October 18, 2022

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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, v2
Engineering Firm Designation:	**Project Number:**	153448.006.01.0001
Site Data:	**52 Stadley Rough Road, Danbury, CT, 06811, Fairfield County** **Latitude *41.433102*°, Longitude *-73.431916*°** **Monopole** **(3) 2' T-Arm Mount**	

Dear Mr. Evans,

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 Note: See Table 1 for the final loading configuration	**Sufficient Capacity** **(Passing at 14.3%)**

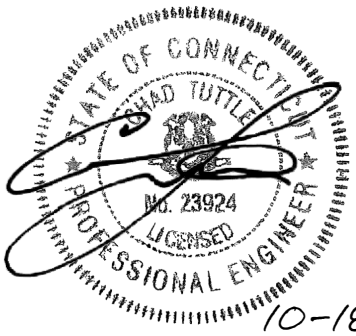
This analysis utilizes an ultimate 3-second gust wind speed of 115 mph as required by the 2022 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

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: Erika Ruiz

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



Chad E. Tuttle, P.E.

10-18-22

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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 30º 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 side by side with RRUS Support, 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: 10/06/2022	SBA Network Services, LLC.
CD's by MTS Engineering, P.L.L.C.		Date: 10/16/2022	
Previous MA	MTS Engineering, P.L.L.C.	Date: 07/29/2022	On File

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 20.0.3), 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.

Component	Section	Length	Note
Raycap Mount Pipe	2” Std. Pipe	6’-0”	In Support Tube of Alpha Sector

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

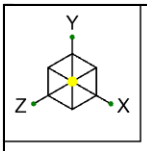
Notes	Component	Elevation (ft.)	% Capacity	Pass / Fail
-	Mount Pipe	127	14.3	Pass
-	Support Tube	127	12.7	Pass

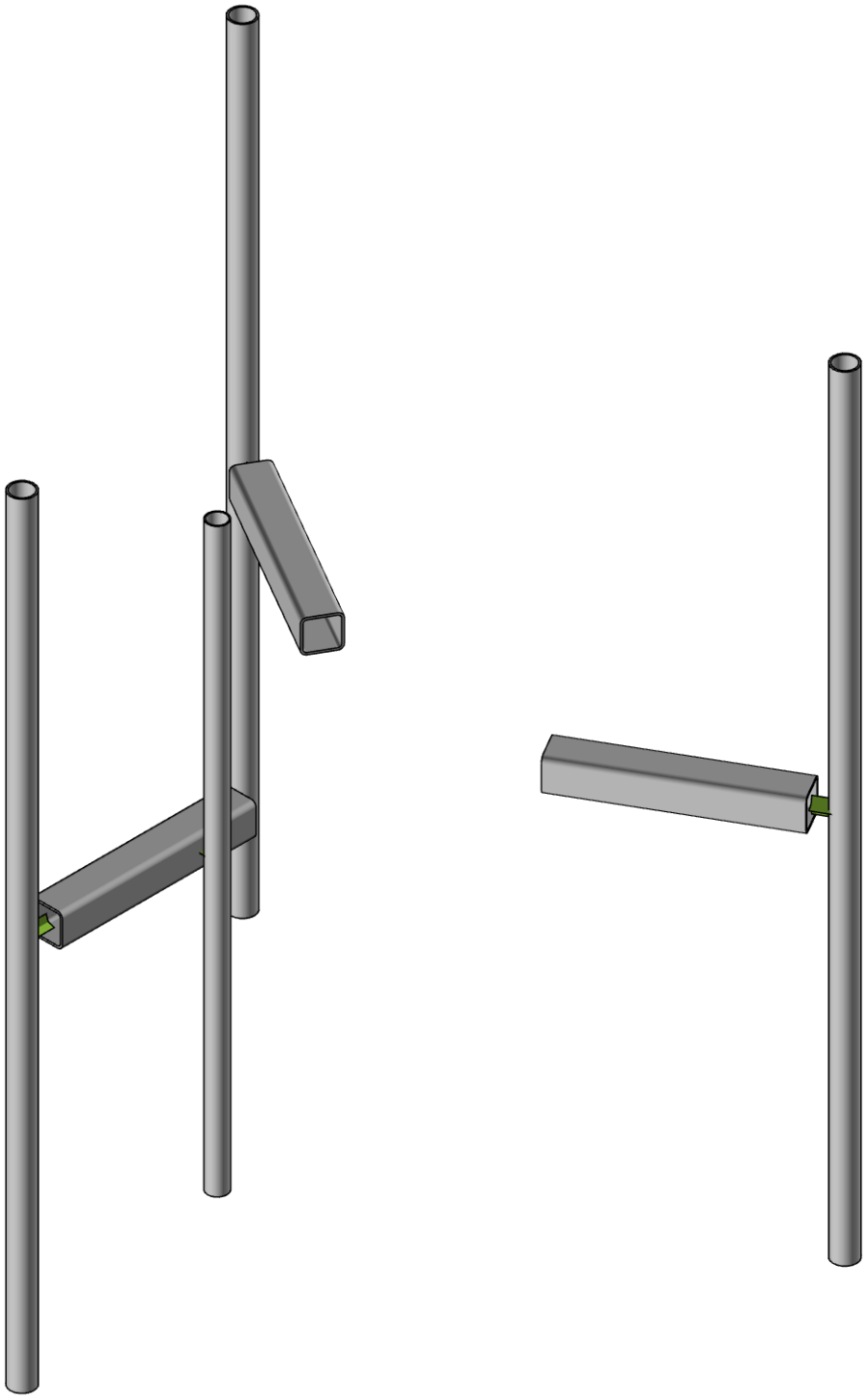
5) RECOMMENDATIONS

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).

APPENDIX A

(RISA-3D Output)





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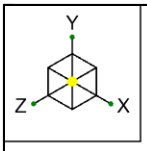

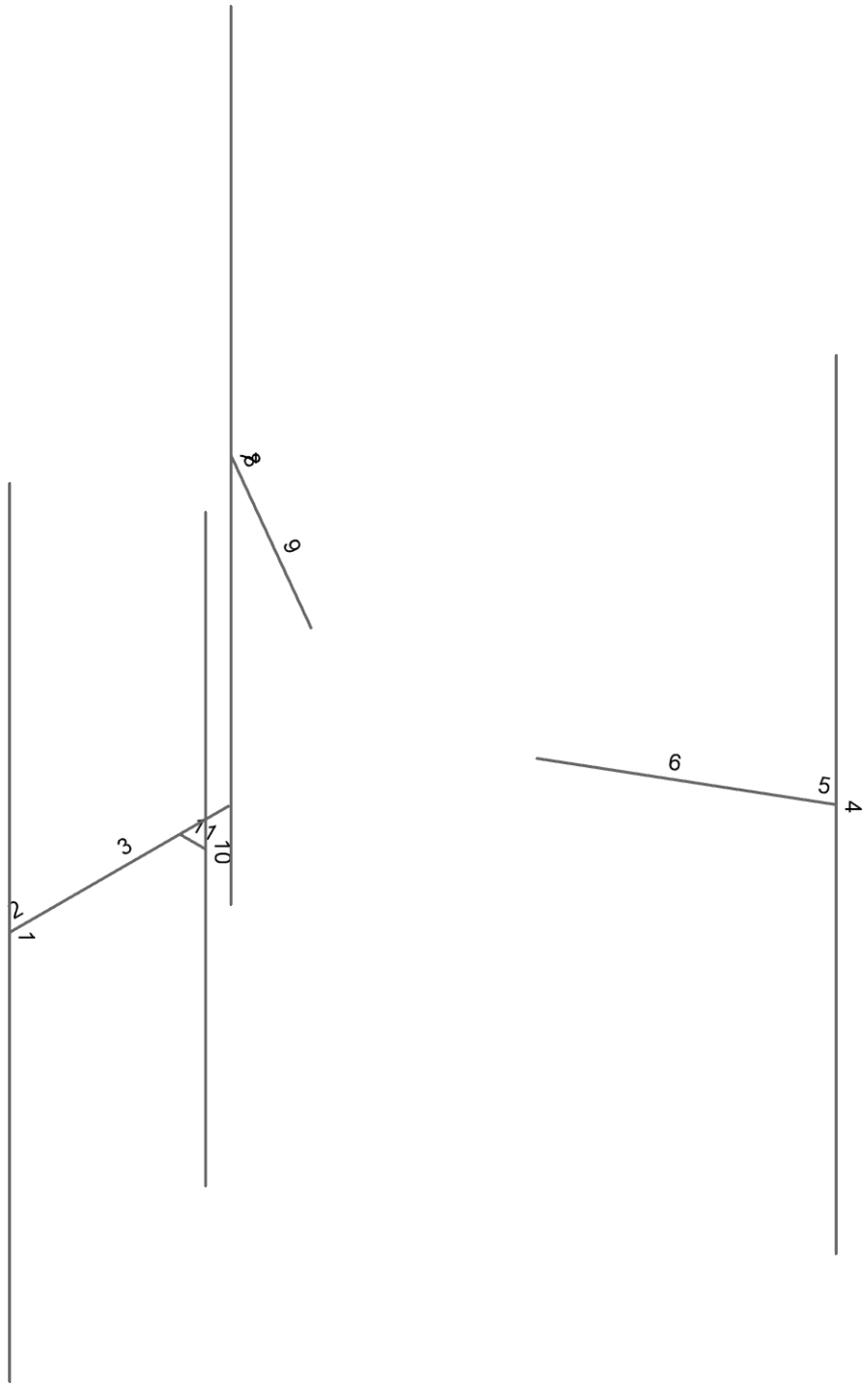

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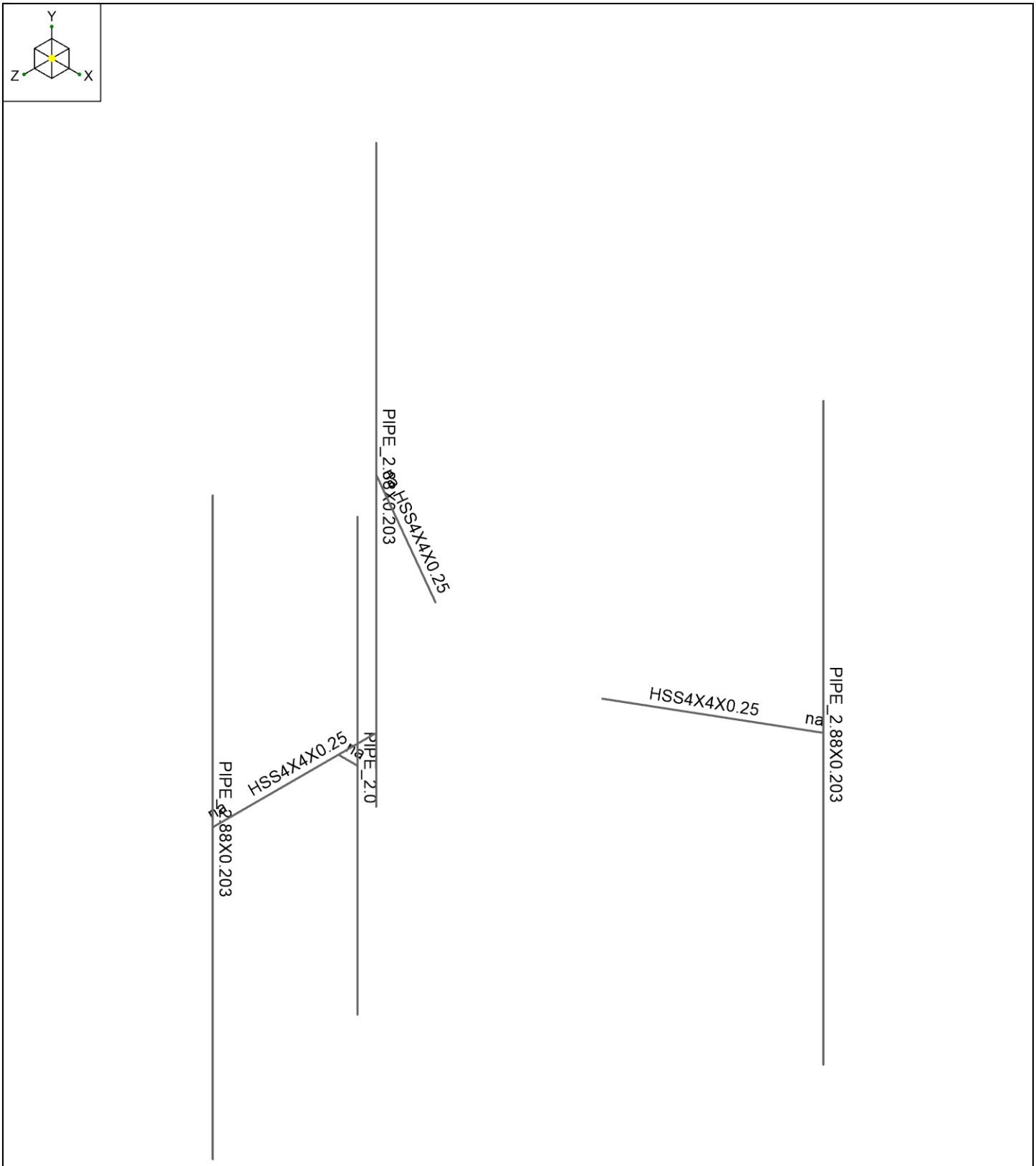

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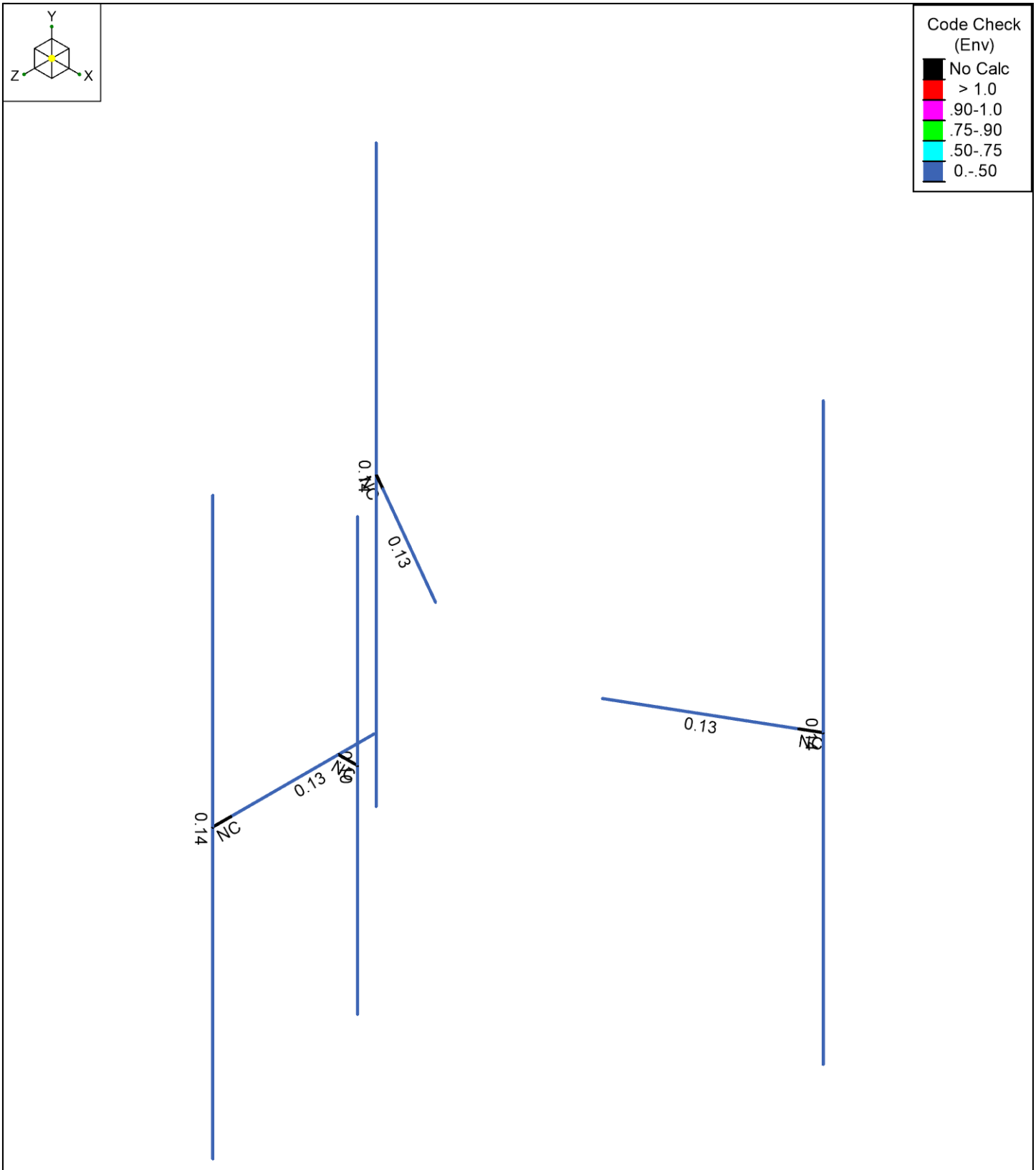

Member Code Checks Displayed (Enveloped)
Envelope Only Solution

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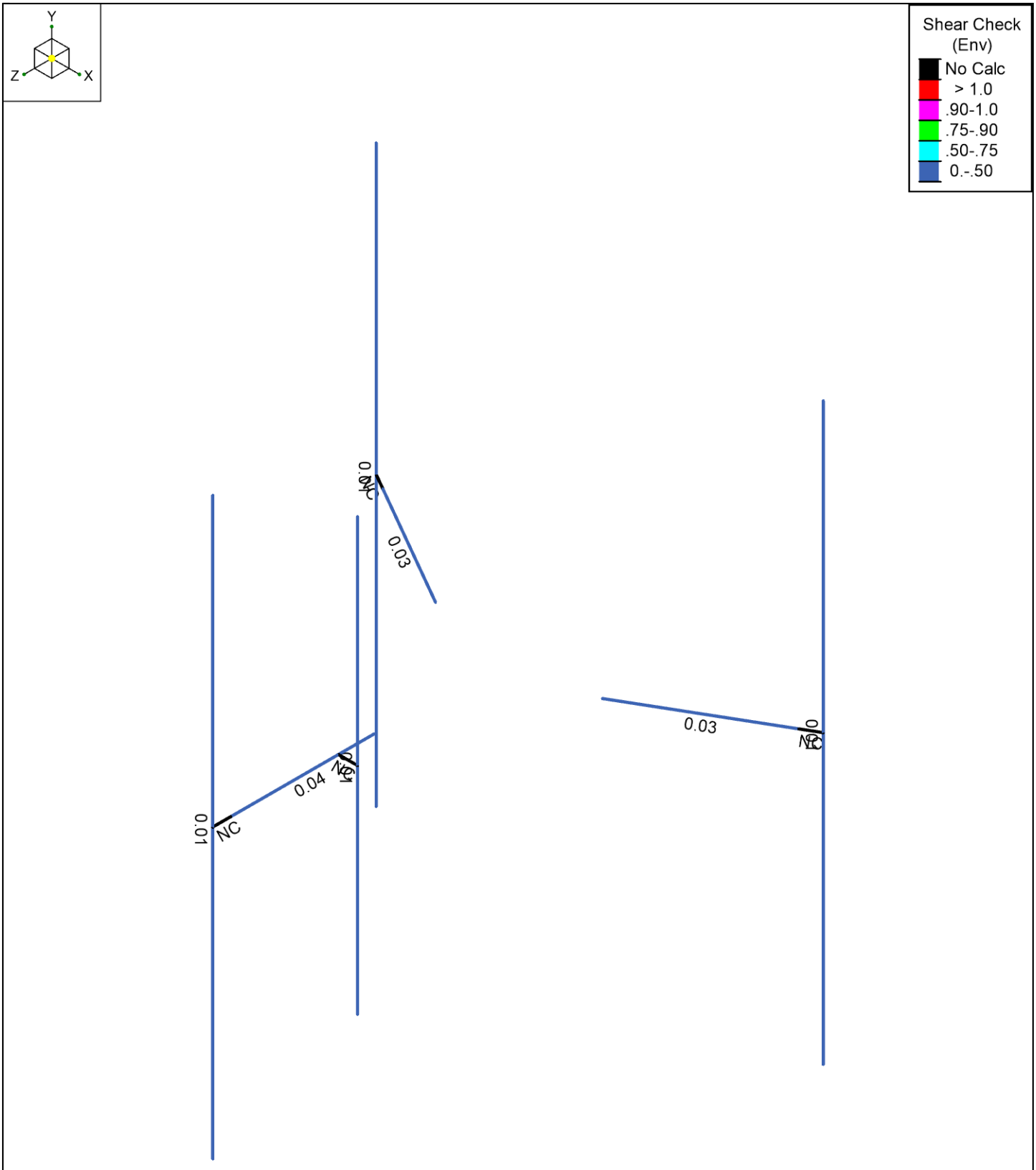

Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

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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	
17	17	0	0	1.841361	
18	18	0.2656	0	1.841361	
19	19	0.2656	3.	1.841361	
20	20	0.2656	-3.	1.841361	

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
4	17						
5	18						
6	19						
7	20						

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	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
3	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in^{2}]	Iyy [in^{4}]	Izz [in^{4}]	J [in^{4}]
1	MF-P1	PIPE_2.88X0.203	Column	Pipe	A500 Gr.C	Typical	1.707	1.538	1.538	3.076
2	F1-SA1	HSS4X4X0.25	Beam	Tube	A500 Gr.B Rect	Typical	3.75	8.828	8.828	13.184
3	MF-P2	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25

Member Primary Data

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
1	1	1	2	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	7	8	MF-P1	Column	Pipe	A500 Gr.C	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Section/Shape	Type	Design List	Material	Design Rule
5	5	9	10	RIGID	None	None	RIGID	Typical
6	6	9	11	F1-SA1	Beam	Tube	A500 Gr.B Rect	Typical
7	7	12	13	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
10	10	19	20	MF-P2	Column	Pipe	A53 Gr.B	Typical
11	11	17	18	RIGID	None	None	RIGID	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
10	10	Yes	** NA **	None
11	11	Yes	** NA **	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
7	10	MF-P2	6		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	%25
5	1	Y	0	0
6	10	Y	-0.022	%20
7	10	Y	0	0
8	10	Y	0	0
9	10	Y	0	0
10	10	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	%25
15	7	Y	0	0
16	4	Y	-0.035	%15
17	4	Y	-0.035	%85
18	4	Y	-0.075	%25

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
19	4	Y	-0.064	%25
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	-0.045	%25
4	1	Z	-0.039	%25
5	1	Z	0	0
6	10	Z	-0.076	%20
7	10	Z	0	0
8	10	Z	0	0
9	10	Z	0	0
10	10	Z	0	0
11	7	Z	-0.16	%15
12	7	Z	-0.16	%85
13	7	Z	-0.045	%25
14	7	Z	-0.039	%25
15	7	Z	0	0
16	4	Z	-0.16	%15
17	4	Z	-0.16	%85
18	4	Z	-0.045	%25
19	4	Z	-0.039	%25
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	-0.074	%25
4	1	X	-0.074	%25
5	1	X	0	0
6	10	X	-0.043	%20
7	10	X	0	0
8	10	X	0	0
9	10	X	0	0
10	10	X	0	0
11	7	X	-0.063	%15
12	7	X	-0.063	%85
13	7	X	-0.074	%25
14	7	X	-0.074	%25
15	7	X	0	0
16	4	X	-0.063	%15
17	4	X	-0.063	%85
18	4	X	-0.074	%25
19	4	X	-0.074	%25
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	-0.009	%25
4	1	Z	-0.007	%25
5	1	Z	0	0
6	10	Z	-0.014	%20
7	10	Z	0	0
8	10	Z	0	0
9	10	Z	0	0
10	10	Z	0	0
11	7	Z	-0.034	%15
12	7	Z	-0.034	%85
13	7	Z	-0.009	%25
14	7	Z	-0.007	%25
15	7	Z	0	0
16	4	Z	-0.034	%15
17	4	Z	-0.034	%85
18	4	Z	-0.009	%25
19	4	Z	-0.007	%25
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	-0.014	%25
4	1	X	-0.014	%25
5	1	X	0	0
6	10	X	-0.008	%20
7	10	X	0	0
8	10	X	0	0
9	10	X	0	0
10	10	X	0	0
11	7	X	-0.015	%15
12	7	X	-0.015	%85
13	7	X	-0.014	%25
14	7	X	-0.014	%25
15	7	X	0	0
16	4	X	-0.015	%15
17	4	X	-0.015	%85
18	4	X	-0.014	%25
19	4	X	-0.014	%25
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	-0.003	%25
4	1	Z	-0.003	%25
5	1	Z	0	0
6	10	Z	-0.005	%20

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
7	10	Z	0	0
8	10	Z	0	0
9	10	Z	0	0
10	10	Z	0	0
11	7	Z	-0.011	%15
12	7	Z	-0.011	%85
13	7	Z	-0.003	%25
14	7	Z	-0.003	%25
15	7	Z	0	0
16	4	Z	-0.011	%15
17	4	Z	-0.011	%85
18	4	Z	-0.003	%25
19	4	Z	-0.003	%25
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	-0.005	%25
4	1	X	-0.005	%25
5	1	X	0	0
6	10	X	-0.003	%20
7	10	X	0	0
8	10	X	0	0
9	10	X	0	0
10	10	X	0	0
11	7	X	-0.004	%15
12	7	X	-0.004	%85
13	7	X	-0.005	%25
14	7	X	-0.005	%25
15	7	X	0	0
16	4	X	-0.004	%15
17	4	X	-0.004	%85
18	4	X	-0.005	%25
19	4	X	-0.005	%25
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	%25
5	1	Y	0	0
6	10	Y	-0.034	%20
7	10	Y	0	0
8	10	Y	0	0
9	10	Y	0	0
10	10	Y	0	0
11	7	Y	-0.118	%15
12	7	Y	-0.118	%85
13	7	Y	-0.034	%25

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

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
14	7	Y	-0.033	%25
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	%25
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	%25
5	1	Z	0	0
6	10	Z	-0.007	%20
7	10	Z	0	0
8	10	Z	0	0
9	10	Z	0	0
10	10	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	%25
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	%25
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	%25
5	1	X	0	0
6	10	X	-0.007	%20
7	10	X	0	0
8	10	X	0	0
9	10	X	0	0
10	10	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	%25
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	%25
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
7	10	Z	-0.009	-0.009	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
7	10	X	-0.009	-0.009	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
7	10	Z	-0.002	-0.002	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

Member Distributed Loads (BLC 5 : 90 Wind - Ice) (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, %)]
5	7	X	-0.002	-0.002	0	%100
6	9	X	-0.005	-0.005	0	%100
7	10	X	-0.002	-0.002	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
7	10	Z	-0.0003	-0.0003	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
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
7	10	X	-0.0003	-0.0003	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
7	10	Y	-0.005	-0.005	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
7	10	Z	-0.001	-0.001	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

Member Distributed Loads (BLC 10 : 90 Seismic) (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	-0.004	-0.004	0	%100
5	7	X	-0.002	-0.002	0	%100
6	9	X	-0.004	-0.004	0	%100
7	10	X	-0.001	-0.001	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*s²/ft, k*s²*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	7
3	90 Wind - No Ice	WLX			20	7
4	0 Wind - Ice	WLZ			20	7
5	90 Wind - Ice	WLX			20	7
6	0 Wind - Service	WLZ			20	7
7	90 Wind - Service	WLX			20	7
8	Ice	OL1			20	7
9	0 Seismic	ELZ			20	7
10	90 Seismic	ELX			20	7
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		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
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		
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

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
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
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	0.492	5	1.142	42	0.654	2	-0.444	2	0.896	5	0.388	11
2		min	-0.492	11	0.392	12	-0.654	8	-2.272	44	-0.896	11	-0.361	5
3	11	max	0.395	5	1.09	42	0.524	2	1.124	38	1.065	9	1.947	47
4		min	-0.395	11	0.34	12	-0.524	8	0.193	8	-1.065	3	0.33	5
5	16	max	0.395	5	1.09	46	0.524	2	1.124	38	1.065	13	-0.33	11
6		min	-0.395	11	0.34	4	-0.524	8	0.193	8	-1.065	7	-1.947	41
7	Totals:	max	1.283	5	3.322	44	1.703	2						
8		min	-1.283	11	1.072	2	-1.703	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	1	PIPE_2.88X0.203	0.143	4	8	0.014	4		8	35.519	70.68	5.029	5.029	1	H1-1b
2	3	HSS4X4X0.25	0.127	2	42	0.039	2	z	11	152.716	155.25	18.22	18.22	1.646	H1-1b
3	4	PIPE_2.88X0.203	0.143	4	2	0.014	4		2	35.519	70.68	5.029	5.029	1	H1-1b
4	6	HSS4X4X0.25	0.126	2	45	0.028	2	y	45	152.716	155.25	18.22	18.22	1.634	H1-1b
5	7	PIPE_2.88X0.203	0.143	4	2	0.014	4		2	35.519	70.68	5.029	5.029	1	H1-1b
6	9	HSS4X4X0.25	0.126	2	43	0.028	2	y	43	152.716	155.25	18.22	18.22	1.634	H1-1b
7	10	PIPE_2.0	0.096	3	8	0.011	3		8	20.867	32.13	1.872	1.872	1	H1-1b

APPENDIX B

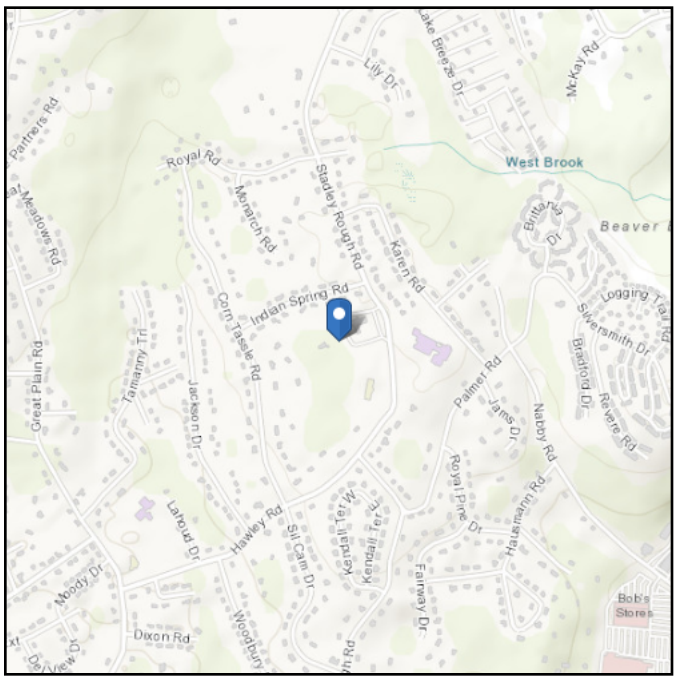
(Additional Calculations)

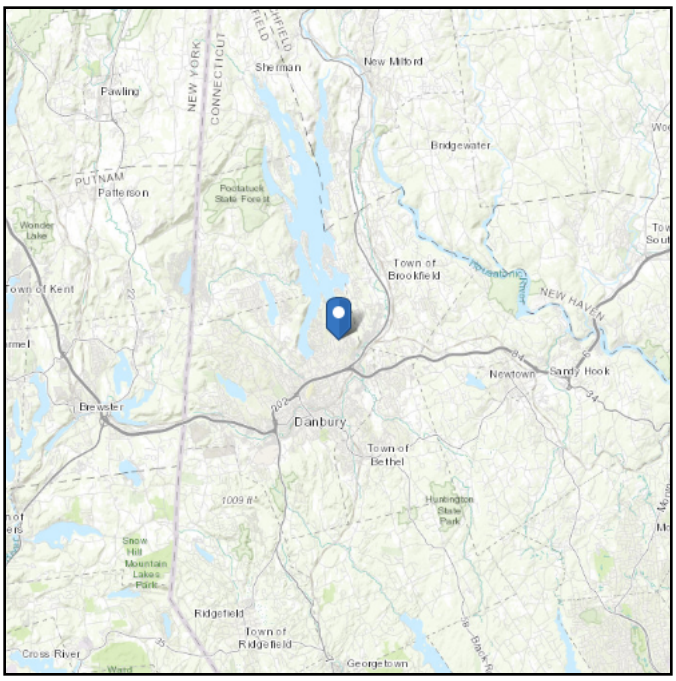
ASCE 7 Hazards Report

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 Oct 18 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.

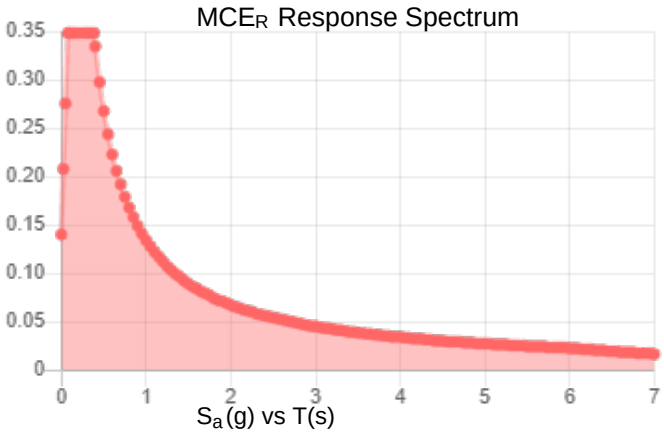
Seismic

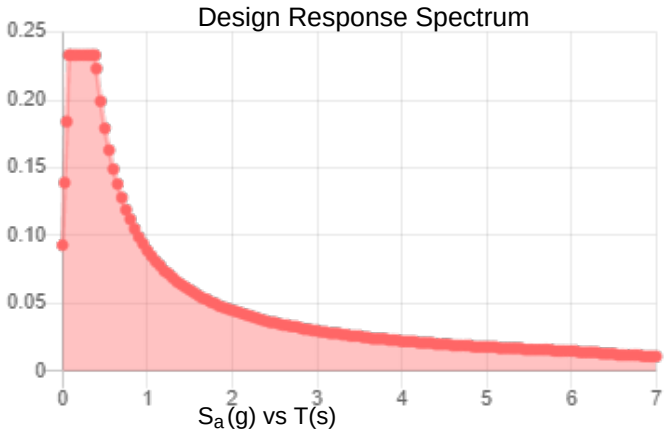
Site Soil Class: D - Default (see Section 11.4.3)

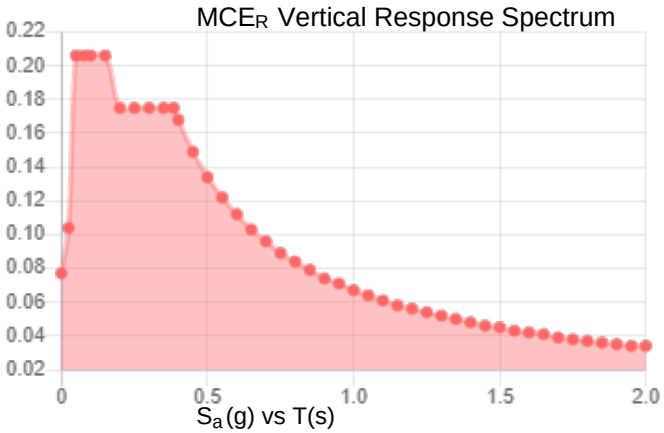
Results:

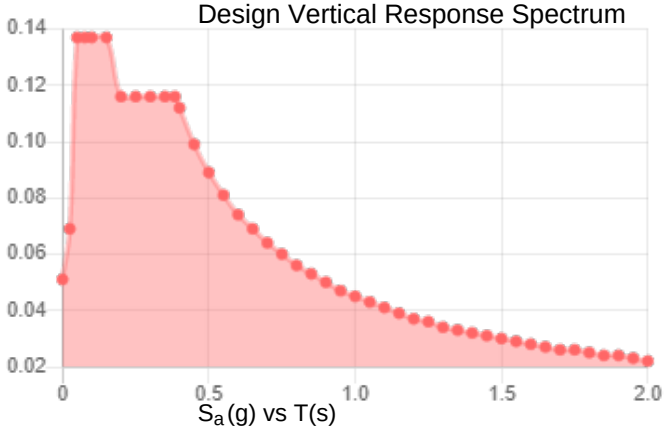
S_S :	0.218	S_{D1} :	0.089
S_1 :	0.056	T_L :	6
F_a :	1.6	PGA :	0.125
F_v :	2.4	PGA_M :	0.193
S_{MS} :	0.349	F_{PGA} :	1.55
S_{M1} :	0.134	I_e :	1
S_{DS} :	0.233	C_v :	0.737

Seismic Design Category B









Data Accessed: **Tue Oct 18 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 Oct 18 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.

