x1.5x1/8 (35"w, 48"s)	113.33 - 120.00	0.6000	0.6000
T10	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	113.33 - 120.00	0.6000	0.6000
T11	1	LDF7-50A (1-5/8 FOAM)	106.67 - 113.33	0.6000	0.6000
T11	2	HB158-1-08U8-S8J18(1-5/8)	106.67 - 113.33	0.6000	0.6000
T11	3	WG Rail 1.5x1.5x1/4	106.67 - 113.33	0.6000	0.6000
T11	6	1 5/8" Hybrid	106.67 - 113.33	0.6000	0.6000
T11	7	LDF7-50A (1-5/8 FOAM)	106.67 - 113.33	0.6000	0.6000
T11	8	WG Rail 1.5x1.5x3/16	106.67 - 113.33	0.6000	0.6000
T11	11	1 1/4 Hybriflex Cable	106.67 - 113.33	0.6000	0.6000
T11	12	WG Rail 1.5x1.5x3/16	106.67 - 113.33	0.6000	0.6000
T11	18	LDF7-50A (1-5/8 FOAM)	106.67 - 113.33	0.6000	0.6000
T11	19	7/16" Fiber Cable (24 fibers Max)	106.67 - 113.33	0.6000	0.6000
T11	20	8AWG7	106.67 - 113.33	0.6000	0.6000
T11	21	WG Rail 1.5x1.5x1/8	106.67 - 113.33	0.6000	0.6000
T11	29	Safety Line 3/8	106.67 - 113.33	0.6000	0.6000
T11	30	Step Pegs (5/8" SR) 7-in. w/30" step	106.67 - 113.33	0.6000	0.6000
T11	39	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	106.67 - 113.33	0.6000	0.6000
T11	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	106.67 - 113.33	0.6000	0.6000
T11	42	Rung L2x1.5x1/8 (35"w,	106.67 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		48"s)	113.33		
T11	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	106.67 - 113.33	0.6000	0.6000
T12	1	LDF7-50A (1-5/8 FOAM)	100.00 - 106.67	0.6000	0.6000
T12	2	HB158-1-08U8-S8J18(1-5/8)	100.00 - 106.67	0.6000	0.6000
T12	3	WG Rail 1.5x1.5x1/4	100.00 - 106.67	0.6000	0.6000
T12	6	1 5/8" Hybrid	100.00 - 106.67	0.6000	0.6000
T12	7	LDF7-50A (1-5/8 FOAM)	100.00 - 106.67	0.6000	0.6000
T12	8	WG Rail 1.5x1.5x3/16	100.00 - 106.67	0.6000	0.6000
T12	11	1 1/4 Hybriflex Cable	100.00 - 106.67	0.6000	0.6000
T12	12	WG Rail 1.5x1.5x3/16	100.00 - 106.67	0.6000	0.6000
T12	18	LDF7-50A (1-5/8 FOAM)	100.00 - 106.67	0.6000	0.6000
T12	19	7/16" Fiber Cable (24 fibers Max)	100.00 - 106.67	0.6000	0.6000
T12	20	8AWG7	100.00 - 106.67	0.6000	0.6000
T12	21	WG Rail 1.5x1.5x1/8	100.00 - 106.67	0.6000	0.6000
T12	29	Safety Line 3/8	100.00 - 106.67	0.6000	0.6000
T12	30	Step Pegs (5/8" SR) 7-in. w/30" step	100.00 - 106.67	0.6000	0.6000
T12	39	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	100.00 - 106.67	0.6000	0.6000
T12	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	100.00 - 106.67	0.6000	0.6000
T12	42	Rung L2x1.5x1/8 (35"w, 48"s)	100.00 - 106.67	0.6000	0.6000
T12	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	100.00 - 106.67	0.6000	0.6000
T13	1	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T13	2	HB158-1-08U8-S8J18(1-5/8)	80.00 - 100.00	0.6000	0.6000
T13	3	WG Rail 1.5x1.5x1/4	80.00 - 100.00	0.6000	0.6000
T13	6	1 5/8" Hybrid	80.00 - 100.00	0.6000	0.6000
T13	7	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T13	8	WG Rail 1.5x1.5x3/16	80.00 - 100.00	0.6000	0.6000
T13	11	1 1/4 Hybriflex Cable	80.00 - 100.00	0.6000	0.6000
T13	12	WG Rail 1.5x1.5x3/16	80.00 - 100.00	0.6000	0.6000
T13	18	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T13	19	7/16" Fiber Cable (24 fibers Max)	80.00 - 100.00	0.6000	0.6000
T13	20	8AWG7	80.00 - 100.00	0.6000	0.6000
T13	21	WG Rail 1.5x1.5x1/8	80.00 - 100.00	0.6000	0.6000
T13	29	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T13	30	Step Pegs (5/8" SR) 7-in. w/30" step	80.00 - 100.00	0.6000	0.6000
T13	39	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	80.00 - 100.00	0.6000	0.6000
T13	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	80.00 - 100.00	0.6000	0.6000
T13	42	Rung L2x1.5x1/8 (35"w, 48"s)	80.00 - 100.00	0.6000	0.6000
T13	44	Rung L1.5x1.5x1/8 (36"w,	80.00 - 100.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		34"s)			
T14	1	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T14	2	HB158-1-08U8-S8J18(1-5/8)	60.00 - 80.00	0.6000	0.6000
T14	3	WG Rail 1.5x1.5x1/4	60.00 - 80.00	0.6000	0.6000
T14	6	1 5/8" Hybrid	60.00 - 80.00	0.6000	0.6000
T14	7	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T14	8	WG Rail 1.5x1.5x3/16	60.00 - 80.00	0.6000	0.6000
T14	10	5/8" dia. coax	60.00 - 75.50	0.6000	0.6000
T14	11	1 1/4 Hybriflex Cable	60.00 - 80.00	0.6000	0.6000
T14	12	WG Rail 1.5x1.5x3/16	60.00 - 80.00	0.6000	0.6000
T14	18	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T14	19	7/16" Fiber Cable (24 fibers Max)	60.00 - 80.00	0.6000	0.6000
T14	20	8AWG7	60.00 - 80.00	0.6000	0.6000
T14	21	WG Rail 1.5x1.5x1/8	60.00 - 80.00	0.6000	0.6000
T14	29	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T14	30	Step Pegs (5/8" SR) 7-in. w/30" step	60.00 - 80.00	0.6000	0.6000
T14	39	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	60.00 - 80.00	0.6000	0.6000
T14	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	60.00 - 80.00	0.6000	0.6000
T14	42	Rung L2x1.5x1/8 (35"w, 48"s)	60.00 - 80.00	0.6000	0.6000
T14	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	60.00 - 80.00	0.6000	0.6000
T15	1	LDF7-50A (1-5/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T15	2	HB158-1-08U8-S8J18(1-5/8)	50.00 - 60.00	0.6000	0.6000
T15	3	WG Rail 1.5x1.5x1/4	50.00 - 60.00	0.6000	0.6000
T15	6	1 5/8" Hybrid	50.00 - 60.00	0.6000	0.6000
T15	7	LDF7-50A (1-5/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T15	8	WG Rail 1.5x1.5x3/16	50.00 - 60.00	0.6000	0.6000
T15	10	5/8" dia. coax	50.00 - 60.00	0.6000	0.6000
T15	11	1 1/4 Hybriflex Cable	50.00 - 60.00	0.6000	0.6000
T15	12	WG Rail 1.5x1.5x3/16	50.00 - 60.00	0.6000	0.6000
T15	18	LDF7-50A (1-5/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T15	19	7/16" Fiber Cable (24 fibers Max)	50.00 - 60.00	0.6000	0.6000
T15	20	8AWG7	50.00 - 60.00	0.6000	0.6000
T15	21	WG Rail 1.5x1.5x1/8	50.00 - 60.00	0.6000	0.6000
T15	29	Safety Line 3/8	50.00 - 60.00	0.6000	0.6000
T15	30	Step Pegs (5/8" SR) 7-in. w/30" step	50.00 - 60.00	0.6000	0.6000
T15	31	Step Pegs (5/8" SR) 7-in. w/30" step	50.00 - 60.00	0.6000	0.6000
T15	32	Step Pegs (5/8" SR) 7-in. w/30" step	50.00 - 60.00	0.6000	0.6000
T15	39	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	50.00 - 60.00	0.6000	0.6000
T15	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	50.00 - 60.00	0.6000	0.6000
T15	42	Rung L2x1.5x1/8 (35"w, 48"s)	50.00 - 60.00	0.6000	0.6000
T15	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	50.00 - 60.00	0.6000	0.6000
T16	1	LDF7-50A (1-5/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T16	2	HB158-1-08U8-S8J18(1-5/8)	40.00 - 50.00	0.6000	0.6000
T16	3	WG Rail 1.5x1.5x1/4	40.00 - 50.00	0.6000	0.6000
T16	6	1 5/8" Hybrid	40.00 - 50.00	0.6000	0.6000
T16	7	LDF7-50A (1-5/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T16	8	WG Rail 1.5x1.5x3/16	40.00 - 50.00	0.6000	0.6000
T16	10	5/8" dia. coax	40.00 - 50.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T16	11	1 1/4 Hybriflex Cable	40.00 - 50.00	0.6000	0.6000
T16	12	WG Rail 1.5x1.5x3/16	40.00 - 50.00	0.6000	0.6000
T16	18	LDF7-50A (1-5/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T16	19	7/16" Fiber Cable (24 fibers Max)	40.00 - 50.00	0.6000	0.6000
T16	20	8AWG7	40.00 - 50.00	0.6000	0.6000
T16	21	WG Rail 1.5x1.5x1/8	40.00 - 50.00	0.6000	0.6000
T16	29	Safety Line 3/8	40.00 - 50.00	0.6000	0.6000
T16	30	Step Pegs (5/8" SR) 7-in. w/30" step	40.00 - 50.00	0.6000	0.6000
T16	31	Step Pegs (5/8" SR) 7-in. w/30" step	40.00 - 50.00	0.6000	0.6000
T16	32	Step Pegs (5/8" SR) 7-in. w/30" step	40.00 - 50.00	0.6000	0.6000
T16	39	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	40.00 - 50.00	0.6000	0.6000
T16	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	40.00 - 50.00	0.6000	0.6000
T16	42	Rung L2x1.5x1/8 (35"w, 48"s)	40.00 - 50.00	0.6000	0.6000
T16	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	40.00 - 50.00	0.6000	0.6000
T17	1	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T17	2	HB158-1-08U8-S8J18(1-5/8)	20.00 - 40.00	0.6000	0.6000
T17	3	WG Rail 1.5x1.5x1/4	20.00 - 40.00	0.6000	0.6000
T17	6	1 5/8" Hybrid	20.00 - 40.00	0.6000	0.6000
T17	7	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T17	8	WG Rail 1.5x1.5x3/16	20.00 - 40.00	0.6000	0.6000
T17	10	5/8" dia. coax	20.00 - 40.00	0.6000	0.6000
T17	11	1 1/4 Hybriflex Cable	20.00 - 40.00	0.6000	0.6000
T17	12	WG Rail 1.5x1.5x3/16	20.00 - 40.00	0.6000	0.6000
T17	18	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T17	19	7/16" Fiber Cable (24 fibers Max)	20.00 - 40.00	0.6000	0.6000
T17	20	8AWG7	20.00 - 40.00	0.6000	0.6000
T17	21	WG Rail 1.5x1.5x1/8	20.00 - 40.00	0.6000	0.6000
T17	29	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T17	30	Step Pegs (5/8" SR) 7-in. w/30" step	20.00 - 40.00	0.6000	0.6000
T17	31	Step Pegs (5/8" SR) 7-in. w/30" step	20.00 - 40.00	0.6000	0.6000
T17	32	Step Pegs (5/8" SR) 7-in. w/30" step	20.00 - 40.00	0.6000	0.6000
T17	39	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	20.00 - 40.00	0.6000	0.6000
T17	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	20.00 - 40.00	0.6000	0.6000
T17	42	Rung L2x1.5x1/8 (35"w, 48"s)	20.00 - 40.00	0.6000	0.6000
T17	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	20.00 - 40.00	0.6000	0.6000
T18	1	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.6000
T18	2	HB158-1-08U8-S8J18(1-5/8)	8.00 - 20.00	0.6000	0.6000
T18	3	WG Rail 1.5x1.5x1/4	8.00 - 20.00	0.6000	0.6000
T18	6	1 5/8" Hybrid	8.00 - 20.00	0.6000	0.6000
T18	7	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.6000
T18	8	WG Rail 1.5x1.5x3/16	0.00 - 20.00	0.6000	0.6000
T18	10	5/8" dia. coax	10.00 - 20.00	0.6000	0.6000
T18	11	1 1/4 Hybriflex Cable	10.00 - 20.00	0.6000	0.6000
T18	12	WG Rail 1.5x1.5x3/16	0.00 - 20.00	0.6000	0.6000
T18	18	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6000	0.6000
T18	19	7/16" Fiber Cable (24 fibers	8.00 - 20.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
		Max)			
T18	20	8AWG7	8.00 - 20.00	0.6000	0.6000
T18	21	WG Rail 1.5x1.5x1/8	2.00 - 20.00	0.6000	0.6000
T18	29	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000
T18	30	Step Pegs (5/8" SR) 7-in. w/30" step	0.00 - 20.00	0.6000	0.6000
T18	31	Step Pegs (5/8" SR) 7-in. w/30" step	0.00 - 20.00	0.6000	0.6000
T18	32	Step Pegs (5/8" SR) 7-in. w/30" step	0.00 - 20.00	0.6000	0.6000
T18	39	Rung L1.5x1.5x1/8 (36.25"w, 34"s)	8.00 - 20.00	0.6000	0.6000
T18	41	Rung L1.5x1.5x1/8 (36"w, 34"s)	0.00 - 20.00	0.6000	0.6000
T18	42	Rung L2x1.5x1/8 (35"w, 48"s)	0.00 - 20.00	0.6000	0.6000
T18	44	Rung L1.5x1.5x1/8 (36"w, 34"s)	2.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
1.75" Dia x 5-ft Pipe	C	From Leg	2.25		0.0000	75.50	No Ice	0.88	0.88	12.00
			0.00				1/2" Ice	1.32	1.32	19.06
			0.00				1" Ice	1.63	1.63	29.51
GPS0015	C	From Leg	4.50		0.0000	75.50	No Ice	0.09	0.09	0.50
			0.00				1/2" Ice	0.13	0.13	2.29
			0.75				1" Ice	0.19	0.19	4.89
****										
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Sector Mount [SM 502-3]	C	None			0.0000	153.00	No Ice	33.02	33.02	1673.10
							1/2" Ice	47.36	47.36	2223.90
							1" Ice	61.70	61.70	2774.70
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	5.00		0.0000	153.00	No Ice	8.02	6.71	78.90
			0.00				1/2" Ice	8.48	7.66	144.31
			0.00				1" Ice	8.94	8.49	217.47
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	5.00		0.0000	153.00	No Ice	8.02	6.71	78.90
			0.00				1/2" Ice	8.48	7.66	144.31
			0.00				1" Ice	8.94	8.49	217.47
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	5.00		0.0000	153.00	No Ice	8.02	6.71	78.90
			0.00				1/2" Ice	8.48	7.66	144.31
			0.00				1" Ice	8.94	8.49	217.47
DT465B-2XR w/ Mount Pipe	A	From Leg	5.00		0.0000	153.00	No Ice	9.34	7.63	83.52
			0.00				1/2" Ice	9.91	8.82	160.00
			0.00				1" Ice	10.44	9.72	244.63
DT465B-2XR w/ Mount Pipe	B	From Leg	5.00		0.0000	153.00	No Ice	9.34	7.63	83.52
			0.00				1/2" Ice	9.91	8.82	160.00
			0.00				1" Ice	10.44	9.72	244.63
DT465B-2XR w/ Mount Pipe	C	From Leg	5.00		0.0000	153.00	No Ice	9.34	7.63	83.52

