STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

April 28, 2023

John Morrison
Site Development Specialist
SBA Communications
134 Flanders Rd, Suite 125
Westborough, MA 01581
JoMorrison@sbasite.com

RE: **TS-DISH-147-230414** - Dish Wireless, LLC request for an order to approve tower sharing at an existing telecommunications facility located at 111 Stone Hill Road, Voluntown, Connecticut.

Dear John Morrison:

The Connecticut Siting Council (Council) is in receipt of your correspondence of April 28, 2023 submitted in response to the Council's April 27, 2023 notification of an incomplete request for tower sharing with regard to the above-referenced matter.

The submission renders the request for tower sharing complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/ANM/laf

From: John Morrison <JoMorrison@sbasite.com>
Sent: Friday, April 28, 2023 10:46 AM
To: Mathews, Lisa A <Lisa.A.Mathews@ct.gov>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: RE: [External] TS-DISH-147-230414 Response to Incomplete

Sorry for the delay!

John Morrison

SDS Specialist I

508.251.0720 x3808 + **T**

508.768.7960 + **C**

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
1320 Greenway Drive, Suite 600, Irving, Texas 75038

Structural Analysis Report

Existing 180 ft Rohn Self Supporting Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT10024-A

Customer Site Name: Voluntown

Carrier Name: Dish Wireless (App#: 178862, V1)

Carrier Site ID / Name: BOBOS00052A / 0

Site Location: 111 Stone Hill Road

Voluntown, Connecticut

New London County

Latitude: 41.606411

Longitude: -71.851133

Analysis Result:

Max Structural Usage: 76.6% [Pass]

Max Foundation Usage: 60.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By: Sital Shrestha

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Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By: Sital Shrestha

Introduction

The purpose of this report is to summarize the analysis results on the 180 ft Rohn Self Supporting Tower to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Rohn, Dwg # A000853, dated 4/3/2000
Foundation Drawing	Rohn, Dwg # AC10521-1, dated 3/21/2001
Geotechnical Report	DR. Clawrence Welti, dated 3/5/2001

Analysis Criteria

The comprehensive analysis was performed in accordance with the requirements and stipulations of the TIA-222-H**.** In accordance with this standard, the structure was analyzed using **TESTowers,** a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Wind Speed Used in the Analysis:	130.0 mph (3-Sec. Gust) (Ultimate wind speed)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" radial ice concurrent
Service Load Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
Exposure Category:	C
Risk Category:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.188, S_1 = 0.053

This structural analysis is based upon the tower being classified as a Risk Category II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	175.0	3	RFS APX16DWV-16DWVS-E-A20 - Panel	Site Pro (3) VFA12-HD w/ Stiff Arms	(3) 1.99" Hybrid - 6x24	T-Mobile Sprint
2		3	RFS APXVAALL24-43-U-NA20 - Panel			
3		3	Ericsson AIR6449 B41 - Panel			
4		3	Ericsson 4415 B66A			
5		3	Ericsson 4424 B25			
6		3	Ericsson 4449 B71 + B85			
7	165.0	6	7770 - Panel	(3) Sector Frames	(12) 1 5/8" (2) 1/2" Fiber (4) 3/4" DC	AT&T
8		3	HPA-65R-BU8AA - Panel			
9		3	800 10966 - Panel			
10		6	LGP21401 TMA			
11		6	LGP21903			
12		3	RRUS 8843 B2 B66A			
13		3	4449 B5/B12			
14		3	DBCT108F1V92-1			
15		1	DC6-48-60-18-8F			
16		1	DC6-48-60-18-8C			
17	153.0	6	Antel BXA-70063-6CF - Panel	(3) Sector Frames	(12) 1 5/8"	Verizon
18		6	BXA-171063-12CF - Panel			
19		2	DB-T1-6Z-8AB-0Z			
20		3	RRH2x40-AWS			
21		3	RRH2x40-07			

Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
22	143.0	3	Commscope - FFVV-65B-R2 - Panel	(3) MTC3975083	(1) 1.60" Hybrid	Dish Wireless
23		3	Fujitsu TA08025-B605 - RRH			
24		3	Fujitsu TA08025-B604 - RRH			
25		1	Raycap RDIDC-9181-PF-48 - OVP			

See the attached coax layout for the line placement considered in the analysis.

Analysis Results

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

Tower Component	Legs	Diagonals	Horizontals
Max. Usage:	**76.6%**	**71.2%**	**3.6%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Compression (Kips)	Uplift (Kips)	Shear (Kips)
Analysis Reactions	363.0	319.7	36.9

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

Service Load Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.2160 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the TIA-222 Standard under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC.** Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.

2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.

3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the ANSI/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Structure: CT10024-A-SBA

Site Name:	Voluntown			**Code:**	TIA-222-H	1/27/2023
Type:	Self Support	**Base Shape:**	Triangle	**Basic WS:**	130.00	
Height:	180.00 (ft)	**Base Width:**	21.12	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	4.58	**Operational WS:**	60.00	Page: 1

IES Tower Engineering Solutions

Section Properties

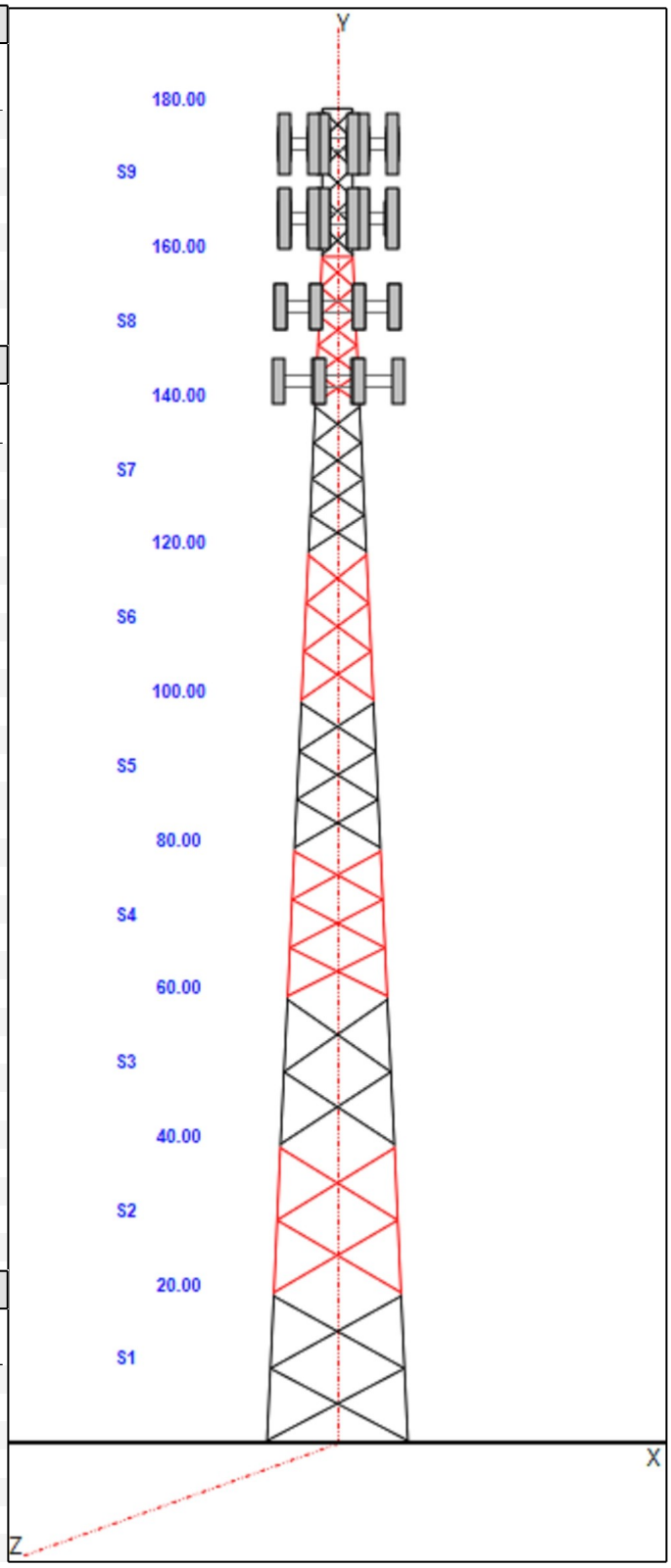
Sect	Leg Members	Diagonal Members	Horizontal Members
1-2	PX 8" DIA PIPE	SAE 4X4X0.25	
3	PSP ROHN 8 EHS	SAE 3.5X3.5X0.25	
4	PX 6" DIA PIPE	SAE 3X3X0.25	
5	PSP ROHN 6 EHS	SAE 2.5X2.5X0.25	
6	PX 5" DIA PIPE	SAE 2.5X2.5X0.25	
7	PX 4" DIA PIPE	SAE 2X2X0.25	
8	PX 3" DIA PIPE	SAE 2X2X0.25	SAE 2X2X0.25
9	PST 2-1/2" DIA PIPE	SAE 2X2X0.25	SAE 2X2X0.25

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description
175.00	175.00	3	APX16DWV-16DWVS-E-A20
175.00	175.00	3	VFA12-HD w/ Stiff Arms
175.00	175.00	3	APXVAALL24-43-U-NA20
175.00	175.00	3	4415 B66A
175.00	175.00	3	4424 B25
175.00	175.00	3	4449 B71 + B85
175.00	175.00	3	AIR6449 B41
165.00	165.00	3	Sector Frames
165.00	165.00	6	7770.00
165.00	165.00	3	HPA-65R-BU8AA
165.00	165.00	6	LGP21401 TMA
165.00	165.00	6	LGP21903
165.00	165.00	3	RRUS 8843 B2 B66A
165.00	165.00	1	DC6-48-60-18-8F
165.00	165.00	3	800 10966
165.00	165.00	3	DBCT108F1V92-1
165.00	165.00	3	4449 B5/B12
165.00	165.00	1	DC6-48-60-18-8C
153.00	153.00	3	Sector Frames
153.00	153.00	6	Antel BXA-70063-6CF
153.00	153.00	6	BXA-171063-12CF
153.00	153.00	2	DB-T1-6Z-8AB-0Z
153.00	153.00	3	RRH2x40-AWS
153.00	153.00	3	RRH2x40-07
143.00	143.00	3	FFVV-65B-R2
143.00	143.00	3	Fujitsu TA08025-B605
143.00	143.00	3	Fujitsu TA08025-B604
143.00	143.00	1	Raycap RDIDC-9181-PF-48
143.00	143.00	1	(3) MTC3975083

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Qty	Description
0.00	180.00	1	Safety Cable
0.00	180.00	1	Step bolts (ladder)
0.00	175.00	3	1.99" Hybrid - 6x24
0.00	175.00	1	W/G Ladder
0.00	165.00	12	1 5/8" Coax
0.00	165.00	2	1/2" Fiber
0.00	165.00	4	3/4" DC
0.00	165.00	1	W/G Ladder
0.00	160.00	1	W/G Ladder



0.00	153.00	12	1 5/8" Coax
0.00	143.00	1	1.60" Hybrid

Base Reactions

Leg		Overturning	
Max Uplift:	-319.69 (kips	Moment:	6333.64 (ft-kips)
Max Down:	363.00 (kips	Total Down:	50.15 (kips)
Max Shear:	36.90 (kips	Total Shear:	60.08 (kips)

Structure: CT10024-A-SBA

Site Name:	Voluntown			**Code:**	TIA-222-H	1/27/2023
Type:	Self Support	**Base Shape:**	Triangle	**Basic WS:**	130.00	
Height:	180.00 (ft)	**Base Width:**	21.12	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	4.58	**Operational WS:**	60.00	Page: 3

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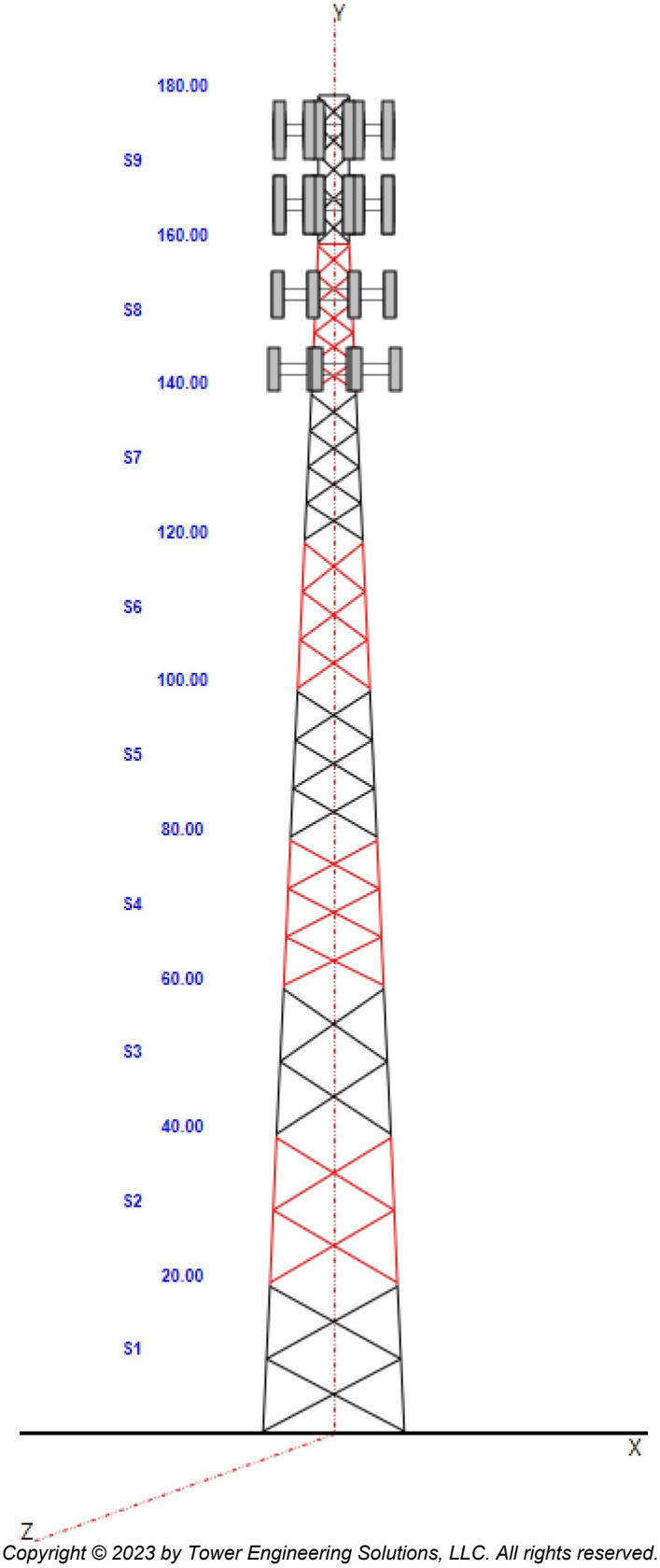
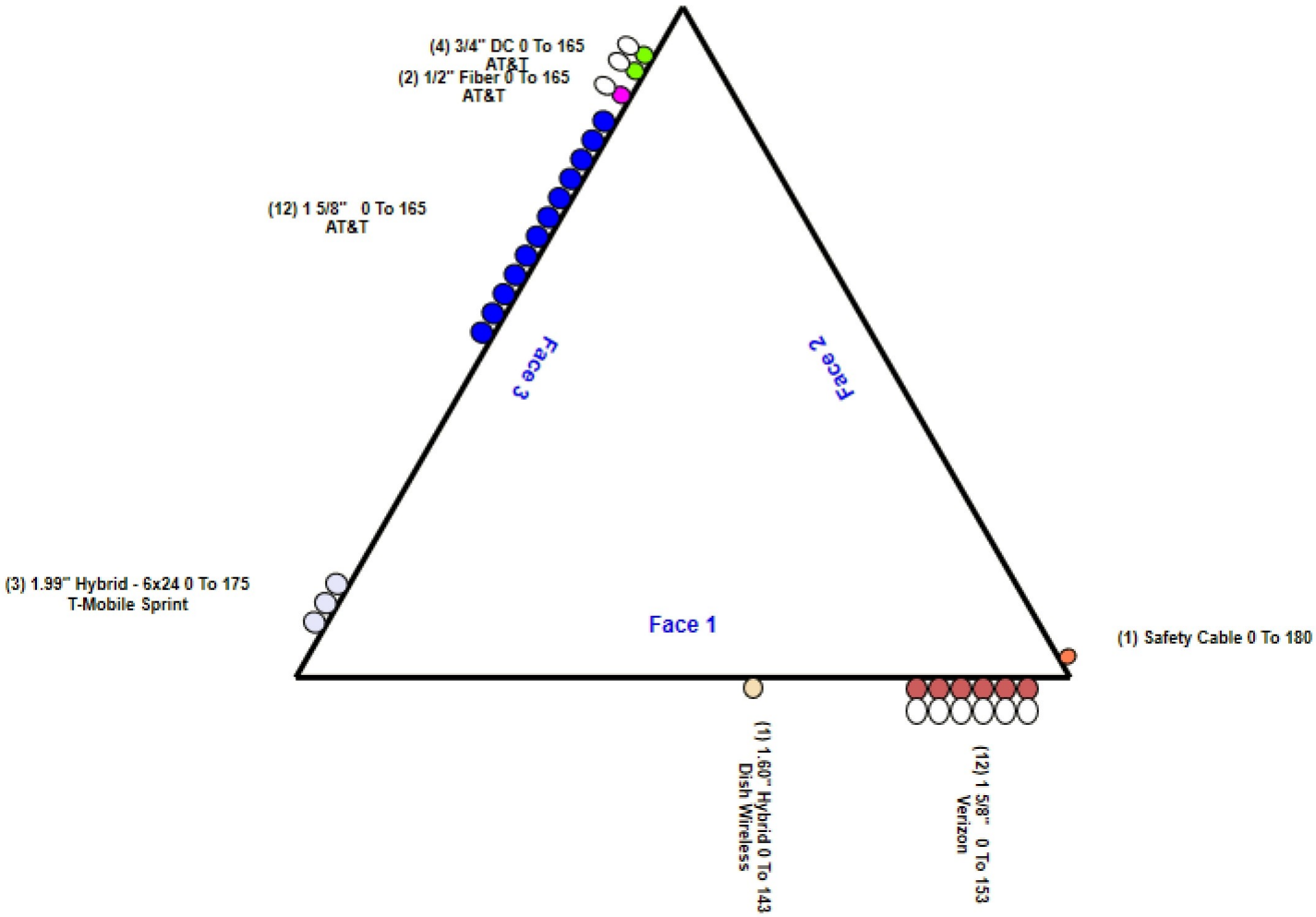


Structure: CT10024-A-SBA - Coax Line Placement

Type: Self Support
Site Name: Voluntown
Height: 180.00 (ft)

1/27/2023

Tower Engineering Solutions



Loading Summary

Structure:	CT10024-A-SBA	**Code:**	TIA-222-H	1/27/2023	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 5	

Tower Engineering Solutions

Discrete Appurtenances Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	Ice Weight (lb)	Ice CaAa (sf)	Len (in)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
175.00	APX16DWV-16DWVS-E-A20	3	40.70	6.610	119.72	8.080	55.900	13.300	3.100	0.80	0.62	0.000
175.00	VFA12-HD w/ Stiff Arms	3	683.00	18.900	1133.61	34.932	0.000	0.000	0.000	0.75	0.75	0.000
175.00	APXVAALL24-43-U-NA20	3	143.30	20.240	449.96	21.509	95.900	24.000	8.500	0.80	0.72	0.000
175.00	4415 B66A	3	46.20	1.860	79.75	2.247	13.500	16.500	4.800	0.80	0.67	0.000
175.00	4424 B25	3	88.00	2.050	142.11	2.440	17.100	14.400	11.300	0.80	0.67	0.000
175.00	4449 B71 + B85	3	73.20	1.970	112.18	2.354	17.900	13.200	10.600	0.80	0.67	0.000
175.00	AIR6449 B41	3	103.00	5.650	195.56	6.292	33.100	20.500	8.300	0.80	0.71	0.000
165.00	Sector Frames	3	450.00	17.000	687.51	22.768	0.000	0.000	0.000	0.75	0.75	0.000
165.00	7770.00	6	35.00	5.500	119.60	6.204	55.000	11.000	5.000	0.80	0.73	0.000
165.00	HPA-65R-BU8AA	3	68.00	12.980	254.04	14.047	92.400	14.800	7.400	0.80	0.79	0.000
165.00	LGP21401 TMA	6	14.10	1.290	30.98	1.854	14.400	9.200	2.600	0.80	0.67	0.000
165.00	LGP21903	6	5.50	0.270	11.19	0.538	4.400	6.300	3.000	0.80	0.67	0.000
165.00	RRUS 8843 B2 B66A	3	72.00	1.640	103.62	1.975	14.900	13.200	10.900	0.80	0.67	0.000
165.00	DC6-48-60-18-8F	1	31.80	0.920	73.54	1.216	24.000	11.000	11.000	0.90	0.90	0.000
165.00	800 10966	3	125.70	17.360	355.97	18.563	96.000	20.000	6.900	0.80	0.72	0.000
165.00	DBCT108F1V92-1	3	7.00	0.710	16.69	1.131	7.000	10.400	1.800	0.80	0.67	0.000
165.00	4449 B5/B12	3	71.00	1.970	107.04	2.340	17.900	13.200	9.400	0.80	0.67	0.000
165.00	DC6-48-60-18-8C	1	20.00	1.260	55.62	1.705	23.500	9.700	9.700	0.90	0.90	0.000
153.00	Sector Frames	3	500.00	17.500	965.39	26.785	0.000	0.000	0.000	0.75	0.75	0.000
153.00	Antel BXA-70063-6CF	6	17.00	7.570	115.86	9.412	71.000	11.200	5.200	0.80	0.73	0.000
153.00	BXA-171063-12CF	6	15.00	4.780	78.88	6.353	72.400	6.100	4.100	0.80	0.84	0.000
153.00	DB-T1-6Z-8AB-0Z	2	18.90	4.800	99.62	5.470	24.000	24.000	10.000	1.00	1.00	0.000
153.00	RRH2x40-AWS	3	44.00	2.160	84.48	2.859	24.400	10.600	6.700	0.80	0.67	0.000
153.00	RRH2x40-07	3	50.70	1.930	89.89	2.543	15.400	15.000	8.200	0.80	0.67	0.000
143.00	FFVV-65B-R2	3	70.80	12.270	233.47	12.345	72.000	18.000	7.000	0.80	0.73	0.000
143.00	Fujitsu TA08025-B605	3	75.00	1.960	109.87	2.334	15.800	15.000	9.100	0.80	0.67	0.000
143.00	Fujitsu TA08025-B604	3	63.90	1.960	97.65	2.334	15.800	15.000	7.900	0.80	0.67	0.000
143.00	Raycap RDIDC-9181-PF-48	1	21.90	2.010	57.40	2.389	16.600	14.600	8.500	0.80	1.00	0.000
143.00	(3) MTC3975083	1	1242.0	28.050	2051.22	51.548	0.000	0.000	0.000	0.75	1.00	0.000
	Totals:	**93**	**10,199.60**		**20,591.60**						**Number of Appurtenances :**	**29**

