



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](mailto:siting.council@ct.gov)

Web Site: [portal.ct.gov/csc](http://portal.ct.gov/csc)

**VIA ELECTRONIC MAIL**

November 15, 2022

Denise Sabo  
Northeast Site Solutions  
54 Main Street, Unit 3  
Sturbridge, MA 01566-1359  
[denise@northeastsitesolutions.com](mailto:denise@northeastsitesolutions.com)

RE: **TS-DISH-034-220907** – Dish Wireless, LLC request for an order to approve tower sharing at an existing telecommunications facility located at 52 Stadley Rough Road, Danbury, Connecticut.

Dear Denise Sabo:

The Connecticut Siting Council (Council) is in receipt of your correspondence of October 31, 2022 and November 10, 2022 submitted in response to the Council's October 6, 2022 and November 2, 2022 notifications of an incomplete request for tower sharing with regard to the above-referenced matter.

The submissions render 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/IN/emr

**From:** Deborah Chase <deborah@norheastsitesolutions.com>  
**Sent:** Thursday, November 10, 2022 3:55 PM  
**To:** CSC-DL Siting Council <Siting.Council@ct.gov>; Bachman, Melanie <Melanie.Bachman@ct.gov>; Fontaine, Lisa <Lisa.Fontaine@ct.gov>; Robidoux, Evan <Evan.Robidoux@ct.gov>  
**Cc:** Denise <denise@norheastsitesolutions.com>  
**Subject:** Council 2nd Incomplete Letter for TS-DISH-034-220907 (Stadley Rough Road, Danbury)-NJER01104B  
**Importance:** High

EXTERNAL EMAIL: This email originated from outside of the organization. Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Siting Council

Please see attached the requested Mount Analysis and Construction Drawings for the above referenced site that include "paint to match" language.

A hard copy will be sent to Council as well as a full application copy sent to recipients Jose & Christina Carvalheiro as requested.

Please let us know if this renders the application complete for continued review.

Thank you very much

## Deborah Chase

Senior Project Coordinator & Analyst

Mobile: 860-490-8839

🌱 Save a tree. Refuse. Reduce. Reuse. Recycle.





November 7, 2022

Sherri Knapik  
SBA Network Services, LLC.  
134 Flanders Road, Suite 125  
Westborough, MA 01581  
(508) 251-0720 x 3805

MTS Engineering, P.L.L.C.  
1717 S. Boulder, Suite 300  
Tulsa, OK 74119  
(918) 587-4630  
btwo@btgrp.com

**Subject:** **Appurtenance Mount Analysis Report**

**Carrier Designation:** **Dish Wireless Co-Locate**

**Site Number:** NJJER01104B  
**Site Name:** N/A

**SBA Network Services Designation:** **Site Number:** CT13549-S  
**Site Name:** Danbury 1  
**Application Number:** 190201, v1

**Engineering Firm Designation:** **Project Number:** 153448.004.01

**Site Data:** **52 Stadley Rough Road, Danbury, CT, 06811, Fairfield County**  
**Latitude 41.433102°, Longitude -73.431916°**  
**Monopole**  
**(3) 2' T-Arm Mount**

Dear Ms. Knapik,

We are pleased to submit this “**Appurtenance Mount Analysis Report**” to determine the structural integrity of the antenna mount on the above-mentioned structure.

The purpose of the analysis is to determine acceptability of the mount’s stress level. Based on our analysis we have determined the stress level for the mount under the following load case to be:

Proposed Equipment	<b>Sufficient Capacity</b>
Note: See Table 1 for the final loading configuration	<b>(Passing at 13.7%)</b>

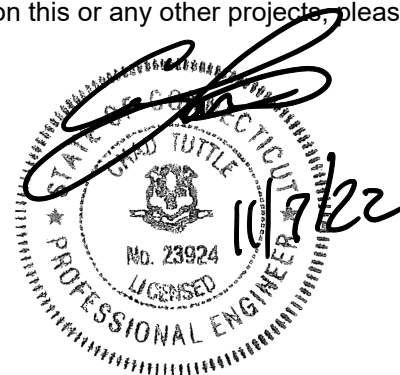
This analysis utilizes an ultimate 3-second gust wind speed of 115 mph as required by the 2018 Connecticut State Building Code (2018 IBC). Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

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

We appreciate the opportunity of providing our continuing professional services to you and *SBA Network Services, LLC*. If you have any questions or need further assistance on this or any other projects, please give us a call.

Mount structural analysis prepared by: Erik Perez

Respectfully submitted by: MTS Engineering, P.L.L.C.  
COA: BER: 2386985 Expires: 03/31/2023



Chad E. Tuttle, P.E.

## TABLE OF CONTENTS

### 1) INTRODUCTION

### 2) ANALYSIS CRITERIA

Table 1 - Proposed Equipment Information

Table 2 - Documents Provided

### 3) ANALYSIS PROCEDURE

3.1) Analysis Method

3.2) Assumptions

### 4) ANALYSIS RESULTS

Table 3 – Mount Component Stresses vs. Capacity

### 5) RECOMMENDATIONS

### 6) APPENDIX A

RISA-3D Output

### 7) APPENDIX B

Additional Calculations

## 1) INTRODUCTION

The appurtenance mount consists of Commscope T-Arm mount, Part# MC-FM3-24-278 at 127 ft., attached to monopole at 52 Stadley Rough Road, Danbury, CT, 06811, Fairfield County. The proposed antenna loading information was obtained from SBA Network Services, LLC. All information provided to us assumed accurate and complete.

## 2) ANALYSIS CRITERIA

The structural analysis was performed for this mount in accordance with the ANSI/TIA-222-H-2017 Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures using a 3 - second gust wind speed of 115 mph with no ice and 50 mph with 1-inch escalated ice thickness. Exposure category C, Topographic Category 1 and Risk Category II were used in the analysis. In addition, the T-Arm mount has been analyzed for various live loading conditions consisting of a 250-lb man live load applied individually at the midpoint and cantilevered ends of horizontal members as well as a 500-pound man live load applied individually at mount pipe locations using a 3-second gust of 30mph. The mount was analyzed under 30° increments in the wind direction. The analyzed loading is detailed in Table 1.

**Table 1 – Proposed Equipment Information**

Loading	RAD Center Elev. (ft.)	Position	Qty.	Description	Note
Proposed	127	1	3	Commscope FFVV-65B-R2	1
			3	Fujitsu TA08025-B605	2
			3	Fujitsu TA08025-B604	
		-	1	Raycap RDIDC-9181-PF-48	3

Note:

- (1) Proposed Antenna to be installed on the proposed Mount Pipe.
- (2) Proposed Equipment to be installed directly behind the Antenna.
- (3) Proposed Equipment to be installed on the Mount.

**Table 2 - Documents Provided**

Documents	Remarks	Reference	Source
SBA Application	Proposed Loading	Date: 07/21/2022	SBA Network Services, LLC.

## 3) ANALYSIS PROCEDURE

### 3.1) Analysis Method

RISA-3D (Version 20.0.2), a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses and deflections for various loading cases. Selected output from the analysis is included in Appendix A.

Manufacturer's drawings were used to create the model.

### 3.2) Assumptions

1. The mount was built in accordance with the manufacturer's specifications.
2. The mount has been maintained in accordance with the manufacturer's specifications and is free of damage.
3. The configuration of antennas and other appurtenances are as specified in Table 1.
4. All mount components have been assumed to be in sufficient condition to carry their full design capacity for the analysis.
5. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.

6. Serviceability with respect to antenna twist, tilt, roll, or lateral translation is not checked and is left to the carrier or tower owner to ensure conformance.
7. All prior structural modifications if any are assumed to be correctly installed and fully effective.
8. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
9. The following material grades were assumed (Unless Noted Otherwise):
  - a) Connection Bolts : ASTM A325
  - b) Steel Pipe : ASTM A53 (GR. 35)
  - c) HSS (Round) : ASTM 500 (GR. B-42)
  - d) HSS (Rectangular) : ASTM 500 (GR. B-46)
  - e) Channel : ASTM A36 (GR. 36)
  - f) Steel Solid Rod : ASTM A36 (GR. 36)
  - g) Steel Plate : ASTM A36 (GR. 36)
  - h) Steel Angle : ASTM A36 (GR. 36)
  - i) UNISTRUT : ASTM A570 (GR. 33)

This analysis may be affected if any assumptions are not valid or have been made in error. MTS Engineering, P.L.L.C. should be notified to determine the effect on the structural integrity of the antenna mounting system.

#### 4) ANALYSIS RESULTS

**Table 3 – Mount Component Stresses vs. Capacity**

Notes	Component	Elevation (ft.)	% Capacity	Pass / Fail
-	Mount Pipe	127	13.7	Pass
-	Support Arm	127	12.6	Pass

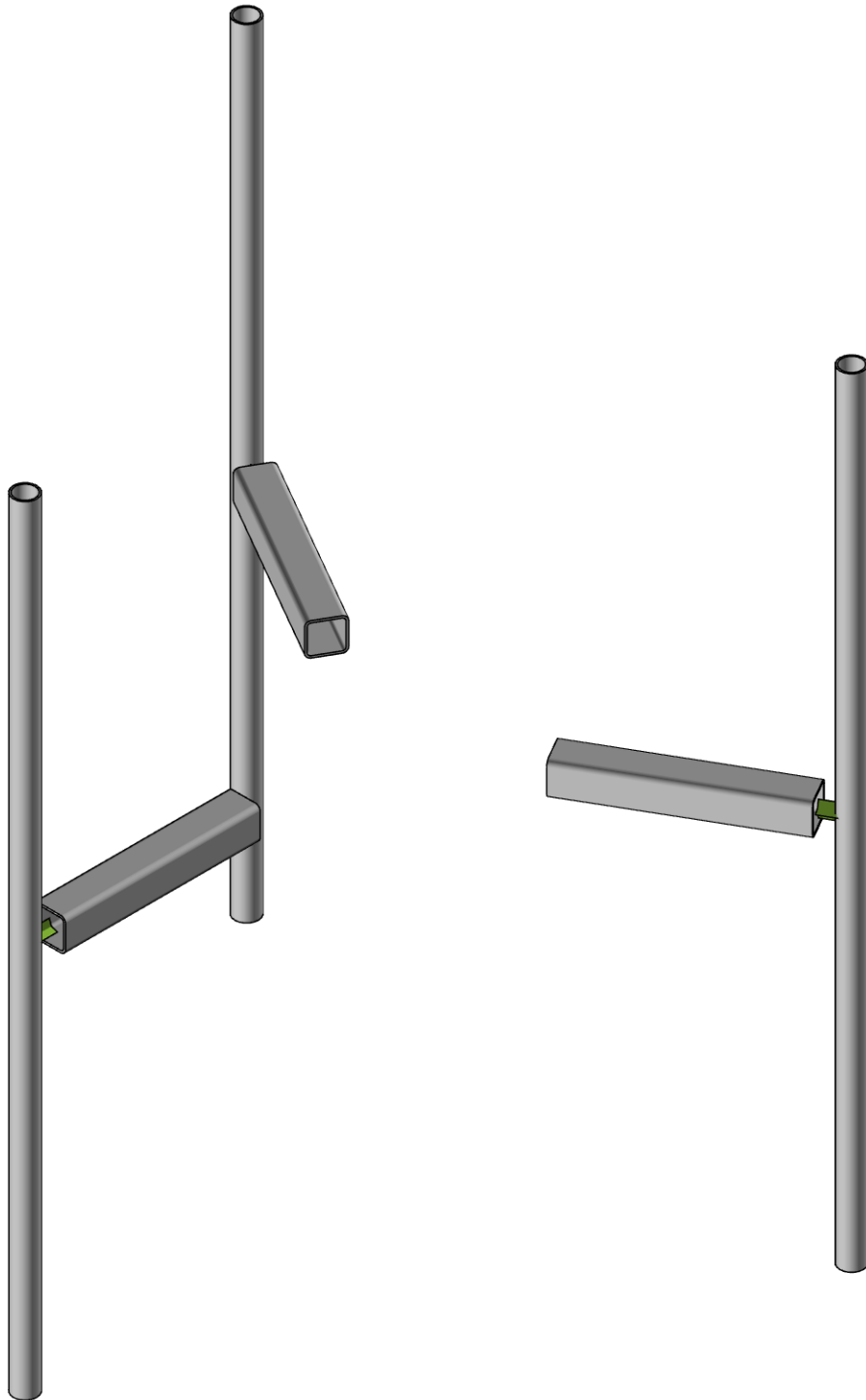
#### 5) RECOMMENDATIONS

The Commscope T-Arm mount, Part# MC-FM3-24-278 has sufficient capacity to carry the proposed loads and is in compliance with the ANSI/TIA-222-H standard for the proposed loading. (Refer to the RISA output for the specific members).

***The mount, antennas, and tower-mounted equipment are to be painted brown to match the rest of the tower.***

# APPENDIX A

(RISA-3D Output)



Envelope Only Solution

MTS Engineering, P.L.L.C.

NK

153448.004.01

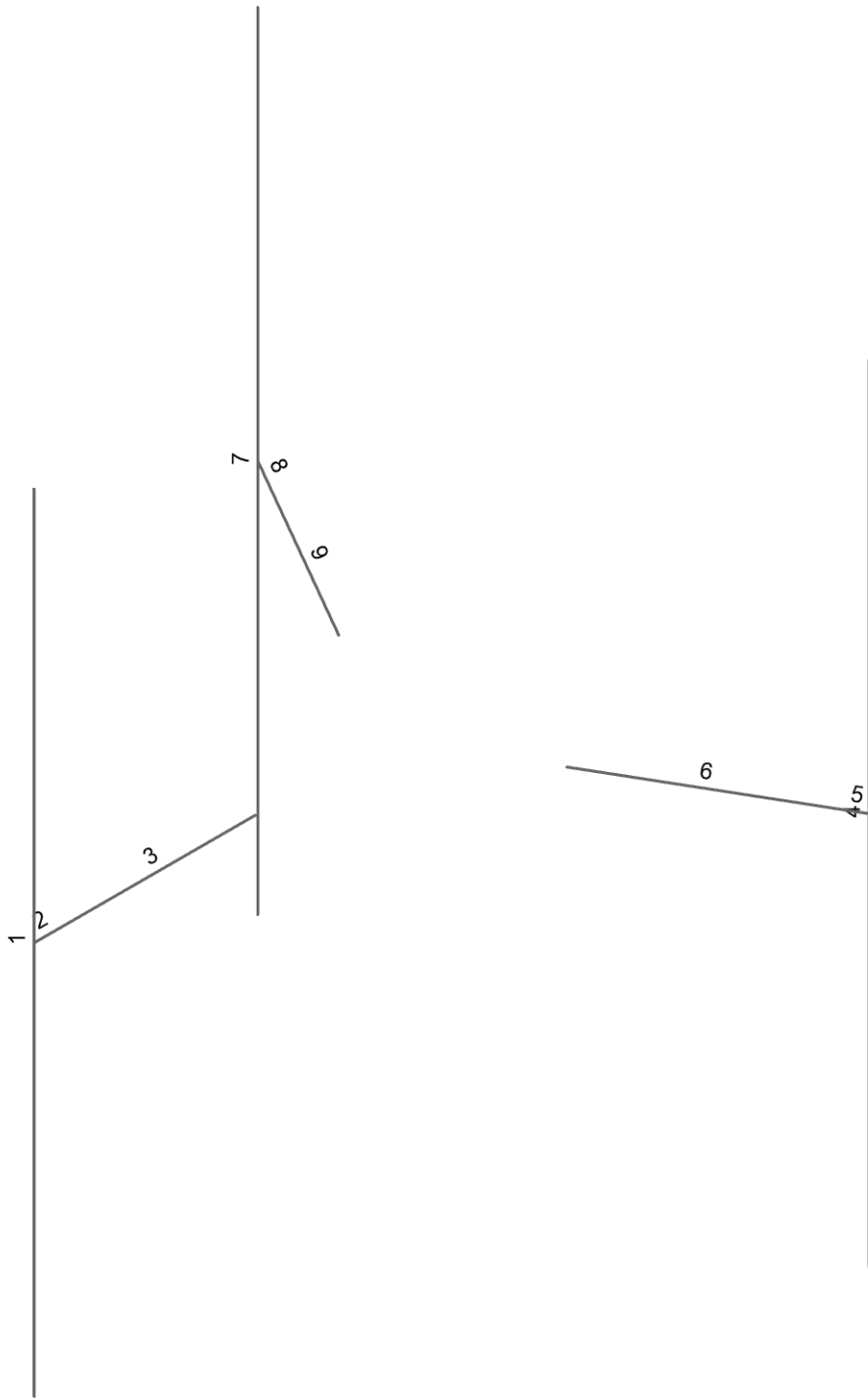
CT13549-S - Danbury 1

SK-3

Jul 29, 2022

153448\_004\_01\_Danbury 1\_CT.r3d





Envelope Only Solution

MTS Engineering, P.L.L.C.

NK

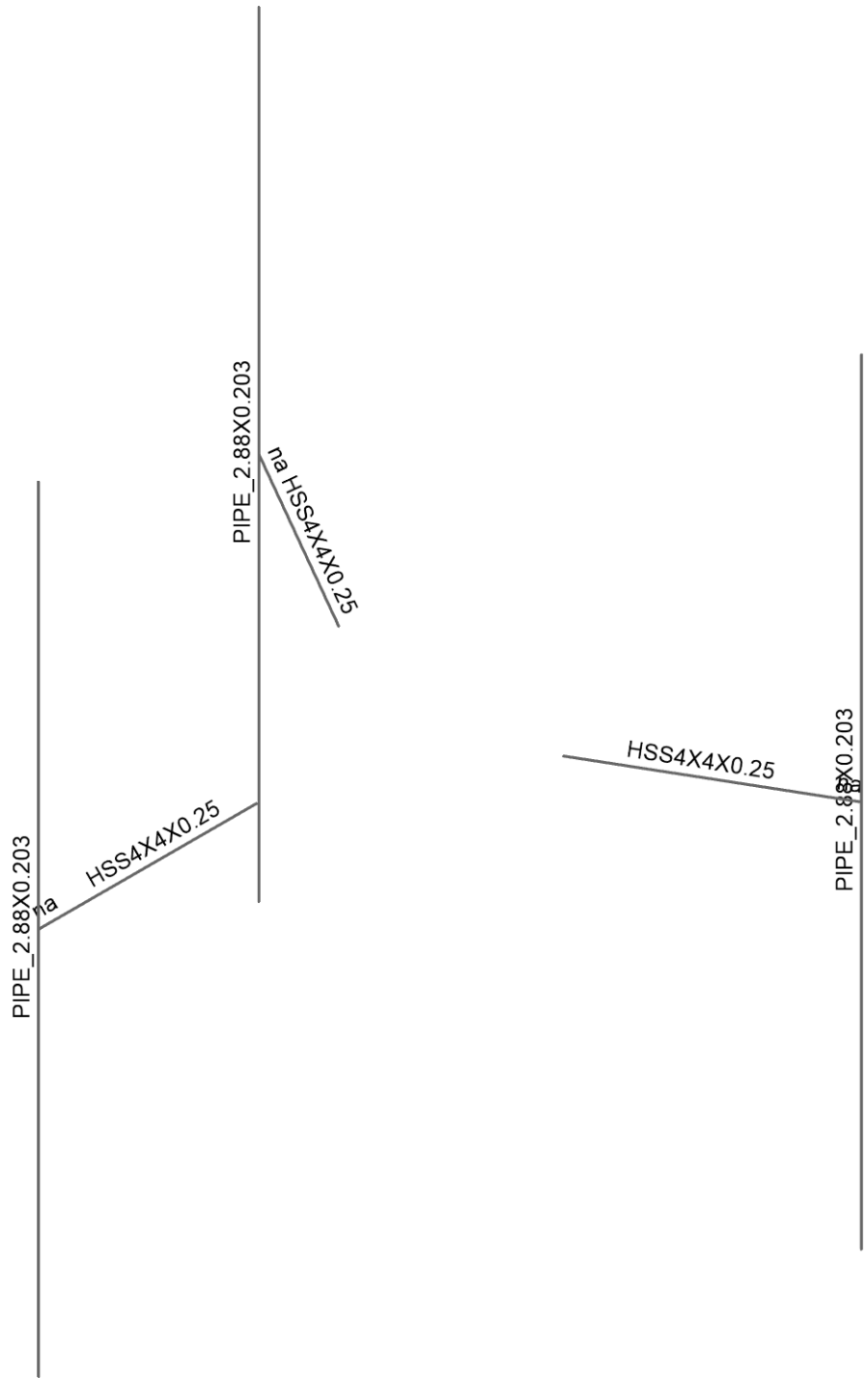
153448.004.01

CT13549-S - Danbury 1

SK-2

Jul 29, 2022

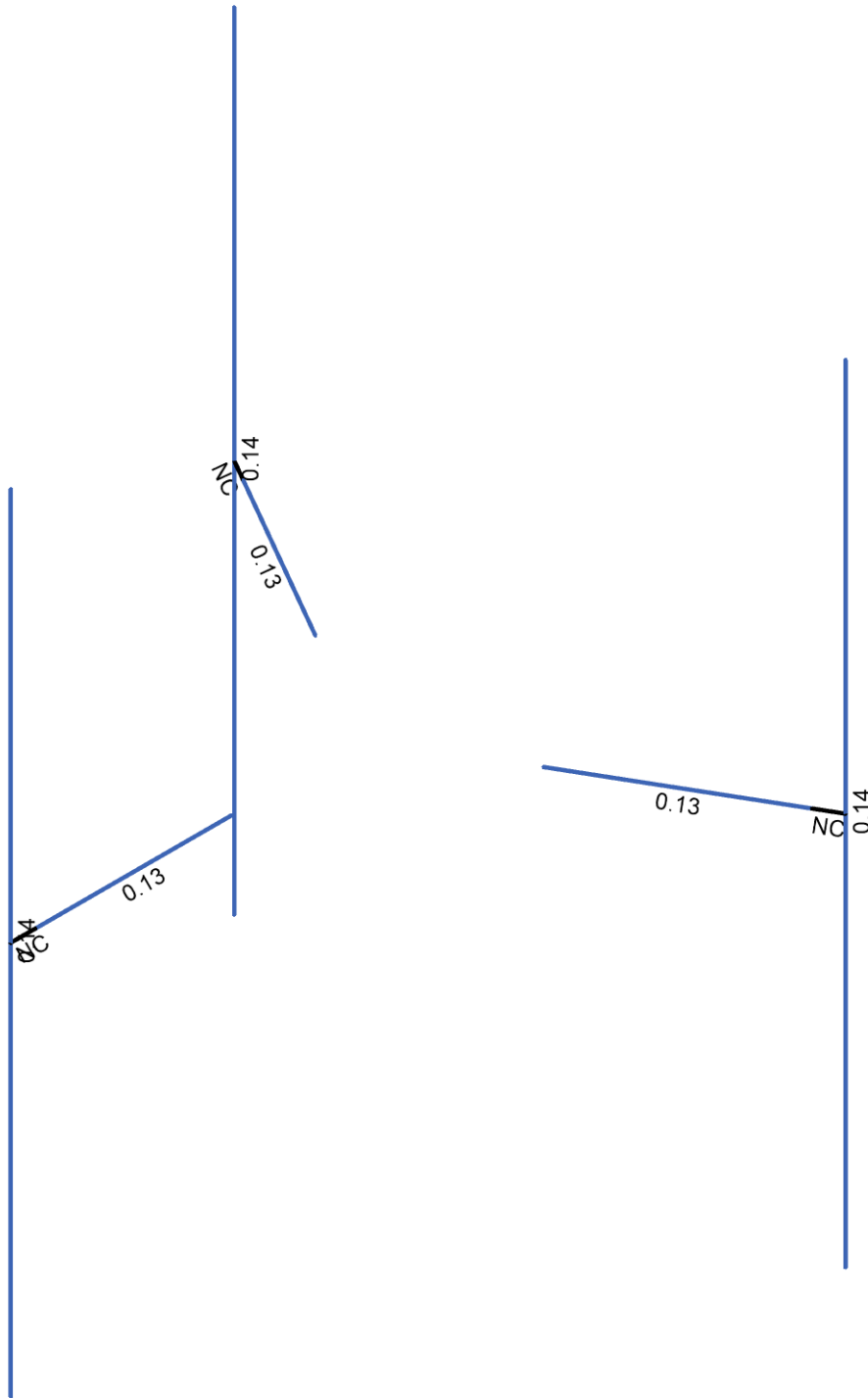
153448\_004\_01\_Danbury 1\_CT.r3d



Envelope Only Solution		
MTS Engineering, P.L.L.C.	CT13549-S - Danbury 1	SK-3
NK		Jul 29, 2022
153448.004.01		153448_004_01_Danbury 1_CT.r3d



Code Check (Env)	
Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0.-.50



Member Code Checks Displayed (Enveloped)  
Envelope Only Solution

MTS Engineering, P.L.L.C.