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00				1/2" Ice	9.91	8.82	160.00
			0.00				1" Ice	10.44	9.72	244.63
RRH2x50-08	A	From Leg	5.00		0.0000	153.00	No Ice	1.70	1.28	52.90
			0.00				1/2" Ice	1.86	1.43	69.91
			0.00				1" Ice	2.03	1.58	89.61
RRH2x50-08	B	From Leg	5.00		0.0000	153.00	No Ice	1.70	1.28	52.90
			0.00				1/2" Ice	1.86	1.43	69.91
			0.00				1" Ice	2.03	1.58	89.61
RRH2x50-08	C	From Leg	5.00		0.0000	153.00	No Ice	1.70	1.28	52.90
			0.00				1/2" Ice	1.86	1.43	69.91
			0.00				1" Ice	2.03	1.58	89.61
800MHZ 2X50W RRH	A	From Leg	5.00		0.0000	153.00	No Ice	2.13	1.77	53.00
			0.00				1/2" Ice	2.32	1.95	74.19
			0.00				1" Ice	2.51	2.13	98.39
800MHZ 2X50W RRH	B	From Leg	5.00		0.0000	153.00	No Ice	2.13	1.77	53.00
			0.00				1/2" Ice	2.32	1.95	74.19
			0.00				1" Ice	2.51	2.13	98.39
800MHZ 2X50W RRH	C	From Leg	5.00		0.0000	153.00	No Ice	2.13	1.77	53.00
			0.00				1/2" Ice	2.32	1.95	74.19
			0.00				1" Ice	2.51	2.13	98.39
PCS 1900MHz 4x45W-65MHz	A	From Leg	5.00		0.0000	153.00	No Ice	2.32	2.24	60.00
			0.00				1/2" Ice	2.53	2.44	83.13
			0.00				1" Ice	2.74	2.65	109.50
PCS 1900MHz 4x45W-65MHz	B	From Leg	5.00		0.0000	153.00	No Ice	2.32	2.24	60.00
			0.00				1/2" Ice	2.53	2.44	83.13
			0.00				1" Ice	2.74	2.65	109.50
PCS 1900MHz 4x45W-65MHz	C	From Leg	5.00		0.0000	153.00	No Ice	2.32	2.24	60.00
			0.00				1/2" Ice	2.53	2.44	83.13
			0.00				1" Ice	2.74	2.65	109.50
TD-RRH8x20-25	A	From Leg	5.00		0.0000	153.00	No Ice	4.05	1.53	70.00
			0.00				1/2" Ice	4.30	1.71	97.15
			0.00				1" Ice	4.56	1.90	127.83
TD-RRH8x20-25	B	From Leg	5.00		0.0000	153.00	No Ice	4.05	1.53	70.00
			0.00				1/2" Ice	4.30	1.71	97.15
			0.00				1" Ice	4.56	1.90	127.83
TD-RRH8x20-25	C	From Leg	5.00		0.0000	153.00	No Ice	4.05	1.53	70.00
			0.00				1/2" Ice	4.30	1.71	97.15
			0.00				1" Ice	4.56	1.90	127.83
****										
(3) Sector Mounts 169-ft	C	None			0.0000	169.00	No Ice	21.56	21.56	1395.40
							1/2" Ice	29.77	29.77	2140.10
							1" Ice	37.98	37.98	2884.80
(2) BXA-70063/6CF w/ Mount Pipe	A	From Leg	5.00		0.0000	169.00	No Ice	7.59	5.18	38.90
			0.00				1/2" Ice	8.04	6.11	95.39
			0.00				1" Ice	8.50	6.92	159.37
(2) DB844G65ZAXY w/Mount Pipe	B	From Leg	5.00		0.0000	169.00	No Ice	5.05	5.28	41.55
			0.00				1/2" Ice	5.68	6.31	92.81
			0.00				1" Ice	6.19	7.06	150.42
(2) DB844G65ZAXY w/Mount Pipe	C	From Leg	5.00		0.0000	169.00	No Ice	5.05	5.28	41.55
			0.00				1/2" Ice	5.68	6.31	92.81
			0.00				1" Ice	6.19	7.06	150.42
DB-B1/T1 w/ Mount Pipe	C	From Leg	5.00		0.0000	169.00	No Ice	4.88	4.18	57.55
			0.00				1/2" Ice	5.61	5.12	107.53
			0.00				1" Ice	6.16	5.77	163.14
(2) HBXX-6517DS-A2M w/ Mount Pipe	A	From Leg	5.00		0.0000	169.00	No Ice	8.77	6.96	67.23
			0.00				1/2" Ice	9.34	8.18	136.85
			0.00				1" Ice	9.89	9.14	214.64

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(2) HBXX-6517DS-A2M w/ Mount Pipe	B	From Leg	5.00	0.00	0.0000	169.00	No Ice	8.77	6.96	67.23
							1/2" Ice	9.34	8.18	136.85
							1" Ice	9.89	9.14	214.64
(2) HBXX-6517DS-A2M w/ Mount Pipe	C	From Leg	5.00	0.00	0.0000	169.00	No Ice	8.77	6.96	67.23
							1/2" Ice	9.34	8.18	136.85
							1" Ice	9.89	9.14	214.64
RRH2x60-AWS	A	From Leg	5.00	0.00	0.0000	169.00	No Ice	3.50	1.82	60.00
							1/2" Ice	3.76	2.05	82.72
							1" Ice	4.03	2.29	109.06
RRH2x60-AWS	B	From Leg	5.00	0.00	0.0000	169.00	No Ice	3.50	1.82	60.00
							1/2" Ice	3.76	2.05	82.72
							1" Ice	4.03	2.29	109.06
RRH2x60-AWS	C	From Leg	5.00	0.00	0.0000	169.00	No Ice	3.50	1.82	60.00
							1/2" Ice	3.76	2.05	82.72
							1" Ice	4.03	2.29	109.06
RRH2X60-PCS	A	From Leg	5.00	0.00	0.0000	169.00	No Ice	2.20	1.72	55.00
							1/2" Ice	2.39	1.90	75.35
							1" Ice	2.59	2.09	98.71
RRH2X60-PCS	B	From Leg	5.00	0.00	0.0000	169.00	No Ice	2.20	1.72	55.00
							1/2" Ice	2.39	1.90	75.35
							1" Ice	2.59	2.09	98.71
RRH2X60-PCS	C	From Leg	5.00	0.00	0.0000	169.00	No Ice	2.20	1.72	55.00
							1/2" Ice	2.39	1.90	75.35
							1" Ice	2.59	2.09	98.71
BXA-70080/6CF w/ Mount Pipe	A	From Leg	5.00	0.00	0.0000	169.00	No Ice	7.59	5.54	42.90
							1/2" Ice	8.04	6.48	100.79
							1" Ice	8.50	7.30	166.25
DB846F65ZAXY w/Mount Pipe	B	From Leg	5.00	0.00	0.0000	169.00	No Ice	7.27	7.82	46.55
							1/2" Ice	7.83	9.01	113.93
							1" Ice	8.35	9.91	189.25
DB846F65ZAXY w/Mount Pipe	C	From Leg	5.00	0.00	0.0000	169.00	No Ice	7.27	7.82	46.55
							1/2" Ice	7.83	9.01	113.93
							1" Ice	8.35	9.91	189.25
(2) FD9R6004	A	From Leg	5.00	0.00	0.0000	169.00	No Ice	0.37	0.08	3.10
							1/2" Ice	0.45	0.14	5.40
							1" Ice	0.54	0.20	8.79
(2) FD9R6004	B	From Leg	5.00	0.00	0.0000	169.00	No Ice	0.37	0.08	3.10
							1/2" Ice	0.45	0.14	5.40
							1" Ice	0.54	0.20	8.79
(2) FD9R6004	C	From Leg	5.00	0.00	0.0000	169.00	No Ice	0.37	0.08	3.10
							1/2" Ice	0.45	0.14	5.40
							1" Ice	0.54	0.20	8.79
****										
(3) Sector Mounts 185-ft	C	None			0.0000	185.00	No Ice	21.56	21.56	1395.40
							1/2" Ice	29.77	29.77	2140.10
							1" Ice	37.98	37.98	2884.80
Miscellaneous [NA 510-1]	C	None			0.0000	185.00	No Ice	6.00	6.00	255.70
							1/2" Ice	8.50	8.50	339.50
							1" Ice	11.00	11.00	409.12
7770.00 w/ Mount Pipe	A	From Leg	5.00	0.00	0.0000	185.00	No Ice	5.84	4.35	56.90
							1/2" Ice	6.32	5.20	105.42
				3.00			1" Ice	6.77	5.92	160.42
7770.00 w/ Mount Pipe	B	From Leg	5.00	0.00	0.0000	185.00	No Ice	5.84	4.35	56.90
							1/2" Ice	6.32	5.20	105.42
				3.00			1" Ice	6.77	5.92	160.42
7770.00 w/ Mount Pipe	C	From Leg	5.00	0.00	0.0000	185.00	No Ice	5.84	4.35	56.90
							1/2" Ice	6.32	5.20	105.42

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
				3.00			1" Ice	6.77	5.92	160.42
P65-17-XLH-RR w/Mount Pipe	A	From Leg	5.00	0.00	0.0000	185.00	No Ice	11.70	8.94	91.85
							1/2" Ice	12.42	10.45	177.61
				3.00			1" Ice	13.15	11.99	273.25
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	5.00	0.00	0.0000	185.00	No Ice	8.26	6.30	74.05
							1/2" Ice	8.82	7.48	139.04
				3.00			1" Ice	9.35	8.37	211.91
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	5.00	0.00	0.0000	185.00	No Ice	8.26	6.30	74.05
							1/2" Ice	8.82	7.48	139.04
				3.00			1" Ice	9.35	8.37	211.91
P65-17-XLH-RR w/Mount Pipe	A	From Leg	5.00	0.00	0.0000	185.00	No Ice	11.70	8.94	91.85
							1/2" Ice	12.42	10.45	177.61
				3.00			1" Ice	13.15	11.99	273.25
P65-17-XLH-RR w/Mount Pipe	B	From Leg	5.00	0.00	0.0000	185.00	No Ice	11.70	8.94	91.85
							1/2" Ice	12.42	10.45	177.61
				3.00			1" Ice	13.15	11.99	273.25
P65-17-XLH-RR w/Mount Pipe	C	From Leg	5.00	0.00	0.0000	185.00	No Ice	11.70	8.94	91.85
							1/2" Ice	12.42	10.45	177.61
				3.00			1" Ice	13.15	11.99	273.25
(2) TPX - 070621	A	From Leg	5.00	0.00	0.0000	185.00	No Ice	0.47	0.18	7.50
							1/2" Ice	0.56	0.24	10.95
				3.00			1" Ice	0.66	0.32	15.73
(2) TPX - 070621	B	From Leg	5.00	0.00	0.0000	185.00	No Ice	0.47	0.18	7.50
							1/2" Ice	0.56	0.24	10.95
				3.00			1" Ice	0.66	0.32	15.73
(2) TPX - 070621	C	From Leg	5.00	0.00	0.0000	185.00	No Ice	0.47	0.18	7.50
							1/2" Ice	0.56	0.24	10.95
				3.00			1" Ice	0.66	0.32	15.73
RRUS-12	A	From Leg	5.00	0.00	0.0000	185.00	No Ice	2.70	1.21	60.00
							1/2" Ice	2.90	1.36	81.29
				3.00			1" Ice	3.11	1.52	105.63
RRUS-12	B	From Leg	5.00	0.00	0.0000	185.00	No Ice	2.70	1.21	60.00
							1/2" Ice	2.90	1.36	81.29
				3.00			1" Ice	3.11	1.52	105.63
RRUS-12	C	From Leg	5.00	0.00	0.0000	185.00	No Ice	2.70	1.21	60.00
							1/2" Ice	2.90	1.36	81.29
				3.00			1" Ice	3.11	1.52	105.63
RRUS-12	A	From Leg	5.00	0.00	0.0000	185.00	No Ice	2.70	1.21	60.00
							1/2" Ice	2.90	1.36	81.29
				3.00			1" Ice	3.11	1.52	105.63
RRUS-12	B	From Leg	5.00	0.00	0.0000	185.00	No Ice	2.70	1.21	60.00
							1/2" Ice	2.90	1.36	81.29
				3.00			1" Ice	3.11	1.52	105.63
RRUS-12	C	From Leg	5.00	0.00	0.0000	185.00	No Ice	2.70	1.21	60.00
							1/2" Ice	2.90	1.36	81.29
				3.00			1" Ice	3.11	1.52	105.63
(2) LGP21401	A	From Leg	5.00	0.00	0.0000	185.00	No Ice	1.10	0.35	14.10
							1/2" Ice	1.24	0.44	21.26
				3.00			1" Ice	1.38	0.54	30.32
(2) LGP21401	B	From Leg	5.00	0.00	0.0000	185.00	No Ice	1.10	0.35	14.10
							1/2" Ice	1.24	0.44	21.26
				3.00			1" Ice	1.38	0.54	30.32
(2) LGP21401	C	From Leg	5.00	0.00	0.0000	185.00	No Ice	1.10	0.35	14.10
							1/2" Ice	1.24	0.44	21.26
				3.00			1" Ice	1.38	0.54	30.32
(2) RRUS-11	A	From Leg	5.00	0.00	0.0000	185.00	No Ice	2.79	1.19	50.00
							1/2" Ice	3.00	1.34	70.87

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
				3.00			1" Ice	3.21	1.50	94.78
(2) RRUS-11	B	From Leg	5.00	0.00	0.0000	185.00	No Ice	2.79	1.19	50.00
				0.00			1/2" Ice	3.00	1.34	70.87
				3.00			1" Ice	3.21	1.50	94.78
(2) RRUS-11	C	From Leg	5.00	0.00	0.0000	185.00	No Ice	2.79	1.19	50.00
				3.00			1/2" Ice	3.00	1.34	70.87
							1" Ice	3.21	1.50	94.78
RRUS-32 B30	A	From Leg	5.00	0.00	0.0000	185.00	No Ice	3.31	2.42	77.00
				3.00			1/2" Ice	3.56	2.64	104.93
							1" Ice	3.81	2.86	136.47
RRUS-32 B30	B	From Leg	5.00	0.00	0.0000	185.00	No Ice	3.31	2.42	77.00
				3.00			1/2" Ice	3.56	2.64	104.93
							1" Ice	3.81	2.86	136.47
RRUS-32 B30	C	From Leg	5.00	0.00	0.0000	185.00	No Ice	3.31	2.42	77.00
				3.00			1/2" Ice	3.56	2.64	104.93
							1" Ice	3.81	2.86	136.47
DC6-48-60-18-8F	A	From Leg	0.50	0.00	0.0000	185.00	No Ice	1.21	1.21	32.80
				3.00			1/2" Ice	1.89	1.89	54.76
							1" Ice	2.11	2.11	79.58
DC6-48-60-18-8F	B	From Leg	0.50	0.00	0.0000	185.00	No Ice	1.21	1.21	32.80
				3.00			1/2" Ice	1.89	1.89	54.76
							1" Ice	2.11	2.11	79.58
****										
Sector Mount [SM 802-3]	C	None			0.0000	195.00	No Ice	24.41	24.41	930.00
							1/2" Ice	31.39	31.39	1362.00
							1" Ice	38.37	38.37	1794.00
HSS Top Mount	C	None			0.0000	195.00	No Ice	8.08	8.08	328.90
							1/2" Ice	9.70	9.70	415.20
							1" Ice	11.32	11.32	501.50
LNX-6515DS-A1M W/ Mount Pipe	A	From Leg	3.00	0.00	0.0000	193.00	No Ice	11.69	10.29	102.38
				0.00			1/2" Ice	12.40	11.81	196.03
				0.00			1" Ice	13.11	13.16	300.79
LNX-6515DS-A1M W/ Mount Pipe	B	From Leg	3.00	0.00	0.0000	193.00	No Ice	11.69	10.29	102.38
				0.00			1/2" Ice	12.40	11.81	196.03
				0.00			1" Ice	13.11	13.16	300.79
LNX-6515DS-A1M W/ Mount Pipe	C	From Leg	3.00	0.00	0.0000	193.00	No Ice	11.69	10.29	102.38
				0.00			1/2" Ice	12.40	11.81	196.03
				0.00			1" Ice	13.11	13.16	300.79
APX16DWV-16DWV-S-E-A 20 w/ Mount Pipe	A	From Leg	3.00	0.00	0.0000	195.00	No Ice	6.91	3.57	62.60
				0.00			1/2" Ice	7.39	4.41	112.02
				0.00			1" Ice	7.86	5.13	168.01
APX16DWV-16DWV-S-E-A 20 w/ Mount Pipe	B	From Leg	3.00	0.00	0.0000	195.00	No Ice	6.91	3.57	62.60
				0.00			1/2" Ice	7.39	4.41	112.02
				0.00			1" Ice	7.86	5.13	168.01
APX16DWV-16DWV-S-E-A 20 w/ Mount Pipe	C	From Leg	3.00	0.00	0.0000	195.00	No Ice	6.91	3.57	62.60
				0.00			1/2" Ice	7.39	4.41	112.02
				0.00			1" Ice	7.86	5.13	168.01
(2) KRY 112 71	A	From Leg	3.00	0.00	0.0000	195.00	No Ice	0.63	0.61	18.07
				0.00			1/2" Ice	0.75	0.79	26.97
				0.00			1" Ice	0.89	0.99	38.22
(2) KRY 112 71	B	From Leg	3.00	0.00	0.0000	195.00	No Ice	0.63	0.61	18.07
				0.00			1/2" Ice	0.75	0.79	26.97
				0.00			1" Ice	0.89	0.99	38.22
(2) KRY 112 71	C	From Leg	3.00	0.00	0.0000	195.00	No Ice	0.63	0.61	18.07
				0.00			1/2" Ice	0.75	0.79	26.97
				0.00			1" Ice	0.89	0.99	38.22
AIR -32 B2A/B66AA	A	From Leg	3.00	0.00	0.0000	195.00	No Ice	6.51	4.71	132.20

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
				0.00			1/2" Ice	6.89	5.07	178.02
				0.00			1" Ice	7.27	5.43	229.11
AIR -32 B2A/B66AA	B	From Leg	3.00	0.00	0.0000	195.00	No Ice	6.51	4.71	132.20
				0.00			1/2" Ice	6.89	5.07	178.02
				0.00			1" Ice	7.27	5.43	229.11
AIR -32 B2A/B66AA	C	From Leg	3.00	0.00	0.0000	195.00	No Ice	6.51	4.71	132.20
				0.00			1/2" Ice	6.89	5.07	178.02
				0.00			1" Ice	7.27	5.43	229.11
****										
TMO Future Loading	C	None			0.0000	195.00	No Ice	41.21	41.21	834.32
							1/2" Ice	46.41	46.41	1254.79
							1" Ice	51.61	51.61	1675.26
*****										

Load Combinations

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

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

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	195 - 180	7.068	39	0.4267	0.0442
T2	180 - 175	5.672	39	0.3936	0.0115
T3	175 - 170	5.263	39	0.3674	0.0094
T4	170 - 160	4.892	39	0.3386	0.0081
T5	160 - 150	4.208	39	0.3043	0.0077
T6	150 - 140	3.612	39	0.2575	0.0073
T7	140 - 133.333	3.098	39	0.2257	0.0068
T8	133.333 - 126.667	2.783	39	0.2149	0.0064
T9	126.667 - 120	2.484	39	0.2037	0.0060
T10	120 - 113.333	2.197	39	0.1926	0.0055
T11	113.333 - 106.667	1.934	39	0.1752	0.0051
T12	106.667 - 100	1.695	39	0.1576	0.0047
T13	100 - 80	1.479	39	0.1401	0.0043
T14	80 - 60	0.927	39	0.1141	0.0032
T15	60 - 50	0.497	39	0.0791	0.0021
T16	50 - 40	0.337	39	0.0617	0.0017
T17	40 - 20	0.215	39	0.0445	0.0012
T18	20 - 0	0.061	39	0.0221	0.0006