PROJECT	**153448.006.01.0001 - Danbury 1, CT KSC**	
SUBJECT	**T-Arm Mount Analysis**	
DATE	**10/18/22**	

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	**153448.006.01.0001 - Danbury 1, CT KSC**
SUBJECT	**T-Arm Mount Analysis**
DATE	**10/18/22**

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

Manufacturer	Model	Qty	Height (in^2)	Width (in^2)	Depth (in^2)	Weight (lbs)	C_aA_a (N) (ft^2)	C_aA_a (T) (ft^2)	C_aA_a (N) Ice (ft^2)	C_aA_a (T) Ice (ft^2)	$F_{A\,(N)}$ (k)	$F_{A\,(T)}$ (k)	$F_{A\,(N)}$ Ice (k)	$F_{A\,(T)}$ 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	9.1	15.0	75.0	1.19	1.96	1.70	2.59	0.04	0.07	0.01	0.01
Fujitsu	TA08025-B604	1	15.8	7.9	15.0	63.9	1.03	1.96	1.53	2.59	0.04	0.07	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	9.1	15.0	75.0	1.19	1.96	1.70	2.59	0.04	0.07	0.01	0.01
Fujitsu	TA08025-B604	1	15.8	7.9	15.0	63.9	1.03	1.96	1.53	2.59	0.04	0.07	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	9.1	15.0	75.0	1.19	1.96	1.70	2.59	0.04	0.07	0.01	0.01
Fujitsu	TA08025-B604	1	15.8	7.9	15.0	63.9	1.03	1.96	1.53	2.59	0.04	0.07	0.01	0.01

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

Structural Analysis Report

Existing 139 ft SABRE Monopole
Customer Name: SBA Communications Corp
Customer Site Number: CT13549-S
Customer Site Name: Danbury 1
Carrier Name: Dish Wireless (App#: 190201, V#2)
Carrier Site ID / Name: NJJER01104B / 0
Site Location: 52 Stadley Rough Road
Danbury, Connecticut
Fairfield County
Latitude: 41.433102
Longitude: -73.431916

Exp. 01/31/2024

10/04/2022

Analysis Result:

Max Structural Usage: 97.1% [Pass]
Max Foundation Usage: 83.7% [Pass]
Additional Usage Caused by New Mount: 0%

Report Prepared By: Sumeet Sahani

Introduction

The purpose of this report is to summarize the analysis results on the 139 ft SABRE Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Sabre Towers and Poles, Job # 10-01206, Dated 01/28/2010
Foundation Drawing	Sabre Towers and Poles, Job # 10-01206, Dated 01/28/2010
Geotechnical Report	Tower Engineering Professionals, Project # 091184.01, Dated 05/13/2009
Modification Drawings	N/A
Mount Analysis	N/A

Analysis Criteria

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

Wind Speed Used in the Analysis:	120.0 mph (3-Sec. Gust) (Ultimate wind speed)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" radial ice concurrent
Service Load Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
Exposure Category:	C
Risk Category:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.218, S_1 = 0.056

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	137.0	3	RFS APXVAARR18_43-U-NA20 - Panel	(3) T-Arms with extended horizontal support Sitepro RDS-272	(9) 1 5/8" (4) 1 5/8" Fiber	T-Mobile
2		3	Air 32 KRD901146_1_B66A_B2A - Panel			
3		3	AIR6449 B41 - Panel			
4		3	Ericsson KRY 112 144/1-TMA			
5		3	Commscope SDX1926Q-43-Diplexers			
6		3	Ericsson 4449 B71+B85 RRU			
7		3	Ericsson 4415 B25 RRU			
-	127.0	3	Commscope FFVV-65B-R2- Panel	(1) Commscope MC-PK8-DSH	(1) 1.75" Hybrid	Dish Wireless
-		3	Fujitsu TA08025-B605- RRH			
-		3	Fujitsu TA08025-B604- RRH			
-		1	Raycap RDIDC-9181-PF-48- OVP			
12	107.0	3	KMW EPBQ-652L8H6-L2- Panel	(1) SitePro1 RMQLP-4120-H10	(1) 0.92" DC Power (1) 1/2" Fiber (6) 3/4" DC Power (2) 3/8" Fiber (6) 7/8" Coax	AT&T
13		3	Ericsson AIR6449 B77D- Panel			
14		3	Cci DMP65R-BU6DA- Panel			
15		3	CCI DTMABP7819VG12A T-MA			
16		3	Ericsson RRUS-32- RRH			
17		3	RRUs 4449 B5/B12 Ericsson- RRH			
18		3	Ericsson RRUS 4426 B66- RRH			
19		3	Ericsson 4415 B25- RRH			
20		3	Ericsson RRUS 4478 B14- RRH			
21		3	Ericsson RRUS-A2- RRU			
22		3	Kaelus DBC2055F1V1- Combiners			
23		2	Raycap DC6-48-60-18-8F- OVP			
24		1	Raycap DC9-48-60-24-8C-EV- OVP			
25	97.0	6	JMA MX06FRO660-03 - Panel	(3) Standoff	(12) 1 5/8" (1) 1 5/8" Hybrid	Verizon
26		3	Samsung VZS01 - Panel			
27		3	Samsung B5/B13 RRH-BR04C			
28		3	Samsung B2/B66A RRH-BR049			
29		1	Commscope RCMDC-6627-PF-48			

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

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
8	127.0	3	Commscope FFVV-65B-R2 - Panel	(1) Commscope MC-FM3-24-278 – T-Arms	(1) 1.75" Hybrid	Dish Wireless
9		3	Fujitsu TA08025-B605 - RRU			
10		3	Fujitsu TA08025-B604 - RRU			
11		1	Raycap RDIDC-9181-PF-48 - OVP			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**97.1%**	**78.1%**	**73.0%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	2582.0	26.0	34.3

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

Service Load Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.866 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

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

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

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

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

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

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

Usage Diagram - Max Ratio 97.09% at 53.3ft

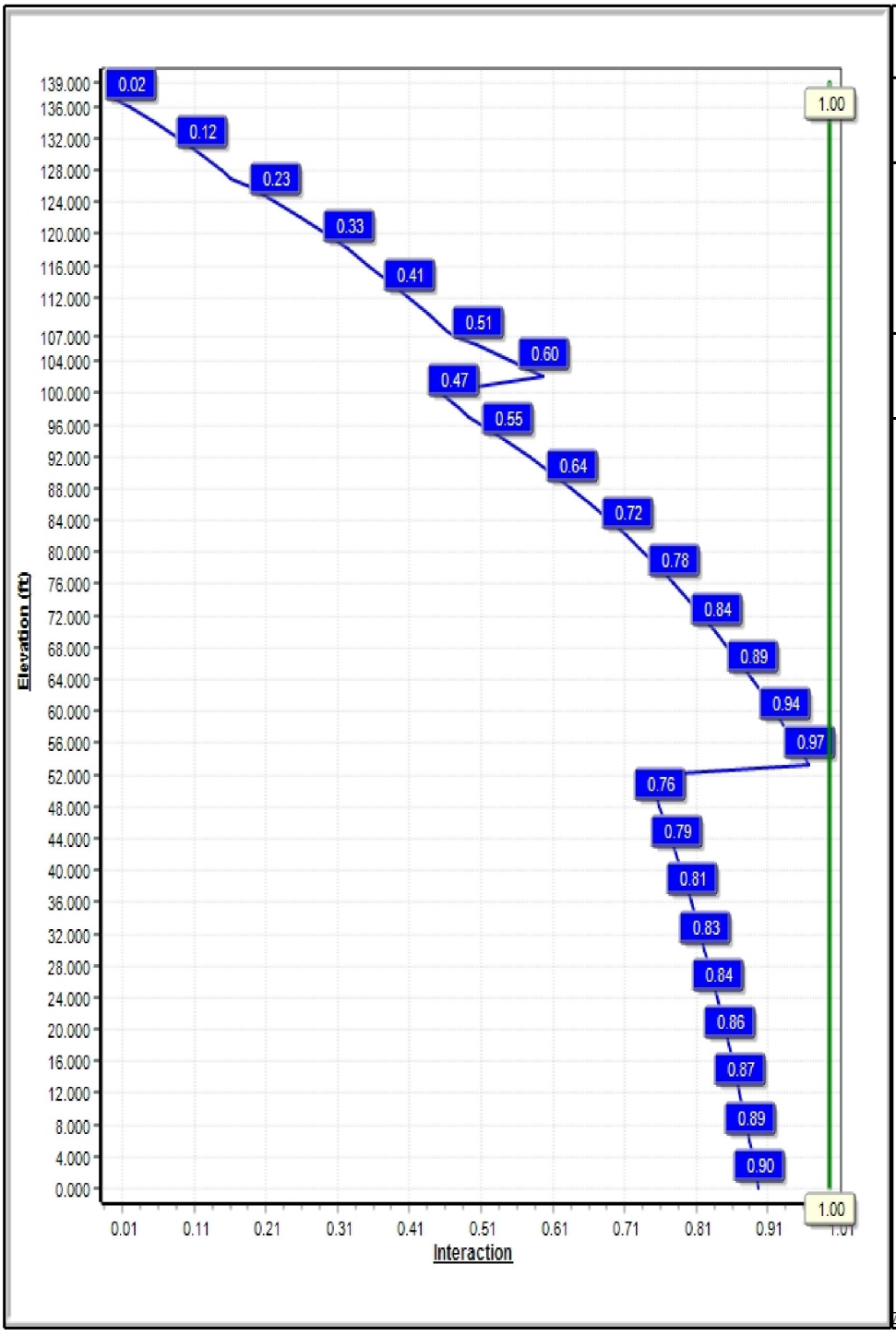
Structure:	CT13549-S-SBA	**Code:**	EIA/TIA-222-H	10/4/2022
Site Name:	Danbury 1	**Exposure:**	C	
Height:	139.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

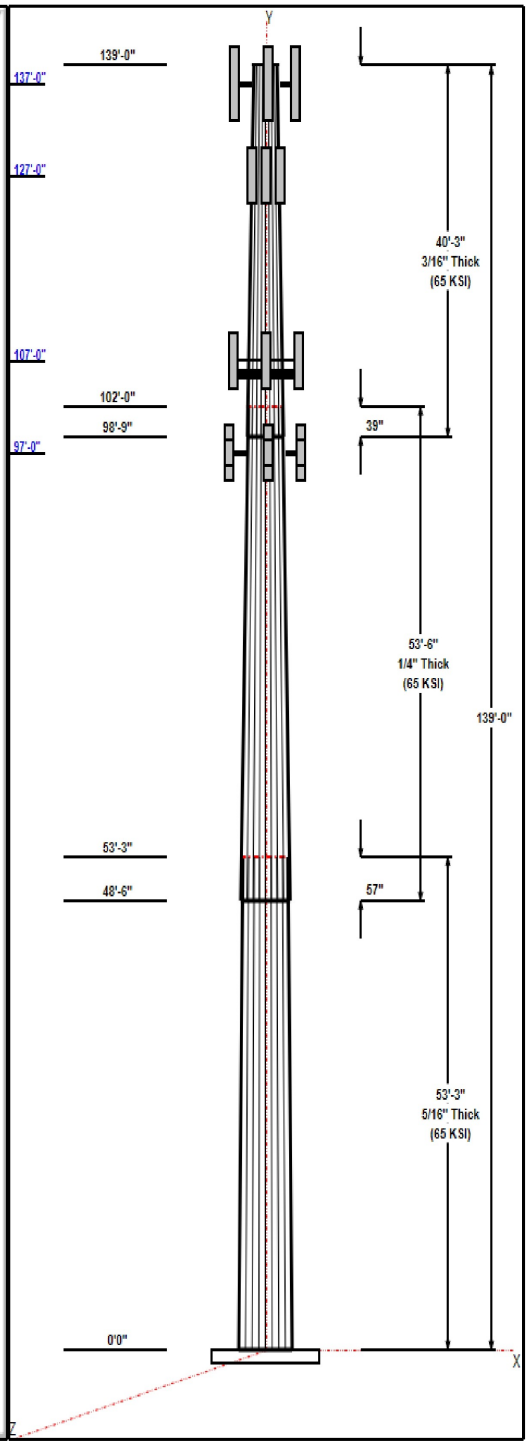
Tower Engineering Solutions

Dead Load Factor:	1.20
Wind Load Factor:	1.00

Load Case : 1.2D + 1.0W 120 mph Wind

Iterations: 31





Structure: CT13549-S-SBA

Type: Tapered
Site Name: Danbury 1
Height: 139.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.23097

10/4/2022

Tower Engineering Solutions

Shaft Properties

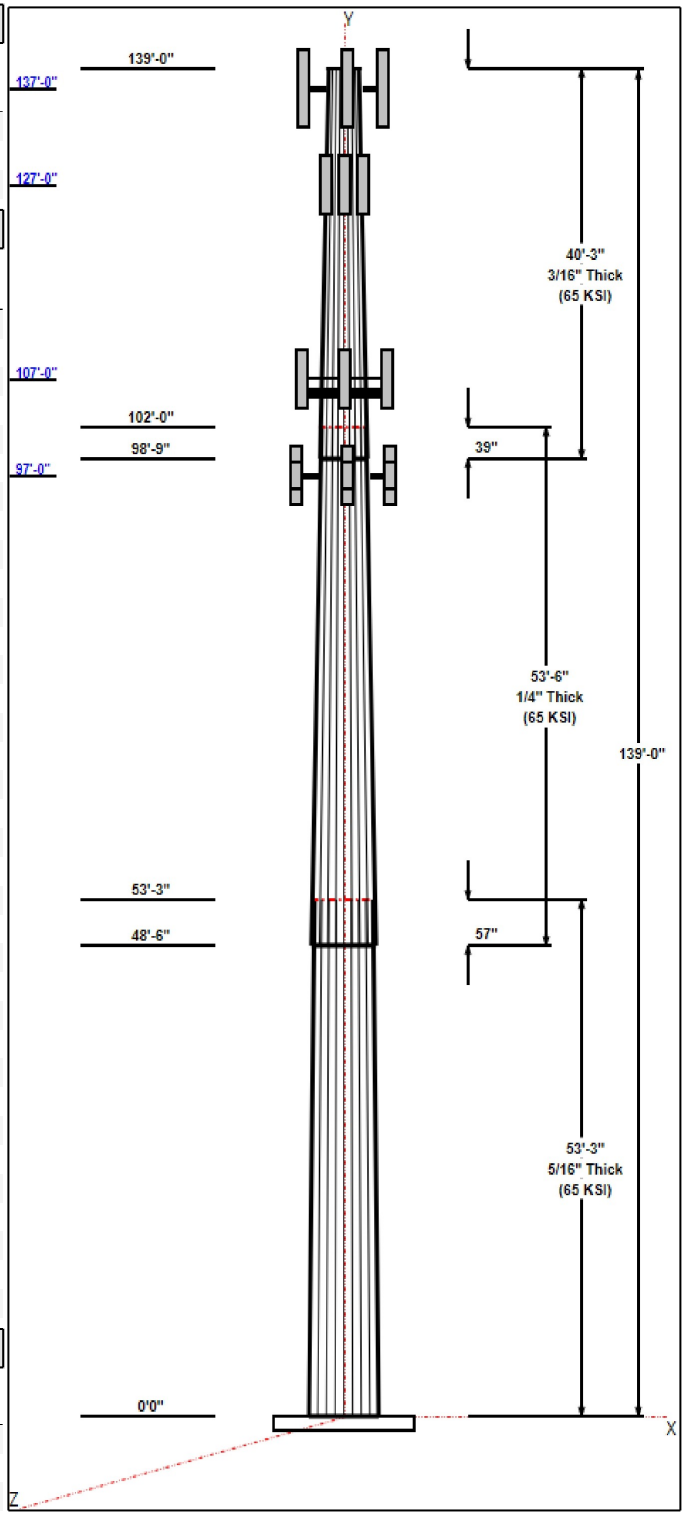
Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.25	34.93	47.23	0.313		0.23097	65
2	53.50	24.17	36.53	0.250	Slip	0.23097	65
3	40.25	16.00	25.30	0.188	Slip	0.23097	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
139.00	139.00	1	6' Lightning rod	
137.00	137.00	3	AIR6449 B41	T-Mobile
137.00	137.00	3	KRY 112 144/1	T-Mobile
137.00	137.00	3	SDX1926Q-43	T-Mobile
137.00	137.00	3	4415 B25	T-Mobile
137.00	137.00	3	RFS	T-Mobile
137.00	137.00	3	Air 32	T-Mobile
137.00	137.00	3	4449 B71+B85	T-Mobile
137.00	137.00	3	RDS-272	T-Mobile
127.00	127.00	3	(1) 8'x2.875" mount pipe	Dish Wireless
127.00	127.00	1	Collar Mount (3-Sided)	Dish Wireless
127.00	127.00	3	Commscope	Dish Wireless
127.00	127.00	3	Fujitsu TA08025-B604 -	Dish Wireless
127.00	127.00	3	Fujitsu TA08025-B605 -	Dish Wireless
127.00	127.00	1	Raycap	Dish Wireless
107.00	107.00	3	AIR 6449 B77D	AT&T
107.00	107.00	3	DMP65R-BU6DA	AT&T
107.00	107.00	1	RMQLP-4120-H10	AT&T
107.00	107.00	3	RRUS 4415 B25	AT&T
107.00	107.00	3	RRUS 4478 B14	AT&T
107.00	107.00	1	DC9-48-60-24-8C-EV	AT&T
107.00	107.00	3	RRUS A2	AT&T
107.00	107.00	3	RRUS-32	AT&T
107.00	107.00	2	DC6-48-60-18-8F	AT&T
107.00	107.00	3	EPBQ-652L8H6-L2	AT&T
107.00	107.00	3	DBC20056F1V1	AT&T
107.00	107.00	3	DTMABP7819VG12A	AT&T
107.00	107.00	3	4426 B66	AT&T
107.00	107.00	3	RRUS 4449 B5/B12	AT&T
97.00	97.00	3	T-Arms	Verizon
97.00	97.00	6	JMA MX06FRO660-03	Verizon
97.00	97.00	3	Samsung VZS01	Verizon
97.00	97.00	3	Samsung B5/B13	Verizon
97.00	97.00	3	Samsung B2/B66A	Verizon
97.00	97.00	1	Commscope	Verizon

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	139.00	Outside	Safety Cable	
0.00	137.00	Inside	1 5/8" Coax	T-Mobile
0.00	137.00	Inside	1 5/8" Fiber	T-Mobile
0.00	127.00	Inside	1.75" Hybrid	Dish Wireless
0.00	107.00	Inside	0.92" DC	AT&T
0.00	107.00	Inside	1/2" Fiber	AT&T
0.00	107.00	Inside	3/4" DC	AT&T
0.00	107.00	Inside	3/8" Fiber	AT&T



0.00	107.00	Inside	7/8" Coax	AT&T
0.00	97.00	Inside	1 5/8" Coax	Verizon
0.00	97.00	Inside	1 5/8" Hybrid	Verizon

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
12	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	51.5	50.0	Clipped

Reactions

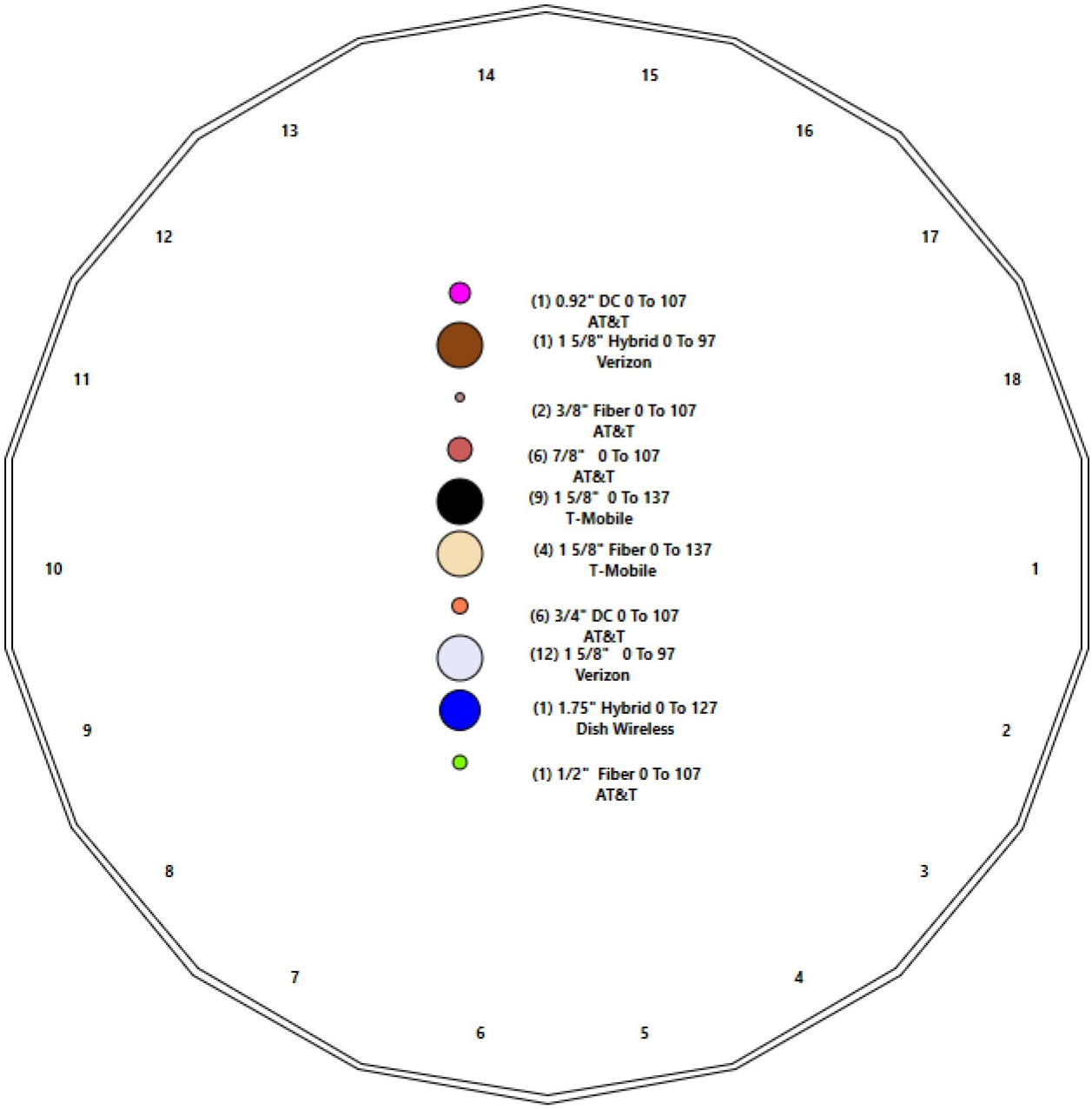
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.0W 120 mph Wind	2582.0	26.0	34.3
0.9D + 1.0W 120 mph Wind	2541.3	26.0	25.7
1.2D + 1.0Di + 1.0Wi 50 mph Wind	661.5	6.7	49.2
1.2D + 1.0Ev + 1.0Eh	51.9	0.4	35.7
0.9D + 1.0Ev + 1.0Eh	51.1	0.4	27.0
1.0D + 1.0W 60 mph Wind	573.0	5.8	28.6

Structure: CT13549-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Danbury 1
Height: 139.00 (ft)

10/4/2022

Tower Engineering Solutions



Shaft Properties

Structure:	CT13549-S-SBA		**Code:**	TIA-222-H	10/4/2022
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	53.250	0.3125	65		0.00	7,327
2	18	53.500	0.2500	65	Slip	57.00	4,348
3	18	40.250	0.1875	65	Slip	39.00	1,668
					Total Shaft Weight:		**13,342**

	Bottom						Top						
Sec. No.	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Taper**
1	47.23	0.00	46.53	12941.93	25.24	151.14	34.93	53.25	34.34	5198.89	18.30	111.7	0.230971
2	36.53	48.50	28.79	4786.42	24.35	146.11	24.17	102.00	18.98	1372.20	15.64	96.68	0.230971
3	25.30	98.75	14.94	1190.25	22.38	134.92	16.00	139.00	9.41	297.27	13.64	85.33	0.230971

Load Summary

Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	139.00	6' Lightning rod	1	6.50	0.38	1.00	30.52	1.100	1.00	0.00	0.00
2	137.00	AIR6449 B41	3	103.00	5.65	0.71	193.59	6.278	0.71	0.00	0.00
3	137.00	KRY 112 144/1	3	11.00	0.41	0.50	18.12	0.724	0.50	0.00	0.00
4	137.00	SDX1926Q-43	3	7.00	0.38	0.50	13.40	0.681	0.50	0.00	0.00
5	137.00	4415 B25	3	46.30	1.86	0.50	82.76	2.218	0.50	0.00	0.00
6	137.00	RFS APXVAARR18_43-U-NA20	3	128.00	20.24	0.70	392.29	21.480	0.70	0.00	0.00
7	137.00	Air 32 KRD901146_1_B66A_B2A	3	132.20	6.51	0.87	246.54	7.291	0.87	0.00	0.00
8	137.00	4449 B71+B85	3	70.00	1.65	0.67	111.25	1.992	0.67	0.00	0.00
9	137.00	RDS-272	3	400.00	10.00	0.75	584.48	15.765	0.75	0.00	0.00
10	127.00	(1) 8'x2.875" mount pipe	3	46.40	2.30	1.00	109.90	4.258	1.00	0.00	0.00
11	127.00	Collar Mount (3-Sided)	1	367.00	3.50	1.00	702.96	5.903	1.00	0.00	0.00
12	127.00	Commscope FFVV-65B-R2	3	70.80	12.24	0.74	218.57	13.192	0.74	0.00	0.00
13	127.00	Fujitsu TA08025-B604 - RRU	3	63.90	1.96	0.67	97.10	2.328	0.67	0.00	0.00
14	127.00	Fujitsu TA08025-B605 - RRU	3	75.00	1.96	0.67	109.29	2.328	0.67	0.00	0.00
15	127.00	Raycap RDIDC-9181-PF-48 - OVP	1	21.90	2.01	1.00	56.81	2.383	1.00	0.00	0.00
16	107.00	AIR 6449 B77D	3	81.60	4.13	0.85	164.51	4.670	0.85	0.00	0.00
17	107.00	DMP65R-BU6DA	3	79.40	12.71	0.72	269.24	13.654	0.72	0.00	0.00
18	107.00	RMQLP-4120-H10	1	3249.41	42.00	1.00	5442.43	62.031	1.00	0.00	0.00
19	107.00	RRUS 4415 B25	3	46.00	1.64	0.67	72.49	1.972	0.67	0.00	0.00
20	107.00	RRUS 4478 B14	3	59.40	1.65	0.67	86.13	1.984	0.67	0.00	0.00
21	107.00	DC9-48-60-24-8C-EV	1	26.20	1.14	0.50	94.51	2.163	0.50	0.00	0.00
22	107.00	RRUS A2	3	21.20	1.86	0.67	44.47	2.488	0.67	0.00	0.00
23	107.00	RRUS-32	3	77.00	3.87	0.67	144.93	3.811	0.67	0.00	0.00
24	107.00	DC6-48-60-18-8F	2	31.80	1.47	0.50	71.65	1.921	0.50	0.00	0.00
25	107.00	EPBQ-652L8H6-L2	3	72.80	9.66	0.85	244.56	14.201	0.85	0.00	0.00
26	107.00	DBC20056F1V1	3	7.00	0.41	0.50	16.35	0.617	0.50	0.00	0.00
27	107.00	DTMABP7819VG12A	3	19.20	1.14	0.50	35.65	1.636	0.50	0.00	0.00
28	107.00	4426 B66	3	53.00	1.15	0.67	75.15	1.444	0.67	0.00	0.00
29	107.00	RRUS 4449 B5/B12	3	85.00	1.65	0.50	156.03	3.995	0.50	0.00	0.00
30	97.00	T-Arms	3	350.00	8.00	0.75	505.94	12.455	0.75	0.00	0.00
31	97.00	JMA MX06FRO660-03	6	46.00	9.87	0.87	208.27	10.731	0.87	0.00	0.00
32	97.00	Samsung VZS01	3	87.10	4.30	0.69	152.54	4.853	0.75	0.00	0.00
33	97.00	Samsung B5/B13 RRH-BR04C	3	84.40	1.88	0.67	117.11	2.232	0.67	0.00	0.00
34	97.00	Samsung B2/B66A RRH-BR049	3	70.30	1.88	0.67	101.34	2.232	0.67	0.00	0.00
35	97.00	Commscope RCMDC-6627-PF-48	1	20.00	5.60	0.50	93.42	6.660	0.50	0.00	0.00
		Totals:	**95**	**11,071.61**			**20,904.78**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	139.00	(1) Safety Cable	0.00	Outside
0.00	137.00	(9) 1 5/8" Coax	0.00	Inside
0.00	137.00	(4) 1 5/8" Fiber	0.00	Inside
0.00	127.00	(1) 1.75" Hybrid	0.00	Inside
0.00	107.00	(1) 0.92" DC	0.00	Inside
0.00	107.00	(1) 1/2" Fiber	0.00	Inside

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
0.00	107.00	(6) 3/4" DC			0.00	Inside					
0.00	107.00	(2) 3/8" Fiber			0.00	Inside					
0.00	107.00	(6) 7/8" Coax			0.00	Inside					
0.00	97.00	(12) 1 5/8" Coax			0.00	Inside					
0.00	97.00	(1) 1 5/8" Hybrid			0.00	Inside					

Shaft Section Properties

Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Increment Length: **2 (ft)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.3125	47.230	46.535	12941.9	25.24	151.14	71.7	539.7	0.0
2.00		0.3125	46.768	46.076	12563.4	24.98	149.66	72.0	529.1	315.1
4.00		0.3125	46.306	45.618	12192.3	24.72	148.18	72.3	518.6	312.0
6.00		0.3125	45.844	45.160	11828.7	24.46	146.70	72.6	508.2	308.9
8.00		0.3125	45.382	44.702	11472.3	24.20	145.22	72.9	497.9	305.8
10.00		0.3125	44.920	44.244	11123.1	23.94	143.74	73.2	487.7	302.7
12.00		0.3125	44.458	43.786	10781.1	23.67	142.27	73.6	477.6	299.5
14.00		0.3125	43.996	43.327	10446.2	23.41	140.79	73.9	467.7	296.4
16.00		0.3125	43.534	42.869	10118.3	23.15	139.31	74.2	457.8	293.3
18.00		0.3125	43.073	42.411	9797.3	22.89	137.83	74.5	448.0	290.2
20.00		0.3125	42.611	41.953	9483.2	22.63	136.35	74.8	438.3	287.1
22.00		0.3125	42.149	41.495	9175.9	22.37	134.88	75.1	428.8	284.0
24.00		0.3125	41.687	41.037	8875.3	22.11	133.40	75.4	419.3	280.8
26.00		0.3125	41.225	40.578	8581.3	21.85	131.92	75.7	410.0	277.7
28.00		0.3125	40.763	40.120	8293.9	21.59	130.44	76.0	400.8	274.6
30.00		0.3125	40.301	39.662	8013.0	21.33	128.96	76.3	391.6	271.5
32.00		0.3125	39.839	39.204	7738.5	21.07	127.48	76.6	382.6	268.4
34.00		0.3125	39.377	38.746	7470.3	20.81	126.01	76.9	373.7	265.2
36.00		0.3125	38.915	38.288	7208.5	20.55	124.53	77.2	364.8	262.1
38.00		0.3125	38.453	37.829	6952.8	20.29	123.05	77.5	356.1	259.0
40.00		0.3125	37.991	37.371	6703.2	20.03	121.57	77.8	347.5	255.9
42.00		0.3125	37.529	36.913	6459.6	19.77	120.09	78.2	339.0	252.8
44.00		0.3125	37.067	36.455	6222.1	19.50	118.62	78.5	330.6	249.7
46.00		0.3125	36.605	35.997	5990.4	19.24	117.14	78.8	322.3	246.5
48.00		0.3125	36.143	35.538	5764.6	18.98	115.66	79.1	314.1	243.4
48.50	Bot - Section 2	0.3125	36.028	35.424	5709.0	18.92	115.29	79.1	312.1	60.4
50.00		0.3125	35.681	35.080	5544.5	18.72	114.18	79.4	306.1	326.2
52.00		0.3125	35.219	34.622	5330.1	18.46	112.70	79.7	298.1	430.0
53.25	Top - Section 1	0.2500	35.431	27.915	4365.2	23.58	141.72	0.0	0.0	265.9
54.00		0.2500	35.258	27.777	4301.0	23.46	141.03	73.8	240.3	71.1
56.00		0.2500	34.796	27.411	4133.0	23.13	139.18	74.2	233.9	187.8
58.00		0.2500	34.334	27.044	3969.4	22.81	137.33	74.6	227.7	185.3
60.00		0.2500	33.872	26.678	3810.2	22.48	135.49	75.0	221.6	182.8
62.00		0.2500	33.410	26.311	3655.3	22.15	133.64	75.3	215.5	180.3
64.00		0.2500	32.948	25.945	3504.6	21.83	131.79	75.7	209.5	177.8
66.00		0.2500	32.486	25.578	3358.2	21.50	129.94	76.1	203.6	175.3
68.00		0.2500	32.024	25.212	3215.9	21.18	128.10	76.5	197.8	172.8
70.00		0.2500	31.562	24.845	3077.6	20.85	126.25	76.9	192.1	170.3
72.00		0.2500	31.100	24.479	2943.4	20.52	124.40	77.3	186.4	167.8
74.00		0.2500	30.638	24.112	2813.2	20.20	122.55	77.6	180.8	165.3
76.00		0.2500	30.176	23.746	2686.8	19.87	120.70	78.0	175.4	162.8
78.00		0.2500	29.714	23.379	2564.3	19.55	118.86	78.4	170.0	160.4
80.00		0.2500	29.252	23.012	2445.6	19.22	117.01	78.8	164.7	157.9
82.00		0.2500	28.790	22.646	2330.6	18.90	115.16	79.2	159.4	155.4
84.00		0.2500	28.328	22.279	2219.2	18.57	113.31	79.6	154.3	152.9
86.00		0.2500	27.866	21.913	2111.5	18.24	111.47	79.9	149.2	150.4
88.00		0.2500	27.405	21.546	2007.3	17.92	109.62	80.3	144.3	147.9
90.00		0.2500	26.943	21.180	1906.6	17.59	107.77	80.7	139.4	145.4
92.00		0.2500	26.481	20.813	1809.3	17.27	105.92	81.1	134.6	142.9
94.00		0.2500	26.019	20.447	1715.4	16.94	104.07	81.5	129.9	140.4

Increment Length: **2 (ft)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
96.00		0.2500	25.557	20.080	1624.8	16.61	102.23	81.9	125.2	137.9
97.00		0.2500	25.326	19.897	1580.7	16.45	101.30	82.1	122.9	68.0
98.00		0.2500	25.095	19.714	1537.4	16.29	100.38	82.2	120.7	67.4
98.75	Bot - Section 3	0.2500	24.922	19.576	1505.5	16.17	99.69	82.4	119.0	50.1
100.00		0.2500	24.633	19.347	1453.2	15.96	98.53	82.5	116.2	146.0
102.00	Top - Section 2	0.1875	24.546	14.496	1086.7	21.67	130.91	0.0	0.0	230.0
104.00		0.1875	24.084	14.221	1026.0	21.24	128.45	76.4	83.9	97.7
106.00		0.1875	23.622	13.946	967.6	20.80	125.98	76.9	80.7	95.8
107.00		0.1875	23.391	13.809	939.3	20.59	124.75	77.2	79.1	47.2
108.00		0.1875	23.160	13.671	911.5	20.37	123.52	77.4	77.5	46.8
110.00		0.1875	22.698	13.396	857.7	19.93	121.06	78.0	74.4	92.1
112.00		0.1875	22.236	13.121	805.9	19.50	118.59	78.5	71.4	90.2
114.00		0.1875	21.774	12.846	756.3	19.07	116.13	79.0	68.4	88.4
116.00		0.1875	21.312	12.571	708.8	18.63	113.67	79.5	65.5	86.5
118.00		0.1875	20.850	12.297	663.3	18.20	111.20	80.0	62.7	84.6
120.00		0.1875	20.388	12.022	619.8	17.76	108.74	80.5	59.9	82.7
122.00		0.1875	19.927	11.747	578.3	17.33	106.27	81.0	57.2	80.9
124.00		0.1875	19.465	11.472	538.6	16.89	103.81	81.5	54.5	79.0
126.00		0.1875	19.003	11.197	500.8	16.46	101.35	82.0	51.9	77.1
127.00		0.1875	18.772	11.059	482.6	16.24	100.12	82.3	50.6	37.9
128.00		0.1875	18.541	10.922	464.8	16.03	98.88	82.5	49.4	37.4
130.00		0.1875	18.079	10.647	430.6	15.59	96.42	82.5	46.9	73.4
132.00		0.1875	17.617	10.372	398.1	15.16	93.96	82.5	44.5	71.5
134.00		0.1875	17.155	10.097	367.3	14.72	91.49	82.5	42.2	69.7
136.00		0.1875	16.693	9.822	338.1	14.29	89.03	82.5	39.9	67.8
137.00		0.1875	16.462	9.685	324.1	14.07	87.80	82.5	38.8	33.2
138.00		0.1875	16.231	9.548	310.5	13.85	86.57	82.5	37.7	32.7
139.00		0.1875	16.000	9.410	297.3	13.64	85.33	82.5	36.6	32.3
										13342.3

Wind Loading - Shaft

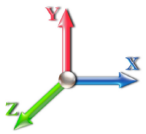
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 120 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 31

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	29.183	32.10	437.79	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
2.00		1.00	0.85	29.183	32.10	433.51	0.730	0.000	2.00	7.954	5.81	186.4	0.0	378.2
4.00		1.00	0.85	29.183	32.10	429.23	0.730	0.000	2.00	7.876	5.75	184.6	0.0	374.4
6.00		1.00	0.85	29.183	32.10	424.95	0.730	0.000	2.00	7.798	5.69	182.7	0.0	370.7
8.00		1.00	0.85	29.183	32.10	420.67	0.730	0.000	2.00	7.719	5.64	180.9	0.0	366.9
10.00		1.00	0.85	29.183	32.10	416.38	0.730	0.000	2.00	7.641	5.58	179.1	0.0	363.2
12.00		1.00	0.85	29.183	32.10	412.10	0.730	0.000	2.00	7.563	5.52	177.2	0.0	359.5
14.00		1.00	0.85	29.183	32.10	407.82	0.730	0.000	2.00	7.485	5.46	175.4	0.0	355.7
16.00		1.00	0.86	29.544	32.50	406.02	0.730	0.000	2.00	7.407	5.41	175.7	0.0	352.0
18.00		1.00	0.88	30.285	33.31	406.73	0.730	0.000	2.00	7.329	5.35	178.2	0.0	348.2
20.00		1.00	0.90	30.965	34.06	406.85	0.730	0.000	2.00	7.250	5.29	180.3	0.0	344.5
22.00		1.00	0.92	31.592	34.75	406.50	0.730	0.000	2.00	7.172	5.24	181.9	0.0	340.7
24.00		1.00	0.94	32.176	35.39	405.74	0.730	0.000	2.00	7.094	5.18	183.3	0.0	337.0
26.00		1.00	0.95	32.723	36.00	404.64	0.730	0.000	2.00	7.016	5.12	184.4	0.0	333.3
28.00		1.00	0.97	33.238	36.56	403.24	0.730	0.000	2.00	6.938	5.06	185.2	0.0	329.5
30.00		1.00	0.98	33.724	37.10	401.58	0.730	0.000	2.00	6.860	5.01	185.8	0.0	325.8
32.00		1.00	1.00	34.185	37.60	399.68	0.730	0.000	2.00	6.781	4.95	186.2	0.0	322.0
34.00		1.00	1.01	34.624	38.09	397.57	0.730	0.000	2.00	6.703	4.89	186.4	0.0	318.3
36.00		1.00	1.02	35.044	38.55	395.28	0.730	0.000	2.00	6.625	4.84	186.4	0.0	314.6
38.00		1.00	1.03	35.445	38.99	392.82	0.730	0.000	2.00	6.547	4.78	186.3	0.0	310.8
40.00		1.00	1.04	35.830	39.41	390.20	0.730	0.000	2.00	6.469	4.72	186.1	0.0	307.1
42.00		1.00	1.05	36.199	39.82	387.44	0.730	0.000	2.00	6.390	4.67	185.8	0.0	303.3
44.00		1.00	1.06	36.556	40.21	384.55	0.730	0.000	2.00	6.312	4.61	185.3	0.0	299.6
46.00		1.00	1.07	36.899	40.59	381.54	0.730	0.000	2.00	6.234	4.55	184.7	0.0	295.8
48.00		1.00	1.08	37.232	40.95	378.42	0.730	0.000	2.00	6.156	4.49	184.0	0.0	292.1
48.50	Bot - Section 2	1.00	1.09	37.313	41.04	377.62	0.730	0.000	0.50	1.527	1.11	45.7	0.0	72.4
50.00		1.00	1.09	37.553	41.31	375.19	0.730	0.000	1.50	4.614	3.37	139.1	0.0	391.4
52.00		1.00	1.10	37.864	41.65	371.86	0.730	0.000	2.00	6.084	4.44	185.0	0.0	516.0
53.25	Top - Section 1	1.00	1.11	38.054	41.86	369.74	0.730	0.000	1.25	3.763	2.75	115.0	0.0	319.1
54.00		1.00	1.11	38.166	41.98	373.75	0.730	0.000	0.75	2.243	1.64	68.7	0.0	85.3
56.00		1.00	1.12	38.460	42.31	370.26	0.730	0.000	2.00	5.928	4.33	183.1	0.0	225.4
58.00		1.00	1.13	38.745	42.62	366.70	0.730	0.000	2.00	5.850	4.27	182.0	0.0	222.4
60.00		1.00	1.14	39.022	42.92	363.06	0.730	0.000	2.00	5.771	4.21	180.8	0.0	219.4
62.00		1.00	1.14	39.293	43.22	359.35	0.730	0.000	2.00	5.693	4.16	179.6	0.0	216.4
64.00		1.00	1.15	39.556	43.51	355.57	0.730	0.000	2.00	5.615	4.10	178.4	0.0	213.4
66.00		1.00	1.16	39.813	43.79	351.72	0.730	0.000	2.00	5.537	4.04	177.0	0.0	210.4
68.00		1.00	1.17	40.064	44.07	347.81	0.730	0.000	2.00	5.459	3.98	175.6	0.0	207.4
70.00		1.00	1.17	40.309	44.34	343.84	0.730	0.000	2.00	5.381	3.93	174.2	0.0	204.4
72.00		1.00	1.18	40.549	44.60	339.81	0.730	0.000	2.00	5.302	3.87	172.7	0.0	201.4
74.00		1.00	1.19	40.784	44.86	335.73	0.730	0.000	2.00	5.224	3.81	171.1	0.0	198.4
76.00		1.00	1.19	41.013	45.11	331.60	0.730	0.000	2.00	5.146	3.76	169.5	0.0	195.4
78.00		1.00	1.20	41.238	45.36	327.42	0.730	0.000	2.00	5.068	3.70	167.8	0.0	192.4
80.00		1.00	1.21	41.459	45.60	323.19	0.730	0.000	2.00	4.990	3.64	166.1	0.0	189.4
82.00		1.00	1.21	41.675	45.84	318.91	0.730	0.000	2.00	4.912	3.59	164.4	0.0	186.4
84.00		1.00	1.22	41.887	46.08	314.59	0.730	0.000	2.00	4.833	3.53	162.6	0.0	183.4
86.00		1.00	1.23	42.095	46.30	310.23	0.730	0.000	2.00	4.755	3.47	160.7	0.0	180.5
88.00		1.00	1.23	42.299	46.53	305.82	0.730	0.000	2.00	4.677	3.41	158.9	0.0	177.5

Wind Loading - Shaft

Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 11

90.00		1.00	1.24	42.500	46.75	301.38	0.730	0.000	2.00	4.599	3.36	156.9	0.0	174.5
92.00		1.00	1.24	42.697	46.97	296.90	0.730	0.000	2.00	4.521	3.30	155.0	0.0	171.5
94.00		1.00	1.25	42.890	47.18	292.38	0.730	0.000	2.00	4.442	3.24	153.0	0.0	168.5
96.00		1.00	1.25	43.081	47.39	287.83	0.730	0.000	2.00	4.364	3.19	151.0	0.0	165.5
97.00	Appurtenance(s)	1.00	1.26	43.175	47.49	285.54	0.730	0.000	1.00	2.153	1.57	74.6	0.0	81.6
98.00		1.00	1.26	43.268	47.60	283.24	0.730	0.000	1.00	2.133	1.56	74.1	0.0	80.9
98.75	Bot - Section 3	1.00	1.26	43.338	47.67	281.51	0.730	0.000	0.75	1.587	1.16	55.2	0.0	60.2
100.00		1.00	1.27	43.453	47.80	278.62	0.730	0.000	1.25	2.660	1.94	92.8	0.0	175.2
102.00	Top - Section 2	1.00	1.27	43.634	48.00	273.96	0.730	0.000	2.00	4.193	3.06	146.9	0.0	276.0
104.00		1.00	1.28	43.813	48.19	273.54	0.730	0.000	2.00	4.115	3.00	144.8	0.0	117.3
106.00		1.00	1.28	43.989	48.39	268.83	0.730	0.000	2.00	4.037	2.95	142.6	0.0	115.0
107.00	Appurtenance(s)	1.00	1.28	44.076	48.48	266.46	0.730	0.000	1.00	1.989	1.45	70.4	0.0	56.7
108.00		1.00	1.29	44.163	48.58	264.09	0.730	0.000	1.00	1.970	1.44	69.8	0.0	56.1
110.00		1.00	1.29	44.334	48.77	259.32	0.730	0.000	2.00	3.880	2.83	138.1	0.0	110.5
112.00		1.00	1.30	44.502	48.95	254.53	0.730	0.000	2.00	3.802	2.78	135.9	0.0	108.3
114.00		1.00	1.30	44.668	49.13	249.71	0.730	0.000	2.00	3.724	2.72	133.6	0.0	106.0
116.00		1.00	1.31	44.832	49.32	244.86	0.730	0.000	2.00	3.646	2.66	131.3	0.0	103.8
118.00		1.00	1.31	44.994	49.49	239.98	0.730	0.000	2.00	3.568	2.60	128.9	0.0	101.5
120.00		1.00	1.32	45.153	49.67	235.08	0.730	0.000	2.00	3.490	2.55	126.5	0.0	99.3
122.00		1.00	1.32	45.310	49.84	230.15	0.730	0.000	2.00	3.411	2.49	124.1	0.0	97.1
124.00		1.00	1.32	45.466	50.01	225.20	0.730	0.000	2.00	3.333	2.43	121.7	0.0	94.8
126.00		1.00	1.33	45.619	50.18	220.23	0.730	0.000	2.00	3.255	2.38	119.2	0.0	92.6
127.00	Appurtenance(s)	1.00	1.33	45.695	50.26	217.73	0.730	0.000	1.00	1.598	1.17	58.6	0.0	45.4
128.00		1.00	1.33	45.771	50.35	215.23	0.730	0.000	1.00	1.579	1.15	58.0	0.0	44.9
130.00		1.00	1.34	45.920	50.51	210.21	0.730	0.000	2.00	3.099	2.26	114.3	0.0	88.1
132.00		1.00	1.34	46.068	50.68	205.17	0.730	0.000	2.00	3.021	2.20	111.7	0.0	85.8
134.00		1.00	1.35	46.214	50.84	200.11	0.730	0.000	2.00	2.942	2.15	109.2	0.0	83.6
136.00		1.00	1.35	46.359	50.99	195.02	0.730	0.000	2.00	2.864	2.09	106.6	0.0	81.3
137.00	Appurtenance(s)	1.00	1.35	46.430	51.07	192.47	0.730	0.000	1.00	1.403	1.02	52.3	0.0	39.8
138.00		1.00	1.35	46.501	51.15	189.92	0.730	0.000	1.00	1.383	1.01	51.7	0.0	39.3
139.00	Appurtenance(s)	1.00	1.36	46.572	51.23	187.36	0.730	0.000	1.00	1.364	1.00	51.0	0.0	38.7
								Totals:	**139.00**			**11,230.3**		**16,010.8**