NK

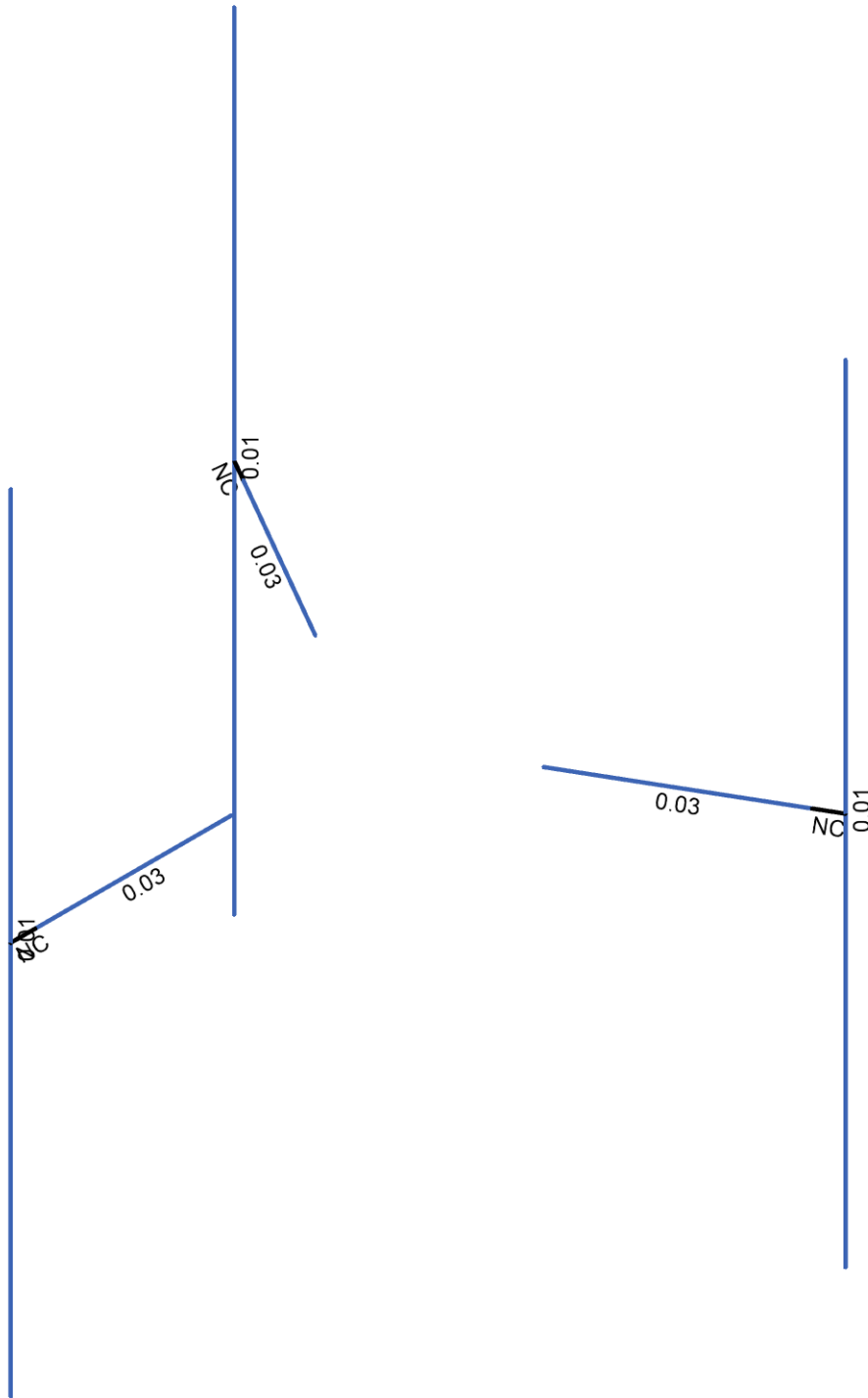
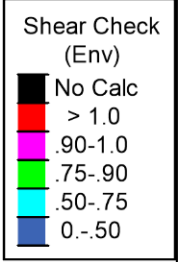
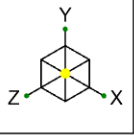
153448.004.01

CT13549-S - Danbury 1

SK-5

Jul 29, 2022

153448\_004\_01\_Danbury 1\_CT.r3d



Member Shear Checks Displayed (Enveloped)  
Envelope Only Solution

MTS Engineering, P.L.L.C.	CT13549-S - Danbury 1	SK-6
NK		Jul 29, 2022
153448.004.01		153448_004_01_Danbury 1_CT.r3d

**Node Coordinates**

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	1	0	4.	3.591361	
2	2	0	-4.	3.591361	
3	3	0	0	3.341361	
4	4	0	0	3.591361	
5	5	0	0	1.341361	
6	6	0	0	0	
7	7	3.11021	4.	-1.795681	
8	8	3.11021	-4.	-1.795681	
9	9	2.893704	0	-1.670681	
10	10	3.11021	0	-1.795681	
11	11	1.161653	0	-0.670681	
12	12	-3.11021	4.	-1.795681	
13	13	-3.11021	-4.	-1.795681	
14	14	-2.893704	0	-1.670681	
15	15	-3.11021	0	-1.795681	
16	16	-1.161653	0	-0.670681	

**Node Boundary Conditions**

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	5	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	11	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	16	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

**Hot Rolled Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e <sup>5</sup> F <sup>-1</sup> ]	Density [k/ft <sup>3</sup> ]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A500 Gr.C	29000	11154	0.3	0.65	0.49	46	1.4	62	1.3
2	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3

**Hot Rolled Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Rule	Area [in <sup>2</sup> ]	Iyy [in <sup>4</sup> ]	Izz [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	MF-P1	PIPE 2.88X0.203	Column	Pipe	A500 Gr.C	Typical	1.704	1.53	1.53	3.059
2	F1-SA1	HSS4X4X0.25	Beam	Tube	A500 Gr.B Rect	Typical	3.75	8.828	8.828	13.184

**Member Primary Data**

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	1	2	1	MF-P1	Column	Pipe	A500 Gr.C	Typical
2	2	3	4	RIGID	None	None	RIGID	Typical
3	3	3	5	F1-SA1	Beam	Tube	A500 Gr.B Rect	Typical
4	4	8	7	MF-P1	Column	Pipe	A500 Gr.C	Typical
5	5	9	10	RIGID	None	None	RIGID	Typical
6	6	9	11	F1-SA1	Beam	Tube	A500 Gr.B Rect	Typical
7	7	13	12	MF-P1	Column	Pipe	A500 Gr.C	Typical
8	8	14	15	RIGID	None	None	RIGID	Typical
9	9	14	16	F1-SA1	Beam	Tube	A500 Gr.B Rect	Typical

**Member Advanced Data**

	Label	Physical	Deflection Ratio Options	Seismic DR
1	1	Yes	** NA **	None
2	2	Yes	** NA **	None
3	3	Yes	Default	None
4	4	Yes	** NA **	None
5	5	Yes	** NA **	None
6	6	Yes	Default	None
7	7	Yes	** NA **	None
8	8	Yes	** NA **	None
9	9	Yes	Default	None

**Hot Rolled Steel Design Parameters**

	Label	Shape	Length [ft]	Lcomp top [ft]	Channel Conn.	a [ft]	Function
1	1	MF-P1	8	Lbyy	N/A	N/A	Lateral
2	3	F1-SA1	2	Lbyy	N/A	N/A	Lateral
3	4	MF-P1	8	Lbyy	N/A	N/A	Lateral
4	6	F1-SA1	2	Lbyy	N/A	N/A	Lateral
5	7	MF-P1	8	Lbyy	N/A	N/A	Lateral
6	9	F1-SA1	2	Lbyy	N/A	N/A	Lateral

**Member Point Loads (BLC 1 : Dead)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	Y	-0.035	%15
2	1	Y	-0.035	%85
3	1	Y	-0.075	%25
4	1	Y	-0.064	%65
5	1	Y	0	0
6	3	Y	-0.022	%50
7	3	Y	0	0
8	3	Y	0	0
9	3	Y	0	0
10	3	Y	0	0
11	7	Y	-0.035	%15
12	7	Y	-0.035	%85
13	7	Y	-0.075	%25
14	7	Y	-0.064	%65
15	7	Y	0	0
16	4	Y	-0.035	%15
17	4	Y	-0.035	%85
18	4	Y	-0.075	%25
19	4	Y	-0.064	%65
20	4	Y	0	0

**Member Point Loads (BLC 2 : 0 Wind - No Ice)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	Z	-0.16	%15
2	1	Z	-0.16	%85
3	1	Z	-0.074	%25
4	1	Z	-0.074	%65
5	1	Z	0	0
6	3	Z	-0.076	%50
7	3	Z	0	0



**Member Point Loads (BLC 2 : 0 Wind - No Ice) (Continued)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
8	3	Z	0	0
9	3	Z	0	0
10	3	Z	0	0
11	7	Z	-0.16	%15
12	7	Z	-0.16	%85
13	7	Z	-0.074	%25
14	7	Z	-0.074	%65
15	7	Z	0	0
16	4	Z	-0.16	%15
17	4	Z	-0.16	%85
18	4	Z	-0.074	%25
19	4	Z	-0.074	%65
20	4	Z	0	0

**Member Point Loads (BLC 3 : 90 Wind - No Ice)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	X	-0.063	%15
2	1	X	-0.063	%85
3	1	X	-0.045	%25
4	1	X	-0.039	%65
5	1	X	0	0
6	3	X	-0.043	%50
7	3	X	0	0
8	3	X	0	0
9	3	X	0	0
10	3	X	0	0
11	7	X	-0.063	%15
12	7	X	-0.063	%85
13	7	X	-0.045	%25
14	7	X	-0.039	%65
15	7	X	0	0
16	4	X	-0.063	%15
17	4	X	-0.063	%85
18	4	X	-0.045	%25
19	4	X	-0.039	%65
20	4	X	0	0

**Member Point Loads (BLC 4 : 0 Wind - Ice)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	Z	-0.034	%15
2	1	Z	-0.034	%85
3	1	Z	-0.014	%25
4	1	Z	-0.014	%65
5	1	Z	0	0
6	3	Z	-0.014	%50
7	3	Z	0	0
8	3	Z	0	0
9	3	Z	0	0
10	3	Z	0	0
11	7	Z	-0.034	%15
12	7	Z	-0.034	%85
13	7	Z	-0.014	%25
14	7	Z	-0.014	%65



**Member Point Loads (BLC 4 : 0 Wind - Ice) (Continued)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
15	7	Z	0	0
16	4	Z	-0.034	%15
17	4	Z	-0.034	%85
18	4	Z	-0.014	%25
19	4	Z	-0.014	%65
20	4	Z	0	0

**Member Point Loads (BLC 5 : 90 Wind - Ice)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	X	-0.015	%15
2	1	X	-0.015	%85
3	1	X	-0.009	%25
4	1	X	-0.007	%65
5	1	X	0	0
6	3	X	-0.008	%50
7	3	X	0	0
8	3	X	0	0
9	3	X	0	0
10	3	X	0	0
11	7	X	-0.015	%15
12	7	X	-0.015	%85
13	7	X	-0.009	%25
14	7	X	-0.007	%65
15	7	X	0	0
16	4	X	-0.015	%15
17	4	X	-0.015	%85
18	4	X	-0.009	%25
19	4	X	-0.007	%65
20	4	X	0	0

**Member Point Loads (BLC 6 : 0 Wind - Service)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	Z	-0.011	%15
2	1	Z	-0.011	%85
3	1	Z	-0.005	%25
4	1	Z	-0.005	%65
5	1	Z	0	0
6	3	Z	-0.005	%50
7	3	Z	0	0
8	3	Z	0	0
9	3	Z	0	0
10	3	Z	0	0
11	7	Z	-0.011	%15
12	7	Z	-0.011	%85
13	7	Z	-0.005	%25
14	7	Z	-0.005	%65
15	7	Z	0	0
16	4	Z	-0.011	%15
17	4	Z	-0.011	%85
18	4	Z	-0.005	%25
19	4	Z	-0.005	%65
20	4	Z	0	0





**Member Point Loads (BLC 7 : 90 Wind - Service)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	X	-0.004	%15
2	1	X	-0.004	%85
3	1	X	-0.003	%25
4	1	X	-0.003	%65
5	1	X	0	0
6	3	X	-0.003	%50
7	3	X	0	0
8	3	X	0	0
9	3	X	0	0
10	3	X	0	0
11	7	X	-0.004	%15
12	7	X	-0.004	%85
13	7	X	-0.003	%25
14	7	X	-0.003	%65
15	7	X	0	0
16	4	X	-0.004	%15
17	4	X	-0.004	%85
18	4	X	-0.003	%25
19	4	X	-0.003	%65
20	4	X	0	0

**Member Point Loads (BLC 8 : Ice)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	Y	-0.118	%15
2	1	Y	-0.118	%85
3	1	Y	-0.034	%25
4	1	Y	-0.033	%65
5	1	Y	0	0
6	3	Y	-0.034	%50
7	3	Y	0	0
8	3	Y	0	0
9	3	Y	0	0
10	3	Y	0	0
11	7	Y	-0.118	%15
12	7	Y	-0.118	%85
13	7	Y	-0.034	%25
14	7	Y	-0.033	%65
15	7	Y	0	0
16	4	Y	-0.118	%15
17	4	Y	-0.118	%85
18	4	Y	-0.034	%25
19	4	Y	-0.033	%65
20	4	Y	0	0

**Member Point Loads (BLC 9 : 0 Seismic)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	Z	-0.022	%15
2	1	Z	-0.022	%85
3	1	Z	-0.023	%25
4	1	Z	-0.02	%65
5	1	Z	0	0
6	3	Z	-0.007	%50



**Member Point Loads (BLC 9 : 0 Seismic) (Continued)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
7	3	Z	0	0
8	3	Z	0	0
9	3	Z	0	0
10	3	Z	0	0
11	7	Z	-0.022	%15
12	7	Z	-0.022	%85
13	7	Z	-0.023	%25
14	7	Z	-0.02	%65
15	7	Z	0	0
16	4	Z	-0.022	%15
17	4	Z	-0.022	%85
18	4	Z	-0.023	%25
19	4	Z	-0.02	%65
20	4	Z	0	0

**Member Point Loads (BLC 10 : 90 Seismic)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	1	X	-0.022	%15
2	1	X	-0.022	%85
3	1	X	-0.023	%25
4	1	X	-0.02	%65
5	1	X	0	0
6	3	X	-0.007	%50
7	3	X	0	0
8	3	X	0	0
9	3	X	0	0
10	3	X	0	0
11	7	X	-0.022	%15
12	7	X	-0.022	%85
13	7	X	-0.023	%25
14	7	X	-0.02	%65
15	7	X	0	0
16	4	X	-0.022	%15
17	4	X	-0.022	%85
18	4	X	-0.023	%25
19	4	X	-0.02	%65
20	4	X	0	0

**Member Point Loads (BLC 15 : Maint LL 1)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	3	Y	-0.25	%5

**Member Point Loads (BLC 16 : Maint LL 2)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	6	Y	-0.25	%5

**Member Point Loads (BLC 17 : Maint LL 3)**

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	9	Y	-0.25	%5



**Member Distributed Loads (BLC 2 : 0 Wind - No Ice)**

Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.011	-0.011	0 %100
2	3	Z	-0.017	-0.017	0 %100
3	4	Z	-0.011	-0.011	0 %100
4	6	Z	-0.017	-0.017	0 %100
5	7	Z	-0.011	-0.011	0 %100
6	9	Z	-0.017	-0.017	0 %100

**Member Distributed Loads (BLC 3 : 90 Wind - No Ice)**

Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.011	-0.011	0 %100
2	3	X	-0.017	-0.017	0 %100
3	4	X	-0.011	-0.011	0 %100
4	6	X	-0.017	-0.017	0 %100
5	7	X	-0.011	-0.011	0 %100
6	9	X	-0.017	-0.017	0 %100

**Member Distributed Loads (BLC 4 : 0 Wind - Ice)**

Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.002	-0.002	0 %100
2	3	Z	-0.005	-0.005	0 %100
3	4	Z	-0.002	-0.002	0 %100
4	6	Z	-0.005	-0.005	0 %100
5	7	Z	-0.002	-0.002	0 %100
6	9	Z	-0.005	-0.005	0 %100

**Member Distributed Loads (BLC 5 : 90 Wind - Ice)**

Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.002	-0.002	0 %100
2	3	X	-0.005	-0.005	0 %100
3	4	X	-0.002	-0.002	0 %100
4	6	X	-0.005	-0.005	0 %100
5	7	X	-0.002	-0.002	0 %100
6	9	X	-0.005	-0.005	0 %100

**Member Distributed Loads (BLC 6 : 0 Wind - Service)**

Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.0004	-0.0004	0 %100
2	3	Z	-0.001	-0.001	0 %100
3	4	Z	-0.0004	-0.0004	0 %100
4	6	Z	-0.001	-0.001	0 %100
5	7	Z	-0.0004	-0.0004	0 %100
6	9	Z	-0.001	-0.001	0 %100

**Member Distributed Loads (BLC 7 : 90 Wind - Service)**

Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.0004	-0.0004	0 %100
2	3	X	-0.001	-0.001	0 %100
3	4	X	-0.0004	-0.0004	0 %100

**Member Distributed Loads (BLC 7 : 90 Wind - Service) (Continued)**

Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
4	6	X	-0.001	-0.001	0 %100
5	7	X	-0.0004	-0.0004	0 %100
6	9	X	-0.001	-0.001	0 %100

**Member Distributed Loads (BLC 8 : Ice)**

Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Y	-0.006	-0.006	0 %100
2	3	Y	-0.01	-0.01	0 %100
3	4	Y	-0.006	-0.006	0 %100
4	6	Y	-0.01	-0.01	0 %100
5	7	Y	-0.006	-0.006	0 %100
6	9	Y	-0.01	-0.01	0 %100

**Member Distributed Loads (BLC 9 : 0 Seismic)**

Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.002	-0.002	0 %100
2	3	Z	-0.004	-0.004	0 %100
3	4	Z	-0.002	-0.002	0 %100
4	6	Z	-0.004	-0.004	0 %100
5	7	Z	-0.002	-0.002	0 %100
6	9	Z	-0.004	-0.004	0 %100

**Member Distributed Loads (BLC 10 : 90 Seismic)**

Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.002	-0.002	0 %100
2	3	X	-0.004	-0.004	0 %100
3	4	X	-0.002	-0.002	0 %100
4	6	X	-0.004	-0.004	0 %100
5	7	X	-0.002	-0.002	0 %100
6	9	X	-0.004	-0.004	0 %100

**Node Loads and Enforced Displacements (BLC 11 : Live Load a)**

Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s <sup>2</sup> /ft, k*s <sup>2</sup> *ft)]
1	3	L	Y -0.5
2	9	L	Y -0.5
3	14	L	Y -0.5

**Basic Load Cases**

BLC Description	Category	Y Gravity	Nodal	Point	Distributed
1 Dead	DL	-1		20	
2 0 Wind - No Ice	WLZ			20	6
3 90 Wind - No Ice	WLX			20	6
4 0 Wind - Ice	WLZ			20	6
5 90 Wind - Ice	WLX			20	6
6 0 Wind - Service	WLZ			20	6
7 90 Wind - Service	WLX			20	6
8 Ice	OL1			20	6
9 0 Seismic	ELZ			20	6
10 90 Seismic	ELX			20	6



**Basic Load Cases (Continued)**

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed
11	Live Load a	LL		3		
12	Live Load b	LL				
13	Live Load c	LL				
14	Live Load d	LL				
15	Maint LL 1	LL			1	
16	Maint LL 2	LL			1	
17	Maint LL 3	LL			1	
18	Maint LL 4	LL				
19	Maint LL 5	LL				
20	Maint LL 6	LL				
21	Maint LL 7	LL				
22	Maint LL 8	LL				
23	Maint LL 9	LL				
24	Maint LL 10	LL				
25	Maint LL 11	LL				
26	Maint LL 12	LL				
27	Maint LL 13	LL				
28	Maint LL 14	LL				
29	Maint LL 15	LL				