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
195.00	Sector Mount [SM 802-3]	39	7.068	0.4267	0.0442	25214
193.00	LNX-6515DS-A1M W/ Mount Pipe	39	6.875	0.4244	0.0385	25214
185.00	(3) Sector Mounts 185-ft	39	6.118	0.4106	0.0183	12607
169.00	(3) Sector Mounts 169-ft	39	4.820	0.3340	0.0080	16583
153.00	Sector Mount [SM 502-3]	39	3.782	0.2718	0.0074	13468
75.50	1.75" Dia x 5-ft Pipe	39	0.819	0.1075	0.0030	39577

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	195 - 180	27.067	2	1.6315	0.1451
T2	180 - 175	21.745	2	1.5066	0.0446
T3	175 - 170	20.176	2	1.4070	0.0365
T4	170 - 160	18.754	2	1.2973	0.0314
T5	160 - 150	16.135	2	1.1662	0.0297
T6	150 - 140	13.852	2	0.9872	0.0282
T7	140 - 133.333	11.879	2	0.8653	0.0264
T8	133.333 - 126.667	10.674	2	0.8237	0.0248
T9	126.667 - 120	9.525	2	0.7811	0.0232
T10	120 - 113.333	8.426	2	0.7383	0.0211
T11	113.333 - 106.667	7.417	2	0.6715	0.0196
T12	106.667 - 100	6.500	2	0.6042	0.0182
T13	100 - 80	5.674	2	0.5372	0.0164
T14	80 - 60	3.554	2	0.4373	0.0124
T15	60 - 50	1.907	2	0.3033	0.0082
T16	50 - 40	1.294	2	0.2367	0.0064
T17	40 - 20	0.827	2	0.1704	0.0046
T18	20 - 0	0.235	2	0.0846	0.0022

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
195.00	Sector Mount [SM 802-3]	2	27.067	1.6315	0.1451	6836
193.00	LNX-6515DS-A1M W/ Mount Pipe	2	26.331	1.6229	0.1275	6836
185.00	(3) Sector Mounts 185-ft	2	23.445	1.5710	0.0654	3418
169.00	(3) Sector Mounts 169-ft	2	18.480	1.2799	0.0309	4368
153.00	Sector Mount [SM 502-3]	2	14.501	1.0419	0.0288	3521
75.50	1.75" Dia x 5-ft Pipe	2	3.140	0.4123	0.0115	10330

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	195	Leg	A325N	0.7500	4	4837.06	29820.60	0.162	1	Bolt Tension
T2	180	Diagonal	A325N	0.5000	1	3574.61	4689.84	0.762	1	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	699.62	6830.86	0.102	1	Member Block Shear
T3	175	Diagonal	A325X	0.5000	1	3707.77	7245.70	0.512	1	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	885.85	6830.86	0.130	1	Member Block Shear
T4	170	Leg	A325N	0.7500	6	10805.40	29820.60	0.362	1	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
		Diagonal	A325N	0.5000	1	4974.50	8265.00	0.602	1	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	1286.75	6830.86	0.188	1	Member Block Shear
T5	160	Diagonal	A325X	0.5000	1	5929.18	8265.00	0.717	1	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	1671.54	6830.86	0.245	1	Member Block Shear
T6	150	Leg	A325N	1.0000	6	17642.00	53014.40	0.333	1	Bolt Tension
		Diagonal	A325N	0.5000	1	5780.33	8265.00	0.699	1	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	2088.30	6830.86	0.306	1	Member Block Shear
T7	140	Diagonal	A325X	0.6250	1	5952.86	12712.50	0.468	1	Member Block Shear
T8	133.333	Diagonal	A325X	0.6250	1	6094.69	12712.50	0.479	1	Member Block Shear
T9	126.667	Leg	A325N	1.0000	8	17819.80	53014.40	0.336	1	Bolt Tension
		Diagonal	A325N	0.6250	1	5993.95	7830.00	0.766	1	Member Bearing
T10	120	Diagonal	A325X	0.6250	1	6654.67	13050.00	0.510	1	Member Bearing
		Secondary Horizontal	A325N	0.6250	1	2979.26	7830.00	0.380	1	Member Bearing
T11	113.333	Diagonal	A325X	0.6250	1	6898.13	13050.00	0.529	1	Member Bearing
		Secondary Horizontal	A325N	0.6250	1	3200.33	7830.00	0.409	1	Member Bearing
T12	106.667	Leg	A325N	1.0000	8	21775.10	53014.40	0.411	1	Bolt Tension
		Diagonal	A325X	0.6250	1	6846.45	12712.50	0.539	1	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	3405.53	7830.00	0.435	1	Member Bearing
T13	100	Leg	A325N	1.2500	8	25675.90	82835.00	0.310	1	Bolt Tension
		Diagonal	A325N	0.6250	2	3614.35	11622.70	0.311	1	Member Block Shear
		Secondary Horizontal	A325N	0.7500	1	4042.34	13898.40	0.291	1	Member Block Shear
T14	80	Leg	A325N	1.2500	8	29423.70	82835.00	0.355	1	Bolt Tension
		Diagonal	A325N	0.6250	2	3865.22	11622.70	0.333	1	Member Block Shear
T15	60	Diagonal	A325N	0.6250	2	4913.55	12425.20	0.395	1	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	4859.84	12425.20	0.391	1	Bolt Shear
T16	50	Leg	A325N	1.2500	8	32474.80	82835.00	0.392	1	Bolt Tension
		Diagonal	A325N	0.6250	2	4795.32	12425.20	0.386	1	Bolt Shear
		Secondary Horizontal	A325X	0.7500	1	5154.95	14355.00	0.359	1	Member Bearing
T17	40	Leg	A325N	1.2500	8	35922.50	82835.00	0.434	1	Bolt Tension
		Diagonal	A325N	0.6250	2	4742.33	12425.20	0.382	1	Bolt Shear
T18	20	Leg	A36	1.5000	8	39912.10	61496.70	0.649	1	Bolt Tension
		Diagonal	A325N	0.6250	2	5073.52	12425.20	0.408	1	Bolt 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	f P_n lb	Ratio P_u / f P_n
T1	195 - 180	PIPE 2.5 STD (SCH 40)	15.00	3.75	47.4 K=1.00	1.7072	-36210.60	70532.50	0.513 [1]
T2	180 - 175	PIPE 2.5 STD (SCH 40)	5.01	2.67	33.8 K=1.00	1.7072	-40342.30	77102.10	0.523 [1]
T3	175 - 170	PIPE 2.5 STD (SCH 40)	5.01	2.65	33.5 K=1.00	1.7072	-51081.10	77205.80	0.662 [1]
T4	170 - 160	2.5SCH40 w/ 3SCH80 Half Sleeve	10.02	2.62	34.2 K=1.00	3.2300	-74198.10	72967.00	0.713 [1]
T5	160 - 150	Pipe 3.5 Std (SCH40)	10.02	2.60	23.4 K=1.00	2.6795	-96284.10	126932.00	0.759 [1]
T6	150 - 140	3.5SCH40 w/ 4SCH40 Half Sleeve	10.02	2.59	23.8 K=1.00	4.2666	-120397.00	184209.00	0.633 [1]
T7	140 - 133.333	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4 K=1.00	8.5023	-133779.00	306442.00	0.494 [1]
T8	133.333 - 126.667	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4 K=1.00	8.5023	-147405.00	306442.00	0.494 [1]
T9	126.667 - 120	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4 K=1.00	8.5023	-160852.00	306442.00	0.494 [1]
T10	120 - 113.333	Pipe 6.625" x 0.280" (6 STD)	6.68	3.45	18.4 K=1.00	5.5813	-171750.00	268817.00	0.639 [1]
T11	113.333 - 106.667	Pipe 6.625" x 0.280" (6 STD)	6.68	3.44	18.4 K=1.00	5.5813	-184438.00	268848.00	0.686 [1]
T12	106.667 - 100	Pipe 6.625" x 0.280" (6 STD)	6.68	3.44	18.4 K=1.00	5.5813	-196295.00	268875.00	0.730 [1]
T13	100 - 80	6 STD w/ 7 XH Half Sleeve	20.03	3.42	19.5 K=1.00	11.1800	-233094.00	412800.00	0.530 [1]
T14	80 - 60	Pipe 8.625" x 0.322" (8 STD)	20.03	6.68	27.3 K=1.00	8.3993	-268048.00	391613.00	0.684 [1]
T15	60 - 50	Pipe 8.625" x 0.322" (8 STD)	10.02	5.16	21.1 K=1.00	8.3993	-280233.00	401143.00	0.699 [1]
T16	50 - 40	Pipe 8.625" x 0.322" (8 STD)	10.02	5.16	21.1 K=1.00	8.3993	-297250.00	401194.00	0.741 [1]
T17	40 - 20	Pipe 8.75" x 0.500" (8 EH)	20.03	10.02	41.1 K=1.00	12.9591	-330803.00	559858.00	0.591 [1]
T18	20 - 0	Pipe 8.75" x 0.500" (8 EH)	20.03	9.97	41.0 K=1.00	12.9591	-361363.00	560492.00	0.645 [1]

[1] P_u / f P_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	f P_n lb	Ratio P_u / f P_n
T2	180 - 175	L1 1/2x1 1/2x3/16	6.25	3.03	124.0 K=1.00	0.5273	-4335.78	7609.55	0.570 [1]
T3	175 - 170	L2x2x3/16	6.56	3.18	102.5 K=1.06	0.7150	-3463.98	13320.20	0.260 [1]
T4	170 - 160	2L1 1/2x1 1/2x3/16x1/4	6.90	3.34	87.9 K=1.00	1.0547	-5409.95	22761.40	0.238 [1]
T5	160 - 150	2L 'a' > 19.3293 in - 84 2L2x2x3/16x1/4	8.01	3.83	76.6 K=1.00	1.4297	-6165.84	34011.90	0.181 [1]
T6	150 - 140	2L 'a' > 22.0154 in - 93 2L2x2x3/16x1/4	8.81	4.22	84.4 K=1.00	1.4297	-5854.19	31842.70	0.184 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	f P_n lb	Ratio $\frac{P_u}{f P_n}$
		2L 'a' > 24.2504 in - 115							
T7	140 - 133.333	L2 1/2x2 1/2x1/4	10.29	4.92	120.3 K=1.00	1.1900	-6050.81	17991.90	0.336 [1]
T8	133.333 - 126.667	L2 1/2x2 1/2x1/4	10.80	5.18	126.7 K=1.00	1.1900	-6248.89	16560.40	0.377 [1]
T9	126.667 - 120	L2 1/2x2 1/2x3/16	11.34	5.47	132.6 K=1.00	0.9020	-6063.53	11588.10	0.523 [1]
T10	120 - 113.333	L3x3x1/4	11.88	5.67	116.3 K=1.01	1.4400	-7149.80	22905.00	0.312 [1]
T11	113.333 - 106.667	L3x3x1/4	12.44	5.95	120.7 K=1.00	1.4400	-7245.35	21667.80	0.334 [1]
T12	106.667 - 100	L2 1/2x2 1/2x1/4	13.01	6.24	152.5 K=1.00	1.1900	-7359.89	11556.70	0.637 [1]
T13	100 - 80	L3 1/2x3 1/2x1/4	14.76	7.01	121.0 K=1.00	1.6900	-7461.70	25335.60	0.295 [1]
T14	80 - 60	L3 1/2x3 1/2x1/4	16.57	7.88	132.4 K=0.97	1.6900	-7902.08	21768.60	0.363 [1]
T15	60 - 50	L3x3x5/16	18.87	9.11	170.0 K=0.92	1.7800	-9827.10	13914.00	0.706 [1]
T16	50 - 40	L3x3x5/16	19.73	9.54	176.7 K=0.91	1.7800	-9590.64	12883.30	0.744 [1]
T17	40 - 20	L4x4x3/8	21.47	10.41	149.4 K=0.94	2.8600	-9484.67	28952.00	0.328 [1]
T18	20 - 0	L5x5x5/16	23.24	11.29	132.5 K=0.97	3.0300	-10147.00	38842.60	0.261 [1]

[1] P_u / f P_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	f P_n lb	Ratio $\frac{P_u}{f P_n}$
T1	195 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	0.5273	-5332.57	7191.11	0.742 [1]

[1] P_u / f P_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	f P_n lb	Ratio $\frac{P_u}{f P_n}$
T2	180 - 175	L2x2x3/16	3.73	1.63	84.8 K=1.71	0.7150	-699.62	15868.60	0.044 [1]
T3	175 - 170	L2x2x3/16	4.24	1.88	88.6 K=1.55	0.7150	-885.85	15324.60	0.058 [1]
T4	170 - 160	L2x2x3/16	5.24	2.37	96.0 K=1.33	0.7150	-1286.75	14254.80	0.090 [1]
T5	160 - 150	L2x2x3/16	6.24	2.83	103.2 K=1.20	0.7150	-1671.54	13230.80	0.126 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	f P_n lb	Ratio $\frac{P_u}{f P_n}$
T6	150 - 140	L2x2x3/16	7.24	3.31	110.5 K=1.09	0.7150	-2088.30	12187.10	0.171 [1]
T10	120 - 113.333	L3x3x3/16	9.82	4.52	105.5 K=1.16	1.0900	-2979.26	19380.60	0.154 [1]
T11	113.333 - 106.667	L3x3x3/16	10.49	4.85	108.8 K=1.11	1.0900	-3200.33	18683.90	0.171 [1]
T12	106.667 - 100	L3x3x3/16	11.16	5.18	112.2 K=1.08	1.0900	-3405.53	17991.70	0.189 [1]
T13	100 - 80	L3x3x1/4	13.16	6.12	124.0 K=1.00	1.4400	-4042.34	20777.30	0.195 [1]
T15	60 - 50	L4x4x3/8	15.98	7.51	117.2 K=1.02	2.8600	-4859.84	44960.90	0.108 [1]
T16	50 - 40	L4x4x1/4	16.99	7.99	120.6 K=1.00	1.9400	-5154.95	28993.60	0.178 [1]

[1] P_u / f P_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	f P_n lb	Ratio $\frac{P_u}{f P_n}$
T1	195 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	0.5273	-1526.46	7191.11	0.212 [1]

[1] P_u / f P_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	f P_n lb	Ratio $\frac{P_u}{f P_n}$
T1	195 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	0.5273	-3149.68	7191.11	0.438 [1]

[1] P_u / f P_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	f P_n lb	Ratio $\frac{P_u}{f P_n}$

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	f P_n	Ratio $\frac{P_u}{f P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	195 - 180	PIPE 2.5 STD (SCH 40)	15.00	3.75	47.4	1.7072	19348.20	84508.30	0.229 [1]
T2	180 - 175	PIPE 2.5 STD (SCH 40)	5.01	2.34	29.5	1.7072	35728.90	84508.30	0.423 [1]
T3	175 - 170	PIPE 2.5 STD (SCH 40)	5.01	2.36	29.8	1.7072	44672.50	84508.30	0.529 [1]
T4	170 - 160	2.5SCH40 w/ 3SCH80 Half Sleeve 4.8.1 (1.01 CR) - 67	10.02	2.38	31.1	3.2300	64878.40	101745.00	0.638 [1]
T5	160 - 150	Pipe 3.5 Std (SCH40)	10.02	2.40	21.6	2.6795	84517.70	132637.00	0.637 [1]
T6	150 - 140	3.5SCH40 w/ 4SCH40 Half Sleeve	10.02	2.42	22.2	4.2666	105984.00	191997.00	0.552 [1]
T7	140 - 133.333	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4	8.5023	118103.00	351995.00	0.336 [1]
T8	133.333 - 126.667	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4	8.5023	130487.00	351995.00	0.371 [1]
T9	126.667 - 120	5 STD w/ 6 XH Half Sleeve	6.68	6.68	45.4	8.5023	142558.00	351995.00	0.405 [1]
T10	120 - 113.333	Pipe 6.625" x 0.280" (6 STD)	6.68	3.23	17.2	5.5813	152658.00	276277.00	0.553 [1]
T11	113.333 - 106.667	Pipe 6.625" x 0.280" (6 STD)	6.68	3.23	17.3	5.5813	163879.00	276277.00	0.593 [1]
T12	106.667 - 100	Pipe 6.625" x 0.280" (6 STD)	6.68	3.24	17.3	5.5813	174465.00	276277.00	0.631 [1]
T13	100 - 80	6 STD w/ 7 XH Half Sleeve	20.03	3.25	18.6	11.1800	205658.00	422604.00	0.487 [1]
T14	80 - 60	Pipe 8.625" x 0.322" (8 STD)	20.03	6.68	27.3	8.3993	235390.00	415763.00	0.566 [1]
T15	60 - 50	Pipe 8.625" x 0.322" (8 STD)	10.02	4.85	19.8	8.3993	245846.00	415763.00	0.591 [1]
T16	50 - 40	Pipe 8.625" x 0.322" (8 STD)	10.02	4.86	19.9	8.3993	260100.00	415763.00	0.626 [1]
T17	40 - 20	Pipe 8.75" x 0.500" (8 EH)	20.03	10.02	41.1	12.9591	287380.00	641474.00	0.448 [1]
T18	20 - 0	Pipe 8.75" x 0.500" (8 EH)	20.03	0.08	0.3	12.9591	319297.00	641474.00	0.498 [1]