Discrete Appurtenance Forces

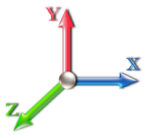
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 120 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 31

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	139.00	6' Lightning rod	1	46.572	51.229	1.00	1.00	0.38	7.80	0.000	0.000	19.47	0.00	0.00
2	137.00	4415 B25	3	46.430	51.073	0.40	0.80	2.23	166.68	0.000	0.000	114.00	0.00	0.00
3	137.00	KRY 112 144/1	3	46.430	51.073	0.40	0.80	0.49	39.60	0.000	0.000	25.13	0.00	0.00
4	137.00	SDX1926Q-43	3	46.430	51.073	0.40	0.80	0.46	25.20	0.000	0.000	23.29	0.00	0.00
5	137.00	AIR6449 B41	3	46.430	51.073	0.57	0.80	9.63	370.80	0.000	0.000	491.71	0.00	0.00
6	137.00	Air 32	3	46.430	51.073	0.70	0.80	13.59	475.92	0.000	0.000	694.23	0.00	0.00
7	137.00	4449 B71+B85	3	46.430	51.073	0.54	0.80	2.65	252.00	0.000	0.000	135.51	0.00	0.00
8	137.00	RDS-272	3	46.430	51.073	0.56	0.75	16.88	1440.00	0.000	0.000	861.86	0.00	0.00
9	137.00	RFS	3	46.430	51.073	0.56	0.80	34.00	460.80	0.000	0.000	1736.65	0.00	0.00
10	127.00	Commscope	3	45.695	50.265	0.59	0.80	21.74	254.88	0.000	0.000	1092.67	0.00	0.00
11	127.00	(1) 8'x2.875" mount pipe	3	45.695	50.265	1.00	1.00	6.90	167.04	0.000	0.000	346.83	0.00	0.00
12	127.00	Collar Mount (3-Sided)	1	45.695	50.265	1.00	1.00	3.50	440.40	0.000	0.000	175.93	0.00	0.00
13	127.00	Fujitsu TA08025-B605 -	3	45.695	50.265	0.54	0.80	3.15	270.00	0.000	0.000	158.42	0.00	0.00
14	127.00	Fujitsu TA08025-B604 -	3	45.695	50.265	0.54	0.80	3.15	230.04	0.000	0.000	158.42	0.00	0.00
15	127.00	Raycap	1	45.695	50.265	0.80	0.80	1.61	26.28	0.000	0.000	80.83	0.00	0.00
16	107.00	RRUS 4449 B5/B12	3	44.076	48.484	0.38	0.75	1.86	306.00	0.000	0.000	90.00	0.00	0.00
17	107.00	4426 B66	3	44.076	48.484	0.50	0.75	1.73	190.80	0.000	0.000	84.05	0.00	0.00
18	107.00	DTMABP7819VG12A	3	44.076	48.484	0.38	0.75	1.28	69.12	0.000	0.000	62.18	0.00	0.00
19	107.00	RRUS 4478 B14	3	44.076	48.484	0.50	0.75	2.49	213.84	0.000	0.000	120.60	0.00	0.00
20	107.00	AIR 6449 B77D	3	44.076	48.484	0.64	0.75	7.90	293.76	0.000	0.000	382.96	0.00	0.00
21	107.00	DMP65R-BU6DA	3	44.076	48.484	0.54	0.75	20.59	285.84	0.000	0.000	998.29	0.00	0.00
22	107.00	RMQLP-4120-H10	1	44.076	48.484	1.00	1.00	42.00	3899.29	0.000	0.000	2036.32	0.00	0.00
23	107.00	RRUS 4415 B25	3	44.076	48.484	0.50	0.75	2.47	165.60	0.000	0.000	119.87	0.00	0.00
24	107.00	DBC20056F1V1	3	44.076	48.484	0.38	0.75	0.46	25.20	0.000	0.000	22.36	0.00	0.00
25	107.00	RRUS A2	3	44.076	48.484	0.50	0.75	2.80	76.32	0.000	0.000	135.95	0.00	0.00
26	107.00	RRUS-32	3	44.076	48.484	0.50	0.75	5.83	277.20	0.000	0.000	282.86	0.00	0.00
27	107.00	DC6-48-60-18-8F	2	44.076	48.484	0.38	0.75	1.10	76.32	0.000	0.000	53.45	0.00	0.00
28	107.00	EPBQ-652L8H6-L2	3	44.076	48.484	0.64	0.75	18.47	262.08	0.000	0.000	895.73	0.00	0.00
29	107.00	DC9-48-60-24-8C-EV	1	44.076	48.484	0.38	0.75	0.43	31.44	0.000	0.000	20.73	0.00	0.00
30	97.00	Samsung VZS01	3	43.175	47.493	0.55	0.80	7.12	313.56	0.000	0.000	338.19	0.00	0.00
31	97.00	T-Arms	3	43.175	47.493	0.56	0.75	13.50	1260.00	0.000	0.000	641.15	0.00	0.00
32	97.00	JMA MX06FRO660-03	6	43.175	47.493	0.70	0.80	41.22	331.20	0.000	0.000	1957.51	0.00	0.00
33	97.00	Commscope	1	43.175	47.493	0.40	0.80	2.24	24.00	0.000	0.000	106.38	0.00	0.00
34	97.00	Samsung B5/B13	3	43.175	47.493	0.54	0.80	3.02	303.84	0.000	0.000	143.57	0.00	0.00
35	97.00	Samsung B2/B66A	3	43.175	47.493	0.54	0.80	3.02	253.08	0.000	0.000	143.57	0.00	0.00
							Totals:		**13,285.93**			**14,750.63**		

Total Applied Force Summary

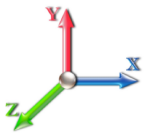
Structure:	CT13549-S-SBA		**Code:**	TIA-222-H	10/4/2022
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 13

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 120 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 31

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
2.00		186.40	464.09	0.00	0.00
4.00		184.56	460.35	0.00	0.00
6.00		182.73	456.61	0.00	0.00
8.00		180.90	452.87	0.00	0.00
10.00		179.07	449.12	0.00	0.00
12.00		177.24	445.38	0.00	0.00
14.00		175.40	441.64	0.00	0.00
16.00		175.71	437.90	0.00	0.00
18.00		178.23	434.16	0.00	0.00
20.00		180.28	430.42	0.00	0.00
22.00		181.95	426.67	0.00	0.00
24.00		183.29	422.93	0.00	0.00
26.00		184.35	419.19	0.00	0.00
28.00		185.17	415.45	0.00	0.00
30.00		185.76	411.71	0.00	0.00
32.00		186.15	407.97	0.00	0.00
34.00		186.37	404.22	0.00	0.00
36.00		186.43	400.48	0.00	0.00
38.00		186.34	396.74	0.00	0.00
40.00		186.11	393.00	0.00	0.00
42.00		185.76	389.26	0.00	0.00
44.00		185.29	385.51	0.00	0.00
46.00		184.72	381.77	0.00	0.00
48.00		184.04	378.03	0.00	0.00
48.50		45.75	93.92	0.00	0.00
50.00		139.15	455.84	0.00	0.00
52.00		184.99	601.89	0.00	0.00
53.25		114.98	372.76	0.00	0.00
54.00		68.75	117.50	0.00	0.00
56.00		183.07	311.28	0.00	0.00
58.00		181.99	308.29	0.00	0.00
60.00		180.85	305.30	0.00	0.00
62.00		179.63	302.30	0.00	0.00
64.00		178.36	299.31	0.00	0.00
66.00		177.02	296.32	0.00	0.00
68.00		175.62	293.32	0.00	0.00
70.00		174.16	290.33	0.00	0.00
72.00		172.65	287.34	0.00	0.00
74.00		171.09	284.34	0.00	0.00
76.00		169.48	281.35	0.00	0.00
78.00		167.82	278.36	0.00	0.00
80.00		166.11	275.36	0.00	0.00
82.00		164.36	272.37	0.00	0.00
84.00		162.57	269.37	0.00	0.00
86.00		160.73	266.38	0.00	0.00
88.00		158.86	263.39	0.00	0.00

Total Applied Force Summary

Structure:	CT13549-S-SBA		**Code:**	TIA-222-H	10/4/2022
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 14

Tower Engineering Solutions

90.00		156.94	260.39	0.00	0.00
92.00		154.99	257.40	0.00	0.00
94.00		153.00	254.41	0.00	0.00
96.00		150.98	251.41	0.00	0.00
97.00	(19) attachments	3405.01	2610.26	0.00	0.00
98.00		74.12	107.54	0.00	0.00
98.75		55.23	80.16	0.00	0.00
100.00		92.83	208.50	0.00	0.00
102.00		146.92	329.35	0.00	0.00
104.00		144.77	170.60	0.00	0.00
106.00		142.59	168.35	0.00	0.00
107.00	(37) attachments	5375.73	6256.15	0.00	0.00
108.00		69.85	75.33	0.00	0.00
110.00		138.14	148.98	0.00	0.00
112.00		135.88	146.74	0.00	0.00
114.00		133.58	144.49	0.00	0.00
116.00		131.25	142.25	0.00	0.00
118.00		128.90	140.00	0.00	0.00
120.00		126.53	137.76	0.00	0.00
122.00		124.12	135.51	0.00	0.00
124.00		121.69	133.27	0.00	0.00
126.00		119.24	131.02	0.00	0.00
127.00	(14) attachments	2071.73	1453.31	0.00	0.00
128.00		58.02	61.72	0.00	0.00
130.00		114.26	121.75	0.00	0.00
132.00		111.74	119.51	0.00	0.00
134.00		109.19	117.26	0.00	0.00
136.00		106.62	115.02	0.00	0.00
137.00	(24) attachments	4134.68	3287.67	0.00	0.00
138.00		51.65	39.59	0.00	0.00
139.00	(1) attachments	70.47	46.83	0.00	0.00
	Totals:	**25,980.89**	**34,284.63**	**0.00**	**0.00**

Linear Appurtenance Segment Forces (Factored)

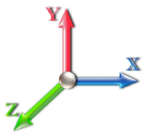
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 120 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 31

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
2.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.183	0.00	0.66
4.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.183	0.00	0.66
6.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.183	0.00	0.66
8.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.183	0.00	0.66
10.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.183	0.00	0.66
12.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.183	0.00	0.66
14.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.183	0.00	0.66
16.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.544	0.00	0.66
18.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	30.285	0.00	0.66
20.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	30.965	0.00	0.66
22.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	31.592	0.00	0.66
24.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	32.176	0.00	0.66
26.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	32.723	0.00	0.66
28.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	33.238	0.00	0.66
30.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	33.724	0.00	0.66
32.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	34.185	0.00	0.66
34.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	34.624	0.00	0.66
36.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	35.044	0.00	0.66
38.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	35.445	0.00	0.66
40.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	35.830	0.00	0.66
42.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	36.199	0.00	0.66
44.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	36.556	0.00	0.66
46.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	36.899	0.00	0.66
48.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	37.232	0.00	0.66
48.50	Safety Cable	Yes	0.50	0.000	0.00	0.00	0.00	0.000	0.000	37.313	0.00	0.16
50.00	Safety Cable	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	37.553	0.00	0.49
52.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	37.864	0.00	0.66
53.25	Safety Cable	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	38.054	0.00	0.41
54.00	Safety Cable	Yes	0.75	0.000	0.00	0.00	0.00	0.000	0.000	38.166	0.00	0.25
56.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	38.460	0.00	0.66
58.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	38.745	0.00	0.66
60.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	39.022	0.00	0.66
62.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	39.293	0.00	0.66
64.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	39.556	0.00	0.66
66.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	39.813	0.00	0.66
68.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	40.064	0.00	0.66
70.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	40.309	0.00	0.66
72.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	40.549	0.00	0.66
74.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	40.784	0.00	0.66
76.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	41.013	0.00	0.66
78.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	41.238	0.00	0.66
80.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	41.459	0.00	0.66
82.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	41.675	0.00	0.66
84.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	41.887	0.00	0.66
86.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	42.095	0.00	0.66
88.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	42.299	0.00	0.66
90.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	42.500	0.00	0.66

Linear Appurtenance Segment Forces (Factored)

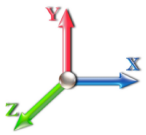
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 120 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 31

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
92.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	42.697	0.00	0.66
94.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	42.890	0.00	0.66
96.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	43.081	0.00	0.66
97.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	43.175	0.00	0.33
98.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	43.268	0.00	0.33
98.75	Safety Cable	Yes	0.75	0.000	0.00	0.00	0.00	0.000	0.000	43.338	0.00	0.25
100.00	Safety Cable	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	43.453	0.00	0.41
102.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	43.634	0.00	0.66
104.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	43.813	0.00	0.66
106.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	43.989	0.00	0.66
107.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	44.076	0.00	0.33
108.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	44.163	0.00	0.33
110.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	44.334	0.00	0.66
112.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	44.502	0.00	0.66
114.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	44.668	0.00	0.66
116.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	44.832	0.00	0.66
118.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	44.994	0.00	0.66
120.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	45.153	0.00	0.66
122.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	45.310	0.00	0.66
124.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	45.466	0.00	0.66
126.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	45.619	0.00	0.66
127.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	45.695	0.00	0.33
128.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	45.771	0.00	0.33
130.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	45.920	0.00	0.66
132.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	46.068	0.00	0.66
134.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	46.214	0.00	0.66
136.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	46.359	0.00	0.66
137.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	46.430	0.00	0.33
138.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	46.501	0.00	0.33
139.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	46.572	0.00	0.33
									Totals:		**0.0**	**45.5**

Calculated Forces

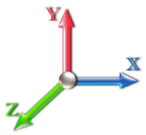
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 120 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 31

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-34.26	-26.02	0.00	-2582.0	0.00	2582.01	3003.53	816.68	3179.09	2902.93	0.00	0.000	0.000	0.902
2.00	-33.74	-25.89	0.00	-2529.9	0.00	2529.98	2986.67	808.64	3116.80	2858.03	0.02	-0.112	0.000	0.898
4.00	-33.23	-25.78	0.00	-2478.1	0.00	2478.19	2969.56	800.60	3055.12	2813.21	0.10	-0.226	0.000	0.893
6.00	-32.72	-25.66	0.00	-2426.6	0.00	2426.64	2952.19	792.56	2994.06	2768.48	0.22	-0.340	0.000	0.889
8.00	-32.22	-25.54	0.00	-2375.3	0.00	2375.33	2934.57	784.52	2933.61	2723.85	0.38	-0.456	0.000	0.884
10.00	-31.72	-25.42	0.00	-2324.2	0.00	2324.26	2916.70	776.48	2873.79	2679.32	0.60	-0.572	0.000	0.879
12.00	-31.23	-25.30	0.00	-2273.4	0.00	2273.43	2898.58	768.44	2814.57	2634.90	0.87	-0.690	0.000	0.875
14.00	-30.74	-25.18	0.00	-2222.8	0.00	2222.82	2880.20	760.40	2755.98	2590.61	1.18	-0.809	0.000	0.870
16.00	-30.25	-25.07	0.00	-2172.4	0.00	2172.46	2861.57	752.36	2698.00	2546.44	1.55	-0.928	0.000	0.865
18.00	-29.76	-24.94	0.00	-2122.3	0.00	2122.33	2842.69	744.31	2640.64	2502.41	1.96	-1.049	0.000	0.860
20.00	-29.28	-24.82	0.00	-2072.4	0.00	2072.45	2823.56	736.27	2583.89	2458.52	2.43	-1.171	0.000	0.854
22.00	-28.81	-24.69	0.00	-2022.8	0.00	2022.81	2804.17	728.23	2527.76	2414.78	2.94	-1.294	0.000	0.849
24.00	-28.34	-24.56	0.00	-1973.4	0.00	1973.44	2784.53	720.19	2472.25	2371.19	3.51	-1.418	0.000	0.844
26.00	-27.87	-24.42	0.00	-1924.3	0.00	1924.33	2764.64	712.15	2417.35	2327.77	4.13	-1.543	0.000	0.838
28.00	-27.41	-24.29	0.00	-1875.4	0.00	1875.49	2744.49	704.11	2363.07	2284.52	4.81	-1.669	0.000	0.832
30.00	-26.95	-24.15	0.00	-1826.9	0.00	1826.92	2724.09	696.07	2309.41	2241.44	5.53	-1.796	0.000	0.826
32.00	-26.49	-24.01	0.00	-1778.6	0.00	1778.62	2703.44	688.03	2256.36	2198.55	6.31	-1.924	0.000	0.820
34.00	-26.04	-23.87	0.00	-1730.6	0.00	1730.61	2682.53	679.99	2203.93	2155.86	7.15	-2.053	0.000	0.814
36.00	-25.59	-23.72	0.00	-1682.8	0.00	1682.88	2661.38	671.95	2152.11	2113.36	8.03	-2.183	0.000	0.807
38.00	-25.15	-23.58	0.00	-1635.4	0.00	1635.43	2639.97	663.90	2100.91	2071.07	8.98	-2.314	0.000	0.800
40.00	-24.71	-23.43	0.00	-1588.2	0.00	1588.28	2618.30	655.86	2050.33	2029.00	9.97	-2.445	0.000	0.794
42.00	-24.27	-23.29	0.00	-1541.4	0.00	1541.41	2596.39	647.82	2000.36	1987.14	11.03	-2.578	0.000	0.786
44.00	-23.84	-23.14	0.00	-1494.8	0.00	1494.83	2574.22	639.78	1951.01	1945.52	12.14	-2.712	0.000	0.779
46.00	-23.42	-22.99	0.00	-1448.5	0.00	1448.55	2551.80	631.74	1902.28	1904.13	13.30	-2.847	0.000	0.771
48.00	-23.02	-22.82	0.00	-1402.5	0.00	1402.56	2529.12	623.70	1854.16	1862.98	14.52	-2.982	0.000	0.763
48.50	-22.90	-22.80	0.00	-1391.1	0.00	1391.15	2523.41	621.69	1842.23	1852.74	14.84	-3.016	0.000	0.761
50.00	-22.40	-22.68	0.00	-1356.9	0.00	1356.95	2506.19	615.66	1806.66	1822.09	15.80	-3.119	0.000	0.755
52.00	-21.77	-22.51	0.00	-1311.5	0.00	1311.58	2483.01	607.62	1759.78	1781.45	17.14	-3.256	0.000	0.746
53.25	-21.37	-22.40	0.00	-1283.4	0.00	1283.45	1850.79	489.91	1429.99	1340.72	18.00	-3.343	0.000	0.971
54.00	-21.22	-22.36	0.00	-1266.6	0.00	1266.65	1845.26	487.50	1415.95	1330.10	18.53	-3.395	0.000	0.966
56.00	-20.86	-22.22	0.00	-1221.9	0.00	1221.92	1830.37	481.06	1378.82	1301.83	19.99	-3.560	0.000	0.952
58.00	-20.50	-22.08	0.00	-1177.4	0.00	1177.48	1815.22	474.63	1342.20	1273.66	21.51	-3.725	0.000	0.938
60.00	-20.14	-21.94	0.00	-1133.3	0.00	1133.32	1799.82	468.20	1306.06	1245.62	23.11	-3.890	0.000	0.923
62.00	-19.79	-21.80	0.00	-1089.4	0.00	1089.44	1784.16	461.76	1270.42	1217.69	24.77	-4.056	0.000	0.908
64.00	-19.44	-21.65	0.00	-1045.8	0.00	1045.85	1768.26	455.33	1235.27	1189.90	26.51	-4.223	0.000	0.892
66.00	-19.09	-21.51	0.00	-1002.5	0.00	1002.55	1752.10	448.90	1200.61	1162.24	28.31	-4.389	0.000	0.876
68.00	-18.75	-21.37	0.00	-959.53	0.00	959.53	1735.69	442.47	1166.45	1134.73	30.18	-4.555	0.000	0.859
70.00	-18.42	-21.22	0.00	-916.80	0.00	916.80	1719.02	436.03	1132.78	1107.37	32.13	-4.721	0.000	0.841
72.00	-18.08	-21.08	0.00	-874.36	0.00	874.36	1702.10	429.60	1099.60	1080.16	34.14	-4.887	0.000	0.823
74.00	-17.76	-20.93	0.00	-832.21	0.00	832.21	1684.93	423.17	1066.92	1053.13	36.22	-5.052	0.000	0.803
76.00	-17.43	-20.79	0.00	-790.34	0.00	790.34	1667.51	416.73	1034.73	1026.26	38.37	-5.216	0.000	0.783
78.00	-17.11	-20.65	0.00	-748.76	0.00	748.76	1649.83	410.30	1003.03	999.58	40.58	-5.379	0.000	0.762
80.00	-16.80	-20.50	0.00	-707.47	0.00	707.47	1631.90	403.87	971.82	973.09	42.87	-5.540	0.000	0.740
82.00	-16.48	-20.36	0.00	-666.47	0.00	666.47	1613.72	397.44	941.11	946.79	45.22	-5.700	0.000	0.717
84.00	-16.18	-20.21	0.00	-625.76	0.00	625.76	1595.28	391.00	910.89	920.69	47.64	-5.858	0.000	0.692
86.00	-15.88	-20.07	0.00	-585.33	0.00	585.33	1576.59	384.57	881.17	894.80	50.12	-6.013	0.000	0.667
88.00	-15.58	-19.92	0.00	-545.20	0.00	545.20	1557.65	378.14	851.94	869.13	52.67	-6.165	0.000	0.640
90.00	-15.29	-19.78	0.00	-505.35	0.00	505.35	1538.46	371.71	823.20	843.69	55.28	-6.314	0.000	0.612

Calculated Forces

Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 18

Tower Engineering Solutions

92.00	-15.00	-19.63	0.00	-465.80	0.00	465.80	1519.01	365.27	794.95	818.47	57.95	-6.459	0.000	0.582
94.00	-14.72	-19.49	0.00	-426.54	0.00	426.54	1499.31	358.84	767.20	793.50	60.68	-6.600	0.000	0.550
96.00	-14.45	-19.33	0.00	-387.56	0.00	387.56	1479.36	352.41	739.94	768.77	63.47	-6.735	0.000	0.517
97.00	-12.24	-15.66	0.00	-368.23	0.00	368.23	1469.29	349.19	726.49	756.50	64.89	-6.801	0.000	0.497
98.00	-12.13	-15.58	0.00	-352.57	0.00	352.57	1459.16	345.97	713.17	744.29	66.32	-6.866	0.000	0.484
98.75	-12.04	-15.53	0.00	-340.89	0.00	340.89	1451.52	343.56	703.26	735.18	67.40	-6.914	0.000	0.474
100.00	-11.82	-15.44	0.00	-321.47	0.00	321.47	1437.39	339.54	686.90	719.42	69.21	-6.992	0.000	0.457
102.00	-11.48	-15.27	0.00	-290.60	0.00	290.60	990.34	254.40	514.14	496.43	72.16	-7.112	0.000	0.601
104.00	-11.29	-15.13	0.00	-260.06	0.00	260.06	978.09	249.58	494.83	480.92	75.16	-7.226	0.000	0.556
106.00	-11.12	-14.99	0.00	-229.79	0.00	229.79	965.60	244.75	475.88	465.53	78.21	-7.362	0.000	0.509
107.00	-5.59	-8.86	0.00	-214.80	0.00	214.80	959.26	242.34	466.55	457.88	79.75	-7.427	0.000	0.476
108.00	-5.51	-8.79	0.00	-205.95	0.00	205.95	952.85	239.93	457.30	450.26	81.31	-7.491	0.000	0.465
110.00	-5.37	-8.64	0.00	-188.37	0.00	188.37	939.85	235.10	439.10	435.11	84.47	-7.614	0.000	0.440
112.00	-5.22	-8.50	0.00	-171.08	0.00	171.08	926.60	230.28	421.26	420.10	87.67	-7.733	0.000	0.414
114.00	-5.08	-8.36	0.00	-154.08	0.00	154.08	913.09	225.45	403.79	405.23	90.93	-7.848	0.000	0.387
116.00	-4.94	-8.22	0.00	-137.37	0.00	137.37	899.33	220.63	386.70	390.51	94.23	-7.958	0.000	0.359
118.00	-4.81	-8.08	0.00	-120.93	0.00	120.93	885.32	215.80	369.97	375.94	97.57	-8.061	0.000	0.329
120.00	-4.68	-7.94	0.00	-104.77	0.00	104.77	871.06	210.98	353.61	361.54	100.96	-8.158	0.000	0.297
122.00	-4.55	-7.81	0.00	-88.89	0.00	88.89	856.54	206.16	337.63	347.31	104.39	-8.247	0.000	0.263
124.00	-4.42	-7.67	0.00	-73.28	0.00	73.28	841.77	201.33	322.01	333.26	107.85	-8.327	0.000	0.227
126.00	-4.31	-7.54	0.00	-57.93	0.00	57.93	826.75	196.51	306.76	319.39	111.34	-8.396	0.000	0.188
127.00	-3.17	-5.28	0.00	-50.39	0.00	50.39	819.14	194.09	299.27	312.53	113.10	-8.427	0.000	0.166
128.00	-3.11	-5.21	0.00	-45.11	0.00	45.11	811.45	191.68	291.88	305.71	114.86	-8.455	0.000	0.152
130.00	-3.01	-5.09	0.00	-34.68	0.00	34.68	791.03	186.86	277.37	290.44	118.40	-8.504	0.000	0.124
132.00	-2.90	-4.96	0.00	-24.51	0.00	24.51	770.61	182.03	263.24	275.56	121.96	-8.543	0.000	0.093
134.00	-2.80	-4.84	0.00	-14.59	0.00	14.59	750.18	177.21	249.47	261.07	125.53	-8.571	0.000	0.060
136.00	-2.70	-4.71	0.00	-4.92	0.00	4.92	729.76	172.38	236.07	246.97	129.11	-8.586	0.000	0.024
137.00	-0.07	-0.13	0.00	-0.21	0.00	0.21	719.55	169.97	229.51	240.07	130.90	-8.588	0.000	0.001
138.00	-0.04	-0.08	0.00	-0.08	0.00	0.08	709.33	167.56	223.04	233.27	132.69	-8.588	0.000	0.000
139.00	0.00	-0.07	0.00	0.00	0.00	0.00	699.12	165.15	216.66	226.56	134.48	-8.588	0.000	0.000

Wind Loading - Shaft

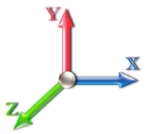
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 120 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 31

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	29.183	32.10	437.79	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
2.00		1.00	0.85	29.183	32.10	433.51	0.730	0.000	2.00	7.954	5.81	186.4	0.0	283.6
4.00		1.00	0.85	29.183	32.10	429.23	0.730	0.000	2.00	7.876	5.75	184.6	0.0	280.8
6.00		1.00	0.85	29.183	32.10	424.95	0.730	0.000	2.00	7.798	5.69	182.7	0.0	278.0
8.00		1.00	0.85	29.183	32.10	420.67	0.730	0.000	2.00	7.719	5.64	180.9	0.0	275.2
10.00		1.00	0.85	29.183	32.10	416.38	0.730	0.000	2.00	7.641	5.58	179.1	0.0	272.4
12.00		1.00	0.85	29.183	32.10	412.10	0.730	0.000	2.00	7.563	5.52	177.2	0.0	269.6
14.00		1.00	0.85	29.183	32.10	407.82	0.730	0.000	2.00	7.485	5.46	175.4	0.0	266.8
16.00		1.00	0.86	29.544	32.50	406.02	0.730	0.000	2.00	7.407	5.41	175.7	0.0	264.0
18.00		1.00	0.88	30.285	33.31	406.73	0.730	0.000	2.00	7.329	5.35	178.2	0.0	261.2
20.00		1.00	0.90	30.965	34.06	406.85	0.730	0.000	2.00	7.250	5.29	180.3	0.0	258.4
22.00		1.00	0.92	31.592	34.75	406.50	0.730	0.000	2.00	7.172	5.24	181.9	0.0	255.6
24.00		1.00	0.94	32.176	35.39	405.74	0.730	0.000	2.00	7.094	5.18	183.3	0.0	252.8
26.00		1.00	0.95	32.723	36.00	404.64	0.730	0.000	2.00	7.016	5.12	184.4	0.0	249.9
28.00		1.00	0.97	33.238	36.56	403.24	0.730	0.000	2.00	6.938	5.06	185.2	0.0	247.1
30.00		1.00	0.98	33.724	37.10	401.58	0.730	0.000	2.00	6.860	5.01	185.8	0.0	244.3
32.00		1.00	1.00	34.185	37.60	399.68	0.730	0.000	2.00	6.781	4.95	186.2	0.0	241.5
34.00		1.00	1.01	34.624	38.09	397.57	0.730	0.000	2.00	6.703	4.89	186.4	0.0	238.7
36.00		1.00	1.02	35.044	38.55	395.28	0.730	0.000	2.00	6.625	4.84	186.4	0.0	235.9
38.00		1.00	1.03	35.445	38.99	392.82	0.730	0.000	2.00	6.547	4.78	186.3	0.0	233.1
40.00		1.00	1.04	35.830	39.41	390.20	0.730	0.000	2.00	6.469	4.72	186.1	0.0	230.3
42.00		1.00	1.05	36.199	39.82	387.44	0.730	0.000	2.00	6.390	4.67	185.8	0.0	227.5
44.00		1.00	1.06	36.556	40.21	384.55	0.730	0.000	2.00	6.312	4.61	185.3	0.0	224.7
46.00		1.00	1.07	36.899	40.59	381.54	0.730	0.000	2.00	6.234	4.55	184.7	0.0	221.9
48.00		1.00	1.08	37.232	40.95	378.42	0.730	0.000	2.00	6.156	4.49	184.0	0.0	219.1
48.50	Bot - Section 2	1.00	1.09	37.313	41.04	377.62	0.730	0.000	0.50	1.527	1.11	45.7	0.0	54.3
50.00		1.00	1.09	37.553	41.31	375.19	0.730	0.000	1.50	4.614	3.37	139.1	0.0	293.5
52.00		1.00	1.10	37.864	41.65	371.86	0.730	0.000	2.00	6.084	4.44	185.0	0.0	387.0
53.25	Top - Section 1	1.00	1.11	38.054	41.86	369.74	0.730	0.000	1.25	3.763	2.75	115.0	0.0	239.3
54.00		1.00	1.11	38.166	41.98	373.75	0.730	0.000	0.75	2.243	1.64	68.7	0.0	64.0
56.00		1.00	1.12	38.460	42.31	370.26	0.730	0.000	2.00	5.928	4.33	183.1	0.0	169.0
58.00		1.00	1.13	38.745	42.62	366.70	0.730	0.000	2.00	5.850	4.27	182.0	0.0	166.8
60.00		1.00	1.14	39.022	42.92	363.06	0.730	0.000	2.00	5.771	4.21	180.8	0.0	164.5
62.00		1.00	1.14	39.293	43.22	359.35	0.730	0.000	2.00	5.693	4.16	179.6	0.0	162.3
64.00		1.00	1.15	39.556	43.51	355.57	0.730	0.000	2.00	5.615	4.10	178.4	0.0	160.0
66.00		1.00	1.16	39.813	43.79	351.72	0.730	0.000	2.00	5.537	4.04	177.0	0.0	157.8
68.00		1.00	1.17	40.064	44.07	347.81	0.730	0.000	2.00	5.459	3.98	175.6	0.0	155.5
70.00		1.00	1.17	40.309	44.34	343.84	0.730	0.000	2.00	5.381	3.93	174.2	0.0	153.3
72.00		1.00	1.18	40.549	44.60	339.81	0.730	0.000	2.00	5.302	3.87	172.7	0.0	151.1
74.00		1.00	1.19	40.784	44.86	335.73	0.730	0.000	2.00	5.224	3.81	171.1	0.0	148.8
76.00		1.00	1.19	41.013	45.11	331.60	0.730	0.000	2.00	5.146	3.76	169.5	0.0	146.6
78.00		1.00	1.20	41.238	45.36	327.42	0.730	0.000	2.00	5.068	3.70	167.8	0.0	144.3
80.00		1.00	1.21	41.459	45.60	323.19	0.730	0.000	2.00	4.990	3.64	166.1	0.0	142.1
82.00		1.00	1.21	41.675	45.84	318.91	0.730	0.000	2.00	4.912	3.59	164.4	0.0	139.8
84.00		1.00	1.22	41.887	46.08	314.59	0.730	0.000	2.00	4.833	3.53	162.6	0.0	137.6
86.00		1.00	1.23	42.095	46.30	310.23	0.730	0.000	2.00	4.755	3.47	160.7	0.0	135.3
88.00		1.00	1.23	42.299	46.53	305.82	0.730	0.000	2.00	4.677	3.41	158.9	0.0	133.1

Wind Loading - Shaft

Structure: CT13549-S-SBA | **Code:** TIA-222-H | 10/4/2022
Site Name: Danbury 1 | **Exposure:** C
Height: 139.00 (ft) | **Crest Height:** 0.00
Base Elev: 0.000 (ft) | **Site Class:** D - Stiff Soil
Gh: 1.1 | **Topography:** 1 | **Struct Class:** II | Page: 20

90.00		1.00	1.24	42.500	46.75	301.38	0.730	0.000	2.00	4.599	3.36	156.9	0.0	130.8
92.00		1.00	1.24	42.697	46.97	296.90	0.730	0.000	2.00	4.521	3.30	155.0	0.0	128.6
94.00		1.00	1.25	42.890	47.18	292.38	0.730	0.000	2.00	4.442	3.24	153.0	0.0	126.4
96.00		1.00	1.25	43.081	47.39	287.83	0.730	0.000	2.00	4.364	3.19	151.0	0.0	124.1
97.00	Appurtenance(s)	1.00	1.26	43.175	47.49	285.54	0.730	0.000	1.00	2.153	1.57	74.6	0.0	61.2
98.00		1.00	1.26	43.268	47.60	283.24	0.730	0.000	1.00	2.133	1.56	74.1	0.0	60.7
98.75	Bot - Section 3	1.00	1.26	43.338	47.67	281.51	0.730	0.000	0.75	1.587	1.16	55.2	0.0	45.1
100.00		1.00	1.27	43.453	47.80	278.62	0.730	0.000	1.25	2.660	1.94	92.8	0.0	131.4
102.00	Top - Section 2	1.00	1.27	43.634	48.00	273.96	0.730	0.000	2.00	4.193	3.06	146.9	0.0	207.0
104.00		1.00	1.28	43.813	48.19	273.54	0.730	0.000	2.00	4.115	3.00	144.8	0.0	87.9
106.00		1.00	1.28	43.989	48.39	268.83	0.730	0.000	2.00	4.037	2.95	142.6	0.0	86.3
107.00	Appurtenance(s)	1.00	1.28	44.076	48.48	266.46	0.730	0.000	1.00	1.989	1.45	70.4	0.0	42.5
108.00		1.00	1.29	44.163	48.58	264.09	0.730	0.000	1.00	1.970	1.44	69.8	0.0	42.1
110.00		1.00	1.29	44.334	48.77	259.32	0.730	0.000	2.00	3.880	2.83	138.1	0.0	82.9
112.00		1.00	1.30	44.502	48.95	254.53	0.730	0.000	2.00	3.802	2.78	135.9	0.0	81.2
114.00		1.00	1.30	44.668	49.13	249.71	0.730	0.000	2.00	3.724	2.72	133.6	0.0	79.5
116.00		1.00	1.31	44.832	49.32	244.86	0.730	0.000	2.00	3.646	2.66	131.3	0.0	77.8
118.00		1.00	1.31	44.994	49.49	239.98	0.730	0.000	2.00	3.568	2.60	128.9	0.0	76.2
120.00		1.00	1.32	45.153	49.67	235.08	0.730	0.000	2.00	3.490	2.55	126.5	0.0	74.5
122.00		1.00	1.32	45.310	49.84	230.15	0.730	0.000	2.00	3.411	2.49	124.1	0.0	72.8
124.00		1.00	1.32	45.466	50.01	225.20	0.730	0.000	2.00	3.333	2.43	121.7	0.0	71.1
126.00		1.00	1.33	45.619	50.18	220.23	0.730	0.000	2.00	3.255	2.38	119.2	0.0	69.4
127.00	Appurtenance(s)	1.00	1.33	45.695	50.26	217.73	0.730	0.000	1.00	1.598	1.17	58.6	0.0	34.1
128.00		1.00	1.33	45.771	50.35	215.23	0.730	0.000	1.00	1.579	1.15	58.0	0.0	33.7
130.00		1.00	1.34	45.920	50.51	210.21	0.730	0.000	2.00	3.099	2.26	114.3	0.0	66.1
132.00		1.00	1.34	46.068	50.68	205.17	0.730	0.000	2.00	3.021	2.20	111.7	0.0	64.4
134.00		1.00	1.35	46.214	50.84	200.11	0.730	0.000	2.00	2.942	2.15	109.2	0.0	62.7
136.00		1.00	1.35	46.359	50.99	195.02	0.730	0.000	2.00	2.864	2.09	106.6	0.0	61.0
137.00	Appurtenance(s)	1.00	1.35	46.430	51.07	192.47	0.730	0.000	1.00	1.403	1.02	52.3	0.0	29.9
138.00		1.00	1.35	46.501	51.15	189.92	0.730	0.000	1.00	1.383	1.01	51.7	0.0	29.4
139.00	Appurtenance(s)	1.00	1.36	46.572	51.23	187.36	0.730	0.000	1.00	1.364	1.00	51.0	0.0	29.0
								Totals:	**139.00**			**11,230.3**		**12,008.1**

Discrete Appurtenance Forces

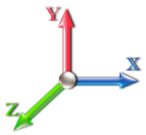
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 120 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 31

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	139.00	6' Lightning rod	1	46.572	51.229	1.00	1.00	0.38	5.85	0.000	0.000	19.47	0.00	0.00
2	137.00	4415 B25	3	46.430	51.073	0.40	0.80	2.23	125.01	0.000	0.000	114.00	0.00	0.00
3	137.00	KRY 112 144/1	3	46.430	51.073	0.40	0.80	0.49	29.70	0.000	0.000	25.13	0.00	0.00
4	137.00	SDX1926Q-43	3	46.430	51.073	0.40	0.80	0.46	18.90	0.000	0.000	23.29	0.00	0.00
5	137.00	AIR6449 B41	3	46.430	51.073	0.57	0.80	9.63	278.10	0.000	0.000	491.71	0.00	0.00
6	137.00	Air 32	3	46.430	51.073	0.70	0.80	13.59	356.94	0.000	0.000	694.23	0.00	0.00
7	137.00	4449 B71+B85	3	46.430	51.073	0.54	0.80	2.65	189.00	0.000	0.000	135.51	0.00	0.00
8	137.00	RDS-272	3	46.430	51.073	0.56	0.75	16.88	1080.00	0.000	0.000	861.86	0.00	0.00
9	137.00	RFS	3	46.430	51.073	0.56	0.80	34.00	345.60	0.000	0.000	1736.65	0.00	0.00
10	127.00	Commscope	3	45.695	50.265	0.59	0.80	21.74	191.16	0.000	0.000	1092.67	0.00	0.00
11	127.00	(1) 8'x2.875" mount pipe	3	45.695	50.265	1.00	1.00	6.90	125.28	0.000	0.000	346.83	0.00	0.00
12	127.00	Collar Mount (3-Sided)	1	45.695	50.265	1.00	1.00	3.50	330.30	0.000	0.000	175.93	0.00	0.00
13	127.00	Fujitsu TA08025-B605 -	3	45.695	50.265	0.54	0.80	3.15	202.50	0.000	0.000	158.42	0.00	0.00
14	127.00	Fujitsu TA08025-B604 -	3	45.695	50.265	0.54	0.80	3.15	172.53	0.000	0.000	158.42	0.00	0.00
15	127.00	Raycap	1	45.695	50.265	0.80	0.80	1.61	19.71	0.000	0.000	80.83	0.00	0.00
16	107.00	RRUS 4449 B5/B12	3	44.076	48.484	0.38	0.75	1.86	229.50	0.000	0.000	90.00	0.00	0.00
17	107.00	4426 B66	3	44.076	48.484	0.50	0.75	1.73	143.10	0.000	0.000	84.05	0.00	0.00
18	107.00	DTMABP7819VG12A	3	44.076	48.484	0.38	0.75	1.28	51.84	0.000	0.000	62.18	0.00	0.00
19	107.00	RRUS 4478 B14	3	44.076	48.484	0.50	0.75	2.49	160.38	0.000	0.000	120.60	0.00	0.00
20	107.00	AIR 6449 B77D	3	44.076	48.484	0.64	0.75	7.90	220.32	0.000	0.000	382.96	0.00	0.00
21	107.00	DMP65R-BU6DA	3	44.076	48.484	0.54	0.75	20.59	214.38	0.000	0.000	998.29	0.00	0.00
22	107.00	RMQLP-4120-H10	1	44.076	48.484	1.00	1.00	42.00	2924.47	0.000	0.000	2036.32	0.00	0.00
23	107.00	RRUS 4415 B25	3	44.076	48.484	0.50	0.75	2.47	124.20	0.000	0.000	119.87	0.00	0.00
24	107.00	DBC20056F1V1	3	44.076	48.484	0.38	0.75	0.46	18.90	0.000	0.000	22.36	0.00	0.00
25	107.00	RRUS A2	3	44.076	48.484	0.50	0.75	2.80	57.24	0.000	0.000	135.95	0.00	0.00
26	107.00	RRUS-32	3	44.076	48.484	0.50	0.75	5.83	207.90	0.000	0.000	282.86	0.00	0.00
27	107.00	DC6-48-60-18-8F	2	44.076	48.484	0.38	0.75	1.10	57.24	0.000	0.000	53.45	0.00	0.00
28	107.00	EPBQ-652L8H6-L2	3	44.076	48.484	0.64	0.75	18.47	196.56	0.000	0.000	895.73	0.00	0.00
29	107.00	DC9-48-60-24-8C-EV	1	44.076	48.484	0.38	0.75	0.43	23.58	0.000	0.000	20.73	0.00	0.00
30	97.00	Samsung VZS01	3	43.175	47.493	0.55	0.80	7.12	235.17	0.000	0.000	338.19	0.00	0.00
31	97.00	T-Arms	3	43.175	47.493	0.56	0.75	13.50	945.00	0.000	0.000	641.15	0.00	0.00
32	97.00	JMA MX06FRO660-03	6	43.175	47.493	0.70	0.80	41.22	248.40	0.000	0.000	1957.51	0.00	0.00
33	97.00	Commscope	1	43.175	47.493	0.40	0.80	2.24	18.00	0.000	0.000	106.38	0.00	0.00
34	97.00	Samsung B5/B13	3	43.175	47.493	0.54	0.80	3.02	227.88	0.000	0.000	143.57	0.00	0.00
35	97.00	Samsung B2/B66A	3	43.175	47.493	0.54	0.80	3.02	189.81	0.000	0.000	143.57	0.00	0.00
							Totals:		**9,964.45**			**14,750.63**		