**Load Combinations**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4 Dead	Yes	Y	1	1.4						
2	1.2 D + 1.0 - 0 W	Yes	Y	1	1.2	2	1				
3	1.2 D + 1.0 - 30 W	Yes	Y	1	1.2	2	0.866	3	0.5		
4	1.2 D + 1.0 - 60 W	Yes	Y	1	1.2	3	0.866	2	0.5		
5	1.2 D + 1.0 - 90 W	Yes	Y	1	1.2	3	1				
6	1.2 D + 1.0 - 120 W	Yes	Y	1	1.2	3	0.866	2	-0.5		
7	1.2 D + 1.0 - 150 W	Yes	Y	1	1.2	2	-0.866	3	0.5		
8	1.2 D + 1.0 - 180 W	Yes	Y	1	1.2	2	-1				
9	1.2 D + 1.0 - 210 W	Yes	Y	1	1.2	2	-0.866	3	-0.5		
10	1.2 D + 1.0 - 240 W	Yes	Y	1	1.2	3	-0.866	2	-0.5		
11	1.2 D + 1.0 - 270 W	Yes	Y	1	1.2	3	-1				
12	1.2 D + 1.0 - 300 W	Yes	Y	1	1.2	3	-0.866	2	0.5		
13	1.2 D + 1.0 - 330 W	Yes	Y	1	1.2	2	0.866	3	-0.5		
14	1.2 D + 1.0 - 0 W/Ice	Yes	Y	1	1.2	4	1			8	1
15	1.2 D + 1.0 - 30 W/Ice	Yes	Y	1	1.2	4	0.866	5	0.5	8	1
16	1.2 D + 1.0 - 60 W/Ice	Yes	Y	1	1.2	5	0.866	4	0.5	8	1
17	1.2 D + 1.0 - 90 W/Ice	Yes	Y	1	1.2	5	1			8	1
18	1.2 D + 1.0 - 120 W/Ice	Yes	Y	1	1.2	5	0.866	4	-0.5	8	1
19	1.2 D + 1.0 - 150 W/Ice	Yes	Y	1	1.2	4	-0.866	5	0.5	8	1
20	1.2 D + 1.0 - 180 W/Ice	Yes	Y	1	1.2	4	-1			8	1
21	1.2 D + 1.0 - 210 W/Ice	Yes	Y	1	1.2	4	-0.866	5	-0.5	8	1
22	1.2 D + 1.0 - 240 W/Ice	Yes	Y	1	1.2	5	-0.866	4	-0.5	8	1
23	1.2 D + 1.0 - 270 W/Ice	Yes	Y	1	1.2	5	-1			8	1
24	1.2 D + 1.0 - 300 W/Ice	Yes	Y	1	1.2	5	-0.866	4	0.5	8	1
25	1.2 D + 1.0 - 330 W/Ice	Yes	Y	1	1.2	4	0.866	5	-0.5	8	1
26	1.2 D + 1.0 E - 0	Yes	Y	1	1.2	9	1				
27	1.2 D + 1.0 E - 30	Yes	Y	1	1.2	9	0.866	10	0.5		
28	1.2 D + 1.0 E - 60	Yes	Y	1	1.2	10	0.866	9	0.5		
29	1.2 D + 1.0 E - 90	Yes	Y	1	1.2	10	1				
30	1.2 D + 1.0 E - 120	Yes	Y	1	1.2	10	0.866	9	-0.5		
31	1.2 D + 1.0 E - 150	Yes	Y	1	1.2	9	-0.866	10	0.5		
32	1.2 D + 1.0 E - 180	Yes	Y	1	1.2	9	-1				
33	1.2 D + 1.0 E - 210	Yes	Y	1	1.2	9	-0.866	10	-0.5		



**Load Combinations (Continued)**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
34	1.2 D + 1.0 E - 240	Yes	Y	1	1.2	10	-0.866	9	-0.5		
35	1.2 D + 1.0 E - 270	Yes	Y	1	1.2	10	-1				
36	1.2 D + 1.0 E - 300	Yes	Y	1	1.2	10	-0.866	9	0.5		
37	1.2 D + 1.0 E - 330	Yes	Y	1	1.2	9	0.866	10	-0.5		
38	1.2 D + 1.5 LL a + Service - 0 W	Yes	Y	1	1.2	6	1			11	1.5
39	1.2 D + 1.5 LL a + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	11	1.5
40	1.2 D + 1.5 LL a + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	11	1.5
41	1.2 D + 1.5 LL a + Service - 90 W	Yes	Y	1	1.2	7	1			11	1.5
42	1.2 D + 1.5 LL a + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	11	1.5
43	1.2 D + 1.5 LL a + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	11	1.5
44	1.2 D + 1.5 LL a + Service - 180 W	Yes	Y	1	1.2	6	-1			11	1.5
45	1.2 D + 1.5 LL a + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	11	1.5
46	1.2 D + 1.5 LL a + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	11	1.5
47	1.2 D + 1.5 LL a + Service - 270 W	Yes	Y	1	1.2	7	-1			11	1.5
48	1.2 D + 1.5 LL a + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	11	1.5
49	1.2 D + 1.5 LL a + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	11	1.5
50	1.2 D + 1.5 LL b + Service - 0 W	Yes	Y	1	1.2	6	1			12	1.5
51	1.2 D + 1.5 LL b + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	12	1.5
52	1.2 D + 1.5 LL b + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	12	1.5
53	1.2 D + 1.5 LL b + Service - 90 W	Yes	Y	1	1.2	7	1			12	1.5
54	1.2 D + 1.5 LL b + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	12	1.5
55	1.2 D + 1.5 LL b + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	12	1.5
56	1.2 D + 1.5 LL b + Service - 180 W	Yes	Y	1	1.2	6	-1			12	1.5
57	1.2 D + 1.5 LL b + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	12	1.5
58	1.2 D + 1.5 LL b + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	12	1.5
59	1.2 D + 1.5 LL b + Service - 270 W	Yes	Y	1	1.2	7	-1			12	1.5
60	1.2 D + 1.5 LL b + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	12	1.5
61	1.2 D + 1.5 LL b + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	12	1.5
62	1.2 D + 1.5 LL c + Service - 0 W	Yes	Y	1	1.2	6	1			13	1.5
63	1.2 D + 1.5 LL c + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	13	1.5
64	1.2 D + 1.5 LL c + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	13	1.5
65	1.2 D + 1.5 LL c + Service - 90 W	Yes	Y	1	1.2	7	1			13	1.5
66	1.2 D + 1.5 LL c + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	13	1.5
67	1.2 D + 1.5 LL c + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	13	1.5
68	1.2 D + 1.5 LL c + Service - 180 W	Yes	Y	1	1.2	6	-1			13	1.5
69	1.2 D + 1.5 LL c + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	13	1.5
70	1.2 D + 1.5 LL c + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	13	1.5
71	1.2 D + 1.5 LL c + Service - 270 W	Yes	Y	1	1.2	7	-1			13	1.5
72	1.2 D + 1.5 LL c + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	13	1.5
73	1.2 D + 1.5 LL c + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	13	1.5
74	1.2 D + 1.5 LL d + Service - 0 W	Yes	Y	1	1.2	6	1			14	1.5
75	1.2 D + 1.5 LL d + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	14	1.5
76	1.2 D + 1.5 LL d + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	14	1.5
77	1.2 D + 1.5 LL d + Service - 90 W	Yes	Y	1	1.2	7	1			14	1.5
78	1.2 D + 1.5 LL d + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	14	1.5
79	1.2 D + 1.5 LL d + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	14	1.5
80	1.2 D + 1.5 LL d + Service - 180 W	Yes	Y	1	1.2	6	-1			14	1.5
81	1.2 D + 1.5 LL d + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	14	1.5
82	1.2 D + 1.5 LL d + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	14	1.5
83	1.2 D + 1.5 LL d + Service - 270 W	Yes	Y	1	1.2	7	-1			14	1.5
84	1.2 D + 1.5 LL d + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	14	1.5
85	1.2 D + 1.5 LL d + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	14	1.5
86	1.2 D + 1.5 LL Maint (1)	Yes	Y	1	1.2					15	1.5
87	1.2 D + 1.5 LL Maint (2)	Yes	Y	1	1.2					16	1.5
88	1.2 D + 1.5 LL Maint (3)	Yes	Y	1	1.2					17	1.5

**Load Combinations (Continued)**

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
89	1.2 D + 1.5 LL Maint (4)	Yes	Y	1	1.2					18	1.5
90	1.2 D + 1.5 LL Maint (5)	Yes	Y	1	1.2					19	1.5
91	1.2 D + 1.5 LL Maint (6)	Yes	Y	1	1.2					20	1.5
92	1.2 D + 1.5 LL Maint (7)	Yes	Y	1	1.2					21	1.5
93	1.2 D + 1.5 LL Maint (8)	Yes	Y	1	1.2					22	1.5
94	1.2 D + 1.5 LL Maint (9)	Yes	Y	1	1.2					23	1.5
95	1.2 D + 1.5 LL Maint (10)	Yes	Y	1	1.2					24	1.5
96	1.2 D + 1.5 LL Maint (11)	Yes	Y	1	1.2					25	1.5
97	1.2 D + 1.5 LL Maint (12)	Yes	Y	1	1.2					26	1.5
98	1.2 D + 1.5 LL Maint (13)	Yes	Y	1	1.2					27	1.5
99	1.2 D + 1.5 LL Maint (14)	Yes	Y	1	1.2					28	1.5
100	1.2 D + 1.5 LL Maint (15)	Yes	Y	1	1.2					29	1.5

**Envelope Node Reactions**

Node Label	X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC		
1	5	max	0.373	5	1.117	44	0.665	2	-0.692	8	0.745	5	0.042	5
2		min	-0.373	11	0.367	2	-0.665	8	-2.255	38	-0.745	11	-0.042	11
3	11	max	0.331	5	1.09	48	0.589	2	1.116	44	1.138	9	1.929	41
4		min	-0.331	11	0.34	6	-0.589	8	0.304	2	-1.138	3	0.585	11
5	16	max	0.331	5	1.09	40	0.589	2	1.116	44	1.138	13	-0.585	5
6		min	-0.331	11	0.34	10	-0.589	8	0.304	2	-1.138	7	-1.929	47
7	Totals:	max	1.035	5	3.297	38	1.842	2						
8		min	-1.035	11	1.047	8	-1.842	8						

**Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks**

Member	Shape	Code Check	Loc [ft]	LC	Shear Check	Loc [ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn	
1	3	HSS4X4X0.25	0.126	2	47	0.028	2	y	47	152.716	155.25	18.22	18.22	1.645	H1-1b
2	9	HSS4X4X0.25	0.126	2	44	0.027	2	y	43	152.716	155.25	18.22	18.22	1.635	H1-1b
3	6	HSS4X4X0.25	0.126	2	44	0.027	2	y	45	152.716	155.25	18.22	18.22	1.635	H1-1b
4	1	PIPE 2.88X0.203	0.137	4	8	0.013	4		8	35.361	70.548	5.01	5.01	1	H1-1b
5	4	PIPE 2.88X0.203	0.137	4	2	0.013	4		2	35.361	70.548	5.01	5.01	1	H1-1b
6	7	PIPE 2.88X0.203	0.137	4	2	0.013	4		2	35.361	70.548	5.01	5.01	1	H1-1b

## APPENDIX B

(Additional Calculations)



PROJECT	<b>153448.004.01 - Danbury 1, CT</b>	<b>KSC</b>
SUBJECT	<b>T-Arm Mount Analysis</b>	
DATE	<b>07/29/22</b>	



**B+T Group**  
 1717 S. Boulder, Suite 300  
 Tulsa, OK 74119  
 (918) 587-4630

Tower Type	:	Monopole	
Ground Elevation	$z_s$ :	548 ft	[ASCE7 Hazard Tool]
Tower Height	:	139.00 ft	
Mount Elevation	:	127.00 ft	
Antenna Elevation	:	127.00 ft	
Crest Height	:	0 ft	
Risk Category	:	II	[Table 2-1 ]
Exposure Category	:	C	[Sec. 2.6.5.1.2]
Topography Category	:	1.00	[Sec. 2.6.6.2]
Wind Velocity	$V$ :	115 mph	[ASCE7 Hazard Tool]
Ice wind Velocity	$V_i$ :	50 mph	[ASCE7 Hazard Tool]
Service Velocity	$V_s$ :	30 mph	[ASCE7 Hazard Tool]
Base Ice thickness	$t_i$ :	1.00 in	[ASCE7 Hazard Tool]
Seismic Design Cat.	:	B	[ASCE7 Hazard Tool]
	$S_S$ :	0.22	
	$S_1$ :	0.06	
	$S_{DS}$ :	0.23	
	$S_{D1}$ :	0.09	
Gust Factor	$G_h$ :	1.00	[Sec. 16.6]
Pressure Coefficient	$K_z$ :	1.33	[Sec. 2.6.5.2]
Topography Facto	$K_{zt}$ :	2.34	[Sec. 2.6.6]
Elevation Factor	$K_e$ :	0.98	[Sec. 2.6.8]
Directionality Factor	$K_d$ :	0.95	[Sec. 16.6]
Shielding Factor	$K_a$ :	0.90	[Sec. 16.6]
Design Ice Thickness	$t_{iz}$ :	1.14 in	[Sec. 2.6.10]
Importance Factor	$I_e$ :	1	[Table 2-3 ]
Response Coefficient	$C_s$ :	0.117	[Sec. 2.7.7.1]
Amplification	$A_s$ :	2.654676	[Sec. 16.7]
	$q_z$ :	41.97 psf	

PROJECT	<b>153448.004.01 - Danbury 1, CT</b>	<b>KSC</b>
SUBJECT	<b>T-Arm Mount Analysis</b>	
DATE	<b>07/29/22</b>	



**B+T Group**  
 1717 S. Boulder, Suite 300  
 Tulsa, OK 74119  
 (918) 587-4630

**B+T GRP**

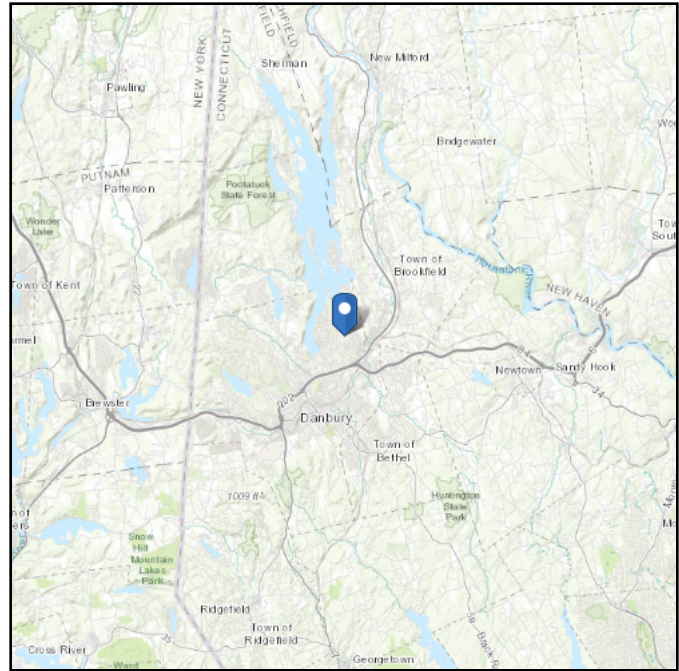
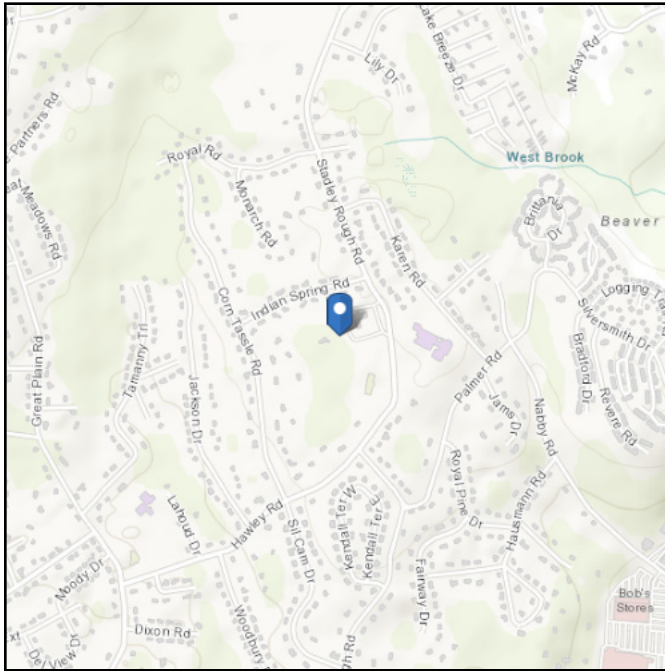
Manufacturer	Model	Qty	Height (in <sup>2</sup> )	Width (in <sup>2</sup> )	Depth (in <sup>2</sup> )	Weight (lbs)	C <sub>a</sub> A <sub>a</sub> (N) (ft <sup>2</sup> )	C <sub>a</sub> A <sub>a</sub> (T) (ft <sup>2</sup> )	C <sub>a</sub> A <sub>a</sub> (N) Ice (ft <sup>2</sup> )	C <sub>a</sub> A <sub>a</sub> (T) Ice (ft <sup>2</sup> )	F <sub>A</sub> (N) (k)	F <sub>A</sub> (T) (k)	F <sub>A</sub> (N) Ice (k)	F <sub>A</sub> (T) Ice (k)
COMMSCOPE	FFVV-65B-R2	0.5	72.0	19.6	7.8	70.8	3.81	1.51	4.32	1.95	0.16	0.06	0.03	0.02
COMMSCOPE	FFVV-65B-R2	0.5					3.81	1.51	4.32	1.95	0.16	0.06	0.03	0.02
Fujitsu	TA08025-B605	1	15.8	15.0	9.1	75.0	1.96	1.19	2.59	1.70	0.07	0.04	0.01	0.01
Fujitsu	TA08025-B604	1	15.8	15.0	7.9	63.9	1.96	1.03	2.59	1.53	0.07	0.04	0.01	0.01
Raycap	RDIDC-9181-PF-48	1	16.6	14.6	8.2	21.9	2.01	1.13	2.65	1.64	0.08	0.04	0.01	0.01
COMMSCOPE	FFVV-65B-R2	0.5	72.0	19.6	7.8	70.8	3.81	1.51	4.32	1.95	0.16	0.06	0.03	0.02
COMMSCOPE	FFVV-65B-R2	0.5					3.81	1.51	4.32	1.95	0.16	0.06	0.03	0.02
Fujitsu	TA08025-B605	1	15.8	15.0	9.1	75.0	1.96	1.19	2.59	1.70	0.07	0.04	0.01	0.01
Fujitsu	TA08025-B604	1	15.8	15.0	7.9	63.9	1.96	1.03	2.59	1.53	0.07	0.04	0.01	0.01
COMMSCOPE	FFVV-65B-R2	0.5	72.0	19.6	7.8	70.8	3.81	1.51	4.32	1.95	0.16	0.06	0.03	0.02
COMMSCOPE	FFVV-65B-R2	0.5					3.81	1.51	4.32	1.95	0.16	0.06	0.03	0.02
Fujitsu	TA08025-B605	1	15.8	15.0	9.1	75.0	1.96	1.19	2.59	1.70	0.07	0.04	0.01	0.01
Fujitsu	TA08025-B604	1	15.8	15.0	7.9	63.9	1.96	1.03	2.59	1.53	0.07	0.04	0.01	0.01

# ASCE 7 Hazards Report

**Address:**  
No Address at This  
Location

**Standard:** ASCE/SEI 7-16  
**Risk Category:** II  
**Soil Class:** D - Default (see  
Section 11.4.3)

**Elevation:** 547.79 ft (NAVD 88)  
**Latitude:** 41.433102  
**Longitude:** -73.431916



## Wind

### Results:

Wind Speed	115 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	89 Vmph
100-year MRI	96 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2  
Date Accessed: Tue Jul 26 2022

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

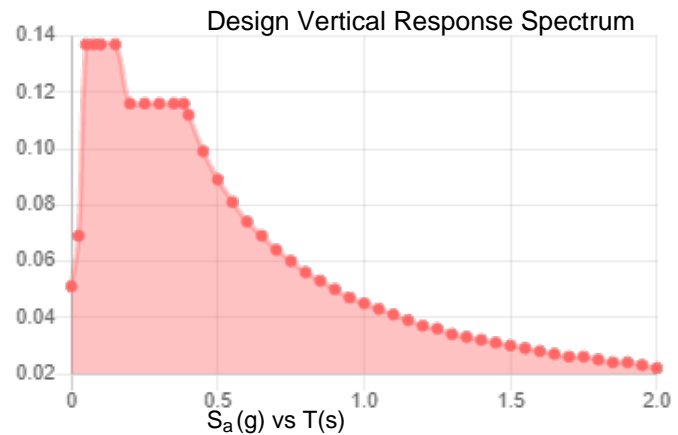
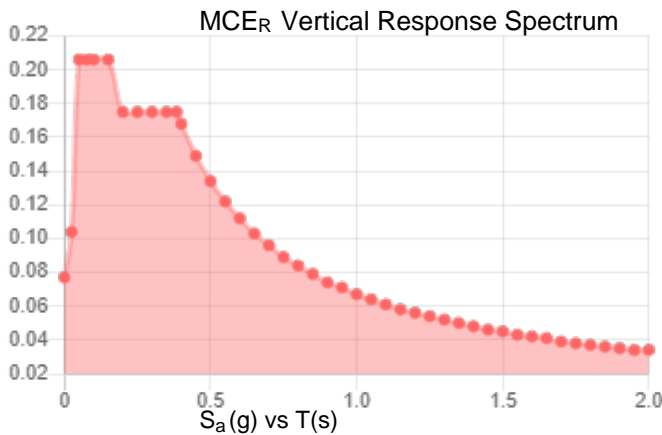
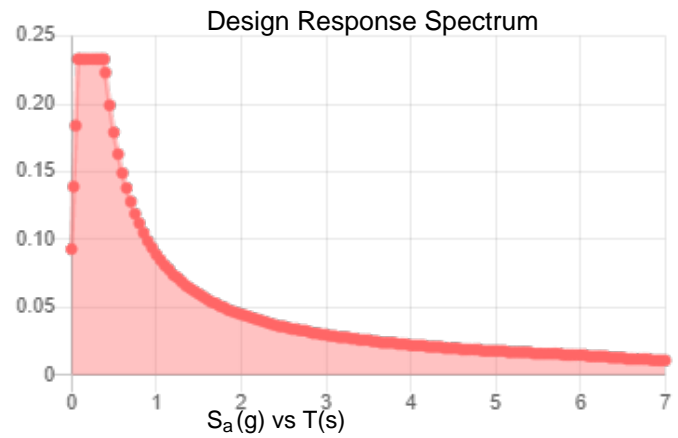
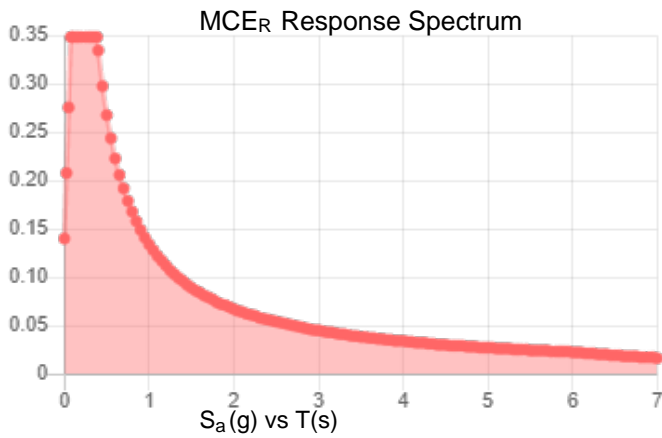
Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

**Site Soil Class:** D - Default (see Section 11.4.3)

**Results:**

$S_s$ :	0.218	$S_{D1}$ :	0.089
$S_1$ :	0.056	$T_L$ :	6
$F_a$ :	1.6	PGA :	0.125
$F_v$ :	2.4	PGA <sub>M</sub> :	0.193
$S_{MS}$ :	0.349	$F_{PGA}$ :	1.55
$S_{M1}$ :	0.134	$I_e$ :	1
$S_{DS}$ :	0.233	$C_v$ :	0.737

**Seismic Design Category** B



**Data Accessed:** Tue Jul 26 2022

**Date Source:**

**USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.**

## Ice

---

**Results:**

Ice Thickness: 1.00 in.  
Concurrent Temperature: 15 F  
Gust Speed 50 mph

**Data Source:** Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

**Date Accessed:** Tue Jul 26 2022

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

---

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.