[1] P_u / f P_n controls

Diagonal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	f P_n	Ratio $\frac{P_u}{f P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	195 - 180	5/8	5.13	4.78	366.9	0.3068	9418.12	9940.20	0.947 [1]
T2	180 - 175	L1 1/2x1 1/2x3/16	6.25	3.03	82.4	0.3076	3574.61	13381.30	0.267 [1]
T3	175 - 170	L2x2x3/16	6.56	3.18	64.0	0.4484	3707.77	19503.60	0.190 [1]
T4	170 - 160	2L1 1/2x1 1/2x3/16x1/4 2L 'a' > 19.3293 in - 83	6.90	3.34	90.6	0.6152	4974.50	26762.70	0.186 [1]
T5	160 - 150	2L2x2x3/16x1/4 2L 'a' > 22.0154 in - 94	8.01	3.83	76.8	0.8965	5929.18	38997.10	0.152 [1]
T6	150 - 140	2L2x2x3/16x1/4 2L 'a' > 23.1042 in - 124	8.40	4.02	80.3	0.8965	5780.33	38997.10	0.148 [1]
T7	140 - 133.333	L2 1/2x2 1/2x1/4	10.29	4.92	78.9	0.7519	5952.86	32706.60	0.182 [1]
T8	133.333 - 126.667	L2 1/2x2 1/2x1/4	10.80	5.18	83.0	0.7519	6094.69	32706.60	0.186 [1]
T9	126.667 - 120	L2 1/2x2 1/2x3/16	11.34	5.47	86.2	0.5710	5993.95	24839.90	0.241 [1]
T10	120 - 113.333	L3x3x1/4	11.88	5.67	75.0	0.9394	6654.67	40862.80	0.163 [1]
T11	113.333 - 106.667	L3x3x1/4	12.44	5.95	78.6	0.9394	6898.13	40862.80	0.169 [1]
T12	106.667 - 100	L2 1/2x2 1/2x1/4	13.01	6.24	99.5	0.7519	6846.45	32706.60	0.209 [1]
T13	100 - 80	L3 1/2x3 1/2x1/4	14.17	6.72	76.1	1.1269	7228.70	49019.10	0.147 [1]
T14	80 - 60	L3 1/2x3 1/2x1/4	16.57	7.88	88.9	1.1269	7730.45	49019.10	0.158 [1]
T15	60 - 50	L3x3x5/16	18.87	9.11	121.1	1.1592	9005.94	50426.00	0.179 [1]

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	f P_n	Ratio $\frac{P_u}{f P_n}$
	ft		ft	ft		in^2	lb	lb	
T16	50 - 40	L3x3x5/16	19.73	9.54	126.7	1.1592	8952.58	50426.00	0.178 [1]
T17	40 - 20	L4x4x3/8	21.47	10.41	103.5	1.9341	9132.61	84131.70	0.109 [1]
T18	20 - 0	L5x5x5/16	23.24	11.29	87.8	2.0967	9617.08	91207.30	0.105 [1]

[1] P_u / f P_n controls

Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	f P_n	Ratio $\frac{P_u}{f P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	195 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	627.19	17085.90	0.037 [1]

[1] P_u / f P_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	f P_n	Ratio $\frac{P_u}{f P_n}$
	ft		ft	ft		in^2	lb	lb	
T2	180 - 175	L2x2x3/16	3.73	1.63	67.9	0.4308	699.62	18739.00	0.037 [1]
T3	175 - 170	L2x2x3/16	4.24	1.88	77.7	0.4308	885.85	18739.00	0.047 [1]
T4	170 - 160	L2x2x3/16	5.24	2.37	96.7	0.4308	1286.75	18739.00	0.069 [1]
T5	160 - 150	L2x2x3/16	6.24	2.83	114.9	0.4308	1671.54	18739.00	0.089 [1]
T6	150 - 140	L2x2x3/16	7.24	3.31	133.5	0.4308	2088.30	18739.00	0.111 [1]
T10	120 - 113.333	L3x3x3/16	9.82	4.52	118.5	0.7120	2979.26	30973.40	0.096 [1]
T11	113.333 - 106.667	L3x3x3/16	10.49	4.85	127.0	0.7120	3200.33	30973.40	0.103 [1]
T12	106.667 - 100	L3x3x3/16	11.16	5.18	135.5	0.7120	3405.53	30973.40	0.110 [1]
T13	100 - 80	L3x3x1/4	13.16	6.12	161.6	0.9159	4042.34	39843.30	0.101 [1]
T15	60 - 50	L4x4x3/8	15.98	7.51	148.9	1.9341	4859.84	84131.70	0.058 [1]
T16	50 - 40	L4x4x1/4	16.99	7.99	156.2	1.2909	5154.95	56155.80	0.092 [1]

[1] P_u / f P_n controls

Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	f P_n	Ratio $\frac{P_u}{f P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	195 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	756.52	17085.90	0.044 [1]

[1] P_u / f P_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	195 - 180	Leg	PIPE 2.5 STD (SCH 40)	3	-36210.60	70532.50	51.3	Pass
T2	180 - 175	Leg	PIPE 2.5 STD (SCH 40)	45	-40342.30	77102.10	52.3	Pass
T3	175 - 170	Leg	PIPE 2.5 STD (SCH 40)	57	-51081.10	77205.80	66.2	Pass
T4	170 - 160	Leg	2.5SCH40 w/ 3SCH80 Half Sleeve	69	-74198.10	72967.00	71.3	Pass
T5	160 - 150	Leg	Pipe 3.5 Std (SCH40)	90	-96284.10	126932.00	75.9	Pass
T6	150 - 140	Leg	3.5SCH40 w/ 4SCH40 Half Sleeve	111	-120397.00	184209.00	63.3	Pass
T7	140 - 133.333	Leg	5 STD w/ 6 XH Half Sleeve	132	-133779.00	306442.00	49.4	Pass
T8	133.333 - 126.667	Leg	5 STD w/ 6 XH Half Sleeve	141	-147405.00	306442.00	49.4	Pass
T9	126.667 - 120	Leg	5 STD w/ 6 XH Half Sleeve	150	-160852.00	306442.00	49.4	Pass
T10	120 - 113.333	Leg	Pipe 6.625" x 0.280" (6 STD)	159	-171750.00	268817.00	63.9	Pass
T11	113.333 - 106.667	Leg	Pipe 6.625" x 0.280" (6 STD)	171	-184438.00	268848.00	68.6	Pass
T12	106.667 - 100	Leg	Pipe 6.625" x 0.280" (6 STD)	183	-196295.00	268875.00	73.0	Pass
T13	100 - 80	Leg	6 STD w/ 7 XH Half Sleeve	195	-233094.00	412800.00	53.0	Pass
T14	80 - 60	Leg	Pipe 8.625" x 0.322" (8 STD)	225	-268048.00	391613.00	68.4	Pass
T15	60 - 50	Leg	Pipe 8.625" x 0.322" (8 STD)	246	-280233.00	401143.00	69.9	Pass
T16	50 - 40	Leg	Pipe 8.625" x 0.322" (8 STD)	258	-297250.00	401194.00	74.1	Pass
T17	40 - 20	Leg	Pipe 8.75" x 0.500" (8 EH)	270	-330803.00	559858.00	59.1	Pass
T18	20 - 0	Leg	Pipe 8.75" x 0.500" (8 EH)	285	-361363.00	560492.00	64.5	Pass
							64.9 (b)	
T1	195 - 180	Diagonal	5/8	12	9418.12	9940.20	94.7	Pass
T2	180 - 175	Diagonal	L1 1/2x1 1/2x3/16	48	-4335.78	7609.55	57.0	Pass
							76.2 (b)	
T3	175 - 170	Diagonal	L2x2x3/16	60	-3463.98	13320.20	26.0	Pass
							51.2 (b)	
T4	170 - 160	Diagonal	2L1 1/2x1 1/2x3/16x1/4	84	-5409.95	22761.40	23.8	Pass
							60.2 (b)	
T5	160 - 150	Diagonal	2L2x2x3/16x1/4	93	-6165.84	34011.90	18.1	Pass
							71.7 (b)	
T6	150 - 140	Diagonal	2L2x2x3/16x1/4	115	-5854.19	31842.70	18.4	Pass
							69.9 (b)	
T7	140 - 133.333	Diagonal	L2 1/2x2 1/2x1/4	135	-6050.81	17991.90	33.6	Pass
							46.8 (b)	
T8	133.333 - 126.667	Diagonal	L2 1/2x2 1/2x1/4	144	-6248.89	16560.40	37.7	Pass
							47.9 (b)	
T9	126.667 - 120	Diagonal	L2 1/2x2 1/2x3/16	153	-6063.53	11588.10	52.3	Pass
							76.6 (b)	
T10	120 - 113.333	Diagonal	L3x3x1/4	163	-7149.80	22905.00	31.2	Pass
							51.0 (b)	
T11	113.333 - 106.667	Diagonal	L3x3x1/4	175	-7245.35	21667.80	33.4	Pass
							52.9 (b)	
T12	106.667 - 100	Diagonal	L2 1/2x2 1/2x1/4	187	-7359.89	11556.70	63.7	Pass
T13	100 - 80	Diagonal	L3 1/2x3 1/2x1/4	199	-7461.70	25335.60	29.5	Pass
							31.1 (b)	
T14	80 - 60	Diagonal	L3 1/2x3 1/2x1/4	229	-7902.08	21768.60	36.3	Pass
T15	60 - 50	Diagonal	L3x3x5/16	250	-9827.10	13914.00	70.6	Pass
T16	50 - 40	Diagonal	L3x3x5/16	262	-9590.64	12883.30	74.4	Pass
T17	40 - 20	Diagonal	L4x4x3/8	274	-9484.67	28952.00	32.8	Pass
							38.2 (b)	
T18	20 - 0	Diagonal	L5x5x5/16	289	-10147.00	38842.60	26.1	Pass
							40.8 (b)	
T1	195 - 180	Horizontal	L1 1/2x1 1/2x3/16	17	-5332.57	7191.11	74.2	Pass
T2	180 - 175	Secondary Horizontal	L2x2x3/16	53	-699.62	15868.60	4.4	Pass
							10.2 (b)	

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T3	175 - 170	Secondary Horizontal	L2x2x3/16	65	-885.85	15324.60	5.8	Pass
							13.0 (b)	
T4	170 - 160	Secondary Horizontal	L2x2x3/16	77	-1286.75	14254.80	9.0	Pass
							18.8 (b)	
T5	160 - 150	Secondary Horizontal	L2x2x3/16	98	-1671.54	13230.80	12.6	Pass
							24.5 (b)	
T6	150 - 140	Secondary Horizontal	L2x2x3/16	119	-2088.30	12187.10	17.1	Pass
							30.6 (b)	
T10	120 - 113.333	Secondary Horizontal	L3x3x3/16	168	-2979.26	19380.60	15.4	Pass
							38.0 (b)	
T11	113.333 - 106.667	Secondary Horizontal	L3x3x3/16	179	-3200.33	18683.90	17.1	Pass
							40.9 (b)	
T12	106.667 - 100	Secondary Horizontal	L3x3x3/16	191	-3405.53	17991.70	18.9	Pass
							43.5 (b)	
T13	100 - 80	Secondary Horizontal	L3x3x1/4	203	-4042.34	20777.30	19.5	Pass
							29.1 (b)	
T15	60 - 50	Secondary Horizontal	L4x4x3/8	254	-4859.84	44960.90	10.8	Pass
							39.1 (b)	
T16	50 - 40	Secondary Horizontal	L4x4x1/4	266	-5154.95	28993.60	17.8	Pass
							35.9 (b)	
T1	195 - 180	Top Girt	L1 1/2x1 1/2x3/16	5	-1526.46	7191.11	21.2	Pass
T1	195 - 180	Bottom Girt	L1 1/2x1 1/2x3/16	8	-3149.68	7191.11	43.8	Pass
							Summary	
							Leg (T4) 75.9	Pass
							Diagonal (T1) 94.7	Pass
							Horizontal (T1) 74.2	Pass
							Secondary Horizontal (T12) 43.5	Pass
							Top Girt (T1) 21.2	Pass
							Bottom Girt (T1) 43.8	Pass
							Bolt Checks 76.6	Pass
							RATING = **94.7**	**Pass**

APPENDIX B

ADDITIONAL CALCULATIONS

Project Name:	Straits Turnpike	**Engineer:**	ML
Project Number:	TEP#25628.147080	**Check:**	SJJ
Client Site Number:	US-CT-1003	**Date:**	12/12/2017
Elevation:	160 - 170ft	**CODE:**	TIA-G

Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F

ϕc =	0.90	- LRFD strength reduction factor (compression)	Mast St.: 1.00 - from tnxTower
ϕt =	0.90	- LRFD strength reduction factor (tension)	
ϕw =	0.75	- LRFD strength reduction factor (weld shear)	
ϕv =	0.75	- LRFD strength reduction factor (shear)	

Input - Loads

$P_{initial}$:	4.16448	kips - force from initial load (no wind)
P_{wind}:	74.1981	kips - force due to final loading including reinforcement
T_u:	64.8784	kips - maximum load on leg

Quick Check

Weld Size:	OK
Weld Connection:	24.4%
Crushing Check:	49.0%
Leg Comp. Check:	49.6%
Sleeve Check:	71.3%
Built-up Check:	63.3%
Slenderness Check:	OK
Leg Tension Check:	49.2%

Input - Tower Leg 2.5 STD

K:	1.00	- effective length factor for leg
L_u:	2.64	ft - unbraced length of tower leg
F_{y_leg}:	55.00	ksi - minimum specified yield strength of tower leg
F_{u_leg}:	70.00	ksi - minimum specified ultimate strength of tower leg
r:	0.95	in - minimum radius of gyration of tower leg
A_{leg}:	1.70	in^2 - area of tower leg
Di:	2.47	in - inside diameter of tower leg
t_{leg}:	0.20	in - thickness of tower leg
f`c:	0.00	ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

Input - Sleeve R/F 3 XS Gap Check: OK

F_{y_sleeve}:	35.00	ksi - minimum specified yield strength of sleeve r/f
F_{u_sleeve}:	60.00	ksi - minimum specified ultimate strength of sleeve r/f
r_{x_sleeve}:	0.50	in - minimum radius of gyration of sleeve r/f about the x-axis
r_{y_sleeve}:	1.14	in - minimum radius of gyration of sleeve r/f about the y-axis
A_{sleeve}:	1.51	in^2 - area of sleeve r/f
t_{sleeve}:	0.30	in - thickness of tower leg
Termination:	Connected to Flange	

Input - Sleeve Connection to Leg

a:	12.00	in - spacing of connectors connecting the sleeve to the leg
D:	3.00	- weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)
Length //:	12.00	in - length of weld on each side of the leg at the termination
Length ^:	5.50	in - length of weld at the bottom/top of the leg sleeve at termination (pD/2)
No:	2.00	- number of longitudinal welds per end of the leg (typically near side & far side, so 2)
F_{EXX}:	70.00	ksi - weld electrode classification
Width:	3.50	in - maximum width of the built-up leg
Gap:	0.00	in - length of leg considered for crushing

Input - Built-up Leg Section 2.5 STD w/3 XS Half Sleeve

r_{x_bu}:	0.92	in - minimum radius of gyration of the built-up section about the x-axis
r_{y_bu}:	1.04	in - minimum radius of gyration of the built-up section about the y-axis

Input - Grouted Leg

Ec:	0	ksi - Modulus of Elasticity of Grout
E_leg:	29,000	ksi - Modulus of Elasticity of Leg
E_sleeve:	29,000	ksi - Modulus of Elasticity of Sleeve

Project Name:	Straits Turnpike	**Engineer:**	ML
Project Number:	TEP#25628.147080	**Check:**	SJJ
Client Site Number:	US-CT-1003	**Date:**	12/12/2017
Elevation:	140 - 150ft	**CODE:**	TIA-G

Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F

ϕc =	0.90	- LRFD strength reduction factor (compression)	Mast St.: 1.00 - from tnxTower
ϕt =	0.90	- LRFD strength reduction factor (tension)	
ϕw =	0.75	- LRFD strength reduction factor (weld shear)	
ϕv =	0.75	- LRFD strength reduction factor (shear)	

Input - Loads

$P_{initial}$:	6.12059	kips - force from initial load (no wind)
P_{wind}:	120.397	kips - force due to final loading including reinforcement
T_u:	105.984	kips - maximum load on leg

Quick Check

Weld Size:	OK
Weld Connection:	29.4%
Crushing Check:	58.7%
Leg Comp. Check:	59.1%
Sleeve Check:	61.0%
Built-up Check:	63.3%
Slenderness Check:	OK
Leg Tension Check:	51.9%

Input - Tower Leg 3.5 STD

K:	1.00	- effective length factor for leg
L_u:	2.60	ft - unbraced length of tower leg
F_{y_leg}:	55.00	ksi - minimum specified yield strength of tower leg
F_{u_leg}:	70.00	ksi - minimum specified ultimate strength of tower leg
r:	1.34	in - minimum radius of gyration of tower leg
A_{leg}:	2.68	in^2 - area of tower leg
Di:	3.55	in - inside diameter of tower leg
t_{leg}:	0.23	in - thickness of tower leg
$f`_c$:	0.00	ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

Input - Sleeve R/F 4 STD Gap Check: OK

F_{y_sleeve}:	50.00	ksi - minimum specified yield strength of sleeve r/f
F_{u_sleeve}:	62.00	ksi - minimum specified ultimate strength of sleeve r/f
r_{x_sleeve}:	0.66	in - minimum radius of gyration of sleeve r/f about the x-axis
r_{y_sleeve}:	1.51	in - minimum radius of gyration of sleeve r/f about the y-axis
A_{sleeve}:	1.59	in^2 - area of sleeve r/f
t_{sleeve}:	0.24	in - thickness of tower leg
Termination:	Connected to Flange	

Input - Sleeve Connection to Leg

a:	12.00	in - spacing of connectors connecting the sleeve to the leg
D:	3.00	- weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)
Length //:	12.00	in - length of weld on each side of the leg at the termination
Length ^:	7.07	in - length of weld at the bottom/top of the leg sleeve at termination (pD/2)
No:	2.00	- number of longitudinal welds per end of the leg (typically near side & far side, so 2)
F_{EXX}:	70.00	ksi - weld electrode classification
Width:	4.50	in - maximum width of the built-up leg
Gap:	0.00	in - length of leg considered for crushing

