



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

December 15, 2022

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103
kbaldwin@rc.com

RE: **SUBPETITION NO. 1133-VER-20221020** – Cellco Partnership d/b/a Verizon Wireless eligible facility request for modifications to an existing telecommunications facility located at 71 Pleasant View Road, Derby, Connecticut.

Dear Attorney Baldwin:

The Connecticut Siting Council (Council) is in receipt of the Revised Structural Analysis, dated December 14, 2022, regarding compliance with Condition No. 2 and a rigorous cumulative far-field radio frequency analysis for the facility regarding compliance with Condition No. 3 of the Council's Declaratory Ruling of November 21, 2022, for the above-referenced project.

The Council acknowledges that the conditions have been satisfied. This acknowledgment applies only to the conditions satisfied by the December 14, 2022 correspondence.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MB/IN/laf

KENNETH C. BALDWIN

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts
and New York

December 14, 2022

Melanie A. Bachman, Esq.
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Sub-Petition No. 1133-VER-20221020 – Cellco Partnership d/b/a Verizon Wireless -
71 Pleasant View Road, Derby, Connecticut**

Dear Attorney Bachman:

Pursuant to Condition No. 2 of the Siting Council's November 21, 2022 approval of the above referenced Sub-Petition, enclosed is a revised Structural Analysis referencing the recently revised Connecticut State Building Code effective October 1, 2022. Also, pursuant to Condition No. 3 of the Siting Council's approval, attached is a cumulative far-field radio frequency analysis for the 71 Pleasant View Road facility.

Please contact me if you have any questions regarding this proposal.

Sincerely,



Kenneth C. Baldwin

Attachments



Tower Engineering Solutions

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

Structural Analysis Report

Existing 119 ft PennSummit Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13616-A

Customer Site Name: St. Judes

Carrier Name: Verizon (App#: 202165-1)

Carrier Site ID / Name: 468487 / Derby North_CT

Site Location: 71 Pleasantview Road

Derby, Connecticut

New Haven County

Latitude: 41.315042

Longitude: -73.064314

Analysis Result:

Max Structural Usage: 43.5% [Pass]

Max Foundation Usage: 16.0% [Pass]



Report Prepared By : Tawfeeq Alajaj



Tower Engineering Solutions

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Report Prepared By : Tawfeeq Alajaj

Introduction

The purpose of this report is to summarize the analysis results on the 119 ft PennSummit 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	Original structural design report prepared by PennSummit Tubular, LLC & Paul J. Ford and Company. Dated 08-17-2006. Design No 26805. Job No 29206-0266. / Original antenna concealment cylinder fabrication drawings prepared by Stealth Concealment Solutions, Inc. Dated 03-17-2003. Job No. FOUR-4C-100-40. Previous structural report prepared by Tower Engineering Solutions. Dated 01-21-2016. TES Project No 20131.
Foundation Drawing	Original foundation design prepared by PennSummit Tubular, LLC & Paul J. Ford and Company. Dated 08-17-2006. Design No 26805. Job No 29206-0266.
Geotechnical Report	Geotechnical report prepared by JGI Eastern, Inc. Dated 07-31-2006. Project No 06496G.
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:	125.0 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:	B
Risk Category:	II
Topographic Category:	1
Crest Height:	674 ft
Seismic Parameters:	$S_S = 0.202$, $S_1 = 0.054$

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	114.0	3	RFS V18-209014 - Panel	Inside 27" existing concealment canister from 109' to 119'	(6) 1 5/8"	T-Mobile
2		3	RFS Twin PCS TMAs			
3		3	RFS Twin AWS TMAs			
4	113.0	1	Flag (12'x18')	Direct	-	-
5	107.0	3	Andrew SBNHH-1D65B - Panel	Inside 28" existing concealment canister from 99' to 109'	(12) 1 5/8"	Verizon
6	97.0	3	FFVV-65B-R3 - Panel	Inside 30" existing concealment canister from 79' to 99'	(1) 1.60" Hybrid	Dish Wireless
7		1	Raycap RDIDC-9181-PF-48			
8	87.0	3	CommScope DHHTT65B-3XR - Panel	Inside 30" existing concealment canister from 79' to 99'	(12) 7/8"; (2) 1/2"; (3) 3/8" RET Line; (3) 5/8" DC; (3) 1/4" Fiber	Sprint Nextel
9		2	Andrew FPA5250D06-N			
10		6	RFS KIT-FD9R6004/1C-DL Diplexrs			
11		3	Redconnex AN-80i			
12	84.0	3	Argus LLPX310R - Panel	Inside 30" existing concealment canister from 79' to 99'	(2) 1/2"; (3) 5/8"; (3) 1/4"	Clearwire
13		1	Andrew FPA5250D06-N			
14		3	Redconnex AN-80i BTSs			

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
6	97.0	3	FFVV-65B-R3 - Panel	Inside 36" concealment canister from 79' to 99'	(1) 1.60" Hybrid	Dish Wireless
7		1	Raycap RDIDC-9181-PF-48			

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	Spoked Connection
Max. Usage:	42.8%	18.7%	20.3%	43.5%
Pass/Fail	Pass	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	1550.0	23.0
Analysis Reactions	565.9	8.9
Factored Reactions*	2092.5	31.1
% of Design Reactions	27.0%	28.6%

* Per section 15.6.2 of the TIA-222-H standard, factored reactions were obtained by multiplying a 1.35 factor to the original design reactions.

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

Service Load Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.8317 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure was found inadequate to safely support the existing and proposed equipment per the TIA-222 Standard under the design basic wind speed specified in the Analysis Criteria. The following modifications to the existing structure will be required.

A modification packet (including design drawings) can be provided under a separate scope of work.

Replace the canister from 99-109' with 36".

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 42.82% at 79.0ft

Structure: CT13616-A-SBA
Site Name: St. Judes
Height: 119.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-H
Exposure: B
Gh: 1.1