DISH Wireless L.L.C. SITE ID:

**NJJER01104B**

DISH Wireless L.L.C. SITE ADDRESS:

**52 STADLEY ROUGH ROAD  
DANBURY, CT 06811**

**NOTE:**  
THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION REMOVAL AND/OR REPLACEMENT OF THE TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR 1.61000 (B)(7).

**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 (1 PER SECTOR)
  - 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 METAL PLATFORM
  - 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 INFORMATION	PROJECT DIRECTORY
PROPERTY OWNER: CHRIST THE SHEPHERD CHURCH PCA ADDRESS: 52 STADLEY ROUGH RD DANBURY, CT 06811	APPLICANT: DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120 (303) 706-5008
TOWER TYPE: MONOPOLE	TOWER OWNER: SBA COMMUNICATIIONS CORP. 8051 CONGRESS AVENUE BOCA RATON, FL 33487 (800) 487-7483
TOWER CO SITE ID: CT13549-S	SITE DESIGNER: B+T GROUP 1717 S. BOULDER AVE, SUITE 300 TULSA, OK 74119 (918) 587-4630
TOWER APP NUMBER: 163808	SITE ACQUISITION: GREGG BAILEY GREGG.BAILEY@DISH.COM
COUNTY: FAIRFIELD	CONSTRUCTION MANAGER: MICHAEL NARDUCCI MICHAEL.NARDUCCI@DISH.COM
LATITUDE (NAD 83): 41° 25' 59.17" N 41.43310211 N	RF ENGINEER: MURUGABIRAN JAYAPAL MURUGABIRAN.JAYAPAL@DISH.COM
LONGITUDE (NAD 83): 73° 25' 54.90" W 73.431916 W	
ZONING JURISDICTION: FAIRFIELD COUNTY	
ZONING DISTRICT: RA40	
PARCEL NUMBER: K07019	
OCCUPANCY GROUP: U	
CONSTRUCTION TYPE: II-B	
POWER COMPANY: EVERSOURCE	
TELEPHONE COMPANY: XFINITY	



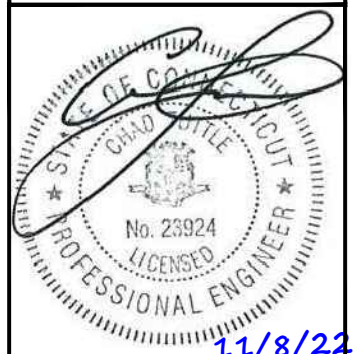
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	RMC	RMC

RFDS REV #: 3

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
**153448.001.01**

DISH Wireless L.L.C.  
PROJECT INFORMATION  
**NJJER01104B**  
**52 STADLEY ROUGH ROAD**  
**DANBURY, CT 06811**

SHEET TITLE  
**TITLE SHEET**

SHEET NUMBER  
**T-1**

**CONNECTICUT CODE 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	2018 CT STATE BUILDING CODE/2015 IBC W/ CT AMENDMENTS
MECHANICAL	2018 CT STATE BUILDING CODE/2015 IMC W/ CT AMENDMENTS
ELECTRICAL	2018 CT STATE BUILDING CODE/2017 NEC W/ CT AMENDMENTS

**SITE PHOTO**



**DIRECTIONS**

DIRECTIONS FROM 3 ADP BLVD, ROSELAND, NJ 07068:  
TURN RIGHT ONTO CR-527 [LIVINGSTON AVE]. TAKE RAMP (RIGHT) ONTO I-280. AT EXIT 17B, STAY ON I-280. TAKE RAMP ONTO I-95 [NEW JERSEY TPKE]. STAY ON I-95 [NEW JERSEY TPKE]. AT EXIT 73, STAY ON I-95 [NEW JERSEY TPKE]. STAY ON I-95 [US-1]. AT EXIT 3, TAKE RAMP (RIGHT) ONTO I-87 [MAJOR DEEGAN EXPY]. AT EXIT 4, TAKE RAMP ONTO CENTRAL PARK AVE. TAKE RAMP ONTO CROSS COUNTY PKWY. MERGE ONTO HUTCHINSON RIVER PKWY N. KEEP LEFT ONTO I-684 . AT EXIT 9E, TAKE RAMP (RIGHT) ONTO I-84. KEEP LEFT ONTO US-202 [US-7]. ROAD NAME CHANGES TO US-7. AT EXIT 11, KEEP LEFT ONTO RAMP. TURN LEFT ONTO WHITE TURKEY RD. TURN LEFT ONTO US-202 [FEDERAL RD]. TURN RIGHT ONTO NABBY RD. TURN LEFT ONTO PALMER RD, THEN IMMEDIATELY TURN RIGHT ONTO KAREN RD. TURN LEFT ONTO STADLEY ROUGH RD. TURN RIGHT ONTO INDIAN SPRING RD. TURN LEFT ONTO LOCAL ROAD(S). ARRIVE AT NJJER01104B.

**VICINITY MAP**



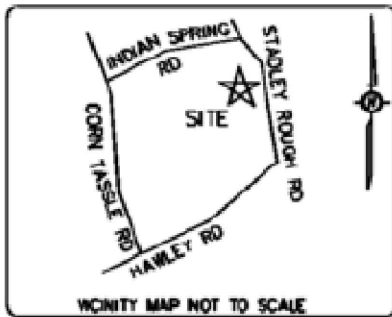
**UNDERGROUND SERVICE ALERT CBYD 811**  
**UTILITY NOTIFICATION CENTER OF CONNECTICUT**  
(800) 922-4455  
**WWW.CBYD.COM**  
CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

**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.



LEGAL DESCRIPTION: 20' NON-EXCLUSIVE ACCESS AND UTILITY EASEMENT (AS SURVEYED)

COMMENCING FROM AN EXISTING IRON PIPE ON THE WESTERN RIGHT OF WAY OF STADLEY ROUGH ROAD, HAVING CONNECTICUT STATE PLANE COORDINATES E:813,361.77' -AND- N:719,635.32'; THENCE, S 20° 01' 42" E FOR A DISTANCE OF 333.46 FEET TO A POINT ON SAID RIGHT OF WAY, ALSO BEING THE POINT OF BEGINNING; THENCE, ALONG SAID RIGHT OF WAY S 04° 48' 18" E FOR A DISTANCE OF 20.58 FEET TO A POINT; THENCE, DEPARTING SAID RIGHT OF WAY S 71° 34' 18" W FOR A DISTANCE OF 294.88 FEET TO THE BEGINNING OF A NON-TANGENTIAL CURVE, SAID CURVE TURNING TO THE RIGHT THROUGH AN ANGLE OF 91° 46' 37", HAVING A RADIUS OF 60.19 FEET, AND WHOSE LONG CHORD BEARS N 62° 49' 03" W FOR A DISTANCE OF 86.43 FEET. THENCE, N 16° 55' 45" W FOR A DISTANCE OF 57.98 FEET TO A POINT; THENCE, S 72° 56' 26" W FOR A DISTANCE OF 73.09 FEET TO THE BEGINNING OF A CURVE, SAID CURVE TURNING TO THE LEFT THROUGH 91° 49' 30", HAVING A RADIUS OF 42.21 FEET, AND WHOSE LONG CHORD BEARS S 27° 01' 41" W FOR A DISTANCE OF 60.63 FEET. THENCE, S 71° 06' 56" W FOR A DISTANCE OF 20.00 FEET TO THE BEGINNING OF A NON-TANGENTIAL CURVE, SAID CURVE TURNING TO THE RIGHT THROUGH AN ANGLE OF 91° 49' 30", HAVING A RADIUS OF 62.21 FEET, AND WHOSE LONG CHORD BEARS N 27° 01' 41" E FOR A DISTANCE OF 89.36 FEET. THENCE, N 72° 56' 26" E FOR A DISTANCE OF 93.15 FEET TO A POINT; THENCE, S 16° 55' 45" E FOR A DISTANCE OF 78.03 FEET TO THE BEGINNING OF A CURVE, SAID CURVE TURNING TO THE LEFT THROUGH AN ANGLE OF 91° 50' 20", HAVING A RADIUS OF 40.19 FEET, AND WHOSE LONG CHORD BEARS S 62° 50' 55" E FOR A DISTANCE OF 57.74 FEET TO A POINT OF INTERSECTION WITH A NON-TANGENTIAL LINE. THENCE, N 71° 34' 18" E FOR A DISTANCE OF 299.78 FEET TO A POINT ON SAID RIGHT OF WAY, ALSO BEING THE POINT OF BEGINNING, CONTAINING 12,250 SQ FT -AND- 0.28 ACRES.

LEGAL DESCRIPTION: EXCLUSIVE EASEMENT (AS SURVEYED)

COMMENCING FROM AN EXISTING IRON PIPE ON THE WESTERN RIGHT OF WAY OF STADLEY ROUGH ROAD, HAVING CONNECTICUT STATE PLANE COORDINATES E:813,361.77' -AND- N:719,635.32'; THENCE, S 38° 13' 17" W FOR A DISTANCE OF 498.43 FEET TO THE POINT OF BEGINNING; THENCE, S 18° 53' 04" E FOR A DISTANCE OF 100.00 FEET TO A POINT; THENCE, S 71° 06' 56" W FOR A DISTANCE OF 100.00 FEET TO A POINT; THENCE, N 18° 53' 04" W FOR A DISTANCE OF 100.00 FEET TO A POINT; THENCE, N 71° 06' 56" E FOR A DISTANCE OF 100.00 FEET TO THE POINT OF BEGINNING, CONTAINING 10,000 SQ FT -AND- 0.23 ACRES.

ZONING: RA-40

THIS PARCEL OF LAND LIES WITHIN FLOOD ZONE X WHICH IS NOT A SPECIAL FLOOD HAZARD AREA AS PER F.I.R.M. PANEL NUMBER: 09001C0141E EFFECTIVE DATE: 06/18/2010

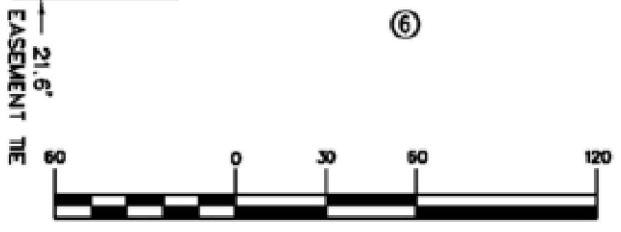
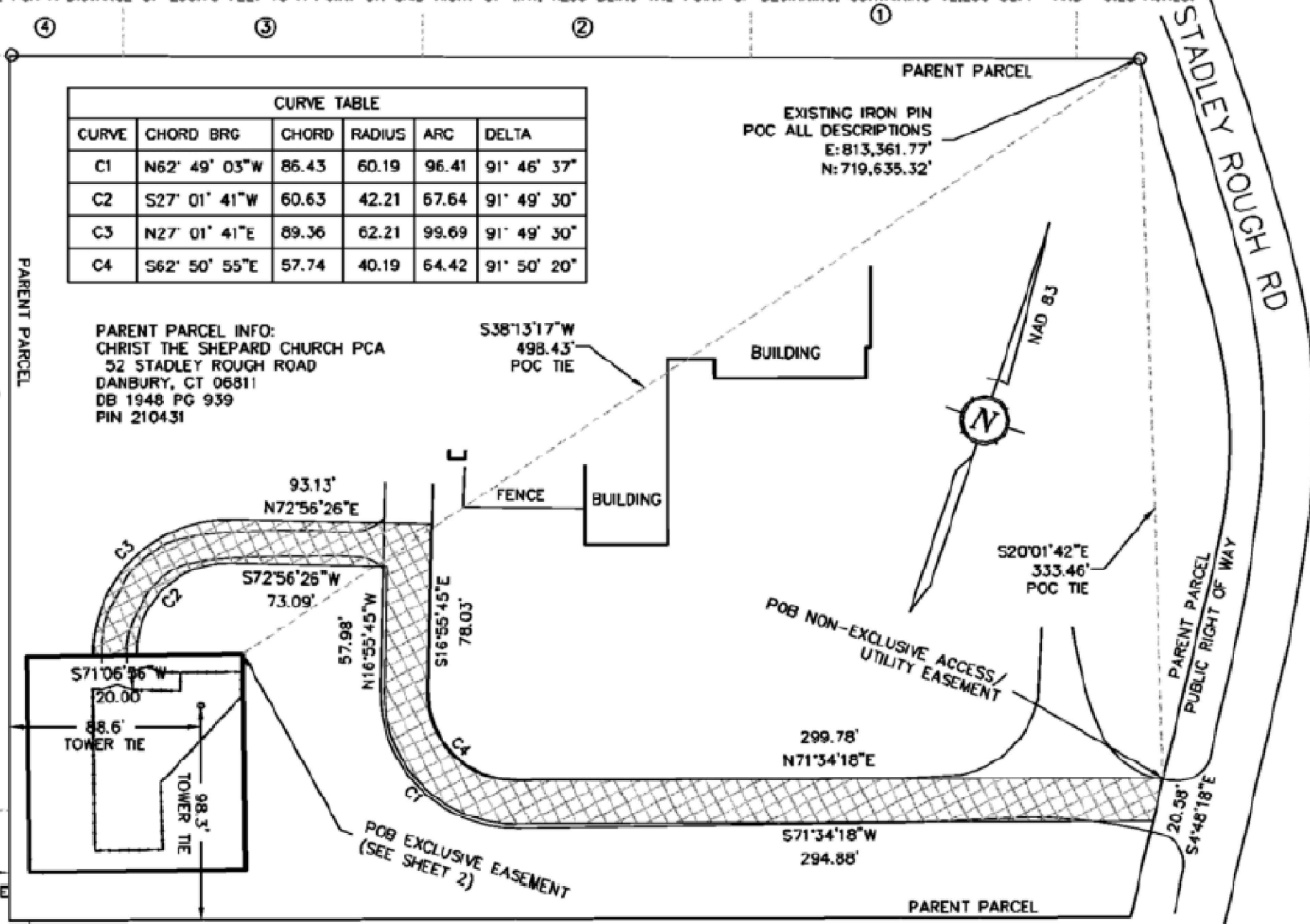
LEGEND

- : SET 5/8" REBAR.
- : FOUND 1/2" REBAR AS NOTED.
- (---) : RECORD DESCRIPTION DATA.
- P.O.B. : POINT OF BEGINNING.
- P.O.C. : POINT OF COMMENCEMENT.
- : FENCE AS NOTED.
- : OVER HEAD UTILITY LINES.
- : WOOD UTILITY POLE.
- : ELECTRIC TRANSFORMER.
- : TELCO PEDESTAL.
- WM : WATER METER.
- CA TV : CABLE TELEVISION
- ⊙ : SEWER MAN HOLE
- N/F : NOW OR FORMERLY

AREA	SQUARE FEET	ACRE
PARENT PARCEL	215,273	4.94
EXCLUSIVE EASEMENT	10,000	0.23
COMPOUND AREA	3611	0.08
NON-EXCLUSIVE ACCESS/UTILITY EASEMENT	12250	0.28
NON-EXCLUSIVE UTILITY EASEMENT		

CURVE TABLE					
CURVE	CHORD BRG	CHORD	RADIUS	ARC	DELTA
C1	N62° 49' 03" W	86.43	60.19	96.41	91° 46' 37"
C2	S27° 01' 41" W	60.63	42.21	67.64	91° 49' 30"
C3	N27° 01' 41" E	89.36	62.21	99.69	91° 49' 30"
C4	S62° 50' 55" E	57.74	40.19	64.42	91° 50' 20"

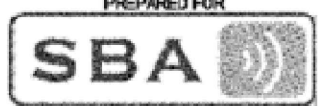
PARENT PARCEL INFO:  
CHRIST THE SHEPARD CHURCH PCA  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811  
DB 1948 PG 939  
PIN 210431



- ADJOINER INFO:
- ① N/F TOM & ROSE MARY PEAT  
PIN K070180000
  - ② N/F LISA MARIA & JAMES J BAKER  
PIN K070170000
  - ③ N/F CAROL RIZZA  
PIN K070160000

- ④ N/F CHARLES H & RUTH R SNODGRASS  
PIN K070150000
- ⑤ N/F JOSE & CHRISTINA CARVALHEIRO  
PIN K070200000
- ⑥ COLONIAL HILLS BAPTIST CHURCH  
PIN K071050000

AS-BUILT SURVEY



SITE: DANBURY 1  
ID: CT13549-S  
ADDRESS: 52 Stadley Rough Road  
DANBURY, CT 06811  
FAIRFIELD COUNTY

NATIONAL SURVEY SERVICES COORDINATION BY:

GEOLINE SURVEYING, INC.

13430 NW 104th Terrace, Alachua, FL 32615  
Office: (386) 418-0500 Fax: (386) 462-9986  
WWW.GEOLINEINC.COM

SURVEY WORK PERFORMED BY:

JONATHAN MURPHY

Professional Land Surveying  
10505 Leafwood Place (919) 280-8180  
Raleigh, NC 27615 FAX 908-9616  
E-MAIL: jnm@jmurphygeomatics.com WWW: J-1757

SURVEYOR'S NOTES

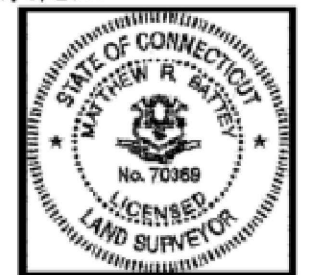
1. BASIS OF BEARING:  
CT GRID NAD83
2. NO SUBSURFACE INVESTIGATION WAS PERFORMED TO LOCATE UNDERGROUND UTILITIES. UTILITIES SHOWN HEREON ARE LIMITED TO AND ARE PER OBSERVED EVIDENCE ONLY.
3. THIS SURVEY DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARENT PARCEL.
4. ALL VISIBLE TOWER EQUIPMENT AND IMPROVEMENTS ARE CONTAINED WITHIN THE DESCRIBED AREA.
5. AT THE TIME OF THE SURVEY THERE WERE NO VISIBLE ENCROACHMENT ONTO OR BEYOND SUBJECT PROPERTY.

SURVEYOR'S CERTIFICATION

I HEREBY CERTIFY TO SBA ENTITY: SBA TOWERS II, LLC, A FLORIDA LIMITED LIABILITY COMPANY, NATHANSON, CIPRIANO, AND GAMBARDELLA, PC, AND STEWART TITLE GUARANTY COMPANY COMMITMENT CDM 27474 EFFECTIVE AUGUST 25, 2014.

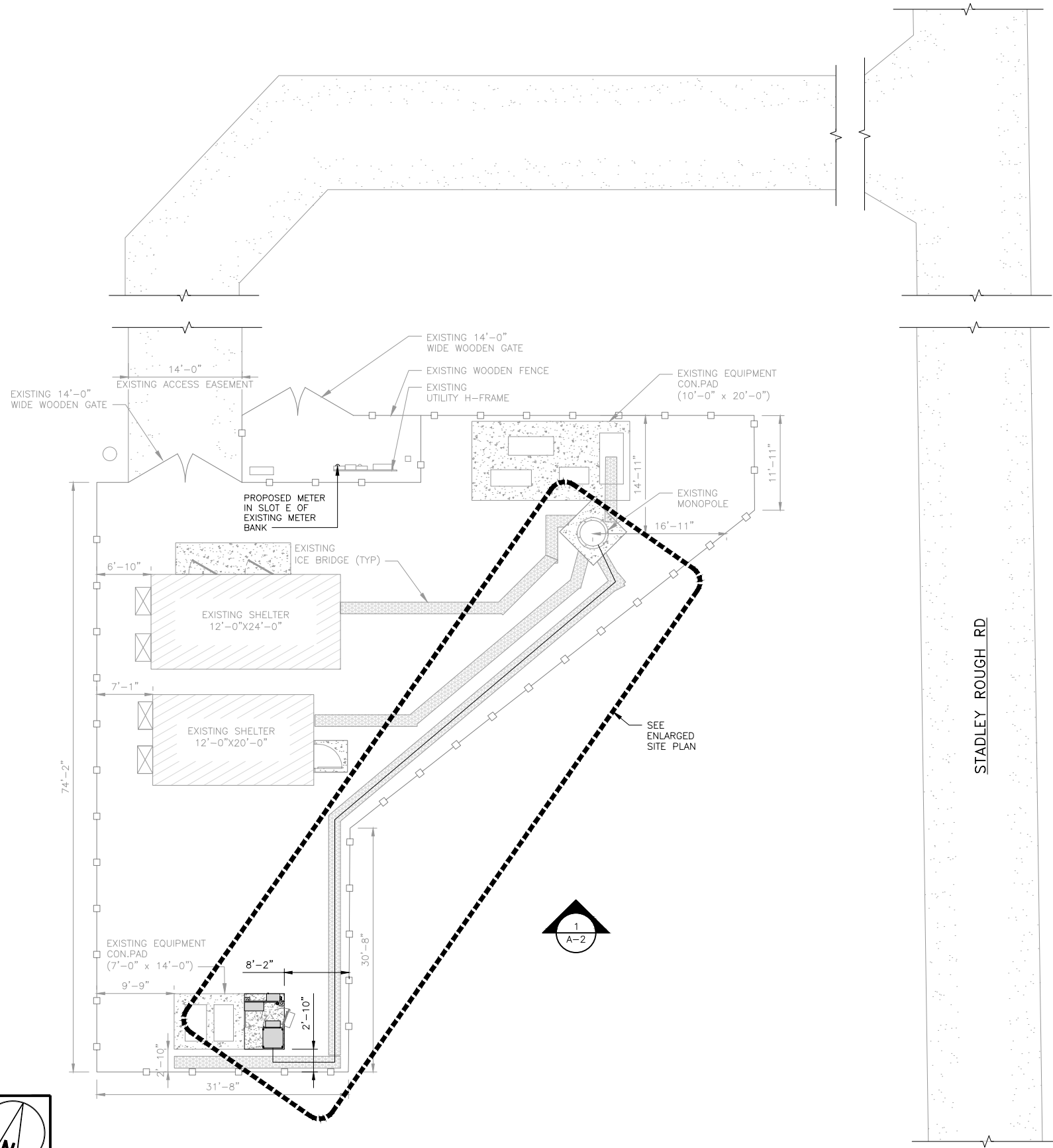
MURPHY GEOMATICS

*Matthew R. Battey*  
MATTHEW BATTEY  
LAND SURVEYOR -  
DATE: 9/3/2014

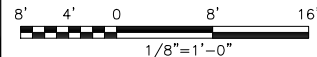


NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



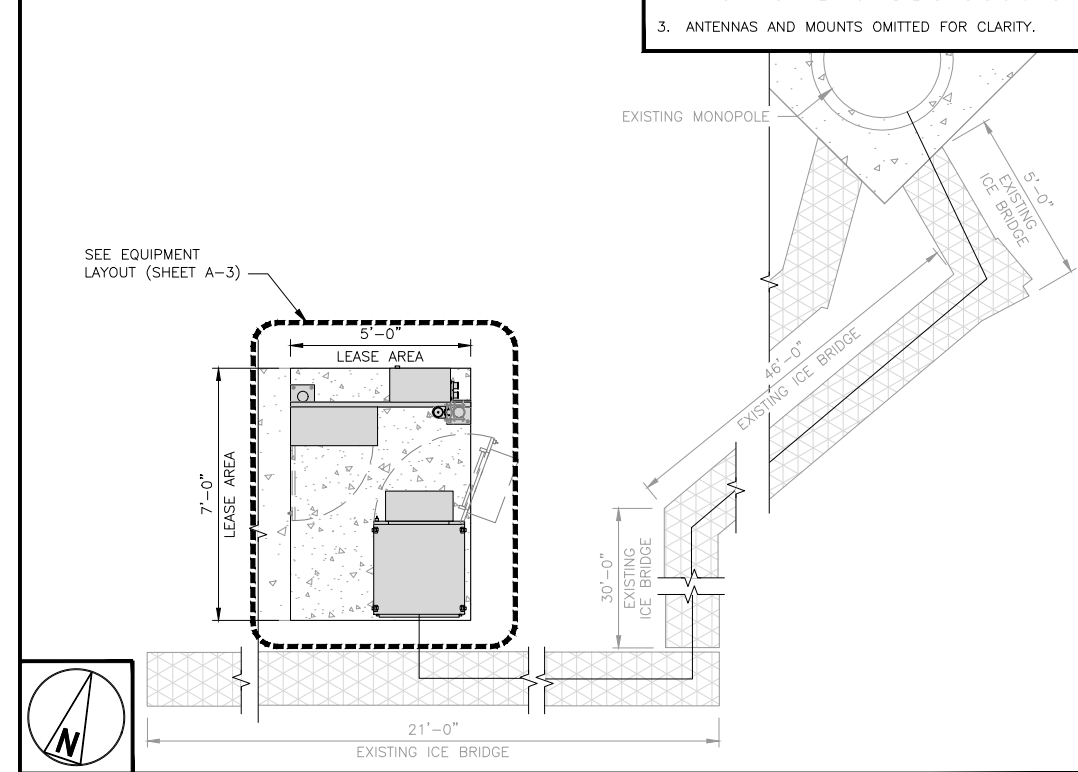
OVERALL SITE PLAN



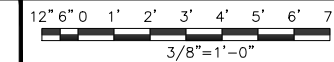
1

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.