Input - Built-up Leg Section 3.5 STD w/4 STD Half Sleeve

r_{x_bu}:	1.31	in - minimum radius of gyration of the built-up section about the x-axis
r_{y_bu}:	1.40	in - minimum radius of gyration of the built-up section about the y-axis

Input - Grouted Leg

Ec:	0	ksi - Modulus of Elasticity of Grout
E_leg:	29,000	ksi - Modulus of Elasticity of Leg
E_sleeve:	29,000	ksi - Modulus of Elasticity of Sleeve

Project Name:	Straits Turnpike	**Engineer:**	ML
Project Number:	TEP#25628.147080	**Check:**	SJJ
Client Site Number:	US-CT-1003	**Date:**	12/12/2017
Elevation:	120 - 140ft	**CODE:**	TIA-G

Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F

ϕc =	0.90	- LRFD strength reduction factor (compression)	Mast St.: 1.00 - from tnxTower
ϕt =	0.90	- LRFD strength reduction factor (tension)	
ϕw =	0.75	- LRFD strength reduction factor (weld shear)	
ϕv =	0.75	- LRFD strength reduction factor (shear)	

Input - Loads

$P_{initial}$:	7.53551	kips - force from initial load (no wind)
P_{wind}:	160.852	kips - force due to final loading including reinforcement
T_u:	142.558	kips - maximum load on leg

Quick Check

Weld Size:	OK
Weld Connection:	27.5%
Crushing Check:	40.0%
Leg Comp. Check:	40.2%
Sleeve Check:	44.3%
Built-up Check:	49.4%
Slenderness Check:	OK
Leg Tension Check:	36.9%

Input - Tower Leg 5 STD

K:	1.00	- effective length factor for leg
L_u:	6.68	ft - unbraced length of tower leg
F_{y_leg}:	55.00	ksi - minimum specified yield strength of tower leg
F_{u_leg}:	70.00	ksi - minimum specified ultimate strength of tower leg
r:	1.88	in - minimum radius of gyration of tower leg
A_{leg}:	4.30	in^2 - area of tower leg
Di:	5.05	in - inside diameter of tower leg
t_{leg}:	0.26	in - thickness of tower leg
f`c:	0.00	ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

Input - Sleeve R/F 6 XH Gap Check: OK

F_{y_sleeve}:	46.00	ksi - minimum specified yield strength of sleeve r/f
F_{u_sleeve}:	62.00	ksi - minimum specified ultimate strength of sleeve r/f
r_{x_sleeve}:	0.96	in - minimum radius of gyration of sleeve r/f about the x-axis
r_{y_sleeve}:	2.19	in - minimum radius of gyration of sleeve r/f about the y-axis
A_{sleeve}:	4.20	in^2 - area of sleeve r/f
t_{sleeve}:	0.43	in - thickness of tower leg
Termination:	Connected to Flange	

Input - Sleeve Connection to Leg

a:	15.50	in - spacing of connectors connecting the sleeve to the leg
D:	5.00	- weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)
Length //:	12.00	in - length of weld on each side of the leg at the termination
Length ^:	10.41	in - length of weld at the bottom/top of the leg sleeve at termination (pD/2)
No:	2.00	- number of longitudinal welds per end of the leg (typically near side & far side, so 2)
F_{EXX}:	70.00	ksi - weld electrode classification
Width:	6.63	in - maximum width of the built-up leg
Gap:	0.00	in - length of leg considered for crushing

Input - Built-up Leg Section 5 STD w/6 XH Half Sleeve

r_{x_bu}:	1.77	in - minimum radius of gyration of the built-up section about the x-axis
r_{y_bu}:	2.04	in - minimum radius of gyration of the built-up section about the y-axis

Input - Grouted Leg

Ec:	0	ksi - Modulus of Elasticity of Grout
E_leg:	29,000	ksi - Modulus of Elasticity of Leg
E_sleeve:	29,000	ksi - Modulus of Elasticity of Sleeve

Project Name:	Straits Turnpike	**Engineer:**	ML
Project Number:	TEP#25628.147080	**Check:**	SJJ
Client Site Number:	US-CT-1003	**Date:**	12/12/2017
Elevation:	80 - 100ft	**CODE:**	TIA-G

Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F

ϕc =	0.90	- LRFD strength reduction factor (compression)	Mast St.: 1.00 - from tnxTower
ϕt =	0.90	- LRFD strength reduction factor (tension)	
ϕw =	0.75	- LRFD strength reduction factor (weld shear)	
ϕv =	0.75	- LRFD strength reduction factor (shear)	

Input - Loads

$P_{initial}$:	10.7955	kips - force from initial load (no wind)
P_{wind}:	233.094	kips - force due to final loading including reinforcement
T_u:	205.658	kips - maximum load on leg

Quick Check

Weld Size:	OK
Weld Connection:	38.1%
Crushing Check:	44.1%
Leg Comp. Check:	44.2%
Sleeve Check:	53.0%
Built-up Check:	49.5%
Slenderness Check:	OK
Leg Tension Check:	42.2%

Input - Tower Leg 6 STD

K:	1.00	- effective length factor for leg
L_u:	3.43	ft - unbraced length of tower leg
F_{y_leg}:	55.00	ksi - minimum specified yield strength of tower leg
F_{u_leg}:	70.00	ksi - minimum specified ultimate strength of tower leg
r:	2.25	in - minimum radius of gyration of tower leg
A_{leg}:	5.58	in^2 - area of tower leg
Di:	6.07	in - inside diameter of tower leg
t_{leg}:	0.28	in - thickness of tower leg
f`c:	0.00	ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

Input - Sleeve R/F 7 XH Gap Check: OK

F_{y_sleeve}:	42.00	ksi - minimum specified yield strength of sleeve r/f
F_{u_sleeve}:	63.00	ksi - minimum specified ultimate strength of sleeve r/f
r_{x_sleeve}:	1.10	in - minimum radius of gyration of sleeve r/f about the x-axis
r_{y_sleeve}:	2.53	in - minimum radius of gyration of sleeve r/f about the y-axis
A_{sleeve}:	5.60	in^2 - area of sleeve r/f
t_{sleeve}:	0.50	in - thickness of tower leg
Termination:	Connected to Flange	

Input - Sleeve Connection to Leg

a:	12.00	in - spacing of connectors connecting the sleeve to the leg
D:	5.00	- weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)
Length //:	12.00	in - length of weld on each side of the leg at the termination
Length ^:	11.98	in - length of weld at the bottom/top of the leg sleeve at termination (pD/2)
No:	2.00	- number of longitudinal welds per end of the leg (typically near side & far side, so 2)
F_{EXX}:	70.00	ksi - weld electrode classification
Width:	7.63	in - maximum width of the built-up leg
Gap:	0.00	in - length of leg considered for crushing

Input - Built-up Leg Section 6 STD w/7 XH Half Sleeve

r_{x_bu}:	2.10	in - minimum radius of gyration of the built-up section about the x-axis
r_{y_bu}:	2.39	in - minimum radius of gyration of the built-up section about the y-axis

Input - Grouted Leg

Ec:	0	ksi - Modulus of Elasticity of Grout
E_leg:	29,000	ksi - Modulus of Elasticity of Leg
E_sleeve:	29,000	ksi - Modulus of Elasticity of Sleeve

Project Name:	Straits Turnpike	**Engineer:**	ML
Project Number:	TEP #25628.147080	**Check:**	SJJ
Client Site Number:	US-CT-1003	**Date:**	12/12/2017

Anchor Bolt Reinforcement:

Result Summary 71.6%

Input - Loads

Tu:	318.01	kip - maximum leg uplift
Pu:	369.30	kip - maximum leg download
Vu:	31.24	kips - maximum leg shear (uplift)
Vu:	35.81	kips - maximum leg shear (download)
η:	0.55	Eta factor (Existing)
η:	0.55	Eta factor (Proposed)

Geometry

n_1:	8	quantity of existing anchor bolts
Ex. Bolt Grade:	A36	
Ex. Bolt Size:	1.50	in
n_2:	0	quantity of reinforcing bolts
Pr. Bolt Grade:	A36	
Pr. Bolt Size:	1.50	in

Case 1 - Max T/C in Reinforcement

T_u:	0.00	kips - maximum tension force in bolt
C_u:	0.00	kips - maximum compression force in bolt
V_u:	0.00	kips - maximum shear force in bolt (uplift)
V_u:	0.00	kips - maximum shear force in bolt (download)

Case 1I - Max T/C in Existing Bolts

T_u:	39.75	kips - maximum tension force in bolt
C_u:	46.16	kips - maximum compression force in bolt
V_u:	3.91	kips - maximum shear force in bolt (uplift)
V_u:	4.48	kips - maximum shear force in bolt (download)

Anchor Rods (TIA-G 4.9.9) ϕ: 0.80

	No	are the reinforcing bolts Williams Form?
A_{nt}:	1.410	in^2 - tensile area of reinforcing bolt
R_y:	36.00	ksi - minimum yeild strength of reinforcing bolt
R_u:	58.00	ksi - minimum tensile strength of reinforcing bolt
A_{nt}:	1.410	in^2 - tensile area of existing anchor bolt
F_y:	36.00	ksi - minimum yeild strength of existing bolt
F_u:	58.00	ksi - minimum tensile strength of existing bolt
ϕR_n:	65.42	kips - design capacity of reinforcement anchor bolts steel failure
ϕR_n:	65.42	kips - design capacity of existing anchor bolts

Interaction:	0.000	interaction for reinforcement anchor bolt
Interaction:	0.716	interaction for existing anchor bolt

Anchor Bolts are Adequate	71.6%

TOWER ENGINEERING PROFESSIONALS

JOB:	Straits Turnpike (US-CT-1003)		
SHEET #:	1	OF	2
CALCULATED BY:	ML	DATE	12/12/2017
CHECKED BY:	SJJ	DATE	12/12/2017

Mat Foundation Design for Self Supporting Tower - TIA-222-G

q_a, ALLOWABLE SOIL PRESS. (ksf)	6
NET OR GROSS BEARING?	NET
SAFETY FACTOR IN q_a	2
SOIL DENSITY (pcf)	125
TOWER FACE WIDTH (ft.)	21.5
Tower Eccentricity (ft)	0.00

$f * q_n$ = 9.0 ksf

F'c (ksi)	3
F'y (ksi)	60

Distance between tower centroid and the foundation centroid

Base Reactions LC1: 1.2D + 1.6W		Base Reactions LC2: 0.9D + 1.6W	
M_u, MOMENT (k-ft)	6472.3	M, MOMENT (k-ft)	6472.3
P_t, AXIAL (k)	65.1	P_t, AXIAL (k)	48.8
H, SHEAR (k)	55.5	H, SHEAR (k)	55.5

Try:	L (ft.)	B (ft.)	t (ft.)	Soil depth to TOP of mat (ft.)	Soil depth to BOT. of mat (ft.)	Pier dia./width (ft.)	Pier Height, h (ft.)	Pier Shape
	33	33	4	5.416	9.416	4.00	5.67	Square

W_f, WEIGHT OF FOUNDATION (k) =	694.2	Concrete Volume (cu yd)	171.4
W_s, WEIGHT OF SOIL (k) =	704.8		

CHECK BEARING CAPACITY FOR LC1: 1.2D + 1.6W

$P = P_t + 1.2*Wf + 1.2*Ws$ =	1743.9	k
$e = (M_{ot} + P_t*e_t)/P$ =	4.02	ft
L/6 =	5.50	ft
90 Axis: q_{max} =	1.59	ksf
Diag. Axis: q_{max} =	2.08	ksf

Capacity: **23.1%**

CHECK BEARING FAILURE[1] FOR LC2: 0.9D +1.6W

$P = P_t + 0.9*Wf + 0.9*Ws$ =		1307.9	k
90° Axis	$M_{f\,Qn}$[2] =	19033.7	k-ft
	$M_{ot}/M_{f\,Qn}$ =	0.368	
Diag. Axis	$M_{f\,Qn}$ =	20035.0	k-ft
	$M_{ot}/M_{f\,Qn}$ =	0.350	

Capacity: **36.8%**

[1] **Per effective bearing area (AASHTO LRFD Bridge Design Specifications, 4th Ed.)**

[2] **$M_{f\,Qn}$ is the applied moment for which qmax = $f\,Q_n$**

CHECK OVERTURNING: LC2 CONTROLS

$M_{ot} = M+H*(t+h)$ =	7008.9	k-ft
$M_{st}=P*(L/2-e_t)+(W_{f+S}*L/2)$ =	21580.4	k-ft
M_{ot}/M_{st} =	0.325	

Capacity: **32.5%**

TOWER ENGINEERING PROFESSIONALS

JOB:	Straits Turnpike (US-CT-1003)		
SHEET NUMBER:	2	OF	2
CALCULATED BY:	ML	DATE	12/12/2017

Stress and capacity calculations of reinforced concrete mat assume a fully rigid foundation and a linear (triangular or trapeziodal) contact stress distribution based on factored loads.

CHECK BEAM SHEAR

Vu = 146.3 k
f Vc = 1415.3 k Vc > Vu **O.K**

Capacity: **10.3%**

CHECK PUNCHING SHEAR

Vu = 295.2 k
f Vc = 2009.1 k Vc > Vu **O.K**

Capacity: **14.7%**

CALCULATE REINFORCING REQUIRED

F'c = 3.0 ksi F'y = 60.0 ksi

Temp & Shrinkage Reinforcement, As, temp = 0.39 in^2/ft (ACI 318 Sec. 10.5.4)

BOTTOM REINFORCING

Bar Size= 8
Bar Spacing = 11.8 in.
d = 43.5 in.

Mu= -546.5 in-k/ft

f Mn=0.9*As*Fy*(d-1/2*As*Fy/(0.85*b*F'c))

Solution: As,req = 0.23 in^2/ft As,temp controls
Check, As= 0.80 in^2/ft

Capacity: **48.5%**

TOP REINFORCING

Bar Size= 8
Bar Spacing = 11.8 in.
d= 43.5 in.

Mu= 506.8 in-k/ft

f Mn=0.9*As*Fy*d(1-0.59*As*Fy/(b*d*F'c))

Solution: As,req = 0.22 in^2/ft As,temp controls
Check, As= 0.80 in^2/ft

Capacity: **48.5%**

		PASS	PASS			
	Results Summary:	LC1	LC2		Straits Turnpike (US-CT-1003)	
	Soil Interaction:	N/A	N/A	TEP #:	25628.147080	
Drilled Caisson Tool - Pier Check	Foundation Structural:	26.7%	53.7%	Analysis:	ML	12/12/2017
				Check:	SJJ	12/12/2017

Code Revisions: TIA-222-G ACI 318-11

Tower Type: Self Support

	LC1	LC2	
Moment:	0.00	0.00	kip-ft
Axial (download):	369.30	0.00	kip
Shear:	35.81	31.24	kip
Axial (uplift):	0.00	318.01	kip

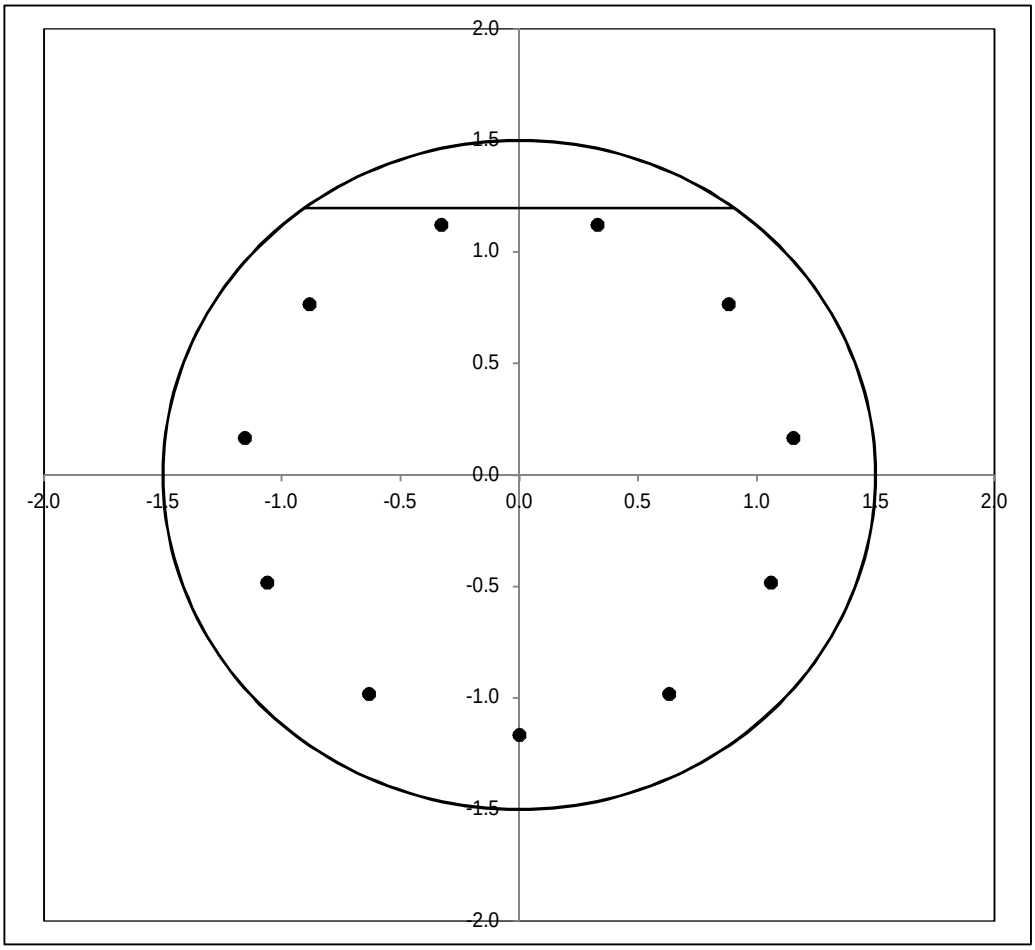
Shaft Information

Diameter:	3.00	ft
Projection:	0.25	ft
Caisson Length:	5.67	ft
f'c:	3.000	ksi
Max εc:	0.003	in/in