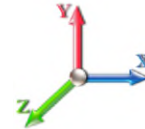
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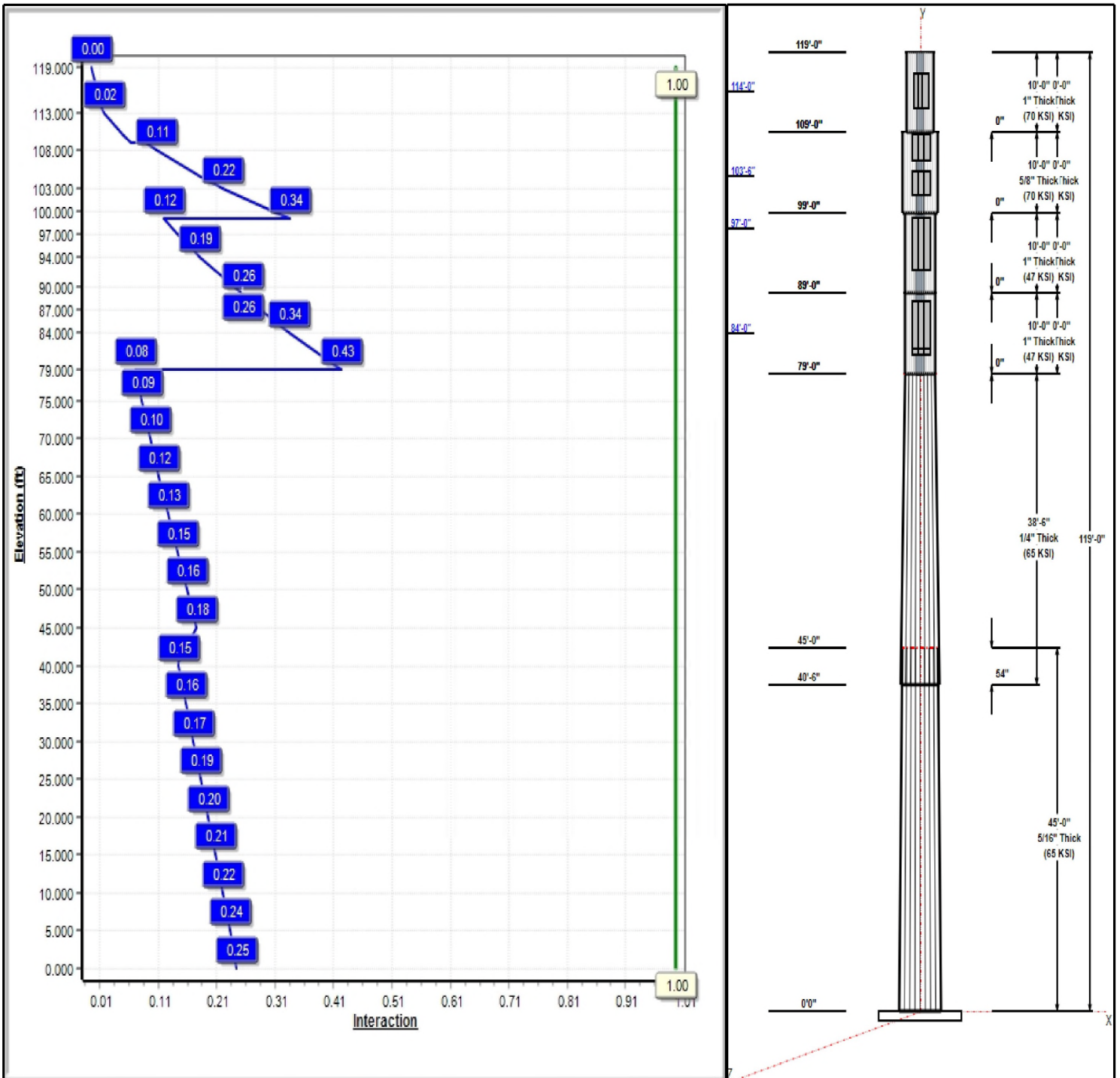
Dead Load Factor: 1.20
Wind Load Factor: 1.00

Load Case : 1.2D + 1.0W 125 mph Wind



Iterations: 29

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Structure: CT13616-A-SBA

Type: Custom
Site Name: St. Judes
Height: 119.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.15000

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Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	45.00	34.60	41.35	0.313		0.15000	65
2	38.50	30.00	35.77	0.250	Slip	0.15000	65
3	10.00	8.00	8.00	1.000	Butt	0.00000	47
4	10.00	8.00	8.00	1.000	Butt	0.00000	47
5	10.00	5.00	5.00	0.625	Butt	0.00000	70
6	10.00	5.00	5.00	1.000	Butt	0.00000	70

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
114.00	114.00	3	RFS Twin PCS TMAs	T-Mobile
114.00	114.00	3	RFS Twin AWS TMAs	T-Mobile
114.00	114.00	1	27" Canister at 114.0'	---
114.00	114.00	3	V18-209014	T-Mobile
113.00	113.00	1	Flag (12'x18')	---
108.00	107.00	3	APXVBLL09B43-C-I20	Verizon
104.00	104.00	1	28" Canister at 104.0'	---
103.50	102.50	3	MT6407-77A	Verizon
103.00	103.00	3	Commscope	Verizon
97.00	95.00	3	FFVV-65B-R3	Dish Wireless
97.00	97.00	1	Raycap	Dish Wireless
94.00	94.00	1	29" Canister at 94.0'	---
87.00	85.00	3	Commscope	Sprint Nextel
87.00	87.00	2	Andrew FPA5250D06-N	Sprint Nextel
87.00	87.00	6	RFS	Sprint Nextel
87.00	87.00	3	Redconnex AN-80i	Sprint Nextel
84.00	82.00	3	Argus LLPX310R	Clearwire
84.00	82.00	1	Andrew FPA5250D06-N	Clearwire
84.00	84.00	3	Redconnex AN-80i BTSs	Clearwire
84.00	84.00	1	30" Canister at 84.0'	---