ENLARGED SITE PLAN



2

NOT USED

3



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY: YN CHECKED BY: RMC APPROVED BY: RMC

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
153448.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION  
NJJER01104B  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811

SHEET TITLE  
OVERALL AND ENLARGED  
SITE PLAN

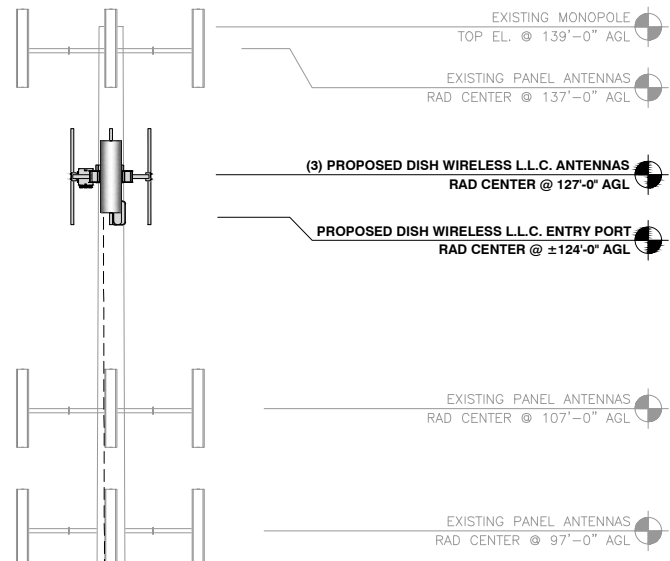
SHEET NUMBER  
**A-1**



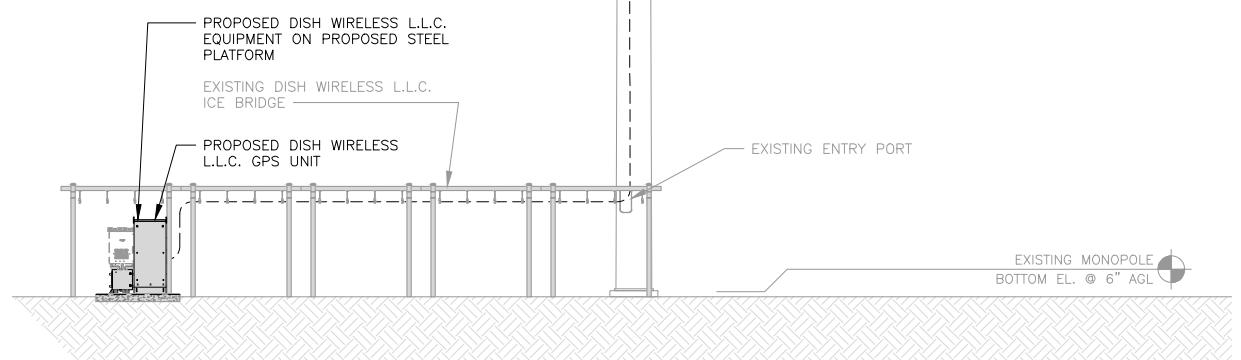
**NOTES**

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.
4. PROPOSED MOUNTS, ANTENNAS, AND EQUIPMENT ARE TO BE PAINTED BROWN TO MATCH EXISTING.

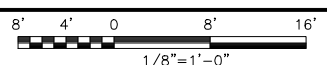
PROPOSED T-ARM MOUNT (MC-FM3-24-278) IS SUFFICIENT PER APPURTENANCE MOUNT ANALYSIS REPORT BY B+T GROUP DATED 11/7/22.



(1) PROPOSED DISH WIRELESS L.L.C. HYBRID CABLE ROUTED INSIDE POLE  
EXISTING MONOPOLE

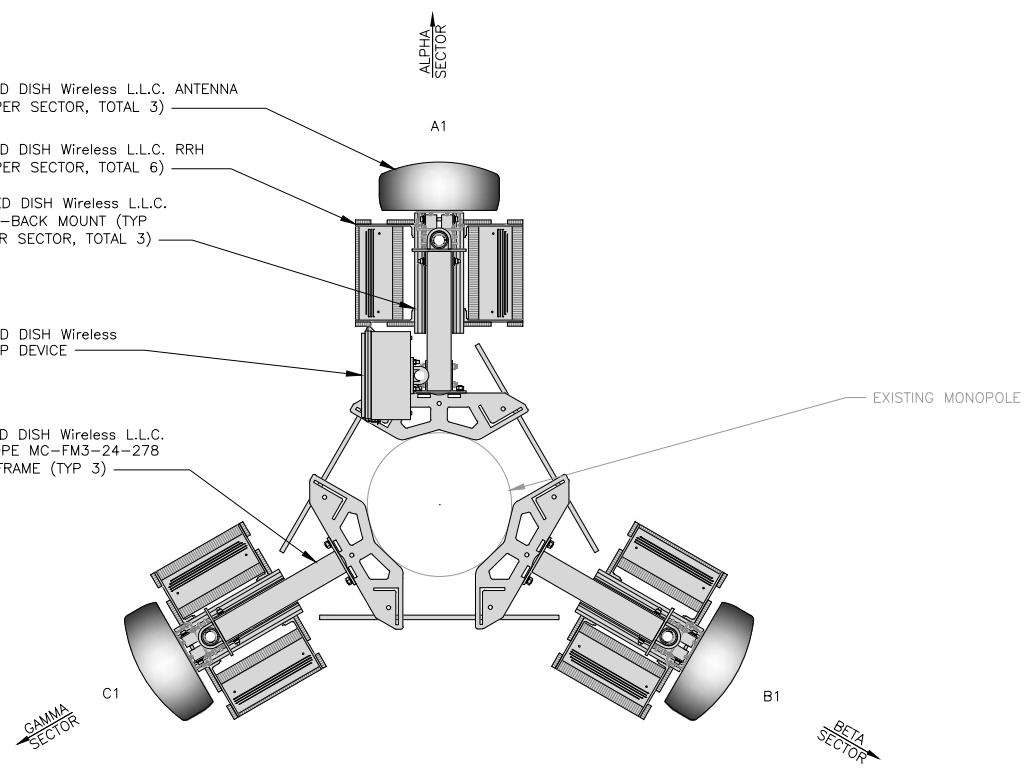


**PROPOSED SOUTH ELEVATION**



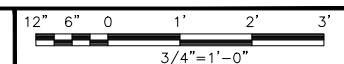
**1**

- PROPOSED DISH Wireless L.L.C. ANTENNA (TYP 1 PER SECTOR, TOTAL 3)
- PROPOSED DISH Wireless L.L.C. RRH (TYP 2 PER SECTOR, TOTAL 6)
- PROPOSED DISH Wireless L.L.C. BACK-TO-BACK MOUNT (TYP OF 1 PER SECTOR, TOTAL 3)
- PROPOSED DISH Wireless L.L.C. OVP DEVICE
- PROPOSED DISH Wireless L.L.C. COMMSCOPE MC-FM3-24-278 SECTOR FRAME (TYP 3)



NOTE: AZIMUTHS ARE TENTATIVE, CONFIRM BEFORE STARTING CONSTRUCTION

**ANTENNA LAYOUT**



**2**

SECTOR	POSITION	ANTENNA						TRANSMISSION CABLE	
		EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	TECHNOLOGY	SIZE (HxW)	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	
ALPHA	A1	PROPOSED	COMMSCOPE - FFV-65B-R2	5G	72.0" x 19.6"	0°	127'-0"	(1) HIGH-CAPACITY HYBRID CABLE (255' LONG)	
BETA	B1	PROPOSED	COMMSCOPE - FFV-65B-R2	5G	72.0" x 19.6"	120°	127'-0"		
GAMMA	C1	PROPOSED	COMMSCOPE - FFV-65B-R2	5G	72.0" x 19.6"	240°	127'-0"		
SECTOR	POSITION	RRH		NOTES					
		MANUFACTURER - MODEL NUMBER	TECHNOLOGY						
ALPHA	A1	FUJITSU - TA08025-B605	5G	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.					
	A1	FUJITSU - TA08025-B604	5G						
BETA	B1	FUJITSU - TA08025-B605	5G						
	B1	FUJITSU - TA08025-B604	5G						
GAMMA	C1	FUJITSU - TA08025-B605	5G						
	C1	FUJITSU - TA08025-B604	5G						
		OVP							
EXISTING OR PROPOSED	MANUFACTURER - MODEL NUMBER	SIZE (HxWxD)							
PROPOSED	RAYCAP-RDIDC-9181-PF-48	16"x14"x8"							

**ANTENNA SCHEDULE**

NO SCALE

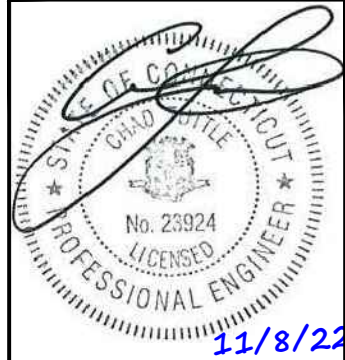
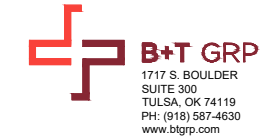
**3**



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY: YN CHECKED BY: RMC APPROVED BY: RMC

RFDS REV #: 3

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
**153448.001.01**

DISH Wireless L.L.C. PROJECT INFORMATION  
**NJER01104B**  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811

SHEET TITLE  
**ELEVATION, ANTENNA LAYOUT AND SCHEDULE**

SHEET NUMBER  
**A-2**



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



11/8/22

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

IT IS A VIOLATION OF LAW FOR ANY PERSON,  
UNLESS THEY ARE ACTING UNDER THE DIRECTION  
OF A LICENSED PROFESSIONAL ENGINEER,  
TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	RMC	RMC

RFDS REV #: 3

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
**153448.001.01**

DISH Wireless L.L.C.  
PROJECT INFORMATION

NJER01104B  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811

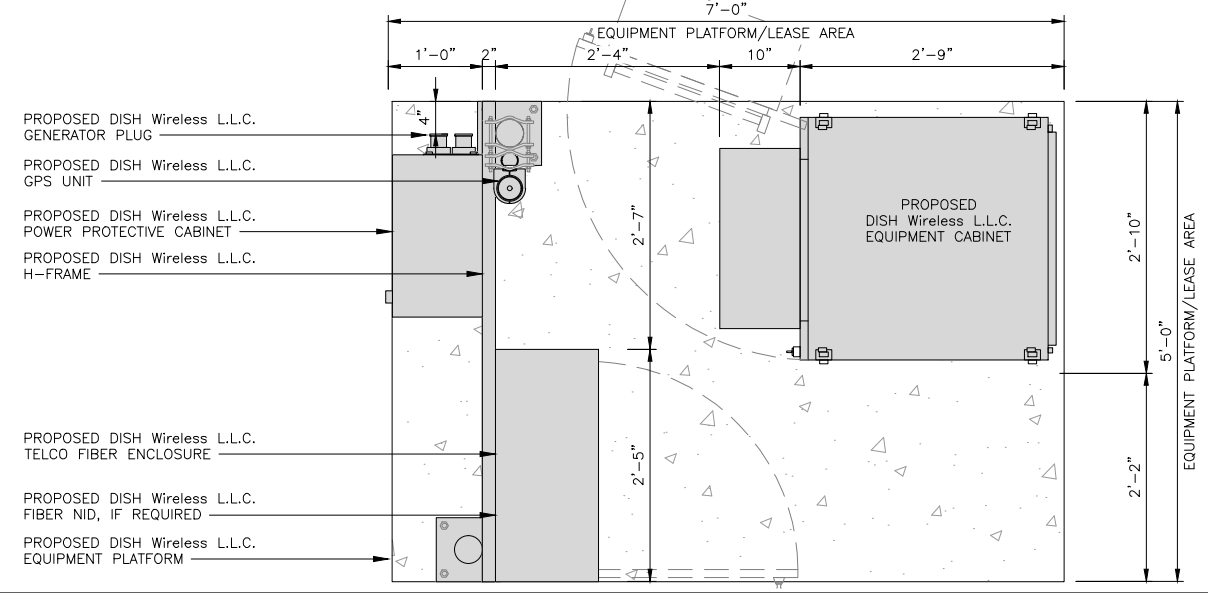
SHEET TITLE  
**EQUIPMENT PLATFORM AND H-FRAME DETAILS**

SHEET NUMBER

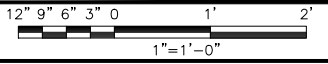
**A-3**

**NOTES**

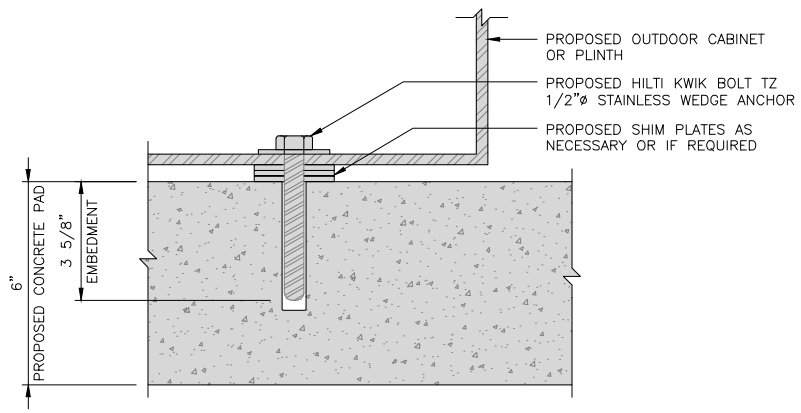
- CONTRACTOR TO BURY PLATFORM FEET WITH A MINIMUM OF 2" OF FILL PER EXISTING SITE SURFACE
- WEED BARRIER FABRIC TO BE ADDED AT DISCRETION OF DISH Wireless L.L.C. CONSTRUCTION MANAGER AT TIME OF CONSTRUCTION. ONE SHEET 8'x8' INSTALLED UNDER ALL FOUR FEET OF THE PLATFORM (4 MIL BLACK PLASTIC)
- EQUIPMENT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



PLATFORM EQUIPMENT PLAN



1

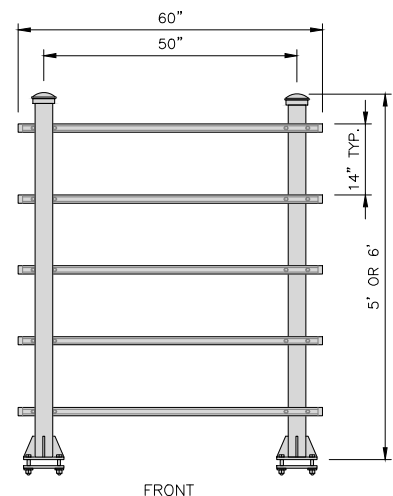


TYPICAL OUTDOOR EQUIPMENT TO CONCRETE SLAB ANCHORAGE

2

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

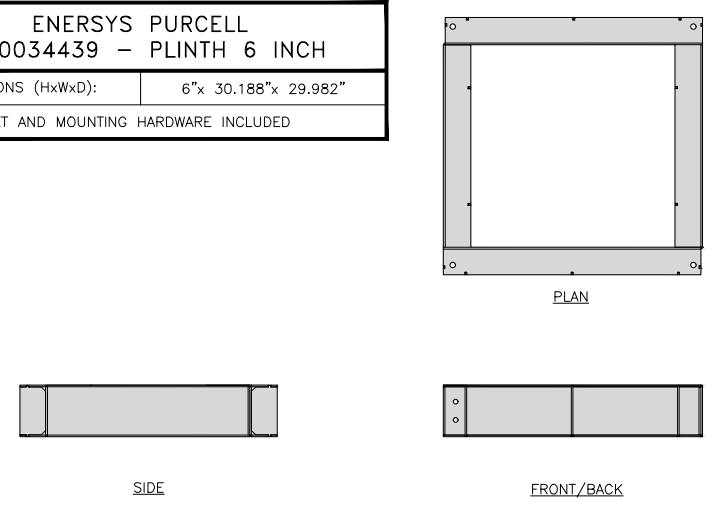
NOTE:  
OR DISH Wireless L.L.C.  
APPROVED EQUIVALENT



H-FRAME DETAIL

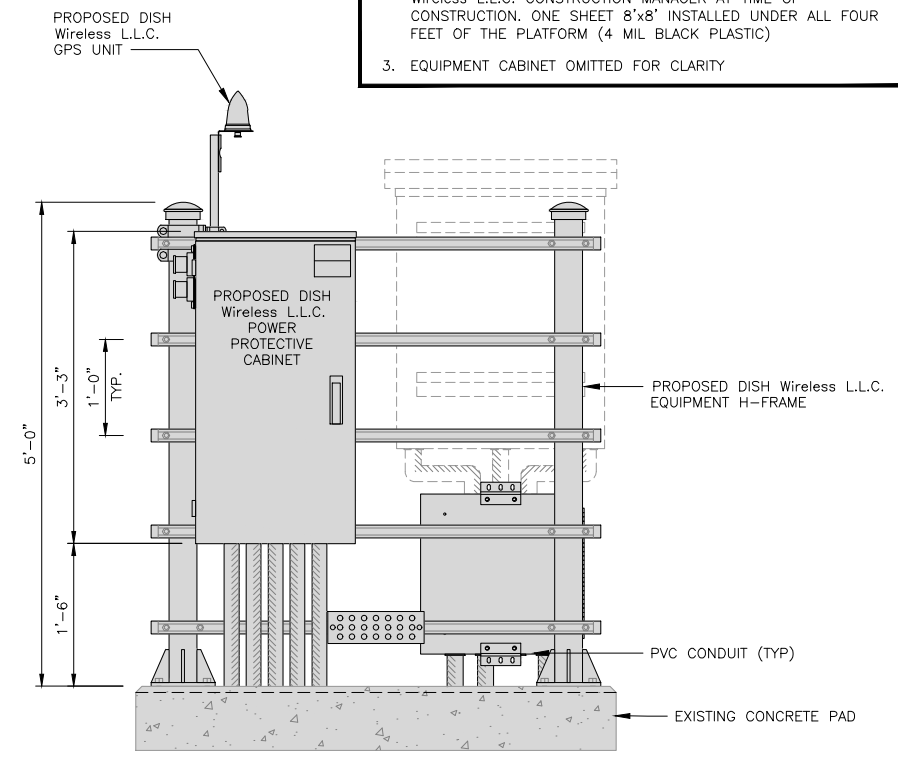
NO SCALE 3

ENERSYS PURCELL 1000034439 - PLINTH 6 INCH	
DIMENSIONS (HxWxD):	6"x 30.188"x 29.982"
NOTE: GASKET AND MOUNTING HARDWARE INCLUDED	

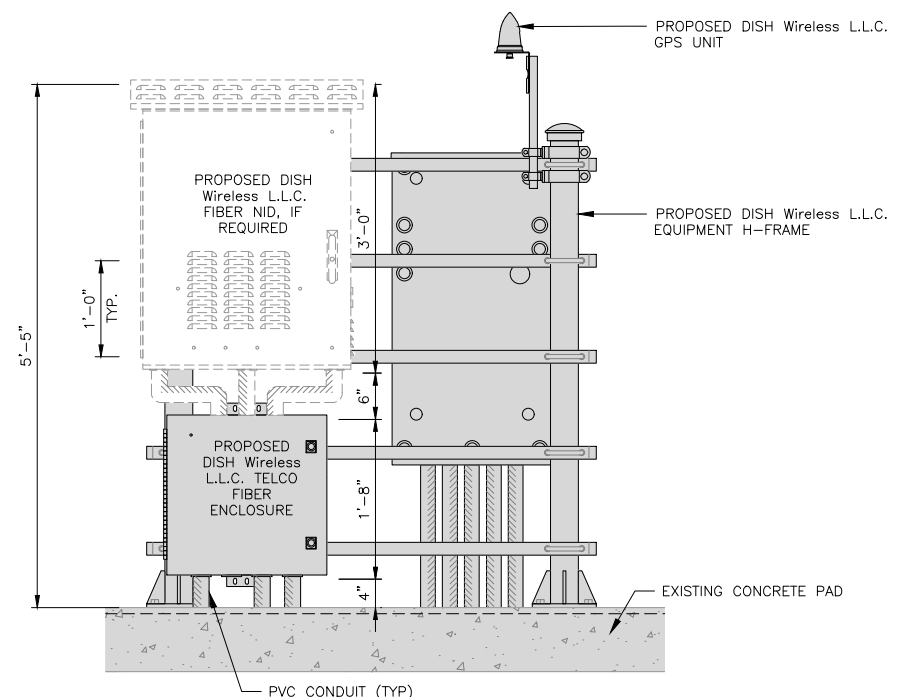


PLINTH DETAIL

NO SCALE 4

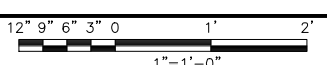


FRONT ELEVATION



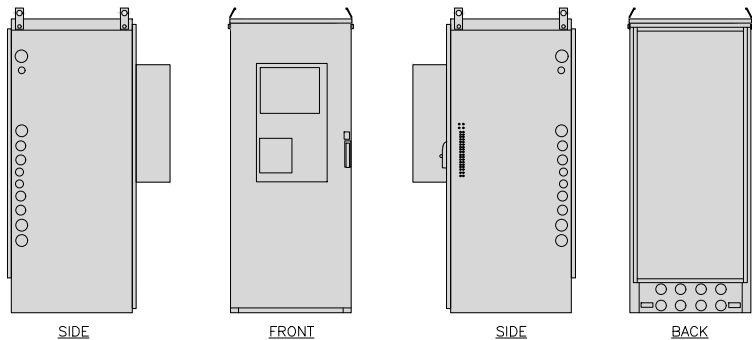
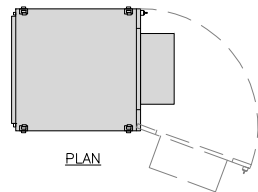
BACK ELEVATION