Linear Appurtenances Properties

Elev. From (ft)	Elev. To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	180.00	Safety Cable	1	0.38	0.27	100.00	2	Individual NR		N	1.00	1.00	
0.00	180.00	Step bolts (ladder)	1	0.63	1.04	100.00	2	Individual NR		N	1.00	1.00	
0.00	175.00	1.99" Hybrid - 6x24	3	1.99	0.95	100.00	3	Individual IR		N	1.00	1.00	
0.00	175.00	W/G Ladder	1	2.50	6.00	100.00	3	Individual NR		N	1.00	1.00	
0.00	165.00	1 5/8" Coax	12	1.98	1.04	100.00	3	Individual NR		N	1.00	1.00	
0.00	165.00	1/2" Fiber	2	0.65	0.16	50.00	3	Block		N	1.00	1.00	
0.00	165.00	3/4" DC	4	0.75	0.40	50.00	3	Block		N	0.50	1.00	
0.00	165.00	W/G Ladder	1	2.00	6.00		3	Individual NR		N	1.00	1.00	
0.00	160.00	W/G Ladder	1	2.50	6.00		1	Individual NR		N	1.00	1.00	
0.00	153.00	1 5/8" Coax	12	1.98	1.04	50.00	1	Block		N	0.50	1.00	
0.00	143.00	1.60" Hybrid	1	1.60	1.04	50.00	1	Block		N	0.50	1.00	

Section Forces

Structure:	CT10024-A-SBA	**Code:**	TIA-222-H	1/27/2023	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 7	

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Load Case: 1.2D + 1.0W Normal Wind — 1.2D + 1.0W 130 mph Wind at Normal To Face

Wind Load Factor: 1.00 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.20

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	30.78	28.808	28.80	0.00	0.14	2.81	1.00	1.00	0.00	40.70	93.93	0.00	6,467.1	0.0	2996.56	1902.92	4,899.49
2	30.0	35.57	26.417	28.80	0.00	0.15	2.78	1.00	1.00	0.00	38.43	93.93	0.00	6,296.0	0.0	3232.74	2199.00	5,431.75
3	50.0	39.60	21.031	28.81	0.00	0.15	2.78	1.00	1.00	0.00	33.08	93.93	0.00	5,164.8	0.0	3090.13	2448.67	5,538.81
4	70.0	42.51	22.214	22.12	0.00	0.15	2.76	1.00	1.00	0.00	31.58	93.93	0.00	4,899.1	0.0	3149.25	2628.42	5,777.66
5	90.0	44.82	16.204	22.13	0.00	0.15	2.75	1.00	1.00	0.00	25.52	93.93	0.00	4,057.3	0.0	2678.20	2771.23	5,449.43
6	110.0	46.75	14.054	18.58	0.00	0.16	2.73	1.00	1.00	0.00	22.62	93.93	0.00	3,748.5	0.0	2458.66	2890.81	5,349.47
7	130.0	48.43	11.609	15.03	0.00	0.17	2.71	1.00	1.00	0.00	19.23	93.93	0.00	3,127.6	0.0	2148.84	2994.29	5,143.12
8	150.0	49.91	11.624	11.69	0.00	0.20	2.60	1.00	1.00	0.00	18.13	83.28	0.00	2,663.8	0.0	2002.88	2696.36	4,699.24
9	170.0	51.24	10.350	9.58	0.00	0.21	2.57	1.00	1.00	0.00	15.87	24.09	0.00	1,481.6	0.0	1778.51	764.17	2,542.68
														37,905.9	**0.0**			**44,831.65**

Load Case: 1.2D + 1.0W 60° Wind — 1.2D + 1.0W 130 mph Wind at 60° From Face

Wind Load Factor: 1.00 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.20

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	30.78	28.808	28.80	0.00	0.14	2.81	0.80	1.00	0.00	34.94	93.93	0.00	6,467.1	0.0	2572.38	1902.92	4,475.30
2	30.0	35.57	26.417	28.80	0.00	0.15	2.78	0.80	1.00	0.00	33.15	93.93	0.00	6,296.0	0.0	2788.30	2199.00	4,987.30
3	50.0	39.60	21.031	28.81	0.00	0.15	2.78	0.80	1.00	0.00	28.87	93.93	0.00	5,164.8	0.0	2697.19	2448.67	5,145.86
4	70.0	42.51	22.214	22.12	0.00	0.15	2.76	0.80	1.00	0.00	27.14	93.93	0.00	4,899.1	0.0	2706.23	2628.42	5,334.65
5	90.0	44.82	16.204	22.13	0.00	0.15	2.75	0.80	1.00	0.00	22.28	93.93	0.00	4,057.3	0.0	2338.09	2771.23	5,109.32
6	110.0	46.75	14.054	18.58	0.00	0.16	2.73	0.80	1.00	0.00	19.81	93.93	0.00	3,748.5	0.0	2153.16	2890.81	5,043.97
7	130.0	48.43	11.609	15.03	0.00	0.17	2.71	0.80	1.00	0.00	16.91	93.93	0.00	3,127.6	0.0	1889.45	2994.29	4,883.74
8	150.0	49.91	11.624	11.69	0.00	0.20	2.60	0.80	1.00	0.00	15.81	83.28	0.00	2,663.8	0.0	1746.09	2696.36	4,442.45
9	170.0	51.24	10.350	9.58	0.00	0.21	2.57	0.80	1.00	0.00	13.80	24.09	0.00	1,481.6	0.0	1546.49	764.17	2,310.66
														37,905.9	**0.0**			**41,733.23**

Section Forces

Structure:	CT10024-A-SBA	**Code:**	TIA-222-H	1/27/2023	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 8	

IES Tower Engineering Solutions

Load Case: 1.2D + 1.0W 90° Wind — 1.2D + 1.0W 130 mph Wind at 90° From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	30.78	28.808	28.80	0.00	0.14	2.81	0.85	1.00	0.00	36.38	93.93	0.00	6,467.1	0.0	2678.42	1902.92	4,581.35
2	30.0	35.57	26.417	28.80	0.00	0.15	2.78	0.85	1.00	0.00	34.47	93.93	0.00	6,296.0	0.0	2899.41	2199.00	5,098.41
3	50.0	39.60	21.031	28.81	0.00	0.15	2.78	0.85	1.00	0.00	29.92	93.93	0.00	5,164.8	0.0	2795.42	2448.67	5,244.10
4	70.0	42.51	22.214	22.12	0.00	0.15	2.76	0.85	1.00	0.00	28.25	93.93	0.00	4,899.1	0.0	2816.98	2628.42	5,445.40
5	90.0	44.82	16.204	22.13	0.00	0.15	2.75	0.85	1.00	0.00	23.09	93.93	0.00	4,057.3	0.0	2423.12	2771.23	5,194.35
6	110.0	46.75	14.054	18.58	0.00	0.16	2.73	0.85	1.00	0.00	20.51	93.93	0.00	3,748.5	0.0	2229.53	2890.81	5,120.34
7	130.0	48.43	11.609	15.03	0.00	0.17	2.71	0.85	1.00	0.00	17.49	93.93	0.00	3,127.6	0.0	1954.30	2994.29	4,948.58
8	150.0	49.91	11.624	11.69	0.00	0.20	2.60	0.85	1.00	0.00	16.39	83.28	0.00	2,663.8	0.0	1810.28	2696.36	4,506.65
9	170.0	51.24	10.350	9.58	0.00	0.21	2.57	0.85	1.00	0.00	14.31	24.09	0.00	1,481.6	0.0	1604.50	764.17	2,368.67
														37,905.9	**0.0**			**42,507.84**

Load Case: 0.9D + 1.0W Normal Wind — 0.9D + 1.0W 130 mph Wind at Normal To Face

Wind Load Factor: 1.00
Dead Load Factor: 0.90
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	30.78	28.808	28.80	0.00	0.14	2.81	1.00	1.00	0.00	40.70	93.93	0.00	4,850.4	0.0	2996.56	1902.92	4,899.49
2	30.0	35.57	26.417	28.80	0.00	0.15	2.78	1.00	1.00	0.00	38.43	93.93	0.00	4,722.0	0.0	3232.74	2199.00	5,431.75
3	50.0	39.60	21.031	28.81	0.00	0.15	2.78	1.00	1.00	0.00	33.08	93.93	0.00	3,873.6	0.0	3090.13	2448.67	5,538.81
4	70.0	42.51	22.214	22.12	0.00	0.15	2.76	1.00	1.00	0.00	31.58	93.93	0.00	3,674.3	0.0	3149.25	2628.42	5,777.66
5	90.0	44.82	16.204	22.13	0.00	0.15	2.75	1.00	1.00	0.00	25.52	93.93	0.00	3,043.0	0.0	2678.20	2771.23	5,449.43
6	110.0	46.75	14.054	18.58	0.00	0.16	2.73	1.00	1.00	0.00	22.62	93.93	0.00	2,811.4	0.0	2458.66	2890.81	5,349.47
7	130.0	48.43	11.609	15.03	0.00	0.17	2.71	1.00	1.00	0.00	19.23	93.93	0.00	2,345.7	0.0	2148.84	2994.29	5,143.12
8	150.0	49.91	11.624	11.69	0.00	0.20	2.60	1.00	1.00	0.00	18.13	83.28	0.00	1,997.8	0.0	2002.88	2696.36	4,699.24
9	170.0	51.24	10.350	9.58	0.00	0.21	2.57	1.00	1.00	0.00	15.87	24.09	0.00	1,111.2	0.0	1778.51	764.17	2,542.68
														28,429.4	**0.0**			**44,831.65**

Section Forces

Structure:	CT10024-A-SBA	**Code:**	TIA-222-H	1/27/2023	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 60° Wind — 0.9D + 1.0W 130 mph Wind at 60° From Face

Wind Load Factor: 1.00 — **Wind Importance Factor:** 1.00

Dead Load Factor: 0.90

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	30.78	28.808	28.80	0.00	0.14	2.81	0.80	1.00	0.00	34.94	93.93	0.00	4,850.4	0.0	2572.38	1902.92	4,475.30
2	30.0	35.57	26.417	28.80	0.00	0.15	2.78	0.80	1.00	0.00	33.15	93.93	0.00	4,722.0	0.0	2788.30	2199.00	4,987.30
3	50.0	39.60	21.031	28.81	0.00	0.15	2.78	0.80	1.00	0.00	28.87	93.93	0.00	3,873.6	0.0	2697.19	2448.67	5,145.86
4	70.0	42.51	22.214	22.12	0.00	0.15	2.76	0.80	1.00	0.00	27.14	93.93	0.00	3,674.3	0.0	2706.23	2628.42	5,334.65
5	90.0	44.82	16.204	22.13	0.00	0.15	2.75	0.80	1.00	0.00	22.28	93.93	0.00	3,043.0	0.0	2338.09	2771.23	5,109.32
6	110.0	46.75	14.054	18.58	0.00	0.16	2.73	0.80	1.00	0.00	19.81	93.93	0.00	2,811.4	0.0	2153.16	2890.81	5,043.97
7	130.0	48.43	11.609	15.03	0.00	0.17	2.71	0.80	1.00	0.00	16.91	93.93	0.00	2,345.7	0.0	1889.45	2994.29	4,883.74
8	150.0	49.91	11.624	11.69	0.00	0.20	2.60	0.80	1.00	0.00	15.81	83.28	0.00	1,997.8	0.0	1746.09	2696.36	4,442.45
9	170.0	51.24	10.350	9.58	0.00	0.21	2.57	0.80	1.00	0.00	13.80	24.09	0.00	1,111.2	0.0	1546.49	764.17	2,310.66
														28,429.4	**0.0**			**41,733.23**

Load Case: 0.9D + 1.0W 90° Wind — 0.9D + 1.0W 130 mph Wind at 90° From Face

Wind Load Factor: 1.00 — **Wind Importance Factor:** 1.00

Dead Load Factor: 0.90

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	30.78	28.808	28.80	0.00	0.14	2.81	0.85	1.00	0.00	36.38	93.93	0.00	4,850.4	0.0	2678.42	1902.92	4,581.35
2	30.0	35.57	26.417	28.80	0.00	0.15	2.78	0.85	1.00	0.00	34.47	93.93	0.00	4,722.0	0.0	2899.41	2199.00	5,098.41
3	50.0	39.60	21.031	28.81	0.00	0.15	2.78	0.85	1.00	0.00	29.92	93.93	0.00	3,873.6	0.0	2795.42	2448.67	5,244.10
4	70.0	42.51	22.214	22.12	0.00	0.15	2.76	0.85	1.00	0.00	28.25	93.93	0.00	3,674.3	0.0	2816.98	2628.42	5,445.40
5	90.0	44.82	16.204	22.13	0.00	0.15	2.75	0.85	1.00	0.00	23.09	93.93	0.00	3,043.0	0.0	2423.12	2771.23	5,194.35
6	110.0	46.75	14.054	18.58	0.00	0.16	2.73	0.85	1.00	0.00	20.51	93.93	0.00	2,811.4	0.0	2229.53	2890.81	5,120.34
7	130.0	48.43	11.609	15.03	0.00	0.17	2.71	0.85	1.00	0.00	17.49	93.93	0.00	2,345.7	0.0	1954.30	2994.29	4,948.58
8	150.0	49.91	11.624	11.69	0.00	0.20	2.60	0.85	1.00	0.00	16.39	83.28	0.00	1,997.8	0.0	1810.28	2696.36	4,506.65
9	170.0	51.24	10.350	9.58	0.00	0.21	2.57	0.85	1.00	0.00	14.31	24.09	0.00	1,111.2	0.0	1604.50	764.17	2,368.67
														28,429.4	**0.0**			**42,507.84**

Section Forces

Structure:	CT10024-A-SBA	**Code:**	TIA-222-H	1/27/2023	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi Normal Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	4.55	28.808	47.94	19.14	0.18	2.65	1.00	1.00	0.89	56.22	112.06	50.29	10,858.	4390.9	577.17	597.46	1,174.63
2	30.0	5.26	26.417	48.97	20.17	0.20	2.60	1.00	1.00	0.99	54.54	113.78	56.13	11,096.	4800.9	634.03	713.73	1,347.76
3	50.0	5.86	21.031	48.80	19.99	0.21	2.57	1.00	1.00	1.04	49.12	114.64	59.07	9,871.8	4707.0	629.64	807.56	1,437.21
4	70.0	6.29	22.214	45.88	23.76	0.23	2.49	1.00	1.00	1.08	48.87	115.23	61.09	9,788.2	4889.1	650.70	861.09	1,511.80
5	90.0	6.63	16.204	44.45	22.33	0.24	2.46	1.00	1.00	1.11	42.11	115.69	62.65	8,622.8	4565.4	584.94	911.55	1,496.49
6	110.0	6.92	14.054	39.32	20.74	0.26	2.42	1.00	1.00	1.13	37.12	112.31	67.68	8,128.6	4380.1	527.39	946.16	1,473.55
7	130.0	7.16	11.609	36.57	21.55	0.29	2.31	1.00	1.00	1.15	33.44	112.56	68.82	7,339.3	4211.7	471.27	954.88	1,426.14
8	150.0	7.38	11.624	33.60	21.92	0.37	2.12	1.00	1.00	1.16	32.60	100.77	66.51	6,596.1	3932.4	434.49	835.33	1,269.82
9	170.0	7.58	10.350	30.15	20.57	0.40	2.06	1.00	1.00	1.18	29.58	31.50	23.56	3,679.9	2198.3	391.99	272.28	664.27
														75,981.7	**38075.8**			**11,801.66**

Load Case: 1.2D + 1.0Di + 1.0Wi 60° Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	4.55	28.808	47.94	19.14	0.18	2.65	0.80	1.00	0.89	50.45	112.06	50.29	10,858.	4390.9	518.02	597.46	1,115.48
2	30.0	5.26	26.417	48.97	20.17	0.20	2.60	0.80	1.00	0.99	49.25	113.78	56.13	11,096.	4800.9	572.61	713.73	1,286.34
3	50.0	5.86	21.031	48.80	19.99	0.21	2.57	0.80	1.00	1.04	44.92	114.64	59.07	9,871.8	4707.0	575.73	807.56	1,383.29
4	70.0	6.29	22.214	45.88	23.76	0.23	2.49	0.80	1.00	1.08	44.42	115.23	61.09	9,788.2	4889.1	591.54	861.09	1,452.64
5	90.0	6.63	16.204	44.45	22.33	0.24	2.46	0.80	1.00	1.11	38.87	115.69	62.65	8,622.8	4565.4	539.93	911.55	1,451.48
6	110.0	6.92	14.054	39.32	20.74	0.26	2.42	0.80	1.00	1.13	34.31	112.31	67.68	8,128.6	4380.1	487.46	946.16	1,433.62
7	130.0	7.16	11.609	36.57	21.55	0.29	2.31	0.80	1.00	1.15	31.11	112.56	68.82	7,339.3	4211.7	438.54	954.88	1,393.42
8	150.0	7.38	11.624	33.60	21.92	0.37	2.12	0.80	1.00	1.16	30.28	100.77	66.51	6,596.1	3932.4	403.50	835.33	1,238.84
9	170.0	7.58	10.350	30.15	20.57	0.40	2.06	0.80	1.00	1.18	27.51	31.50	23.56	3,679.9	2198.3	364.56	272.28	636.83
														75,981.7	**38075.8**			**11,391.93**

Section Forces

Structure:	CT10024-A-SBA	**Code:**	TIA-222-H	1/27/2023	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 11	

IES Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 90° Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	4.55	28.808	47.94	19.14	0.18	2.65	0.85	1.00	0.89	51.89	112.06	50.29	10,858.	4390.9	532.81	597.46	1,130.27
2	30.0	5.26	26.417	48.97	20.17	0.20	2.60	0.85	1.00	0.99	50.58	113.78	56.13	11,096.	4800.9	587.97	713.73	1,301.69
3	50.0	5.86	21.031	48.80	19.99	0.21	2.57	0.85	1.00	1.04	45.97	114.64	59.07	9,871.8	4707.0	589.21	807.56	1,396.77
4	70.0	6.29	22.214	45.88	23.76	0.23	2.49	0.85	1.00	1.08	45.53	115.23	61.09	9,788.2	4889.1	606.33	861.09	1,467.43
5	90.0	6.63	16.204	44.45	22.33	0.24	2.46	0.85	1.00	1.11	39.68	115.69	62.65	8,622.8	4565.4	551.18	911.55	1,462.73
6	110.0	6.92	14.054	39.32	20.74	0.26	2.42	0.85	1.00	1.13	35.02	112.31	67.68	8,128.6	4380.1	497.44	946.16	1,443.60
7	130.0	7.16	11.609	36.57	21.55	0.29	2.31	0.85	1.00	1.15	31.69	112.56	68.82	7,339.3	4211.7	446.72	954.88	1,401.60
8	150.0	7.38	11.624	33.60	21.92	0.37	2.12	0.85	1.00	1.16	30.86	100.77	66.51	6,596.1	3932.4	411.25	835.33	1,246.58
9	170.0	7.58	10.350	30.15	20.57	0.40	2.06	0.85	1.00	1.18	28.03	31.50	23.56	3,679.9	2198.3	371.41	272.28	643.69
														75,981.7	**38075.8**			**11,494.36**

Load Case: 1.0D + 1.0W Normal Wind — 1.0D + 1.0W 60 mph Wind at Normal To Face

Wind Load Factor: 1.00
Dead Load Factor: 1.00
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	6.56	28.808	28.80	0.00	0.14	2.81	1.00	1.00	0.00	45.07	93.93	0.00	5,389.3	0.0	706.87	405.36	1,112.22
2	30.0	7.58	26.417	28.80	0.00	0.15	2.78	1.00	1.00	0.00	42.37	93.93	0.00	5,246.7	0.0	759.30	468.43	1,227.73
3	50.0	8.44	21.031	28.81	0.00	0.15	2.78	1.00	1.00	0.00	36.74	93.93	0.00	4,304.0	0.0	731.19	521.61	1,252.80
4	70.0	9.06	22.214	22.12	0.00	0.15	2.76	1.00	1.00	0.00	34.78	93.93	0.00	4,082.6	0.0	738.68	559.90	1,298.58
5	90.0	9.55	16.204	22.13	0.00	0.15	2.75	1.00	1.00	0.00	28.77	93.93	0.00	3,381.1	0.0	643.20	590.32	1,233.52
6	110.0	9.96	14.054	18.58	0.00	0.16	2.73	1.00	1.00	0.00	24.62	93.93	0.00	3,123.7	0.0	569.96	615.79	1,185.75
7	130.0	10.32	11.609	15.03	0.00	0.17	2.71	1.00	1.00	0.00	20.16	93.93	0.00	2,606.3	0.0	479.87	637.84	1,117.70
8	150.0	10.63	11.624	11.69	0.00	0.20	2.60	1.00	1.00	0.00	18.33	83.28	0.00	2,219.8	0.0	431.38	574.37	1,005.75
9	170.0	10.92	10.350	9.58	0.00	0.21	2.57	1.00	1.00	0.00	15.87	24.09	0.00	1,234.7	0.0	378.86	162.78	541.64
														31,588.2	**0.0**			**9,975.69**

Section Forces

Structure:	CT10024-A-SBA	**Code:**	TIA-222-H	1/27/2023	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60° Wind — 1.0D + 1.0W 60 mph Wind at 60° From Face

Wind Load Factor: 1.00 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.00

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	6.56	28.808	28.80	0.00	0.14	2.81	0.80	1.00	0.00	39.31	93.93	0.00	5,389.3	0.0	616.51	405.36	1,021.86
2	30.0	7.58	26.417	28.80	0.00	0.15	2.78	0.80	1.00	0.00	37.09	93.93	0.00	5,246.7	0.0	664.62	468.43	1,133.05
3	50.0	8.44	21.031	28.81	0.00	0.15	2.78	0.80	1.00	0.00	32.54	93.93	0.00	4,304.0	0.0	647.48	521.61	1,169.09
4	70.0	9.06	22.214	22.12	0.00	0.15	2.76	0.80	1.00	0.00	30.33	93.93	0.00	4,082.6	0.0	644.31	559.90	1,204.21
5	90.0	9.55	16.204	22.13	0.00	0.15	2.75	0.80	1.00	0.00	25.53	93.93	0.00	3,381.1	0.0	570.75	590.32	1,161.07
6	110.0	9.96	14.054	18.58	0.00	0.16	2.73	0.80	1.00	0.00	21.81	93.93	0.00	3,123.7	0.0	504.88	615.79	1,120.68
7	130.0	10.32	11.609	15.03	0.00	0.17	2.71	0.80	1.00	0.00	17.84	93.93	0.00	2,606.3	0.0	424.61	637.84	1,062.45
8	150.0	10.63	11.624	11.69	0.00	0.20	2.60	0.80	1.00	0.00	16.01	83.28	0.00	2,219.8	0.0	376.68	574.37	951.05
9	170.0	10.92	10.350	9.58	0.00	0.21	2.57	0.80	1.00	0.00	13.80	24.09	0.00	1,234.7	0.0	329.43	162.78	492.21
														31,588.2	**0.0**			**9,315.68**