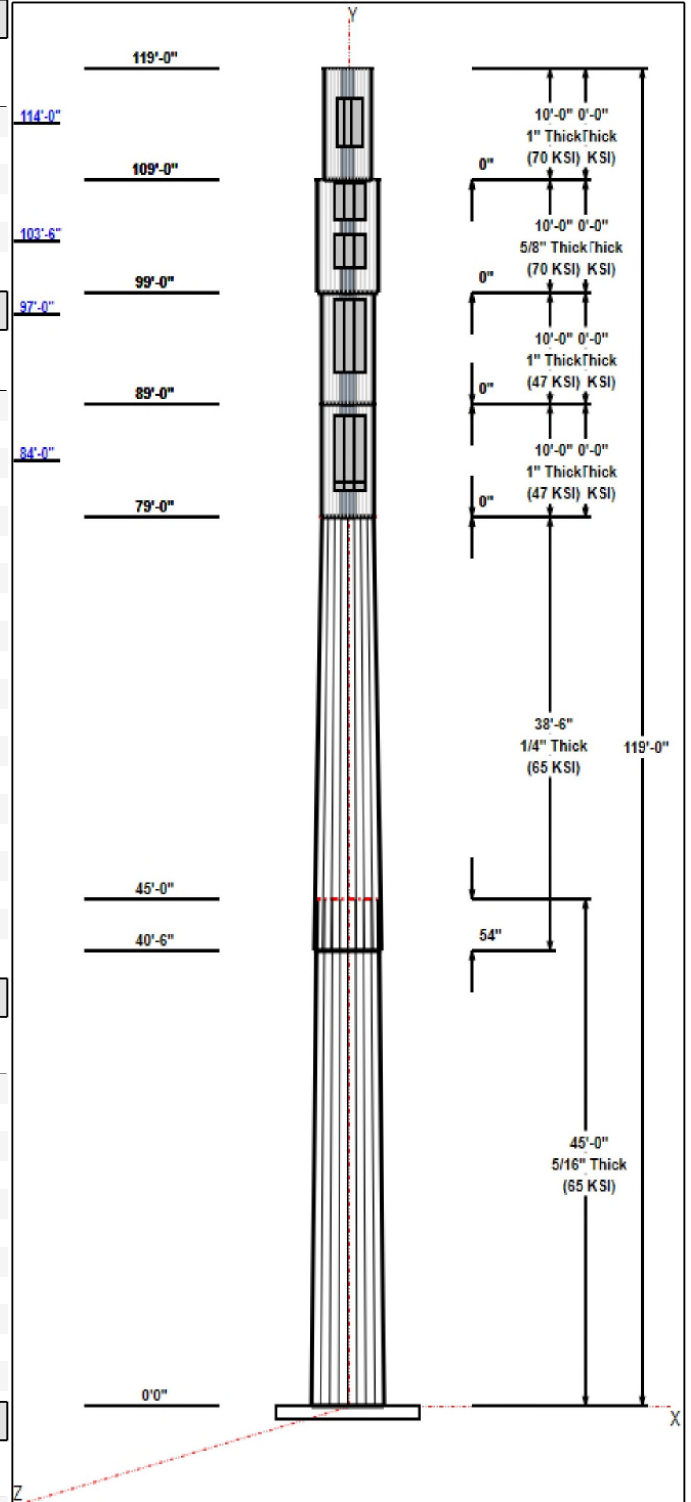
Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
3.00	114.00	Inside	1 5/8" Coax	T-Mobile
3.00	107.00	Inside	1 5/8" Coax	Verizon
3.00	97.00	Inside	1.60" Hybrid	Dish Wireless
3.00	87.00	Inside	1/2" Coax	Sprint Nextel
3.00	87.00	Inside	1/4" Fiber	Sprint Nextel
3.00	87.00	Inside	3/8" RET Line	Sprint Nextel
3.00	87.00	Inside	5/8" DC	Sprint Nextel
3.00	87.00	Inside	7/8" Coax	Sprint Nextel
3.00	84.00	Inside	1/2" Coax	Clearwire
3.00	84.00	Inside	1/4" Coax	Clearwire
3.00	84.00	Inside	5/8" Coax	Clearwire

Anchor Bolts

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

Base Plate



Structure: CT13616-A-SBA

Type: Custom
Site Name: St. Judes
Height: 119.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.00000

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Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	46.0	50.0	Clipped

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.0W 125 mph Wind	565.9	8.9	19.6
0.9D + 1.0W 125 mph Wind	562.4	8.9	14.7
1.2D + 1.0Di + 1.0Wi 50 mph Wind	244.6	3.3	28.0
1.2D + 1.0Ev + 1.0Eh	32.0	0.4	20.3
0.9D + 1.0Ev + 1.0Eh	32.0	0.4	15.3
1.0D + 1.0W 60 mph Wind	110.4	1.7	16.3

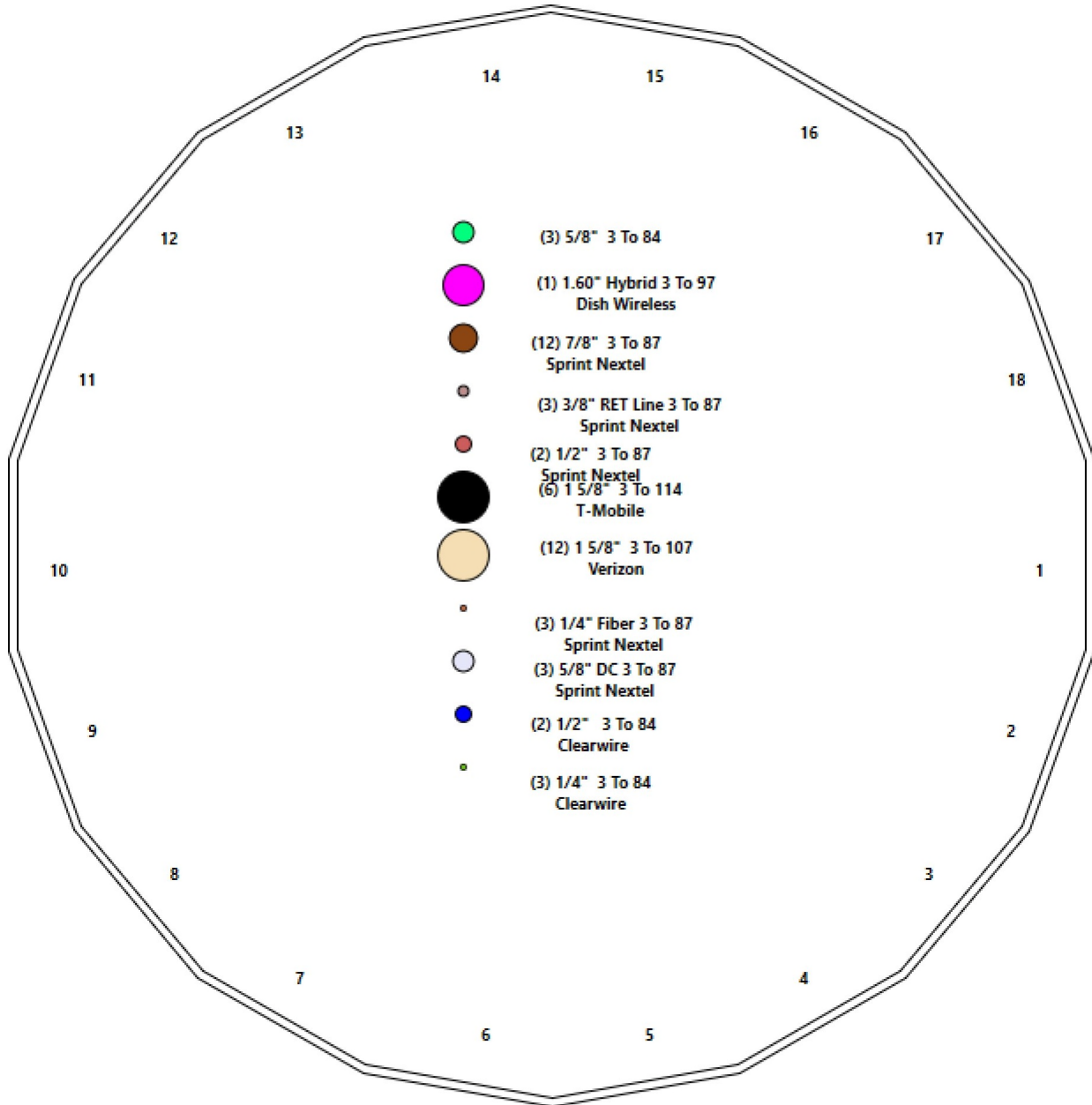
Structure: CT13616-A-SBA - Coax Line Placement