Total Applied Force Summary

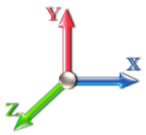
Structure:	CT13549-S-SBA		**Code:**	TIA-222-H	10/4/2022
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 22

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 120 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 31

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
2.00		186.40	348.07	0.00	0.00
4.00		184.56	345.26	0.00	0.00
6.00		182.73	342.46	0.00	0.00
8.00		180.90	339.65	0.00	0.00
10.00		179.07	336.84	0.00	0.00
12.00		177.24	334.04	0.00	0.00
14.00		175.40	331.23	0.00	0.00
16.00		175.71	328.42	0.00	0.00
18.00		178.23	325.62	0.00	0.00
20.00		180.28	322.81	0.00	0.00
22.00		181.95	320.01	0.00	0.00
24.00		183.29	317.20	0.00	0.00
26.00		184.35	314.39	0.00	0.00
28.00		185.17	311.59	0.00	0.00
30.00		185.76	308.78	0.00	0.00
32.00		186.15	305.97	0.00	0.00
34.00		186.37	303.17	0.00	0.00
36.00		186.43	300.36	0.00	0.00
38.00		186.34	297.56	0.00	0.00
40.00		186.11	294.75	0.00	0.00
42.00		185.76	291.94	0.00	0.00
44.00		185.29	289.14	0.00	0.00
46.00		184.72	286.33	0.00	0.00
48.00		184.04	283.52	0.00	0.00
48.50		45.75	70.44	0.00	0.00
50.00		139.15	341.88	0.00	0.00
52.00		184.99	451.42	0.00	0.00
53.25		114.98	279.57	0.00	0.00
54.00		68.75	88.13	0.00	0.00
56.00		183.07	233.46	0.00	0.00
58.00		181.99	231.22	0.00	0.00
60.00		180.85	228.97	0.00	0.00
62.00		179.63	226.73	0.00	0.00
64.00		178.36	224.48	0.00	0.00
66.00		177.02	222.24	0.00	0.00
68.00		175.62	219.99	0.00	0.00
70.00		174.16	217.75	0.00	0.00
72.00		172.65	215.50	0.00	0.00
74.00		171.09	213.26	0.00	0.00
76.00		169.48	211.01	0.00	0.00
78.00		167.82	208.77	0.00	0.00
80.00		166.11	206.52	0.00	0.00
82.00		164.36	204.28	0.00	0.00
84.00		162.57	202.03	0.00	0.00
86.00		160.73	199.79	0.00	0.00
88.00		158.86	197.54	0.00	0.00

Total Applied Force Summary

Structure:	CT13549-S-SBA		**Code:**	TIA-222-H	10/4/2022
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 23

Tower Engineering Solutions

90.00		156.94	195.30	0.00	0.00
92.00		154.99	193.05	0.00	0.00
94.00		153.00	190.81	0.00	0.00
96.00		150.98	188.56	0.00	0.00
97.00	(19) attachments	3405.01	1957.70	0.00	0.00
98.00		74.12	80.66	0.00	0.00
98.75		55.23	60.12	0.00	0.00
100.00		92.83	156.38	0.00	0.00
102.00		146.92	247.01	0.00	0.00
104.00		144.77	127.95	0.00	0.00
106.00		142.59	126.26	0.00	0.00
107.00	(37) attachments	5375.73	4692.11	0.00	0.00
108.00		69.85	56.50	0.00	0.00
110.00		138.14	111.74	0.00	0.00
112.00		135.88	110.05	0.00	0.00
114.00		133.58	108.37	0.00	0.00
116.00		131.25	106.69	0.00	0.00
118.00		128.90	105.00	0.00	0.00
120.00		126.53	103.32	0.00	0.00
122.00		124.12	101.63	0.00	0.00
124.00		121.69	99.95	0.00	0.00
126.00		119.24	98.27	0.00	0.00
127.00	(14) attachments	2071.73	1089.98	0.00	0.00
128.00		58.02	46.29	0.00	0.00
130.00		114.26	91.32	0.00	0.00
132.00		111.74	89.63	0.00	0.00
134.00		109.19	87.95	0.00	0.00
136.00		106.62	86.26	0.00	0.00
137.00	(24) attachments	4134.68	2465.75	0.00	0.00
138.00		51.65	29.70	0.00	0.00
139.00	(1) attachments	70.47	35.12	0.00	0.00
	Totals:	**25,980.89**	**25,713.47**	**0.00**	**0.00**

Linear Appurtenance Segment Forces (Factored)

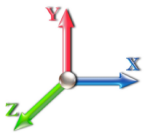
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 120 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 31

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
2.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.183	0.00	0.49
4.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.183	0.00	0.49
6.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.183	0.00	0.49
8.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.183	0.00	0.49
10.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.183	0.00	0.49
12.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.183	0.00	0.49
14.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.183	0.00	0.49
16.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	29.544	0.00	0.49
18.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	30.285	0.00	0.49
20.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	30.965	0.00	0.49
22.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	31.592	0.00	0.49
24.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	32.176	0.00	0.49
26.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	32.723	0.00	0.49
28.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	33.238	0.00	0.49
30.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	33.724	0.00	0.49
32.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	34.185	0.00	0.49
34.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	34.624	0.00	0.49
36.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	35.044	0.00	0.49
38.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	35.445	0.00	0.49
40.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	35.830	0.00	0.49
42.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	36.199	0.00	0.49
44.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	36.556	0.00	0.49
46.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	36.899	0.00	0.49
48.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	37.232	0.00	0.49
48.50	Safety Cable	Yes	0.50	0.000	0.00	0.00	0.00	0.000	0.000	37.313	0.00	0.12
50.00	Safety Cable	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	37.553	0.00	0.37
52.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	37.864	0.00	0.49
53.25	Safety Cable	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	38.054	0.00	0.31
54.00	Safety Cable	Yes	0.75	0.000	0.00	0.00	0.00	0.000	0.000	38.166	0.00	0.18
56.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	38.460	0.00	0.49
58.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	38.745	0.00	0.49
60.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	39.022	0.00	0.49
62.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	39.293	0.00	0.49
64.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	39.556	0.00	0.49
66.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	39.813	0.00	0.49
68.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	40.064	0.00	0.49
70.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	40.309	0.00	0.49
72.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	40.549	0.00	0.49
74.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	40.784	0.00	0.49
76.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	41.013	0.00	0.49
78.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	41.238	0.00	0.49
80.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	41.459	0.00	0.49
82.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	41.675	0.00	0.49
84.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	41.887	0.00	0.49
86.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	42.095	0.00	0.49
88.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	42.299	0.00	0.49
90.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	42.500	0.00	0.49

Linear Appurtenance Segment Forces (Factored)

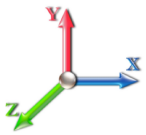
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 120 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 31

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
92.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	42.697	0.00	0.49
94.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	42.890	0.00	0.49
96.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	43.081	0.00	0.49
97.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	43.175	0.00	0.25
98.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	43.268	0.00	0.25
98.75	Safety Cable	Yes	0.75	0.000	0.00	0.00	0.00	0.000	0.000	43.338	0.00	0.18
100.00	Safety Cable	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	43.453	0.00	0.31
102.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	43.634	0.00	0.49
104.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	43.813	0.00	0.49
106.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	43.989	0.00	0.49
107.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	44.076	0.00	0.25
108.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	44.163	0.00	0.25
110.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	44.334	0.00	0.49
112.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	44.502	0.00	0.49
114.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	44.668	0.00	0.49
116.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	44.832	0.00	0.49
118.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	44.994	0.00	0.49
120.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	45.153	0.00	0.49
122.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	45.310	0.00	0.49
124.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	45.466	0.00	0.49
126.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	45.619	0.00	0.49
127.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	45.695	0.00	0.25
128.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	45.771	0.00	0.25
130.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	45.920	0.00	0.49
132.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	46.068	0.00	0.49
134.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	46.214	0.00	0.49
136.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	46.359	0.00	0.49
137.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	46.430	0.00	0.25
138.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	46.501	0.00	0.25
139.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	46.572	0.00	0.25
									Totals:		**0.0**	**34.2**

Calculated Forces

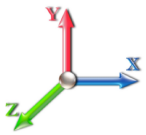
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 120 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 31

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-25.69	-26.01	0.00	-2541.3	0.00	2541.34	3003.53	816.68	3179.09	2902.93	0.00	0.000	0.000	0.885
2.00	-25.29	-25.87	0.00	-2489.3	0.00	2489.32	2986.67	808.64	3116.80	2858.03	0.02	-0.111	0.000	0.880
4.00	-24.89	-25.73	0.00	-2437.5	0.00	2437.59	2969.56	800.60	3055.12	2813.21	0.09	-0.222	0.000	0.876
6.00	-24.50	-25.60	0.00	-2386.1	0.00	2386.13	2952.19	792.56	2994.06	2768.48	0.21	-0.335	0.000	0.871
8.00	-24.11	-25.46	0.00	-2334.9	0.00	2334.94	2934.57	784.52	2933.61	2723.85	0.38	-0.448	0.000	0.866
10.00	-23.73	-25.33	0.00	-2284.0	0.00	2284.02	2916.70	776.48	2873.79	2679.32	0.59	-0.563	0.000	0.862
12.00	-23.34	-25.19	0.00	-2233.3	0.00	2233.36	2898.58	768.44	2814.57	2634.90	0.85	-0.678	0.000	0.857
14.00	-22.96	-25.06	0.00	-2182.9	0.00	2182.98	2880.20	760.40	2755.98	2590.61	1.16	-0.795	0.000	0.852
16.00	-22.59	-24.93	0.00	-2132.8	0.00	2132.86	2861.57	752.36	2698.00	2546.44	1.52	-0.912	0.000	0.847
18.00	-22.21	-24.79	0.00	-2083.0	0.00	2083.01	2842.69	744.31	2640.64	2502.41	1.93	-1.031	0.000	0.841
20.00	-21.84	-24.65	0.00	-2033.4	0.00	2033.44	2823.56	736.27	2583.89	2458.52	2.39	-1.151	0.000	0.836
22.00	-21.47	-24.50	0.00	-1984.1	0.00	1984.14	2804.17	728.23	2527.76	2414.78	2.89	-1.271	0.000	0.830
24.00	-21.11	-24.36	0.00	-1935.1	0.00	1935.13	2784.53	720.19	2472.25	2371.19	3.45	-1.393	0.000	0.825
26.00	-20.75	-24.21	0.00	-1886.4	0.00	1886.42	2764.64	712.15	2417.35	2327.77	4.06	-1.515	0.000	0.819
28.00	-20.39	-24.06	0.00	-1837.9	0.00	1837.99	2744.49	704.11	2363.07	2284.52	4.72	-1.639	0.000	0.813
30.00	-20.03	-23.91	0.00	-1789.8	0.00	1789.87	2724.09	696.07	2309.41	2241.44	5.44	-1.763	0.000	0.807
32.00	-19.68	-23.76	0.00	-1742.0	0.00	1742.05	2703.44	688.03	2256.36	2198.55	6.20	-1.888	0.000	0.801
34.00	-19.33	-23.60	0.00	-1694.5	0.00	1694.54	2682.53	679.99	2203.93	2155.86	7.02	-2.015	0.000	0.794
36.00	-18.99	-23.45	0.00	-1647.3	0.00	1647.33	2661.38	671.95	2152.11	2113.36	7.89	-2.142	0.000	0.788
38.00	-18.65	-23.29	0.00	-1600.4	0.00	1600.43	2639.97	663.90	2100.91	2071.07	8.82	-2.270	0.000	0.781
40.00	-18.31	-23.14	0.00	-1553.8	0.00	1553.84	2618.30	655.86	2050.33	2029.00	9.80	-2.399	0.000	0.774
42.00	-17.97	-22.98	0.00	-1507.5	0.00	1507.57	2596.39	647.82	2000.36	1987.14	10.83	-2.529	0.000	0.767
44.00	-17.64	-22.82	0.00	-1461.6	0.00	1461.61	2574.22	639.78	1951.01	1945.52	11.92	-2.660	0.000	0.759
46.00	-17.31	-22.66	0.00	-1415.9	0.00	1415.97	2551.80	631.74	1902.28	1904.13	13.06	-2.792	0.000	0.752
48.00	-17.00	-22.49	0.00	-1370.6	0.00	1370.64	2529.12	623.70	1854.16	1862.98	14.26	-2.924	0.000	0.744
48.50	-16.91	-22.46	0.00	-1359.3	0.00	1359.39	2523.41	621.69	1842.23	1852.74	14.57	-2.958	0.000	0.742
50.00	-16.53	-22.34	0.00	-1325.7	0.00	1325.70	2506.19	615.66	1806.66	1822.09	15.51	-3.058	0.000	0.735
52.00	-16.05	-22.16	0.00	-1281.0	0.00	1281.03	2483.01	607.62	1759.78	1781.45	16.82	-3.192	0.000	0.727
53.25	-15.75	-22.05	0.00	-1253.3	0.00	1253.33	1850.79	489.91	1429.99	1340.72	17.67	-3.276	0.000	0.945
54.00	-15.62	-22.00	0.00	-1236.7	0.00	1236.79	1845.26	487.50	1415.95	1330.10	18.19	-3.327	0.000	0.940
56.00	-15.34	-21.85	0.00	-1192.7	0.00	1192.79	1830.37	481.06	1378.82	1301.83	19.61	-3.488	0.000	0.927
58.00	-15.06	-21.70	0.00	-1149.0	0.00	1149.09	1815.22	474.63	1342.20	1273.66	21.11	-3.649	0.000	0.913
60.00	-14.78	-21.54	0.00	-1105.7	0.00	1105.70	1799.82	468.20	1306.06	1245.62	22.67	-3.811	0.000	0.898
62.00	-14.51	-21.39	0.00	-1062.6	0.00	1062.62	1784.16	461.76	1270.42	1217.69	24.30	-3.973	0.000	0.883
64.00	-14.23	-21.24	0.00	-1019.8	0.00	1019.84	1768.26	455.33	1235.27	1189.90	26.00	-4.135	0.000	0.867
66.00	-13.97	-21.08	0.00	-977.37	0.00	977.37	1752.10	448.90	1200.61	1162.24	27.77	-4.297	0.000	0.851
68.00	-13.70	-20.93	0.00	-935.21	0.00	935.21	1735.69	442.47	1166.45	1134.73	29.60	-4.459	0.000	0.834
70.00	-13.44	-20.78	0.00	-893.35	0.00	893.35	1719.02	436.03	1132.78	1107.37	31.50	-4.621	0.000	0.817
72.00	-13.18	-20.62	0.00	-851.80	0.00	851.80	1702.10	429.60	1099.60	1080.16	33.47	-4.782	0.000	0.799
74.00	-12.93	-20.47	0.00	-810.55	0.00	810.55	1684.93	423.17	1066.92	1053.13	35.51	-4.943	0.000	0.780
76.00	-12.67	-20.32	0.00	-769.61	0.00	769.61	1667.51	416.73	1034.73	1026.26	37.61	-5.103	0.000	0.760
78.00	-12.43	-20.17	0.00	-728.97	0.00	728.97	1649.83	410.30	1003.03	999.58	39.78	-5.261	0.000	0.739
80.00	-12.18	-20.02	0.00	-688.64	0.00	688.64	1631.90	403.87	971.82	973.09	42.01	-5.419	0.000	0.718
82.00	-11.94	-19.87	0.00	-648.60	0.00	648.60	1613.72	397.44	941.11	946.79	44.31	-5.574	0.000	0.695
84.00	-11.70	-19.71	0.00	-608.87	0.00	608.87	1595.28	391.00	910.89	920.69	46.68	-5.728	0.000	0.671
86.00	-11.47	-19.56	0.00	-569.44	0.00	569.44	1576.59	384.57	881.17	894.80	49.11	-5.879	0.000	0.646
88.00	-11.24	-19.42	0.00	-530.32	0.00	530.32	1557.65	378.14	851.94	869.13	51.60	-6.027	0.000	0.620
90.00	-11.01	-19.27	0.00	-491.49	0.00	491.49	1538.46	371.71	823.20	843.69	54.15	-6.172	0.000	0.592

Calculated Forces

Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 27

Tower Engineering Solutions

92.00	-10.79	-19.12	0.00	-452.95	0.00	452.95	1519.01	365.27	794.95	818.47	56.76	-6.313	0.000	0.563
94.00	-10.58	-18.97	0.00	-414.72	0.00	414.72	1499.31	358.84	767.20	793.50	59.43	-6.449	0.000	0.532
96.00	-10.37	-18.81	0.00	-376.78	0.00	376.78	1479.36	352.41	739.94	768.77	62.16	-6.580	0.000	0.500
97.00	-8.80	-15.22	0.00	-357.97	0.00	357.97	1469.29	349.19	726.49	756.50	63.54	-6.645	0.000	0.481
98.00	-8.72	-15.14	0.00	-342.75	0.00	342.75	1459.16	345.97	713.17	744.29	64.93	-6.708	0.000	0.468
98.75	-8.65	-15.09	0.00	-331.40	0.00	331.40	1451.52	343.56	703.26	735.18	65.99	-6.755	0.000	0.459
100.00	-8.48	-14.99	0.00	-312.54	0.00	312.54	1437.39	339.54	686.90	719.42	67.77	-6.831	0.000	0.442
102.00	-8.22	-14.83	0.00	-282.55	0.00	282.55	990.34	254.40	514.14	496.43	70.65	-6.947	0.000	0.581
104.00	-8.08	-14.69	0.00	-252.88	0.00	252.88	978.09	249.58	494.83	480.92	73.57	-7.058	0.000	0.538
106.00	-7.95	-14.55	0.00	-223.50	0.00	223.50	965.60	244.75	475.88	465.53	76.55	-7.190	0.000	0.492
107.00	-3.96	-8.63	0.00	-208.95	0.00	208.95	959.26	242.34	466.55	457.88	78.06	-7.254	0.000	0.462
108.00	-3.90	-8.56	0.00	-200.32	0.00	200.32	952.85	239.93	457.30	450.26	79.58	-7.316	0.000	0.450
110.00	-3.79	-8.42	0.00	-183.21	0.00	183.21	939.85	235.10	439.10	435.11	82.67	-7.435	0.000	0.426
112.00	-3.68	-8.27	0.00	-166.37	0.00	166.37	926.60	230.28	421.26	420.10	85.80	-7.551	0.000	0.401
114.00	-3.58	-8.13	0.00	-149.83	0.00	149.83	913.09	225.45	403.79	405.23	88.98	-7.663	0.000	0.375
116.00	-3.47	-8.00	0.00	-133.56	0.00	133.56	899.33	220.63	386.70	390.51	92.20	-7.770	0.000	0.347
118.00	-3.37	-7.86	0.00	-117.57	0.00	117.57	885.32	215.80	369.97	375.94	95.47	-7.870	0.000	0.318
120.00	-3.28	-7.73	0.00	-101.85	0.00	101.85	871.06	210.98	353.61	361.54	98.77	-7.965	0.000	0.287
122.00	-3.18	-7.59	0.00	-86.40	0.00	86.40	856.54	206.16	337.63	347.31	102.12	-8.051	0.000	0.254
124.00	-3.09	-7.46	0.00	-71.21	0.00	71.21	841.77	201.33	322.01	333.26	105.50	-8.129	0.000	0.219
126.00	-3.01	-7.33	0.00	-56.29	0.00	56.29	826.75	196.51	306.76	319.39	108.91	-8.196	0.000	0.181
127.00	-2.22	-5.13	0.00	-48.96	0.00	48.96	819.14	194.09	299.27	312.53	110.62	-8.226	0.000	0.160
128.00	-2.18	-5.07	0.00	-43.83	0.00	43.83	811.45	191.68	291.88	305.71	112.34	-8.253	0.000	0.147
130.00	-2.10	-4.94	0.00	-33.70	0.00	33.70	791.03	186.86	277.37	290.44	115.80	-8.301	0.000	0.119
132.00	-2.03	-4.82	0.00	-23.82	0.00	23.82	770.61	182.03	263.24	275.56	119.27	-8.339	0.000	0.090
134.00	-1.95	-4.70	0.00	-14.18	0.00	14.18	750.18	177.21	249.47	261.07	122.76	-8.366	0.000	0.058
136.00	-1.88	-4.58	0.00	-4.79	0.00	4.79	729.76	172.38	236.07	246.97	126.25	-8.380	0.000	0.023
137.00	-0.05	-0.13	0.00	-0.21	0.00	0.21	719.55	169.97	229.51	240.07	128.00	-8.382	0.000	0.001
138.00	-0.02	-0.07	0.00	-0.07	0.00	0.07	709.33	167.56	223.04	233.27	129.75	-8.383	0.000	0.000
139.00	0.00	-0.07	0.00	0.00	0.00	0.00	699.12	165.15	216.66	226.56	131.50	-8.383	0.000	0.000

Wind Loading - Shaft

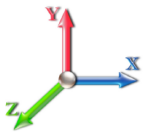
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 30

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.067	5.57	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
2.00		1.00	0.85	5.067	5.57	0.00	1.200	0.756	2.00	8.206	9.85	54.9	90.0	468.1
4.00		1.00	0.85	5.067	5.57	0.00	1.200	0.810	2.00	8.146	9.77	54.5	95.6	470.0
6.00		1.00	0.85	5.067	5.57	0.00	1.200	0.843	2.00	8.079	9.69	54.0	98.7	469.3
8.00		1.00	0.85	5.067	5.57	0.00	1.200	0.868	2.00	8.009	9.61	53.6	100.6	467.5
10.00		1.00	0.85	5.067	5.57	0.00	1.200	0.887	2.00	7.937	9.52	53.1	101.9	465.1
12.00		1.00	0.85	5.067	5.57	0.00	1.200	0.904	2.00	7.864	9.44	52.6	102.7	462.2
14.00		1.00	0.85	5.067	5.57	0.00	1.200	0.918	2.00	7.791	9.35	52.1	103.3	459.0
16.00		1.00	0.86	5.129	5.64	0.00	1.200	0.930	2.00	7.717	9.26	52.2	103.6	455.6
18.00		1.00	0.88	5.258	5.78	0.00	1.200	0.941	2.00	7.642	9.17	53.0	103.8	452.0
20.00		1.00	0.90	5.376	5.91	0.00	1.200	0.951	2.00	7.567	9.08	53.7	103.8	448.3
22.00		1.00	0.92	5.485	6.03	0.00	1.200	0.960	2.00	7.492	8.99	54.2	103.7	444.5
24.00		1.00	0.94	5.586	6.14	0.00	1.200	0.969	2.00	7.417	8.90	54.7	103.5	440.5
26.00		1.00	0.95	5.681	6.25	0.00	1.200	0.976	2.00	7.341	8.81	55.1	103.3	436.5
28.00		1.00	0.97	5.770	6.35	0.00	1.200	0.984	2.00	7.266	8.72	55.3	102.9	432.4
30.00		1.00	0.98	5.855	6.44	0.00	1.200	0.991	2.00	7.190	8.63	55.6	102.5	428.3
32.00		1.00	1.00	5.935	6.53	0.00	1.200	0.997	2.00	7.114	8.54	55.7	102.0	424.0
34.00		1.00	1.01	6.011	6.61	0.00	1.200	1.003	2.00	7.037	8.44	55.8	101.5	419.8
36.00		1.00	1.02	6.084	6.69	0.00	1.200	1.009	2.00	6.961	8.35	55.9	100.9	415.5
38.00		1.00	1.03	6.154	6.77	0.00	1.200	1.014	2.00	6.885	8.26	55.9	100.3	411.1
40.00		1.00	1.04	6.220	6.84	0.00	1.200	1.019	2.00	6.808	8.17	55.9	99.6	406.7
42.00		1.00	1.05	6.285	6.91	0.00	1.200	1.024	2.00	6.732	8.08	55.8	99.0	402.3
44.00		1.00	1.06	6.346	6.98	0.00	1.200	1.029	2.00	6.655	7.99	55.8	98.2	397.8
46.00		1.00	1.07	6.406	7.05	0.00	1.200	1.034	2.00	6.579	7.89	55.6	97.5	393.3
48.00		1.00	1.08	6.464	7.11	0.00	1.200	1.038	2.00	6.502	7.80	55.5	96.7	388.8
48.50	Bot - Section 2	1.00	1.09	6.478	7.13	0.00	1.200	1.039	0.50	1.613	1.94	13.8	24.1	96.6
50.00		1.00	1.09	6.520	7.17	0.00	1.200	1.042	1.50	4.875	5.85	42.0	72.9	464.3
52.00		1.00	1.10	6.574	7.23	0.00	1.200	1.047	2.00	6.433	7.72	55.8	96.4	612.4
53.25	Top - Section 1	1.00	1.11	6.607	7.27	0.00	1.200	1.049	1.25	3.981	4.78	34.7	59.9	379.0
54.00		1.00	1.11	6.626	7.29	0.00	1.200	1.050	0.75	2.374	2.85	20.8	35.8	121.1
56.00		1.00	1.12	6.677	7.34	0.00	1.200	1.054	2.00	6.279	7.54	55.3	94.7	320.1
58.00		1.00	1.13	6.727	7.40	0.00	1.200	1.058	2.00	6.202	7.44	55.1	93.8	316.2
60.00		1.00	1.14	6.775	7.45	0.00	1.200	1.062	2.00	6.125	7.35	54.8	92.9	312.3
62.00		1.00	1.14	6.822	7.50	0.00	1.200	1.065	2.00	6.048	7.26	54.5	92.0	308.4
64.00		1.00	1.15	6.867	7.55	0.00	1.200	1.068	2.00	5.971	7.17	54.1	91.1	304.4
66.00		1.00	1.16	6.912	7.60	0.00	1.200	1.072	2.00	5.894	7.07	53.8	90.1	300.5
68.00		1.00	1.17	6.956	7.65	0.00	1.200	1.075	2.00	5.817	6.98	53.4	89.1	296.5
70.00		1.00	1.17	6.998	7.70	0.00	1.200	1.078	2.00	5.740	6.89	53.0	88.2	292.6
72.00		1.00	1.18	7.040	7.74	0.00	1.200	1.081	2.00	5.663	6.80	52.6	87.2	288.6
74.00		1.00	1.19	7.081	7.79	0.00	1.200	1.084	2.00	5.586	6.70	52.2	86.2	284.6
76.00		1.00	1.19	7.120	7.83	0.00	1.200	1.087	2.00	5.508	6.61	51.8	85.1	280.6
78.00		1.00	1.20	7.159	7.88	0.00	1.200	1.090	2.00	5.431	6.52	51.3	84.1	276.5
80.00		1.00	1.21	7.198	7.92	0.00	1.200	1.093	2.00	5.354	6.42	50.9	83.1	272.5
82.00		1.00	1.21	7.235	7.96	0.00	1.200	1.095	2.00	5.277	6.33	50.4	82.0	268.4
84.00		1.00	1.22	7.272	8.00	0.00	1.200	1.098	2.00	5.199	6.24	49.9	80.9	264.4
86.00		1.00	1.23	7.308	8.04	0.00	1.200	1.101	2.00	5.122	6.15	49.4	79.9	260.3
88.00		1.00	1.23	7.344	8.08	0.00	1.200	1.103	2.00	5.045	6.05	48.9	78.8	256.2

Wind Loading - Shaft

Structure:	CT13549-S-SBA	**Code:**	TIA-222-H		10/4/2022
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 29

Tower Engineering Solutions

90.00		1.00	1.24	7.378	8.12	0.00	1.200	1.106	2.00	4.967	5.96	48.4	77.7	252.1
92.00		1.00	1.24	7.413	8.15	0.00	1.200	1.108	2.00	4.890	5.87	47.8	76.6	248.0
94.00		1.00	1.25	7.446	8.19	0.00	1.200	1.110	2.00	4.813	5.78	47.3	75.5	243.9
96.00		1.00	1.25	7.479	8.23	0.00	1.200	1.113	2.00	4.735	5.68	46.7	74.3	239.8
97.00	Appurtenance(s)	1.00	1.26	7.496	8.25	0.00	1.200	1.114	1.00	2.338	2.81	23.1	36.9	118.5
98.00		1.00	1.26	7.512	8.26	0.00	1.200	1.115	1.00	2.319	2.78	23.0	36.6	117.5
98.75	Bot - Section 3	1.00	1.26	7.524	8.28	0.00	1.200	1.116	0.75	1.727	2.07	17.1	27.3	87.5
100.00		1.00	1.27	7.544	8.30	0.00	1.200	1.117	1.25	2.893	3.47	28.8	45.7	220.9
102.00	Top - Section 2	1.00	1.27	7.575	8.33	0.00	1.200	1.119	2.00	4.566	5.48	45.7	72.0	348.0
104.00		1.00	1.28	7.606	8.37	0.00	1.200	1.122	2.00	4.489	5.39	45.1	70.8	188.1
106.00		1.00	1.28	7.637	8.40	0.00	1.200	1.124	2.00	4.411	5.29	44.5	69.7	184.7
107.00	Appurtenance(s)	1.00	1.28	7.652	8.42	0.00	1.200	1.125	1.00	2.177	2.61	22.0	34.5	91.2
108.00		1.00	1.29	7.667	8.43	0.00	1.200	1.126	1.00	2.157	2.59	21.8	34.2	90.3
110.00		1.00	1.29	7.697	8.47	0.00	1.200	1.128	2.00	4.256	5.11	43.2	67.3	177.8
112.00		1.00	1.30	7.726	8.50	0.00	1.200	1.130	2.00	4.179	5.01	42.6	66.1	174.4
114.00		1.00	1.30	7.755	8.53	0.00	1.200	1.132	2.00	4.101	4.92	42.0	64.9	171.0
116.00		1.00	1.31	7.783	8.56	0.00	1.200	1.134	2.00	4.024	4.83	41.3	63.8	167.5
118.00		1.00	1.31	7.811	8.59	0.00	1.200	1.136	2.00	3.946	4.74	40.7	62.6	164.1
120.00		1.00	1.32	7.839	8.62	0.00	1.200	1.138	2.00	3.869	4.64	40.0	61.3	160.6
122.00		1.00	1.32	7.866	8.65	0.00	1.200	1.140	2.00	3.791	4.55	39.4	60.1	157.2
124.00		1.00	1.32	7.893	8.68	0.00	1.200	1.142	2.00	3.714	4.46	38.7	58.9	153.7
126.00		1.00	1.33	7.920	8.71	0.00	1.200	1.143	2.00	3.636	4.36	38.0	57.7	150.3
127.00	Appurtenance(s)	1.00	1.33	7.933	8.73	0.00	1.200	1.144	1.00	1.789	2.15	18.7	28.5	74.0
128.00		1.00	1.33	7.946	8.74	0.00	1.200	1.145	1.00	1.770	2.12	18.6	28.2	73.1
130.00		1.00	1.34	7.972	8.77	0.00	1.200	1.147	2.00	3.481	4.18	36.6	55.2	143.3
132.00		1.00	1.34	7.998	8.80	0.00	1.200	1.149	2.00	3.403	4.08	35.9	54.0	139.8
134.00		1.00	1.35	8.023	8.83	0.00	1.200	1.150	2.00	3.326	3.99	35.2	52.7	136.3
136.00		1.00	1.35	8.048	8.85	0.00	1.200	1.152	2.00	3.248	3.90	34.5	51.5	132.8
137.00	Appurtenance(s)	1.00	1.35	8.061	8.87	0.00	1.200	1.153	1.00	1.595	1.91	17.0	25.4	65.3
138.00		1.00	1.35	8.073	8.88	0.00	1.200	1.154	1.00	1.576	1.89	16.8	25.1	64.4
139.00	Appurtenance(s)	1.00	1.36	8.085	8.89	0.00	1.200	1.155	1.00	1.556	1.87	16.6	24.8	63.5
								Totals:	**139.00**			**3,426.4**		**21,834.9**

Discrete Appurtenance Forces

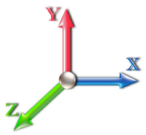
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 30	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 30

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	139.00	6' Lightning rod	1	8.085	8.894	1.00	1.00	1.10	26.52	0.000	0.000	9.78	0.00	0.00
2	137.00	4415 B25	3	8.061	8.867	0.40	0.80	2.66	276.05	0.000	0.000	23.60	0.00	0.00
3	137.00	KRY 112 144/1	3	8.061	8.867	0.40	0.80	0.87	51.67	0.000	0.000	7.70	0.00	0.00
4	137.00	SDX1926Q-43	3	8.061	8.867	0.40	0.80	0.82	36.01	0.000	0.000	7.25	0.00	0.00
5	137.00	AIR6449 B41	3	8.061	8.867	0.57	0.80	10.70	547.46	0.000	0.000	94.86	0.00	0.00
6	137.00	Air 32	3	8.061	8.867	0.70	0.80	15.22	818.93	0.000	0.000	134.98	0.00	0.00
7	137.00	4449 B71+B85	3	8.061	8.867	0.54	0.80	3.20	375.76	0.000	0.000	28.40	0.00	0.00
8	137.00	RDS-272	3	8.061	8.867	0.56	0.75	26.60	1753.43	0.000	0.000	235.89	0.00	0.00
9	137.00	RFS	3	8.061	8.867	0.56	0.80	36.09	1253.67	0.000	0.000	319.97	0.00	0.00
10	127.00	Commscope	3	7.933	8.727	0.59	0.80	23.43	467.19	0.000	0.000	204.46	0.00	0.00
11	127.00	(1) 8'x2.875" mount pipe	3	7.933	8.727	1.00	1.00	12.77	366.84	0.000	0.000	111.47	0.00	0.00
12	127.00	Collar Mount (3-Sided)	1	7.933	8.727	1.00	1.00	5.90	826.36	0.000	0.000	51.51	0.00	0.00
13	127.00	Fujitsu TA08025-B605 -	3	7.933	8.727	0.54	0.80	3.74	335.08	0.000	0.000	32.66	0.00	0.00
14	127.00	Fujitsu TA08025-B604 -	3	7.933	8.727	0.54	0.80	3.74	293.33	0.000	0.000	32.66	0.00	0.00
15	127.00	Raycap	1	7.933	8.727	0.80	0.80	1.91	48.49	0.000	0.000	16.63	0.00	0.00
16	107.00	RRUS 4449 B5/B12	3	7.652	8.417	0.38	0.75	4.49	519.09	0.000	0.000	37.83	0.00	0.00
17	107.00	4426 B66	3	7.652	8.417	0.50	0.75	2.18	257.26	0.000	0.000	18.32	0.00	0.00
18	107.00	DTMABP7819VG12A	3	7.652	8.417	0.38	0.75	1.84	96.56	0.000	0.000	15.49	0.00	0.00
19	107.00	RRUS 4478 B14	3	7.652	8.417	0.50	0.75	2.99	265.82	0.000	0.000	25.18	0.00	0.00
20	107.00	AIR 6449 B77D	3	7.652	8.417	0.64	0.75	8.93	542.50	0.000	0.000	75.18	0.00	0.00
21	107.00	DMP65R-BU6DA	3	7.652	8.417	0.54	0.75	22.12	653.46	0.000	0.000	186.18	0.00	0.00
22	107.00	RMQLP-4120-H10	1	7.652	8.417	1.00	1.00	62.03	6441.72	0.000	0.000	522.13	0.00	0.00
23	107.00	RRUS 4415 B25	3	7.652	8.417	0.50	0.75	2.97	216.88	0.000	0.000	25.02	0.00	0.00
24	107.00	DBC20056F1V1	3	7.652	8.417	0.38	0.75	0.69	46.06	0.000	0.000	5.84	0.00	0.00
25	107.00	RRUS A2	3	7.652	8.417	0.50	0.75	3.75	115.54	0.000	0.000	31.57	0.00	0.00
26	107.00	RRUS-32	3	7.652	8.417	0.50	0.75	5.75	480.98	0.000	0.000	48.36	0.00	0.00
27	107.00	DC6-48-60-18-8F	2	7.652	8.417	0.38	0.75	1.44	120.61	0.000	0.000	12.13	0.00	0.00
28	107.00	EPBQ-652L8H6-L2	3	7.652	8.417	0.64	0.75	27.16	777.36	0.000	0.000	228.60	0.00	0.00
29	107.00	DC9-48-60-24-8C-EV	1	7.652	8.417	0.38	0.75	0.81	82.65	0.000	0.000	6.83	0.00	0.00
30	97.00	Samsung VZS01	3	7.496	8.245	0.60	0.80	8.74	509.89	0.000	0.000	72.02	0.00	0.00
31	97.00	T-Arms	3	7.496	8.245	0.56	0.75	21.02	1517.82	0.000	0.000	173.30	0.00	0.00
32	97.00	JMA MX06FRO660-03	6	7.496	8.245	0.70	0.80	44.81	1304.80	0.000	0.000	369.48	0.00	0.00
33	97.00	Commscope	1	7.496	8.245	0.40	0.80	2.66	64.42	0.000	0.000	21.97	0.00	0.00
34	97.00	Samsung B5/B13	3	7.496	8.245	0.54	0.80	3.59	296.39	0.000	0.000	29.59	0.00	0.00
35	97.00	Samsung B2/B66A	3	7.496	8.245	0.54	0.80	3.59	311.40	0.000	0.000	29.59	0.00	0.00
							Totals:		**22,098.01**			**3,246.44**		

Total Applied Force Summary

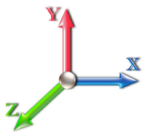
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 31	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 30

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
2.00		54.88	555.93	0.00	0.00
4.00		54.48	558.06	0.00	0.00
6.00		54.03	557.52	0.00	0.00
8.00		53.56	555.82	0.00	0.00
10.00		53.08	553.46	0.00	0.00
12.00		52.60	550.67	0.00	0.00
14.00		52.10	547.56	0.00	0.00
16.00		52.25	544.22	0.00	0.00
18.00		53.04	540.70	0.00	0.00
20.00		53.70	537.03	0.00	0.00
22.00		54.24	533.24	0.00	0.00
24.00		54.69	529.35	0.00	0.00
26.00		55.05	525.37	0.00	0.00
28.00		55.34	521.31	0.00	0.00
30.00		55.56	517.19	0.00	0.00
32.00		55.73	513.01	0.00	0.00
34.00		55.84	508.77	0.00	0.00
36.00		55.90	504.49	0.00	0.00
38.00		55.92	500.17	0.00	0.00
40.00		55.90	495.80	0.00	0.00
42.00		55.85	491.40	0.00	0.00
44.00		55.75	486.97	0.00	0.00
46.00		55.63	482.50	0.00	0.00
48.00		55.48	478.01	0.00	0.00
48.50		13.80	118.87	0.00	0.00
50.00		41.95	531.22	0.00	0.00
52.00		55.82	701.60	0.00	0.00
53.25		34.72	434.76	0.00	0.00
54.00		20.77	154.59	0.00	0.00
56.00		55.34	409.34	0.00	0.00
58.00		55.07	405.48	0.00	0.00
60.00		54.78	401.61	0.00	0.00
62.00		54.46	397.72	0.00	0.00
64.00		54.13	393.81	0.00	0.00
66.00		53.78	389.88	0.00	0.00
68.00		53.41	385.94	0.00	0.00
70.00		53.02	381.98	0.00	0.00
72.00		52.62	378.01	0.00	0.00
74.00		52.20	374.03	0.00	0.00
76.00		51.77	370.03	0.00	0.00
78.00		51.33	366.02	0.00	0.00
80.00		50.87	362.00	0.00	0.00
82.00		50.39	357.97	0.00	0.00
84.00		49.91	353.92	0.00	0.00
86.00		49.41	349.87	0.00	0.00
88.00		48.90	345.80	0.00	0.00

Total Applied Force Summary

Structure:	CT13549-S-SBA		**Code:**	TIA-222-H	10/4/2022
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 32

Tower Engineering Solutions

90.00		48.38	341.73	0.00	0.00
92.00		47.85	337.65	0.00	0.00
94.00		47.30	333.55	0.00	0.00
96.00		46.75	329.45	0.00	0.00
97.00	(19) attachments	719.09	4168.04	0.00	0.00
98.00		23.00	146.00	0.00	0.00
98.75		17.15	108.85	0.00	0.00
100.00		28.81	256.53	0.00	0.00
102.00		45.66	405.06	0.00	0.00
104.00		45.07	245.17	0.00	0.00
106.00		44.47	241.78	0.00	0.00
107.00	(37) attachments	1260.64	10736.26	0.00	0.00
108.00		21.83	111.47	0.00	0.00
110.00		43.24	220.09	0.00	0.00
112.00		42.62	216.68	0.00	0.00
114.00		41.98	213.25	0.00	0.00
116.00		41.34	209.83	0.00	0.00
118.00		40.69	206.39	0.00	0.00
120.00		40.03	202.95	0.00	0.00
122.00		39.37	199.51	0.00	0.00
124.00		38.69	196.05	0.00	0.00
126.00		38.01	192.60	0.00	0.00
127.00	(14) attachments	468.14	2432.44	0.00	0.00
128.00		18.56	91.90	0.00	0.00
130.00		36.63	180.88	0.00	0.00
132.00		35.93	177.41	0.00	0.00
134.00		35.22	173.93	0.00	0.00
136.00		34.51	170.44	0.00	0.00
137.00	(24) attachments	869.62	5197.05	0.00	0.00
138.00		16.79	66.68	0.00	0.00
139.00	(1) attachments	26.39	92.33	0.00	0.00
	Totals:	**6,672.85**	**49,154.98**	**0.00**	**0.00**

Linear Appurtenance Segment Forces (Factored)

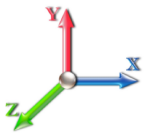
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 33	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 30