Load Case: 1.0D + 1.0W 90° Wind — 1.0D + 1.0W 60 mph Wind at 90° From Face

Wind Load Factor: 1.00 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.00

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	6.56	28.808	28.80	0.00	0.14	2.81	0.85	1.00	0.00	40.75	93.93	0.00	5,389.3	0.0	639.10	405.36	1,044.45
2	30.0	7.58	26.417	28.80	0.00	0.15	2.78	0.85	1.00	0.00	38.41	93.93	0.00	5,246.7	0.0	688.29	468.43	1,156.72
3	50.0	8.44	21.031	28.81	0.00	0.15	2.78	0.85	1.00	0.00	33.59	93.93	0.00	4,304.0	0.0	668.41	521.61	1,190.02
4	70.0	9.06	22.214	22.12	0.00	0.15	2.76	0.85	1.00	0.00	31.44	93.93	0.00	4,082.6	0.0	667.91	559.90	1,227.81
5	90.0	9.55	16.204	22.13	0.00	0.15	2.75	0.85	1.00	0.00	26.34	93.93	0.00	3,381.1	0.0	588.86	590.32	1,179.18
6	110.0	9.96	14.054	18.58	0.00	0.16	2.73	0.85	1.00	0.00	22.51	93.93	0.00	3,123.7	0.0	521.15	615.79	1,136.94
7	130.0	10.32	11.609	15.03	0.00	0.17	2.71	0.85	1.00	0.00	18.42	93.93	0.00	2,606.3	0.0	438.43	637.84	1,076.26
8	150.0	10.63	11.624	11.69	0.00	0.20	2.60	0.85	1.00	0.00	16.59	83.28	0.00	2,219.8	0.0	390.35	574.37	964.72
9	170.0	10.92	10.350	9.58	0.00	0.21	2.57	0.85	1.00	0.00	14.31	24.09	0.00	1,234.7	0.0	341.79	162.78	504.57
														31,588.2	**0.0**			**9,480.68**

Force/Stress Compression Summary

Structure:	CT10024-A-SBA	**Code:**	EIA/TIA-222-H	1/27/2023	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	20	PX - 8" DIA PIPE	-354.87	1.2D + 1.0W Normal Wind	9.77	100	100	100	40.73	50.00	508.62	69.8	Member X
2	40	PX - 8" DIA PIPE	-320.25	1.2D + 1.0W Normal Wind	9.77	100	100	100	40.72	50.00	508.65	63.0	Member X
3	60	PSP - ROHN 8 EHS	-283.33	1.2D + 1.0W Normal Wind	9.77	100	100	100	40.15	50.00	388.77	72.9	Member X
4	80	PX - 6" DIA PIPE	-250.13	1.2D + 1.0W Normal Wind	6.51	100	100	100	35.68	50.00	344.41	72.6	Member X
5	100	PSP - ROHN 6 EHS	-211.54	1.2D + 1.0W Normal Wind	6.51	100	100	100	35.12	50.00	276.03	76.6	Member X
6	120	PX - 5" DIA PIPE	-172.58	1.2D + 1.0W Normal Wind	6.51	100	100	100	42.47	50.00	240.98	71.6	Member X
7	140	PX - 4" DIA PIPE	-131.20	1.2D + 1.0W Normal Wind	4.88	100	100	100	39.60	50.00	176.96	74.1	Member X
8	160	PX - 3" DIA PIPE	-80.53	1.2D + 1.0W Normal Wind	3.91	100	100	100	41.12	50.00	120.09	67.1	Member X
9	180	PST - 2-1/2" DIA PIPE	-32.42	1.2D + 1.0W Normal Wind	0.25	100	100	100	3.17	50.00	76.62	42.3	Member X

HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	20										0.00	0	0				
2	40										0.00	0	0				
3	60										0.00	0	0				
4	80										0.00	0	0				
5	100										0.00	0	0				
6	120										0.00	0	0				
7	140										0.00	0	0				
8	160	SAE - 2X2X0.25	-0.43	0.9D + 1.0W Normal Wind	4.58	100	100	100	140.56	36.00	13.62	1	1	13.81	17.40	3.2	Member Z
9	180	SAE - 2X2X0.25	-0.28	0.9D + 1.0W Normal Wind	4.58	100	100	100	140.56	36.00	13.62	1	1	13.81	17.40	2.1	Member Z

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	20	SAE - 4X4X0.25	-10.4	0.9D + 1.0W 90° Wind	21.87	48	48	48	158.45	50.00	22.12	1	1	19.87	23.4	52.4	Bolt Shear
2	40	SAE - 4X4X0.25	-10.6	0.9D + 1.0W 90° Wind	20.11	48	48	48	145.72	50.00	26.15	1	1	19.87	23.4	53.4	Bolt Shear
3	60	SAE - 3.5X3.5X0.25	-8.97	0.9D + 1.0W 90° Wind	19.20	48	48	48	159.33	50.00	19.05	1	1	19.87	23.4	47.1	Member Z
4	80	SAE - 3X3X0.25	-8.23	1.2D + 1.0W 90° Wind	15.95	48	48	48	155.22	50.00	17.11	1	1	19.87	23.4	48.1	Member Z
5	100	SAE - 2.5X2.5X0.25	-7.29	1.2D + 1.0W 90° Wind	14.12	48	48	48	165.68	36.00	12.41	1	1	13.81	17.4	58.8	Member Z
6	120	SAE - 2.5X2.5X0.25	-7.48	1.2D + 1.0W 90° Wind	11.14	48	48	48	130.71	36.00	19.94	1	1	13.81	17.4	54.2	Bolt Shear
7	140	SAE - 2X2X0.25	-7.21	1.2D + 1.0W 90° Wind	8.45	49	49	49	127.14	36.00	16.65	1	1	13.81	17.4	52.2	Bolt Shear
8	160	SAE - 2X2X0.25	-6.26	1.2D + 1.0W 90° Wind	7.50	49	49	49	114.58	36.00	19.87	1	1	13.81	17.4	45.3	Bolt Shear
9	180	SAE - 2X2X0.25	-5.30	1.2D + 1.0W 90° Wind	6.02	49	49	49	97.85	36.00	23.65	1	1	13.81	17.4	38.4	Bolt Shear

Force/Stress Tension Summary

Structure:	CT10024-A-SBA	**Code:**	EIA/TIA-222-H	1/27/2023	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	20	PX - 8" DIA PIPE	321.43	0.9D + 1.0W 60° Wind	50	574.20	56.0	Member
2	40	PX - 8" DIA PIPE	293.24	0.9D + 1.0W 60° Wind	50	574.20	51.1	Member
3	60	PSP - ROHN 8 EHS	260.84	0.9D + 1.0W 60° Wind	50	437.40	59.6	Member
4	80	PX - 6" DIA PIPE	230.28	0.9D + 1.0W 60° Wind	50	378.00	60.9	Member
5	100	PSP - ROHN 6 EHS	196.30	0.9D + 1.0W 60° Wind	50	302.09	65.0	Member
6	120	PX - 5" DIA PIPE	161.80	0.9D + 1.0W 60° Wind	50	274.95	58.8	Member
7	140	PX - 4" DIA PIPE	122.91	0.9D + 1.0W 60° Wind	50	198.45	61.9	Member
8	160	PX - 3" DIA PIPE	75.69	0.9D + 1.0W 60° Wind	50	135.90	55.7	Member
9	180	PST - 2-1/2" DIA PIPE	26.55	0.9D + 1.0W 60° Wind	50	76.68	34.6	Member

HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	-			50	0.00	0	0					
2	40	-			50	0.00	0	0					
3	60	-			50	0.00	0	0					
4	80	-			50	0.00	0	0					
5	100	-			36	0.00	0	0					
6	120	-			36	0.00	0	0					
7	140	-			36	0.00	0	0					
8	160	SAE - 2X2X0.25	0.41	1.2D + 1.0W 60° Wind	36	30.46	1	1	13.81	13.05	11.35	3.6	Blck Shear
9	180	SAE - 2X2X0.25	0.31	1.2D + 1.0W 60° Wind	36	30.46	1	1	13.81	13.05	11.35	2.8	Blck Shear

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	SAE - 4X4X0.25	10.14	0.9D + 1.0W 90° Wind	50	62.93	1	1	19.87	16.09	18.89	63.0	Bolt Bear
2	40	SAE - 4X4X0.25	10.42	0.9D + 1.0W 90° Wind	50	62.93	1	1	19.87	16.09	18.89	64.8	Bolt Bear
3	60	SAE - 3.5X3.5X0.25	8.78	0.9D + 1.0W 90° Wind	50	53.79	1	1	19.87	16.09	18.89	54.6	Bolt Bear
4	80	SAE - 3X3X0.25	8.25	1.2D + 1.0W 90° Wind	50	44.65	1	1	19.87	16.09	15.84	52.1	Blck Shear
5	100	SAE - 2.5X2.5X0.25	7.34	1.2D + 1.0W 90° Wind	36	32.71	1	1	13.81	13.05	12.71	57.7	Blck Shear
6	120	SAE - 2.5X2.5X0.25	7.26	1.2D + 1.0W 90° Wind	36	32.71	1	1	13.81	13.05	12.71	57.1	Blck Shear
7	140	SAE - 2X2X0.25	7.12	1.2D + 1.0W 90° Wind	36	24.55	1	1	13.81	13.05	9.99	71.2	Blck Shear
8	160	SAE - 2X2X0.25	6.17	1.2D + 1.0W 90° Wind	36	24.55	1	1	13.81	13.05	9.99	61.7	Blck Shear
9	180	SAE - 2X2X0.25	5.17	1.2D + 1.0W 90° Wind	36	24.55	1	1	13.81	13.05	9.99	51.7	Blck Shear

Seismic Section Forces

Structure:	CT10024-A-SBA	**Code:**	TIA-222-H	1/27/2023	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 15	

IES Tower Engineering Solutions

Load Case: 1.2D + 1.0Ev + 1.0Eh

Dead Load Factor	1.20	**Sds**	0.200	**Ss**	0.1880	**Fa**	1.6000	**Ke**	1.0778	**TL**	6.0000
Seismic Load Factor	1.00	**Sd1**	0.084	**S1**	0.0530	**Fv**	2.4000	**Kg**	0.0000	**Cs**	0.0431
Seismic Importance Factor	1.00	**W1**	19.62	**R**	3.0000	**Vs**	1.8025	**T**	0.6556	**f1**	1.5252

Sect #	Elev (ft)	Wz (lb)	Lateral Fsz (lbs)	Vertical Ev (lbs)
1	10.00	5389.2	20.63	216.25
2	30.00	5246.6	65.49	210.53
3	50.00	4304.0	91.74	172.71
4	70.00	4082.5	124.55	163.82
5	90.00	3381.0	133.27	135.67
6	110.00	3123.7	151.91	125.35
7	130.00	2606.3	149.63	104.58
8	150.00	6126.7	438.63	245.85
9	170.00	7527.3	626.69	302.05

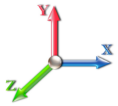
Load Case: 0.9D + 1.0Ev + 1.0Eh

Dead Load Factor	0.90	**Sds**	0.200	**Ss**	0.1880	**Fa**	1.6000	**Ke**	1.0778	**TL**	6.0000
Seismic Load Factor	1.00	**Sd1**	0.084	**S1**	0.0530	**Fv**	2.4000	**Kg**	0.0000	**Cs**	0.0431
Seismic Importance Factor	1.00	**W1**	19.62	**R**	3.0000	**Vs**	1.8025	**T**	0.6556	**f1**	1.5252

Sect #	Elev (ft)	Wz (lb)	Lateral Fsz (lbs)	Vertical Ev (lbs)
1	10.00	5389.2	20.63	216.25
2	30.00	5246.6	65.49	210.53
3	50.00	4304.0	91.74	172.71
4	70.00	4082.5	124.55	163.82
5	90.00	3381.0	133.27	135.67
6	110.00	3123.7	151.91	125.35
7	130.00	2606.3	149.63	104.58
8	150.00	6126.7	438.63	245.85
9	170.00	7527.3	626.69	302.05

Support Forces Summary

Structure:	CT10024-A-SBA	**Code:**	TIA-222-H	1/27/2023	
Site Name:	Voluntown	**Exposure:**	C		
Height:	180.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 16	



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Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.0W Normal Wind	1	0.00	363.00	-36.90	
	1a	12.93	-156.43	-11.59	
	1b	-12.93	-156.43	-11.59	
1.2D + 1.0W 60° Wind	1	-3.23	183.04	-18.11	
	1a	-17.30	183.04	6.26	
	1b	-28.82	-315.94	-16.64	
1.2D + 1.0W 90° Wind	1	-3.85	16.72	-1.03	
	1a	-27.76	307.75	13.85	
	1b	-26.15	-274.32	-12.83	
0.9D + 1.0W Normal Wind	1	0.00	358.37	-36.62	
	1a	13.16	-160.38	-11.73	
	1b	-13.16	-160.38	-11.73	
0.9D + 1.0W 60° Wind	1	-3.23	178.65	-17.84	
	1a	-17.06	178.65	6.12	
	1b	-29.05	-319.69	-16.77	
0.9D + 1.0W 90° Wind	1	-3.85	12.54	-0.75	
	1a	-27.52	303.19	13.71	
	1b	-26.38	-278.12	-12.96	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.00	115.03	-7.58	
	1a	4.42	-9.52	-3.58	
	1b	-4.42	-9.52	-3.58	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.85	72.64	-3.07	
	1a	-3.08	72.64	0.80	
	1b	-8.47	-49.28	-4.89	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-0.99	32.00	1.21	
	1a	-5.66	102.81	2.70	
	1b	-7.77	-38.81	-3.91	
1.2D + 1.0Ev + 1.0Eh	1	0.00	30.15	4.87	
	1a	5.66	10.84	-3.32	
	1b	-5.66	10.84	-3.32	
0.9D + 1.0Ev + 1.0Eh	1	0.00	25.95	5.15	
	1a	5.90	6.67	-3.46	
	1b	-5.90	6.67	-3.46	
1.0D + 1.0W Normal Wind	1	0.00	88.97	-8.79	
	1a	2.23	-23.59	-2.21	
	1b	-2.23	-23.59	-2.21	
1.0D + 1.0W 60° Wind	1	-0.74	50.00	-4.66	
	1a	-4.40	50.00	1.69	
	1b	-5.72	-58.21	-3.30	
1.0D + 1.0W 90° Wind	1	-0.87	13.93	-0.91	
	1a	-6.71	77.10	3.37	
	1b	-5.14	-49.24	-2.47	

Max Reactions

Leg			Overturning		
Max Uplift:	-319.69	(kips)	Moment:	6333.64	(ft-kips)
Max Down:	363.00	(kips)	Total Down:	50.15	(kips)
Max Shear:	36.90	(kips)	Total Shear:	60.08	(kips)

Max Reactions

Leg			Overturning		
Max Uplift:	-319.69	(kips)	Moment:	6333.64	(ft-kips)
Max Down:	363.00	(kips)	Total Down:	50.15	(kips)
Max Shear:	36.90	(kips)	Total Shear:	60.08	(kips)

Anchor Bolts

Bolt Size (in.):	1.00	Number Bolts:	10	Type:	UnGrouted
Yield Strength (Ksi):	109.00	Tensile Strength (Ksi):	125.00		
		Length:	1.00		

Interaction Ratios:

Tensile: **0.72** Compression: **0.63**

Max Usages

Max Leg: 76.6% (1.2D + 1.0W Normal Wind - Sect 5)
Max Diag: 71.2% (1.2D + 1.0W 90° Wind - Sect 7)
Max Horiz: 3.6% (1.2D + 1.0W 60° Wind - Sect 8)

Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
0.9D + 1.0Ev + 1.0Eh - Normal To Face	144.15	0.0465	0.0015	0.0457
	151.95	0.0531	0.0015	0.0520
	164.15	0.0646	0.0016	0.0565
	175.85	0.0769	0.0015	0.0607
0.9D + 1.0W 130 mph Wind at 60° From Face	144.15	1.0663	0.0400	0.9803
	151.95	1.2081	0.0414	1.0871
	164.15	1.4505	0.0446	1.1591
	175.85	1.6966	0.0449	1.2191
0.9D + 1.0W 130 mph Wind at 90° From Face	144.15	1.0746	-0.0467	0.9905
	151.95	1.2175	-0.0482	1.0926
	164.15	1.4614	-0.0523	1.1748
	175.85	1.7093	-0.0522	1.2264
0.9D + 1.0W 130 mph Wind at Normal To Face	144.15	1.1004	0.0411	1.0082
	151.95	1.2465	0.0423	1.1170
	164.15	1.4953	0.0461	1.1914
	175.85	1.7487	0.0458	1.2500
1.0D + 1.0W 60 mph Wind at 60° From Face	144.15	0.2294	0.0082	0.2100
	151.95	0.2598	0.0084	0.2327
	164.15	0.3117	0.0089	0.2478
	175.85	0.3643	0.0086	0.2619
1.0D + 1.0W 60 mph Wind at 90° From Face	144.15	0.2316	-0.0097	0.2125
	151.95	0.2622	-0.0099	0.2343
	164.15	0.3146	-0.0105	0.2517
	175.85	0.3677	-0.0103	0.2637

1.0D + 1.0W 60 mph Wind at Normal To Face	144.15	0.2370	0.0083	0.2160
	151.95	0.2682	0.0085	0.2391
	164.15	0.3216	0.0090	0.2551
	175.85	0.3757	0.0088	0.2680
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	144.15	0.2536	0.0092	0.2260
	151.95	0.2862	0.0095	0.2494
	164.15	0.3413	0.0100	0.2649
	175.85	0.3978	0.0098	0.2809
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	144.15	0.2548	-0.0108	0.2278
	151.95	0.2875	-0.0111	0.2500
	164.15	0.3428	-0.0119	0.2681
	175.85	0.3996	-0.0117	0.2817
1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	144.15	0.2577	0.0092	0.2296
	151.95	0.2908	-0.0095	0.2530
	164.15	0.3469	0.0101	0.2697
	175.85	0.4042	-0.0099	0.2836
1.2D + 1.0Ev + 1.0Eh - Normal To Face	144.15	0.0466	0.0016	0.0458
	151.95	0.0532	0.0015	0.0522
	164.15	0.0648	0.0016	0.0566
	175.85	0.0771	0.0015	0.0609
1.2D + 1.0W 130 mph Wind at 60° From Face	144.15	1.0685	0.0401	0.9829
	151.95	1.2107	0.0415	1.0901
	164.15	1.4537	0.0447	1.1624
	175.85	1.7006	0.0450	1.2231
1.2D + 1.0W 130 mph Wind at 90° From Face	144.15	1.0768	-0.0468	0.9931
	151.95	1.2200	-0.0483	1.0956
	164.15	1.4646	-0.0524	1.1782
	175.85	1.7133	-0.0523	1.2304
1.2D + 1.0W 130 mph Wind at Normal To Face	144.15	1.1027	0.0412	1.0109
	151.95	1.2491	0.0424	1.1201
	164.15	1.4986	0.0463	1.1949
	175.85	1.7528	-0.0459	1.2539

Mat Foundation Design for Self Supporting Tower

			Date: 1/27/2023
Customer Name:	SBA Communications Corp	TIA Standard:	TIA-222-H
Site Name:		Structure Height (Ft.):	180
Site Nmber:	CT10024-A-SBA	Engineer Name:	J. Tibbetts
Engr. Number:	138162	Engineer Login ID:	

Foundation Info Obtained from: Drawings/Calculations

Analysis or Design? Analysis

Number of Tower Legs: 3 Legs

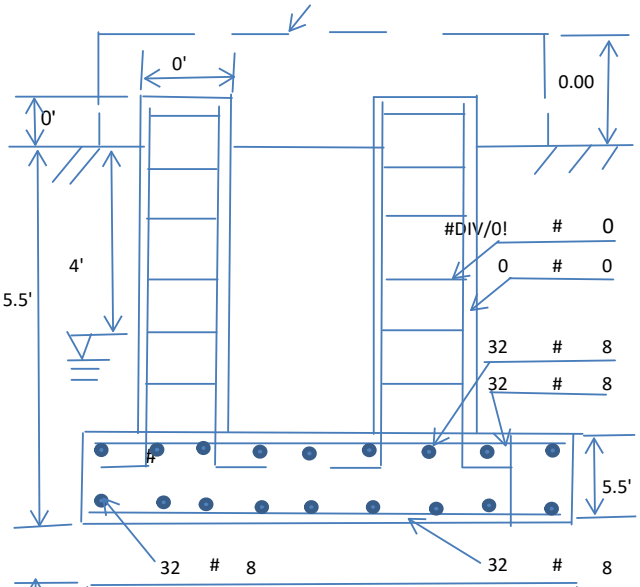
Base Reactions (Factored):

(1). Individual Leg:

Axial Load (Kips):	363.0	Uplift Force (Kips):	319.7
Shear Force (Kips):	36.9		
(2). Tower Base:			
Total Vertical Load (Kips):	50.2	Total Shear Force (Kips):	60.1
Moment (Kips-ft):	6333.6		

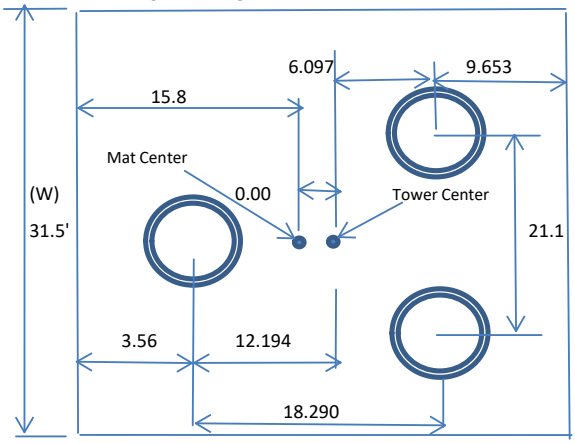
Foundation Geometries:

Leg distance (Center-to-Center ft.):		21.1	Mods required -Yes/No ?:	No	
Diameter of Pier (ft.):	Round	0.0	Pier Height A. G. (ft.):	0.00	
Tower center to mat center (ft):		0	Depth of Base BG (ft.):	5.5	
Length of Pad (ft.):		31.5	Width of Pad (ft.):	31.5	
Thickness of Pad (ft):		5.50			



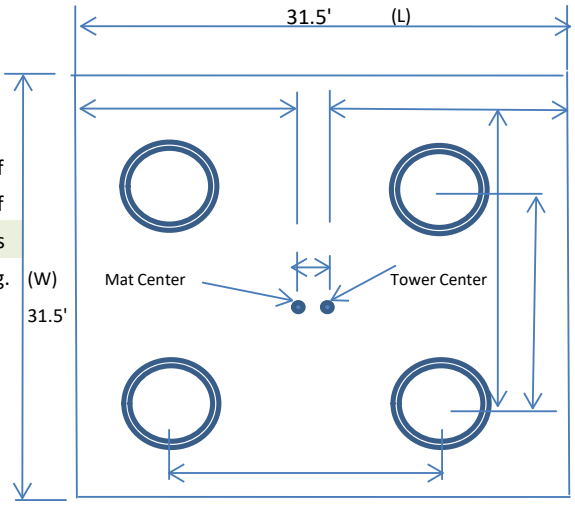
Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi	(W)
Vertical bar yield (ksi)	0	Tie steel yield (ksi):	60		31.5'
Vertical Rebar Size #:		Tie / Stirrup Size #:			
Qty. of Vertical Rebars:		Tie Spacing (in):			
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8		
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf	
Rebar at the bottom of the concrete pad:					
Qty. of Rebar in Pad (L):	32	Qty. of Rebar in Pad (W):	32		
Rebar at the top of the concrete pad:					
Qty. of Rebar in Pad (L):	32	Qty. of Rebar in Pad (W):	32		