Cage 1 Reinforcement

Tie Bar Size:	4	*(fy = 60.0 ksi)*
Clear Cover to Tie:	3.00	*in (Cage Ø = 28.00in)*
Tie Bar Spacing:	16.00	in
Vertical Bar Size:	8	
Vertical Bar Quantity:	11	*(ρ =0.854%)*
fy:	60.0	ksi
E:	29,000	ksi

Reinforcement Capacity



		LC1	LC2	
	Vu =	35.8	35.8	kip
	Vc =	131.7	41.8	kip
fy,tie = 60.0	Vs =	47.1	47.1	kip
	ϕVn =	134.2	66.7	kip
	Capacity =	26.7%	53.7%	
		PASS	PASS	

	LC1	LC2	
Mu =	0.0	0.0	kip-ft
ϕMn =	802.5	191.4	kip-ft
Capacity =	0.0%	0.0%	
	PASS	PASS	

Sprint

PROJECT:	DO MACRO UPGRADE
SITE NAME:	MIDDLEBURY/OMNIPOINT
SITE CASCADE:	CT33XC532
SITE ADDRESS:	1 SERVICE ROAD MIDDLEBURY, CT 06762
SITE TYPE:	SELF SUPPORT TOWER
MARKET:	NORTHERN CONNECTICUT

SITE INFORMATION

TOWER OWNER:
PHOENIX TOWER INTERNATION
1001 YAMATO ROAD, SUITE 105
BOCA RATON, FL 33431

PTI SITE NAME: STRAITS TURNPIKE
PTI SITE NUMBER: US-CT-1003

LATITUDE (NAD83):
41° 32' 08.8" N
41.535788

LONGITUDE (NAD83):
73° 05' 21.3" W
-73.089237

COUNTY:
NEW HAVEN CONTY

ZONING JURISDICTION:
CONNECTICUT SITING COUNCIL

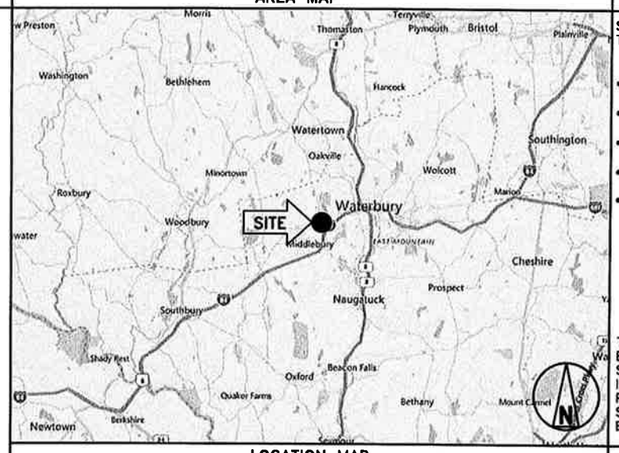
ZONING DISTRICT:
TBD

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

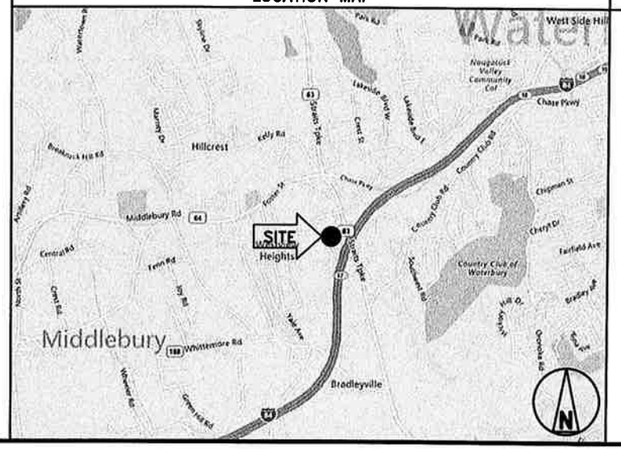
AAV PROVIDER:
AT&T
PHONE: (800) 288-2020

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

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- INSTALL (3) PANEL ANTENNAS
- INSTALL (6) RRH'S BEHIND PROPOSED ANTENNA
- INSTALL (30) JUMPER CABLES
- INSTALL (1) HYBRID CABLE
- INSTALL 2.5 EQUIPMENT INSIDE EXISTING N.V. MMBS CABINET

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

APPLICABLE CODES

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

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

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

DRAWING INDEX

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PLANS PREPARED FOR:
Sprint

PLANS PREPARED BY:
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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#. (516) 306-3740

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED/ISSUED FOR REVIEW	02/12/18	ETC	1
ISSUED FOR REVIEW	1/26/18	RCD	0

SITE NAME:
MIDDLEBURY/
OMNIPOINT

SITE NUMBER:
CT33XC532

SITE ADDRESS:
1 SERVICE ROAD
MIDDLEBURY, CT 06762

SHEET DESCRIPTION:
TITLE SHEET
& PROJECT DATA

SHEET NUMBER:
T-1

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

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

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

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

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

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

1.5 DEFINITIONS:

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

B. COMPANY: SPRINT CORPORATION

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

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

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

F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

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

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

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

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

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

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

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

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

1 ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.

2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.

3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.

4. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.

5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.

6. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

3.2 DELIVERABLES:

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

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

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

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

1.3 NOTICE TO PROCEED

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 FUNCTIONAL REQUIREMENTS:

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

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

C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

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

PLANS PREPARED FOR:

Sprint

PLANS PREPARED BY:

INFINIGY
FROM ZERO TO INFINIGY
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www.infinigy.com
JOB NUMBER 526-104

PROJECT MANAGER:

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

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
FEB 12 2018
No. 24705
LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED/ISSUED FOR REVIEW	02/12/18	ETC	1
ISSUED FOR REVIEW	1/26/18	RCD	0

SITE NAME:

MIDDLEBURY/ OMNIPOINT

SITE NUMBER:

CT33XC532

SITE ADDRESS:

1 SERVICE ROAD
MIDDLEBURY, CT 06762

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-1

CONTINUE FROM SP-1

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

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

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

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

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

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

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

E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

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

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

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

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

1.3 SUBMITTALS:

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

B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.

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

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

1.4 TESTS AND INSPECTIONS:

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

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

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

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

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

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

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

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

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

3.2 REQUIRED TESTS:

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

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

3.3 REQUIRED INSPECTIONS

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

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

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

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Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-104

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

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24048
LICENSED PROFESSIONAL ENGINEER
FEB 12 2018

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED/ISSUED FOR REVIEW	02/12/18	ETC	1
ISSUED FOR REVIEW	1/26/18	RCD	0

SITE NAME:
MIDDLEBURY/ OMNIPOINT

SITE NUMBER:
CT33XC532

SITE ADDRESS:
1 SERVICE ROAD
MIDDLEBURY, CT 06762

SHEET DESCRIPTION:
SPRINT SPECIFICATIONS

SHEET NUMBER:
SP-2

CONTINUE FROM SP-2

7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.
8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC.). SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.
9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.
10. SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
11. ALL AVAILABLE JURISDICTIONAL INFORMATION
12. PDF SCAN OF REDLINES PRODUCED IN FIELD

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

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

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

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

1. CONCRETE MIX AND CYLINDER BREAK REPORTS.
2. STRUCTURAL BACKFILL COMPACTION REPORTS.
3. SITE RESISTANCE TO EARTH TEST.
4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.
6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".

B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;

1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.
2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;
3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS – PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.
4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING – TOP AND BOTTOM; PHOTOS OF COAX GROUNDING--TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
5. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;
6. SITE LAYOUT – PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
7. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.
8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.
9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 WEEKLY REPORTS:

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

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

3.2 PROJECT CONFERENCE CALLS:

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

3.3 PROJECT TRACKING IN SMS:

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

3.4 ADDITIONAL REPORTING:

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

3.5 PROJECT PHOTOGRAPHS:

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

1. 1SHELTER AND TOWER OVERVIEW.
2. TOWER FOUNDATION(S) – FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
5. PHOTOS OF TOWER SECTION STACKING.
6. CONCRETE TESTING / SAMPLES.
7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
9. SHELTER FOUNDATION--FORMS AND STEEL BEFORE POURING.
10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.
11. COAX CABLE ENTRY INTO SHELTER.
12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.
14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.
18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.
19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.
21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
24. FENCE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
25. ALL BTS GROUND CONNECTIONS.
26. ALL GROUND TEST WELLS.
27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.
28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.
29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.
30. GPS ANTENNAS.
31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.
32. DOGHOUSE/CABLE EXIT FROM ROOF.
33. EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.
34. MASTER BUS BAR.
35. TELCO BOARD AND NIU.
36. ELECTRICAL DISTRIBUTION WALL.
37. CABLE ENTRY WITH SURGE SUPPRESSION.
38. ENTRANCE TO EQUIPMENT ROOM.
39. COAX WEATHERPROOFING-TOP AND BOTTOM OF TOWER.
40. COAX GROUNDING -TOP AND BOTTOM OF TOWER.
41. ANTENNA AND MAST GROUNDING.
42. LANDSCAPING – WHERE APPLICABLE.

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

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www.infinigy.com
JOB NUMBER 526-104

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

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
FEB 2 2018
No. 24705
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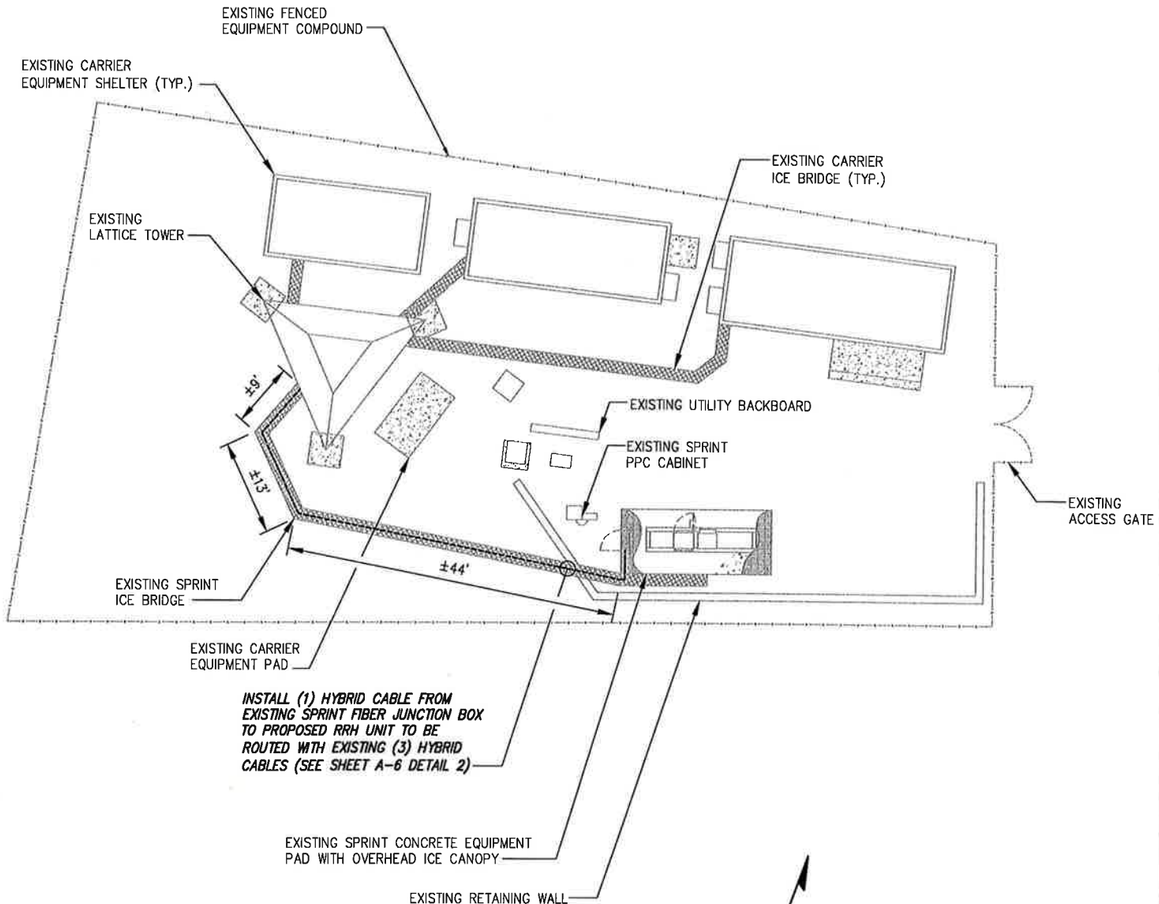
SHEET DESCRIPTION:
SPRINT SPECIFICATIONS

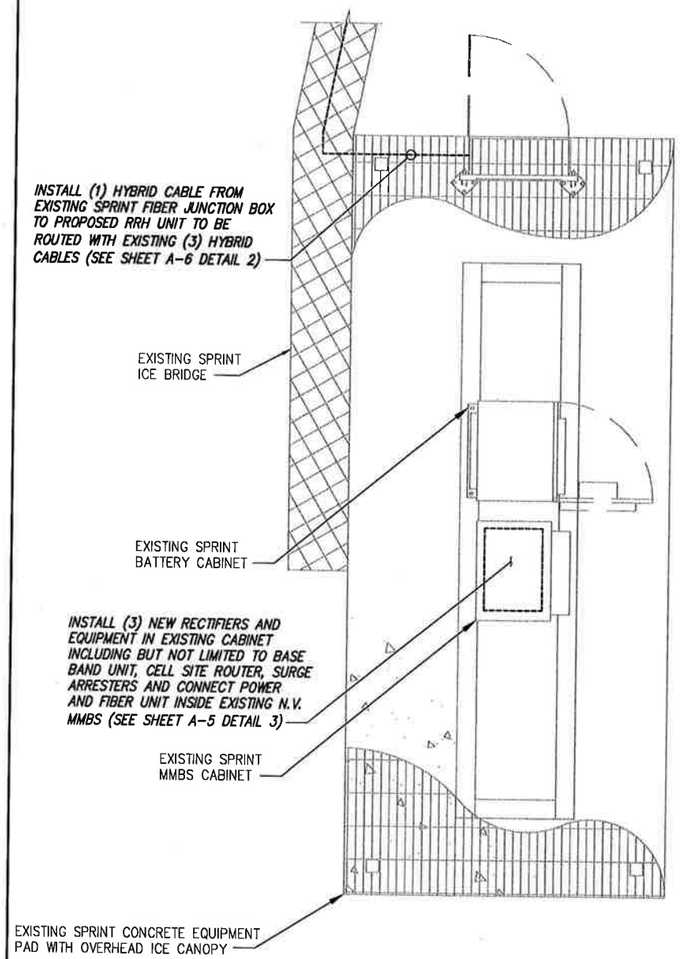
SHEET NUMBER:
SP-3



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

GRAPHIC SCALE:
20' 10' 0 10' 20'
SCALE (11x17): 1" = 20'-0"
SCALE (22x34): 1" = 10'-0"

OVERALL SITE PLAN | SCALE: AS NOTED | 1



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

SPRINT EQUIPMENT PLAN | SCALE: AS NOTED | 2

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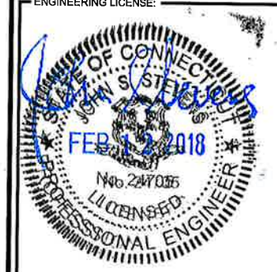

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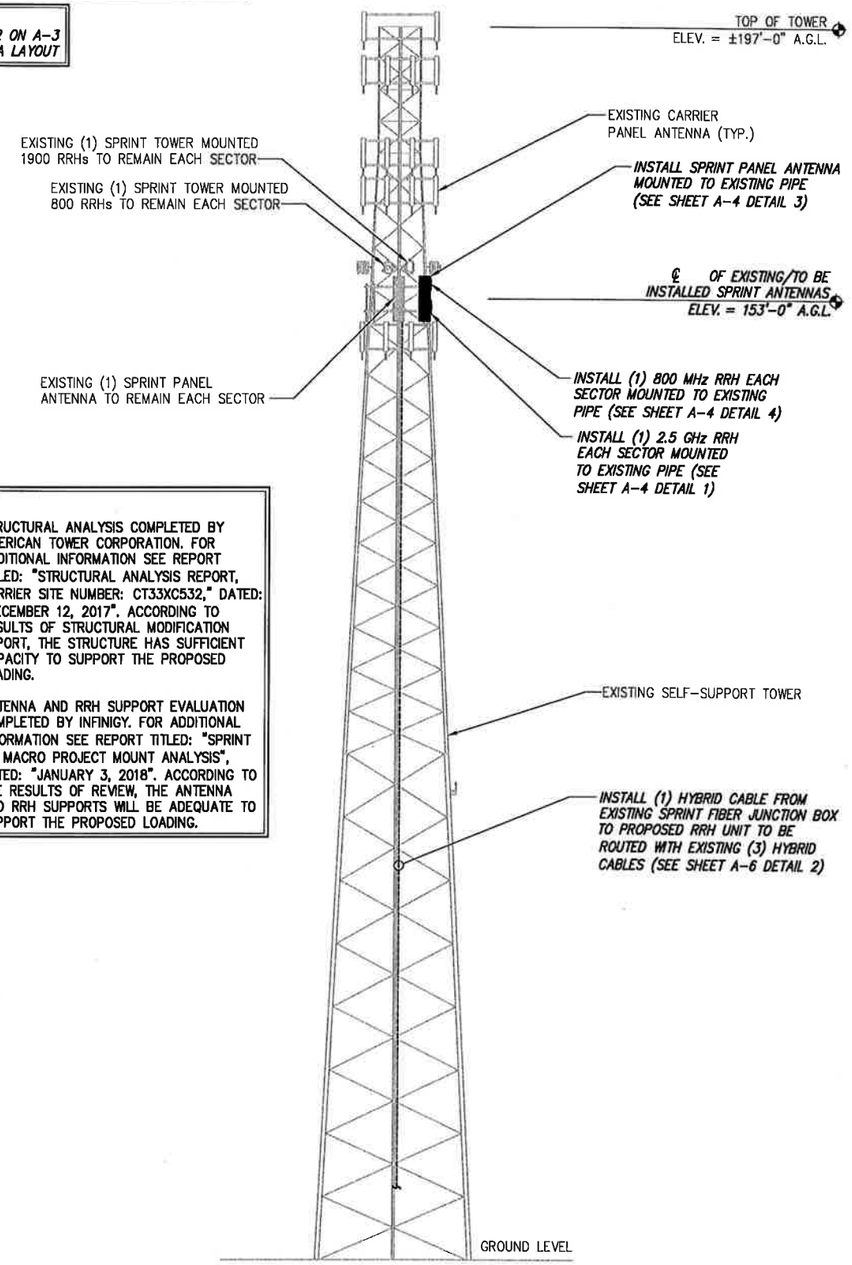
SHEET DESCRIPTION:
SITE PLAN

SHEET NUMBER:
A-1

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

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



NOTE:
- STRUCTURAL ANALYSIS COMPLETED BY AMERICAN TOWER CORPORATION. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "STRUCTURAL ANALYSIS REPORT, CARRIER SITE NUMBER: CT33XC532," DATED: "DECEMBER 12, 2017". ACCORDING TO RESULTS OF STRUCTURAL MODIFICATION REPORT, THE STRUCTURE HAS SUFFICIENT CAPACITY TO SUPPORT THE PROPOSED LOADING.
- ANTENNA AND RRH SUPPORT EVALUATION COMPLETED BY INFINIGY. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "SPRINT DO MACRO PROJECT MOUNT ANALYSIS", DATED: "JANUARY 3, 2018". ACCORDING TO THE RESULTS OF REVIEW, THE ANTENNA AND RRH SUPPORTS WILL BE ADEQUATE TO SUPPORT THE PROPOSED LOADING.