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
2.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.067	0.00	2.51
4.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.067	0.00	2.75
6.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.067	0.00	2.91
8.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.067	0.00	3.03
10.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.067	0.00	3.12
12.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.067	0.00	3.20
14.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.067	0.00	3.27
16.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.129	0.00	3.34
18.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.258	0.00	3.39
20.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.376	0.00	3.44
22.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.485	0.00	3.49
24.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.586	0.00	3.54
26.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.681	0.00	3.58
28.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.770	0.00	3.62
30.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.855	0.00	3.65
32.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.935	0.00	3.69
34.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.011	0.00	3.72
36.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.084	0.00	3.75
38.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.154	0.00	3.78
40.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.220	0.00	3.81
42.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.285	0.00	3.84
44.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.346	0.00	3.87
46.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.406	0.00	3.89
48.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.464	0.00	3.92
48.50	Safety Cable	Yes	0.50	0.000	0.00	0.00	0.00	0.000	0.000	6.478	0.00	0.98
50.00	Safety Cable	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	6.520	0.00	2.96
52.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.574	0.00	3.97
53.25	Safety Cable	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	6.607	0.00	2.49
54.00	Safety Cable	Yes	0.75	0.000	0.00	0.00	0.00	0.000	0.000	6.626	0.00	1.50
56.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.677	0.00	4.01
58.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.727	0.00	4.03
60.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.775	0.00	4.05
62.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.822	0.00	4.07
64.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.867	0.00	4.09
66.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.912	0.00	4.11
68.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.956	0.00	4.13
70.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.998	0.00	4.15
72.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.040	0.00	4.17
74.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.081	0.00	4.18
76.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.120	0.00	4.20
78.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.159	0.00	4.22
80.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.198	0.00	4.23
82.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.235	0.00	4.25
84.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.272	0.00	4.26
86.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.308	0.00	4.28
88.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.344	0.00	4.30
90.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.378	0.00	4.31

Linear Appurtenance Segment Forces (Factored)

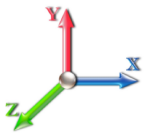
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 34	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 30

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
92.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.413	0.00	4.32
94.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.446	0.00	4.34
96.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.479	0.00	4.35
97.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	7.496	0.00	2.18
98.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	7.512	0.00	2.18
98.75	Safety Cable	Yes	0.75	0.000	0.00	0.00	0.00	0.000	0.000	7.524	0.00	1.64
100.00	Safety Cable	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	7.544	0.00	2.74
102.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.575	0.00	4.39
104.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.606	0.00	4.41
106.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.637	0.00	4.42
107.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	7.652	0.00	2.21
108.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	7.667	0.00	2.22
110.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.697	0.00	4.45
112.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.726	0.00	4.46
114.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.755	0.00	4.47
116.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.783	0.00	4.48
118.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.811	0.00	4.49
120.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.839	0.00	4.51
122.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.866	0.00	4.52
124.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.893	0.00	4.53
126.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.920	0.00	4.54
127.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	7.933	0.00	2.27
128.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	7.946	0.00	2.28
130.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.972	0.00	4.56
132.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.998	0.00	4.57
134.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.023	0.00	4.58
136.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.048	0.00	4.59
137.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	8.061	0.00	2.30
138.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	8.073	0.00	2.30
139.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	8.085	0.00	2.30
									Totals:		**0.0**	**279.7**

Calculated Forces

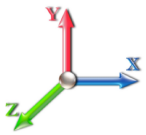
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 35	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 30

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-49.15	-6.68	0.00	-661.46	0.00	661.46	3003.53	816.68	3179.09	2902.93	0.00	0.000	0.000	0.244
2.00	-48.59	-6.65	0.00	-648.09	0.00	648.09	2986.67	808.64	3116.80	2858.03	0.01	-0.029	0.000	0.243
4.00	-48.03	-6.62	0.00	-634.78	0.00	634.78	2969.56	800.60	3055.12	2813.21	0.02	-0.058	0.000	0.242
6.00	-47.47	-6.59	0.00	-621.53	0.00	621.53	2952.19	792.56	2994.06	2768.48	0.06	-0.087	0.000	0.241
8.00	-46.91	-6.56	0.00	-608.35	0.00	608.35	2934.57	784.52	2933.61	2723.85	0.10	-0.117	0.000	0.239
10.00	-46.36	-6.53	0.00	-595.22	0.00	595.22	2916.70	776.48	2873.79	2679.32	0.15	-0.147	0.000	0.238
12.00	-45.80	-6.50	0.00	-582.15	0.00	582.15	2898.58	768.44	2814.57	2634.90	0.22	-0.177	0.000	0.237
14.00	-45.25	-6.47	0.00	-569.15	0.00	569.15	2880.20	760.40	2755.98	2590.61	0.30	-0.207	0.000	0.235
16.00	-44.70	-6.44	0.00	-556.20	0.00	556.20	2861.57	752.36	2698.00	2546.44	0.40	-0.238	0.000	0.234
18.00	-44.16	-6.41	0.00	-543.31	0.00	543.31	2842.69	744.31	2640.64	2502.41	0.50	-0.269	0.000	0.233
20.00	-43.62	-6.38	0.00	-530.49	0.00	530.49	2823.56	736.27	2583.89	2458.52	0.62	-0.300	0.000	0.231
22.00	-43.08	-6.35	0.00	-517.73	0.00	517.73	2804.17	728.23	2527.76	2414.78	0.75	-0.331	0.000	0.230
24.00	-42.55	-6.31	0.00	-505.04	0.00	505.04	2784.53	720.19	2472.25	2371.19	0.90	-0.363	0.000	0.228
26.00	-42.02	-6.28	0.00	-492.42	0.00	492.42	2764.64	712.15	2417.35	2327.77	1.06	-0.395	0.000	0.227
28.00	-41.50	-6.24	0.00	-479.87	0.00	479.87	2744.49	704.11	2363.07	2284.52	1.23	-0.427	0.000	0.225
30.00	-40.98	-6.20	0.00	-467.39	0.00	467.39	2724.09	696.07	2309.41	2241.44	1.42	-0.460	0.000	0.224
32.00	-40.46	-6.17	0.00	-454.98	0.00	454.98	2703.44	688.03	2256.36	2198.55	1.62	-0.492	0.000	0.222
34.00	-39.95	-6.13	0.00	-442.64	0.00	442.64	2682.53	679.99	2203.93	2155.86	1.83	-0.525	0.000	0.220
36.00	-39.44	-6.09	0.00	-430.38	0.00	430.38	2661.38	671.95	2152.11	2113.36	2.06	-0.559	0.000	0.219
38.00	-38.94	-6.05	0.00	-418.20	0.00	418.20	2639.97	663.90	2100.91	2071.07	2.30	-0.592	0.000	0.217
40.00	-38.44	-6.02	0.00	-406.09	0.00	406.09	2618.30	655.86	2050.33	2029.00	2.55	-0.626	0.000	0.215
42.00	-37.95	-5.98	0.00	-394.05	0.00	394.05	2596.39	647.82	2000.36	1987.14	2.82	-0.660	0.000	0.213
44.00	-37.46	-5.94	0.00	-382.10	0.00	382.10	2574.22	639.78	1951.01	1945.52	3.11	-0.694	0.000	0.211
46.00	-36.97	-5.90	0.00	-370.22	0.00	370.22	2551.80	631.74	1902.28	1904.13	3.41	-0.728	0.000	0.209
48.00	-36.49	-5.85	0.00	-358.42	0.00	358.42	2529.12	623.70	1854.16	1862.98	3.72	-0.763	0.000	0.207
48.50	-36.37	-5.85	0.00	-355.50	0.00	355.50	2523.41	621.69	1842.23	1852.74	3.80	-0.772	0.000	0.206
50.00	-35.84	-5.82	0.00	-346.73	0.00	346.73	2506.19	615.66	1806.66	1822.09	4.05	-0.798	0.000	0.205
52.00	-35.13	-5.77	0.00	-335.10	0.00	335.10	2483.01	607.62	1759.78	1781.45	4.39	-0.833	0.000	0.202
53.25	-34.70	-5.74	0.00	-327.89	0.00	327.89	1850.79	489.91	1429.99	1340.72	4.61	-0.855	0.000	0.263
54.00	-34.54	-5.73	0.00	-323.58	0.00	323.58	1845.26	487.50	1415.95	1330.10	4.74	-0.869	0.000	0.262
56.00	-34.13	-5.70	0.00	-312.12	0.00	312.12	1830.37	481.06	1378.82	1301.83	5.12	-0.911	0.000	0.259
58.00	-33.72	-5.66	0.00	-300.73	0.00	300.73	1815.22	474.63	1342.20	1273.66	5.51	-0.953	0.000	0.255
60.00	-33.31	-5.62	0.00	-289.41	0.00	289.41	1799.82	468.20	1306.06	1245.62	5.92	-0.995	0.000	0.251
62.00	-32.91	-5.58	0.00	-278.17	0.00	278.17	1784.16	461.76	1270.42	1217.69	6.34	-1.037	0.000	0.247
64.00	-32.52	-5.55	0.00	-267.00	0.00	267.00	1768.26	455.33	1235.27	1189.90	6.79	-1.080	0.000	0.243
66.00	-32.12	-5.51	0.00	-255.91	0.00	255.91	1752.10	448.90	1200.61	1162.24	7.25	-1.122	0.000	0.239
68.00	-31.74	-5.47	0.00	-244.89	0.00	244.89	1735.69	442.47	1166.45	1134.73	7.73	-1.165	0.000	0.234
70.00	-31.35	-5.43	0.00	-233.94	0.00	233.94	1719.02	436.03	1132.78	1107.37	8.22	-1.207	0.000	0.230
72.00	-30.97	-5.40	0.00	-223.08	0.00	223.08	1702.10	429.60	1099.60	1080.16	8.74	-1.249	0.000	0.225
74.00	-30.59	-5.36	0.00	-212.28	0.00	212.28	1684.93	423.17	1066.92	1053.13	9.27	-1.291	0.000	0.220
76.00	-30.22	-5.32	0.00	-201.57	0.00	201.57	1667.51	416.73	1034.73	1026.26	9.82	-1.333	0.000	0.215
78.00	-29.85	-5.28	0.00	-190.93	0.00	190.93	1649.83	410.30	1003.03	999.58	10.39	-1.375	0.000	0.209
80.00	-29.49	-5.24	0.00	-180.36	0.00	180.36	1631.90	403.87	971.82	973.09	10.97	-1.416	0.000	0.204
82.00	-29.13	-5.20	0.00	-169.88	0.00	169.88	1613.72	397.44	941.11	946.79	11.58	-1.457	0.000	0.198
84.00	-28.77	-5.17	0.00	-159.47	0.00	159.47	1595.28	391.00	910.89	920.69	12.20	-1.497	0.000	0.191
86.00	-28.42	-5.13	0.00	-149.14	0.00	149.14	1576.59	384.57	881.17	894.80	12.83	-1.537	0.000	0.185
88.00	-28.07	-5.09	0.00	-138.89	0.00	138.89	1557.65	378.14	851.94	869.13	13.48	-1.575	0.000	0.178
90.00	-27.73	-5.05	0.00	-128.71	0.00	128.71	1538.46	371.71	823.20	843.69	14.15	-1.613	0.000	0.171

Calculated Forces

Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 36

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92.00	-27.39	-5.01	0.00	-118.62	0.00	118.62	1519.01	365.27	794.95	818.47	14.84	-1.650	0.000	0.163
94.00	-27.05	-4.97	0.00	-108.61	0.00	108.61	1499.31	358.84	767.20	793.50	15.53	-1.686	0.000	0.155
96.00	-26.72	-4.92	0.00	-98.67	0.00	98.67	1479.36	352.41	739.94	768.77	16.25	-1.720	0.000	0.147
97.00	-22.58	-4.08	0.00	-93.75	0.00	93.75	1469.29	349.19	726.49	756.50	16.61	-1.737	0.000	0.139
98.00	-22.43	-4.06	0.00	-89.67	0.00	89.67	1459.16	345.97	713.17	744.29	16.98	-1.754	0.000	0.136
98.75	-22.32	-4.05	0.00	-86.62	0.00	86.62	1451.52	343.56	703.26	735.18	17.25	-1.766	0.000	0.133
100.00	-22.06	-4.02	0.00	-81.56	0.00	81.56	1437.39	339.54	686.90	719.42	17.72	-1.786	0.000	0.129
102.00	-21.66	-3.97	0.00	-73.52	0.00	73.52	990.34	254.40	514.14	496.43	18.47	-1.816	0.000	0.170
104.00	-21.41	-3.93	0.00	-65.58	0.00	65.58	978.09	249.58	494.83	480.92	19.24	-1.845	0.000	0.158
106.00	-21.17	-3.89	0.00	-57.71	0.00	57.71	965.60	244.75	475.88	465.53	20.02	-1.879	0.000	0.146
107.00	-10.48	-2.28	0.00	-53.82	0.00	53.82	959.26	242.34	466.55	457.88	20.42	-1.896	0.000	0.129
108.00	-10.37	-2.26	0.00	-51.54	0.00	51.54	952.85	239.93	457.30	450.26	20.81	-1.912	0.000	0.125
110.00	-10.15	-2.21	0.00	-47.03	0.00	47.03	939.85	235.10	439.10	435.11	21.62	-1.942	0.000	0.119
112.00	-9.93	-2.17	0.00	-42.60	0.00	42.60	926.60	230.28	421.26	420.10	22.44	-1.972	0.000	0.112
114.00	-9.72	-2.12	0.00	-38.27	0.00	38.27	913.09	225.45	403.79	405.23	23.27	-2.001	0.000	0.105
116.00	-9.51	-2.08	0.00	-34.02	0.00	34.02	899.33	220.63	386.70	390.51	24.12	-2.028	0.000	0.098
118.00	-9.31	-2.03	0.00	-29.87	0.00	29.87	885.32	215.80	369.97	375.94	24.97	-2.053	0.000	0.090
120.00	-9.10	-1.99	0.00	-25.80	0.00	25.80	871.06	210.98	353.61	361.54	25.84	-2.077	0.000	0.082
122.00	-8.91	-1.95	0.00	-21.82	0.00	21.82	856.54	206.16	337.63	347.31	26.71	-2.099	0.000	0.073
124.00	-8.71	-1.90	0.00	-17.92	0.00	17.92	841.77	201.33	322.01	333.26	27.60	-2.119	0.000	0.064
126.00	-8.52	-1.86	0.00	-14.11	0.00	14.11	826.75	196.51	306.76	319.39	28.49	-2.136	0.000	0.055
127.00	-6.11	-1.30	0.00	-12.25	0.00	12.25	819.14	194.09	299.27	312.53	28.94	-2.143	0.000	0.047
128.00	-6.01	-1.28	0.00	-10.95	0.00	10.95	811.45	191.68	291.88	305.71	29.39	-2.150	0.000	0.043
130.00	-5.84	-1.24	0.00	-8.38	0.00	8.38	791.03	186.86	277.37	290.44	30.29	-2.162	0.000	0.036
132.00	-5.66	-1.20	0.00	-5.90	0.00	5.90	770.61	182.03	263.24	275.56	31.20	-2.171	0.000	0.029
134.00	-5.49	-1.16	0.00	-3.51	0.00	3.51	750.18	177.21	249.47	261.07	32.11	-2.178	0.000	0.021
136.00	-5.32	-1.12	0.00	-1.20	0.00	1.20	729.76	172.38	236.07	246.97	33.02	-2.182	0.000	0.012
137.00	-0.16	-0.05	0.00	-0.08	0.00	0.08	719.55	169.97	229.51	240.07	33.48	-2.182	0.000	0.001
138.00	-0.09	-0.03	0.00	-0.03	0.00	0.03	709.33	167.56	223.04	233.27	33.93	-2.182	0.000	0.000
139.00	0.00	-0.03	0.00	0.00	0.00	0.00	699.12	165.15	216.66	226.56	34.39	-2.182	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 37	

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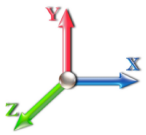
Load Case: 1.2D + 1.0Ev + 1.0Eh

Gust Response Factor	1.10			**Sds**	0.23	**Iterations**	26
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.09	**Ss**	0.22
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.29	**SA**	0.03	**S1**	0.06
						Seismic Importance Factor	1.00



Top Elev (ft)	Description	Wz (lb)	Hz (lb)	Vertical Ev (lb)	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	
2.00		401.06	1.00	18.65	0.00	
4.00		397.95	3.00	18.51	0.00	
6.00		394.83	5.00	18.36	0.00	
8.00		391.71	7.00	18.22	0.01	
10.00		388.59	9.00	18.07	0.01	
12.00		385.47	11.00	17.93	0.01	
14.00		382.36	13.00	17.78	0.02	
16.00		379.24	15.00	17.64	0.03	
18.00		376.12	17.00	17.49	0.03	
20.00		373.00	19.00	17.35	0.04	
22.00		369.88	21.00	17.20	0.05	
24.00		366.77	23.00	17.06	0.06	
26.00		363.65	25.00	16.91	0.07	
28.00		360.53	27.00	16.77	0.08	
30.00		357.41	29.00	16.62	0.09	
32.00		354.29	31.00	16.48	0.10	
34.00		351.17	33.00	16.33	0.11	
36.00		348.06	35.00	16.19	0.12	
38.00		344.94	37.00	16.04	0.13	
40.00		341.82	39.00	15.90	0.14	
42.00		338.70	41.00	15.75	0.15	
44.00		335.58	43.00	15.61	0.17	
46.00		332.47	45.00	15.46	0.18	
48.00		329.35	47.00	15.32	0.19	
48.50	Bot - Section 2	81.85	48.25	3.81	0.01	
50.00		390.60	49.25	18.17	0.30	
52.00		515.89	51.00	23.99	0.55	
53.25	Top - Section 1	319.58	52.63	14.86	0.23	
54.00		103.29	53.63	4.80	0.02	
56.00		273.72	55.00	12.73	0.18	
58.00		271.23	57.00	12.61	0.19	
60.00		268.73	59.00	12.50	0.20	
62.00		266.24	61.00	12.38	0.21	
64.00		263.75	63.00	12.27	0.22	
66.00		261.25	65.00	12.15	0.23	
68.00		258.76	67.00	12.03	0.24	
70.00		256.26	69.00	11.92	0.25	
72.00		253.77	71.00	11.80	0.26	
74.00		251.27	73.00	11.69	0.27	
76.00		248.78	75.00	11.57	0.28	
78.00		246.28	77.00	11.45	0.29	
80.00		243.79	79.00	11.34	0.30	
82.00		241.30	81.00	11.22	0.31	
84.00		238.80	83.00	11.11	0.31	
86.00		236.31	85.00	10.99	0.32	

Seismic Segment Forces (Factored)

Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 38	

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88.00			233.81	87.00	10.87	0.33		
90.00			231.32	89.00	10.76	0.34		
92.00			228.82	91.00	10.64	0.35		
94.00			226.33	93.00	10.53	0.35		
96.00			223.83	95.00	10.41	0.36		
97.00	Appurtenance(s)		2182.3	96.50	101.50	35.50		
98.00			94.06	97.50	4.37	0.07		
98.75	Bot - Section 3		70.14	98.38	3.26	0.04		
100.00			179.31	99.38	8.34	0.25		
102.00	Top - Section 2		283.35	101.00	13.18	0.66		
104.00			151.05	103.00	7.03	0.19		
106.00			149.18	105.00	6.94	0.20		
107.00	Appurtenance(s)		5217.9	106.50	242.67	247.17		
108.00			65.98	107.50	3.07	0.04		
110.00			130.56	109.00	6.07	0.16		
112.00			128.69	111.00	5.98	0.16		
114.00			126.82	113.00	5.90	0.16		
116.00			124.95	115.00	5.81	0.17		
118.00			123.08	117.00	5.72	0.17		
120.00			121.21	119.00	5.64	0.17		
122.00			119.34	121.00	5.55	0.17		
124.00			117.47	123.00	5.46	0.17		
126.00			115.59	125.00	5.38	0.17		
127.00	Appurtenance(s)		1214.3	126.50	56.47	18.89		
128.00			54.24	127.50	2.52	0.04		
130.00			107.07	129.00	4.98	0.15		
132.00			105.20	131.00	4.89	0.15		
134.00			103.33	133.00	4.81	0.15		
136.00			101.46	135.00	4.72	0.15		
137.00	Appurtenance(s)		2742.5	136.50	127.55	112.17		
138.00			33.05	137.50	1.54	0.02		
139.00	Appurtenance(s)		39.08	138.50	1.82	0.02		
		Totals:	**29,401.8**		**1,367.4**	**426.0**	**Total Wind:**	**25,980.9**

Calculated Forces

Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 39	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Ev + 1.0Eh

Iterations 26

Gust Response Factor	1.10			**Sds**	0.23			**Ss**	0.22
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.09			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.29	**SA**	0.03			**Seismic Importance Factor**	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-35.65	-0.43	0.00	-51.93	0.00	51.93	3003.53	816.68	3179.09	2902.93		0.00	0.00	0.030
2.00	-35.17	-0.43	0.00	-51.08	0.00	51.08	2986.67	808.64	3116.80	2858.03		0.00	0.00	0.030
4.00	-34.69	-0.43	0.00	-50.23	0.00	50.23	2969.56	800.60	3055.12	2813.21		0.00	0.00	0.030
6.00	-34.22	-0.43	0.00	-49.37	0.00	49.37	2952.19	792.56	2994.06	2768.48		0.00	-0.01	0.029
8.00	-33.74	-0.43	0.00	-48.51	0.00	48.51	2934.57	784.52	2933.61	2723.85		0.01	-0.01	0.029
10.00	-33.28	-0.43	0.00	-47.65	0.00	47.65	2916.70	776.48	2873.79	2679.32		0.01	-0.01	0.029
12.00	-32.81	-0.43	0.00	-46.79	0.00	46.79	2898.58	768.44	2814.57	2634.90		0.02	-0.01	0.029
14.00	-32.35	-0.43	0.00	-45.92	0.00	45.92	2880.20	760.40	2755.98	2590.61		0.02	-0.02	0.029
16.00	-31.90	-0.44	0.00	-45.05	0.00	45.05	2861.57	752.36	2698.00	2546.44		0.03	-0.02	0.029
18.00	-31.45	-0.44	0.00	-44.18	0.00	44.18	2842.69	744.31	2640.64	2502.41		0.04	-0.02	0.029
20.00	-31.00	-0.44	0.00	-43.31	0.00	43.31	2823.56	736.27	2583.89	2458.52		0.05	-0.02	0.029
22.00	-30.56	-0.44	0.00	-42.43	0.00	42.43	2804.17	728.23	2527.76	2414.78		0.06	-0.03	0.028
24.00	-30.12	-0.44	0.00	-41.56	0.00	41.56	2784.53	720.19	2472.25	2371.19		0.07	-0.03	0.028
26.00	-29.68	-0.44	0.00	-40.67	0.00	40.67	2764.64	712.15	2417.35	2327.77		0.08	-0.03	0.028
28.00	-29.25	-0.44	0.00	-39.79	0.00	39.79	2744.49	704.11	2363.07	2284.52		0.10	-0.03	0.028
30.00	-28.82	-0.44	0.00	-38.91	0.00	38.91	2724.09	696.07	2309.41	2241.44		0.11	-0.04	0.028
32.00	-28.39	-0.44	0.00	-38.02	0.00	38.02	2703.44	688.03	2256.36	2198.55		0.13	-0.04	0.028
34.00	-27.97	-0.45	0.00	-37.13	0.00	37.13	2682.53	679.99	2203.93	2155.86		0.15	-0.04	0.028
36.00	-27.56	-0.45	0.00	-36.24	0.00	36.24	2661.38	671.95	2152.11	2113.36		0.17	-0.05	0.028
38.00	-27.14	-0.45	0.00	-35.35	0.00	35.35	2639.97	663.90	2100.91	2071.07		0.19	-0.05	0.027
40.00	-26.74	-0.45	0.00	-34.45	0.00	34.45	2618.30	655.86	2050.33	2029.00		0.21	-0.05	0.027
42.00	-26.33	-0.45	0.00	-33.56	0.00	33.56	2596.39	647.82	2000.36	1987.14		0.23	-0.05	0.027
44.00	-25.93	-0.45	0.00	-32.66	0.00	32.66	2574.22	639.78	1951.01	1945.52		0.25	-0.06	0.027
46.00	-25.53	-0.45	0.00	-31.76	0.00	31.76	2551.80	631.74	1902.28	1904.13		0.28	-0.06	0.027
48.00	-25.14	-0.45	0.00	-30.86	0.00	30.86	2529.12	623.70	1854.16	1862.98		0.30	-0.06	0.027
48.50	-25.04	-0.45	0.00	-30.64	0.00	30.64	2523.41	621.69	1842.23	1852.74		0.31	-0.06	0.026
50.00	-24.57	-0.45	0.00	-29.96	0.00	29.96	2506.19	615.66	1806.66	1822.09		0.33	-0.07	0.026
52.00	-23.94	-0.45	0.00	-29.06	0.00	29.06	2483.01	607.62	1759.78	1781.45		0.36	-0.07	0.026
53.25	-23.55	-0.45	0.00	-28.49	0.00	28.49	1850.79	489.91	1429.99	1340.72		0.38	-0.07	0.034
54.00	-23.43	-0.45	0.00	-28.16	0.00	28.16	1845.26	487.50	1415.95	1330.10		0.39	-0.07	0.034
56.00	-23.11	-0.45	0.00	-27.25	0.00	27.25	1830.37	481.06	1378.82	1301.83		0.42	-0.08	0.034
58.00	-22.79	-0.45	0.00	-26.35	0.00	26.35	1815.22	474.63	1342.20	1273.66		0.45	-0.08	0.033
60.00	-22.47	-0.45	0.00	-25.44	0.00	25.44	1799.82	468.20	1306.06	1245.62		0.48	-0.08	0.033
62.00	-22.15	-0.46	0.00	-24.53	0.00	24.53	1784.16	461.76	1270.42	1217.69		0.52	-0.09	0.033
64.00	-21.84	-0.46	0.00	-23.62	0.00	23.62	1768.26	455.33	1235.27	1189.90		0.56	-0.09	0.032
66.00	-21.53	-0.46	0.00	-22.71	0.00	22.71	1752.10	448.90	1200.61	1162.24		0.60	-0.09	0.032
68.00	-21.23	-0.46	0.00	-21.79	0.00	21.79	1735.69	442.47	1166.45	1134.73		0.64	-0.10	0.031
70.00	-20.93	-0.46	0.00	-20.88	0.00	20.88	1719.02	436.03	1132.78	1107.37		0.68	-0.10	0.031
72.00	-20.63	-0.46	0.00	-19.96	0.00	19.96	1702.10	429.60	1099.60	1080.16		0.72	-0.11	0.031
74.00	-20.33	-0.46	0.00	-19.05	0.00	19.05	1684.93	423.17	1066.92	1053.13		0.77	-0.11	0.030
76.00	-20.04	-0.46	0.00	-18.13	0.00	18.13	1667.51	416.73	1034.73	1026.26		0.81	-0.11	0.030
78.00	-19.75	-0.46	0.00	-17.21	0.00	17.21	1649.83	410.30	1003.03	999.58		0.86	-0.12	0.029
80.00	-19.46	-0.46	0.00	-16.29	0.00	16.29	1631.90	403.87	971.82	973.09		0.91	-0.12	0.029
82.00	-19.18	-0.46	0.00	-15.37	0.00	15.37	1613.72	397.44	941.11	946.79		0.96	-0.12	0.028
84.00	-18.90	-0.46	0.00	-14.45	0.00	14.45	1595.28	391.00	910.89	920.69		1.02	-0.13	0.028
86.00	-18.62	-0.46	0.00	-13.53	0.00	13.53	1576.59	384.57	881.17	894.80		1.07	-0.13	0.027
88.00	-18.34	-0.46	0.00	-12.60	0.00	12.60	1557.65	378.14	851.94	869.13		1.13	-0.14	0.026

Calculated Forces

Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 40

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90.00	-18.07	-0.46	0.00	-11.68	0.00	11.68	1538.46	371.71	823.20	843.69	1.18	-0.14	0.026
92.00	-17.81	-0.46	0.00	-10.76	0.00	10.76	1519.01	365.27	794.95	818.47	1.24	-0.14	0.025
94.00	-17.54	-0.46	0.00	-9.84	0.00	9.84	1499.31	358.84	767.20	793.50	1.30	-0.15	0.024
96.00	-17.28	-0.46	0.00	-8.91	0.00	8.91	1479.36	352.41	739.94	768.77	1.36	-0.15	0.023
97.00	-14.57	-0.42	0.00	-8.45	0.00	8.45	1469.29	349.19	726.49	756.50	1.39	-0.15	0.021
98.00	-14.46	-0.42	0.00	-8.03	0.00	8.03	1459.16	345.97	713.17	744.29	1.43	-0.15	0.021
98.75	-14.37	-0.42	0.00	-7.72	0.00	7.72	1451.52	343.56	703.26	735.18	1.45	-0.15	0.020
100.00	-14.16	-0.42	0.00	-7.19	0.00	7.19	1437.39	339.54	686.90	719.42	1.49	-0.15	0.020
102.00	-13.81	-0.42	0.00	-6.36	0.00	6.36	990.34	254.40	514.14	496.43	1.56	-0.16	0.027
104.00	-13.63	-0.42	0.00	-5.52	0.00	5.52	978.09	249.58	494.83	480.92	1.62	-0.16	0.025
106.00	-13.46	-0.42	0.00	-4.68	0.00	4.68	965.60	244.75	475.88	465.53	1.69	-0.16	0.024
107.00	-6.96	-0.15	0.00	-4.27	0.00	4.27	959.26	242.34	466.55	457.88	1.72	-0.16	0.017
108.00	-6.88	-0.15	0.00	-4.11	0.00	4.11	952.85	239.93	457.30	450.26	1.76	-0.16	0.016
110.00	-6.73	-0.15	0.00	-3.81	0.00	3.81	939.85	235.10	439.10	435.11	1.83	-0.17	0.016
112.00	-6.58	-0.15	0.00	-3.51	0.00	3.51	926.60	230.28	421.26	420.10	1.90	-0.17	0.015
114.00	-6.42	-0.15	0.00	-3.20	0.00	3.20	913.09	225.45	403.79	405.23	1.97	-0.17	0.015
116.00	-6.28	-0.15	0.00	-2.90	0.00	2.90	899.33	220.63	386.70	390.51	2.04	-0.17	0.014
118.00	-6.13	-0.15	0.00	-2.60	0.00	2.60	885.32	215.80	369.97	375.94	2.11	-0.18	0.014
120.00	-5.99	-0.15	0.00	-2.30	0.00	2.30	871.06	210.98	353.61	361.54	2.19	-0.18	0.013
122.00	-5.85	-0.15	0.00	-2.00	0.00	2.00	856.54	206.16	337.63	347.31	2.26	-0.18	0.013
124.00	-5.71	-0.15	0.00	-1.70	0.00	1.70	841.77	201.33	322.01	333.26	2.34	-0.18	0.012
126.00	-5.57	-0.15	0.00	-1.40	0.00	1.40	826.75	196.51	306.76	319.39	2.42	-0.18	0.011
127.00	-4.06	-0.13	0.00	-1.25	0.00	1.25	819.14	194.09	299.27	312.53	2.46	-0.18	0.009
128.00	-4.00	-0.13	0.00	-1.12	0.00	1.12	811.45	191.68	291.88	305.71	2.49	-0.19	0.009
130.00	-3.87	-0.12	0.00	-0.87	0.00	0.87	791.03	186.86	277.37	290.44	2.57	-0.19	0.008
132.00	-3.75	-0.12	0.00	-0.62	0.00	0.62	770.61	182.03	263.24	275.56	2.65	-0.19	0.007
134.00	-3.62	-0.12	0.00	-0.37	0.00	0.37	750.18	177.21	249.47	261.07	2.73	-0.19	0.006
136.00	-3.50	-0.12	0.00	-0.12	0.00	0.12	729.76	172.38	236.07	246.97	2.81	-0.19	0.005
137.00	-0.09	0.00	0.00	0.00	0.00	0.00	719.55	169.97	229.51	240.07	2.85	-0.19	0.000
138.00	-0.05	0.00	0.00	0.00	0.00	0.00	709.33	167.56	223.04	233.27	2.89	-0.19	0.000
139.00	0.00	0.00	0.00	0.00	0.00	0.00	699.12	165.15	216.66	226.56	2.93	-0.19	0.000

Seismic Segment Forces (Factored)

Structure:	CT13549-S-SBA		**Code:**	TIA-222-H	10/4/2022
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 41

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Load Case: 0.9D + 1.0Ev + 1.0Eh

Gust Response Factor	1.10			**Sds**	0.23		**Iterations**	26
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.09		**Ss**	0.22
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.29	**SA**	0.03		**S1**	0.06
							Seismic Importance Factor	1.00

Top Elev (ft)	Description	Wz (lb)	Hz (lb)	Vertical Ev (lb)	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	
2.00		379.58	1.00	17.65	0.00	
4.00		376.46	3.00	17.51	0.00	
6.00		373.35	5.00	17.36	0.00	
8.00		370.23	7.00	17.22	0.01	
10.00		367.11	9.00	17.07	0.01	
12.00		363.99	11.00	16.93	0.01	
14.00		360.87	13.00	16.78	0.02	
16.00		357.76	15.00	16.64	0.02	
18.00		354.64	17.00	16.49	0.03	
20.00		351.52	19.00	16.35	0.04	
22.00		348.40	21.00	16.20	0.04	
24.00		345.28	23.00	16.06	0.05	
26.00		342.16	25.00	15.91	0.06	
28.00		339.05	27.00	15.77	0.07	
30.00		335.93	29.00	15.62	0.08	
32.00		332.81	31.00	15.48	0.09	
34.00		329.69	33.00	15.33	0.10	
36.00		326.57	35.00	15.19	0.11	
38.00		323.46	37.00	15.04	0.12	
40.00		320.34	39.00	14.90	0.13	
42.00		317.22	41.00	14.75	0.14	
44.00		314.10	43.00	14.61	0.15	
46.00		310.98	45.00	14.46	0.16	
48.00		307.87	47.00	14.32	0.17	
48.50	Bot - Section 2	76.48	48.25	3.56	0.01	
50.00		374.49	49.25	17.42	0.27	
52.00		494.41	51.00	22.99	0.51	
53.25	Top - Section 1	306.16	52.63	14.24	0.21	
54.00		95.23	53.63	4.43	0.02	
56.00		252.24	55.00	11.73	0.16	
58.00		249.75	57.00	11.61	0.16	
60.00		247.25	59.00	11.50	0.17	
62.00		244.76	61.00	11.38	0.18	
64.00		242.26	63.00	11.27	0.19	
66.00		239.77	65.00	11.15	0.20	
68.00		237.27	67.00	11.03	0.20	
70.00		234.78	69.00	10.92	0.21	
72.00		232.29	71.00	10.80	0.22	
74.00		229.79	73.00	10.69	0.23	
76.00		227.30	75.00	10.57	0.23	
78.00		224.80	77.00	10.45	0.24	
80.00		222.31	79.00	10.34	0.25	
82.00		219.81	81.00	10.22	0.26	
84.00		217.32	83.00	10.11	0.26	
86.00		214.82	85.00	9.99	0.27	

Seismic Segment Forces (Factored)

Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 42	

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88.00			212.33	87.00	9.87	0.28		
90.00			209.83	89.00	9.76	0.28		
92.00			207.34	91.00	9.64	0.29		
94.00			204.85	93.00	9.53	0.29		
96.00			202.35	95.00	9.41	0.30		
97.00	Appurtenance(s)		2171.6	96.50	101.00	35.42		
98.00			87.39	97.50	4.06	0.06		
98.75	Bot - Section 3		65.14	98.38	3.03	0.03		
100.00			170.97	99.38	7.95	0.23		
102.00	Top - Section 2		270.01	101.00	12.56	0.60		
104.00			137.72	103.00	6.40	0.16		
106.00			135.85	105.00	6.32	0.16		
107.00	Appurtenance(s)		5211.2	106.50	242.36	248.43		
108.00			61.18	107.50	2.85	0.03		
110.00			120.95	109.00	5.62	0.14		
112.00			119.08	111.00	5.54	0.14		
114.00			117.21	113.00	5.45	0.14		
116.00			115.33	115.00	5.36	0.14		
118.00			113.46	117.00	5.28	0.14		
120.00			111.59	119.00	5.19	0.14		
122.00			109.72	121.00	5.10	0.14		
124.00			107.85	123.00	5.02	0.14		
126.00			105.98	125.00	4.93	0.14		
127.00	Appurtenance(s)		1209.4	126.50	56.25	18.88		
128.00			50.03	127.50	2.33	0.03		
130.00			98.65	129.00	4.59	0.13		
132.00			96.78	131.00	4.50	0.13		
134.00			94.91	133.00	4.41	0.13		
136.00			93.04	135.00	4.33	0.13		
137.00	Appurtenance(s)		2738.3	136.50	127.35	112.68		
138.00			32.97	137.50	1.53	0.02		
139.00	Appurtenance(s)		39.00	138.50	1.81	0.02		
		Totals:	**28,154.9**		**1,309.4**	**426.0**	**Total Wind:**	**25,980.9**

Calculated Forces

Structure:	CT13549-S-SBA		**Code:**	TIA-222-H	10/4/2022
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 43

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Load Case:	0.9D + 1.0Ev + 1.0Eh							**Iterations**	26
Gust Response Factor	1.10				**Sds**	0.23		**Ss**	0.22
Dead Load Factor	0.90	**Seismic Load Factor**	1.00		**Sd1**	0.09		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.29		**SA**	0.03	**Seismic Importance Factor**		1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-27.02	-0.43	0.00	-51.12	0.00	51.12	3003.53	816.68	3179.09	2902.93		0.00	0.00	0.027
2.00	-26.66	-0.43	0.00	-50.27	0.00	50.27	2986.67	808.64	3116.80	2858.03		0.00	0.00	0.027
4.00	-26.29	-0.43	0.00	-49.41	0.00	49.41	2969.56	800.60	3055.12	2813.21		0.00	0.00	0.026
6.00	-25.93	-0.43	0.00	-48.56	0.00	48.56	2952.19	792.56	2994.06	2768.48		0.00	-0.01	0.026
8.00	-25.58	-0.43	0.00	-47.70	0.00	47.70	2934.57	784.52	2933.61	2723.85		0.01	-0.01	0.026
10.00	-25.22	-0.43	0.00	-46.84	0.00	46.84	2916.70	776.48	2873.79	2679.32		0.01	-0.01	0.026
12.00	-24.87	-0.43	0.00	-45.98	0.00	45.98	2898.58	768.44	2814.57	2634.90		0.02	-0.01	0.026
14.00	-24.52	-0.43	0.00	-45.12	0.00	45.12	2880.20	760.40	2755.98	2590.61		0.02	-0.02	0.026
16.00	-24.18	-0.43	0.00	-44.26	0.00	44.26	2861.57	752.36	2698.00	2546.44		0.03	-0.02	0.026
18.00	-23.84	-0.43	0.00	-43.39	0.00	43.39	2842.69	744.31	2640.64	2502.41		0.04	-0.02	0.026
20.00	-23.50	-0.43	0.00	-42.52	0.00	42.52	2823.56	736.27	2583.89	2458.52		0.05	-0.02	0.026
22.00	-23.16	-0.44	0.00	-41.65	0.00	41.65	2804.17	728.23	2527.76	2414.78		0.06	-0.03	0.026
24.00	-22.83	-0.44	0.00	-40.78	0.00	40.78	2784.53	720.19	2472.25	2371.19		0.07	-0.03	0.025
26.00	-22.50	-0.44	0.00	-39.91	0.00	39.91	2764.64	712.15	2417.35	2327.77		0.08	-0.03	0.025
28.00	-22.17	-0.44	0.00	-39.04	0.00	39.04	2744.49	704.11	2363.07	2284.52		0.10	-0.03	0.025
30.00	-21.85	-0.44	0.00	-38.16	0.00	38.16	2724.09	696.07	2309.41	2241.44		0.11	-0.04	0.025
32.00	-21.53	-0.44	0.00	-37.28	0.00	37.28	2703.44	688.03	2256.36	2198.55		0.13	-0.04	0.025
34.00	-21.21	-0.44	0.00	-36.41	0.00	36.41	2682.53	679.99	2203.93	2155.86		0.14	-0.04	0.025
36.00	-20.89	-0.44	0.00	-35.53	0.00	35.53	2661.38	671.95	2152.11	2113.36		0.16	-0.04	0.025
38.00	-20.58	-0.44	0.00	-34.64	0.00	34.64	2639.97	663.90	2100.91	2071.07		0.18	-0.05	0.025
40.00	-20.27	-0.44	0.00	-33.76	0.00	33.76	2618.30	655.86	2050.33	2029.00		0.20	-0.05	0.024
42.00	-19.96	-0.44	0.00	-32.88	0.00	32.88	2596.39	647.82	2000.36	1987.14		0.22	-0.05	0.024
44.00	-19.66	-0.44	0.00	-31.99	0.00	31.99	2574.22	639.78	1951.01	1945.52		0.25	-0.06	0.024
46.00	-19.36	-0.44	0.00	-31.11	0.00	31.11	2551.80	631.74	1902.28	1904.13		0.27	-0.06	0.024
48.00	-19.06	-0.44	0.00	-30.22	0.00	30.22	2529.12	623.70	1854.16	1862.98		0.30	-0.06	0.024
48.50	-18.99	-0.44	0.00	-30.00	0.00	30.00	2523.41	621.69	1842.23	1852.74		0.30	-0.06	0.024
50.00	-18.63	-0.44	0.00	-29.33	0.00	29.33	2506.19	615.66	1806.66	1822.09		0.32	-0.06	0.024
52.00	-18.15	-0.44	0.00	-28.44	0.00	28.44	2483.01	607.62	1759.78	1781.45		0.35	-0.07	0.023
53.25	-17.86	-0.44	0.00	-27.89	0.00	27.89	1850.79	489.91	1429.99	1340.72		0.37	-0.07	0.030
54.00	-17.77	-0.44	0.00	-27.55	0.00	27.55	1845.26	487.50	1415.95	1330.10		0.38	-0.07	0.030
56.00	-17.52	-0.45	0.00	-26.67	0.00	26.67	1830.37	481.06	1378.82	1301.83		0.41	-0.07	0.030
58.00	-17.28	-0.45	0.00	-25.78	0.00	25.78	1815.22	474.63	1342.20	1273.66		0.44	-0.08	0.030
60.00	-17.04	-0.45	0.00	-24.88	0.00	24.88	1799.82	468.20	1306.06	1245.62		0.48	-0.08	0.029
62.00	-16.80	-0.45	0.00	-23.99	0.00	23.99	1784.16	461.76	1270.42	1217.69		0.51	-0.09	0.029
64.00	-16.56	-0.45	0.00	-23.10	0.00	23.10	1768.26	455.33	1235.27	1189.90		0.55	-0.09	0.029
66.00	-16.33	-0.45	0.00	-22.20	0.00	22.20	1752.10	448.90	1200.61	1162.24		0.58	-0.09	0.028
68.00	-16.10	-0.45	0.00	-21.31	0.00	21.31	1735.69	442.47	1166.45	1134.73		0.62	-0.10	0.028
70.00	-15.87	-0.45	0.00	-20.41	0.00	20.41	1719.02	436.03	1132.78	1107.37		0.67	-0.10	0.028
72.00	-15.64	-0.45	0.00	-19.51	0.00	19.51	1702.10	429.60	1099.60	1080.16		0.71	-0.10	0.027
74.00	-15.42	-0.45	0.00	-18.61	0.00	18.61	1684.93	423.17	1066.92	1053.13		0.75	-0.11	0.027
76.00	-15.20	-0.45	0.00	-17.71	0.00	17.71	1667.51	416.73	1034.73	1026.26		0.80	-0.11	0.026
78.00	-14.98	-0.45	0.00	-16.81	0.00	16.81	1649.83	410.30	1003.03	999.58		0.84	-0.11	0.026
80.00	-14.76	-0.45	0.00	-15.91	0.00	15.91	1631.90	403.87	971.82	973.09		0.89	-0.12	0.025
82.00	-14.55	-0.45	0.00	-15.01	0.00	15.01	1613.72	397.44	941.11	946.79		0.94	-0.12	0.025
84.00	-14.34	-0.45	0.00	-14.11	0.00	14.11	1595.28	391.00	910.89	920.69		1.00	-0.13	0.024
86.00	-14.13	-0.45	0.00	-13.21	0.00	13.21	1576.59	384.57	881.17	894.80		1.05	-0.13	0.024
88.00	-13.92	-0.45	0.00	-12.31	0.00	12.31	1557.65	378.14	851.94	869.13		1.10	-0.13	0.023