H-FRAME EQUIPMENT ELEVATION



5

ENERSYS HVAC CABINET 200005995	
DIMENSIONS (HxWxD):	73"x30"x32"
WEIGHT EMPTY:	371 lbs
HVAC	600W
POWER SYSTEM	-48V ALPHA/600A

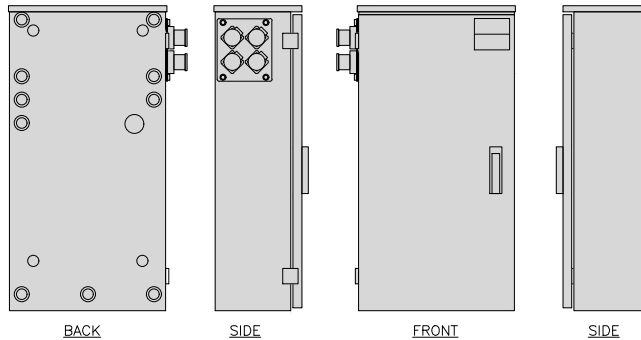
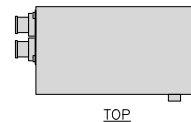


CABINET DETAIL

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



POWER PROTECTION CABINET (PPC) DETAIL

NO SCALE

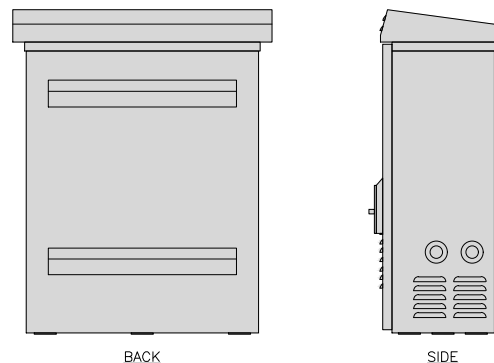
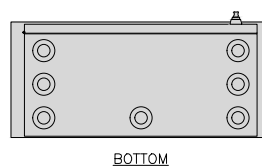
2

NOT USED

NO SCALE

3

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



BACK

SIDE

FRONT

NOT USED

NO SCALE

4

FIBER NID ENCLOSURE DETAIL

NO SCALE

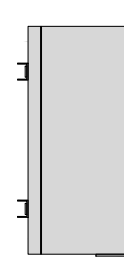
5

CHARLES CFIT-PF2020DSH1  
FIBER TELCO ENCLOSURE

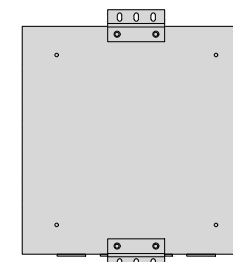
ENCLOSURE DIMS (HxWxD)	20"x20"x9"
ENCLOSURE WEIGHT	20 lbs
MOUNTING	WALL
COMPLIANCE	TYPE 4



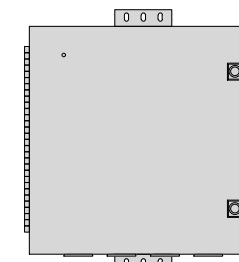
FRONT



SIDE



BACK



FRONT

FIBER TELCO ENCLOSURE DETAIL

NO SCALE

6

NOT USED

NO SCALE

7

NOT USED

NO SCALE

8

NOT USED

NO SCALE

9



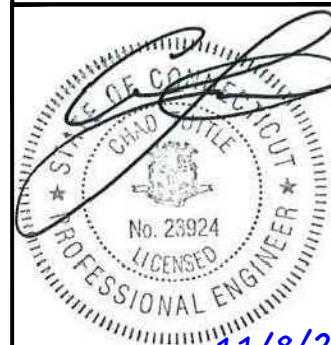
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



11/8/22

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

IT IS A VIOLATION OF LAW FOR ANY PERSON,  
UNLESS THEY ARE ACTING UNDER THE DIRECTION  
OF A LICENSED PROFESSIONAL ENGINEER,  
TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	RMC	RMC

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
153448.001.01

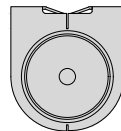
DISH Wireless L.L.C.  
PROJECT INFORMATION  
NJJER01104B  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811

SHEET TITLE  
EQUIPMENT DETAILS

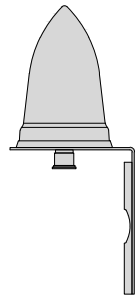
SHEET NUMBER

A-4

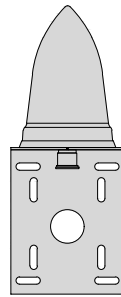
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



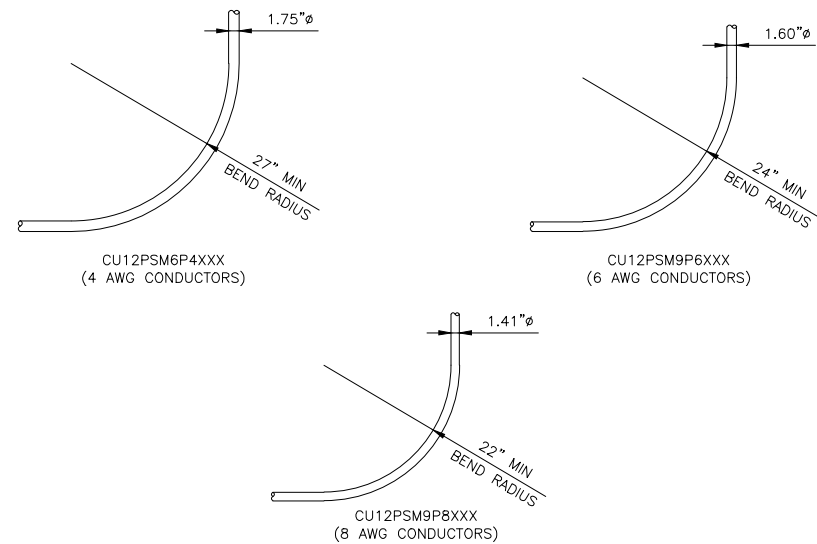
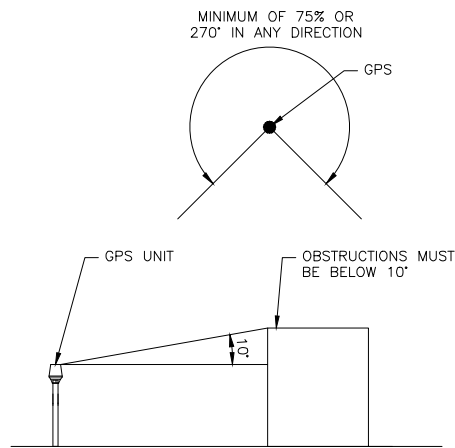
TOP



BACK



SIDE



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



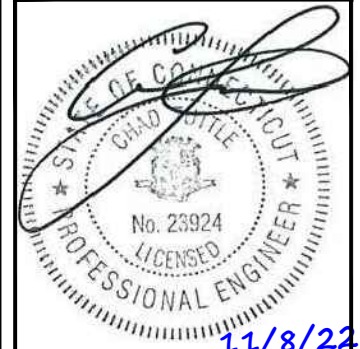
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

IT IS A VIOLATION OF LAW FOR ANY PERSON,  
UNLESS THEY ARE ACTING UNDER THE DIRECTION  
OF A LICENSED PROFESSIONAL ENGINEER,  
TO ALTER THIS DOCUMENT.

DRAWN BY: YN CHECKED BY: RMC APPROVED BY: RMC

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
153448.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION

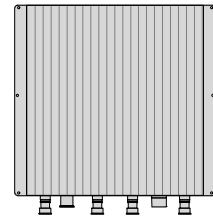
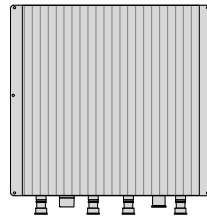
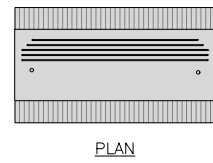
NJGER01104B  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811

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



BACK

SIDE

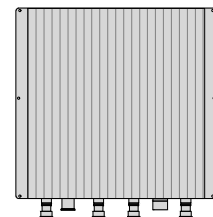
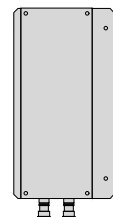
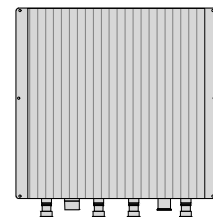
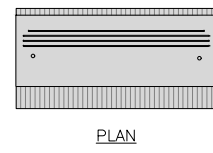
FRONT

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



BACK

SIDE

FRONT

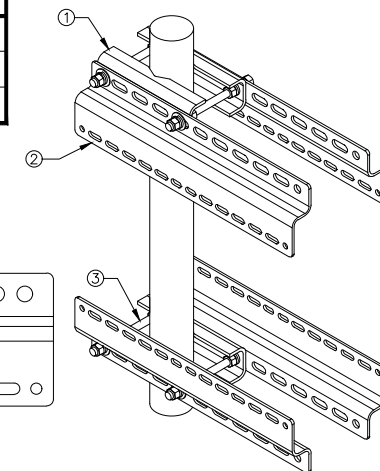
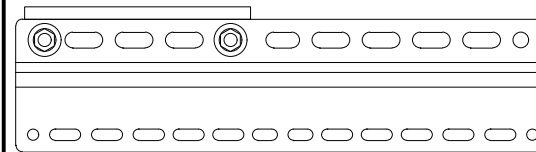
RRH DETAIL

NO SCALE

2

SABRE DOUBLE Z-BRACKET C10123155	
DIMENSIONS (HxWxD) (1 BRACKET)	5"x20"x1-13/16"
WEIGHT (FULL ASSEMBLY)	35.79 lbs
PACKAGE QUANTITY	4

#	DESCRIPTION
1	PLATE, CHANNEL BRACKET
2	RRH Z BRACKET, 3/16"
3	THREADED ROD ASSEMBLY 1/2"x12"



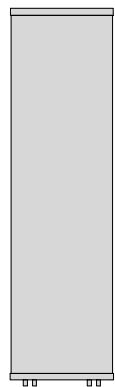
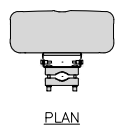
NOTE:  
OR DISH Wireless L.L.C.  
APPROVED EQUIVALENT

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



BACK

SIDE

FRONT

ANTENNA DETAIL

NO SCALE

4



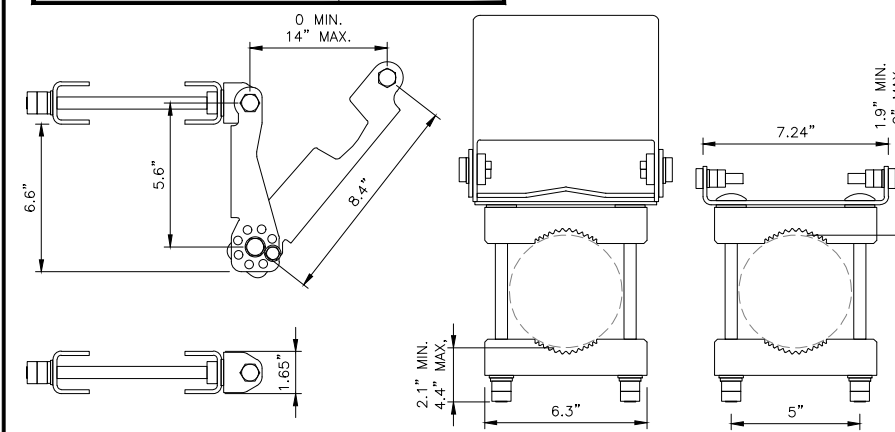
NOT USED

NO SCALE

5

COMMSCOPE ANTENNA BRACKET BSAMNT-3	
DIAMETER COMPATIBILITY	2.362" - 4.528"
NET WEIGHT	13.669 lbs

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

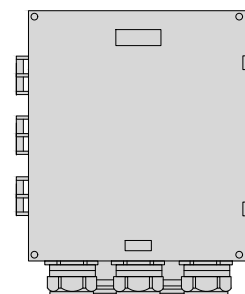
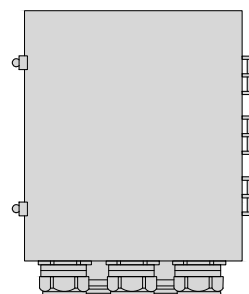
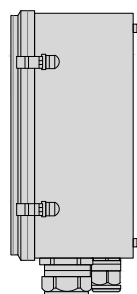
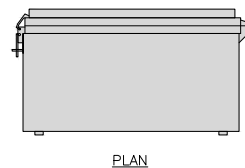


ANTENNA BRACKET DETAIL

NO SCALE

6

RAYCAP RDIC-9181-PF-48 DC SURGE PROTECTION (OVP)	
DIMENSIONS (HxWxD)	18.98"x14.39"x8.15"
WEIGHT	21.82 LBS



SIDE

BACK

FRONT

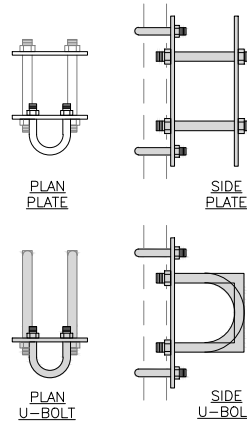
SURGE SUPPRESSION DETAIL (OVP)

NO SCALE

7

COMMSCOPE XP-2040 CROSSOVER PLATE	
DIMENSIONS (HxW)	10"x12"
WEIGHT	11 lbs

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



PLAN U-BOLT

SIDE U-BOLT

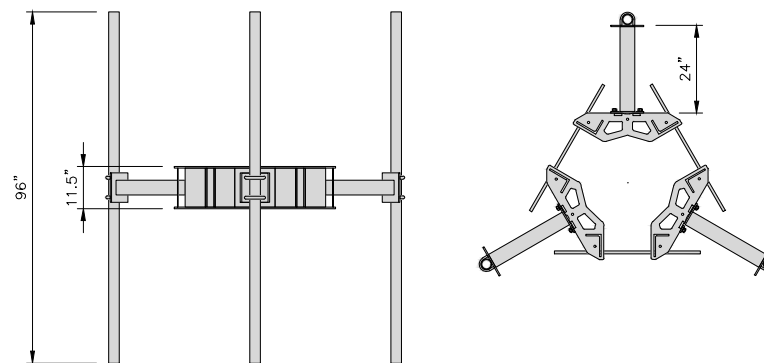
RRH/OVP MOUNT DETAIL

NO SCALE

8

COMMSCOPE MC-FM3-24-278	
POLE DIAMETER	15" - 50"
WEIGHT	506.656 lbs

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



STAND OFF MOUNT DETAIL

NO SCALE

9



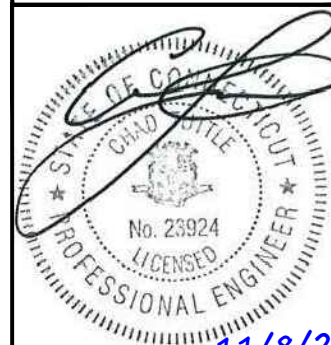
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



11/8/22

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

IT IS A VIOLATION OF LAW FOR ANY PERSON,  
UNLESS THEY ARE ACTING UNDER THE DIRECTION  
OF A LICENSED PROFESSIONAL ENGINEER,  
TO ALTER THIS DOCUMENT.

DRAWN BY: CHECKED BY: APPROVED BY:

YN RMC RMC

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
153448.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION

NJER01104B  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811

SHEET TITLE  
EQUIPMENT DETAILS

SHEET NUMBER

A-6

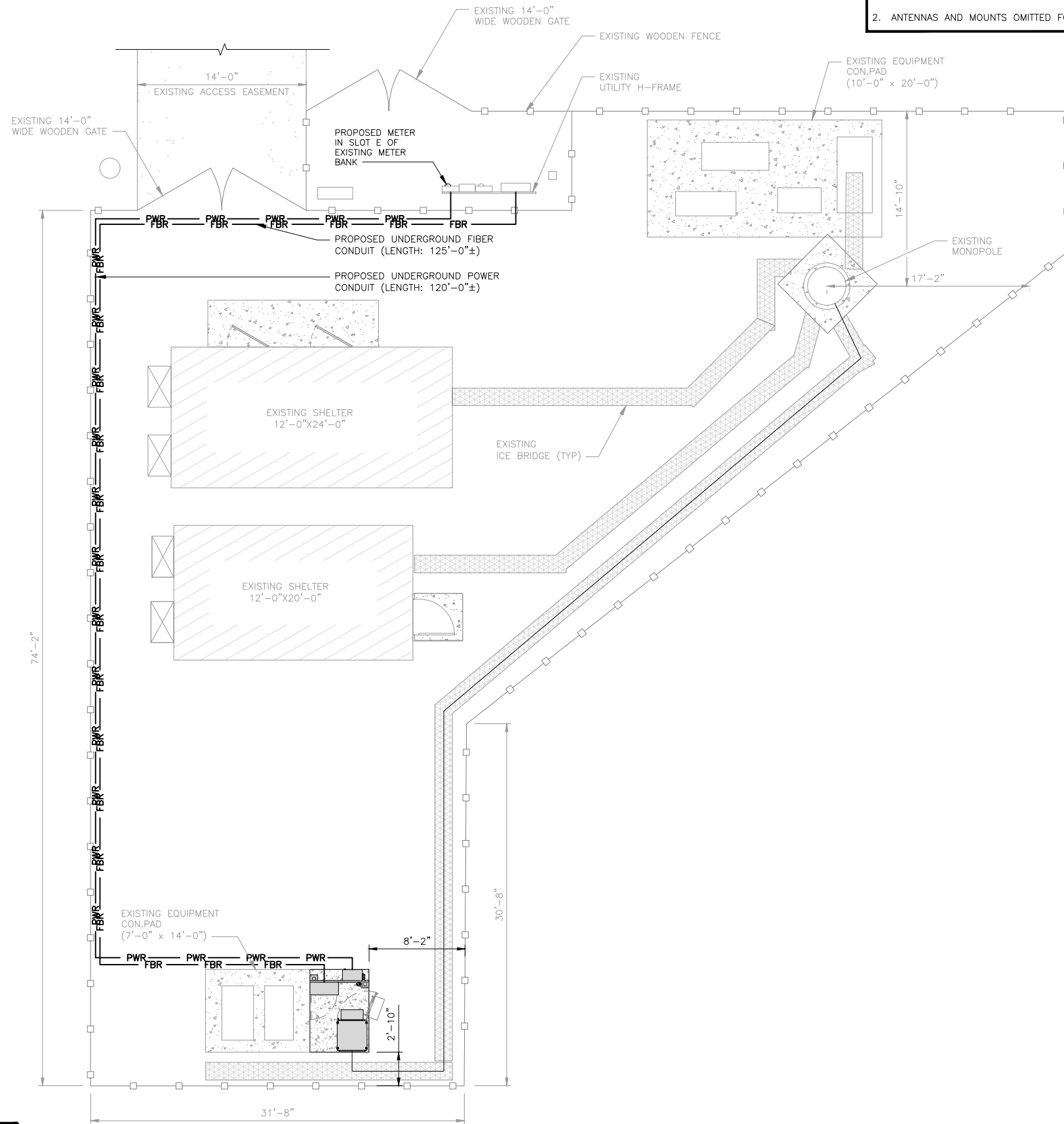
FINAL POWER OR FIBER DESIGN  
NOT AVAILABLE AT TIME OF ISSUE

NOTES

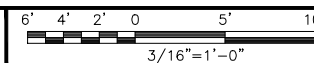
1. CONTRACTOR SHALL FIELD VERIFY ALL PROPOSED UNDERGROUND UTILITY CONDUIT ROUTE.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.

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



UTILITY ROUTE PLAN



1

ELECTRICAL NOTES

NO SCALE

2



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



11/8/22

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

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	RMC	RMC

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
153448.001.01

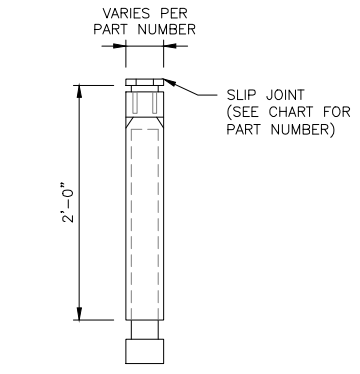
DISH Wireless L.L.C.  
PROJECT INFORMATION  
NJJER01104B  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811

SHEET TITLE  
ELECTRICAL/FIBER ROUTE  
PLAN AND NOTES

SHEET NUMBER  
E-1

**CARLON EXPANSION FITTINGS**

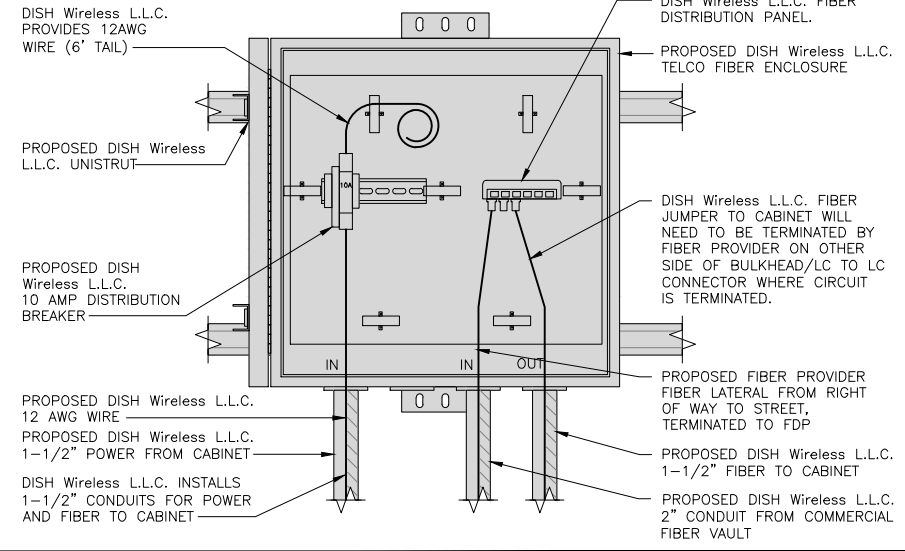
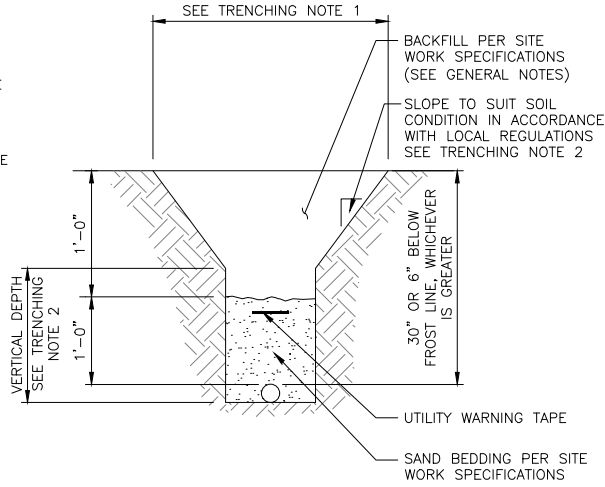
COUPLING END PART#	MALE TERMINAL ADAPTER END PART#	SIZE	STD CTN QTY.	TRAVEL LENGTH
E945D	E945DX	1/2"	20	4"
E945E	E945EX	3/4"	15	4"
E945F	E945FX	1"	10	4"
E945G	E945GX	1 1/4"	5	4"
E945H	E945HX	1 1/2"	5	4"
E945J	E945JX	2"	15	8"
E945K	E945KX	2 1/2"	10	8"
E945L	E945LX	3"	10	8"
E945M	E945MX	3 1/2"	5	8"
E945N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

**TRENCHING NOTES**

- 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.
- TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT OSHA TRENCHING AND EXCAVATION SAFETY STANDARDS.
- 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.