Type: Monopole
Site Name: St. Judes
Height: 119.00 (ft)

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Shaft Properties

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	45.000	0.3125	65		0.00	5,720
2	18	38.500	0.2500	65	Slip	54.00	3,393
3	R	10.000	1.0000	47	Flange	0.00	748
4	R	10.000	1.0000	47	Flange	0.00	748
5	R	10.000	0.6250	70	Flange	0.00	292
6	R	10.000	1.0000	70	Flange	0.00	428
Total Shaft Weight:							11,329

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	Canister Diam (in)
1	41.35	0.00	40.70	8660.38	21.92	132.32	34.60	45.00	34.01	5051.28	18.11	110.7	0.150000	0.00
2	35.77	40.50	28.19	4494.55	23.82	143.10	30.00	79.00	23.61	2639.64	19.75	120.0	0.150000	0.00
3	8.00	79.00	21.99	134.80	0.00	8.00	8.00	89.00	21.99	134.80	0.00	8.00	0.000000	30.00
4	8.00	89.00	21.99	134.80	0.00	8.00	8.00	99.00	21.99	134.80	0.00	8.00	0.000000	30.00
5	5.00	99.00	8.59	20.57	0.00	8.00	5.00	109.00	8.59	20.57	0.00	8.00	0.000000	36.00
6	5.00	109.00	12.57	25.15	0.00	5.00	5.00	119.00	12.57	25.15	0.00	5.00	0.000000	27.00

Load Summary

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	114.00	RFS Twin PCS TMAs	3	11.00	0.00	0.00	17.87	0.000	0.00	0.00	0.00
2	114.00	RFS Twin AWS TMAs	3	17.60	0.00	0.00	28.77	0.000	0.00	0.00	0.00
3	114.00	27" Canister at 114.0'	1	150.00	0.00	1.00	755.02	0.000	1.00	0.00	0.00
4	114.00	V18-209014	3	18.70	0.00	0.00	70.02	4.165	0.00	0.00	0.00
5	113.00	Flag (12'x18')	1	100.00	7.92	1.00	104.52	8.278	1.00	0.00	0.00
6	108.00	APXVBLL09B43-C-I20	3	35.70	0.00	0.00	115.06	5.045	0.00	0.00	-1.00
7	104.00	28" Canister at 104.0'	1	150.00	0.00	1.00	749.56	0.000	1.00	0.00	0.00
8	103.50	MT6407-77A	3	79.40	0.00	0.00	150.04	5.247	0.00	0.00	-1.00
9	103.00	Commscope TMAT1921B78-21A	3	17.60	0.00	0.00	28.83	0.000	0.00	0.00	0.00
10	97.00	FFVV-65B-R3	3	125.70	0.00	0.00	430.56	20.445	0.00	0.00	-2.00
11	97.00	Raycap RDIDC-9181-PF-48	1	21.90	0.00	0.00	55.88	0.000	0.00	0.00	0.00
12	94.00	29" Canister at 94.0'	1	150.00	0.00	1.00	743.53	0.000	1.00	0.00	0.00
13	87.00	Commscope DHHTT65B-3XR	3	45.40	0.00	1.00	171.63	0.000	1.00	0.00	-2.00
14	87.00	Andrew FPA5250D06-N	2	2.00	0.00	1.00	19.34	0.000	1.00	0.00	0.00
15	87.00	RFS KIT-FD9R6004/1C-DL Diplexrs	6	6.40	0.00	1.00	13.08	0.000	1.00	0.00	0.00
16	87.00	Redconnex AN-80i	3	4.50	0.00	1.00	58.14	0.000	1.00	0.00	0.00
17	84.00	Argus LLPX310R	3	28.60	0.00	1.00	85.41	0.000	1.00	0.00	-2.00
18	84.00	Andrew FPA5250D06-N	1	14.00	0.00	1.00	25.45	0.581	1.00	0.00	-2.00
19	84.00	Redconnex AN-80i BTSs	3	4.50	0.00	1.00	14.86	0.000	1.00	0.00	0.00
20	84.00	30" Canister at 84.0'	1	150.00	0.00	1.00	736.89	0.000	1.00	0.00	0.00
Totals:			48	1,944.40			6,801.65				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
3.00	114.00	(6) 1 5/8" Coax	0.00	Inside
3.00	107.00	(12) 1 5/8" Coax	0.00	Inside
3.00	97.00	(1) 1.60" Hybrid	0.00	Inside
3.00	87.00	(2) 1/2" Coax	0.00	Inside
3.00	87.00	(3) 1/4" Fiber	0.00	Inside
3.00	87.00	(3) 3/8" RET Line	0.00	Inside
3.00	87.00	(3) 5/8" DC	0.00	Inside
3.00	87.00	(12) 7/8" Coax	0.00	Inside
3.00	84.00	(2) 1/2" Coax	0.00	Inside
3.00	84.00	(3) 1/4" Coax	0.00	Inside
3.00	84.00	(3) 5/8" Coax	0.00	Inside