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	DT465B-2XR	COMMSCOPE	290°	1	–	(1) 800 MHZ 2X50W RRH (1) TD-RRH8X20-25 W/ SOLAR SHIELD	SEE SHEET A-5 DETAIL 1	±245'*	±153' AGL
	EXISTING	APXVSPP18-C-A20	RFS	290°	1	–	(1) 1900 MHz 4X45 RRH (1) 2x50W 800MHz RRHs	EXISTING COAX		
BETA	PROPOSED	DT465B-2XR	COMMSCOPE	75°	1	–	(1) 800 MHZ 2X50W RRH (1) TD-RRH8X20-25 W/ SOLAR SHIELD	SEE SHEET A-5 DETAIL 1		±153' AGL
	EXISTING	APXVSPP18-C-A20	RFS	75°	1	–	(1) 1900 MHz 4X45 RRH (1) 2x50W 800MHz RRHs	EXISTING COAX		
GAMMA	PROPOSED	DT465B-2XR	COMMSCOPE	170°	1	–	(1) 800 MHZ 2X50W RRH (1) TD-RRH8X20-25 W/ SOLAR SHIELD	SEE SHEET A-5 DETAIL 1		±153' AGL
	EXISTING	APXVSPP18-C-A20	RFS	170°	1	–	(1) 1900 MHz 4X45 RRH (1) 2x50W 800MHz RRHs	EXISTING COAX		

PROJECT SCOPE:

INSTALL: (3) PANEL ANTENNAS AND (6) 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

NOT USED | NO SCALE | 3

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OFFICE#: (518) 308-3740

ENGINEER OF RECORD:
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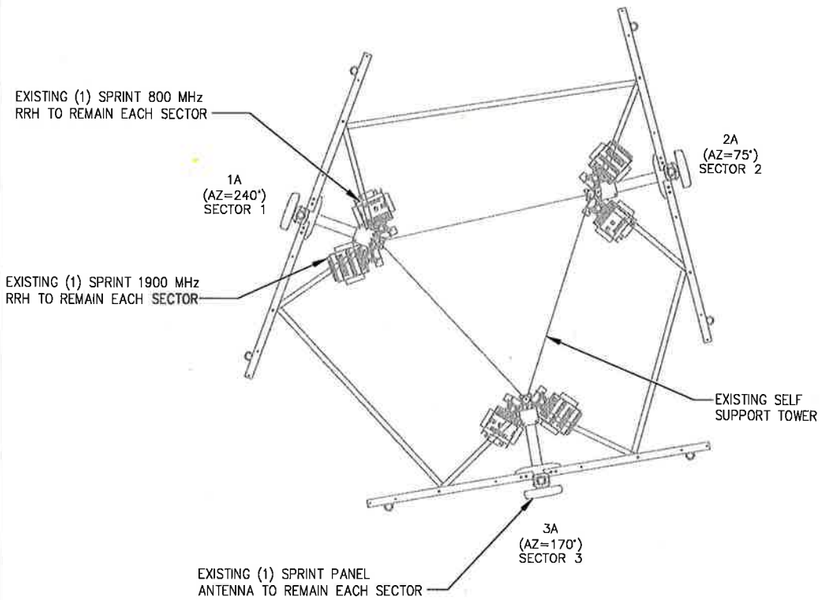
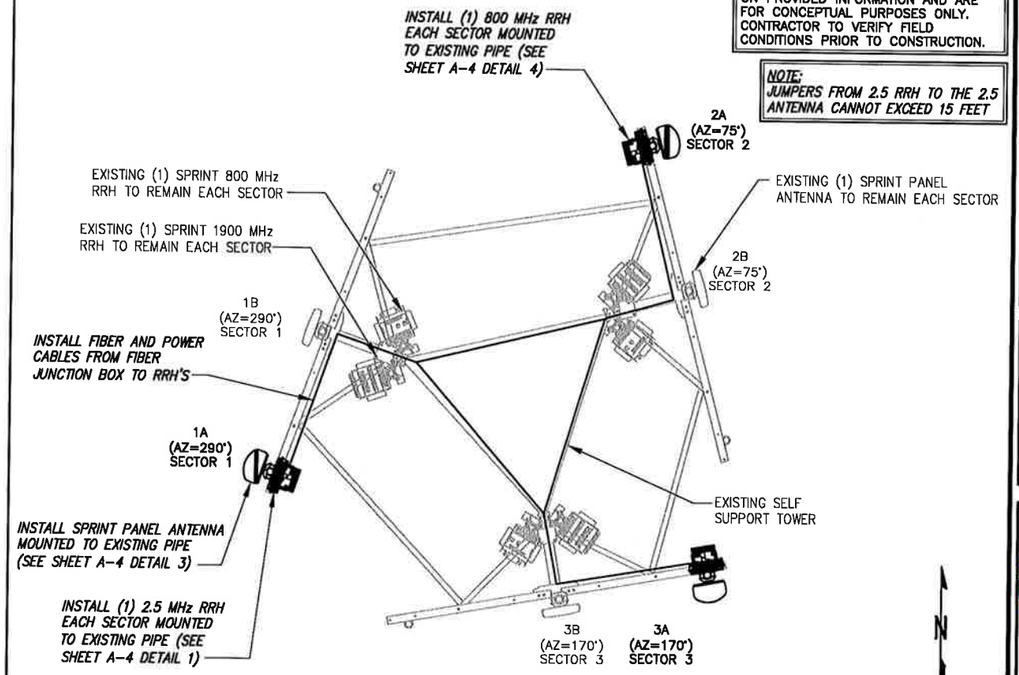
TOWER ELEVATION

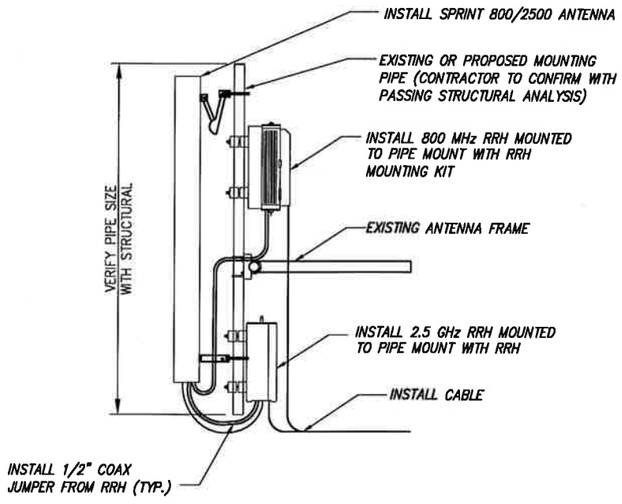
SHEET NUMBER:
A-2



EXISTING ANTENNA LAYOUT | NO SCALE | 1



FINAL ANTENNA & RRH LAYOUT | NO SCALE | 2



TYPICAL ANTENNA & RRH MOUNTING DETAILS | NO SCALE | 3

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

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

NOTES:

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

NOT USED | NO SCALE | 4

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

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

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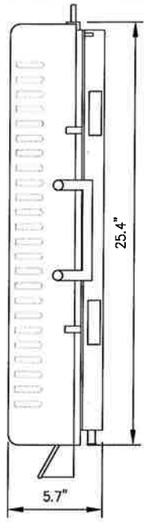
SHEET DESCRIPTION:
ANTENNA LAYOUT
& MOUNTING DETAILS

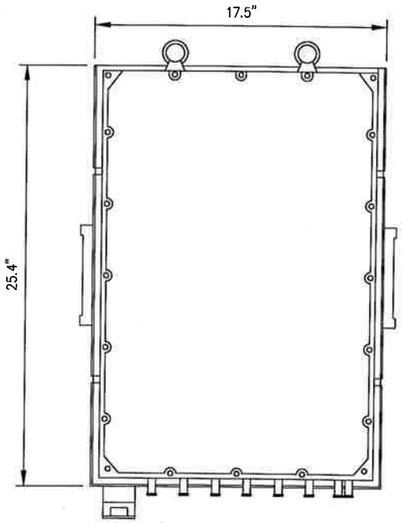
SHEET NUMBER:
A-3

RRH: ALCATEL LUCENT TD-RRH8X20

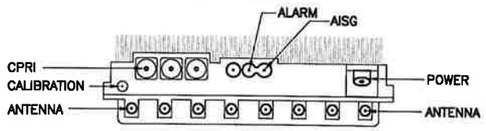
COLOR: LIGHT GREY
WEIGHT: 70 LBS.



SIDE VIEW



FRONT VIEW



PLAN VIEW

NOTES

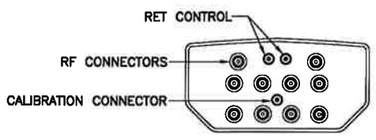
COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.

2.5 RRH'S | NO SCALE | 1

DETAIL NOT USED | NO SCALE | 2

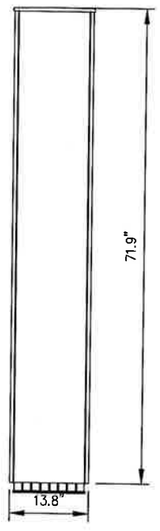
ANTENNA COMMSCOPE DT465B-2XR

RADOME MATERIAL:	FIBERGLASS
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD.in(mim):	71.9"x13.8"x8.2" (1825x350x209mm)
WEIGHT:	58 lbs
CONNECTORS:	(2) 7/16" DIN FEMALE
	(8) 4.1/9.5 DIN FEMALE



PLAN VIEW

SIDE VIEW



FRONT VIEW

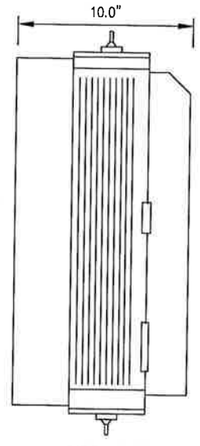
800/2500 ANTENNA | NO SCALE | 3

RRH: ALCATEL LUCENT RRH 800 MHz 2x50W

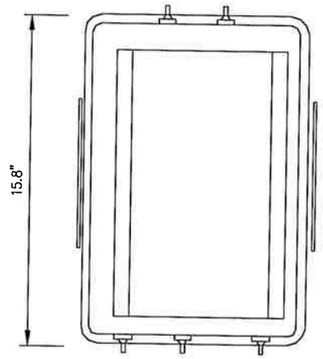
COLOR: LIGHT GREY
WEIGHT: 53 LBS.

NOTES

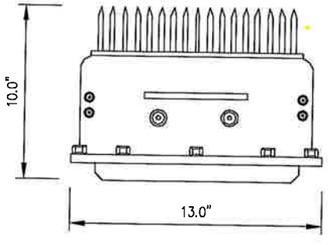
COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.



SIDE VIEW



FRONT VIEW



PLAN VIEW

800 MHz RRH | NO SCALE | 4

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www.infinigy.com
JOB NUMBER 526-104

PROJECT MANAGER:
AIROSMITH DEVELOPMENT
32 CLINTON ST.
SARATOGA SPRINGS, NY 12866
OFFICE#. (516) 308-3740

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 29105
LICENSED PROFESSIONAL ENGINEER
DEC 12 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED/ISSUED FOR REVIEW	02/12/18	ETC	1
ISSUED FOR REVIEW	1/26/18	RCD	0

SITE NAME:
MIDDLEBURY/ OMNIPOINT

SITE NUMBER:
CT33XC532

SITE ADDRESS:
1 SERVICE ROAD
MIDDLEBURY, CT 06762

SHEET DESCRIPTION:
EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:
A-4

RFS HYBRIFLEX RISER CABLE SCHEDULE

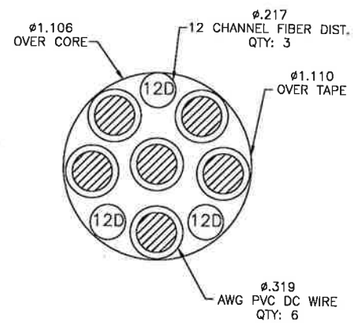
Fiber Only (Existing DC Power)	**Hybrid cable** MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50 ft	50 ft
	MN: HB058-M12-075F	75 ft
	MN: HB058-M12-100F	100 ft
	MN: HB058-M12-125F	125 ft
	MN: HB058-M12-150F	150 ft
	MN: HB058-M12-175F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

RFS HYBRIFLEX JUMPER CABLE SCHEDULE

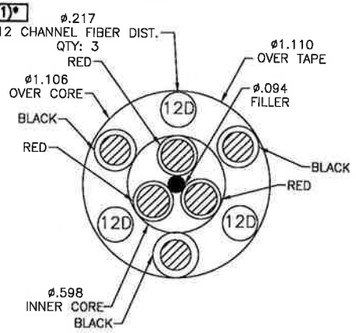
Fiber Only	**Hybrid Jumper cable** MN: HBF012-M3-5F1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN: HBF012-M3-10F1	10 ft
	MN: HBF012-M3-15F1	15 ft
	MN: HBF012-M3-20F1	20 ft
	MN: HBF012-M3-25F1	25 ft
	MN: HBF012-M3-30F1	30 ft
8 AWG Power	**Hybrid Jumper cable** MN: HBF058-08U1M3-5F1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

* 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.

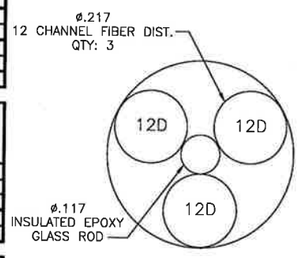
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.



4 AWG

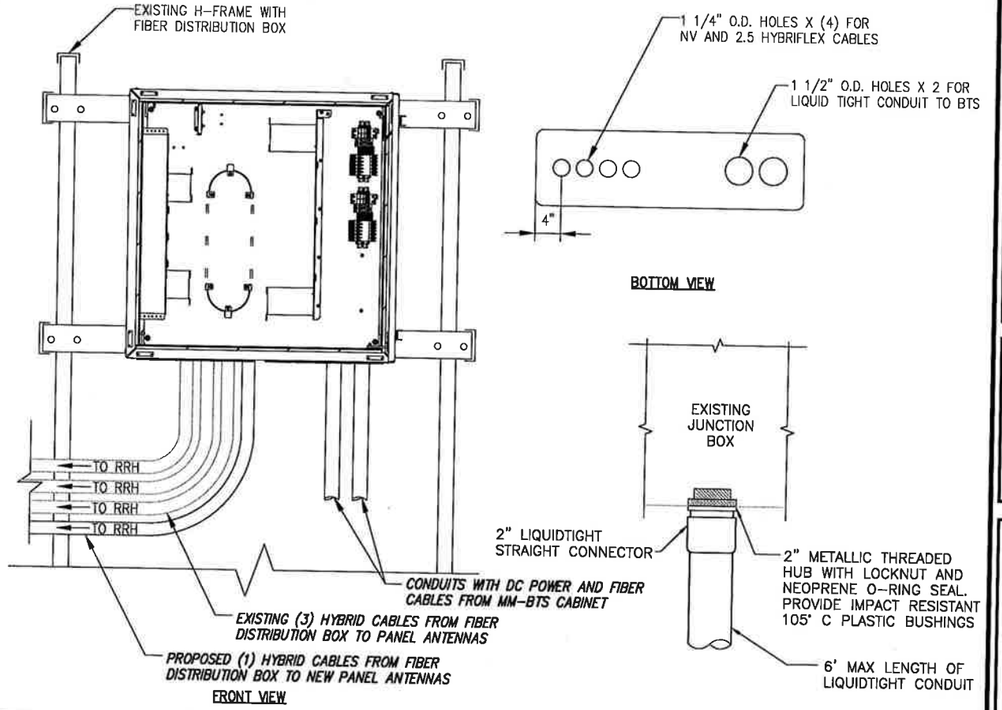


8 & 6 AWG

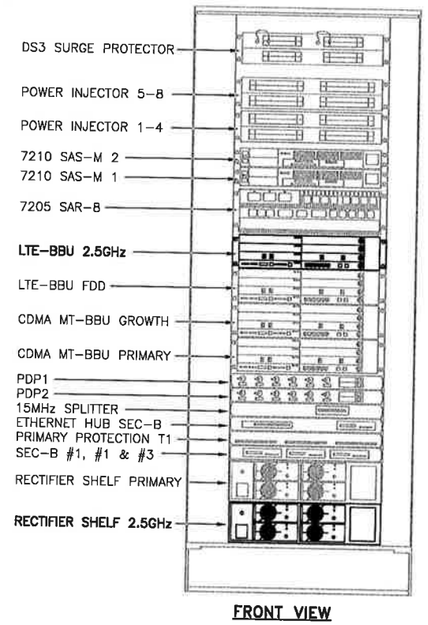


FIBER ONLY

2.5 CABLE 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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JOB NUMBER 526-104