Soil Design Parameters:

Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	50.0	Pcf	
Water Table B.G.S. (ft):	4.0	Unit Weight of Water:	62.4	pcf	
Ultimate Bearing Pressure (psf):	12000	Consider ties in concrete shear strength:		Yes	
Consider Soil Lateral Resistance ?	Yes	Enter soil C (psf) or Phi (deg.):	30.0	Deg.	(W)
		Depth to ignor lateral resistance	1.0	Ft.	31.5'



A l 1.3 f or e/w er /H 1.3

Foundation Analysis and Design:	lift Strengt euc tion ac tor	0.	Co ress ion Strengt euc tion ac tor	0.			
	Total Dr Soil o lu e cu. t.	0.00	Total Dr Soil eigt Kis	0.00			
	Total Buo ant Soil o lu e cu. t.	0.00	Total Buo ant Soil eigt K is	0.00			
	Total Effecti e Soil eigt Kis	0.00	eigt fr o te Concr ete Bloc at To K	0.00			
	Total Dr Concrete o lu e cu. t.	36.00	Total Dr Concrete eigt K is	.3			
	Total Buo ant Concrete o lu e cu. t.	1488.38	Total Buo ant Concete eigt K is	130.38			
	Total Effecti e Concrete eigt Kis	2.3	Total er tical oa on Base Kis	.88			
Check Soil Capacities:					oa / Caacit ati o		
Calcula e a iu et S oil res sure uner te base s f		2380.4	Allowable actore Soil Bearing sf	000	0.26	OK!	
Allowable ouna tion Oer turning esis tance is- ft.		110.1	Design ac tore oont is- ft	6664	0.60	OK!	
actor of Saet Against Oer turning O. . oent/D esign o ent		1.66	OK!				
Check the capacities of Reinforceing Concrete:							
Strengt r euction f actor le ure an aial tens ion		0.0	Strengt r euction fac tor Sear	0.			
Strengt r euction f actor Aial co resion		0.6	in oa actor on Concete Design	1.00			
					oa / Ca adit atio		
1 Concrete ier							
ert ical Steel ebar Areas. in./eac		/A	Tie / Stiru Ar ea s. in./eac	/A			
Calcula e o ent Caacit nKis - t		/A /A	Design actore o ent u Kis - t	0.2	/A		
Calcula e S ear C aacit Kis		DI /0!	Design actore S ear Kis	36.	DI /0!		
Calcula e T ension Caacit T n Kis		/A /A	Design actore T ension Tu Kis	31.	/A		
Calcula e Co ress ion Caacit n Kis		/A /A	Design actore A ial oa u Kis	363.0	/A		
o ent Tension Strengt Cobinat ion		/A /A	Cec T ie Sacing D esign/e'	DI /0!			
ier einf orceent atio		/A	/A				
2.C oncrete a							
One-a Des ign Sear Caacit or Dir ection Kis		2241.3	One- a actore S e ar / -Dir Kis	34.	0.1	OK!	
One-a Des ign Sear Caacit Diagonal Dir. Kis		16.6	One- a actore S e ar Dia. Dir Kis	340.1	0.20	OK!	
ower Steel a ein force ent atio or - Direct.		0.0011	ower Steel einf. at io Dia. Dir.	0.000			
ower Steel a oent Caacit or - Dir. Kis- ft		042.	o en t at Botto -Direc t. K-t	333.4	0.4	OK!	
ower Steel a oent Caacit D ia. Direction K-ft		66.	o ent at Botto Dia. Di r. K-t	1468.6	0.21	OK!	
er Steel a einf orceent atio or -D irection		0.0011	er St eel einf . a tio D ia. Dir.	0.000			
er Steel a oent C aacit or -D ir. Kis- ft		042.	o ent at te to - Dir Kis- t	13.1	0.2	OK!	
er Steel a oent C aacit D ia. Direction K-ft		66.	o ent at te to Dia. Dir. K-t	16.	0.13	OK!	
unc ing ailure C aacit r o D own oa K is		216.4	unc. ailur e act ore S ear K	363.0	0.1	OK!	
unc ing ailure C aacit r o lif t K is		2064.6	unc. ailur e act ore S ear K	31.	0.1	OK!	
3 . Cec a . eccenticit of oa ing							
Te a iu ecc entricit of oaing		8. ft.	Allowable ecentricit 0.4 f t.	14.1		O	

Reinforce Concrete Pad by enlarging the size of pier (Yes/No): o

DISH Wireless L.L.C. SITE ID:

BOBOS00052A

DISH Wireless L.L.C. SITE ADDRESS:

111 STONE HILL ROAD
VOLUNTOWN, CT 06384

CONNECTICUT CODE OF COMPLIANCE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED 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

CODE TYPE	CODE
BUILDING	2022 CT STATE BUILDING CODE/2021 IBC W/ CT AMENDMENTS
MECHANICAL	2022 CT STATE BUILDING CODE/2021 IMC W/ CT AMENDMENTS
ELECTRICAL	2022 CT STATE BUILDING CODE/2020 NEC W/ CT AMENDMENTS

SHEET INDEX

SCOPE OF WORK

THIS IS NOT AN ALL INCLUSIVE LIST. CONTRACTOR SHALL UTILIZE SPECIFIED EQUIPMENT PART OR ENGINEER APPROVED EQUIVALENT. CONTRACTOR SHALL VERIFY ALL NEEDED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE. THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING:

TOWER SCOPE OF WORK:
- INSTALL (3) PROPOSED PANEL ANTENNAS (1 PER SECTOR)
- INSTALL (3) PROPOSED SECTOR FRAMES
- INSTALL PROPOSED JUMPERS
- INSTALL (6) PROPOSED RRUs (2 PER SECTOR)
- INSTALL (1) PROPOSED OVER VOLTAGE PROTECTION DEVICE (OVP)
- INSTALL (1) PROPOSED HYBRID CABLE

GROUND SCOPE OF WORK:
- INSTALL (1) PROPOSED ICE BRIDGE
- INSTALL (1) PROPOSED PPC CABINET
- INSTALL (1) PROPOSED EQUIPMENT CABINET
- INSTALL (1) PROPOSED POWER CONDUIT
- INSTALL (1) PROPOSED TELCO CONDUIT
- INSTALL (1) PROPOSED TELCO-FIBER BOX
- INSTALL (1) PROPOSED GPS UNIT
- INSTALL (1) PROPOSED FIBER NID (IF REQUIRED)

SITE PHOTO

UNDERGROUND SERVICE ALERT CBYD 811
UTILITY NOTIFICATION CENTER OF CONNECTICUT
(800) 922-4455
WWW.CBYD.COM

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE. NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE, AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.

SITE INFORMATION

PROPERTY OWNER:	THOMAS & PATRICIA SWEET
ADDRESS:	497 EKONK HILL RD VOLUNTOWN, CT 06384
TOWER TYPE:	SELF-SUPPORT TOWER
TOWER CO SITE ID:	CT10024-A
TOWER APP NUMBER:	178862
COUNTY:	NEW LONDON
LATITUDE (NAD 83):	41° 36' 23.1" N 41.606411
LONGITUDE (NAD 83):	71° 51' 04.1" W -71.851133
ZONING JURISDICTION:	NEW LONDON COUNTY
ZONING DISTRICT:	R
PARCEL NUMBER:	CT-147-043/005-00/0497
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	II-B
POWER COMPANY:	CONNECTICUT LIGHT & POWER
TELEPHONE COMPANY:	AT&T

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	SBA COMMUNICATAIONS CORP. 8051 CONGRESS AVENUE BOCA RATON, FL 33487 (800) 487-7483
SITE DESIGNER:	B+T GROUP 1717 S. BOULDER AVE, SUITE 300 TULSA, OK 74119 (918) 587-4630
SITE ACQUISITION:	JEAN COTTRELL jean.cottrell@dish.com
CONST. MANAGER:	CHAD WILCOX chad.wilcox@dish.com
RF ENGINEER:	DIPESH PARIKH dipesh.parikh@dish.com

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:

GET ON BRADLEY INTERNATIONAL AIRPORT CON IN EAST GRANBY FROM BRADLEY INTERNATIONAL AIRPORT TAKE I-91 S, CT-2 E AND I-395 N TO GRISWOLD EXPY IN GRISWOLD. TAKE EXIT 22 FROM I-395 N FOLLOW CT-138 E AND CT-49 N TO STONE HL RD IN VOLUNTOWN. ARRIVE AT BOBOS00052A.

VICINITY MAP

NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA

8051 CONGRESS AVENUE
BOCA RATON, FL 33487

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

STATE OF CONNECTICUT
CHAD WILCOX
No. 23924
LICENSED
PROFESSIONAL ENGINEER

3/6/23

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
MEH	RMC	RMC

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	1/18/22	ISSUED FOR REVIEW
0	3/8/22	ISSUED FOR CONSTRUCTION
1	3/6/23	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149456.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00052A
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

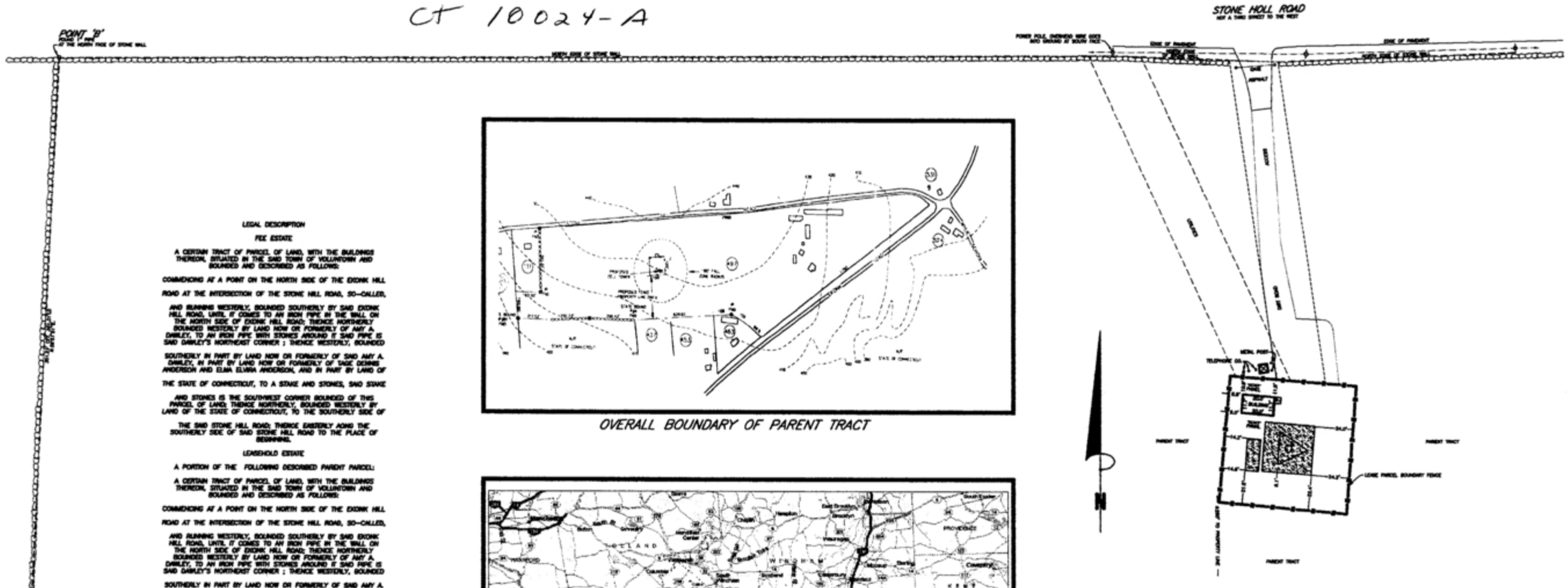
SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

CT 10024-A



LEGAL DESCRIPTION

FEE ESTATE

A CERTAIN TRACT OF PARCEL OF LAND, WITH THE BUILDINGS THEREON, SITUATED IN THE SAID TOWN OF VOLUNTOWN AND BOUNDED AND DESCRIBED AS FOLLOWS:

COMMENCING AT A POINT ON THE NORTH SIDE OF THE EKONK HILL ROAD AT THE INTERSECTION OF THE STONE HILL ROAD, SO—CALLED,

AND RUNNING WESTERLY, BOUNDED SOUTHERLY BY SAID EKONK HILL ROAD, UNTIL IT COMES TO AN IRON PIPE IN THE WALL ON THE NORTH SIDE OF EKONK HILL ROAD; THENCE NORTHERLY BOUNDED WESTERLY BY LAND NOW OR FORMERLY OF AMY A. DARLEY, TO AN IRON PIPE WITH STONES AROUND IT SAID PIPE IS SAID DARLEY'S NORTHEAST CORNER ; THENCE WESTERLY, BOUNDED

SOUTHERLY IN PART BY LAND NOW OR FORMERLY OF SAID AMY A. DARLEY, IN PART BY LAND NOW OR FORMERLY OF TAGE DENNIS ANDERSON AND ELMA ELVIRA ANDERSON, AND IN PART BY LAND OF

THE STATE OF CONNECTICUT, TO A STAKE AND STONES, SAID STAKE

AND STONES IS THE SOUTHWEST CORNER BOUNDED OF THIS PARCEL OF LAND; THENCE NORTHERLY, BOUNDED WESTERLY BY LAND OF THE STATE OF CONNECTICUT, TO THE SOUTHERLY SIDE OF

THE SAID STONE HILL ROAD; THENCE EASTERLY ALONG THE SOUTHERLY SIDE OF SAID STONE HILL ROAD TO THE PLACE OF BEGINNING.

LEASEHOLD ESTATE

A PORTION OF THE FOLLOWING DESCRIBED PARENT PARCEL:

A CERTAIN TRACT OF PARCEL OF LAND, WITH THE BUILDINGS THEREON, SITUATED IN THE SAID TOWN OF VOLUNTOWN AND BOUNDED AND DESCRIBED AS FOLLOWS:

COMMENCING AT A POINT ON THE NORTH SIDE OF THE EKONK HILL ROAD AT THE INTERSECTION OF THE STONE HILL ROAD, SO—CALLED,

AND RUNNING WESTERLY, BOUNDED SOUTHERLY BY SAID EKONK HILL ROAD, UNTIL IT COMES TO AN IRON PIPE IN THE WALL ON THE NORTH SIDE OF EKONK HILL ROAD; THENCE NORTHERLY BOUNDED WESTERLY BY LAND NOW OR FORMERLY OF AMY A. DARLEY, TO AN IRON PIPE WITH STONES AROUND IT SAID PIPE IS SAID DARLEY'S NORTHEAST CORNER ; THENCE WESTERLY, BOUNDED

SOUTHERLY IN PART BY LAND NOW OR FORMERLY OF SAID AMY A. DARLEY, IN PART BY LAND NOW OR FORMERLY OF TAGE DENNIS ANDERSON AND ELMA ELVIRA ANDERSON, AND IN PART BY LAND OF

THE STATE OF CONNECTICUT, TO A STAKE AND STONES, SAID STAKE

AND STONES IS THE SOUTHWEST CORNER BOUNDED OF THIS PARCEL OF LAND; THENCE NORTHERLY, BOUNDED WESTERLY BY LAND OF THE STATE OF CONNECTICUT, TO THE SOUTHERLY SIDE OF

THE SAID STONE HILL ROAD; THENCE EASTERLY ALONG THE SOUTHERLY SIDE OF SAID STONE HILL ROAD TO THE PLACE OF BEGINNING.

PLOTTABLE TITLE EXCEPTIONS LAWYERS TITLE INSURANCE CORPORATION NO.CR02463SLT

EXCEPTION NO.	INSTRUMENT	COMMENT
3.	73—453	NOT PROVIDED TO SURVEYOR

I HEREBY CERTIFY TO SBA TOWERS II LLC A FLORIDA LIMITED LIABILITY COMPANY, SIDDMAN, PRIEWITT & DIBELLO, PA AND LAWYERS TITLE INSURANCE CORPORATION, THE FOLLOWING:

THIS SURVEYOR HAS RECEIVED AND REVIEWED THAT CERTAIN TITLE COMMITMENT NO. CR02463SLT

ISSUED BY LAWYERS TITLE INSURANCE CORPORATION WITH AN EFFECTIVE DATE OF 03—16—07, WHICH PROPOSES TO INSURE THE LANDS DESCRIBED UNDER ITS SCHEDULE A.

THIS SURVEYOR KNOWS OF HIS OWN KNOWLEDGE THAT THE LANDS DESCRIBED UNDER SAID SCHEDULE A OF THE TITLE COMMITMENT CONTAIN OR INCLUDE THE LANDS DESCRIBED IN AND DEPICTED ON THIS SURVEY.

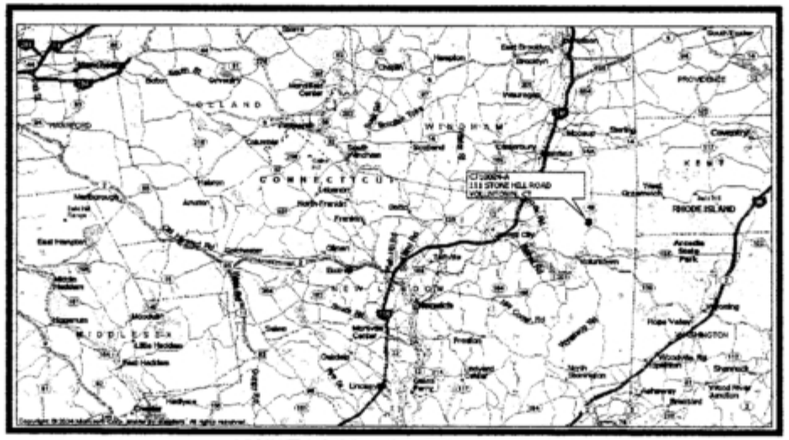
THIS SURVEYOR FURTHER KNOWS OF HIS OWN KNOWLEDGE THAT THE EASEMENTS OF RECORD AND IDENTIFIED UNDER SCHEDULE B—2 OF SAID TITLE COMMITMENT ENCUMBER THE LANDS DESCRIBED ON THIS SURVEY, BUT SAID EASEMENTS WILL NOT INTERFERE WITH THE LOCATION OF

THE PROPOSED INSURED LANDS, INCLUDING THE LEASED AREA AND ANY AND ALL ACCESS, UTILITY AND GUY WIRE EASEMENT PARCELS.

PAUL J. STOWELL, REGISTERED LAND SURVEYOR 70216 DATE: 07—09—06

NOT VALID WITHOUT THE ORIGINAL SIGNATURE AND SEAL OF THE STATE LICENSED REGISTERED LAND SURVEYOR.

OVERALL BOUNDARY OF PARENT TRACT



VICINITY MAP NOT TO SCALE

ZONE RD
ADDRESS 111 STONE HILL ROAD
DEED VOL. 58, PG. 451
ASSESSORS ID MAP #43, LOT # 05
FLOOD ZONE C "FIRM" MAP #090143 0053 B DATED 06—03—1985.
AREA OF LEASE PARCEL SQUARE FEET
AREA OF ACCESS EASEMENT SQUARE FEET

Scale 1" = 30'

IMPROVEMENT LOCATION SURVEY
AND EASEMENT MAP
111 STONE HILL ROAD
VOLUNTOWN, CT
PREPARED FOR
SBA TOWERS II LLC

ABBREVIATIONS

P.K.N.	DENOTES PERMANENT REFERENCE MONUMENT
FND	DENOTES FOUND
SIR	DENOTES IRON ROD
SIP	DENOTES IRON PIPE
MH	DENOTES MANHOLE
CATCH	DENOTES CATCH BASIN
PP	DENOTES POWER POLE
SMH, MH	DENOTES SANITARY SEWER MANHOLE
CAJB	DENOTES CABLE JUNCTION BOX
WM	DENOTES WATER METER
WV	DENOTES WATER VALVE
OH WIRE	DENOTES OVERHEAD WIRES
CLF	DENOTES CHAIN LINK FENCE
N.F.S.	DENOTES NOT TO SCALE
FC	DENOTES FENCE CORNER
FL	DENOTES FENCE LINE
POF	DENOTES PIPE ON FENCE
COF	DENOTES CENTER OF FOUNDATION
UGS	DENOTES UNDERGROUND TURNING SPACE
CC	DENOTES CONCRETE
CW	DENOTES CONCRETE WALK
FND	DENOTES FOUND IRON ROD AND DISC
BC	DENOTES BUILDING CORNER
POC	DENOTES POINT OF COMMENCEMENT
POB	DENOTES POINT OF BEGINNING
PC	DENOTES POINT OF CURVATURE
PT	DENOTES POINT OF TANGENCY
CP	DENOTES CONCRETE MONUMENT FOUND
CL	DENOTES CENTERLINE
CLP	DENOTES CONNECTICUT LIGHT AND POWER
CPRB	DENOTES CAPITOL RECORDS BOOK
PKF	DENOTES PARKER KALON FASTENER
PK	DENOTES PARKER KALON
SET	DENOTES SET 1/2" PIN & CAP
FND	DENOTES SET IRON ROD & DISC
N/F	DENOTES NOW OR FORMERLY
CT	DENOTES CALCULATED FROM FIELD TRAVERSE

GENERAL NOTES

1. FIELD SURVEY DATE: 04—03—07
2. VERTICAL DATUM: NAVD 88
3. HORIZONTAL DATUM: NAD 83
4. TOWER COORDINATES
   LATITUDE 41 DEGREES 38 MINUTES 23.38 SECONDS
   LONGITUDE 71 DEGREES 51 MINUTES 0%.05" SECONDS
   ELEVATION 446 FEET
   HEIGHT OF TOWER 199'
   HEIGHT OF APPR ON TOWER 192
5. PROPERTY OWNER: THOMAS M. SWEET AND PATRICIA A. SWEET
6. SITE NAME: VOLUNTOWN
7. SITE NUMBER: CT10024—A
8. SITE ADDRESS: 111 STONE HILL ROAD
9. JURISDICTION: TOWN OF VOLUNTOWN
   NEW LONDON COUNTY, CT

NOTES

1. THIS SURVEY WAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTION 20—300B—1 THROUGH 20—300B—20 AND THE STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996;

THIS SURVEY CONFORMS TO A CLASS A—2 HORIZONTAL ACCURACY

SURVEY TYPE: IMPROVEMENT LOCATION SURVEY AND EASEMENT MAP

BOUNDARY DETERMINATION CATEGORY: RESURVEY

THE BOUNDARY LINES INDICATED HEREON REFLECT THE INFORMATION CONTAINED IN THE BELOW NAMED MAP REFERENCES.THE BEARINGS DEPICTED HEREON ARE ASSUMED TO BE N.02°51'51"E. BETWEEN THE FOUND PIPES LABLED POINT "A" AND POINT "B" AS SHOWN HEREON.