EXPANSION JOINT DETAIL

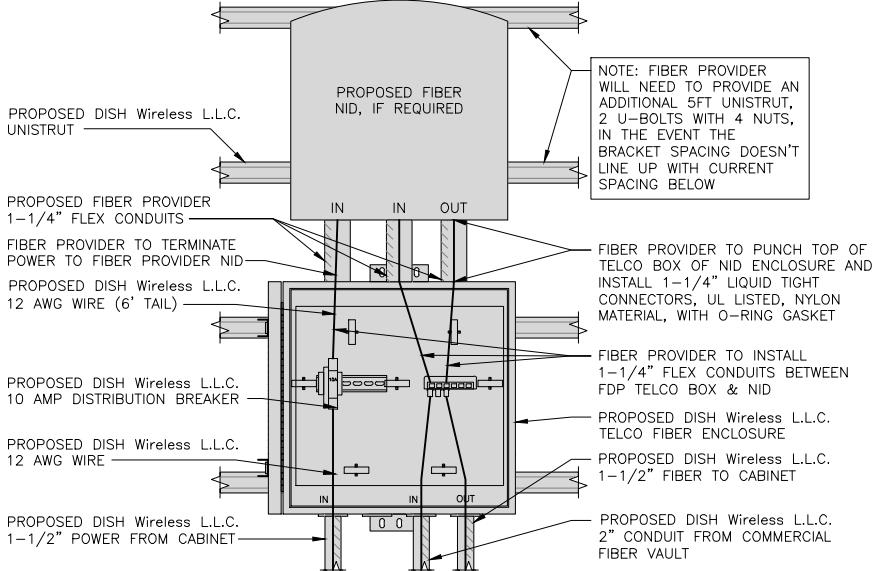
NO SCALE 1

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



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY: CHECKED BY: APPROVED BY:

YN RMC RMC

RFDS REV #: 3

**CONSTRUCTION DOCUMENTS**

SUBMITTALS

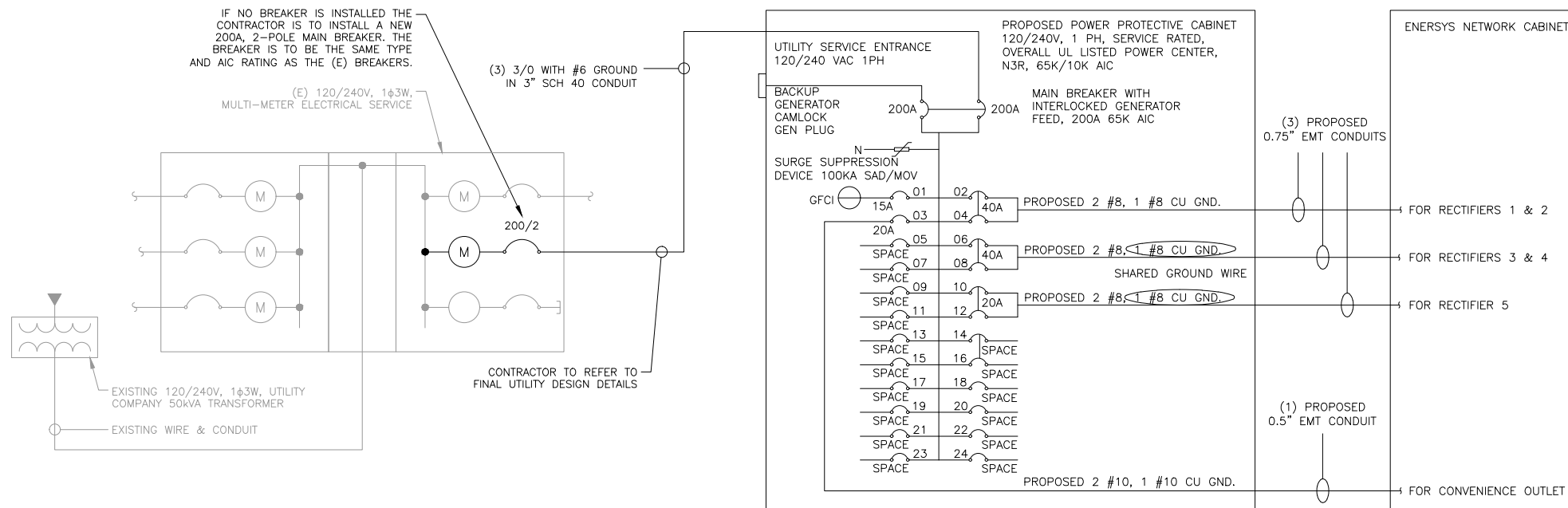
REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
153448.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION  
NJJER01104B  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811

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:**  
(2) 40A, 2P BREAKER - SQUARE D P/N:Q0240  
(1) 20A, 2P BREAKER - SQUARE D P/N:Q0220  
(1) 20A, 1P BREAKER - SQUARE D P/N:Q0120

**NOTES**

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 (3 CONDUITS): USING UL1015, CU.

#8 - 0.0552 SQ. IN X 2 = 0.1103 SQ. IN  
#8 - 0.0131 SQ. IN X 1 = 0.0131 SQ. IN <BARE GROUND  
TOTAL = 0.1234 SQ. IN

0.75" EMT CONDUIT IS ADEQUATE TO HANDLE THE TOTAL OF (3) 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.



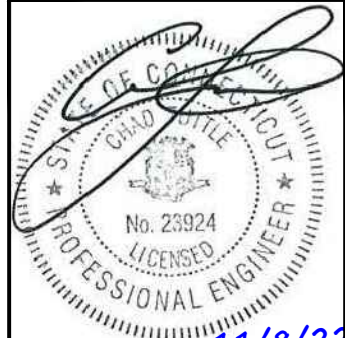
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



11/8/22

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

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	RMC	RMC

RFDS REV #: 3

**CONSTRUCTION DOCUMENTS**

SUBMITTALS

REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
153448.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION  
NJJER01104B  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811

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

SHEET NUMBER  
**E-3**

PPC ONE-LINE DIAGRAM

NO SCALE 1

**PROPOSED ENERSYS PANEL SCHEDULE**

LOAD SERVED	VOLT AMPS (WATTS)		TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS)		LOAD SERVED
	L1	L2						L1	L2	
PPC GFCI OUTLET	180	180	15A	1	A	2	40A	3840	3840	ENERSYS ALPHA CORDEX RECTIFIERS 1 & 2
ENERSYS GFCI OUTLET			20A	3	B	4				
-SPACE-				5	A	6	40A	3840	3840	ENERSYS ALPHA CORDEX RECTIFIER 3 & 4
-SPACE-				7	B	8				
-SPACE-				9	A	10	20A	1920	1920	ENERSYS ALPHA CORDEX RECTIFIER 5
-SPACE-				11	B	12				
-SPACE-				13	A	14				-SPACE-
-SPACE-				15	B	16				-SPACE-
-SPACE-				17	A	18				-SPACE-
-SPACE-				19	B	20				-SPACE-
-SPACE-				21	A	22				-SPACE-
-SPACE-				23	B	24				-SPACE-
VOLTAGE AMPS	180	180						9500	9500	
200A MCB, 1ϕ, 24 SPACE, 120/240V				L1	L2					
MB RATING: 65,000 AIC				9680	9680					
				81	81					
										VOLTAGE AMPS
										AMPS
										MAX AMPS
										MAX 125%

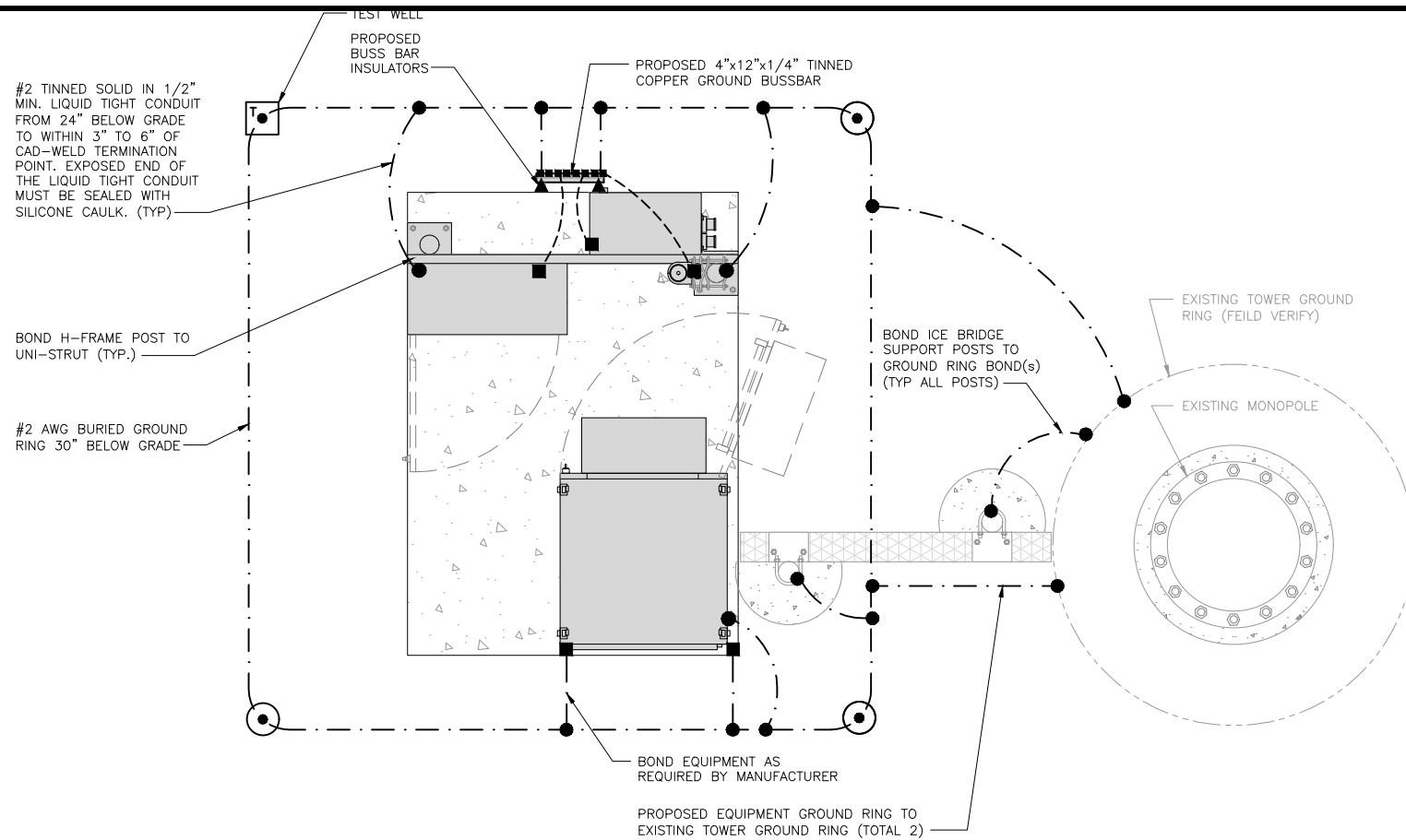
PANEL SCHEDULE

NO SCALE 2

NOT USED

NO SCALE 3



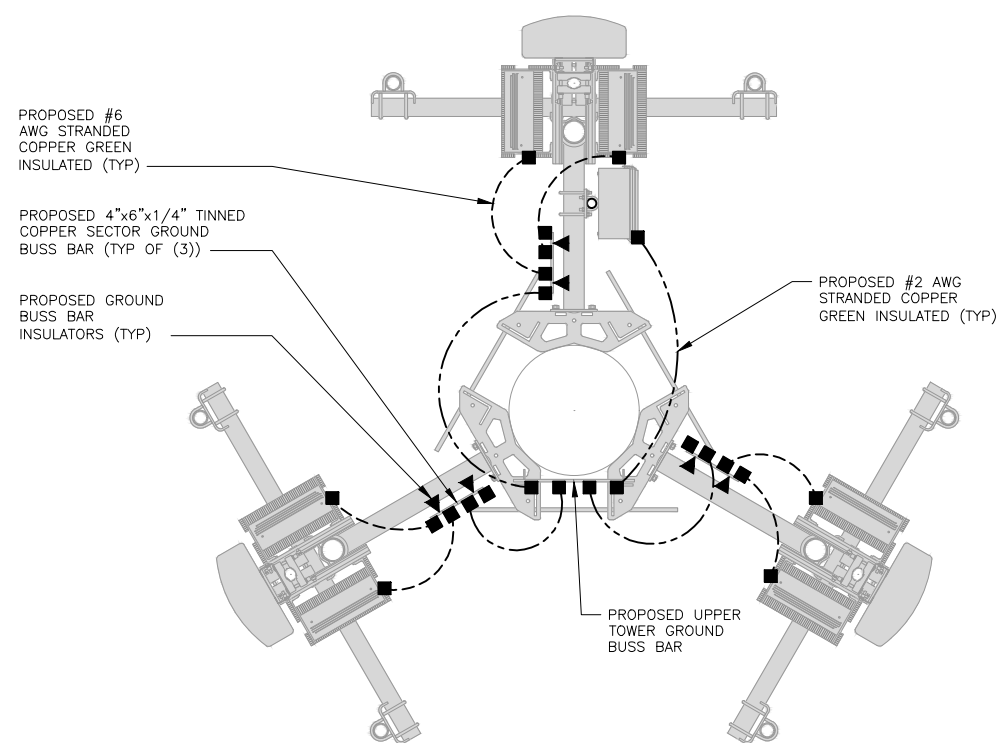


TYPICAL EQUIPMENT GROUNDING PLAN

NO SCALE 1

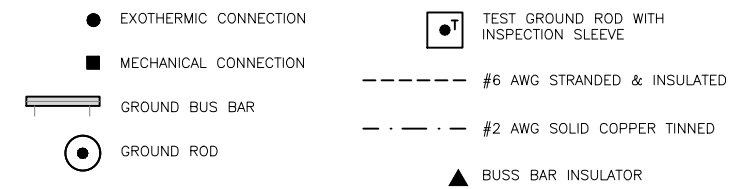
NOTES

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



GROUNDING LEGEND

- GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
- 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.
- 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 PROPOSED ANTENNA MOUNT COLLAR. REFER TO DISH Wireless L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES

NO SCALE 3



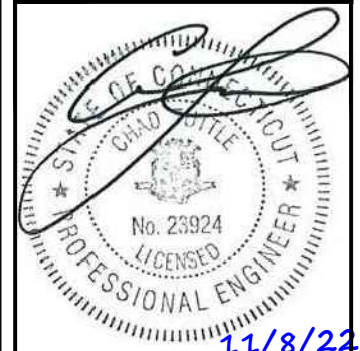
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	RMC	RMC

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
153448.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION  
NJJER01104B  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811

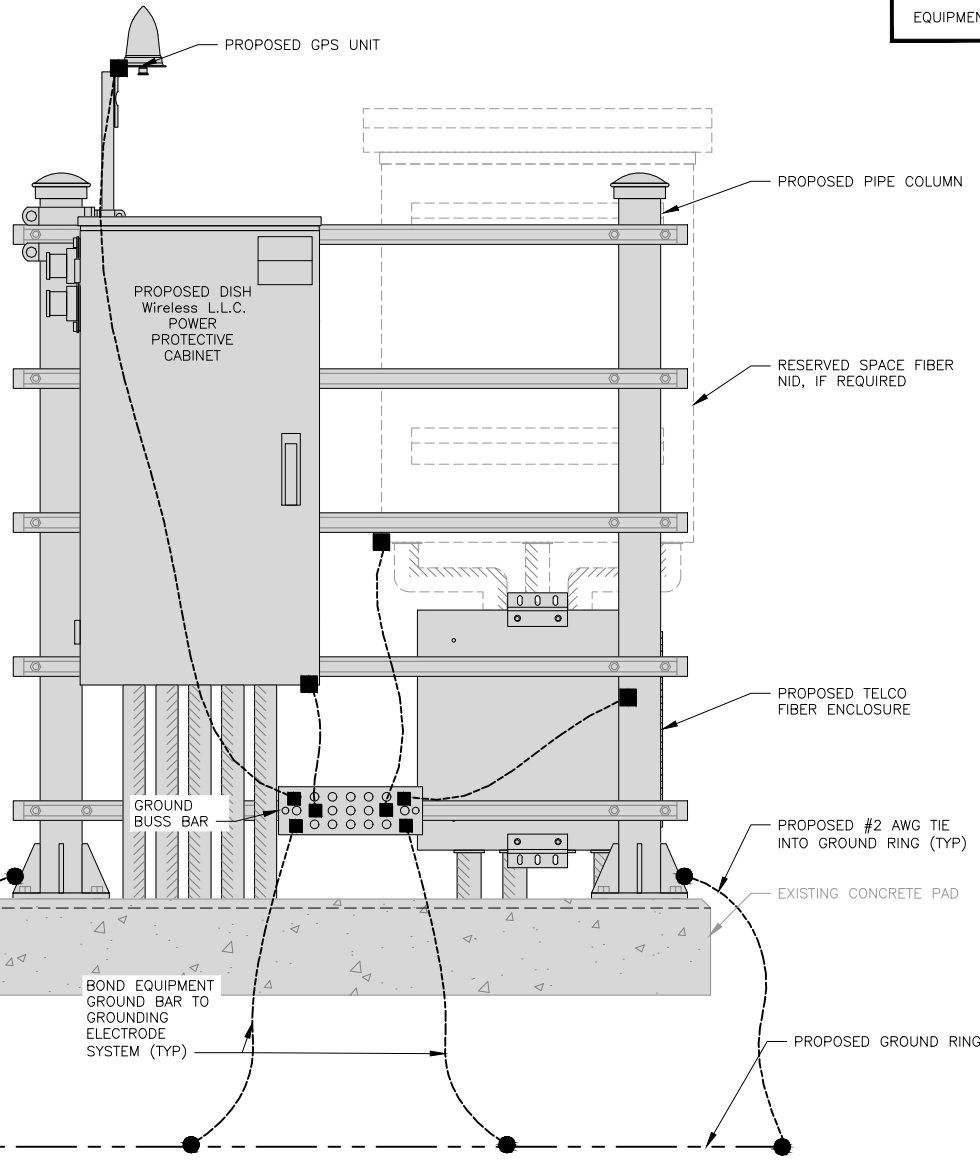
SHEET TITLE  
GROUNDING PLANS  
AND NOTES

SHEET NUMBER

G-1

**NOTES**

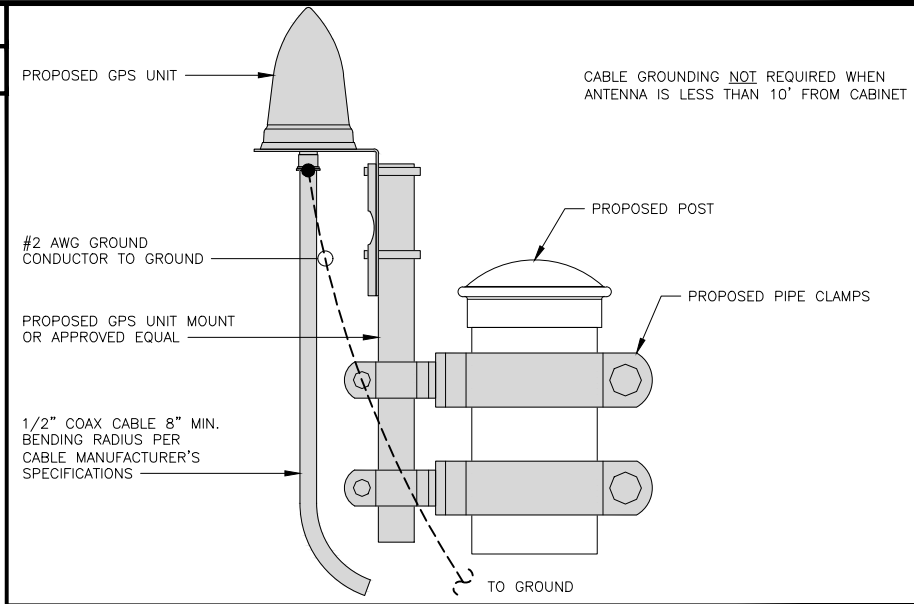
EQUIPMENT CABINET OMITTED FOR CLARITY



#2 TINNED SOLID IN 1/2" MIN. LIQUID TIGHT CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. EXPOSED END OF THE LIQUID TIGHT CONDUIT MUST BE SEALED WITH SILICONE CAULK. (TYP)