Shaft Section Properties

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Increment Length: 5 (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	41.350	40.703	8660.4	21.92	132.32	75.6	412.5	0.0
5.00		0.3125	40.600	39.959	8194.2	21.50	129.92	76.1	397.5	686.2
10.00		0.3125	39.850	39.215	7745.0	21.07	127.52	76.6	382.8	673.5
15.00		0.3125	39.100	38.471	7312.6	20.65	125.12	77.1	368.4	660.9
20.00		0.3125	38.350	37.727	6896.5	20.23	122.72	77.6	354.2	648.2
25.00		0.3125	37.600	36.983	6496.6	19.81	120.32	78.1	340.3	635.6
30.00		0.3125	36.850	36.239	6112.4	19.38	117.92	78.6	326.7	622.9
35.00		0.3125	36.100	35.495	5743.7	18.96	115.52	79.1	313.4	610.2
40.00		0.3125	35.350	34.752	5390.1	18.54	113.12	79.6	300.3	597.6
40.50	Bot - Section 2	0.3125	35.275	34.677	5355.5	18.49	112.88	79.6	299.0	59.1
45.00	Top - Section 1	0.2500	35.100	27.652	4243.2	23.35	140.40	0.0	0.0	953.4
50.00		0.2500	34.350	27.057	3975.1	22.82	137.40	74.6	227.9	465.4
55.00		0.2500	33.600	26.462	3718.5	22.29	134.40	75.2	218.0	455.3
60.00		0.2500	32.850	25.867	3473.3	21.76	131.40	75.8	208.2	445.2
65.00		0.2500	32.100	25.272	3239.0	21.23	128.40	76.4	198.7	435.0
70.00		0.2500	31.350	24.677	3015.5	20.70	125.40	77.1	189.5	424.9
75.00		0.2500	30.600	24.082	2802.6	20.17	122.40	77.7	180.4	414.8
79.00	Top - Section 2	0.2500	30.000	23.606	2639.6	19.75	120.00	78.2	173.3	324.5
79.00	Bot - Section 3	1.0000	8.000	21.991	134.8	4.94	30.00	47.0	33.7	
80.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	74.8
84.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	299.3
85.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	74.8
87.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	149.7
89.00	Top - Section 3	1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	149.7
89.00	Bot - Section 4	1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	
90.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	74.8
94.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	299.3
95.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	74.8
97.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	149.7
99.00	Top - Section 4	1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	149.7
99.00	Bot - Section 5	0.6250	5.000	8.590	20.6	0.00	12.80	70.0	8.2	
100.00		0.6250	5.000	8.590	20.6	0.00	8.00	70.0	8.2	29.2
103.00		0.6250	5.000	8.590	20.6	0.00	8.00	70.0	8.2	87.7
103.50		0.6250	5.000	8.590	20.6	0.00	8.00	70.0	8.2	14.6
104.00		0.6250	5.000	8.590	20.6	0.00	8.00	70.0	8.2	14.6
105.00		0.6250	5.000	8.590	20.6	0.00	8.00	70.0	8.2	29.2
108.00		0.6250	5.000	8.590	20.6	0.00	8.00	70.0	8.2	87.7
109.00	Top - Section 5	0.6250	5.000	8.590	20.6	0.00	8.00	70.0	8.2	29.2
109.00	Bot - Section 6	1.0000	5.000	12.566	25.2	0.00	5.00	70.0	10.1	
110.00		1.0000	5.000	12.566	25.2	0.00	5.00	70.0	10.1	42.8
113.00		1.0000	5.000	12.566	25.2	0.00	5.00	70.0	10.1	128.3
114.00		1.0000	5.000	12.566	25.2	0.00	5.00	70.0	10.1	42.8
115.00		1.0000	5.000	12.566	25.2	0.00	5.00	70.0	10.1	42.8
119.00		1.0000	5.000	12.566	25.2	0.00	5.00	70.0	10.1	171.0

11329.2

Wind Loading - Shaft

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Page: 8
	Struct Class: II	

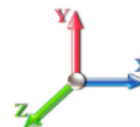


Load Case: 1.2D + 1.0W 125 mph Wind

Iterations 29

Dead Load Factor 1.20

Wind Load Factor 1.00



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	0.70	27.633	30.40	363.52	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0	
5.00		1.00	0.70	27.633	30.40	356.93	0.730	0.000	5.00	17.336	12.66	384.7	0.0	823.4	
10.00		1.00	0.70	27.633	30.40	350.34	0.730	0.000	5.00	17.019	12.42	377.6	0.0	808.2	
15.00		1.00	0.70	27.633	30.40	343.74	0.730	0.000	5.00	16.702	12.19	370.6	0.0	793.0	
20.00		1.00	0.70	27.633	30.40	337.15	0.730	0.000	5.00	16.384	11.96	363.6	0.0	777.9	
25.00		1.00	0.70	27.633	30.40	330.56	0.730	0.000	5.00	16.067	11.73	356.5	0.0	762.7	
30.00		1.00	0.70	27.656	30.42	324.10	0.730	0.000	5.00	15.750	11.50	349.8	0.0	747.5	
35.00		1.00	0.73	28.901	31.79	324.57	0.730	0.000	5.00	15.432	11.27	358.1	0.0	732.3	
40.00		1.00	0.76	30.025	33.03	323.95	0.730	0.000	5.00	15.115	11.03	364.4	0.0	717.1	
40.50	Bot - Section 2	1.00	0.76	30.132	33.14	323.84	0.730	0.000	0.50	1.494	1.09	36.1	0.0	70.9	
45.00	Top - Section 1	1.00	0.79	31.053	34.16	322.46	0.730	0.000	4.50	13.494	9.85	336.5	0.0	1144.1	
50.00		1.00	0.81	32.002	35.20	324.98	0.730	0.000	5.00	14.692	10.73	377.5	0.0	558.5	
55.00		1.00	0.83	32.885	36.17	322.24	0.730	0.000	5.00	14.375	10.49	379.6	0.0	546.3	
60.00		1.00	0.85	33.713	37.08	318.99	0.730	0.000	5.00	14.057	10.26	380.6	0.0	534.2	
65.00		1.00	0.87	34.493	37.94	315.29	0.730	0.000	5.00	13.740	10.03	380.6	0.0	522.0	
70.00		1.00	0.89	35.231	38.75	311.20	0.730	0.000	5.00	13.423	9.80	379.7	0.0	509.9	
75.00		1.00	0.91	35.932	39.53	306.77	0.730	0.000	5.00	13.105	9.57	378.1	0.0	497.7	
79.00	Top - Section 2	1.00	0.92	36.470	40.12	302.99	0.730	0.000	4.00	10.256	7.49	300.3	0.0	389.4	
80.00		1.00	0.93	36.601	40.26	298.93	0.600	0.000	1.00	2.500	1.50	60.4	0.0	99.4	
84.00	Appurtenance(s)	1.00	0.94	37.115	40.83	301.02	0.600	0.000	4.00	10.000	6.00	245.0	0.0	397.6	
85.00		1.00	0.94	37.240	40.96	301.53	0.600	0.000	1.00	2.500	1.50	61.4	0.0	99.4	
87.00	Appurtenance(s)	1.00	0.95	37.489	41.24	302.53	0.600	0.000	2.00	5.000	3.00	123.7	0.0	198.8	
89.00	Top - Section 3	1.00	0.96	37.733	41.51	303.52	0.600	0.000	2.00	5.000	3.00	124.5	0.0	198.8	
90.00		1.00	0.96	37.854	41.64	304.00	0.600	0.000	1.00	2.500	1.50	62.5	0.0	99.4	
94.00	Appurtenance(s)	1.00	0.97	38.327	42.16	305.89	0.600	0.000	4.00	10.000	6.00	253.0	0.0	397.6	
95.00		1.00	0.97	38.443	42.29	306.36	0.600	0.000	1.00	2.500	1.50	63.4	0.0	99.4	
97.00	Appurtenance(s)	1.00	0.98	38.672	42.54	307.27	0.600	0.000	2.00	5.000	3.00	127.6	0.0	198.8	
99.00	Top - Section 4	1.00	0.99	38.899	42.79	308.17	0.600	0.000	2.00	5.000	3.00	128.4	0.0	198.8	
100.00		1.00	0.99	39.010	42.91	370.33	0.600	0.000	1.00	3.000	1.80	77.2	0.0	46.6	
103.00	Appurtenance(s)	1.00	1.00	39.341	43.28	371.90	0.600	0.000	3.00	9.000	5.40	233.7	0.0	139.8	
103.50	Appurtenance(s)	1.00	1.00	39.396	43.34	372.16	0.600	0.000	0.50	1.500	0.90	39.0	0.0	23.3	
104.00	Appurtenance(s)	1.00	1.00	39.450	43.40	372.41	0.600	0.000	0.50	1.500	0.90	39.1	0.0	23.3	
105.00		1.00	1.00	39.558	43.51	372.92	0.600	0.000	1.00	3.000	1.80	78.3	0.0	46.6	
108.00	Appurtenance(s)	1.00	1.01	39.878	43.87	374.43	0.600	0.000	3.00	9.000	5.40	236.9	0.0	139.8	
109.00	Top - Section 5	1.00	1.01	39.983	43.98	374.92	0.600	0.000	1.00	3.000	1.80	79.2	0.0	46.6	
110.00		1.00	1.02	40.087	44.10	281.56	0.600	0.000	1.00	2.250	1.35	59.5	0.0	60.0	
113.00	Appurtenance(s)	1.00	1.02	40.397	44.44	282.64	0.600	0.000	3.00	6.750	4.05	180.0	0.0	179.9	
114.00	Appurtenance(s)	1.00	1.03	40.499	44.55	283.00	0.600	0.000	1.00	2.250	1.35	60.1	0.0	60.0	
115.00		1.00	1.03	40.600	44.66	283.35	0.600	0.000	1.00	2.250	1.35	60.3	0.0	60.0	
119.00		1.00	1.04	40.998	45.10	284.74	0.600	0.000	4.00	9.000	5.40	243.5	0.0	239.8	
Totals:															
									119.00			8,511.0		13,988.7	