PROPERTY OWNER: THOMAS M. SWEET AND PATRICIA A. SWEET

MAP REFERENCE:
1. PLAN SHOWING TELECOMMUNICATIONS TOWER SITE ON PROPERTY OF THOMAS A. SWEET, STONEHILL ROAD AND EKONK HILL ROAD, A.K.A. CONNECTICUT ROUTE 49, VOLUNTOWN CONNECTICUT, ON FILE IN THE OFFICE OF THE CLERK AS MAP NUMBER 301 AND 301A.

2. COMPILATION PLAN SHOWING EASEMENT AREAS TO BE GRANTED TO THE CONNECTICUT POWER COMPANY ACROSS THE PROPERTY OF THOMAS M. AND PATRICIA A. SWEET, PREPARED FOR NEW ENGLAND SITE MANAGEMENT, LLC STONE HILL ROAD AND EKONK HILL ROAD A.K.A. CONNECTICUT ROUTE 49, VOLUNTOWN, CT

CENTERLINE — MUDD FENCE — METAL FENCE — CONCRETE BLOCK WALL — OVERHEAD WIRES — CONCRETE FENCE — GUY ANCHOR — 5.50' DENOTES ELEVATION — MONITORING WELL — CABLE JUNCTION BOX — POWER/LIGHT POLE — WATER METER — CLAP PAD

I HEREBY CERTIFY THAT THIS SURVEY AND MAP WERE PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTION 20—300B—1 THROUGH 20—300B—20 AND THE STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ADOPTED OF SEPTEMBER 26TH, 1996.

NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A CONNECTICUT LICENSED SURVEYOR

BY: [signature] DATE: 06-01-07

PAUL J. STOWELL, PROFESSIONAL LAND SURVEYOR — CONNECTICUT LICENSE NO. 70216

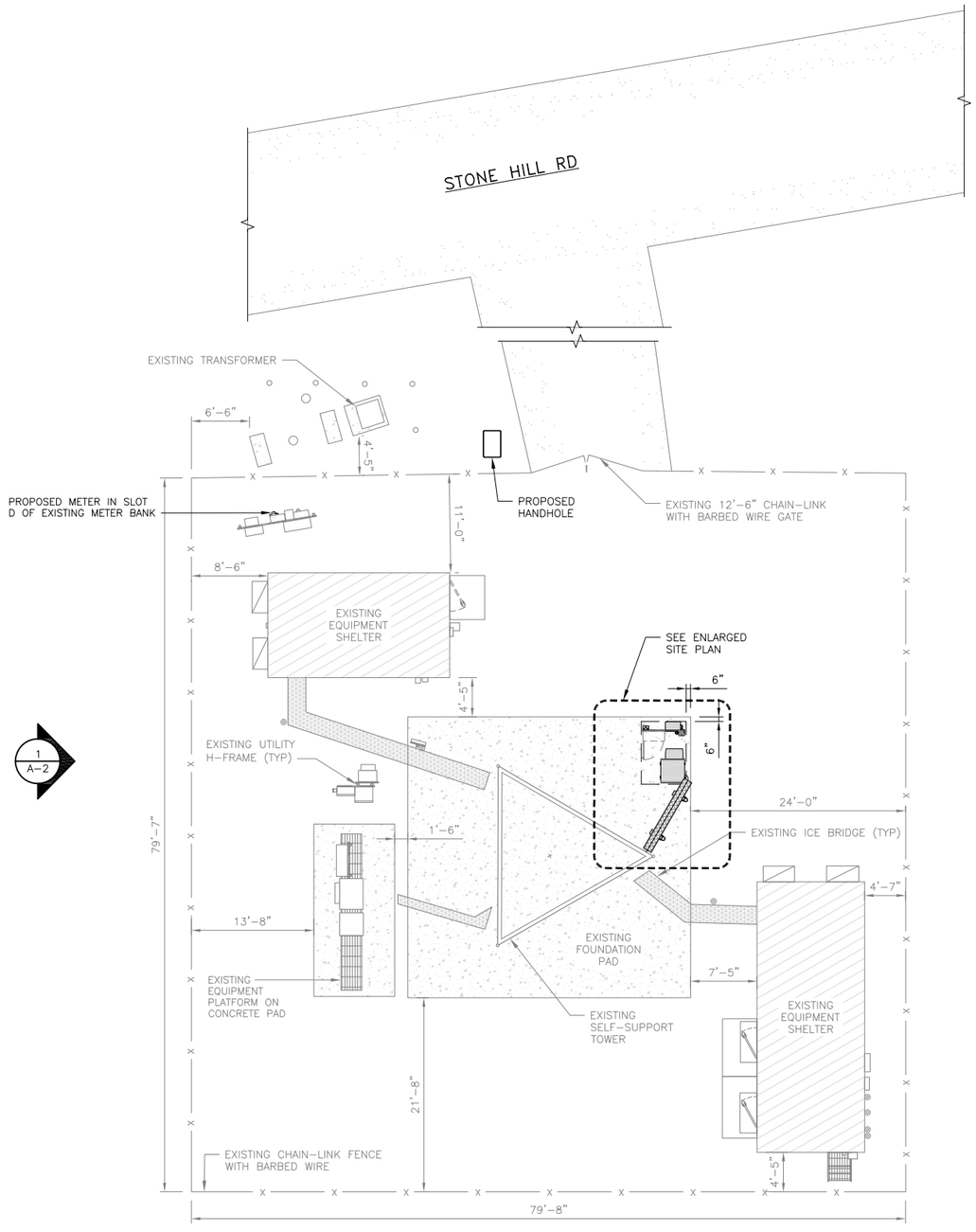
PAUL J. STOWELL
LAND SURVEYOR

171 WILCOX ROAD
WILFORD CT. 06460
PHONE (203) 882—9995
FAX (877) 977—9508

*Final Voluntown CT0024-A

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



1
A-2

N

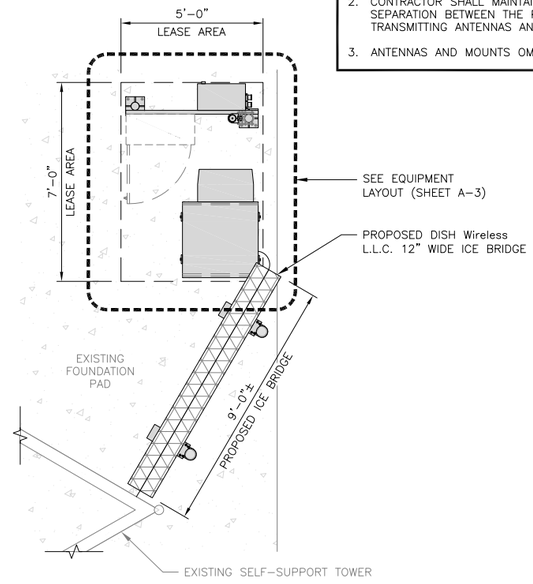
OVERALL SITE PLAN

8' 4' 0 8' 16'
1/8"=1'-0"

1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



N

ENLARGED SITE PLAN

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

2

NOT USED

NO SCALE

3

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5701 SOUTH SANTA FE DRIVE
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SUITE 300
TULSA, OK 74119
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STATE OF CONNECTICUT
CHAD M. TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
3/6/23
MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
MEH	RMC	RMC

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	1/18/22	ISSUED FOR REVIEW
0	3/8/22	ISSUED FOR CONSTRUCTION
1	3/6/23	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

149456.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00052A
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE

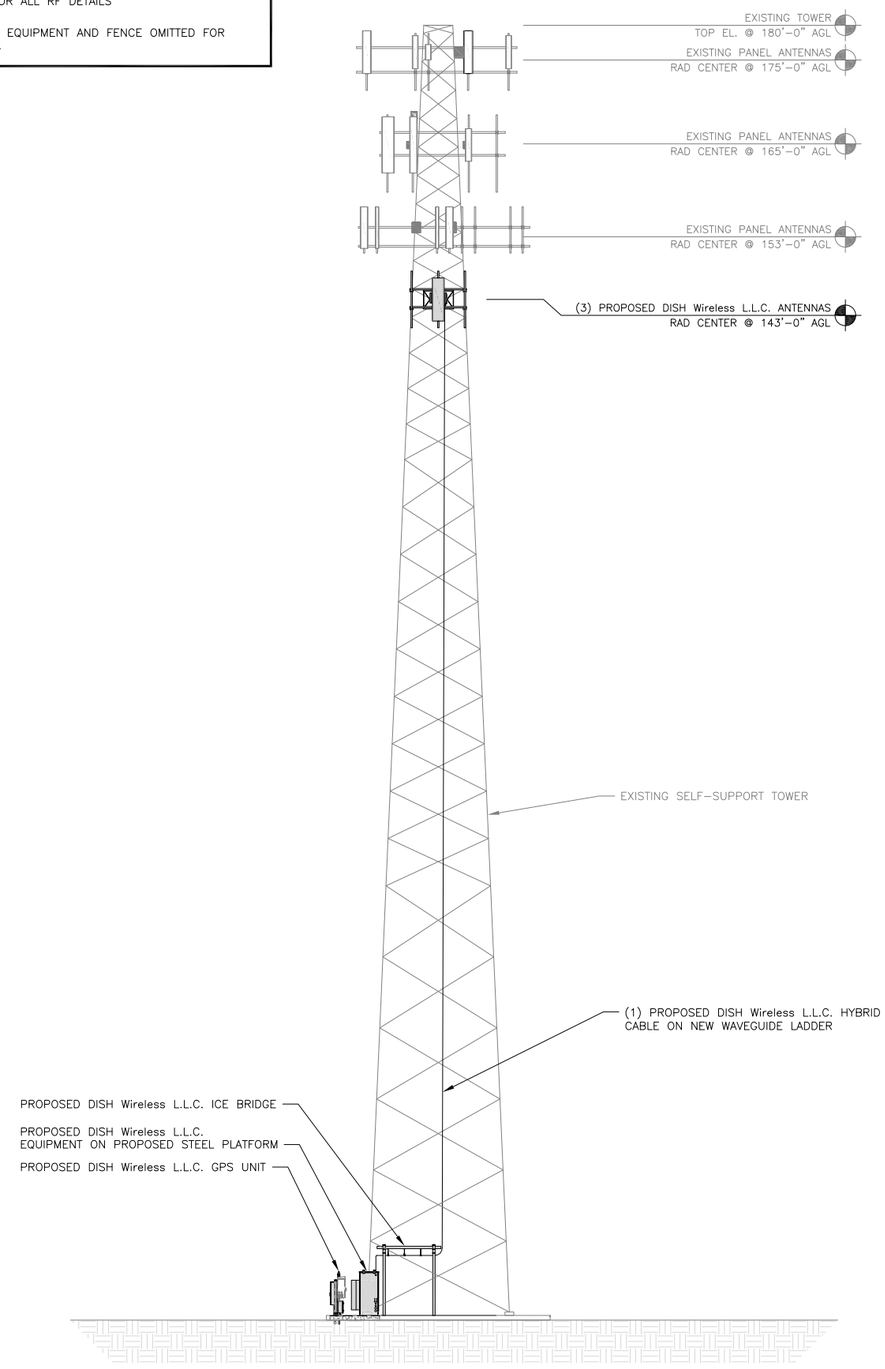
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

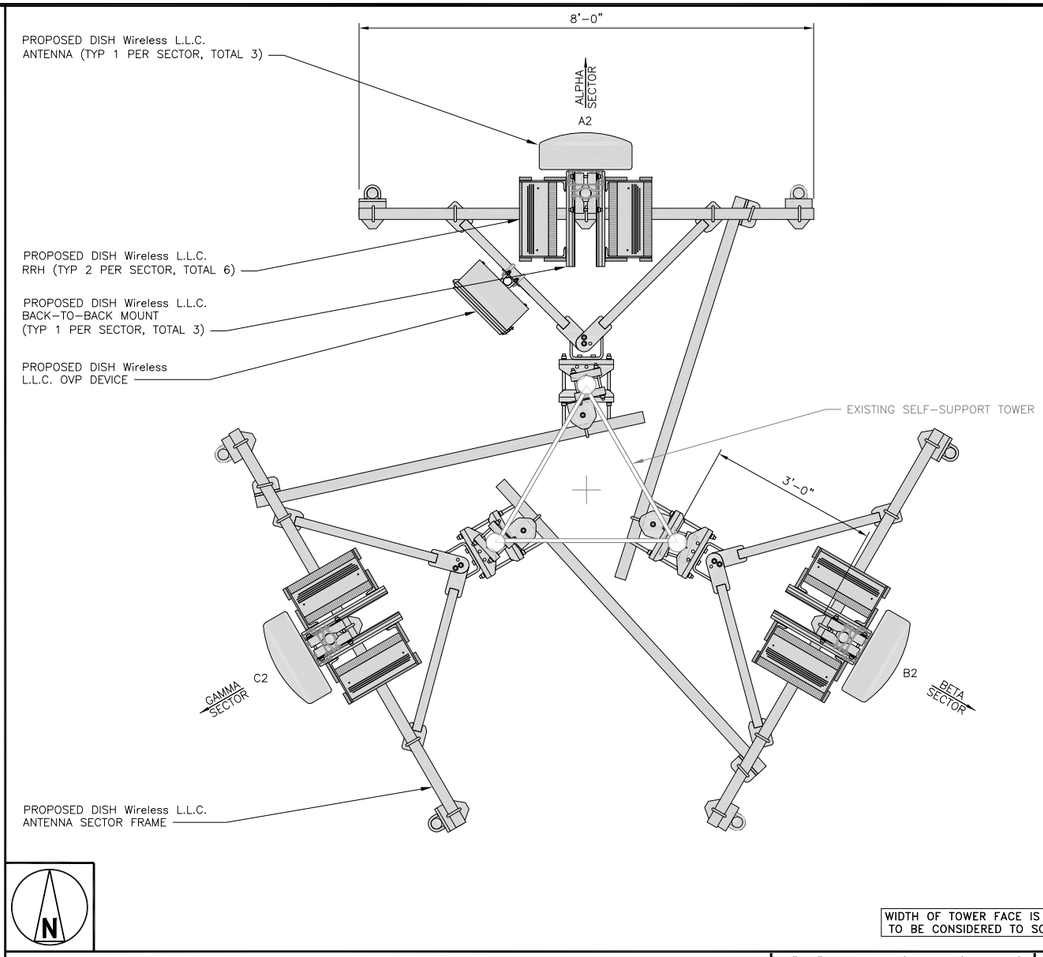
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED WEST ELEVATION

12' 8' 4' 0 10' 20'
3/32"=1'-0"

1



WIDTH OF TOWER FACE IS NOT TO BE CONSIDERED TO SCALE

ANTENNA LAYOUT

12" 6" 0 1' 2' 3'
3/4"=1'-0"

2

SECTOR POS.	ANTENNA					TRANSMISSION CABLE	RRH			OVP
	EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECH	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	MANUFACTURER – MODEL NUMBER	TECH	POS.	MANUFACTURER MODEL
A1	--	--	--	--	--	(1) HIGH-CAPACITY HYBRID CABLE (175' LONG)	FUJITSU – TA08025-B604	5G	A2	(1) RAYCAP RDIDC-9181-PF-48
A2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	0°	143'-0"		FUJITSU – TA08025-B605	5G	A2	
A3	--	--	--	--	--		--	--	--	
B1	--	--	--	--	--	SHARED W/ALPHA	FUJITSU – TA08025-B604	5G	B2	SHARED W/ALPHA
B2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	120°	143'-0"		FUJITSU – TA08025-B605	5G	B2	
B3	--	--	--	--	--		--	--	--	
C1	--	--	--	--	--	SHARED W/ALPHA	FUJITSU – TA08025-B604	5G	C2	SHARED W/ALPHA
C2	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	240°	143'-0"		FUJITSU – TA08025-B605	5G	C2	
C3	--	--	--	--	--		--	--	--	

NOTES

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.

ANTENNA SCHEDULE

NO SCALE

3

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MEH	RMC	RMC

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149456.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

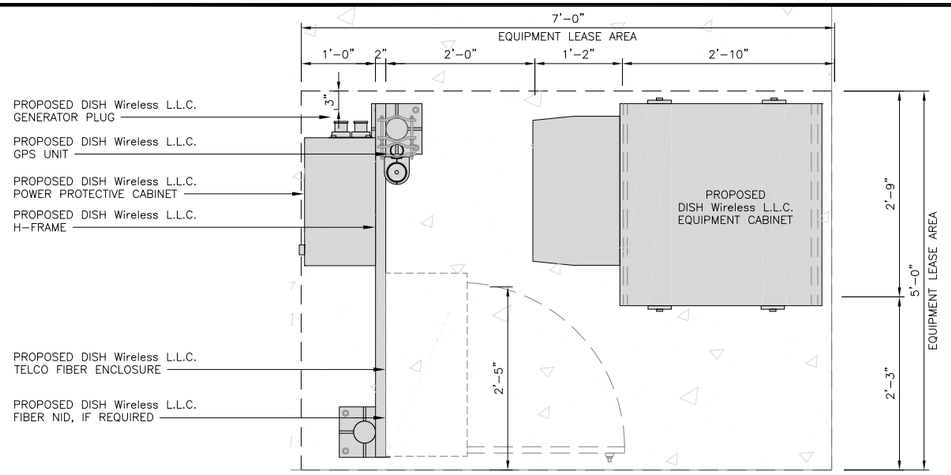
BOBOS00052A
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2

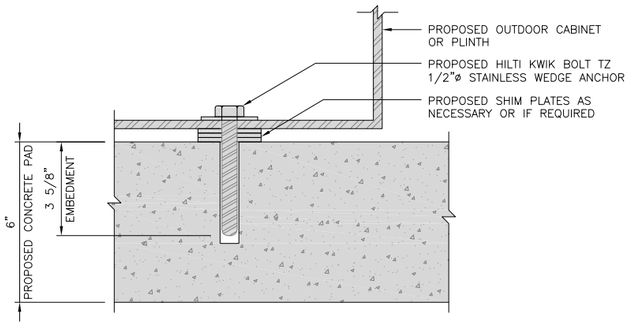


PAD EQUIPMENT PLAN

12" 9" 6" 3" 0 1' 2'
1"=1'-0"

1

NOT USED

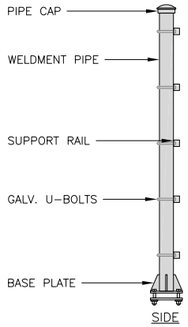


TYPICAL OUTDOOR EQUIPMENT TO CONCRETE SLAB ANCHORAGE

NO SCALE

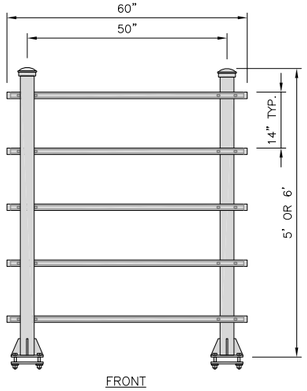
2

COMMSCOPE MTC4045HFLD H-FRAME	
UNISTRUT/SUPPORT RAILS QTY	5
WEIGHT	59.74 lbs



SIDE

NOTE:
OR DISH Wireless L.L.C. APPROVED EQUIVALENT



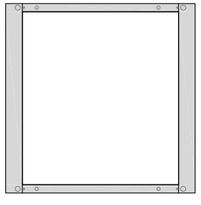
FRONT

H-FRAME DETAIL

NO SCALE

3

CHARLES INDUSTRY LT-97-002422 PLINTH KIT	
DIMENSIONS (HxWxD):	6"x 32"x 32"
NOTE: GASKET AND MOUNTING HARDWARE INCLUDED	



PLAN

FRONT/BACK

SIDE

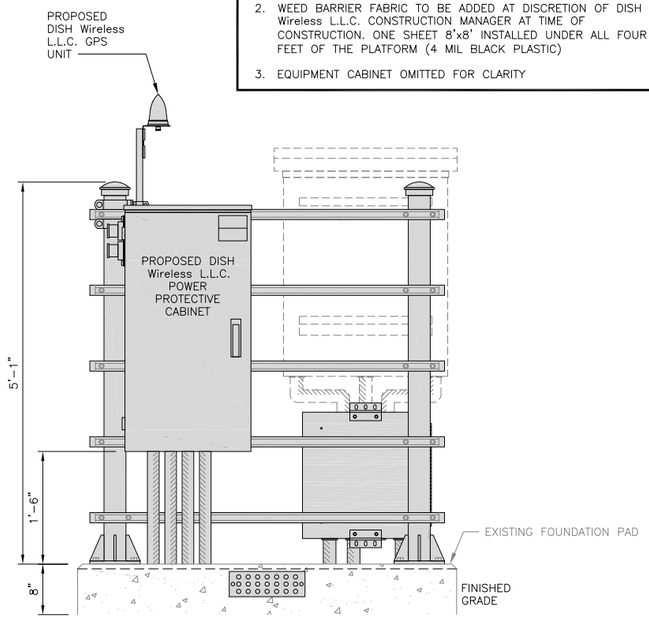
PLINTH DETAIL

NO SCALE

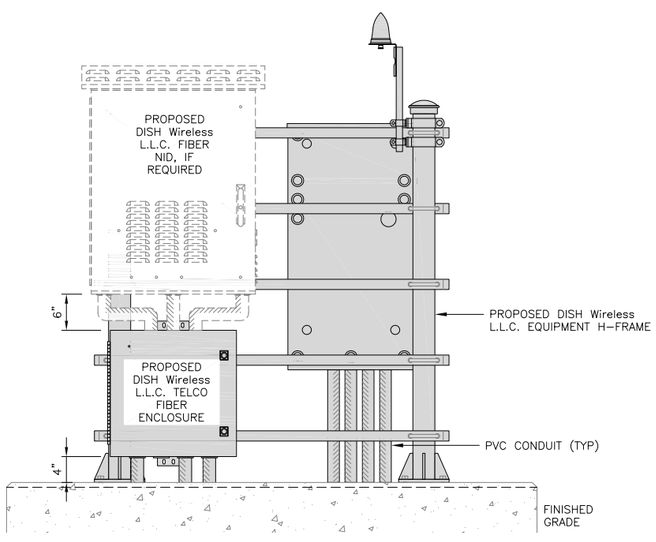
4

NOTES

1. CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
2. WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH Wireless L.L.C. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)
3. EQUIPMENT CABINET OMITTED FOR CLARITY



FRONT ELEVATION



BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION

12" 9" 6" 3" 0 1' 2'
1"=1'-0"

5

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RFDS REV #: 2

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A&E PROJECT NUMBER

149456.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00052A
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE

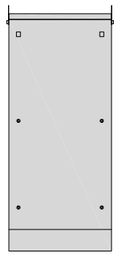
EQUIPMENT PAD AND H-FRAME DETAILS

SHEET NUMBER

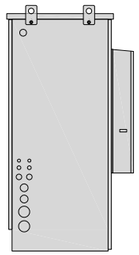
A-3

CHARLES INDUSTRY HVAC CUBE–PM63915IN4	
DIMENSIONS (HxWxD)	74"x32"x32"
POWER PLANT	–48VDC ABB/600W
TOTAL WEIGHT (EMPTY)	383 lbs