Calculated Forces

Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 44

90.00	-13.71	-0.45	0.00	-11.41	0.00	11.41	1538.46	371.71	823.20	843.69	1.16	-0.14	0.022
92.00	-13.51	-0.45	0.00	-10.50	0.00	10.50	1519.01	365.27	794.95	818.47	1.22	-0.14	0.022
94.00	-13.31	-0.45	0.00	-9.60	0.00	9.60	1499.31	358.84	767.20	793.50	1.28	-0.14	0.021
96.00	-13.11	-0.45	0.00	-8.70	0.00	8.70	1479.36	352.41	739.94	768.77	1.34	-0.15	0.020
97.00	-11.05	-0.41	0.00	-8.25	0.00	8.25	1469.29	349.19	726.49	756.50	1.37	-0.15	0.018
98.00	-10.97	-0.41	0.00	-7.84	0.00	7.84	1459.16	345.97	713.17	744.29	1.40	-0.15	0.018
98.75	-10.91	-0.41	0.00	-7.53	0.00	7.53	1451.52	343.56	703.26	735.18	1.42	-0.15	0.018
100.00	-10.74	-0.41	0.00	-7.02	0.00	7.02	1437.39	339.54	686.90	719.42	1.46	-0.15	0.017
102.00	-10.48	-0.41	0.00	-6.20	0.00	6.20	990.34	254.40	514.14	496.43	1.52	-0.15	0.023
104.00	-10.35	-0.41	0.00	-5.38	0.00	5.38	978.09	249.58	494.83	480.92	1.59	-0.16	0.022
106.00	-10.21	-0.41	0.00	-4.56	0.00	4.56	965.60	244.75	475.88	465.53	1.66	-0.16	0.020
107.00	-5.28	-0.15	0.00	-4.15	0.00	4.15	959.26	242.34	466.55	457.88	1.69	-0.16	0.015
108.00	-5.22	-0.15	0.00	-4.00	0.00	4.00	952.85	239.93	457.30	450.26	1.72	-0.16	0.014
110.00	-5.10	-0.15	0.00	-3.71	0.00	3.71	939.85	235.10	439.10	435.11	1.79	-0.16	0.014
112.00	-4.99	-0.15	0.00	-3.41	0.00	3.41	926.60	230.28	421.26	420.10	1.86	-0.17	0.014
114.00	-4.87	-0.15	0.00	-3.12	0.00	3.12	913.09	225.45	403.79	405.23	1.93	-0.17	0.013
116.00	-4.76	-0.15	0.00	-2.82	0.00	2.82	899.33	220.63	386.70	390.51	2.00	-0.17	0.013
118.00	-4.65	-0.15	0.00	-2.53	0.00	2.53	885.32	215.80	369.97	375.94	2.07	-0.17	0.012
120.00	-4.54	-0.15	0.00	-2.24	0.00	2.24	871.06	210.98	353.61	361.54	2.14	-0.17	0.011
122.00	-4.44	-0.15	0.00	-1.95	0.00	1.95	856.54	206.16	337.63	347.31	2.22	-0.18	0.011
124.00	-4.33	-0.15	0.00	-1.66	0.00	1.66	841.77	201.33	322.01	333.26	2.29	-0.18	0.010
126.00	-4.23	-0.15	0.00	-1.37	0.00	1.37	826.75	196.51	306.76	319.39	2.37	-0.18	0.009
127.00	-3.08	-0.12	0.00	-1.22	0.00	1.22	819.14	194.09	299.27	312.53	2.41	-0.18	0.008
128.00	-3.03	-0.12	0.00	-1.10	0.00	1.10	811.45	191.68	291.88	305.71	2.44	-0.18	0.007
130.00	-2.94	-0.12	0.00	-0.85	0.00	0.85	791.03	186.86	277.37	290.44	2.52	-0.18	0.007
132.00	-2.84	-0.12	0.00	-0.61	0.00	0.61	770.61	182.03	263.24	275.56	2.60	-0.18	0.006
134.00	-2.75	-0.12	0.00	-0.36	0.00	0.36	750.18	177.21	249.47	261.07	2.67	-0.18	0.005
136.00	-2.66	-0.12	0.00	-0.12	0.00	0.12	729.76	172.38	236.07	246.97	2.75	-0.18	0.004
137.00	-0.07	0.00	0.00	0.00	0.00	0.00	719.55	169.97	229.51	240.07	2.79	-0.18	0.000
138.00	-0.04	0.00	0.00	0.00	0.00	0.00	709.33	167.56	223.04	233.27	2.83	-0.18	0.000
139.00	0.00	0.00	0.00	0.00	0.00	0.00	699.12	165.15	216.66	226.56	2.87	-0.18	0.000

Wind Loading - Shaft

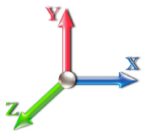
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 45	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 29

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	6.528	7.18	218.90	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
2.00		1.00	0.85	6.528	7.18	216.76	0.730	0.000	2.00	7.954	5.81	41.7	0.0	315.1
4.00		1.00	0.85	6.528	7.18	214.62	0.730	0.000	2.00	7.876	5.75	41.3	0.0	312.0
6.00		1.00	0.85	6.528	7.18	212.47	0.730	0.000	2.00	7.798	5.69	40.9	0.0	308.9
8.00		1.00	0.85	6.528	7.18	210.33	0.730	0.000	2.00	7.719	5.64	40.5	0.0	305.8
10.00		1.00	0.85	6.528	7.18	208.19	0.730	0.000	2.00	7.641	5.58	40.1	0.0	302.7
12.00		1.00	0.85	6.528	7.18	206.05	0.730	0.000	2.00	7.563	5.52	39.6	0.0	299.5
14.00		1.00	0.85	6.528	7.18	203.91	0.730	0.000	2.00	7.485	5.46	39.2	0.0	296.4
16.00		1.00	0.86	6.608	7.27	203.01	0.730	0.000	2.00	7.407	5.41	39.3	0.0	293.3
18.00		1.00	0.88	6.774	7.45	203.36	0.730	0.000	2.00	7.329	5.35	39.9	0.0	290.2
20.00		1.00	0.90	6.926	7.62	203.43	0.730	0.000	2.00	7.250	5.29	40.3	0.0	287.1
22.00		1.00	0.92	7.067	7.77	203.25	0.730	0.000	2.00	7.172	5.24	40.7	0.0	284.0
24.00		1.00	0.94	7.197	7.92	202.87	0.730	0.000	2.00	7.094	5.18	41.0	0.0	280.8
26.00		1.00	0.95	7.320	8.05	202.32	0.730	0.000	2.00	7.016	5.12	41.2	0.0	277.7
28.00		1.00	0.97	7.435	8.18	201.62	0.730	0.000	2.00	6.938	5.06	41.4	0.0	274.6
30.00		1.00	0.98	7.544	8.30	200.79	0.730	0.000	2.00	6.860	5.01	41.6	0.0	271.5
32.00		1.00	1.00	7.647	8.41	199.84	0.730	0.000	2.00	6.781	4.95	41.6	0.0	268.4
34.00		1.00	1.01	7.745	8.52	198.79	0.730	0.000	2.00	6.703	4.89	41.7	0.0	265.2
36.00		1.00	1.02	7.839	8.62	197.64	0.730	0.000	2.00	6.625	4.84	41.7	0.0	262.1
38.00		1.00	1.03	7.928	8.72	196.41	0.730	0.000	2.00	6.547	4.78	41.7	0.0	259.0
40.00		1.00	1.04	8.014	8.82	195.10	0.730	0.000	2.00	6.469	4.72	41.6	0.0	255.9
42.00		1.00	1.05	8.097	8.91	193.72	0.730	0.000	2.00	6.390	4.67	41.6	0.0	252.8
44.00		1.00	1.06	8.177	8.99	192.28	0.730	0.000	2.00	6.312	4.61	41.4	0.0	249.7
46.00		1.00	1.07	8.254	9.08	190.77	0.730	0.000	2.00	6.234	4.55	41.3	0.0	246.5
48.00		1.00	1.08	8.328	9.16	189.21	0.730	0.000	2.00	6.156	4.49	41.2	0.0	243.4
48.50	Bot - Section 2	1.00	1.09	8.346	9.18	188.81	0.730	0.000	0.50	1.527	1.11	10.2	0.0	60.4
50.00		1.00	1.09	8.400	9.24	187.59	0.730	0.000	1.50	4.614	3.37	31.1	0.0	326.2
52.00		1.00	1.10	8.470	9.32	185.93	0.730	0.000	2.00	6.084	4.44	41.4	0.0	430.0
53.25	Top - Section 1	1.00	1.11	8.512	9.36	184.87	0.730	0.000	1.25	3.763	2.75	25.7	0.0	265.9
54.00		1.00	1.11	8.537	9.39	186.87	0.730	0.000	0.75	2.243	1.64	15.4	0.0	71.1
56.00		1.00	1.12	8.603	9.46	185.13	0.730	0.000	2.00	5.928	4.33	40.9	0.0	187.8
58.00		1.00	1.13	8.667	9.53	183.35	0.730	0.000	2.00	5.850	4.27	40.7	0.0	185.3
60.00		1.00	1.14	8.729	9.60	181.53	0.730	0.000	2.00	5.771	4.21	40.5	0.0	182.8
62.00		1.00	1.14	8.789	9.67	179.67	0.730	0.000	2.00	5.693	4.16	40.2	0.0	180.3
64.00		1.00	1.15	8.848	9.73	177.78	0.730	0.000	2.00	5.615	4.10	39.9	0.0	177.8
66.00		1.00	1.16	8.906	9.80	175.86	0.730	0.000	2.00	5.537	4.04	39.6	0.0	175.3
68.00		1.00	1.17	8.962	9.86	173.90	0.730	0.000	2.00	5.459	3.98	39.3	0.0	172.8
70.00		1.00	1.17	9.017	9.92	171.92	0.730	0.000	2.00	5.381	3.93	39.0	0.0	170.3
72.00		1.00	1.18	9.070	9.98	169.91	0.730	0.000	2.00	5.302	3.87	38.6	0.0	167.8
74.00		1.00	1.19	9.123	10.03	167.87	0.730	0.000	2.00	5.224	3.81	38.3	0.0	165.3
76.00		1.00	1.19	9.174	10.09	165.80	0.730	0.000	2.00	5.146	3.76	37.9	0.0	162.8
78.00		1.00	1.20	9.224	10.15	163.71	0.730	0.000	2.00	5.068	3.70	37.5	0.0	160.4
80.00		1.00	1.21	9.274	10.20	161.59	0.730	0.000	2.00	4.990	3.64	37.2	0.0	157.9
82.00		1.00	1.21	9.322	10.25	159.46	0.730	0.000	2.00	4.912	3.59	36.8	0.0	155.4
84.00		1.00	1.22	9.369	10.31	157.30	0.730	0.000	2.00	4.833	3.53	36.4	0.0	152.9
86.00		1.00	1.23	9.416	10.36	155.11	0.730	0.000	2.00	4.755	3.47	36.0	0.0	150.4
88.00		1.00	1.23	9.462	10.41	152.91	0.730	0.000	2.00	4.677	3.41	35.5	0.0	147.9

Wind Loading - Shaft

Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 46

Tower Engineering Solutions

90.00		1.00	1.24	9.506	10.46	150.69	0.730	0.000	2.00	4.599	3.36	35.1	0.0	145.4
92.00		1.00	1.24	9.551	10.51	148.45	0.730	0.000	2.00	4.521	3.30	34.7	0.0	142.9
94.00		1.00	1.25	9.594	10.55	146.19	0.730	0.000	2.00	4.442	3.24	34.2	0.0	140.4
96.00		1.00	1.25	9.637	10.60	143.91	0.730	0.000	2.00	4.364	3.19	33.8	0.0	137.9
97.00	Appurtenance(s)	1.00	1.26	9.658	10.62	142.77	0.730	0.000	1.00	2.153	1.57	16.7	0.0	68.0
98.00		1.00	1.26	9.678	10.65	141.62	0.730	0.000	1.00	2.133	1.56	16.6	0.0	67.4
98.75	Bot - Section 3	1.00	1.26	9.694	10.66	140.76	0.730	0.000	0.75	1.587	1.16	12.4	0.0	50.1
100.00		1.00	1.27	9.720	10.69	139.31	0.730	0.000	1.25	2.660	1.94	20.8	0.0	146.0
102.00	Top - Section 2	1.00	1.27	9.760	10.74	136.98	0.730	0.000	2.00	4.193	3.06	32.9	0.0	230.0
104.00		1.00	1.28	9.800	10.78	136.77	0.730	0.000	2.00	4.115	3.00	32.4	0.0	97.7
106.00		1.00	1.28	9.840	10.82	134.41	0.730	0.000	2.00	4.037	2.95	31.9	0.0	95.8
107.00	Appurtenance(s)	1.00	1.28	9.859	10.85	133.23	0.730	0.000	1.00	1.989	1.45	15.7	0.0	47.2
108.00		1.00	1.29	9.878	10.87	132.05	0.730	0.000	1.00	1.970	1.44	15.6	0.0	46.8
110.00		1.00	1.29	9.917	10.91	129.66	0.730	0.000	2.00	3.880	2.83	30.9	0.0	92.1
112.00		1.00	1.30	9.954	10.95	127.26	0.730	0.000	2.00	3.802	2.78	30.4	0.0	90.2
114.00		1.00	1.30	9.992	10.99	124.85	0.730	0.000	2.00	3.724	2.72	29.9	0.0	88.4
116.00		1.00	1.31	10.028	11.03	122.43	0.730	0.000	2.00	3.646	2.66	29.4	0.0	86.5
118.00		1.00	1.31	10.064	11.07	119.99	0.730	0.000	2.00	3.568	2.60	28.8	0.0	84.6
120.00		1.00	1.32	10.100	11.11	117.54	0.730	0.000	2.00	3.490	2.55	28.3	0.0	82.7
122.00		1.00	1.32	10.135	11.15	115.08	0.730	0.000	2.00	3.411	2.49	27.8	0.0	80.9
124.00		1.00	1.32	10.170	11.19	112.60	0.730	0.000	2.00	3.333	2.43	27.2	0.0	79.0
126.00		1.00	1.33	10.204	11.22	110.11	0.730	0.000	2.00	3.255	2.38	26.7	0.0	77.1
127.00	Appurtenance(s)	1.00	1.33	10.221	11.24	108.87	0.730	0.000	1.00	1.598	1.17	13.1	0.0	37.9
128.00		1.00	1.33	10.238	11.26	107.62	0.730	0.000	1.00	1.579	1.15	13.0	0.0	37.4
130.00		1.00	1.34	10.272	11.30	105.11	0.730	0.000	2.00	3.099	2.26	25.6	0.0	73.4
132.00		1.00	1.34	10.305	11.34	102.58	0.730	0.000	2.00	3.021	2.20	25.0	0.0	71.5
134.00		1.00	1.35	10.337	11.37	100.05	0.730	0.000	2.00	2.942	2.15	24.4	0.0	69.7
136.00		1.00	1.35	10.370	11.41	97.51	0.730	0.000	2.00	2.864	2.09	23.8	0.0	67.8
137.00	Appurtenance(s)	1.00	1.35	10.386	11.42	96.24	0.730	0.000	1.00	1.403	1.02	11.7	0.0	33.2
138.00		1.00	1.35	10.402	11.44	94.96	0.730	0.000	1.00	1.383	1.01	11.6	0.0	32.7
139.00	Appurtenance(s)	1.00	1.36	10.417	11.46	93.68	0.730	0.000	1.00	1.364	1.00	11.4	0.0	32.3
								Totals:	**139.00**			**2,512.0**		**13,342.3**

Discrete Appurtenance Forces

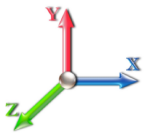
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 47	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 29

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	139.00	6' Lightning rod	1	10.417	11.459	1.00	1.00	0.38	6.50	0.000	0.000	4.35	0.00	0.00
2	137.00	4415 B25	3	10.386	11.424	0.40	0.80	2.23	138.90	0.000	0.000	25.50	0.00	0.00
3	137.00	KRY 112 144/1	3	10.386	11.424	0.40	0.80	0.49	33.00	0.000	0.000	5.62	0.00	0.00
4	137.00	SDX1926Q-43	3	10.386	11.424	0.40	0.80	0.46	21.00	0.000	0.000	5.21	0.00	0.00
5	137.00	AIR6449 B41	3	10.386	11.424	0.57	0.80	9.63	309.00	0.000	0.000	109.99	0.00	0.00
6	137.00	Air 32	3	10.386	11.424	0.70	0.80	13.59	396.60	0.000	0.000	155.29	0.00	0.00
7	137.00	4449 B71+B85	3	10.386	11.424	0.54	0.80	2.65	210.00	0.000	0.000	30.31	0.00	0.00
8	137.00	RDS-272	3	10.386	11.424	0.56	0.75	16.88	1200.00	0.000	0.000	192.78	0.00	0.00
9	137.00	RFS	3	10.386	11.424	0.56	0.80	34.00	384.00	0.000	0.000	388.46	0.00	0.00
10	127.00	Commscope	3	10.221	11.243	0.59	0.80	21.74	212.40	0.000	0.000	244.41	0.00	0.00
11	127.00	(1) 8'x2.875" mount pipe	3	10.221	11.243	1.00	1.00	6.90	139.20	0.000	0.000	77.58	0.00	0.00
12	127.00	Collar Mount (3-Sided)	1	10.221	11.243	1.00	1.00	3.50	367.00	0.000	0.000	39.35	0.00	0.00
13	127.00	Fujitsu TA08025-B605 -	3	10.221	11.243	0.54	0.80	3.15	225.00	0.000	0.000	35.44	0.00	0.00
14	127.00	Fujitsu TA08025-B604 -	3	10.221	11.243	0.54	0.80	3.15	191.70	0.000	0.000	35.44	0.00	0.00
15	127.00	Raycap	1	10.221	11.243	0.80	0.80	1.61	21.90	0.000	0.000	18.08	0.00	0.00
16	107.00	RRUS 4449 B5/B12	3	9.859	10.845	0.38	0.75	1.86	255.00	0.000	0.000	20.13	0.00	0.00
17	107.00	4426 B66	3	9.859	10.845	0.50	0.75	1.73	159.00	0.000	0.000	18.80	0.00	0.00
18	107.00	DTMABP7819VG12A	3	9.859	10.845	0.38	0.75	1.28	57.60	0.000	0.000	13.91	0.00	0.00
19	107.00	RRUS 4478 B14	3	9.859	10.845	0.50	0.75	2.49	178.20	0.000	0.000	26.98	0.00	0.00
20	107.00	AIR 6449 B77D	3	9.859	10.845	0.64	0.75	7.90	244.80	0.000	0.000	85.66	0.00	0.00
21	107.00	DMP65R-BU6DA	3	9.859	10.845	0.54	0.75	20.59	238.20	0.000	0.000	223.30	0.00	0.00
22	107.00	RMQLP-4120-H10	1	9.859	10.845	1.00	1.00	42.00	3249.41	0.000	0.000	455.49	0.00	0.00
23	107.00	RRUS 4415 B25	3	9.859	10.845	0.50	0.75	2.47	138.00	0.000	0.000	26.81	0.00	0.00
24	107.00	DBC20056F1V1	3	9.859	10.845	0.38	0.75	0.46	21.00	0.000	0.000	5.00	0.00	0.00
25	107.00	RRUS A2	3	9.859	10.845	0.50	0.75	2.80	63.60	0.000	0.000	30.41	0.00	0.00
26	107.00	RRUS-32	3	9.859	10.845	0.50	0.75	5.83	231.00	0.000	0.000	63.27	0.00	0.00
27	107.00	DC6-48-60-18-8F	2	9.859	10.845	0.38	0.75	1.10	63.60	0.000	0.000	11.96	0.00	0.00
28	107.00	EPBQ-652L8H6-L2	3	9.859	10.845	0.64	0.75	18.47	218.40	0.000	0.000	200.36	0.00	0.00
29	107.00	DC9-48-60-24-8C-EV	1	9.859	10.845	0.38	0.75	0.43	26.20	0.000	0.000	4.64	0.00	0.00
30	97.00	Samsung VZS01	3	9.658	10.623	0.55	0.80	7.12	261.30	0.000	0.000	75.65	0.00	0.00
31	97.00	T-Arms	3	9.658	10.623	0.56	0.75	13.50	1050.00	0.000	0.000	143.42	0.00	0.00
32	97.00	JMA MX06FRO660-03	6	9.658	10.623	0.70	0.80	41.22	276.00	0.000	0.000	437.86	0.00	0.00
33	97.00	Commscope	1	9.658	10.623	0.40	0.80	2.24	20.00	0.000	0.000	23.80	0.00	0.00
34	97.00	Samsung B5/B13	3	9.658	10.623	0.54	0.80	3.02	253.20	0.000	0.000	32.11	0.00	0.00
35	97.00	Samsung B2/B66A	3	9.658	10.623	0.54	0.80	3.02	210.90	0.000	0.000	32.11	0.00	0.00
							Totals:		**11,071.61**			**3,299.48**		

Total Applied Force Summary

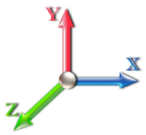
Structure:	CT13549-S-SBA		**Code:**	TIA-222-H	10/4/2022
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 48

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 29

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
2.00		41.69	386.74	0.00	0.00
4.00		41.28	383.62	0.00	0.00
6.00		40.87	380.51	0.00	0.00
8.00		40.46	377.39	0.00	0.00
10.00		40.05	374.27	0.00	0.00
12.00		39.64	371.15	0.00	0.00
14.00		39.23	368.03	0.00	0.00
16.00		39.30	364.92	0.00	0.00
18.00		39.87	361.80	0.00	0.00
20.00		40.33	358.68	0.00	0.00
22.00		40.70	355.56	0.00	0.00
24.00		41.00	352.44	0.00	0.00
26.00		41.24	349.33	0.00	0.00
28.00		41.42	346.21	0.00	0.00
30.00		41.55	343.09	0.00	0.00
32.00		41.64	339.97	0.00	0.00
34.00		41.69	336.85	0.00	0.00
36.00		41.70	333.73	0.00	0.00
38.00		41.68	330.62	0.00	0.00
40.00		41.63	327.50	0.00	0.00
42.00		41.55	324.38	0.00	0.00
44.00		41.45	321.26	0.00	0.00
46.00		41.32	318.14	0.00	0.00
48.00		41.17	315.03	0.00	0.00
48.50		10.23	78.27	0.00	0.00
50.00		31.13	379.86	0.00	0.00
52.00		41.38	501.57	0.00	0.00
53.25		25.72	310.63	0.00	0.00
54.00		15.38	97.92	0.00	0.00
56.00		40.95	259.40	0.00	0.00
58.00		40.71	256.91	0.00	0.00
60.00		40.45	254.41	0.00	0.00
62.00		40.18	251.92	0.00	0.00
64.00		39.90	249.42	0.00	0.00
66.00		39.60	246.93	0.00	0.00
68.00		39.28	244.44	0.00	0.00
70.00		38.96	241.94	0.00	0.00
72.00		38.62	239.45	0.00	0.00
74.00		38.27	236.95	0.00	0.00
76.00		37.91	234.46	0.00	0.00
78.00		37.54	231.96	0.00	0.00
80.00		37.16	229.47	0.00	0.00
82.00		36.77	226.97	0.00	0.00
84.00		36.36	224.48	0.00	0.00
86.00		35.95	221.98	0.00	0.00
88.00		35.53	219.49	0.00	0.00

Total Applied Force Summary

Structure:	CT13549-S-SBA		**Code:**	TIA-222-H	10/4/2022
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 49

Tower Engineering Solutions

90.00		35.11	217.00	0.00	0.00
92.00		34.67	214.50	0.00	0.00
94.00		34.22	212.01	0.00	0.00
96.00		33.77	209.51	0.00	0.00
97.00	(19) attachments	761.65	2175.22	0.00	0.00
98.00		16.58	89.62	0.00	0.00
98.75		12.35	66.80	0.00	0.00
100.00		20.76	173.75	0.00	0.00
102.00		32.86	274.46	0.00	0.00
104.00		32.38	142.16	0.00	0.00
106.00		31.90	140.29	0.00	0.00
107.00	(37) attachments	1202.47	5213.46	0.00	0.00
108.00		15.62	62.78	0.00	0.00
110.00		30.90	124.15	0.00	0.00
112.00		30.39	122.28	0.00	0.00
114.00		29.88	120.41	0.00	0.00
116.00		29.36	118.54	0.00	0.00
118.00		28.83	116.67	0.00	0.00
120.00		28.30	114.80	0.00	0.00
122.00		27.76	112.93	0.00	0.00
124.00		27.22	111.06	0.00	0.00
126.00		26.67	109.18	0.00	0.00
127.00	(14) attachments	463.41	1211.09	0.00	0.00
128.00		12.98	51.43	0.00	0.00
130.00		25.56	101.46	0.00	0.00
132.00		24.99	99.59	0.00	0.00
134.00		24.42	97.72	0.00	0.00
136.00		23.85	95.85	0.00	0.00
137.00	(24) attachments	924.86	2739.72	0.00	0.00
138.00		11.55	32.99	0.00	0.00
139.00	(1) attachments	15.76	39.03	0.00	0.00
	Totals:	**5,811.51**	**28,570.53**	**0.00**	**0.00**

Linear Appurtenance Segment Forces (Factored)

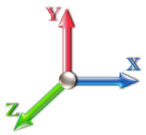
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 50	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 29

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
2.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.528	0.00	0.55
4.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.528	0.00	0.55
6.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.528	0.00	0.55
8.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.528	0.00	0.55
10.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.528	0.00	0.55
12.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.528	0.00	0.55
14.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.528	0.00	0.55
16.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.608	0.00	0.55
18.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.774	0.00	0.55
20.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	6.926	0.00	0.55
22.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.067	0.00	0.55
24.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.197	0.00	0.55
26.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.320	0.00	0.55
28.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.435	0.00	0.55
30.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.544	0.00	0.55
32.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.647	0.00	0.55
34.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.745	0.00	0.55
36.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.839	0.00	0.55
38.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.928	0.00	0.55
40.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.014	0.00	0.55
42.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.097	0.00	0.55
44.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.177	0.00	0.55
46.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.254	0.00	0.55
48.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.328	0.00	0.55
48.50	Safety Cable	Yes	0.50	0.000	0.00	0.00	0.00	0.000	0.000	8.346	0.00	0.14
50.00	Safety Cable	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	8.400	0.00	0.41
52.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.470	0.00	0.55
53.25	Safety Cable	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	8.512	0.00	0.34
54.00	Safety Cable	Yes	0.75	0.000	0.00	0.00	0.00	0.000	0.000	8.537	0.00	0.20
56.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.603	0.00	0.55
58.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.667	0.00	0.55
60.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.729	0.00	0.55
62.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.789	0.00	0.55
64.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.848	0.00	0.55
66.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.906	0.00	0.55
68.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.962	0.00	0.55
70.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.017	0.00	0.55
72.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.070	0.00	0.55
74.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.123	0.00	0.55
76.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.174	0.00	0.55
78.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.224	0.00	0.55
80.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.274	0.00	0.55
82.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.322	0.00	0.55
84.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.369	0.00	0.55
86.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.416	0.00	0.55
88.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.462	0.00	0.55
90.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.506	0.00	0.55

Linear Appurtenance Segment Forces (Factored)

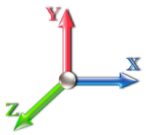
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 51	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 29

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
92.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.551	0.00	0.55
94.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.594	0.00	0.55
96.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.637	0.00	0.55
97.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	9.658	0.00	0.27
98.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	9.678	0.00	0.27
98.75	Safety Cable	Yes	0.75	0.000	0.00	0.00	0.00	0.000	0.000	9.694	0.00	0.20
100.00	Safety Cable	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	9.720	0.00	0.34
102.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.760	0.00	0.55
104.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.800	0.00	0.55
106.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.840	0.00	0.55
107.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	9.859	0.00	0.27
108.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	9.878	0.00	0.27
110.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.917	0.00	0.55
112.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.954	0.00	0.55
114.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	9.992	0.00	0.55
116.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	10.028	0.00	0.55
118.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	10.064	0.00	0.55
120.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	10.100	0.00	0.55
122.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	10.135	0.00	0.55
124.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	10.170	0.00	0.55
126.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	10.204	0.00	0.55
127.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	10.221	0.00	0.27
128.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	10.238	0.00	0.27
130.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	10.272	0.00	0.55
132.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	10.305	0.00	0.55
134.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	10.337	0.00	0.55
136.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	10.370	0.00	0.55
137.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	10.386	0.00	0.27
138.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	10.402	0.00	0.27
139.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	10.417	0.00	0.27
									Totals:		**0.0**	**37.9**

Calculated Forces

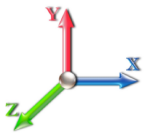
Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 52	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 29

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-28.57	-5.82	0.00	-572.96	0.00	572.96	3003.53	816.68	3179.09	2902.93	0.00	0.000	0.000	0.207
2.00	-28.18	-5.79	0.00	-561.32	0.00	561.32	2986.67	808.64	3116.80	2858.03	0.01	-0.025	0.000	0.206
4.00	-27.79	-5.76	0.00	-549.75	0.00	549.75	2969.56	800.60	3055.12	2813.21	0.02	-0.050	0.000	0.205
6.00	-27.41	-5.73	0.00	-538.23	0.00	538.23	2952.19	792.56	2994.06	2768.48	0.05	-0.075	0.000	0.204
8.00	-27.03	-5.70	0.00	-526.78	0.00	526.78	2934.57	784.52	2933.61	2723.85	0.09	-0.101	0.000	0.203
10.00	-26.65	-5.67	0.00	-515.38	0.00	515.38	2916.70	776.48	2873.79	2679.32	0.13	-0.127	0.000	0.202
12.00	-26.28	-5.64	0.00	-504.03	0.00	504.03	2898.58	768.44	2814.57	2634.90	0.19	-0.153	0.000	0.200
14.00	-25.91	-5.61	0.00	-492.75	0.00	492.75	2880.20	760.40	2755.98	2590.61	0.26	-0.179	0.000	0.199
16.00	-25.54	-5.59	0.00	-481.52	0.00	481.52	2861.57	752.36	2698.00	2546.44	0.34	-0.206	0.000	0.198
18.00	-25.18	-5.56	0.00	-470.35	0.00	470.35	2842.69	744.31	2640.64	2502.41	0.43	-0.233	0.000	0.197
20.00	-24.82	-5.53	0.00	-459.24	0.00	459.24	2823.56	736.27	2583.89	2458.52	0.54	-0.260	0.000	0.196
22.00	-24.46	-5.50	0.00	-448.18	0.00	448.18	2804.17	728.23	2527.76	2414.78	0.65	-0.287	0.000	0.194
24.00	-24.10	-5.46	0.00	-437.19	0.00	437.19	2784.53	720.19	2472.25	2371.19	0.78	-0.314	0.000	0.193
26.00	-23.75	-5.43	0.00	-426.26	0.00	426.26	2764.64	712.15	2417.35	2327.77	0.92	-0.342	0.000	0.192
28.00	-23.40	-5.40	0.00	-415.40	0.00	415.40	2744.49	704.11	2363.07	2284.52	1.07	-0.370	0.000	0.190
30.00	-23.06	-5.37	0.00	-404.60	0.00	404.60	2724.09	696.07	2309.41	2241.44	1.23	-0.398	0.000	0.189
32.00	-22.72	-5.34	0.00	-393.86	0.00	393.86	2703.44	688.03	2256.36	2198.55	1.40	-0.426	0.000	0.188
34.00	-22.38	-5.30	0.00	-383.19	0.00	383.19	2682.53	679.99	2203.93	2155.86	1.58	-0.455	0.000	0.186
36.00	-22.04	-5.27	0.00	-372.59	0.00	372.59	2661.38	671.95	2152.11	2113.36	1.78	-0.484	0.000	0.185
38.00	-21.71	-5.24	0.00	-362.05	0.00	362.05	2639.97	663.90	2100.91	2071.07	1.99	-0.513	0.000	0.183
40.00	-21.38	-5.20	0.00	-351.58	0.00	351.58	2618.30	655.86	2050.33	2029.00	2.21	-0.542	0.000	0.182
42.00	-21.05	-5.17	0.00	-341.18	0.00	341.18	2596.39	647.82	2000.36	1987.14	2.45	-0.571	0.000	0.180
44.00	-20.73	-5.13	0.00	-330.84	0.00	330.84	2574.22	639.78	1951.01	1945.52	2.69	-0.601	0.000	0.178
46.00	-20.41	-5.10	0.00	-320.58	0.00	320.58	2551.80	631.74	1902.28	1904.13	2.95	-0.631	0.000	0.176
48.00	-20.09	-5.06	0.00	-310.38	0.00	310.38	2529.12	623.70	1854.16	1862.98	3.22	-0.661	0.000	0.175
48.50	-20.01	-5.06	0.00	-307.85	0.00	307.85	2523.41	621.69	1842.23	1852.74	3.29	-0.668	0.000	0.174
50.00	-19.63	-5.03	0.00	-300.26	0.00	300.26	2506.19	615.66	1806.66	1822.09	3.50	-0.691	0.000	0.173
52.00	-19.13	-4.99	0.00	-290.21	0.00	290.21	2483.01	607.62	1759.78	1781.45	3.80	-0.721	0.000	0.171
53.25	-18.82	-4.97	0.00	-283.97	0.00	283.97	1850.79	489.91	1429.99	1340.72	3.99	-0.740	0.000	0.222
54.00	-18.72	-4.96	0.00	-280.24	0.00	280.24	1845.26	487.50	1415.95	1330.10	4.11	-0.752	0.000	0.221
56.00	-18.45	-4.92	0.00	-270.33	0.00	270.33	1830.37	481.06	1378.82	1301.83	4.43	-0.788	0.000	0.218
58.00	-18.19	-4.89	0.00	-260.49	0.00	260.49	1815.22	474.63	1342.20	1273.66	4.77	-0.825	0.000	0.215
60.00	-17.94	-4.86	0.00	-250.70	0.00	250.70	1799.82	468.20	1306.06	1245.62	5.12	-0.862	0.000	0.211
62.00	-17.68	-4.83	0.00	-240.99	0.00	240.99	1784.16	461.76	1270.42	1217.69	5.49	-0.898	0.000	0.208
64.00	-17.43	-4.79	0.00	-231.34	0.00	231.34	1768.26	455.33	1235.27	1189.90	5.88	-0.935	0.000	0.204
66.00	-17.18	-4.76	0.00	-221.75	0.00	221.75	1752.10	448.90	1200.61	1162.24	6.28	-0.972	0.000	0.201
68.00	-16.94	-4.73	0.00	-212.23	0.00	212.23	1735.69	442.47	1166.45	1134.73	6.69	-1.009	0.000	0.197
70.00	-16.69	-4.70	0.00	-202.77	0.00	202.77	1719.02	436.03	1132.78	1107.37	7.12	-1.045	0.000	0.193
72.00	-16.45	-4.66	0.00	-193.39	0.00	193.39	1702.10	429.60	1099.60	1080.16	7.57	-1.082	0.000	0.189
74.00	-16.21	-4.63	0.00	-184.06	0.00	184.06	1684.93	423.17	1066.92	1053.13	8.03	-1.118	0.000	0.185
76.00	-15.97	-4.60	0.00	-174.80	0.00	174.80	1667.51	416.73	1034.73	1026.26	8.50	-1.155	0.000	0.180
78.00	-15.74	-4.57	0.00	-165.61	0.00	165.61	1649.83	410.30	1003.03	999.58	9.00	-1.191	0.000	0.175
80.00	-15.51	-4.53	0.00	-156.48	0.00	156.48	1631.90	403.87	971.82	973.09	9.50	-1.227	0.000	0.170
82.00	-15.28	-4.50	0.00	-147.41	0.00	147.41	1613.72	397.44	941.11	946.79	10.02	-1.262	0.000	0.165
84.00	-15.05	-4.47	0.00	-138.41	0.00	138.41	1595.28	391.00	910.89	920.69	10.56	-1.297	0.000	0.160
86.00	-14.83	-4.44	0.00	-129.47	0.00	129.47	1576.59	384.57	881.17	894.80	11.11	-1.331	0.000	0.154
88.00	-14.61	-4.40	0.00	-120.60	0.00	120.60	1557.65	378.14	851.94	869.13	11.68	-1.365	0.000	0.148
90.00	-14.39	-4.37	0.00	-111.79	0.00	111.79	1538.46	371.71	823.20	843.69	12.26	-1.398	0.000	0.142

Calculated Forces

Structure:	CT13549-S-SBA	**Code:**	TIA-222-H	10/4/2022	
Site Name:	Danbury 1	**Exposure:**	C		
Height:	139.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 53

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92.00	-14.17	-4.34	0.00	-103.05	0.00	103.05	1519.01	365.27	794.95	818.47	12.85	-1.430	0.000	0.135
94.00	-13.96	-4.31	0.00	-94.37	0.00	94.37	1499.31	358.84	767.20	793.50	13.45	-1.461	0.000	0.128
96.00	-13.75	-4.27	0.00	-85.76	0.00	85.76	1479.36	352.41	739.94	768.77	14.07	-1.491	0.000	0.121
97.00	-11.59	-3.46	0.00	-81.48	0.00	81.48	1469.29	349.19	726.49	756.50	14.39	-1.505	0.000	0.116
98.00	-11.51	-3.44	0.00	-78.03	0.00	78.03	1459.16	345.97	713.17	744.29	14.70	-1.520	0.000	0.113
98.75	-11.44	-3.43	0.00	-75.45	0.00	75.45	1451.52	343.56	703.26	735.18	14.94	-1.530	0.000	0.111
100.00	-11.26	-3.41	0.00	-71.16	0.00	71.16	1437.39	339.54	686.90	719.42	15.35	-1.548	0.000	0.107
102.00	-10.99	-3.37	0.00	-64.34	0.00	64.34	990.34	254.40	514.14	496.43	16.00	-1.574	0.000	0.141
104.00	-10.85	-3.34	0.00	-57.59	0.00	57.59	978.09	249.58	494.83	480.92	16.67	-1.600	0.000	0.131
106.00	-10.70	-3.31	0.00	-50.90	0.00	50.90	965.60	244.75	475.88	465.53	17.34	-1.630	0.000	0.121
107.00	-5.53	-1.96	0.00	-47.59	0.00	47.59	959.26	242.34	466.55	457.88	17.68	-1.644	0.000	0.110
108.00	-5.46	-1.95	0.00	-45.63	0.00	45.63	952.85	239.93	457.30	450.26	18.03	-1.658	0.000	0.107
110.00	-5.34	-1.91	0.00	-41.74	0.00	41.74	939.85	235.10	439.10	435.11	18.73	-1.685	0.000	0.102
112.00	-5.22	-1.88	0.00	-37.91	0.00	37.91	926.60	230.28	421.26	420.10	19.44	-1.712	0.000	0.096
114.00	-5.10	-1.85	0.00	-34.14	0.00	34.14	913.09	225.45	403.79	405.23	20.17	-1.737	0.000	0.090
116.00	-4.98	-1.82	0.00	-30.44	0.00	30.44	899.33	220.63	386.70	390.51	20.90	-1.762	0.000	0.084
118.00	-4.86	-1.79	0.00	-26.80	0.00	26.80	885.32	215.80	369.97	375.94	21.64	-1.785	0.000	0.077
120.00	-4.75	-1.76	0.00	-23.22	0.00	23.22	871.06	210.98	353.61	361.54	22.39	-1.806	0.000	0.070
122.00	-4.64	-1.73	0.00	-19.70	0.00	19.70	856.54	206.16	337.63	347.31	23.15	-1.826	0.000	0.062
124.00	-4.53	-1.70	0.00	-16.24	0.00	16.24	841.77	201.33	322.01	333.26	23.92	-1.843	0.000	0.054
126.00	-4.42	-1.67	0.00	-12.84	0.00	12.84	826.75	196.51	306.76	319.39	24.70	-1.859	0.000	0.046
127.00	-3.22	-1.17	0.00	-11.17	0.00	11.17	819.14	194.09	299.27	312.53	25.09	-1.866	0.000	0.040
128.00	-3.17	-1.16	0.00	-10.00	0.00	10.00	811.45	191.68	291.88	305.71	25.48	-1.872	0.000	0.037
130.00	-3.07	-1.13	0.00	-7.69	0.00	7.69	791.03	186.86	277.37	290.44	26.27	-1.883	0.000	0.030
132.00	-2.97	-1.10	0.00	-5.43	0.00	5.43	770.61	182.03	263.24	275.56	27.06	-1.891	0.000	0.024
134.00	-2.87	-1.07	0.00	-3.23	0.00	3.23	750.18	177.21	249.47	261.07	27.85	-1.898	0.000	0.016
136.00	-2.78	-1.04	0.00	-1.09	0.00	1.09	729.76	172.38	236.07	246.97	28.65	-1.901	0.000	0.008
137.00	-0.07	-0.03	0.00	-0.05	0.00	0.05	719.55	169.97	229.51	240.07	29.05	-1.901	0.000	0.000
138.00	-0.04	-0.02	0.00	-0.02	0.00	0.02	709.33	167.56	223.04	233.27	29.44	-1.901	0.000	0.000
139.00	0.00	-0.02	0.00	0.00	0.00	0.00	699.12	165.15	216.66	226.56	29.84	-1.901	0.000	0.000