Discrete Appurtenance Forces

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

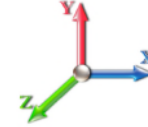


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Load Case: 1.2D + 1.0W 125 mph Wind

Dead Load Factor 1.20

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	114.00	RFS Twin PCS TMAs	3	40.499	44.548	0.00	1.00	0.00	39.60	0.000	0.000	0.00	0.00	0.00
2	114.00	V18-209014	3	40.499	44.548	0.00	1.00	0.00	67.32	0.000	0.000	0.00	0.00	0.00
3	114.00	27" Canister at 114.0'	1	40.499	44.548	1.00	1.00	0.00	180.00	0.000	0.000	0.00	0.00	0.00
4	114.00	RFS Twin AWS TMAs	3	40.499	44.548	0.00	1.00	0.00	63.36	0.000	0.000	0.00	0.00	0.00
5	113.00	Flag (12'x18')	1	40.397	44.436	1.00	1.00	7.92	120.00	0.000	0.000	351.94	0.00	0.00
6	108.00	APXVBLL09B43-C-I20	3	39.772	43.749	0.00	1.00	0.00	128.52	0.000	-1.000	0.00	0.00	0.00
7	104.00	28" Canister at 104.0'	1	39.450	43.395	1.00	1.00	0.00	180.00	0.000	0.000	0.00	0.00	0.00
8	103.50	MT6407-77A	3	39.287	43.215	0.00	1.00	0.00	285.84	0.000	-1.000	0.00	0.00	0.00
9	103.00	Commscope	3	39.341	43.275	0.00	1.00	0.00	63.36	0.000	0.000	0.00	0.00	0.00
10	97.00	Raycap	1	38.672	42.540	0.00	1.00	0.00	26.28	0.000	0.000	0.00	0.00	0.00
11	97.00	FFVV-65B-R3	3	38.443	42.287	0.00	1.00	0.00	452.52	0.000	-2.000	0.00	0.00	0.00
12	94.00	29" Canister at 94.0'	1	38.327	42.160	1.00	1.00	0.00	180.00	0.000	0.000	0.00	0.00	0.00
13	87.00	Redconnex AN-80i	3	37.489	41.238	1.00	1.00	0.00	16.20	0.000	0.000	0.00	0.00	0.00
14	87.00	RFS	6	37.489	41.238	1.00	1.00	0.00	46.08	0.000	0.000	0.00	0.00	0.00
15	87.00	Andrew FPA5250D06-N	2	37.489	41.238	1.00	1.00	0.00	4.80	0.000	0.000	0.00	0.00	0.00
16	87.00	Commscope	3	37.240	40.964	1.00	1.00	0.00	163.44	0.000	-2.000	0.00	0.00	0.00
17	84.00	Redconnex AN-80i BTSs	3	37.115	40.826	1.00	1.00	0.00	16.20	0.000	0.000	0.00	0.00	0.00
18	84.00	Andrew FPA5250D06-N	1	36.860	40.546	1.00	1.00	0.00	16.80	0.000	-2.000	0.00	0.00	0.00
19	84.00	Argus LLPX310R	3	36.860	40.546	1.00	1.00	0.00	102.96	0.000	-2.000	0.00	0.00	0.00
20	84.00	30" Canister at 84.0'	1	37.115	40.826	1.00	1.00	0.00	180.00	0.000	0.000	0.00	0.00	0.00
Totals:									2,333.28			351.94		

Total Applied Force Summary

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

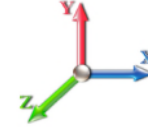


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Load Case: 1.2D + 1.0W 125 mph Wind

Dead Load Factor 1.20

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
5.00		384.67	888.60	0.00	0.00
10.00		377.63	971.19	0.00	0.00
15.00		370.59	956.00	0.00	0.00
20.00		363.55	940.82	0.00	0.00
25.00		356.51	925.63	0.00	0.00
30.00		349.76	910.44	0.00	0.00
35.00		358.15	895.25	0.00	0.00
40.00		364.43	880.06	0.00	0.00
40.50		36.15	87.17	0.00	0.00
45.00		336.48	1290.74	0.00	0.00
50.00		377.54	721.46	0.00	0.00
55.00		379.59	709.31	0.00	0.00
60.00		380.55	697.16	0.00	0.00
65.00		380.57	685.01	0.00	0.00
70.00		379.73	672.86	0.00	0.00
75.00		378.14	660.71	0.00	0.00
79.00		300.34	519.82	0.00	0.00
80.00		60.39	131.99	0.00	0.00
84.00	(8) attachments	244.96	843.92	0.00	0.00
85.00		61.45	130.90	0.00	0.00
87.00	(14) attachments	123.71	492.33	0.00	0.00
89.00		124.52	244.08	0.00	0.00
90.00		62.46	122.04	0.00	0.00
94.00	(1) attachments	252.96	668.16	0.00	0.00
95.00		63.43	122.04	0.00	0.00
97.00	(4) attachments	127.62	722.88	0.00	0.00
99.00		128.37	243.72	0.00	0.00
100.00		77.24	69.06	0.00	0.00
103.00	(3) attachments	233.69	270.54	0.00	0.00
103.50	(3) attachments	39.00	320.37	0.00	0.00
104.00	(1) attachments	39.06	214.53	0.00	0.00
105.00		78.32	69.06	0.00	0.00
108.00	(3) attachments	236.87	320.73	0.00	0.00
109.00		79.17	54.09	0.00	0.00
110.00		59.53	67.44	0.00	0.00
113.00	(1) attachments	531.90	322.32	0.00	0.00
114.00	(10) attachments	60.14	417.72	0.00	0.00
115.00		60.29	59.95	0.00	0.00
119.00		243.53	239.81	0.00	0.00
	Totals:	8,862.98	19,559.91	0.00	0.00