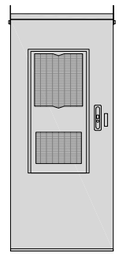
PLAN



BACK



SIDE

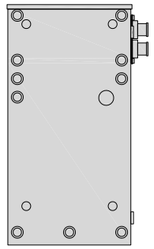


FRONT

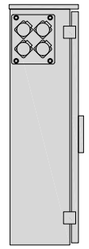
CABINET DETAIL | NO SCALE | 1

RAYCAP PPC RDIAC–2465–P–240–MTS	
ENCLOSURE DIMENSIONS (HxWxD):	39"x22.855"x12.593
WEIGHT:	80 lbs
OPERATING AC VOLTAGE	240/120 1 PHASE 3W+G

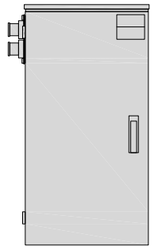
TOP



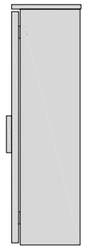
BACK



SIDE



FRONT



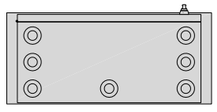
SIDE

POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

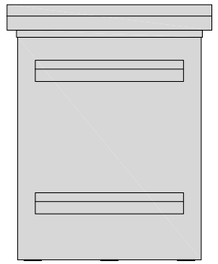
NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

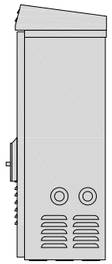
ZAYO 5RU (LEFT SWING DOOR) FIBER NID ENCLOSURE	
DIMENSIONS (HxWxD)	36.1"x29"x12.9"
WEIGHT	85 lbs



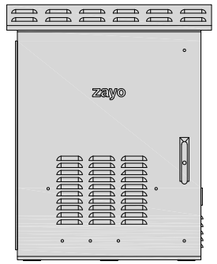
BOTTOM



BACK



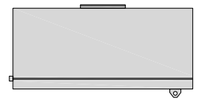
SIDE



FRONT

FIBER NID ENCLOSURE DETAIL | NO SCALE | 5

CHARLES CFIT–PF2020DSH1 FIBER TELCO ENCLOSURE	
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



FRONT

SIDE

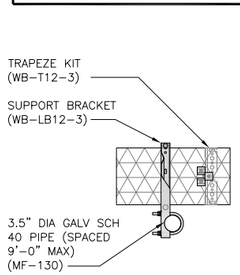
BACK

FRONT

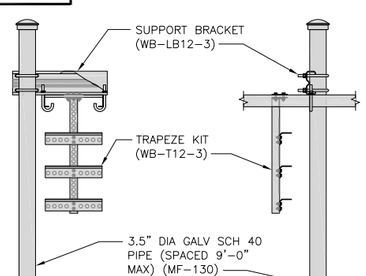
FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

COMMSCOPE WB–K110–B WAVEGUIDE BRIDGE KIT	
DIMENSIONS (HxL)	160"x10'
WEIGHT/ VOLUME	325.0 LBS
CABLE RUN (QTY)	12

INCLUDED PRODUCTS:	WB–T12–3 TRAPEZE KIT, 3 RUNGS
	WB–LB12–3 SUPPORT BRACKET
	MF–130 DIRECT BURIAL PIPE COLUMN, 13'–4"



PLAN

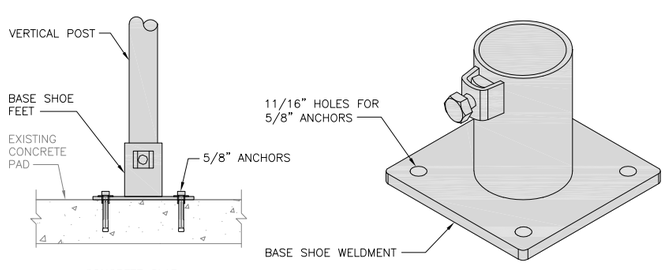


FRONT

SIDE

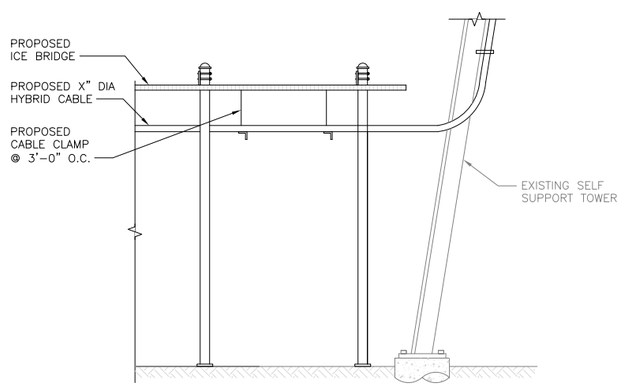
ICE BRIDGE DETAIL | NO SCALE | 7

SITEPRO1 BSF35 BASE SHOE FEET	
DIMENSIONS (HxWxL)	8"x8"x1/2"
WEIGHT	15.0 LBS
POST SIZE:	2–7/8" OR 3–1/2"



CONCRETE SLAB

ICE BRIDGE PIPE MOUNT DETAIL | NO SCALE | 8



HYBRID CABLE RUN | NO SCALE | 9

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SUITE 300
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STATE OF CONNECTICUT
CHAD C. CASTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
3/6/23

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
MEH	RMC	RMC

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	1/18/22	ISSUED FOR REVIEW
0	3/8/22	ISSUED FOR CONSTRUCTION
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A&E PROJECT NUMBER

149456.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00052A
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

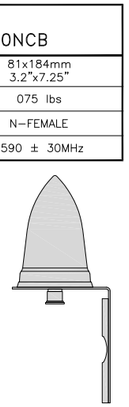
SHEET TITLE

EQUIPMENT DETAILS

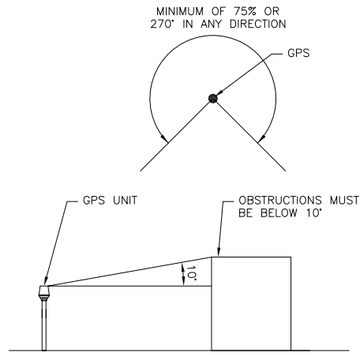
SHEET NUMBER

A-4

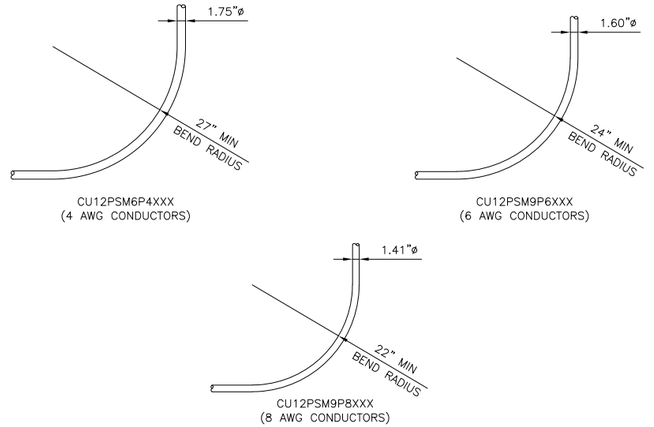
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



CABLES UNLIMITED HYBRID CABLE MINIMUM BEND RADIUSES | NO SCALE | 3

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00052A
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE

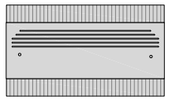
EQUIPMENT DETAILS

SHEET NUMBER

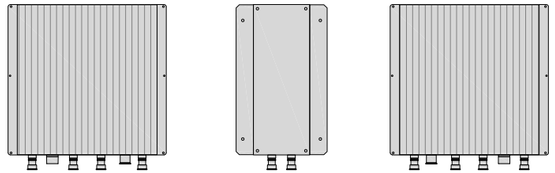
A-5

FUJITSU TRIPLE BAND TA08025-B605

DIMENSIONS (HxWxD)	14.9"x15.7"x9"
WEIGHT	74.95 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



PLAN

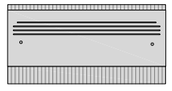


BACK SIDE FRONT

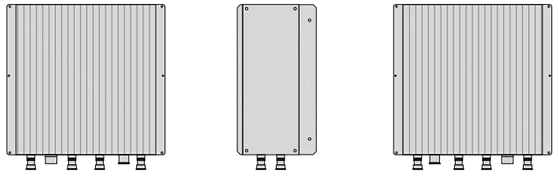
RRH DETAIL | NO SCALE | 1

FUJITSU DUAL BAND TA08025-B604

DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



PLAN



BACK SIDE FRONT

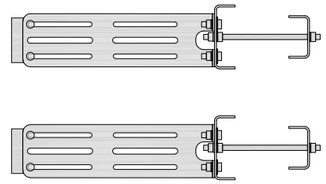
RRH DETAIL | NO SCALE | 2

COMMSCOPE RR-FA2 LARGE STABILIZER

DIMENSIONS (HxWxD)	16.4"x8.5"x18"
WEIGHT	39.2 lbs

DESIGN NOTES:
MOUNT WILL FIT LEGS UP TO:
- 5.6" ROUND
- 6.0" 60° ANGLE
- 4.5" 90° ANGLE

PLAN



SIDE

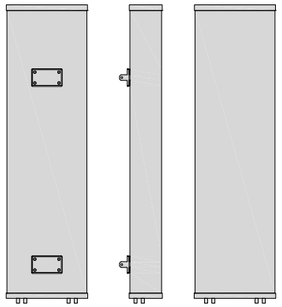
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

RRH MOUNT DETAIL | NO SCALE | 3

COMMSCOPE FFVV-65B-R2

DIMENSIONS (HxWxD)(MM/IN)	1828x498x197 72"x19.6"x7.8"
RF CONNECTOR INTERFACE	4.3-10 FEMALE
WEIGHT	70.8 lbs
WEIGHT WITH BRACKETS	98.1 lbs

PLAN



BACK SIDE FRONT

ANTENNA DETAIL | NO SCALE | 4

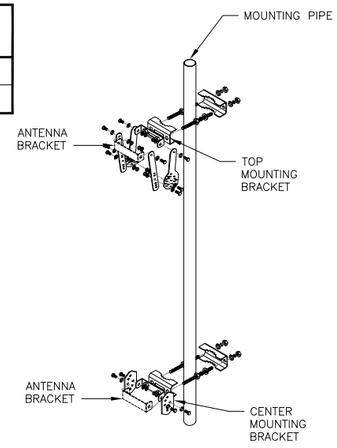
NOT USED | NO SCALE | 5

JMA ANTENNA MOUNT BRACKET #91900318

TOTAL WEIGHT (WITH BRACKETS)	18 lbs (8.18 Kg)
POLE DIAMETER RANGE	2.5" TO 4.5"

NOTE:
KIT #91900318: TOP AND BOTTOM BRACKETS FOR 4-,6-, AND 8-FOOT ANTENNAS

ANTENNA BRACKET NOT PART OF KIT

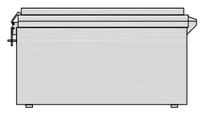


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

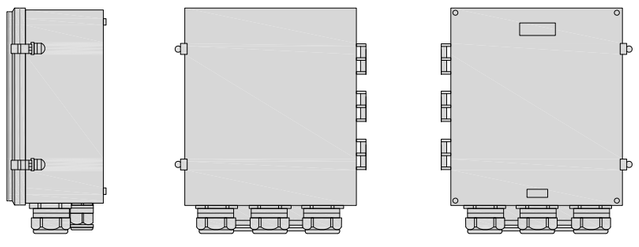
ANTENNA BRACKET DETAIL | NO SCALE | 6

RAYCAP RDIDC-9181-PF-48 DC SURGE PROTECTION (OVP)

DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



PLAN



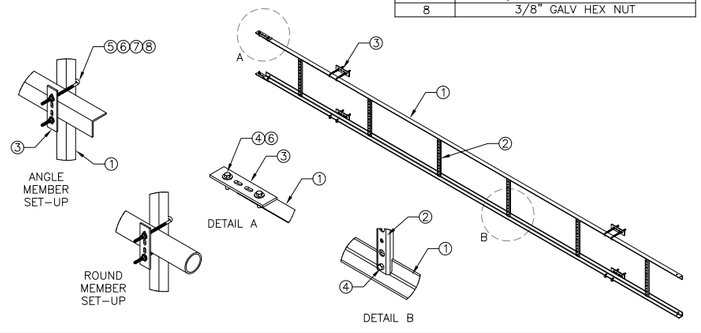
SIDE BACK FRONT

SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

COMMSCOPE 20' CABLE LADDER 6 HOLE RUNGS

DIMENSIONS (WxL)	20.5"x240"
WEIGHT	84.94 lbs

ITEM#	DESCRIPTION
1	20' ANGLE SIDE RAIL
2	20" LADDER RUNG
3	BACKING PLATE
4	3/8"x1-1/2" GALV BOLT KIT
5	8" GALV J-BOLT KIT
6	3/8" GALV FLAT WASHER
7	3/8" GALV LOCK WASHER
8	3/8" GALV HEX NUT

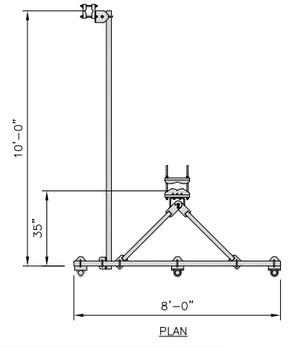


CABLE LADDER DETAIL | NO SCALE | 8

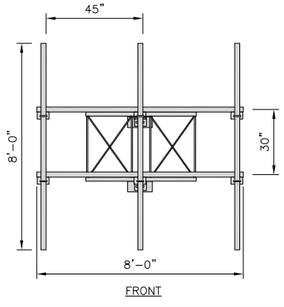
COMMSCOPE V-FRAME MTC3975083

FACE SIZE	8'-0"
WEIGHT	352.136 lbs

NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT



PLAN



FRONT

ANTENNA FRAME DETAIL | NO SCALE | 9

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STATE OF CONNECTICUT CHAD E. LITTLE No. 23924 LICENSED PROFESSIONAL ENGINEER
3/6/23
MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00052A
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE

EQUIPMENT DETAILS

SHEET NUMBER

A-6

STIFF ARM LOCATION NOTES:

- TIE BACK SHALL BE CONNECTED PER MANUFACTURER SPECIFICATIONS. IF THE ANGLE OF ATTACHMENT DEVIATES FROM THE MANUFACTURER RANGES, A SITE SPECIFIC ANALYSIS THAT CONSIDERS THESE EFFECTS ON BOTH THE TOWER AND THE MOUNT WILL BE NEEDED.
- ACCEPTABLE STIFF ARM TO TOWER MEMBER ATTACHMENT LOCATIONS:
  - A) INTERIOR BRACING MEMBERS:
    -WITHIN 25% OF EITHER END OF THE MEMBER'S LENGTH.
  - B) TOWER LEGS:
    -WITHIN 25% OF EITHER END OF THE MEMBER'S LENGTH. IF ATTACHMENT IS NOT WITHIN 25% OF EITHER END OF THE MEMBERS LENGTH THEN ADJUST ATTACHMENT POINT TO MINIMIZE DISTANCE TO END OF MEMBER WHILE FOLLOWING MANUFACTURERS SPECIFICATIONS.

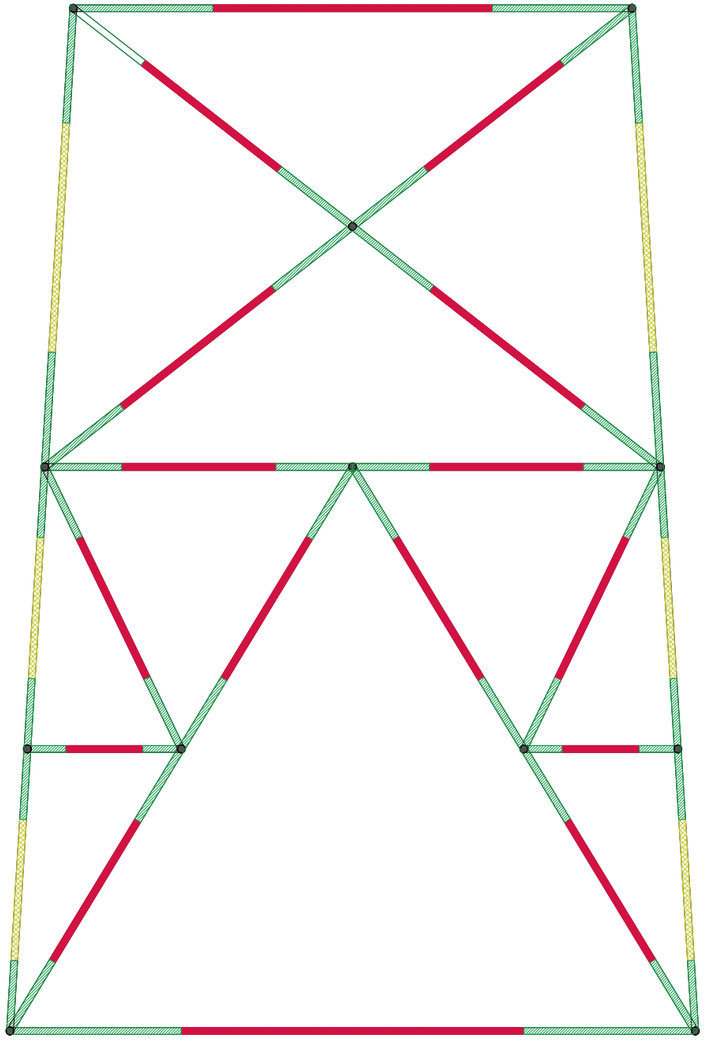
ACCEPTABLE ATTACHMENT REGION & FORCE

ACCEPTABLE ATTACHMENT REGION & FORCE

DO NOT ATTACH HERE

(DO NOT ATTACH HERE)

INTERIOR BRACING



TOWER LEG

TOWER SECTION

STIFF ARM LOCATIONS | NO SCALE | 1

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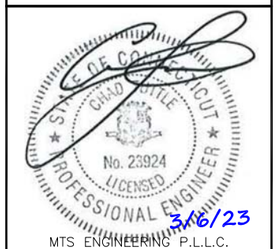

3/6/23

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PROJECT INFORMATION

BOBOS00052A
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE

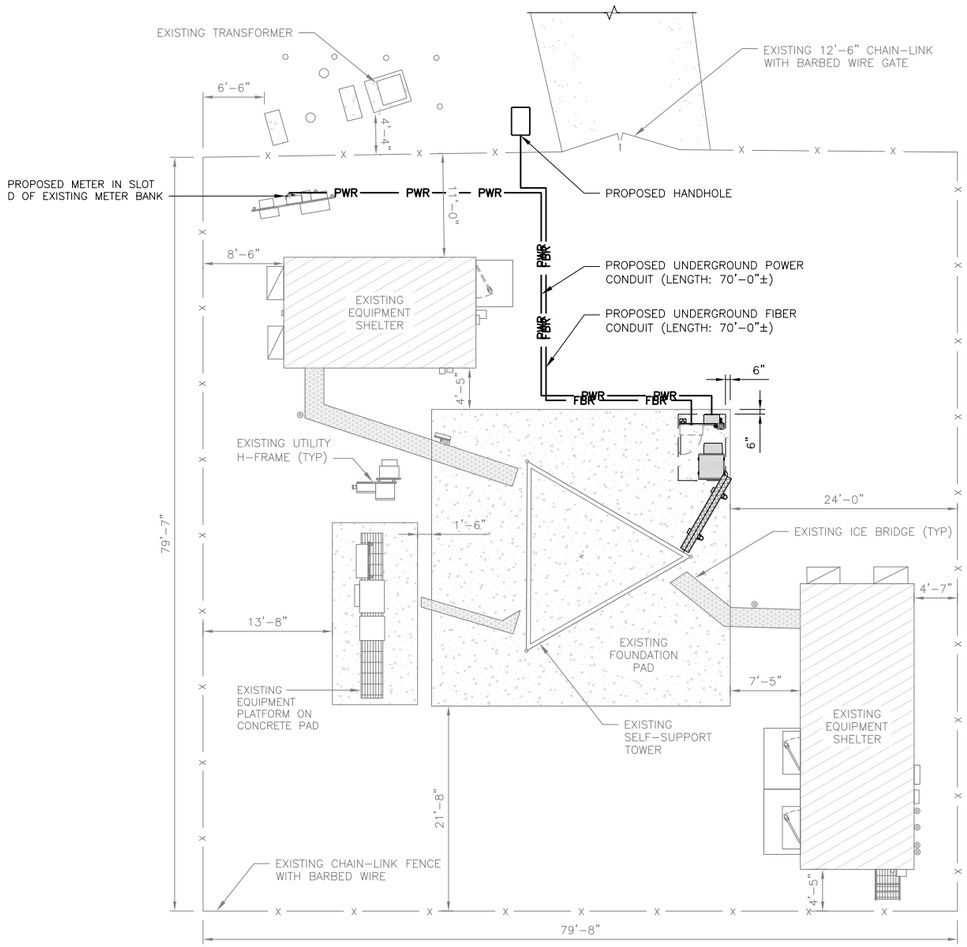
STIFF ARM
LOCATION DETAIL

SHEET NUMBER

A-7

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.
3. THE GROUND LEASE PROVIDES BROAD/BLANKET UTILITY RIGHTS. "PWR" AND "FBR" PATH DEPICTED ON A-1 AND E-1 ARE BASED ON BEST AVAILABLE INFORMATION INCLUDING BUT NOT LIMITED TO FIELD VERIFICATION, PRIOR PROJECT DOCUMENTATION AND OTHER REAL PROPERTY RIGHTS DOCUMENTS. WHEN INSTALLING THE UTILITIES PLEASE LOCATE AND FOLLOW EXISTING PATH. IF EXISTING PATH IS NOT AN OPTION, PLEASE NOTIFY TOWER OWNER AS FURTHER COORDINATION MAY BE NEEDED.



UTILITY ROUTE PLAN

8' 4' 0 8' 16'
1/8"=1'-0"

1

DC POWER WIRING SHALL BE COLOR CODED AT EACH END FOR IDENTIFYING +24V AND -48V CONDUCTORS. RED MARKINGS SHALL IDENTIFY +24V AND BLUE MARKINGS SHALL IDENTIFY -48V.

1. CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING A BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTOR'S FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
2. ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT NATIONAL ELECTRICAL CODES AND ALL STATE AND LOCAL CODES, LAWS, AND ORDINANCES. PROVIDE ALL COMPONENTS AND WIRING SIZES AS REQUIRED TO MEET NEC STANDARDS.
3. LOCATION OF EQUIPMENT, CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED WITH FIELD CONDITIONS PRIOR TO CONSTRUCTION.
4. CONDUIT ROUGH-IN SHALL BE COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION CONFLICTS. VERIFY WITH THE MECHANICAL EQUIPMENT CONTRACTOR AND COMPLY AS REQUIRED.
5. CONTRACTOR SHALL PROVIDE ALL BREAKERS, CONDUITS AND CIRCUITS AS REQUIRED FOR A COMPLETE SYSTEM.
6. CONTRACTOR SHALL PROVIDE PULL BOXES AND JUNCTION BOXES AS REQUIRED BY THE NEC ARTICLE 314.
7. CONTRACTOR SHALL PROVIDE ALL STRAIN RELIEF AND CABLE SUPPORTS FOR ALL CABLE ASSEMBLIES. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
8. ALL DISCONNECTS AND CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED PHENOLIC NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS INSTALLED ON, AND PANEL FIELD LOCATIONS FED FROM.
9. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS PER THE SPECIFICATIONS AND NEC 250. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULL BOXES, AND ALL DISCONNECT SWITCHES, AND EQUIPMENT CABINETS.
10. ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
11. PANEL SCHEDULE LOADING AND CIRCUIT ARRANGEMENTS REFLECT POST-CONSTRUCTION EQUIPMENT.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR AS-BUILT PANEL SCHEDULE AND SITE DRAWINGS.
13. ALL TRENCHES IN COMPOUND TO BE HAND DUG

ELECTRICAL NOTES

NO SCALE

2

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VOLUNTOWN, CT 06384

SHEET TITLE

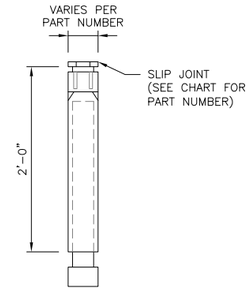
ELECTRICAL/FIBER ROUTE PLAN AND NOTES

SHEET NUMBER

E-1

CARLON EXPANSION FITTINGS

COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"
E945M	E945MX	3 1/2"	5	8"
E945N	E945NX	4"	5	8"
E945P	E945PX	5"	1	8"
E945R	E945RX	6"	1	8"

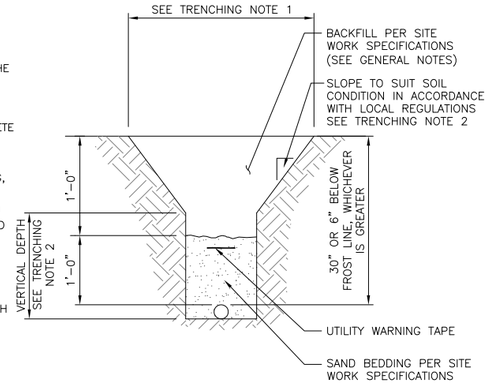


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

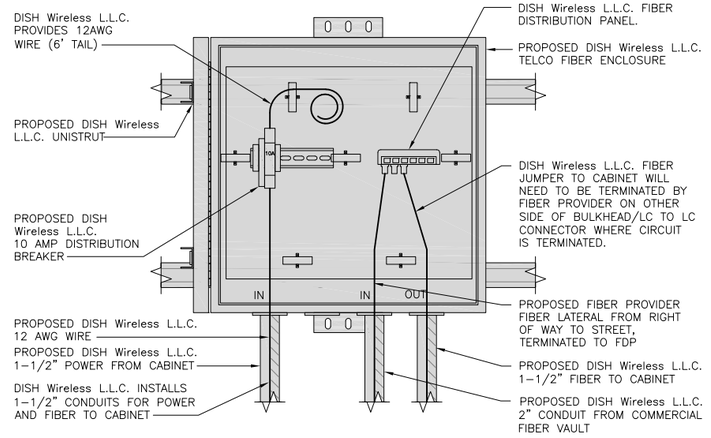
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

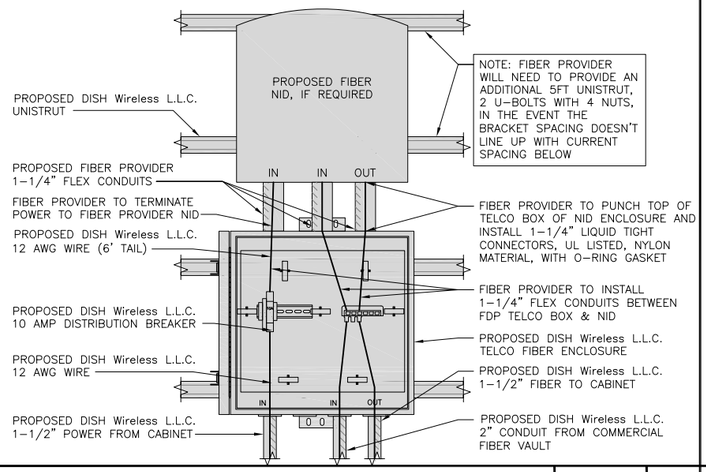
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT OSHA TRENCHING AND EXCAVATION SAFETY STANDARDS.
3. ALL CONDUITS SHALL BE INSTALLED IN COMPLIANCE WITH THE CURRENT NATIONAL ELECTRIC CODE (NEC) OR AS REQUIRED BY THE LOCAL JURISDICTION, WHICHEVER IS THE MOST STRINGENT.



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



DARK TELCO BOX – INTERIOR WIRING LAYOUT | NO SCALE | 3



LIT TELCO BOX – INTERIOR WIRING LAYOUT (OPTIONAL) | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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LITTLETON, CO 80120

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SUITE 300
TULSA, OK 74119
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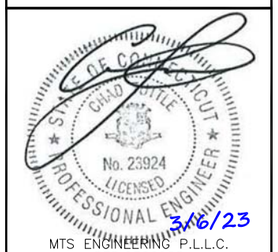

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BER:2386985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
MEH	RMC	RMC

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

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A&E PROJECT NUMBER

149456.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

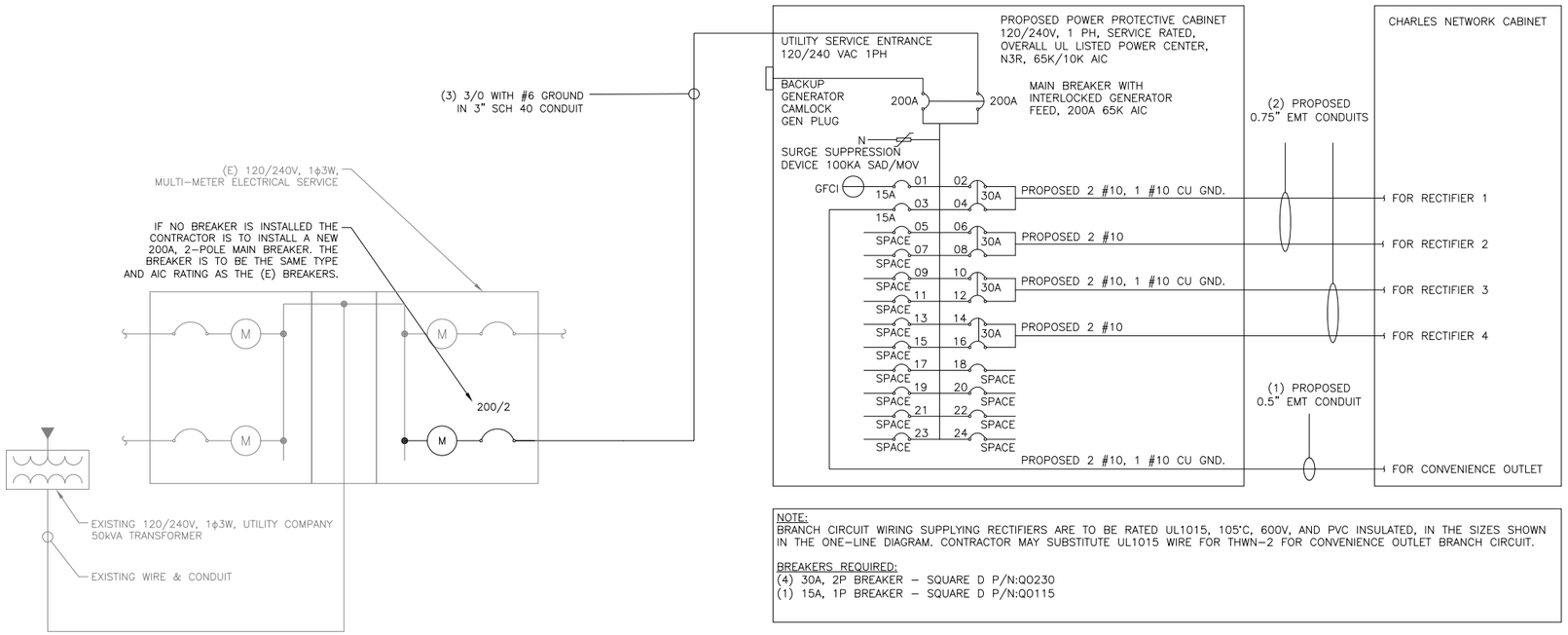
BOBOS00052A
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-2



NOTE:
BRANCH CIRCUIT WIRING SUPPLYING RECTIFIERS ARE TO BE RATED UL1015, 105°C, 600V, AND PVC INSULATED, IN THE SIZES SHOWN IN THE ONE-LINE DIAGRAM. CONTRACTOR MAY SUBSTITUTE UL1015 WIRE FOR THWN-2 FOR CONVENIENCE OUTLET BRANCH CIRCUIT.

BREAKERS REQUIRED:
(4) 30A, 2P BREAKER - SQUARE D P/N:QO230
(1) 15A, 1P BREAKER - SQUARE D P/N:QO115

NOTES

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED SHORT CIRCUIT CALCULATIONS AND THE AIC RATINGS FOR EACH DEVICE IS ADEQUATE TO PROTECT THE EQUIPMENT AND THE ELECTRICAL SYSTEM.

THE ENGINEER OF RECORD HAS PERFORMED ALL REQUIRED VOLTAGE DROP CALCULATIONS AND ALL BRANCH CIRCUIT AND FEEDERS COMPLY WITH THE NEC (LISTED ON T-1) ARTICLE 210.19(A)(1) FPN NO. 4.

THE (2) CONDUITS WITH (4) CURRENT CARRYING CONDUCTORS EACH, SHALL APPLY THE ADJUSTMENT FACTOR OF 80% PER 2014/17 NEC TABLE 310.15(B)(3)(a) OR 2020 NEC TABLE 310.15(C)(1) FOR UL1015 WIRE.

#12 FOR 15A-20A/1P BREAKER: 0.8 x 30A = 24.0A
#10 FOR 25A-30A/2P BREAKER: 0.8 x 40A = 32.0A
#8 FOR 35A-40A/2P BREAKER: 0.8 x 55A = 44.0A
#6 FOR 45A-60A/2P BREAKER: 0.8 x 75A = 60.0A

CONDUIT SIZING: AT 40% FILL PER NEC CHAPTER 9, TABLE 4, ARTICLE 358.
0.5" CONDUIT - 0.122 SQ. IN AREA
0.75" CONDUIT - 0.213 SQ. IN AREA
2.0" CONDUIT - 1.316 SQ. IN AREA
3.0" CONDUIT - 2.907 SQ. IN AREA

CABINET CONVENIENCE OUTLET CONDUCTORS (1 CONDUIT): USING THWN-2, CU.

#10 - 0.0211 SQ. IN X 2 = 0.0422 SQ. IN
#10 - 0.0211 SQ. IN X 1 = 0.0211 SQ. IN <GROUND
TOTAL = 0.0633 SQ. IN

0.5" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (3) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

RECTIFIER CONDUCTORS (2 CONDUITS): USING UL1015, CU.

#10 - 0.0266 SQ. IN X 4 = 0.1064 SQ. IN
#10 - 0.0082 SQ. IN X 1 = 0.0082 SQ. IN <BARE GROUND
TOTAL = 0.1146 SQ. IN

0.75" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (5) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

PPC FEED CONDUCTORS (1 CONDUIT): USING THWN, CU.

3/0 - 0.2679 SQ. IN X 3 = 0.8037 SQ. IN
#6 - 0.0507 SQ. IN X 1 = 0.0507 SQ. IN <GROUND
TOTAL = 0.8544 SQ. IN

3.0" SCH 40 PVC CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (4) WIRES, INCLUDING GROUND WIRE, AS INDICATED ABOVE.

PPC ONE-LINE DIAGRAM | NO SCALE | 1

PROPOSED CHARLES PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	LOAD SERVED
PPC GFCI OUTLET	180		15A	1	A	2	30A	2880		ABB/GE INFINITY RECTIFIER 1
CHARLES GFCI OUTLET		180	15A	3	B	4			2880	
-SPACE-				5	A	6	30A	2880		ABB/GE INFINITY RECTIFIER 2
-SPACE-				7	B	8			2880	
-SPACE-				9	A	10	30A	2880		ABB/GE INFINITY RECTIFIER 3
-SPACE-				11	B	12			2880	
-SPACE-				13	A	14	30A	2880		ABB/GE INFINITY RECTIFIER 4
-SPACE-				15	B	16			2880	
-SPACE-				17	A	18				-SPACE-
-SPACE-				19	B	20				-SPACE-
-SPACE-				21	A	22				-SPACE-
-SPACE-				23	B	24				-SPACE-
VOLTAGE AMPS	180	180						11520	11520	
200A MCB, 1ϕ, 24 SPACE, 120/240V			L1		L2					
MB RATING: 65,000 AIC			11700		11700		VOLTAGE AMPS			
			98		98		AMPS			
			98				MAX AMPS			
			123				MAX 125%			

PANEL SCHEDULE | NO SCALE | 2

NOT USED | NO SCALE | 3

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LITTLETON, CO 80120

SBA
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SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

STATE OF CONNECTICUT
CHAD M. UTTLE
No. 23924
LICENSED
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3/6/23

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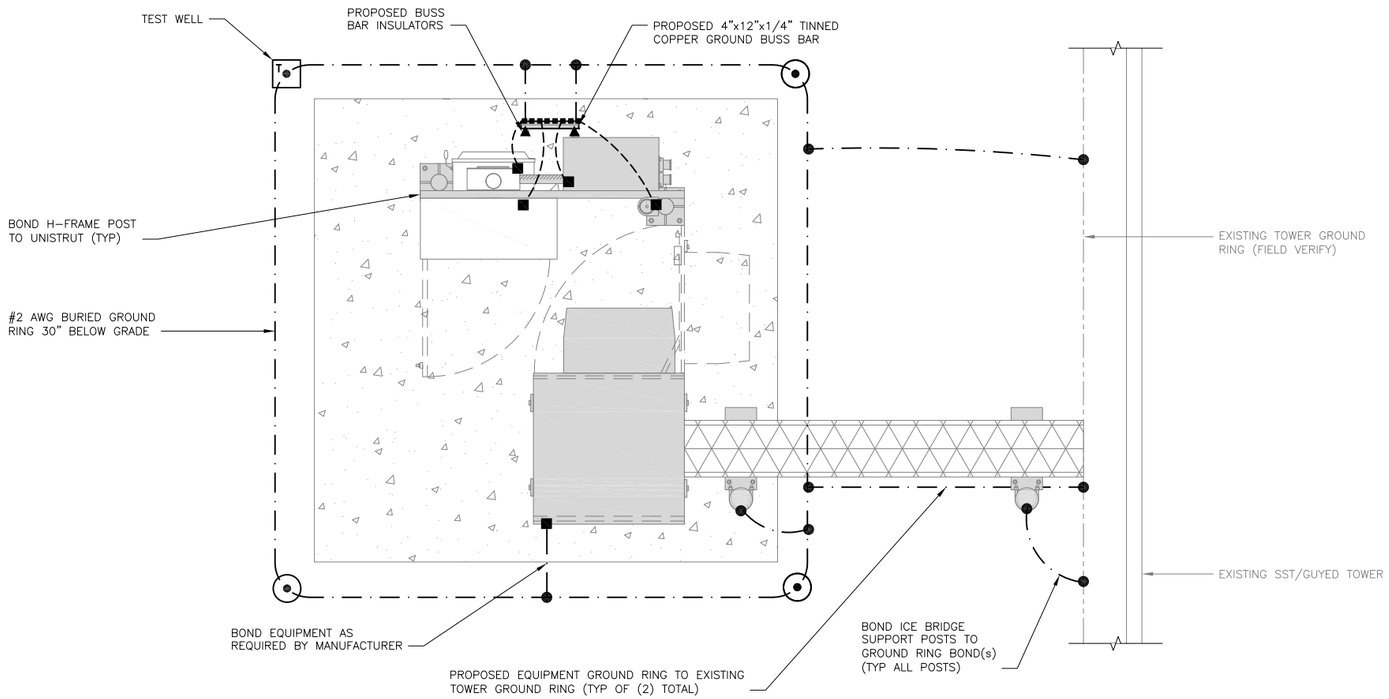
149456.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION
BOBOS00052A
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE
ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE

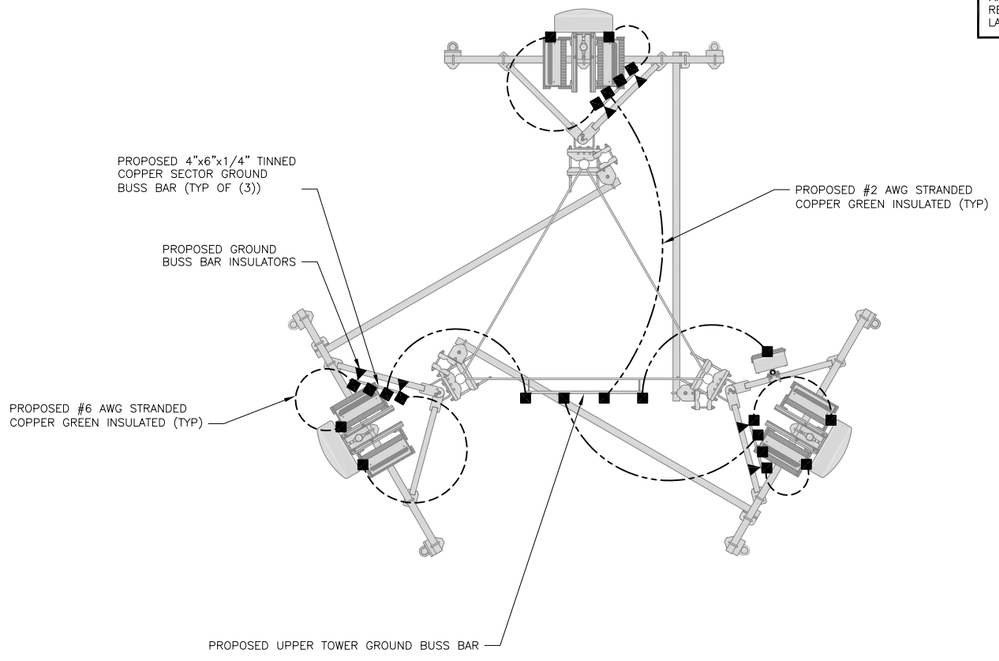
SHEET NUMBER
E-3



TYPICAL EQUIPMENT GROUNDING PLAN | NO SCALE | 1

NOTES

ANTENNAS AND OVP SHOWN ARE GENERIC AND NOT REFERENCING TO A SPECIFIC MANUFACTURER. THIS LAYOUT IS FOR REFERENCE PURPOSES ONLY



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2

EXOTHERMIC CONNECTION
MECHANICAL CONNECTION
GROUND BUS BAR
GROUND ROD
TEST GROUND ROD WITH INSPECTION SLEEVE
#6 AWG STRANDED & INSULATED
#2 AWG SOLID COPPER TINNED
#2 AWG STRANDED & INSULATED
BUSS BAR INSULATOR

GROUNDING LEGEND

1. GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
2. CONTRACTOR SHALL GROUND ALL EQUIPMENT AS A COMPLETE SYSTEM. GROUNDING SHALL BE IN COMPLIANCE WITH NEC SECTION 250 AND DISH Wireless L.L.C. GROUNDING AND BONDING REQUIREMENTS AND MANUFACTURER'S SPECIFICATIONS.
3. ALL GROUND CONDUCTORS SHALL BE COPPER; NO ALUMINUM CONDUCTORS SHALL BE USED.

GROUNDING KEY NOTES

(A) EXTERIOR GROUND RING: #2 AWG SOLID COPPER, BURIED AT A DEPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OR FOOTING.

(B) TOWER GROUND RING: THE GROUND RING SYSTEM SHALL BE INSTALLED AROUND AN ANTENNA TOWER'S LEGS, AND/OR GUY ANCHORS. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE BUILDING, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE BUILDING RING GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS.

(C) INTERIOR GROUND RING: #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR EXTENDED AROUND THE PERIMETER OF THE EQUIPMENT AREA. ALL NON-TELECOMMUNICATIONS RELATED METALLIC OBJECTS FOUND WITHIN A SITE SHALL BE GROUNDED TO THE INTERIOR GROUND RING WITH #6 AWG STRANDED GREEN INSULATED CONDUCTOR.

(D) BOND TO INTERIOR GROUND RING: #2 AWG SOLID TINNED COPPER WIRE PRIMARY BONDS SHALL BE PROVIDED AT LEAST AT FOUR POINTS ON THE INTERIOR GROUND RING, LOCATED AT THE CORNERS OF THE BUILDING.

(E) GROUND ROD: UL LISTED COPPER CLAD STEEL. MINIMUM 1/2" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.

(F) CELL REFERENCE GROUND BAR: POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUCTORS.

(G) HATCH PLATE GROUND BAR: BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.

(H) EXTERIOR CABLE ENTRY PORT GROUND BARS: LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE.

(I) TELCO GROUND BAR: BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.

(J) FRAME BONDING: THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.

(K) INTERIOR UNIT BONDS: METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITH THE AREA OF THE INTERIOR GROUND RING REQUIRE A #6 AWG STRANDED GREEN INSULATED COPPER BOND TO THE INTERIOR GROUND RING.

(L) FENCE AND GATE GROUNDING: METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS.

(M) EXTERIOR UNIT BONDS: METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE EXTERIOR GROUND RING. USING #2 TINNED SOLID COPPER WIRE

(N) ICE BRIDGE SUPPORTS: EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH #2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED GROUND RING.

(O) DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR

(P) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO TOWER STEEL.