**H-FRAME GROUNDING DETAIL**

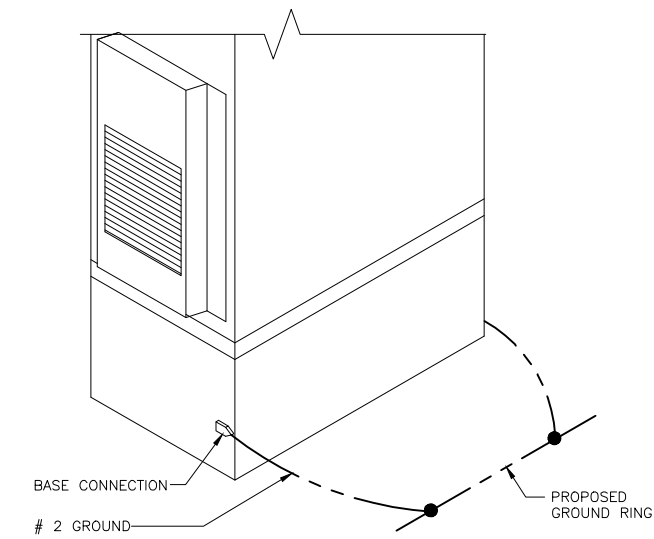
NO SCALE 1



CABLE GROUNDING NOT REQUIRED WHEN ANTENNA IS LESS THAN 10' FROM CABINET

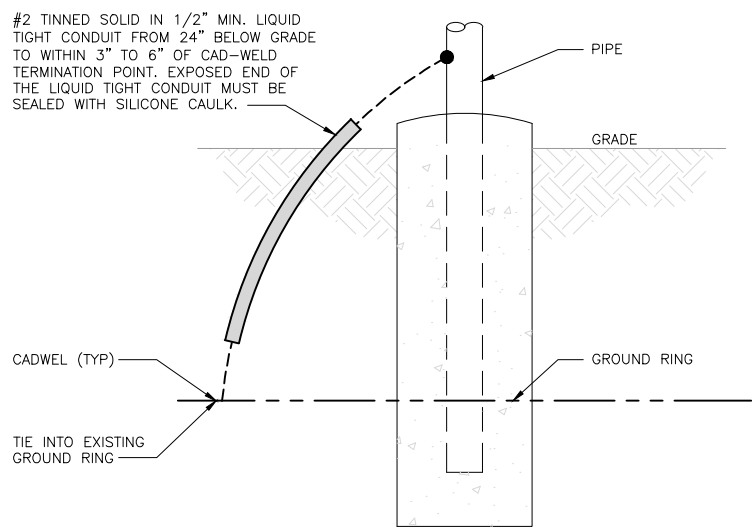
**TYPICAL GPS UNIT GROUNDING**

NO SCALE 2



**OUTDOOR CABINET GROUNDING**

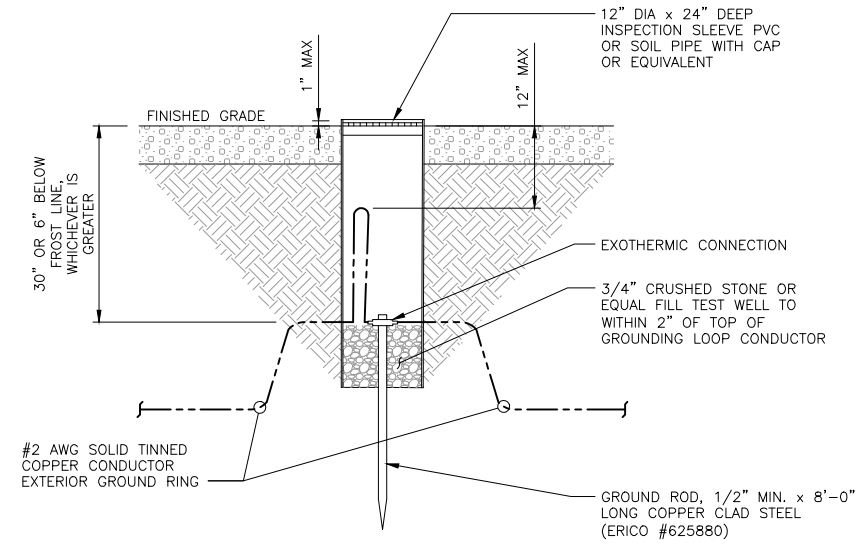
NO SCALE 3



#2 TINNED SOLID IN 1/2" MIN. LIQUID TIGHT CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. EXPOSED END OF THE LIQUID TIGHT CONDUIT MUST BE SEALED WITH SILICONE CAULK.

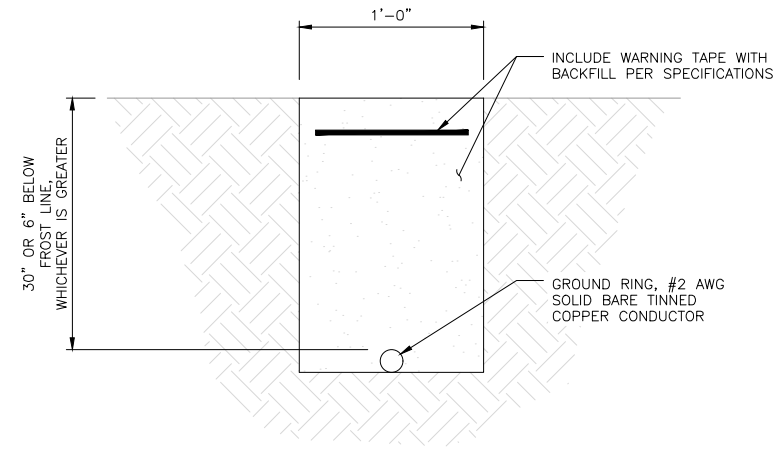
**TRANSITIONING GROUND DETAIL**

NO SCALE 4



**TYPICAL TEST GROUND ROD WITH INSPECTION SLEEVE**

NO SCALE 5



**TYPICAL GROUND RING TRENCH**

NO SCALE 6



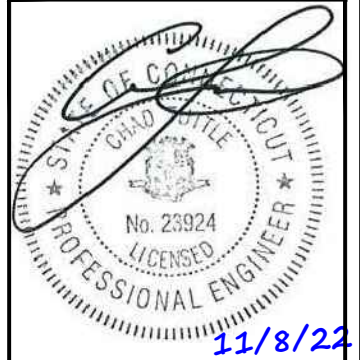
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY: YN CHECKED BY: RMC APPROVED BY: RMC

RFDS REV #: 3

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

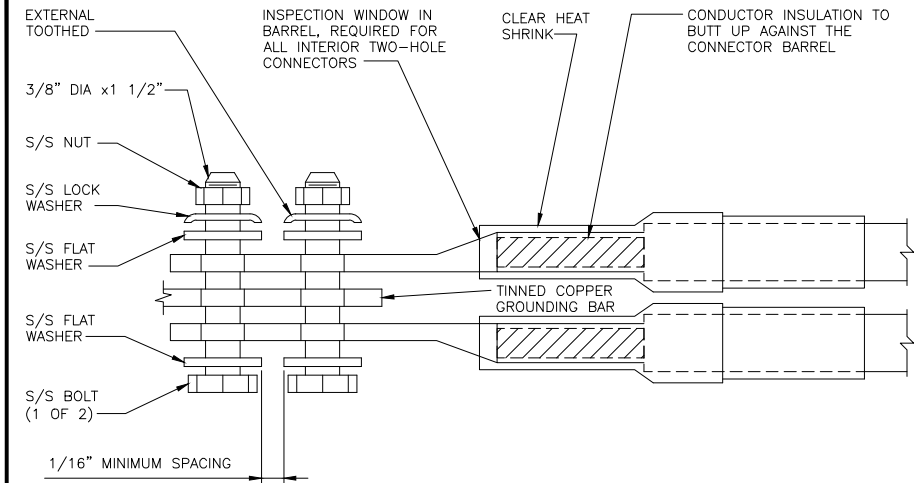
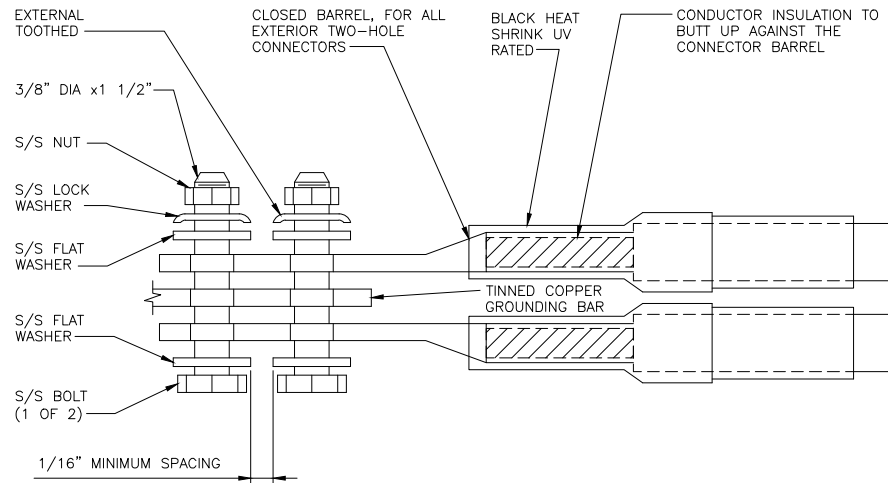
A&E PROJECT NUMBER  
153448.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION  
NJJER01104B  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811

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

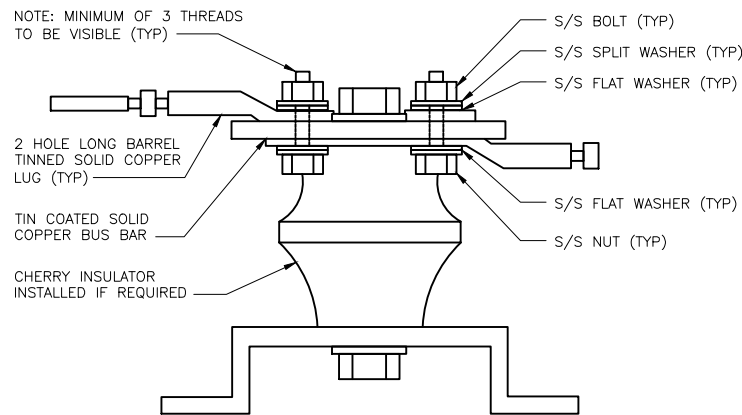
NO SCALE

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

**dish**  
wireless.

5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	RMC	RMC

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
153448.001.01

DISH Wireless L.L.C.  
PROJECT INFORMATION  
NJER01104B  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811

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)

ALPHA RRH				BETA RRH				GAMMA RRH			
PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT	PORT 1 + SLANT	PORT 2 - SLANT	PORT 3 + SLANT	PORT 4 - SLANT
RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
ORANGE	ORANGE	RED	RED	ORANGE	ORANGE	BLUE	BLUE	ORANGE	ORANGE	GREEN	GREEN
	WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE		WHITE (-) PORT	ORANGE	ORANGE
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT

MID-BAND RRH  
(AWS BANDS N66+N70)  
ADD FREQUENCY COLOR TO SECTOR BAND  
(CBRS WILL USE YELLOW BANDS)

RED	RED	RED	RED	BLUE	BLUE	BLUE	BLUE	GREEN	GREEN	GREEN	GREEN
PURPLE	PURPLE	RED	RED	PURPLE	PURPLE	BLUE	BLUE	PURPLE	PURPLE	GREEN	GREEN
	WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE		WHITE (-) PORT	PURPLE	PURPLE
			WHITE (-) PORT				WHITE (-) PORT				WHITE (-) PORT

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.

EXAMPLE 1	EXAMPLE 2	EXAMPLE 3 COAX #1 (ALPHA)	COAX #2 (ALPHA)
RED	RED	RED	RED
BLUE	BLUE		
GREEN	GREEN		
ORANGE	YELLOW		
PURPLE			

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.

LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
ORANGE	PURPLE	ORANGE	PURPLE	ORANGE	PURPLE

POWER CABLES TO RRHS

LOW-BAND RRH POWER CABLES HAVE SECTOR  
STRIPE ONLY

LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH	LOW BAND RRH	MID BAND RRH
RED	RED	BLUE	BLUE	GREEN	GREEN
ORANGE	PURPLE	ORANGE	PURPLE	ORANGE	PURPLE

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.

ANTENNA 1 MID BAND		ANTENNA 1 LOW BAND		ANTENNA 1 MID BAND		ANTENNA 1 LOW BAND		ANTENNA 1 MID BAND		ANTENNA 1 LOW BAND	
IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN
RED	RED	RED	RED	BLUE	BLUE	GREEN	GREEN	BLUE	BLUE	GREEN	GREEN
PURPLE	ORANGE	PURPLE	ORANGE	PURPLE	ORANGE	PURPLE	ORANGE	PURPLE	ORANGE	PURPLE	ORANGE

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.

FORWARD AZIMUTH OF 0-120 DEGREES		FORWARD AZIMUTH OF 120-240 DEGREES		FORWARD AZIMUTH OF 240-359 DEGREES	
PRIMARY	SECONDARY	PRIMARY	SECONDARY	PRIMARY	SECONDARY
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
RED	RED	BLUE	BLUE	GREEN	GREEN
WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
	RED	BLUE	BLUE	GREEN	GREEN
	WHITE	WHITE	WHITE	WHITE	WHITE

RF CABLE COLOR CODES

NO SCALE

1

LOW BANDS (N71+N26)  
OPTIONAL - (N29)



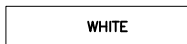
CBRS TECH  
(3 GHz)



AWS  
(N66+N70+H-BLOCK)



NEGATIVE SLANT PORT  
ON ANT/RRH



ALPHA SECTOR



BETA SECTOR



GAMMA SECTOR



COLOR IDENTIFIER

NO SCALE

2

NOT USED

NO SCALE

3

NOT USED

NO SCALE

4



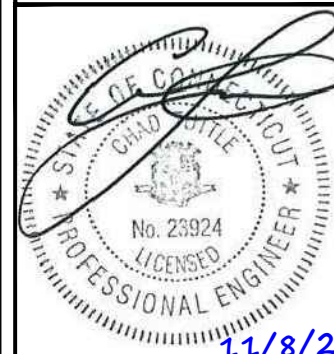
5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

IT IS A VIOLATION OF LAW FOR ANY PERSON,  
UNLESS THEY ARE ACTING UNDER THE DIRECTION  
OF A LICENSED PROFESSIONAL ENGINEER,  
TO ALTER THIS DOCUMENT.

DRAWN BY: YN CHECKED BY: RMC APPROVED BY: RMC

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
153448.001.01

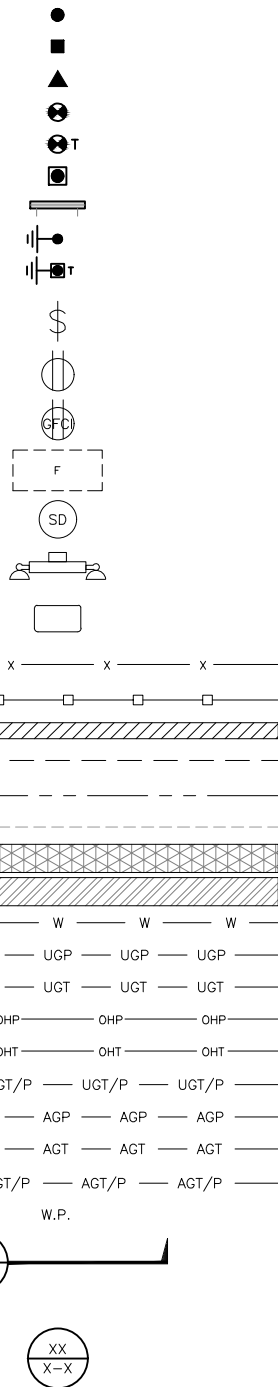
DISH Wireless L.L.C.  
PROJECT INFORMATION  
NJJER01104B  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811

SHEET TITLE  
RF  
CABLE COLOR CODES

SHEET NUMBER

RF-1

EXOTHERMIC CONNECTION  
 MECHANICAL CONNECTION  
 BUSS BAR INSULATOR  
 CHEMICAL ELECTROLYTIC GROUNDING SYSTEM  
 TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM  
 EXOTHERMIC WITH INSPECTION SLEEVE  
 GROUNDING BAR  
 GROUND ROD  
 TEST GROUND ROD WITH INSPECTION SLEEVE  
 SINGLE POLE SWITCH  
 DUPLEX RECEPTACLE  
 DUPLEX GFCI RECEPTACLE  
 FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48-T8  
 SMOKE DETECTION (DC)  
 EMERGENCY LIGHTING (DC)  
 SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW  
 LED-1-25A400/51K-SR4-120-PE-DOBXTD  
 CHAIN LINK FENCE  
 WOOD/WROUGHT IRON FENCE  
 WALL STRUCTURE  
 LEASE AREA  
 PROPERTY LINE (PL)  
 SETBACKS  
 ICE BRIDGE  
 CABLE TRAY  
 WATER LINE  
 UNDERGROUND POWER  
 UNDERGROUND TELCO  
 OVERHEAD POWER  
 OVERHEAD TELCO  
 UNDERGROUND TELCO/POWER  
 ABOVE GROUND POWER  
 ABOVE GROUND TELCO  
 ABOVE GROUND TELCO/POWER  
 WORKPOINT  
 SECTION REFERENCE  
 DETAIL REFERENCE



LEGEND

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

ABBREVIATIONS



5701 SOUTH SANTA FE DRIVE  
 LITTLETON, CO 80120



8051 CONGRESS AVENUE  
 BOCA RATON, FL 33487



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



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

IT IS A VIOLATION OF LAW FOR ANY PERSON,  
 UNLESS THEY ARE ACTING UNDER THE DIRECTION  
 OF A LICENSED PROFESSIONAL ENGINEER,  
 TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	RMC	RMC

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS		
REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
 153448.001.01

DISH Wireless L.L.C.  
 PROJECT INFORMATION  
 NJJER01104B  
 52 STADLEY ROUGH ROAD  
 DANBURY, CT 06811

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



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	RMC	RMC

RFDS REV #: 3

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
**153448.001.01**

DISH Wireless L.L.C.  
PROJECT INFORMATION  
**NJJer01104B**  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811

SHEET TITLE  
**GENERAL NOTES**

SHEET NUMBER  
**GN-2**

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
- ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
- 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.
- 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.
- 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).
- PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
- TIE WRAPS ARE NOT ALLOWED.
- 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.
- 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.
- POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
- 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.
- 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).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
- ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

- ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
- WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
- SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH Wireless L.L.C."
- ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



11/8/22

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

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	RMC	RMC

RFDS REV #: 3

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER  
**153448.001.01**

DISH Wireless L.L.C.  
PROJECT INFORMATION  
**NJJER01104B**  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811

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 GROUND 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.



5701 SOUTH SANTA FE DRIVE  
LITTLETON, CO 80120



8051 CONGRESS AVENUE  
BOCA RATON, FL 33487



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



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

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	RMC	RMC

RFDS REV #: 3

**CONSTRUCTION DOCUMENTS**

SUBMITTALS		
REV	DATE	DESCRIPTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION
4	11/8/22	ISSUED FOR CONSTRUCTION


A&E PROJECT NUMBER  
**153448.001.01**

DISH Wireless L.L.C.  
PROJECT INFORMATION  
**NJJER01104B**  
52 STADLEY ROUGH ROAD  
DANBURY, CT 06811

SHEET TITLE  
**GENERAL NOTES**

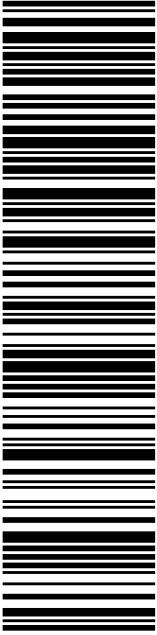
SHEET NUMBER  
**GN-4**





EVAN ROBIDOUX  
CT SITING COUNCIL  
10 FRANKLIN SQ  
NEW BRITAIN CT 06051-2655

**USPS TRACKING #**



**9405 5036 9930 0392 7633 91**

DEBORAH CHASE  
NORTHEAST SITE SOLUTIONS  
STE 1  
420 MAIN ST  
STURBRIDGE MA 01566-1359

**PRIORITY MAIL®**

Expected Delivery Date: 11/14/22  
Ref#: NJJER01104  
**0000**

**C006**

**P**

USPS.com 9405 5036 9930 0392 7633 91 0099 0000 0020 6051  
**US POSTAGE**  
 Flat Rate Env  
**U.S. POSTAGE PAID**  
 Click-N-Ship®

11/10/2022 Mailed from 01566 98677708601 6444

**Click-N-Ship®**

POSTAL SERVICE®



Cut on dotted line.

## Instructions

1. Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. **DO NOT PHOTO COPY OR ALTER LABEL.**
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, **DO NOT TAPE OVER BARCODE.** Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
5. Mail your package on the "Ship Date" you selected when creating this label.

## Click-N-Ship® Label Record

**USPS TRACKING # :**  
**9405 5036 9930 0392 7633 91**

Trans. #: 575540593	Priority Mail® Postage: <b>\$9.90</b>
Print Date: 11/10/2022	Total: <b>\$9.90</b>
Ship Date: 11/10/2022	
Expected Delivery Date: 11/14/2022	


**From:** DEBORAH CHASE      Ref#: NJJER01104  
 NORTHEAST SITE SOLUTIONS  
 STE 1  
 420 MAIN ST  
 STURBRIDGE MA 01566-1359

**To:** EVAN ROBIDOUX  
 CT SITING COUNCIL  
 10 FRANKLIN SQ  
 NEW BRITAIN CT 06051-2655

\* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.

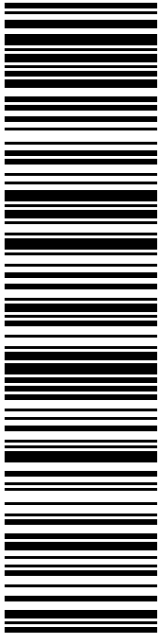


Thank you for shipping with the United States Postal Service!  
 Check the status of your shipment on the USPS Tracking® page at usps.com



JOSE & CHRISTINA CARVALHEIRO  
125 STADLEY ROUGH RD  
DANBURY CT 06811-3279

**USPS TRACKING #**



**9405 5036 9930 0392 7634 21**

**P**

USPS.com 9405 5036 9930 0392 7634 21 0099 0000 0020 6811  
**US POSTAGE**  
 Flat Rate Env  
**U.S. POSTAGE PAID**  
 Click-N-Ship®

11/10/2022 Mailed from 01566 986777086014615

**PRIORITY MAIL®**

DEBORAH CHASE  
NORTHEAST SITE SOLUTIONS  
STE 1  
420 MAIN ST  
STURBRIDGE MA 01566-1359

Expected Delivery Date: 11/14/22  
Ref#: NJJER01104  
**0000**

**C043**



Cut on dotted line.

## Instructions

- Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
- Place your label so it does not wrap around the edge of the package.
- Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
- To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
- Mail your package on the "Ship Date" you selected when creating this label.

## Click-N-Ship® Label Record

<b>USPS TRACKING # :</b>	
<b>9405 5036 9930 0392 7634 21</b>	
Trans. #:	575540593
Print Date:	11/10/2022
Ship Date:	11/10/2022
Expected Delivery Date:	11/14/2022
Priority Mail® Postage:	<b>\$9.90</b>
Total:	<b>\$9.90</b>
<b>From:</b>	DEBORAH CHASE NORTHEAST SITE SOLUTIONS STE 1 420 MAIN ST STURBRIDGE MA 01566-1359
<b>To:</b>	JOSE & CHRISTINA CARVALHEIRO 125 STADLEY ROUGH RD DANBURY CT 06811-3279
Ref#:	NJJER01104

\* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



Thank you for shipping with the United States Postal Service!  
Check the status of your shipment on the USPS Tracking® page at [usps.com](https://usps.com)