Calculated Forces

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

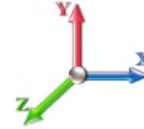


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Load Case: 1.2D + 1.0W 125 mph Wind

Iterations 29

Dead Load Factor 1.20
Wind Load 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	-19.55	-8.88	0.00	-565.87	0.00	565.87	2770.05	714.33	2432.17	2339.53	0.00	0.000	0.000	0.249
5.00	-18.65	-8.52	0.00	-521.48	0.00	521.48	2737.33	701.28	2344.09	2269.31	0.05	-0.089	0.000	0.237
10.00	-17.67	-8.17	0.00	-478.87	0.00	478.87	2703.94	688.22	2257.62	2199.58	0.19	-0.176	0.000	0.224
15.00	-16.70	-7.82	0.00	-438.03	0.00	438.03	2669.88	675.17	2172.78	2130.35	0.42	-0.260	0.000	0.212
20.00	-15.75	-7.47	0.00	-398.94	0.00	398.94	2635.15	662.11	2089.57	2061.66	0.74	-0.342	0.000	0.200
25.00	-14.82	-7.13	0.00	-361.58	0.00	361.58	2599.76	649.06	2007.98	1993.54	1.14	-0.420	0.000	0.187
30.00	-13.90	-6.79	0.00	-325.94	0.00	325.94	2563.70	636.00	1928.02	1926.02	1.62	-0.495	0.000	0.175
35.00	-13.00	-6.44	0.00	-291.99	0.00	291.99	2526.98	622.95	1849.68	1859.13	2.17	-0.567	0.000	0.162
40.00	-12.12	-6.07	0.00	-259.80	0.00	259.80	2489.59	609.89	1772.96	1792.91	2.81	-0.636	0.000	0.150
40.50	-12.03	-6.04	0.00	-256.76	0.00	256.76	2485.81	608.58	1765.38	1786.32	2.87	-0.643	0.000	0.149
45.00	-10.74	-5.70	0.00	-229.57	0.00	229.57	1840.21	485.30	1403.23	1320.44	3.51	-0.701	0.000	0.180
50.00	-10.02	-5.33	0.00	-201.05	0.00	201.05	1815.76	474.86	1343.48	1274.66	4.27	-0.761	0.000	0.163
55.00	-9.31	-4.95	0.00	-174.42	0.00	174.42	1790.64	464.41	1285.03	1229.18	5.11	-0.828	0.000	0.147
60.00	-8.61	-4.57	0.00	-149.68	0.00	149.68	1764.86	453.97	1227.89	1184.03	6.01	-0.890	0.000	0.131
65.00	-7.93	-4.18	0.00	-126.85	0.00	126.85	1738.40	443.52	1172.04	1139.25	6.97	-0.947	0.000	0.116
70.00	-7.26	-3.80	0.00	-105.94	0.00	105.94	1711.29	433.08	1117.49	1094.86	7.99	-0.998	0.000	0.101
75.00	-6.61	-3.41	0.00	-86.95	0.00	86.95	1683.50	422.64	1064.24	1050.90	9.06	-1.044	0.000	0.087
79.00	-6.09	-3.10	0.00	-73.31	0.00	73.31	1660.79	414.28	1022.58	1016.07	9.95	-1.076	0.000	0.076
79.00	-6.09	-3.10	0.00	-73.31	0.00	73.31	930.23	279.07	18866.3	173.90	9.95	-1.076	0.000	0.428
80.00	-5.94	-3.07	0.00	-70.20	0.00	70.20	930.23	279.07	18866.3	173.90	10.18	-1.084	0.000	0.410
84.00	-5.09	-2.83	0.00	-57.92	0.00	57.92	930.23	279.07	18866.3	173.90	11.32	-1.625	0.000	0.339
85.00	-4.95	-2.78	0.00	-55.09	0.00	55.09	930.23	279.07	18866.3	173.90	11.67	-1.744	0.000	0.322
87.00	-4.46	-2.66	0.00	-49.52	0.00	49.52	930.23	279.07	18866.3	173.90	12.45	-1.965	0.000	0.290
89.00	-4.21	-2.54	0.00	-44.20	0.00	44.20	930.23	279.07	18866.3	173.90	13.32	-2.163	0.000	0.259
89.00	-4.21	-2.54	0.00	-44.20	0.00	44.20	930.23	279.07	18866.3	173.90	13.32	-2.163	0.000	0.259
90.00	-4.08	-2.49	0.00	-41.66	0.00	41.66	930.23	279.07	18866.3	173.90	13.78	-2.253	0.000	0.244
94.00	-3.42	-2.22	0.00	-31.72	0.00	31.72	930.23	279.07	18866.3	173.90	15.80	-2.563	0.000	0.186
95.00	-3.29	-2.15	0.00	-29.51	0.00	29.51	930.23	279.07	18866.3	173.90	16.35	-2.628	0.000	0.173
97.00	-2.58	-1.99	0.00	-25.20	0.00	25.20	930.23	279.07	18866.3	173.90	17.47	-2.743	0.000	0.148
99.00	-2.34	-1.86	0.00	-21.21	0.00	21.21	930.23	279.07	18866.3	173.90	18.64	-2.841	0.000	0.125
99.00	-2.34	-1.86	0.00	-21.21	0.00	21.21	541.19	162.36	3641.39	63.23	18.64	-2.841	0.000	0.340
100.00	-2.26	-1.79	0.00	-19.36	0.00	19.36	541.19	162.36	3641.39	63.23	19.24	-2.884	0.000	0.310
103.00	-1.99	-1.56	0.00	-13.98	0.00	13.98	541.19	162.36	3641.39	63.23	21.28	-3.575	0.000	0.225
103.50	-1.67	-1.50	0.00	-13.20	0.00	13.20	541.19	162.36	3641.39	63.23	21.66	-3.669	0.000	0.212
104.00	-1.46	-1.45	0.00	-12.45	0.00	12.45	541.19	162.36	3641.39	63.23	22.05	-3.758	0.000	0.200
105.00	-1.39	-1.37	0.00	-11.00	0.00	11.00	541.19	162.36	3641.39	63.23	22.85	-3.920	0.000	0.177
108.00	-1.08	-1.12	0.00	-6.88	0.00	6.88	541.19	162.36	3641.39	63.23	25.44	-4.291	0.000	0.111
109.00	-1.03	-1.04	0.00	-5.76	0.00	5.76	541.19	162.36	3641.39	63.23	26.35	-4.379	0.000	0.093
109.00	-1.03	-1.04	0.00	-5.76	0.00	5.76	791.68	237.50	8195.40	85.75	26.35	-4.379	0.000	0.068
110.00	-0.97	-0.97	0.00	-4.72	0.00	4.72	791.68	237.50	8195.40	85.75	27.27	-4.451	0.000	0.056
113.00	-0.69	-0.42	0.00	-1.79	0.00	1.79	791.68	237.50	8195.40	85.75	30.10	-4.562	0.000	0.022
114.00	-0.27	-0.33	0.00	-1.37	0.00	1.37	791.68	237.50	8195.40	85.75	31.06	-4.579	0.000	0.016
115.00	-0.22	-0.26	0.00	-1.05	0.00	1.05	791.68	237.50	8195.40	85.75	32.02	-4.593	0.000	0.012
119.00	0.00	-0.24	0.00	0.00	0.00	0.00	791.68	237.50	8195.40	85.75	35.88	-4.617	0.000	0.000