Final Analysis Summary

Structure:	CT13549-S-SBA		**Code:**	TIA-222-H	10/4/2022
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 54

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Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.0W 120 mph Wind	26.0	0.00	34.26	0.00	0.00	2582.01
0.9D + 1.0W 120 mph Wind	26.0	0.00	25.69	0.00	0.00	2541.34
1.2D + 1.0Di + 1.0Wi 50 mph Wind	6.7	0.00	49.15	0.00	0.00	661.46
1.2D + 1.0Ev + 1.0Eh	0.4	0.00	35.65	0.00	0.00	51.93
0.9D + 1.0Ev + 1.0Eh	0.4	0.00	27.02	0.00	0.00	51.12
1.0D + 1.0W 60 mph Wind	5.8	0.00	28.57	0.00	0.00	572.96

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.0W 120 mph Wind	-21.37	-22.40	0.00	-1283.4	0.00	-1283.4	1850.79	489.91	1429.99	1340.72	53.25	0.971
0.9D + 1.0W 120 mph Wind	-15.75	-22.05	0.00	-1253.3	0.00	-1253.3	1850.79	489.91	1429.99	1340.72	53.25	0.945
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-34.70	-5.74	0.00	-327.89	0.00	-327.89	1850.79	489.91	1429.99	1340.72	53.25	0.263
1.2D + 1.0Ev + 1.0Eh	-23.55	-0.45	0.00	-28.49	0.00	-28.49	1850.79	489.91	1429.99	1340.72	53.25	0.034
0.9D + 1.0Ev + 1.0Eh	-17.86	-0.44	0.00	-27.89	0.00	-27.89	1850.79	489.91	1429.99	1340.72	53.25	0.030
1.0D + 1.0W 60 mph Wind	-18.82	-4.97	0.00	-283.97	0.00	-283.97	1850.79	489.91	1429.99	1340.72	53.25	0.222

Base Plate Summary

Structure:	CT13549-S-SB		**Code:**	TIA-222-H	10/4/2022
Site Name:	Danbury 1		**Exposure:**	C	
Height:	139.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 55

Tower Engineering Solutions

Reactions

Original Design

Moment (kip-ft):	2074.00
Axial (kip):	21.70
Shear (kip):	20.70

Analysis (1.2D + 1.0W)

Moment (kip-ft):	2582.01
Axial (kip):	34.26
Shear (kip):	26.02

Base Plate

Yield (ksi):	50.00
Width (in):	51.50
Style:	Clipped
Polygon Sides:	4.00
Clip Length (in):	9.00
Effective Len (in):	9.88
Moment (kip-in):	614.15
Allow Stress (ksi):	67.50
Applied Stress (ksi):	49.27
Stress Ratio:	0.73

Anchor Bolts

Bolt Circle:	53.50
Number Bolts:	12.00
Bolt Type:	2.25" 18J
Bolt Diameter (in):	2.25
Yield (ksi):	75.00
Ultimate (ksi):	100.00
Arrangement:	Clustered
Cluster Dist (in):	6.00
Start Angle (deg):	45.00

Compression

Force (kip):	195.90
Allowable (kip):	268.39
Ratio:	0.73

Tension

Force (kip):	190.19
Allowable (kip):	243.75
Ratio:	0.78

Monopole Mat Foundation Design

			Date: 10/3/2022
Customer Name:	Dish Wireless	**TIA Standard:**	TIA-222-H
Site Name:		**Structure Height (Ft.):**	139
Site Number:	CT13549-S-SBA	**Engineer Name:**	J. Tibbetts
Engr. Number:	134919	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

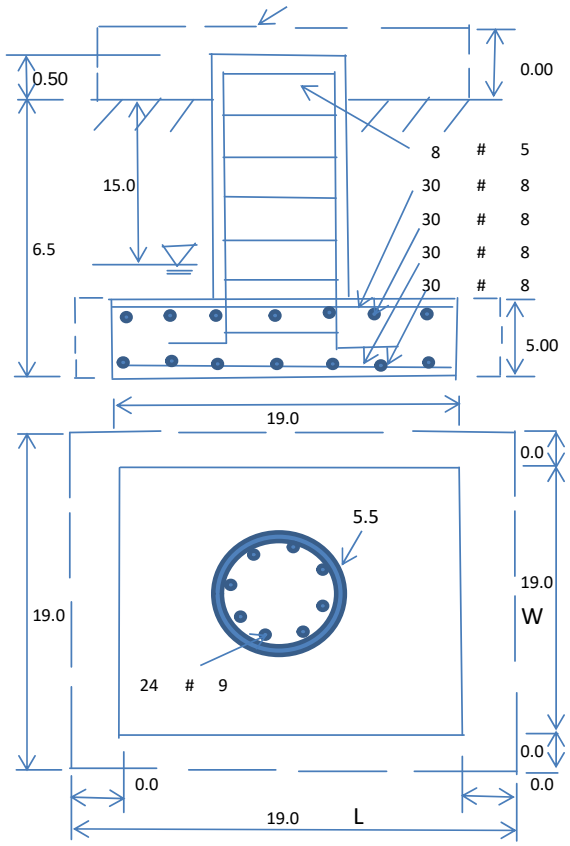
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	34.3	Shear Force (Kips):	26.0
Uplift Force (Kips):	0.0	Moment (Kips-ft):	2582.0
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	5.5	Depth of Base BG (ft.):	6.5
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	5.00
Length of Pad (ft.):	19	Width of Pad (ft.):	19
Final Length of pad (ft)	19.0	Final width of pad (ft):	19.0



Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	9	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	24	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:

Qty. of Rebar in Pad (L):	30	Qty. of Rebar in Pad (W):	30

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	30	Qty. of Rebar in Pad (W):	30
Apply 1.35 factor for e/w Per G:	1.35		

Soil Design Parameters:

Soil Unit Weight (pcf):	115.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	15.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	8600	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	Yes	Reduction factor on the maximum soil bearing pressure:			1.00	

Foundation Analysis and Design: Uplift Strength Reduction Factor: 0.75 — Compression Strength Reduction Factor: 0.75

Total Dry Soil Volume (cu. Ft.):	505.86	Total Dry Soil Weight (Kips):	58.17
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	58.17	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1852.52	Total Dry Concrete Weight (Kips):	277.88
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	277.88	Total Vertical Load on Base (Kips):	370.35

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	4585	<	Allowable Factored Soil Bearing (psf):	6450	0.71	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	3199.1	>	Design Factored Momont (kips-ft):	2579	0.81	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.24	OK!				

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90		Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65		Wind Load Factor on Concrete Design:	1.00		
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	1.00		Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	3146.1	>	Design Factored Moment (Mu, Kips-F	2634.0	0.84	OK!
Calculated Shear Capacity (Kips):	488.2	>	Design Factored Shear (Kips):	26.0	0.05	OK!
Calculated Tension Capacity (Tn, Kips):	1296.0	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	6006.2	>	Design Factored Axial Load (Pu Kips):	34.3	0.01	OK!
Moment & Axial Strength Combination:	0.84	OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.007		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	1222.1	>	One-Way Factored Shear (L-D. Kips):	110.5	0.09	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1222.1	>	One-Way Factored Shear (W-D., Kips)	110.5	0.09	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	768.9	>	One-Way Factored Shear (C-C, Kips):	118.8	0.15	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0018	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0018		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	5927.9	>	Moment at Bottom (L-Dir. K-Ft):	811.0	0.14	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	5927.9	>	Moment at Bottom (W-Dir. K-Ft):	811.0	0.14	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	8347.7	>	Moment at Bottom (C-C Dir. K-Ft):	1146.9	0.14	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0018	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0018		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	5927.9	>	Moment at the top (L-Dir K-Ft):	386.3	0.07	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	5927.9	>	Moment at the top (W-Dir K-Ft):	386.3	0.07	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	8347.7	>	Moment at the top (C-C Dir. K-Ft):	362.9	0.04	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	1032.8	k-ft.	Max. factored shear stress v_{u_CD}:		3.3	Psi
Max. factored shear stress v_{u_AB}:	5.5	Psi	Factored shear Strength ϕv_n:		189.7	Psi
Max. factored shear stress v_u:	5.5	Psi	Check Usage of Punching Shear Capacity:		0.03	OK!
(4).Check Bending Capacity of the Pad Within the Effective Slab Width:						
Overturning moment to be transferred by flexure:	774.6	k-ft.	Effective Width for resisting OT moment:		19.0	ft.
Calculated number of Rebar in Effective width:	30		Actual number of Rebar in Effective width:		30	
Steel Pad Moment Capacity (L-Direc. Kips-ft):	5927.9	k-ft.	Check Usage of the Flexure Capacity:		0.13	OK!

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

PROPERTY OWNER:	CHRIST THE SHEPHERD CHURCH PCA
ADDRESS:	52 STADLEY ROUGH RD DANBURY, CT 06811
TOWER TYPE:	MONOPOLE
TOWER CO SITE ID:	CT13549-S
TOWER APP NUMBER:	163808
COUNTY:	FAIRFIELD
LATITUDE (NAD 83):	41° 25' 59.17" N 41.43310211 N
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

PROJECT DIRECTORY

APPLICANT:	DISH Wireless L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120 (303) 706-5008
TOWER OWNER:	SBA COMMUNICATAIONS CORP. 8051 CONGRESS AVENUE BOCA RATON, FL 33487 (800) 487-7483
SITE DESIGNER:	B+T GROUP 1717 S. BOULDER AVE, SUITE 300 TULSA, OK 74119 (918) 587-4630
SITE ACQUISITION:	GREGG BAILEY GREGG.BAILEY@DISH.COM
CONSTRUCTION MANAGER:	MICHAEL NARDUCCI MICHAEL.NARDUCCI@DISH.COM
RF ENGINEER:	MURUGABIRAN JAYAPAL MURUGABIRAN.JAYAPAL@DISH.COM

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.

SHEET INDEX

SHEET NO.	SHEET TITLE
T-1	TITLE SHEET
LS1	SITE SURVEY
A-1	OVERALL AND ENLARGED SITE PLAN
A-2	ELEVATION, ANTENNA LAYOUT AND SCHEDULE
A-3	EQUIPMENT PLATFORM AND H-FRAME DETAILS
A-4	EQUIPMENT DETAILS
A-5	EQUIPMENT DETAILS
A-6	EQUIPMENT DETAILS
E-1	ELECTRICAL/FIBER ROUTE PLAN AND NOTES
E-2	ELECTRICAL DETAILS
E-3	ELECTRICAL ONE-LINE, FAULT CALCS & PANEL SCHEDULE
G-1	GROUNDING PLANS AND NOTES
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
RF-1	RF CABLE COLOR CODE
GN-1	LEGEND AND ABBREVIATIONS
GN-2	GENERAL NOTES
GN-3	GENERAL NOTES
GN-4	GENERAL NOTES

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.

VICINITY MAP

NO SCALE

dish wireless.

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED PROFESSIONAL ENGINEER

10/16/22

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	BLJ	BEH

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
1	8/8/22	ISSUED FOR CONSTRUCTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	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

VICINITY MAP NOT TO SCALE

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 93.13 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 SQFT -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 SQFT -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: 09001C0141F EFFECTIVE DATE: 05/18/2010

LEGEND

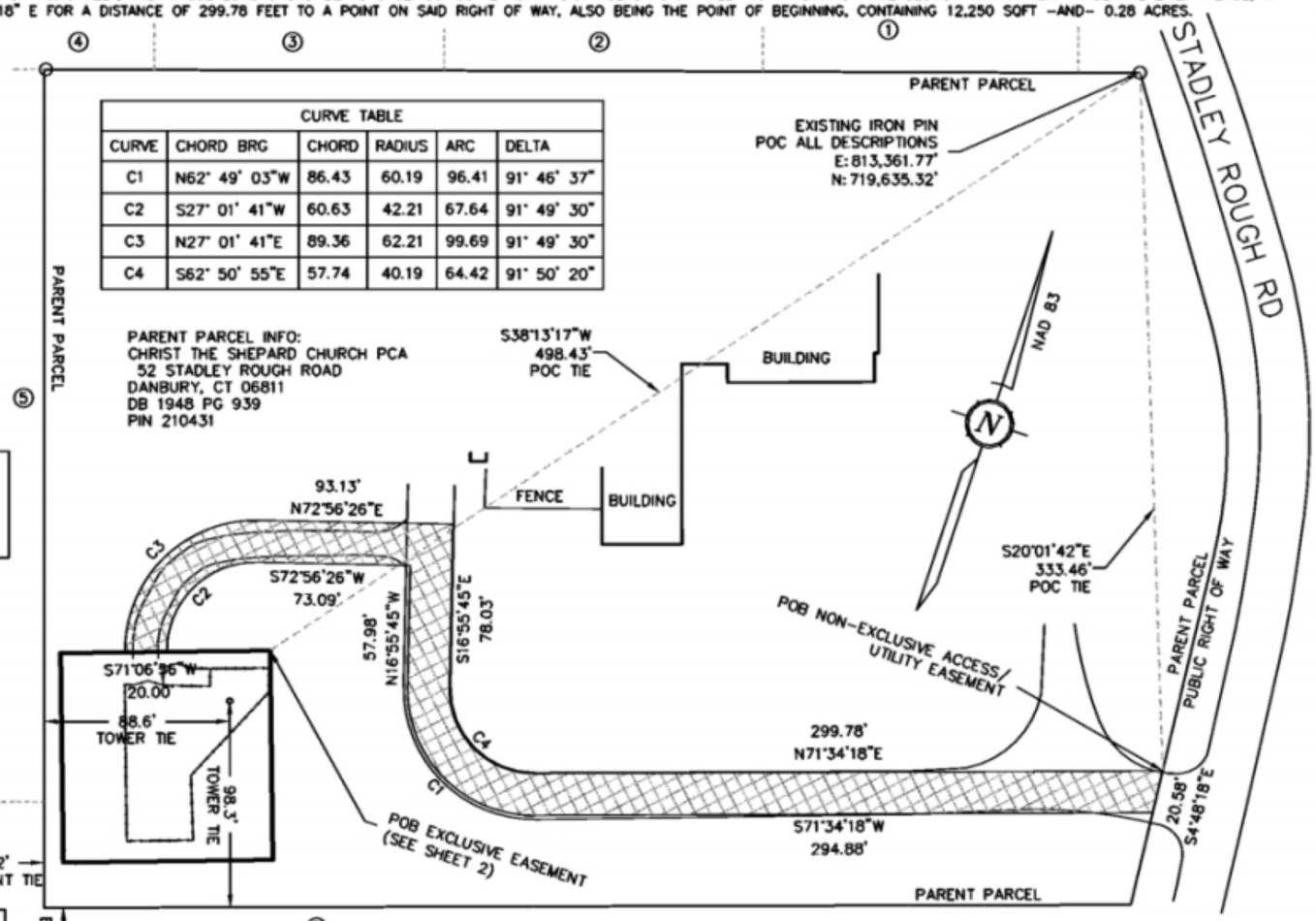
- ● :SET 5/8" REBAR.
- O :FOUND 1/2" REBAR AS NOTED.
- (___) :RECORD DESCRIPTION DATA.
- P.O.B. :POINT OF BEGINNING.
- P.O.C. :POINT OF COMMENCEMENT.
- —— o —— :FENCE AS NOTED.
- —— OH —— :OVER HEAD UTILITY LINES.
- :WOOD UTILITY POLE.
- E :ELECTRIC TRANSFORMER.
- T :TELCO PEDESTAL.
- WM :WATER METER.
- CATV :CABLE TELEVISION
- S :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		

SHEET 1 OF 2

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

CT13549-S DANBURY 1.DWG

SHEET 1 OF 3

AS-BUILT SURVEY

PREPARED FOR SBA

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) 280-8189
Raleigh NC 27613 FAX 995-2616
E-MAIL : info@murphygeomatics.com FIRM C-2757

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 WITH IN 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 CTN 27474 EFFECTIVE AUGUST 25, 2014.

MURPHY GEOMATICS

MATTHEW BATTEY
LAND SURVEYOR -
DATE: 9/3/2014

STATE OF CONNECTICUT
MATTHEW R. BATTEY
No. 70369
LICENSED LAND SURVEYOR

dish wireless.
5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

SBA
8051 CONGRESS AVENUE
BOCA RATON, FL 33487

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

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	BLJ	BEH

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
1	8/8/22	ISSUED FOR CONSTRUCTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
153448.001.01

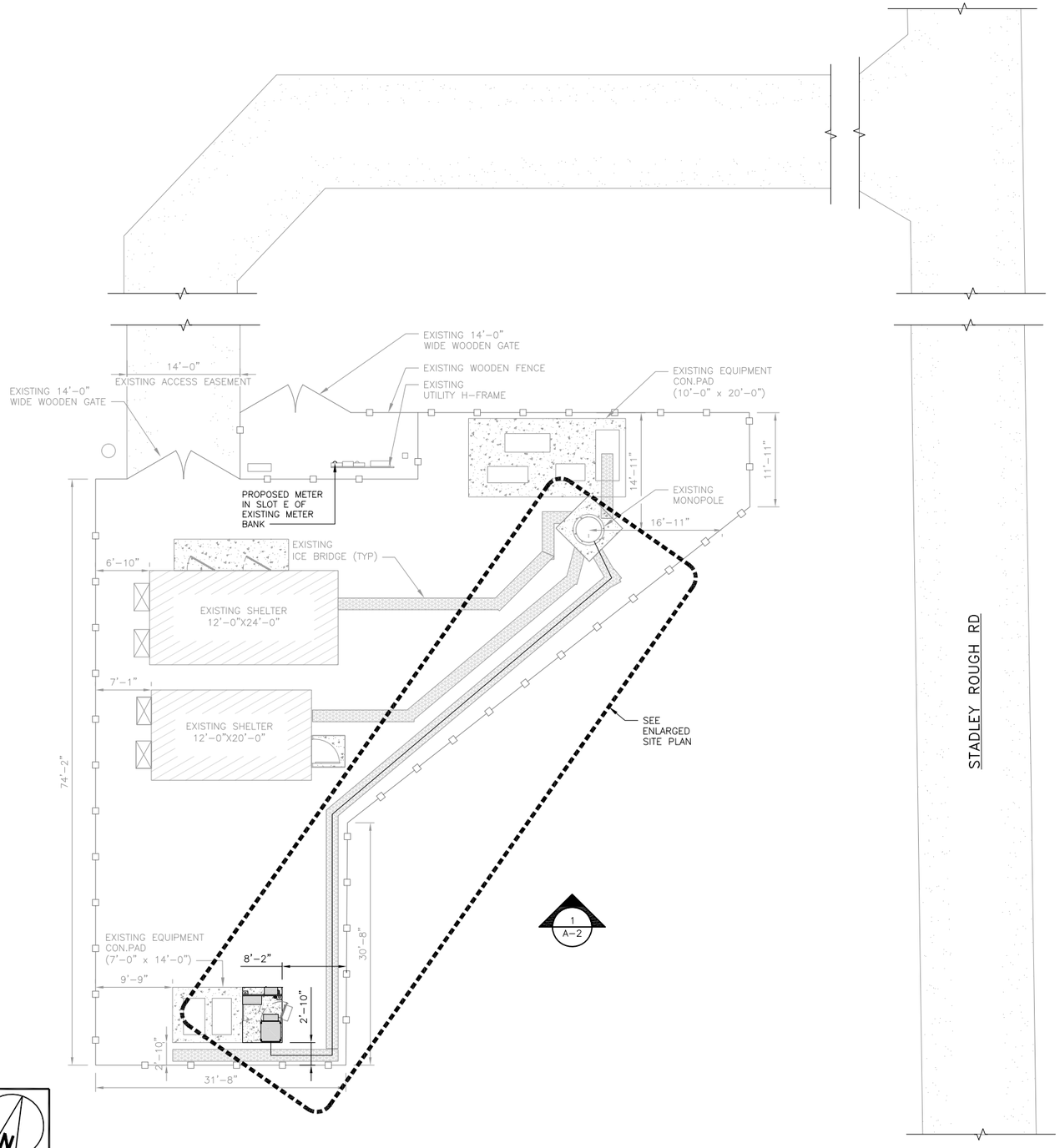
DISH Wireless L.L.C.
PROJECT INFORMATION
NJJER01104B
52 STADLEY ROUGH ROAD
DANBURY, CT 06811

SHEET TITLE
SITE SURVEY

SHEET NUMBER
LS1

NOTES

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



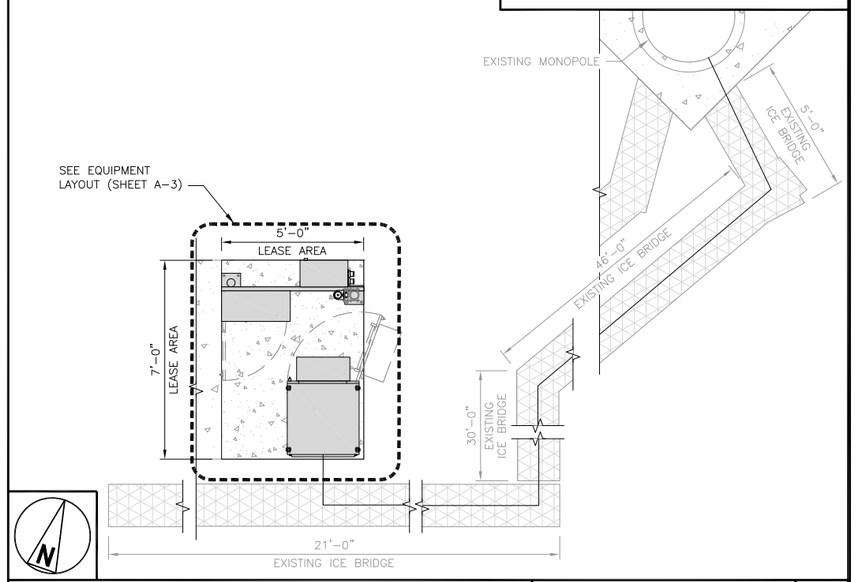
OVERALL SITE PLAN

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

1

NOTES

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



ENLARGED SITE PLAN

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

2

NOT USED

3

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DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01104B
52 STADLEY ROUGH ROAD
DANBURY, CT 06811

SHEET TITLE

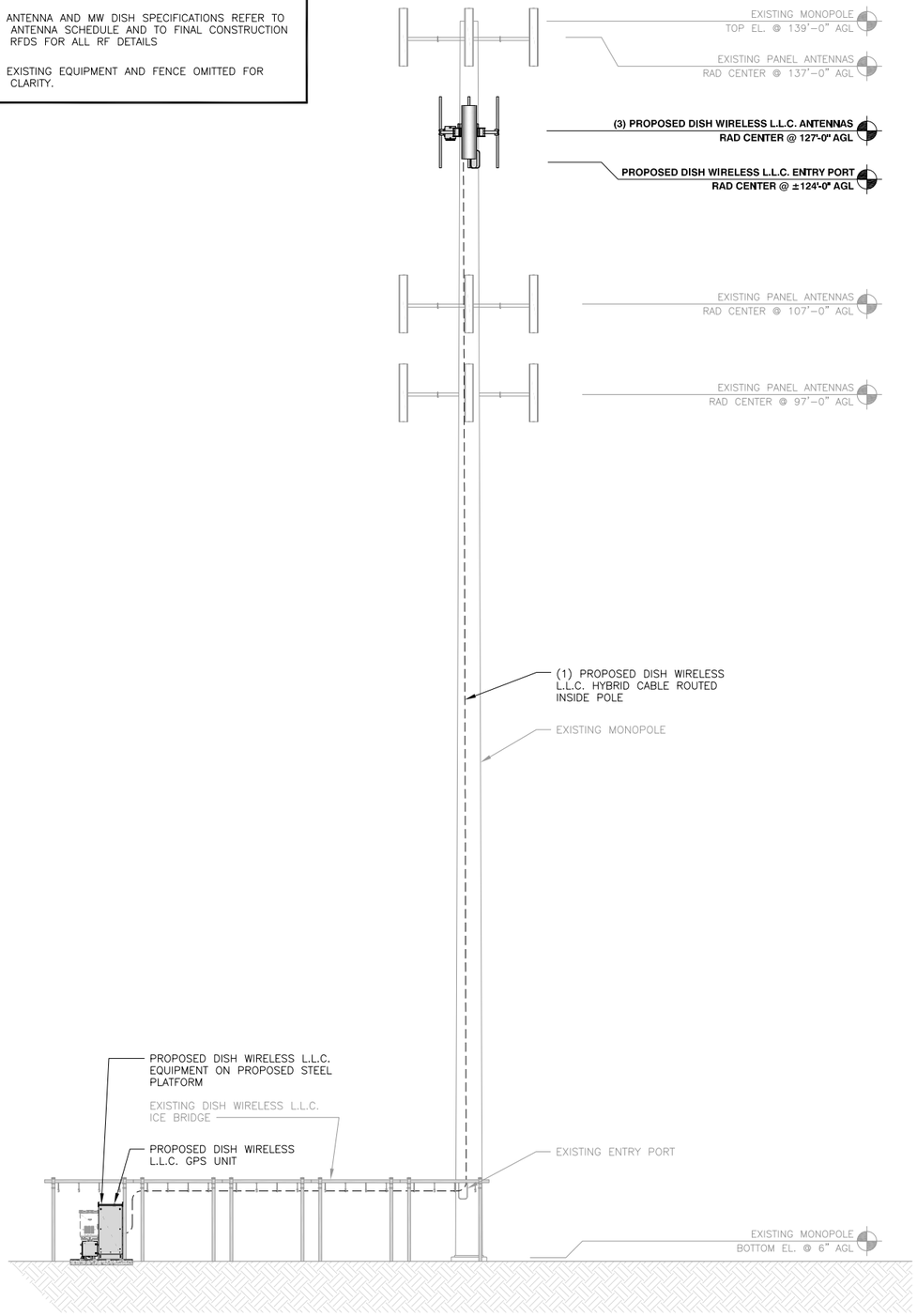
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

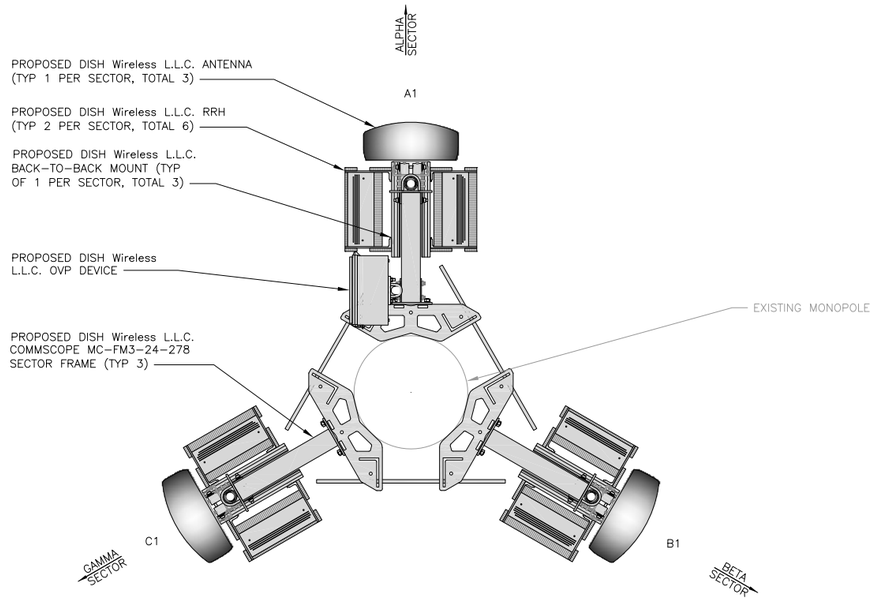
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



PROPOSED SOUTH ELEVATION

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

1



N

NOTE:
AZIMUTHS ARE TENTATIVE, CONFIRM BEFORE STARTING CONSTRUCTION

ANTENNA LAYOUT

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

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 – FFVV-65B-R2	5G	72.0" x 19.6"	0°	127'-0"	(1) HIGH-CAPACITY HYBRID CABLE (255' LONG)
BETA	B1	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	72.0" x 19.6"	120°	127'-0"	
GAMMA	C1	PROPOSED	COMMSCOPE – FFVV-65B-R2	5G	72.0" x 19.6"	240°	127'-0"	

SECTOR	POSITION	RRH	
		MANUFACTURER – MODEL NUMBER	TECHNOLOGY
ALPHA	A1	FUJITSU – TA08025-B605	5G
	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"

NOTES

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

ANTENNA SCHEDULE

NO SCALE

3

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STATE OF CONNECTICUT
CHAD J. BUTLER
No. 23924
LICENSED PROFESSIONAL ENGINEER

10/16/22

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

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DISH Wireless L.L.C.
PROJECT INFORMATION

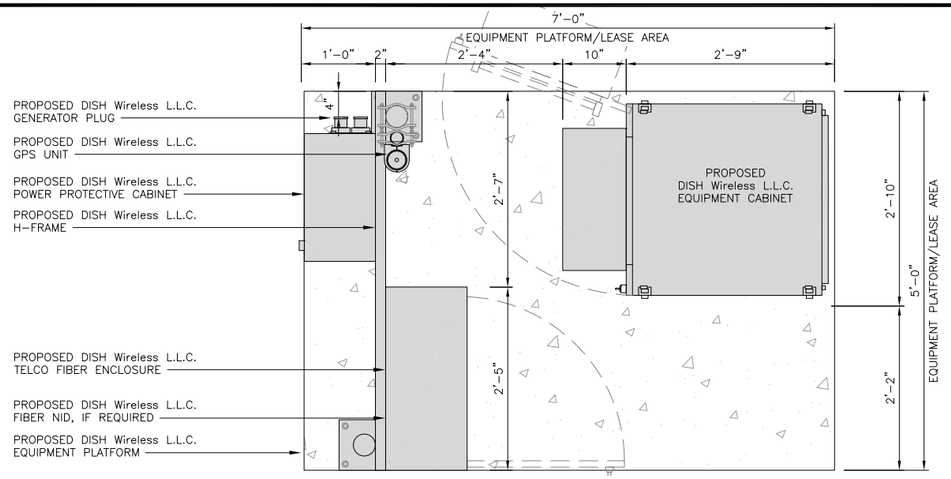
NJJER01104B
52 STADLEY ROUGH ROAD
DANBURY, CT 06811

SHEET TITLE

ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

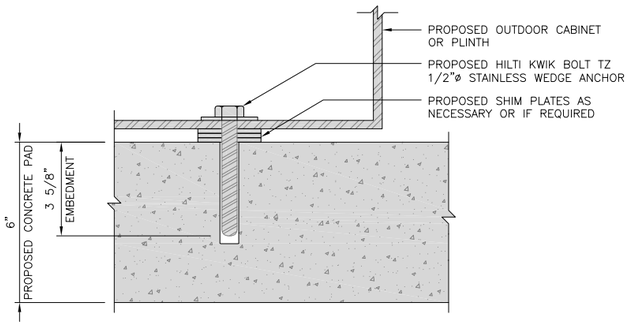
A-2



PLATFORM EQUIPMENT PLAN

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

1

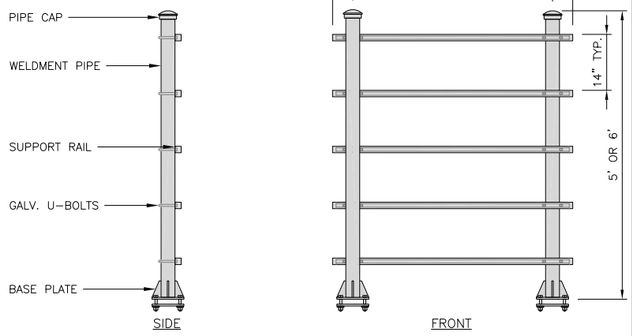


TYPICAL OUTDOOR EQUIPMENT TO CONCRETE SLAB ANCHORAGE

2

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

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

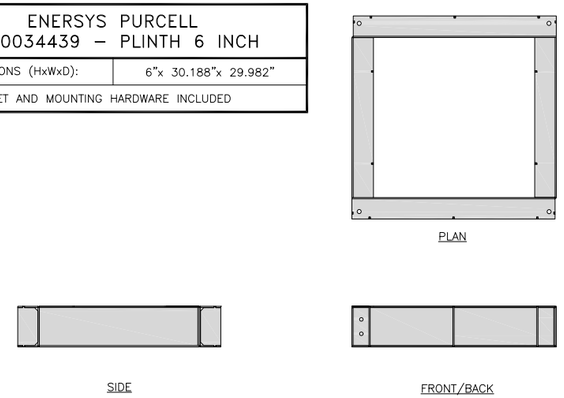


H-FRAME DETAIL

NO SCALE

3

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



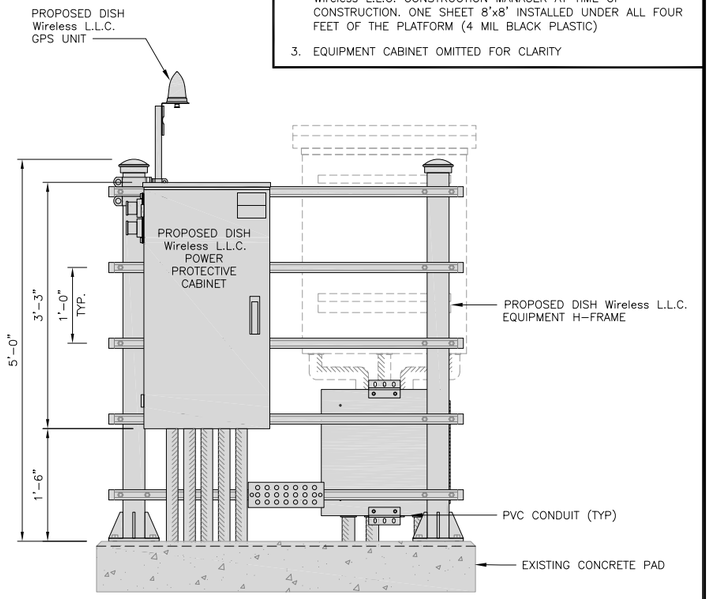
PLINTH DETAIL

NO SCALE

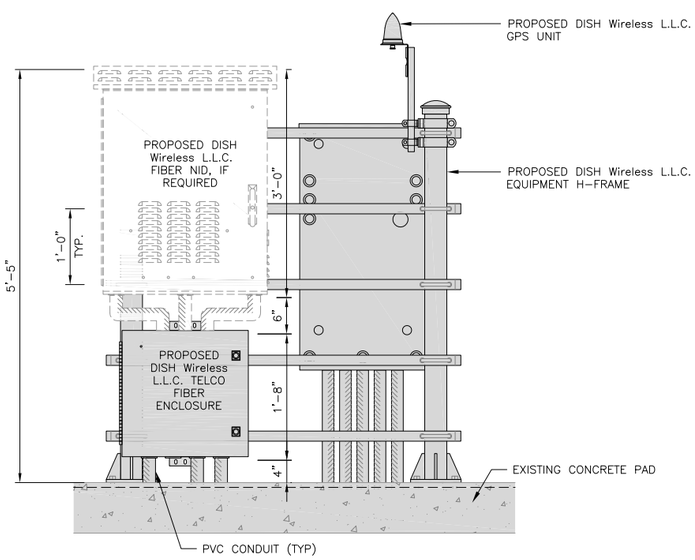
4

NOTES

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



FRONT ELEVATION



BACK ELEVATION

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

H-FRAME EQUIPMENT ELEVATION

5

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STATE OF CONNECTICUT
CHAD L. TUTTLE
No. 23924
LICENSED PROFESSIONAL ENGINEER
10/16/22

MTS ENGINEERING P.L.L.C.
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153448.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01104B
52 STADLEY ROUGH ROAD
DANBURY, CT 06811

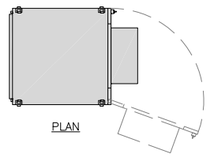
SHEET TITLE

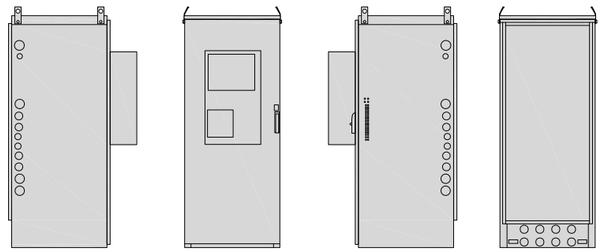
EQUIPMENT PLATFORM AND H-FRAME DETAILS

SHEET NUMBER

A-3

ENERSYS HVAC CABINET 2000005995	
DIMENSIONS (HxWxD):	73"x30"x32"
WEIGHT EMPTY:	371 lbs
HVAC	600W
POWER SYSTEM	-48V ALPHA/600A

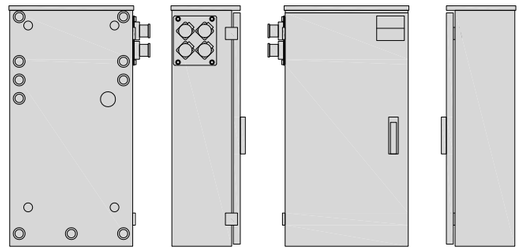

PLAN


SIDE FRONT SIDE BACK

CABINET DETAIL | NO SCALE | 1

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


TOP

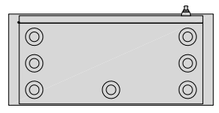

BACK SIDE FRONT SIDE

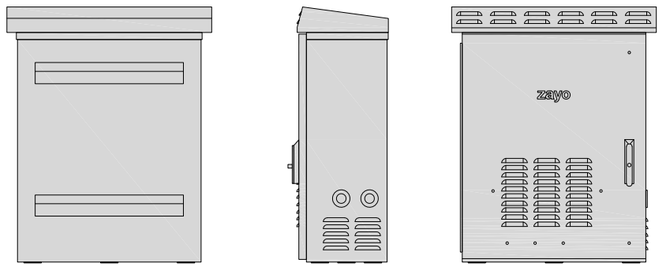
POWER PROTECTION CABINET (PPC) DETAIL | NO SCALE | 2

NOT USED | NO SCALE | 3

NOT USED | NO SCALE | 4

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

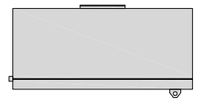

BOTTOM

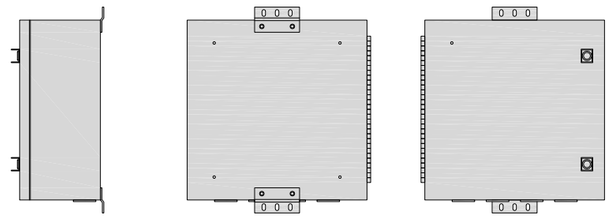


BACK SIDE FRONT

FIBER NID ENCLOSURE DETAIL | NO SCALE | 5

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


FRONT


SIDE BACK FRONT

FIBER TELCO ENCLOSURE DETAIL | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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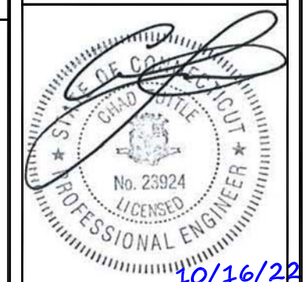

10/16/22

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DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01104B
52 STADLEY ROUGH ROAD
DANBURY, CT 06811

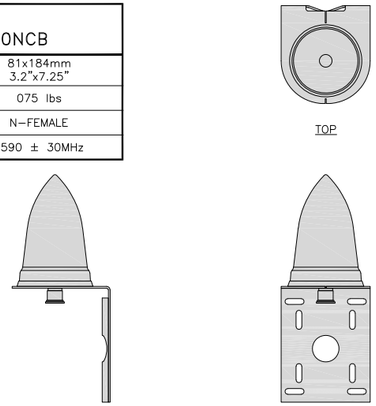
SHEET TITLE

EQUIPMENT DETAILS

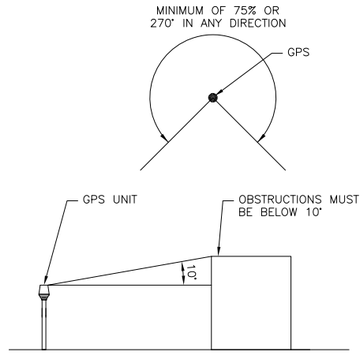
SHEET NUMBER

A-4

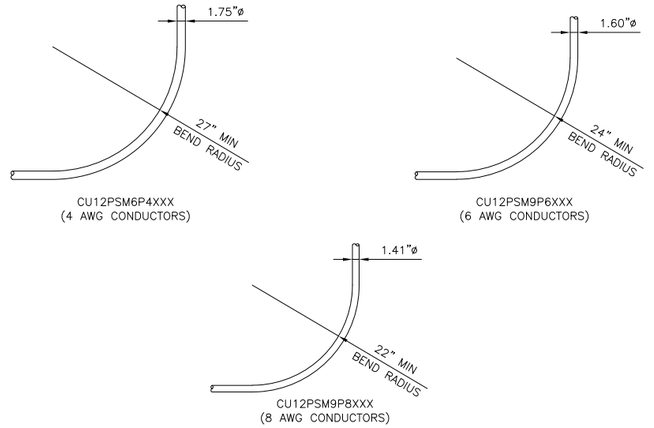
PCTEL GPSGL-TMG-SPI-40NCB	
DIMENSIONS (DIAxH) MM/INCH	81x184mm 3.2"x7.25"
WEIGHT W/ACCESSORIES	075 lbs
CONNECTOR	N-FEMALE
FREQUENCY RANGE	1590 ± 30MHz



GPS DETAIL | NO SCALE | 1



GPS MINIMUM SKY VIEW REQUIREMENTS | NO SCALE | 2



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

NOT USED | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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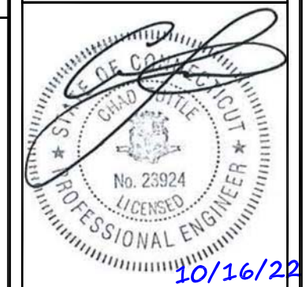

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52 STADLEY ROUGH ROAD
DANBURY, CT 06811