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

ENGINEERING APPROVAL:


DRAWING NOTICE:

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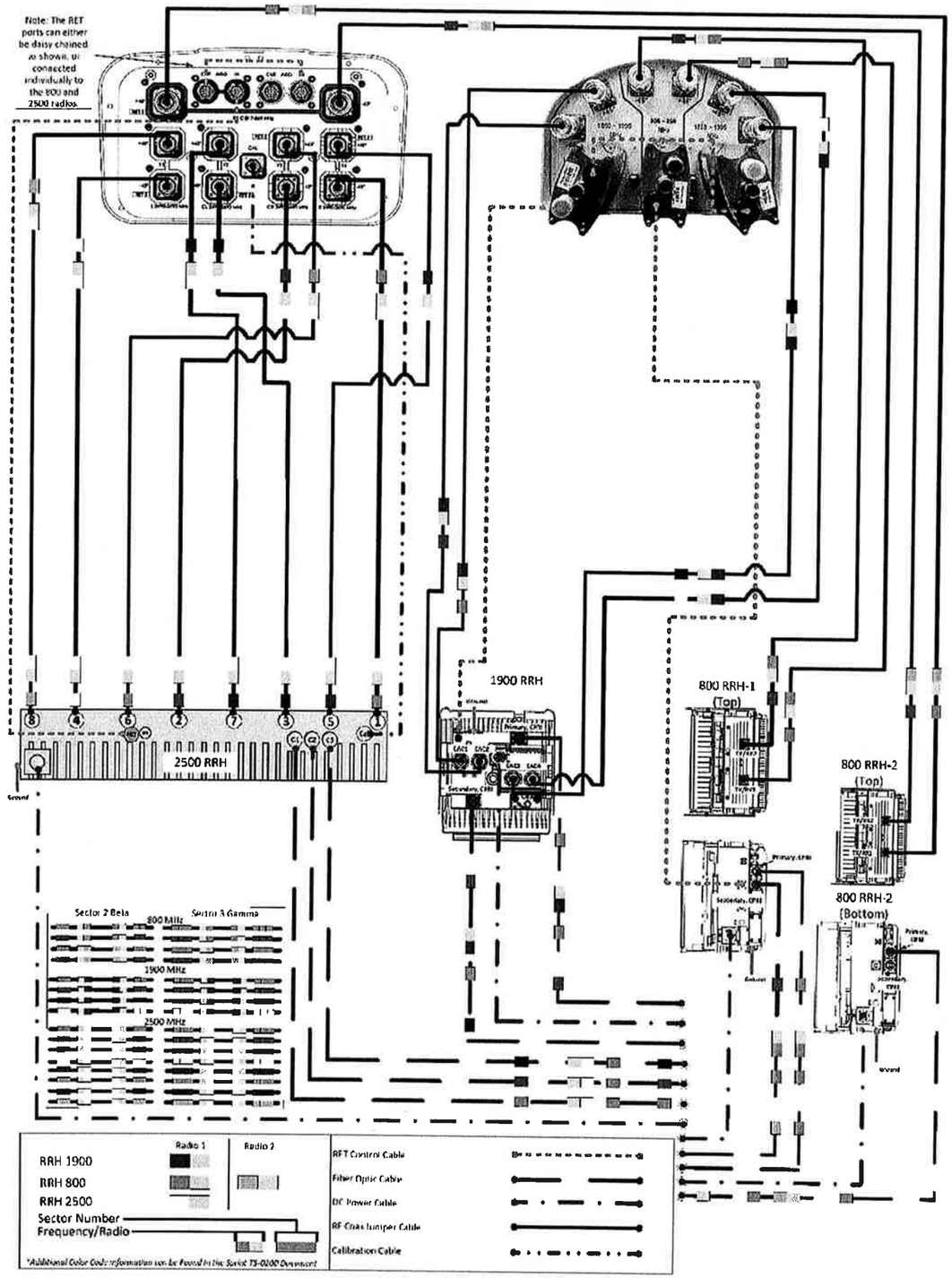
SITE ADDRESS:
1 SERVICE ROAD
MIDDLEBURY, CT 06762

SHEET DESCRIPTION:
CIVIL DETAILS

SHEET NUMBER:
A-5

ALU 211 DT465B-2XR & APXVSPP18-C-A20 wo Filters



PLUMBING DIAGRAM | NO SCALE | 1

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

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
FEB 12 2018
No. 24705
LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

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SITE NUMBER:

CT33XC532

SITE ADDRESS:

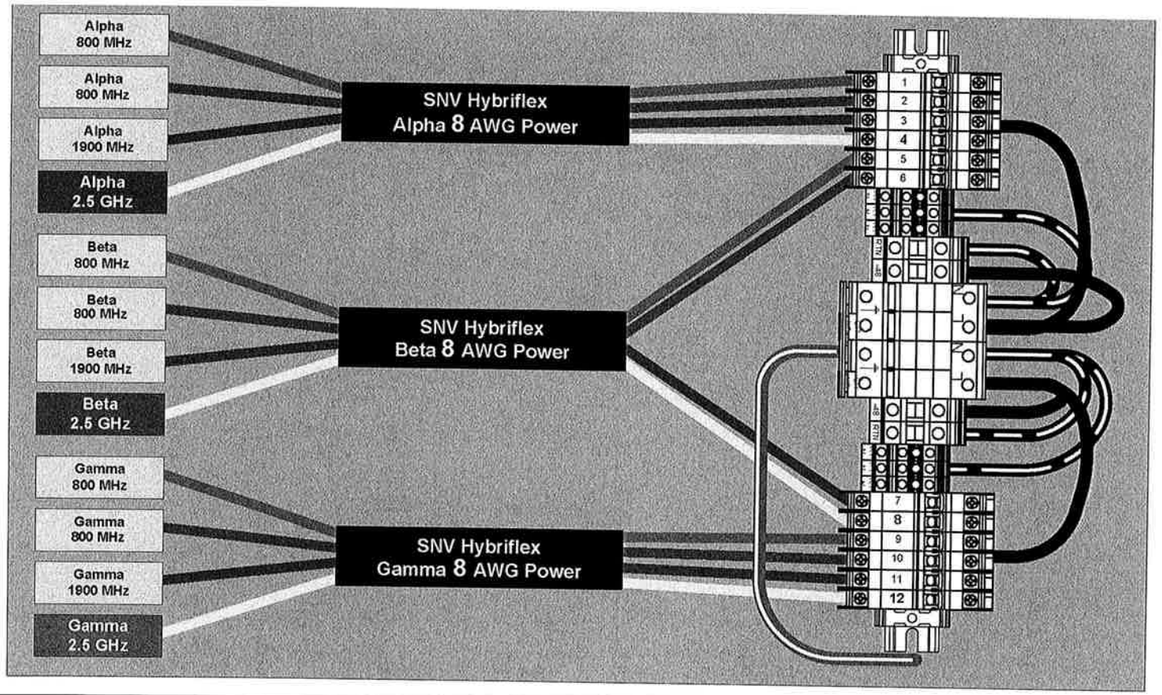
1 SERVICE ROAD
MIDDLEBURY, CT 06762

SHEET DESCRIPTION:

PLUMBING DIAGRAM

SHEET NUMBER:

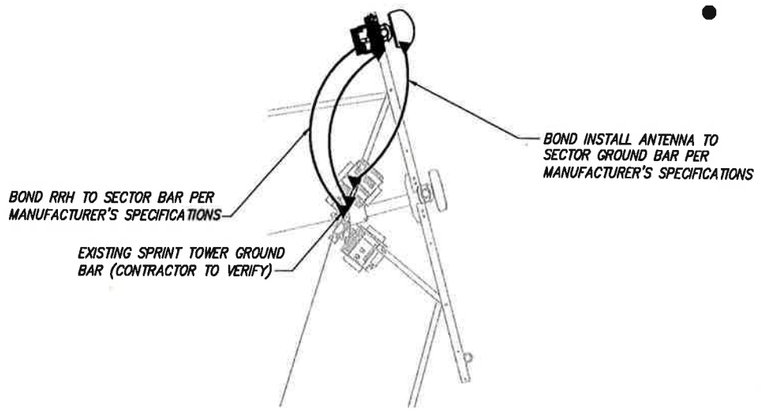
A-6



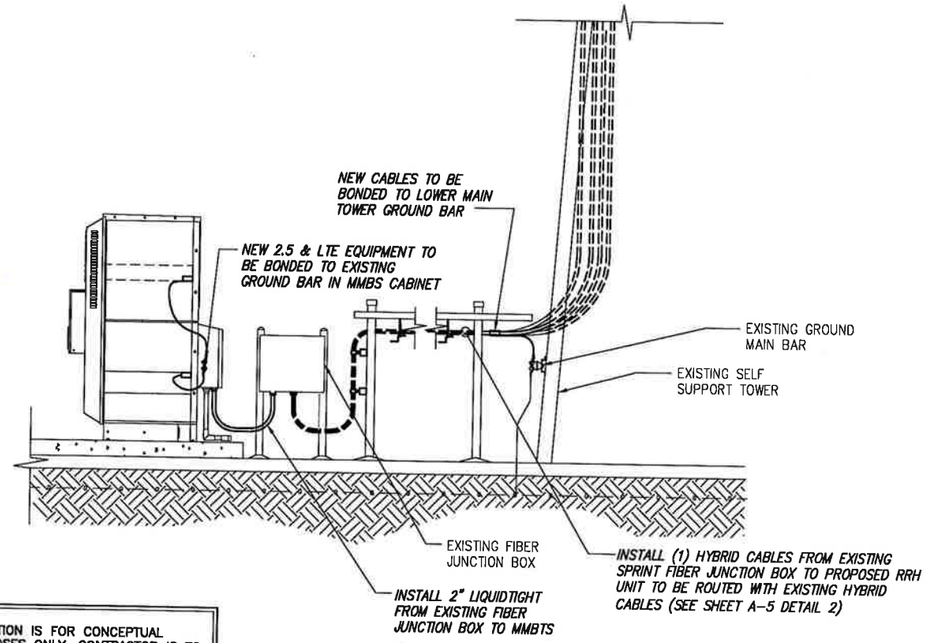
RRH TO DISTRIBUTION BOX POWER CONNECTIVITY | NO SCALE | 1

LEGEND:

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



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2



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

TYPICAL EQUIPMENT GROUNDING PLAN (ELEVATION) | NO SCALE | 3

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SARATOGA SPRINGS, NY 12866
PHONE (518) 877-7440

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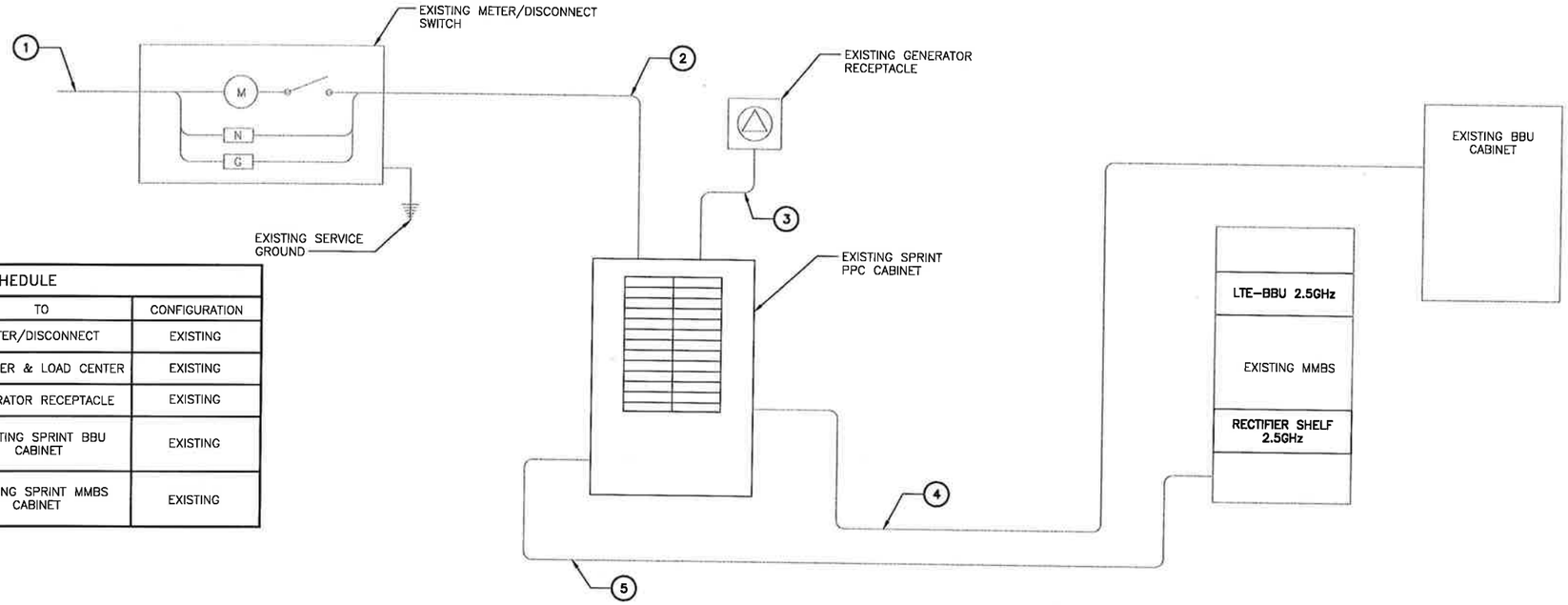
MIDDLEBURY, CT 06762

SHEET DESCRIPTION:
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:
E-1

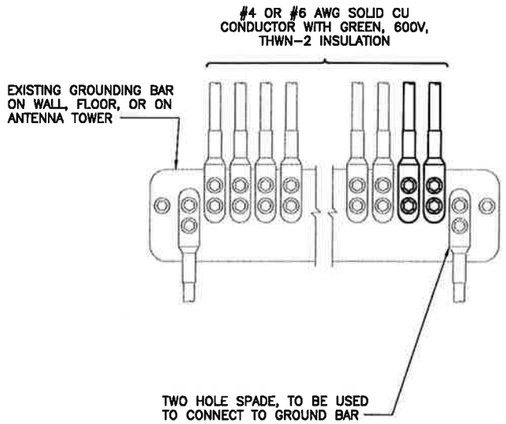
NOTES

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

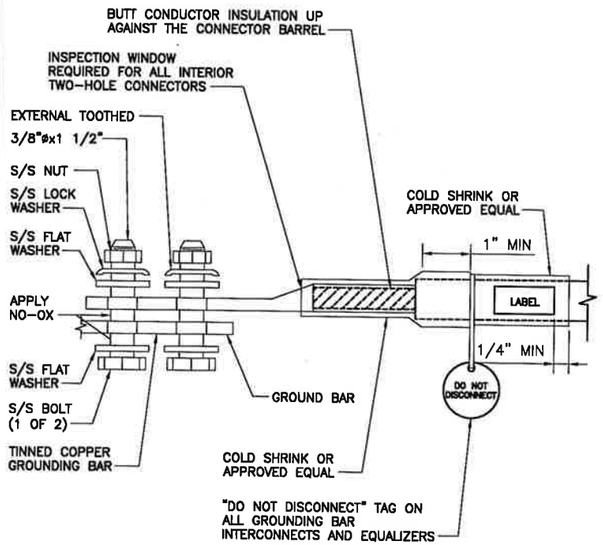
ELECTRICAL ONE–LINE DIAGRAM | NO SCALE | 1



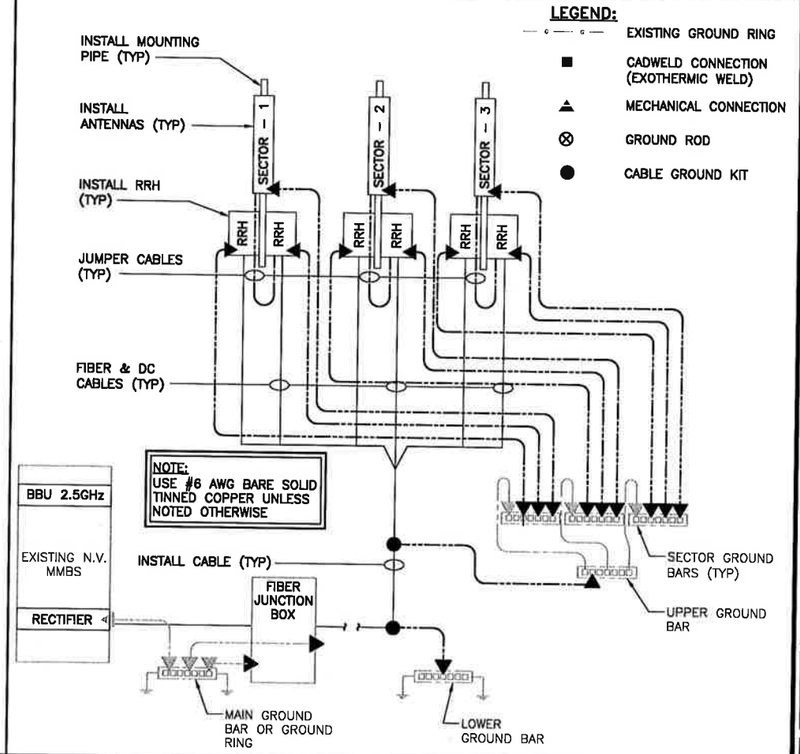
NOTES

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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ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:

E-2