REFER TO DISH Wireless L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES | NO SCALE | 3

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LITTLETON, CO 80120

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

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CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
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Expires 3/31/23

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MEH	RMC	RMC

RFDS REV #: 2

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DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00052A
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE

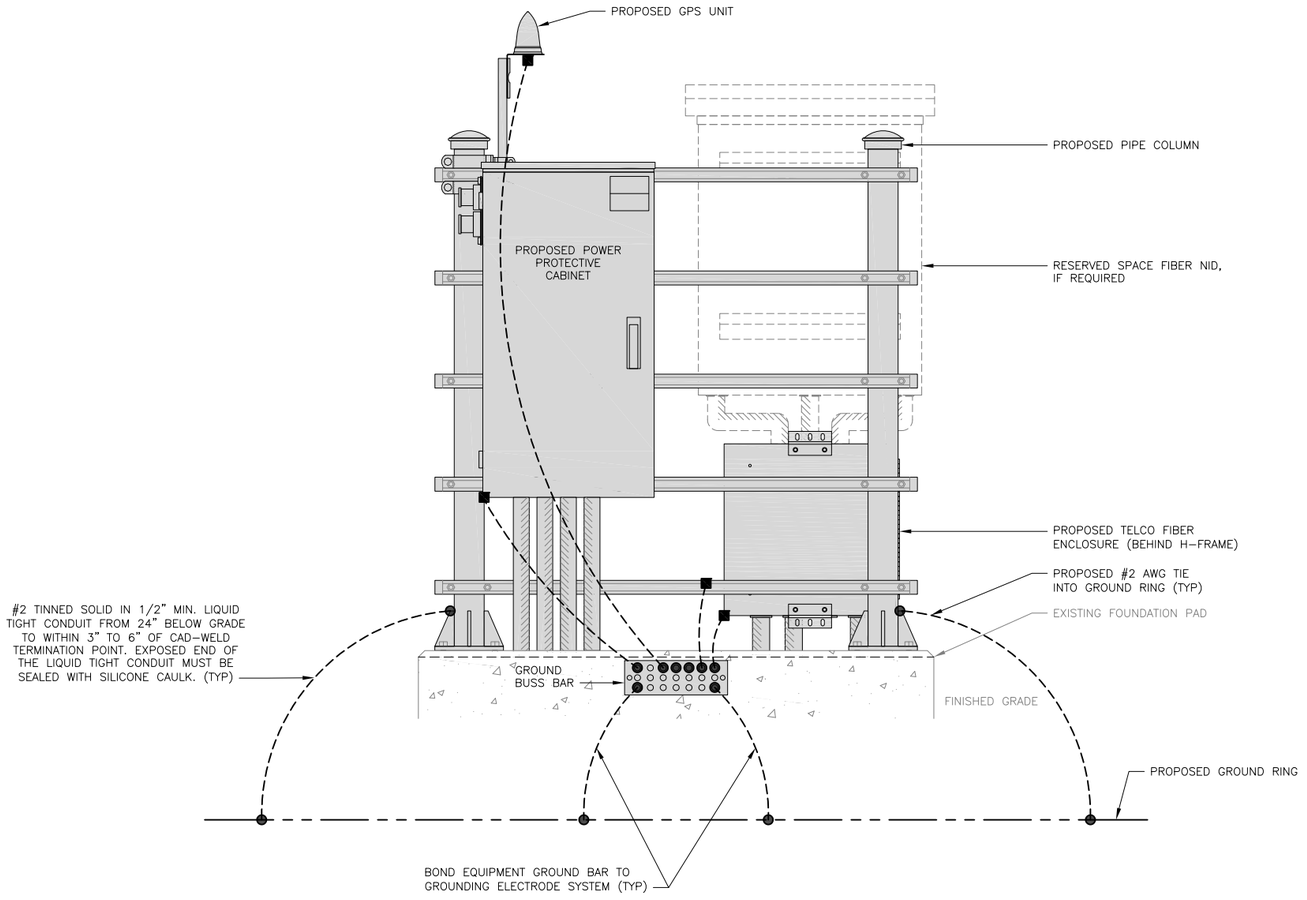
GROUNDING PLANS AND NOTES

SHEET NUMBER

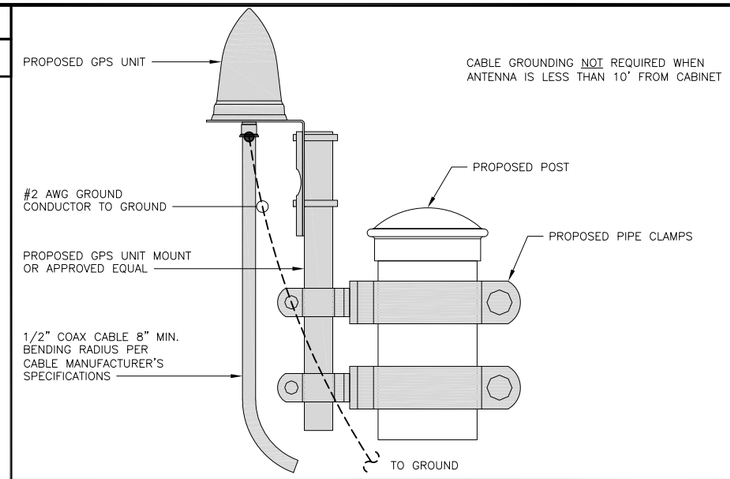
G-1

NOTES

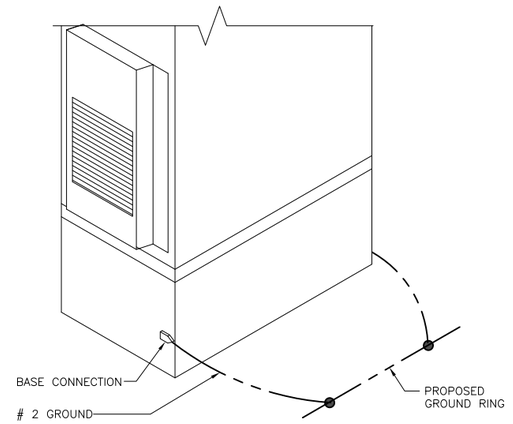
EQUIPMENT CABINET OMITTED FOR CLARITY



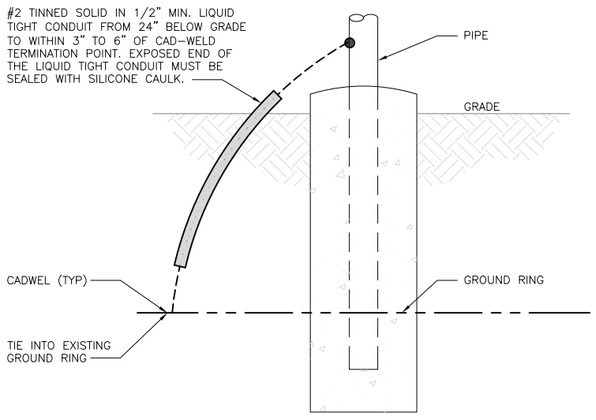
H-FRAME GROUNDING DETAIL | NO SCALE | 1



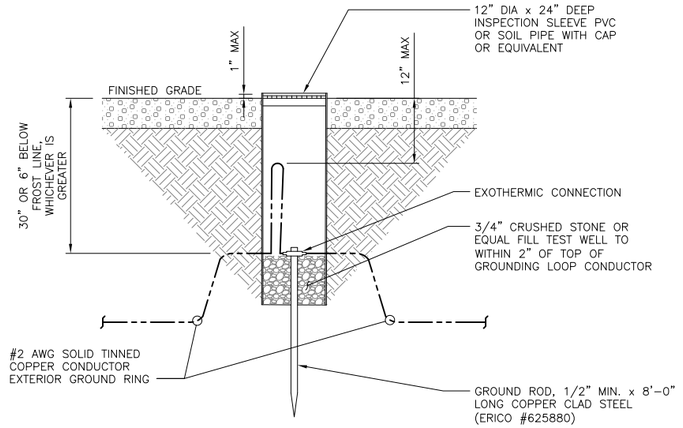
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



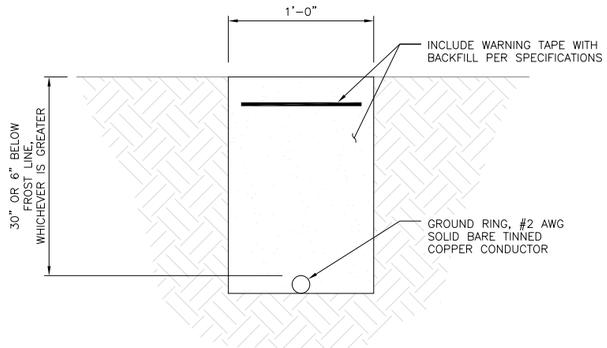
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE | NO SCALE | 5



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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SBA
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1717 S. BOULDER
SUITE 300
TULSA, OK 74119
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VOLUNTOWN, CT 06384

SHEET TITLE

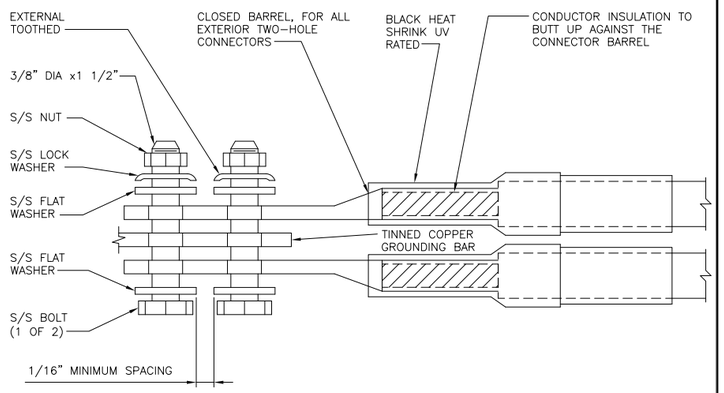
GROUNDING DETAILS

SHEET NUMBER

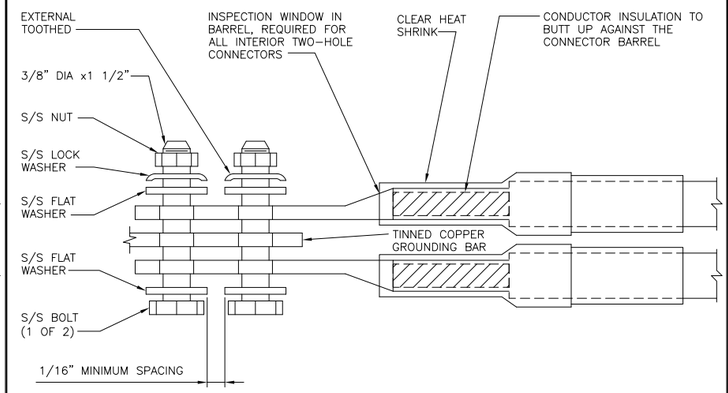
G-2

1. EXOTHERMIC WELD (2) TWO, #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUND BAR, ROUTE CONDUCTORS TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. ALL EXTERIOR GROUNDING HARDWARE SHALL BE STAINLESS STEEL 3/8" DIAMETER OR LARGER. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
3. FOR GROUND BOND TO STEEL ONLY: COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
4. DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUND CONDUCTOR DOWN TO GROUNDING BUS.
5. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE.
6. ALL GROUNDING PARTS AND EQUIPMENT TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUND BAR AS REQUIRED.
8. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).

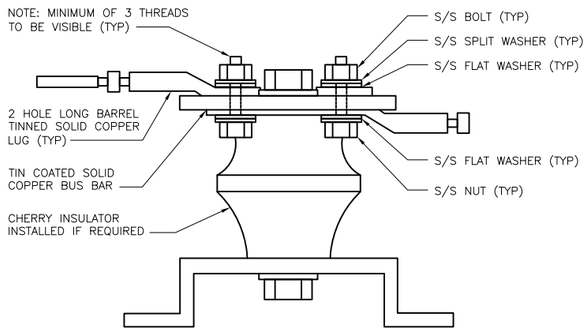
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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VOLUNTOWN, CT 06384

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

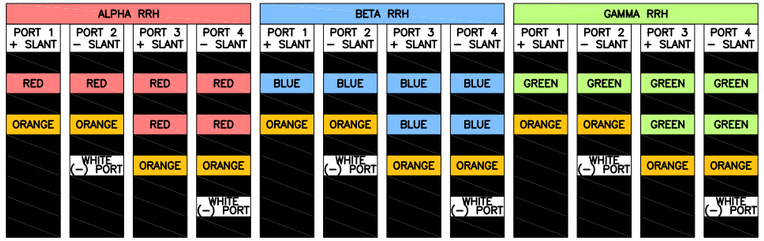
G-3

HYBRID/DISCREET CABLES

3/4" TAPE WIDTHS WITH 3/4" SPACING

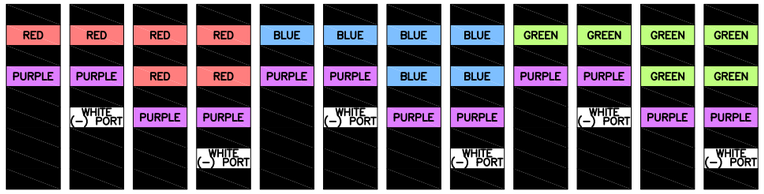
LOW–BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) – OPTIONAL PER MARKET

ADD FREQUENCY COLOR TO SECTOR BAND
(CBRS WILL USE YELLOW BAND)



MID–BAND RRH
(AWS BANDS N66+N70)

ADD FREQUENCY COLOR TO SECTOR BAND
(CBRS WILL USE YELLOW BANDS)



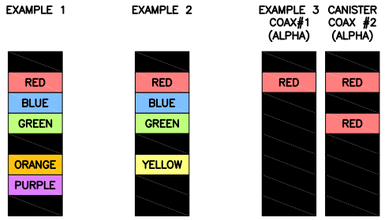
HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS ALL SECTORS, BOTH LOW–BANDS AND MID–BANDS.

EXAMPLE 2 – HYBRID, OR DISCREET, SUPPORTS CBRS ONLY, ALL SECTORS.

EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.



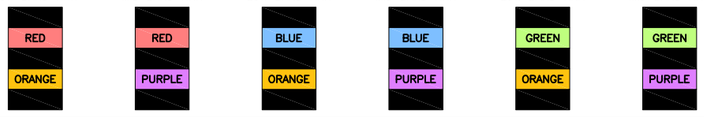
CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RD DETAILS. FINAL RFDS IS IN NEXSYSONE.

FIBER JUMPERS TO RRHs

LOW–BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.

POWER CABLES TO RRHs

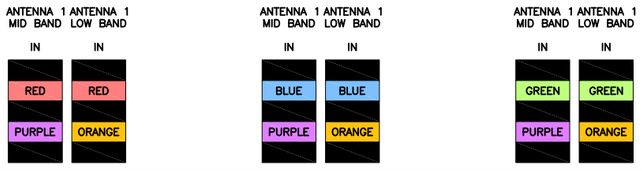
LOW–BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

RET CONTROL IS HANDLED BY THE MID–BAND RRH WHEN ONE SET OF RET PORTS EXIST ON ANTENNA.

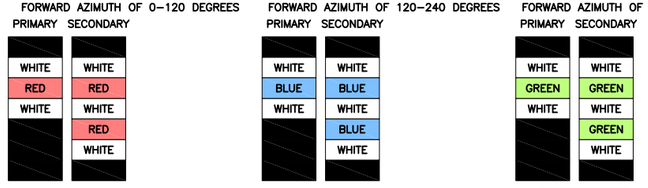
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



MICROWAVE RADIO LINKS

LINKS WILL HAVE A 1.5–2 INCH WHITE WRAP WITH THE AZIMUTH COLOR OVERLAPPING IN THE MIDDLE.
ADD ADDITIONAL SECTOR COLOR BANDS FOR EACH ADDITIONAL MW RADIO.

MICROWAVE CABLES WILL REQUIRE P–TOUCH LABELS INSIDE THE CABINET TO IDENTIFY THE LOCAL AND REMOTE SITE ID's.



RF CABLE COLOR CODES | NO SCALE | 1

LOW BANDS (N71+N26)
OPTIONAL – (N29)
ORANGE

AWS
(N66+N70+H–BLOCK)
PURPLE

CBRS TECH
(3 GHz)
YELLOW

NEGATIVE SLANT PORT
ON ANT/RRH
WHITE

ALPHA SECTOR
RED

BETA SECTOR
BLUE

GAMMA SECTOR
GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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BER:2386985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
MEH	RMC	RMC

RFDS REV #: 2

CONSTRUCTION DOCUMENTS

SUBMITTALS

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A	1/18/22	ISSUED FOR REVIEW
0	3/8/22	ISSUED FOR CONSTRUCTION
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A&E PROJECT NUMBER
149456.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00052A
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE
RF
CABLE COLOR CODE

SHEET NUMBER
RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48–T8 — F

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW LED–1–25A400/51K–SR4–120–PE–DDBTXD

CHAIN LINK FENCE — X — X — X — X

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W — W — W — W — W

UNDERGROUND POWER — UGP — UGP — UGP — UGP — UGP

UNDERGROUND TELCO — UGT — UGT — UGT — UGT — UGT

OVERHEAD POWER — OHP — OHP — OHP — OHP

OVERHEAD TELCO — OHT — OHT — OHT — OHT

UNDERGROUND TELCO/POWER — UGT/P — UGT/P — UGT/P — UGT/P

ABOVE GROUND POWER — AGP — AGP — AGP — AGP — AGP

ABOVE GROUND TELCO — AGT — AGT — AGT — AGT — AGT

ABOVE GROUND TELCO/POWER — AGT/P — AGT/P — AGT/P — AGT/P

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

AB	ANCHOR BOLT
ABV	ABOVE
AC	ALTERNATING CURRENT
ADDL	ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AGL	ABOVE GROUND LEVEL
AIC	AMPERAGE INTERRUPTION CAPACITY
ALUM	ALUMINUM
ALT	ALTERNATE
ANT	ANTENNA
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BTC	BARE TINNED COPPER CONDUCTOR
BOF	BOTTOM OF FOOTING
CAB	CABINET
CANT	CANTILEVERED
CHG	CHARGING
CLG	CEILING
CLR	CLEAR
COL	COLUMN
COMM	COMMON
CONC	CONCRETE
CONSTR	CONSTRUCTION
DBL	DOUBLE
DC	DIRECT CURRENT
DEPT	DEPARTMENT
DF	DOUGLAS FIR
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DWG	DRAWING
DWL	DOWEL
EA	EACH
EC	ELECTRICAL CONDUCTOR
EL.	ELEVATION
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ENG	ENGINEER
EQ	EQUAL
EXP	EXPANSION
EXT	EXTERIOR
EW	EACH WAY
FAB	FABRICATION
FF	FINISH FLOOR
FG	FINISH GRADE
FIF	FACILITY INTERFACE FRAME
FIN	FINISH(ED)
FLR	FLOOR
FDN	FOUNDATION
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FOW	FACE OF WALL
FS	FINISH SURFACE
FT	FOOT
FTG	FOOTING
GA	GAUGE
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GLB	GLUE LAMINATED BEAM
GLV	GALVANIZED
GPS	GLOBAL POSITIONING SYSTEM
GND	GROUND
GSM	GLOBAL SYSTEM FOR MOBILE
HDG	HOT DIPPED GALVANIZED
HDR	HEADER
HGR	HANGER
HVAC	HEAT/VENTILATION/AIR CONDITIONING
HT	HEIGHT
IGR	INTERIOR GROUND RING
IN	INCH
INT	INTERIOR
LB(S)	POUND(S)
LF	LINEAR FEET
LTE	LONG TERM EVOLUTION
MAS	MASONRY
MAX	MAXIMUM
MB	MACHINE BOLT
MECH	MECHANICAL
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MISC	MISCELLANEOUS
MTL	METAL
MTS	MANUAL TRANSFER SWITCH
MW	MICROWAVE
NEC	NATIONAL ELECTRIC CODE
NM	NEWTON METERS
NO.	NUMBER
#	NUMBER
NTS	NOT TO SCALE
OC	ON–CENTER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OPNG	OPENING
P/C	PRECAST CONCRETE
PCS	PERSONAL COMMUNICATION SERVICES
PCU	PRIMARY CONTROL UNIT
PRC	PRIMARY RADIO CABINET
PP	POLARIZING PRESERVING
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
PWR	POWER CABINET
QTY	QUANTITY
RAD	RADIUS
RECT	RECTIFIER
REF	REFERENCE
REINF	REINFORCEMENT
REQ'D	REQUIRED
RET	REMOTE ELECTRIC TILT
RF	RADIO FREQUENCY
RMC	RIGID METALLIC CONDUIT
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
RWY	RACEWAY
SCH	SCHEDULE
SHT	SHEET
SIAD	SMART INTEGRATED ACCESS DEVICE
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
TEMP	TEMPORARY
THK	THICKNESS
TMA	TOWER MOUNTED AMPLIFIER
TN	TOE NAIL
TOA	TOP OF ANTENNA
TOC	TOP OF CURB
TOF	TOP OF FOUNDATION
TOP	TOP OF PLATE (PARAPET)
TOS	TOP OF STEEL
TOW	TOP OF WALL
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
UPS	UNITERRUPTIBLE POWER SYSTEM (DC POWER PLANT)
VIF	VERIFIED IN FIELD
W	WIDE
W/	WITH
WD	WOOD
WP	WEATHERPROOF
WT	WEIGHT

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A&E PROJECT NUMBER

149456.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00052A
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH Wireless L.L.C. AND TOWER OWNER NOC & THE DISH Wireless L.L.C. AND TOWER OWNER CONSTRUCTION MANAGER.

2. "LOOK UP" – DISH Wireless L.L.C. AND TOWER OWNER SAFETY CLIMB REQUIREMENT:

THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR DISH Wireless L.L.C. AND DISH Wireless L.L.C. AND TOWER OWNER POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.

3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.

4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND DISH Wireless L.L.C. AND TOWER OWNER STANDARDS, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).

5. ALL SITE WORK TO COMPLY WITH DISH Wireless L.L.C. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH Wireless L.L.C. AND TOWER OWNER TOWER SITE AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."

6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY DISH Wireless L.L.C. AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.

7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.

10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.

11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.

12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF DISH Wireless L.L.C. AND TOWER OWNER, AND/OR LOCAL UTILITIES.

14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.

15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.

16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.

17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.

18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS AND RADIOS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1.FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH Wireless L.L.C.

TOWER OWNER:TOWER OWNER

2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.

3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.

4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.

5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.

6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CARRIER POC AND TOWER OWNER.

7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.

11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION, BEFORE SUBMITTING BIDS, TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.

12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF DISH Wireless L.L.C. AND TOWER OWNER

13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

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dish wireless.

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SBA

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B+T GRP
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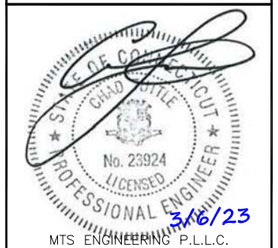
www.btgrp.com



MTS ENGINEERING P.L.L.C.
BER:2386985
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MEH	RMC	RMC

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A&E PROJECT NUMBER

149456.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBOS00052A
111 STONE HILL ROAD
VOLUNTOWN, CT 06384

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.

2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.

3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.

4. CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.

5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

- CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
- CONCRETE EXPOSED TO EARTH OR WEATHER:
- #6 BARS AND LARGER 2"
- #5 BARS AND SMALLER 1-1/2"
- CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
- SLAB AND WALLS 3/4"
- BEAMS AND COLUMNS 1-1/2"

7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.

2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.

3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.

4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.

4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.

4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.

5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.

6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).

7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.

8. TIE WRAPS ARE NOT ALLOWED.

9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.

12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).

14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.

15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.

17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.

18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.

19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.

20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.

21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).

22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).

23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.

24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.

25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.

26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.

27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH Wireless L.L.C. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.

29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C.".

30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

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5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA

8051 CONGRESS AVENUE
BOCA RATON, FL 33487

B+T GRP

1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

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No. 23924
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SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.

4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.

7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.

8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.

11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.

13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.

14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.

15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.

17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.

19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).

21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). DO NOT ATTACH GROUNDING TO FIRE SPRINKLER SYSTEM PIPES.

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LITTLETON, CO 80120

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