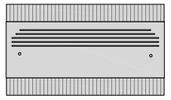
SHEET TITLE

EQUIPMENT DETAILS

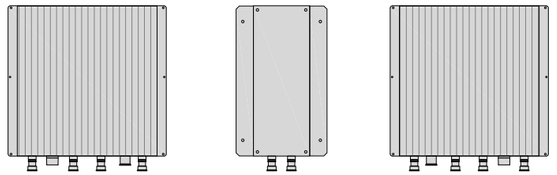
SHEET NUMBER

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



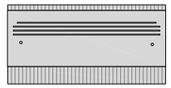
PLAN



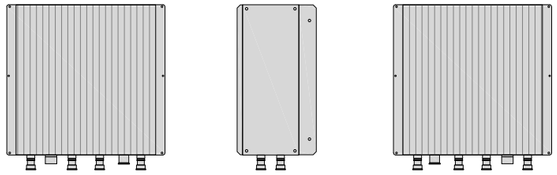
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 1

FUJITSU DUAL BAND TA08025-B604	
DIMENSIONS (HxWxD)	14.9"x15.7"x7.8"
WEIGHT	63.9 lbs
CONNECTOR TYPE	4.3-10 RF CONNECTOR
POWER SUPPLY	DC -58~-36V



PLAN

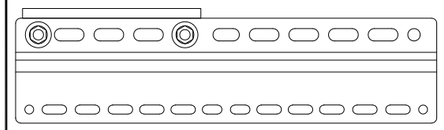


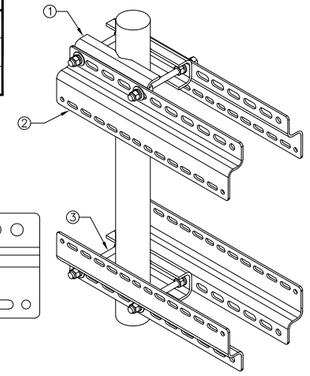
BACK SIDE FRONT

RRH DETAIL | NO SCALE | 2

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"



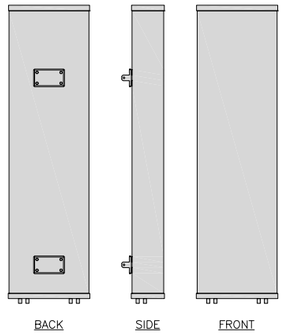


NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT

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

PLAN



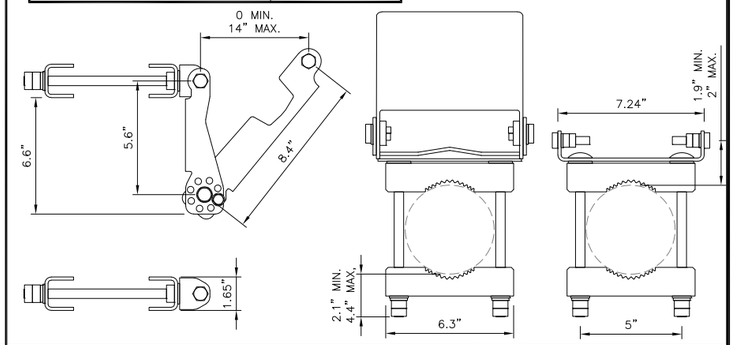
BACK SIDE FRONT

ANTENNA DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

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

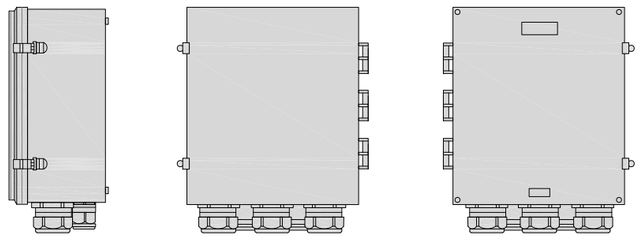
NOTE:
OR DISH Wireless L.L.C.
APPROVED EQUIVALENT



ANTENNA BRACKET DETAIL | NO SCALE | 6

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

PLAN

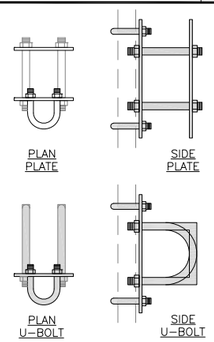


SIDE BACK FRONT

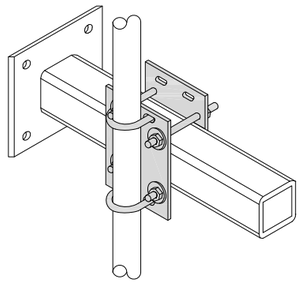
SURGE SUPPRESSION DETAIL (OVP) | NO SCALE | 7

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

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



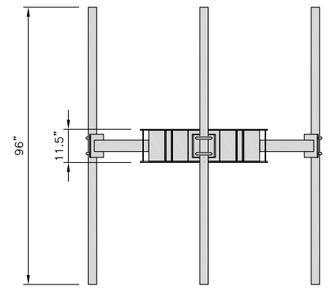
PLAN PLATE SIDE PLATE
PLAN U-BOLT SIDE U-BOLT

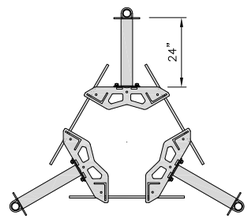


RRH/OVP MOUNT DETAIL | NO SCALE | 8

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

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STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
10/16/22

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	BLJ	BEH

RFDS REV #: 3

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A&E PROJECT NUMBER

153448.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

NJJER01104B
52 STADLEY ROUGH ROAD
DANBURY, CT 06811

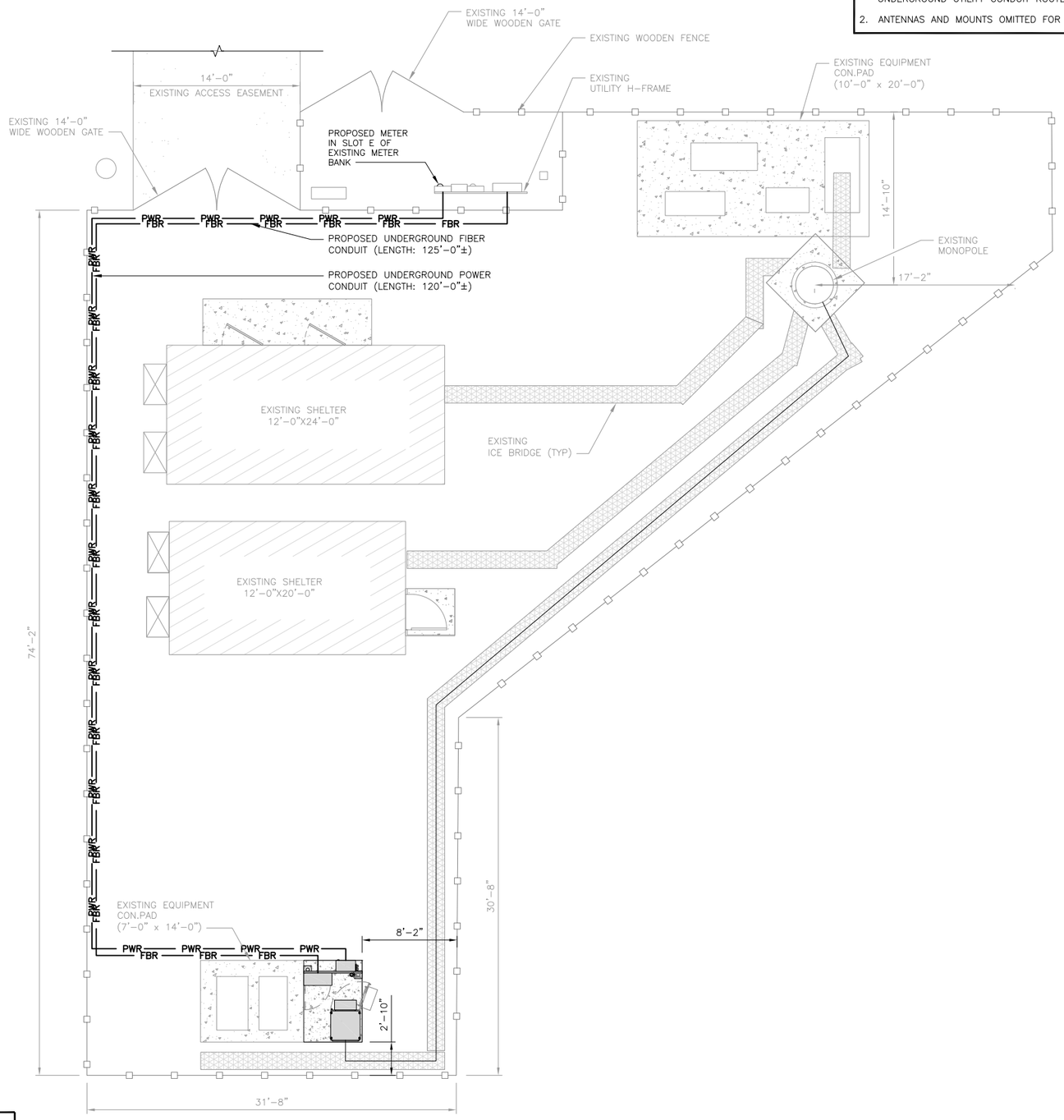
SHEET TITLE

EQUIPMENT DETAILS

SHEET NUMBER

A-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

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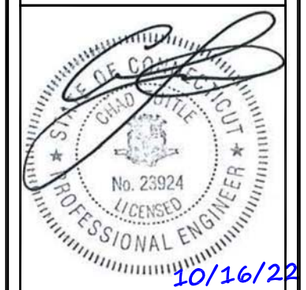

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

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YN	BLJ	BEH

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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

UTILITY ROUTE PLAN

6' 4' 2' 0 5' 10'
3/16"=1'-0"

1

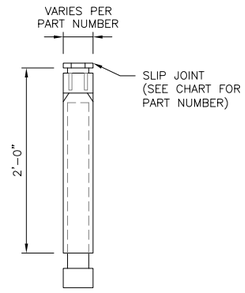
ELECTRICAL NOTES

NO SCALE

2

CARLON EXPANSION FITTINGS

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

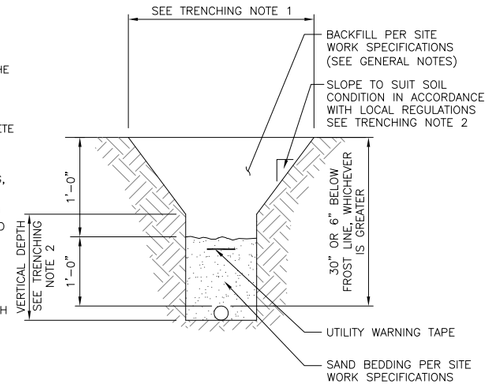


NOTE:
CONTRACTOR TO INSTALL EXPANSION FITTING SLIP JOINT AT METER CENTER CONDUIT TERMINATION, AS PER LOCAL UTILITY POLICY, ORDINANCE AND/OR SPECIFIED REQUIREMENT.

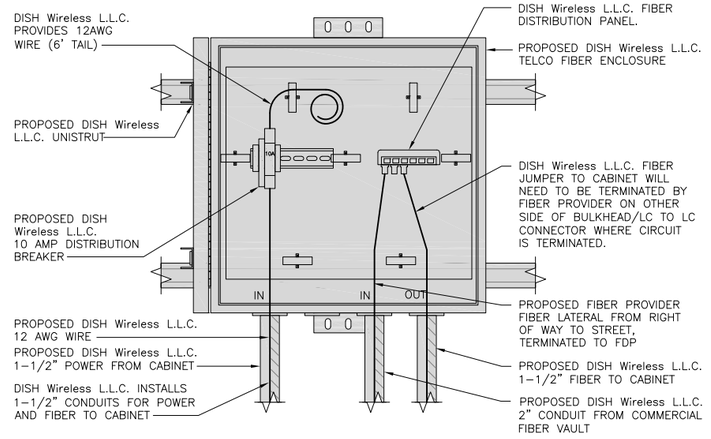
EXPANSION JOINT DETAIL | NO SCALE | 1

TRENCHING NOTES

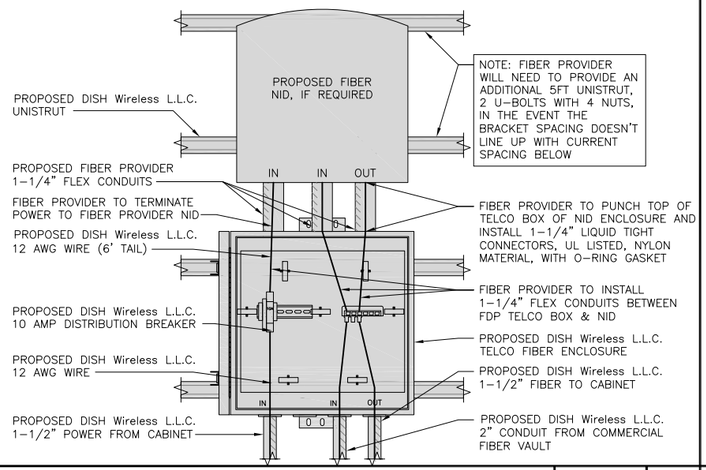
1. CONTRACTOR SHALL RESTORE THE TRENCH TO ITS ORIGINAL CONDITIONS BY EITHER SEEDING OR SODDING GRASS AREAS, OR REPLACING ASPHALT OR CONCRETE AREAS TO ITS ORIGINAL CROSS SECTION.
2. TRENCHING SAFETY; INCLUDING, BUT NOT LIMITED TO SOIL CLASSIFICATION, SLOPING, AND SHORING, SHALL BE GOVERNED BY THE CURRENT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



TYPICAL UNDERGROUND TRENCH DETAIL | NO SCALE | 2



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



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

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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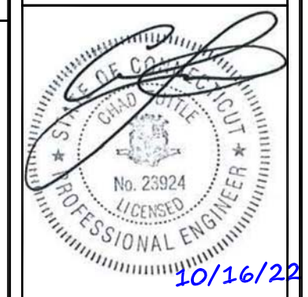

10/16/22

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DISH Wireless L.L.C.
PROJECT INFORMATION

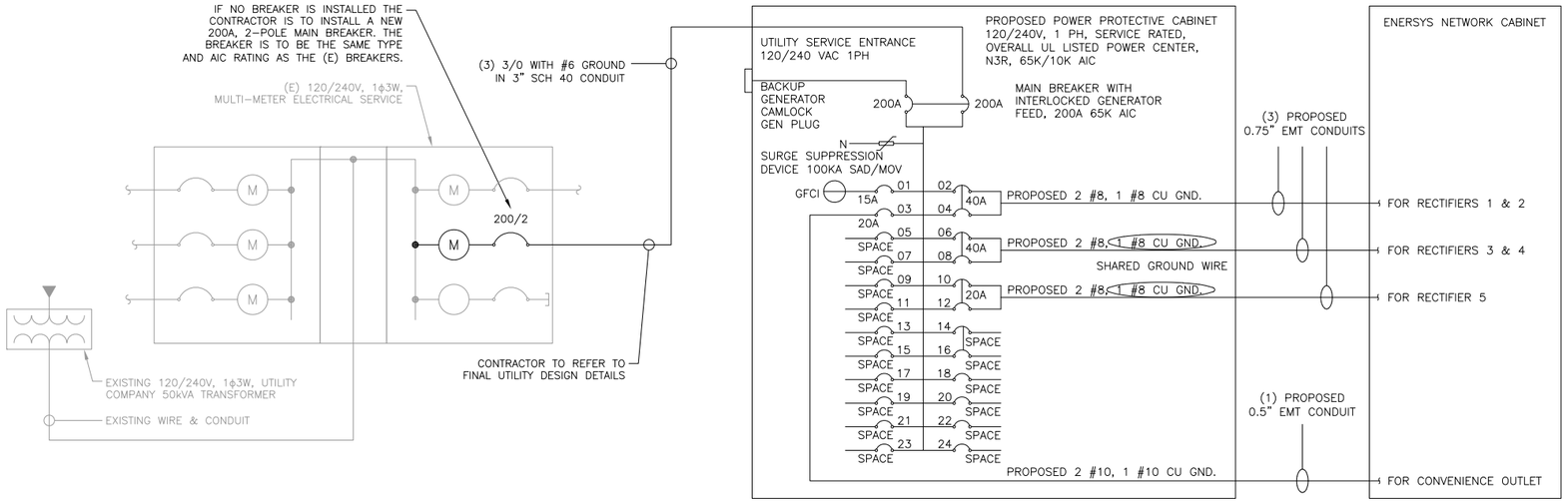
NJJER01104B
52 STADLEY ROUGH ROAD
DANBURY, CT 06811

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:QO240
(1) 20A, 2P BREAKER – SQUARE D P/N:QO220
(1) 20A, 1P BREAKER – SQUARE D P/N:QO120

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.

PPC ONE–LINE DIAGRAM

NO SCALE | 1

PROPOSED ENERSYS PANEL SCHEDULE

LOAD SERVED	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPS (WATTS) L1	VOLT AMPS (WATTS) L2	LOAD SERVED
PPC GFCI OUTLET	180		15A	1	A	2	40A	3840		ENERSYS ALPHA CORDEX
ENERSYS GFCI OUTLET		180	20A	3	B	4			3840	RECTIFIERS 1 & 2
–SPACE–				5	A	6	40A	3840		ENERSYS ALPHA CORDEX
–SPACE–				7	B	8			3840	RECTIFIER 3 & 4
–SPACE–				9	A	10	20A	1920		ENERSYS ALPHA CORDEX
–SPACE–				11	B	12			1920	RECTIFIER 5
–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		VOLTAGE AMPS			
			81		81		AMPS			
			81				MAX AMPS			
			102				MAX 125%			

PANEL SCHEDULE

NO SCALE | 2

NOT USED

NO SCALE | 3

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No. 23924
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DISH Wireless L.L.C.
PROJECT INFORMATION

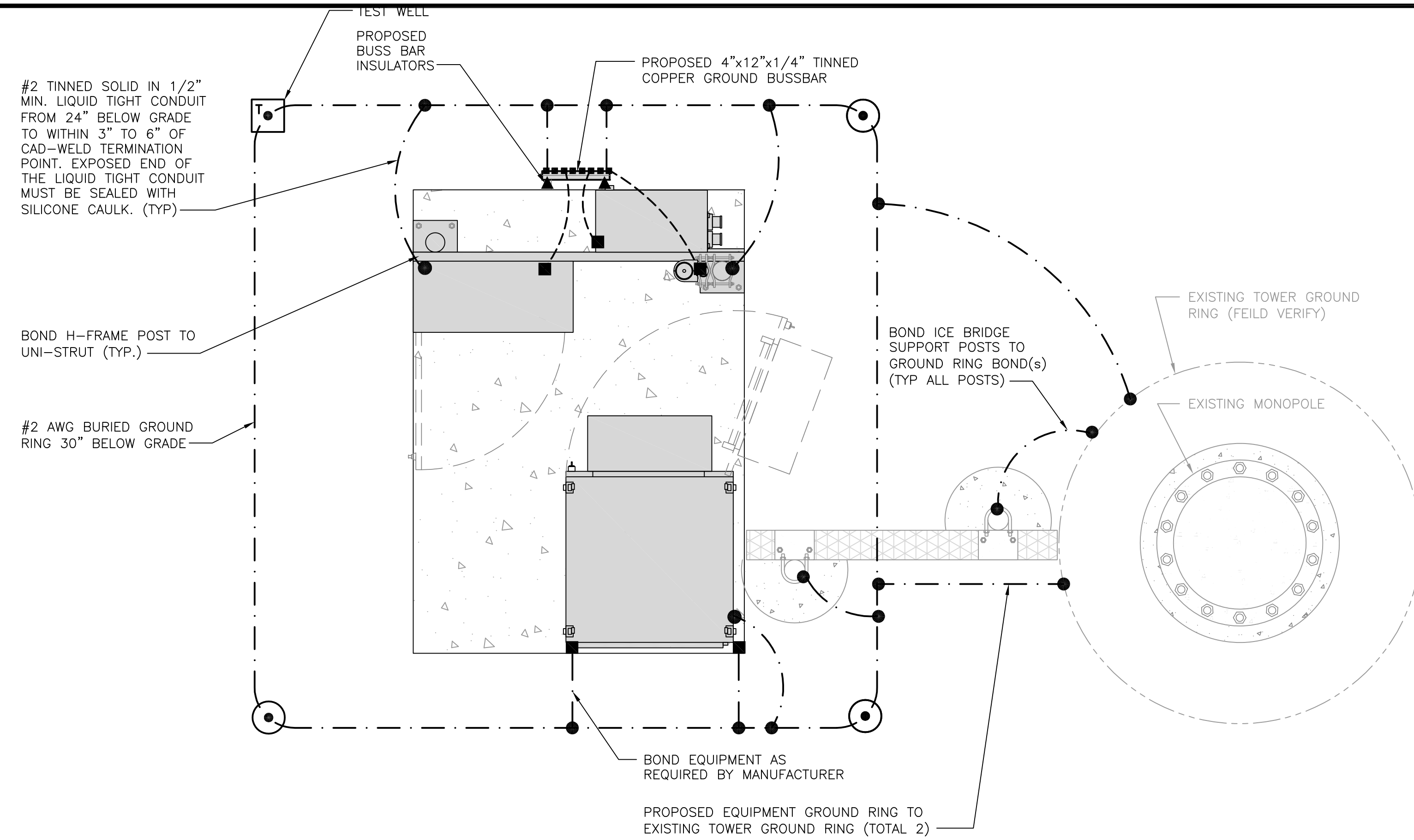
NJJER01104B
52 STADLEY ROUGH ROAD
DANBURY, CT 06811

SHEET TITLE

ELECTRICAL ONE–LINE, FAULT CALCS & PANEL SCHEDULE

SHEET NUMBER

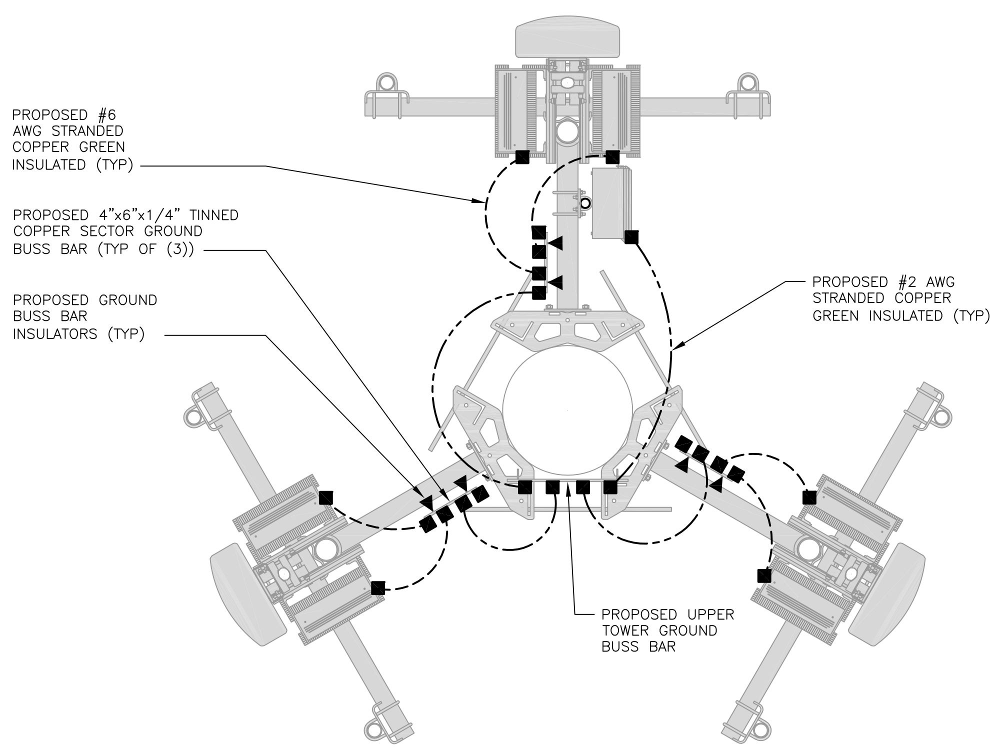
E-3



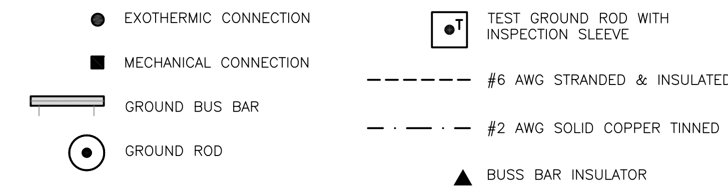
TYPICAL EQUIPMENT GROUNDING PLAN | NO SCALE | 1

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

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

GROUNDING KEY NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(P) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO PROPOSED ANTENNA MOUNT COLLAR.

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

GROUNDING KEY NOTES | NO SCALE | 3

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BER:2386985
Expires 3/31/23

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	BLJ	BEH

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

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2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER
153448.001.01

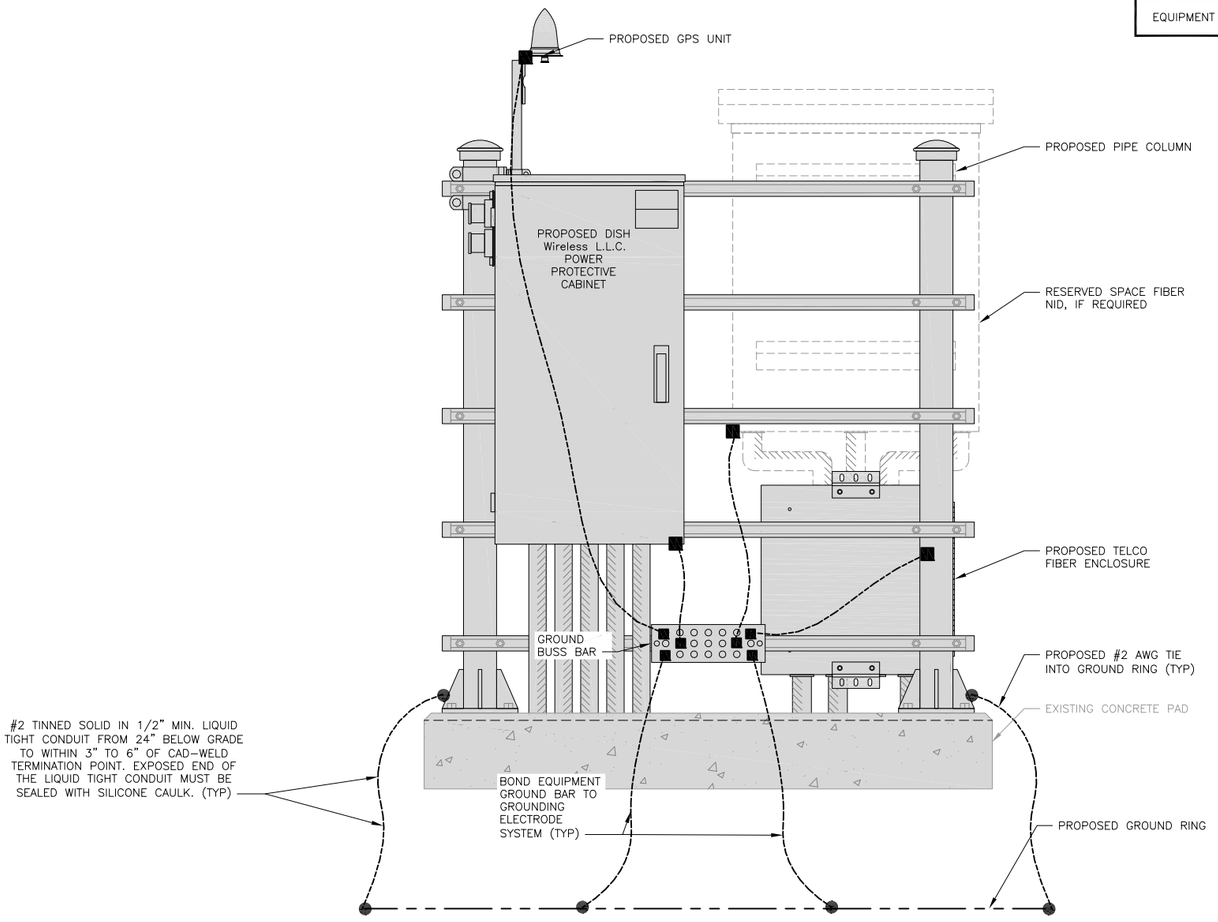
DISH Wireless L.L.C. PROJECT INFORMATION
NJJER01104B
52 STADLEY ROUGH ROAD
DANBURY, CT 06811

SHEET TITLE
GROUNDING PLANS AND NOTES

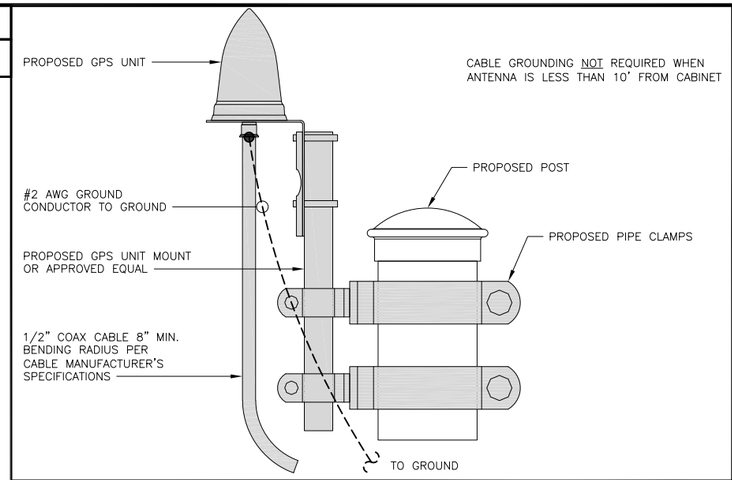
SHEET NUMBER
G-1

NOTES

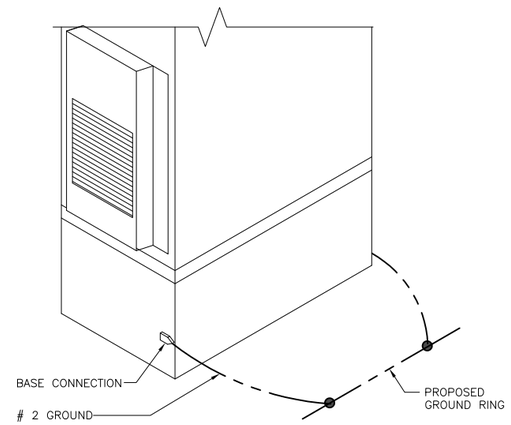
EQUIPMENT CABINET OMITTED FOR CLARITY



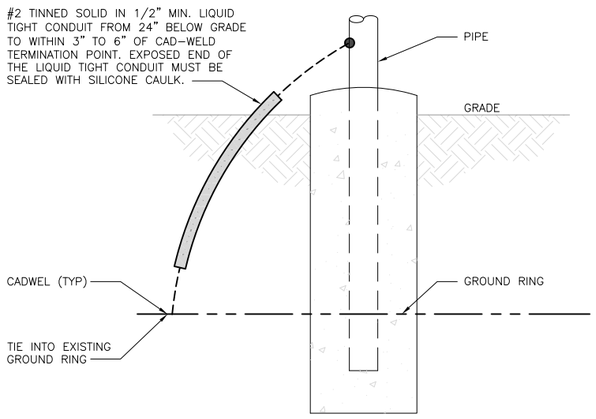
H-FRAME GROUNDING DETAIL | NO SCALE | 1



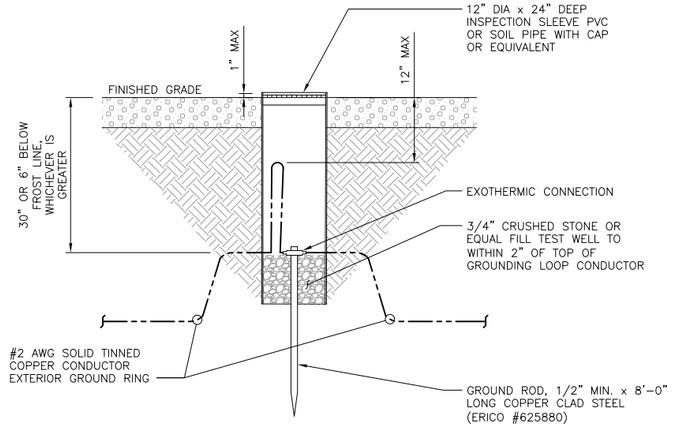
TYPICAL GPS UNIT GROUNDING | NO SCALE | 2



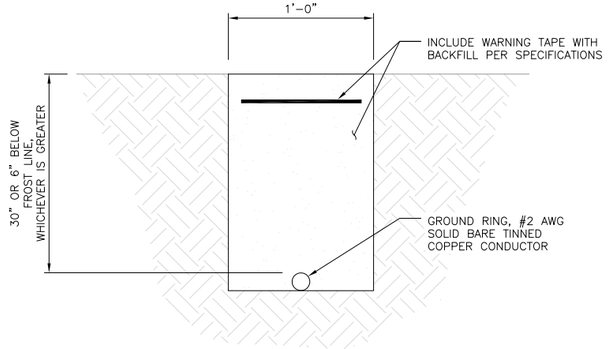
OUTDOOR CABINET GROUNDING | NO SCALE | 3



TRANSITIONING GROUND DETAIL | NO SCALE | 4



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



TYPICAL GROUND RING TRENCH | NO SCALE | 6

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STATE OF CONNECTICUT ★ CHAD M. TUTTLE ★ No. 23924 LICENSED PROFESSIONAL ENGINEER

10/16/22

MTS ENGINEERING P.L.L.C.
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PROJECT INFORMATION

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SHEET TITLE

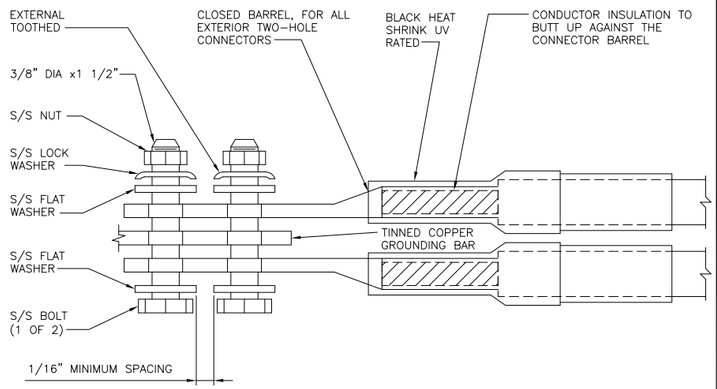
GROUNDING DETAILS

SHEET NUMBER

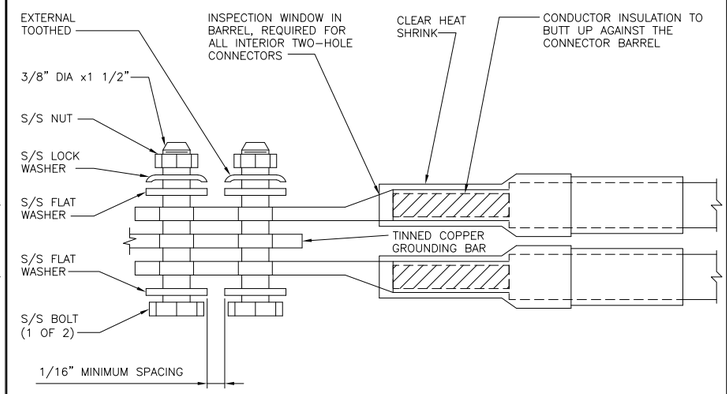
G-2

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

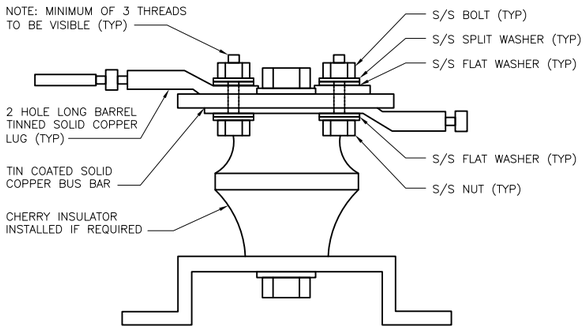
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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PROJECT INFORMATION

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52 STADLEY ROUGH ROAD
DANBURY, CT 06811

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

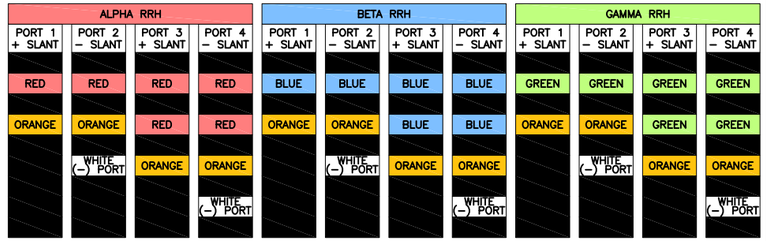
G-3

HYBRID/DISCREET CABLES

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

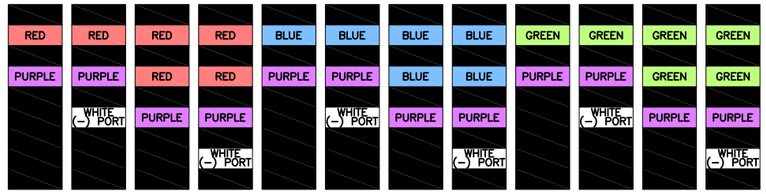
LOW-BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) - OPTIONAL PER MARKET

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



MID-BAND RRH
(AWS BANDS N66+N70)

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



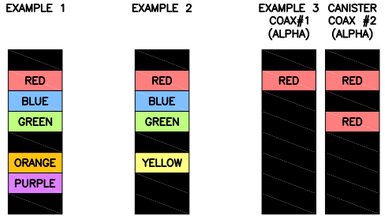
HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

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

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

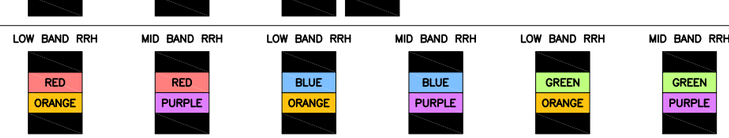
EXAMPLE 3 - MAIN COAX WITH GROUND MOUNTED RRHs.



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

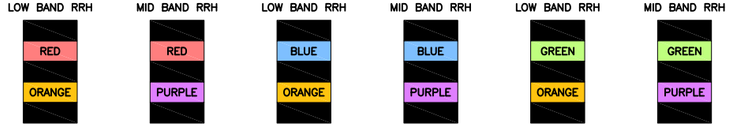
FIBER JUMPERS TO RRHs

LOW-BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.



POWER CABLES TO RRHs

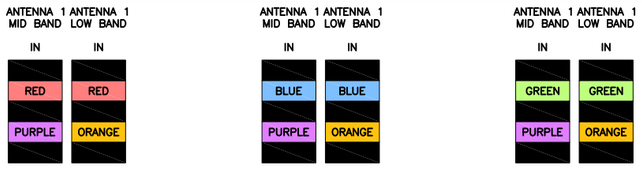
LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

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

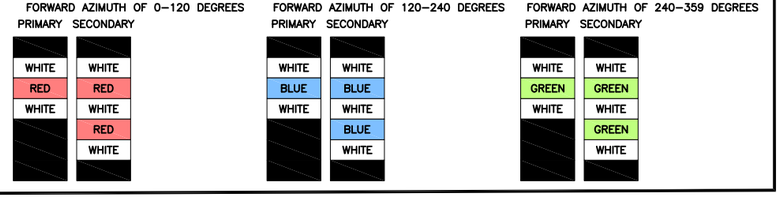
SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.



MICROWAVE RADIO LINKS

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

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



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

AWS (N66+N70+H-BLOCK): PURPLE

CBRS TECH (3 GHz): YELLOW

NEGATIVE SLANT PORT ON ANT/RRH: WHITE

ALPHA SECTOR: RED

BETA SECTOR: BLUE

GAMMA SECTOR: GREEN

COLOR IDENTIFIER | NO SCALE | 2

NOT USED | NO SCALE | 3

RF CABLE COLOR CODES | NO SCALE | 1

NOT USED | NO SCALE | 4

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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

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

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

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

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

CHAIN LINK FENCE — X X X X

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W W W W W

UNDERGROUND POWER — UGP UGP UGP UGP UGP

UNDERGROUND TELCO — UGT UGT UGT UGT UGT

OVERHEAD POWER — OHP OHP OHP OHP

OVERHEAD TELCO — OHT OHT OHT OHT

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

ABOVE GROUND POWER — AGP AGP AGP AGP AGP

ABOVE GROUND TELCO — AGT AGT AGT AGT AGT

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

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

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

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STATE OF CONNECTICUT — CHAD WHITE — No. 23924 LICENSED PROFESSIONAL ENGINEER

10/16/22

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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.

dish wireless.

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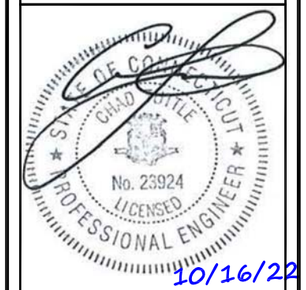

10/16/22

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	BLJ	BEH

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
1	8/8/22	ISSUED FOR CONSTRUCTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	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:

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

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

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

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

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

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

8. TIE WRAPS ARE NOT ALLOWED.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

dish wireless.

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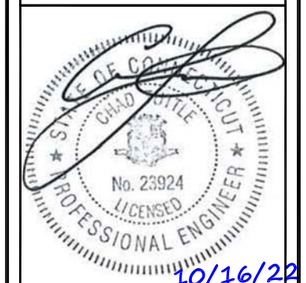

10/16/22

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	BLJ	BEH

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
1	8/8/22	ISSUED FOR CONSTRUCTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	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 GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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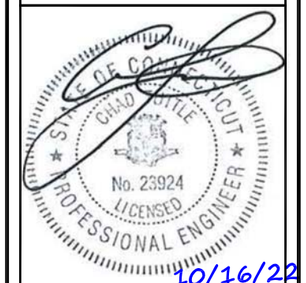

10/16/22

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

DRAWN BY:	CHECKED BY:	APPROVED BY:
YN	BLJ	BEH

RFDS REV #: 3

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
1	8/8/22	ISSUED FOR CONSTRUCTION
2	8/18/22	ISSUED FOR CONSTRUCTION
3	10/16/22	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

153448.001.01

DISH Wireless L.L.C.
PROJECT INFORMATION

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SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4