Wind Loading - Shaft

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

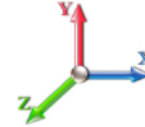


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Load Case: 0.9D + 1.0W 125 mph Wind

Iterations 29

Dead Load Factor 0.90
Wind Load Factor 1.00



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	0.70	27.633	30.40	363.52	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	27.633	30.40	356.93	0.730	0.000	5.00	17.336	12.66	384.7	0.0	617.6
10.00		1.00	0.70	27.633	30.40	350.34	0.730	0.000	5.00	17.019	12.42	377.6	0.0	606.2
15.00		1.00	0.70	27.633	30.40	343.74	0.730	0.000	5.00	16.702	12.19	370.6	0.0	594.8
20.00		1.00	0.70	27.633	30.40	337.15	0.730	0.000	5.00	16.384	11.96	363.6	0.0	583.4
25.00		1.00	0.70	27.633	30.40	330.56	0.730	0.000	5.00	16.067	11.73	356.5	0.0	572.0
30.00		1.00	0.70	27.656	30.42	324.10	0.730	0.000	5.00	15.750	11.50	349.8	0.0	560.6
35.00		1.00	0.73	28.901	31.79	324.57	0.730	0.000	5.00	15.432	11.27	358.1	0.0	549.2
40.00		1.00	0.76	30.025	33.03	323.95	0.730	0.000	5.00	15.115	11.03	364.4	0.0	537.8
40.50	Bot - Section 2	1.00	0.76	30.132	33.14	323.84	0.730	0.000	0.50	1.494	1.09	36.1	0.0	53.2
45.00	Top - Section 1	1.00	0.79	31.053	34.16	322.46	0.730	0.000	4.50	13.494	9.85	336.5	0.0	858.1
50.00		1.00	0.81	32.002	35.20	324.98	0.730	0.000	5.00	14.692	10.73	377.5	0.0	418.9
55.00		1.00	0.83	32.885	36.17	322.24	0.730	0.000	5.00	14.375	10.49	379.6	0.0	409.8
60.00		1.00	0.85	33.713	37.08	318.99	0.730	0.000	5.00	14.057	10.26	380.6	0.0	400.6
65.00		1.00	0.87	34.493	37.94	315.29	0.730	0.000	5.00	13.740	10.03	380.6	0.0	391.5
70.00		1.00	0.89	35.231	38.75	311.20	0.730	0.000	5.00	13.423	9.80	379.7	0.0	382.4
75.00		1.00	0.91	35.932	39.53	306.77	0.730	0.000	5.00	13.105	9.57	378.1	0.0	373.3
79.00	Top - Section 2	1.00	0.92	36.470	40.12	302.99	0.730	0.000	4.00	10.256	7.49	300.3	0.0	292.1
80.00		1.00	0.93	36.601	40.26	298.93	0.600	0.000	1.00	2.500	1.50	60.4	0.0	74.5
84.00	Appurtenance(s)	1.00	0.94	37.115	40.83	301.02	0.600	0.000	4.00	10.000	6.00	245.0	0.0	298.2
85.00		1.00	0.94	37.240	40.96	301.53	0.600	0.000	1.00	2.500	1.50	61.4	0.0	74.5
87.00	Appurtenance(s)	1.00	0.95	37.489	41.24	302.53	0.600	0.000	2.00	5.000	3.00	123.7	0.0	149.1
89.00	Top - Section 3	1.00	0.96	37.733	41.51	303.52	0.600	0.000	2.00	5.000	3.00	124.5	0.0	149.1
90.00		1.00	0.96	37.854	41.64	304.00	0.600	0.000	1.00	2.500	1.50	62.5	0.0	74.5
94.00	Appurtenance(s)	1.00	0.97	38.327	42.16	305.89	0.600	0.000	4.00	10.000	6.00	253.0	0.0	298.2
95.00		1.00	0.97	38.443	42.29	306.36	0.600	0.000	1.00	2.500	1.50	63.4	0.0	74.5
97.00	Appurtenance(s)	1.00	0.98	38.672	42.54	307.27	0.600	0.000	2.00	5.000	3.00	127.6	0.0	149.1
99.00	Top - Section 4	1.00	0.99	38.899	42.79	308.17	0.600	0.000	2.00	5.000	3.00	128.4	0.0	149.1
100.00		1.00	0.99	39.010	42.91	370.33	0.600	0.000	1.00	3.000	1.80	77.2	0.0	34.9
103.00	Appurtenance(s)	1.00	1.00	39.341	43.28	371.90	0.600	0.000	3.00	9.000	5.40	233.7	0.0	104.8
103.50	Appurtenance(s)	1.00	1.00	39.396	43.34	372.16	0.600	0.000	0.50	1.500	0.90	39.0	0.0	17.5
104.00	Appurtenance(s)	1.00	1.00	39.450	43.40	372.41	0.600	0.000	0.50	1.500	0.90	39.1	0.0	17.5
105.00		1.00	1.00	39.558	43.51	372.92	0.600	0.000	1.00	3.000	1.80	78.3	0.0	34.9
108.00	Appurtenance(s)	1.00	1.01	39.878	43.87	374.43	0.600	0.000	3.00	9.000	5.40	236.9	0.0	104.8
109.00	Top - Section 5	1.00	1.01	39.983	43.98	374.92	0.600	0.000	1.00	3.000	1.80	79.2	0.0	34.9
110.00		1.00	1.02	40.087	44.10	281.56	0.600	0.000	1.00	2.250	1.35	59.5	0.0	45.0
113.00	Appurtenance(s)	1.00	1.02	40.397	44.44	282.64	0.600	0.000	3.00	6.750	4.05	180.0	0.0	134.9
114.00	Appurtenance(s)	1.00	1.03	40.499	44.55	283.00	0.600	0.000	1.00	2.250	1.35	60.1	0.0	45.0
115.00		1.00	1.03	40.600	44.66	283.35	0.600	0.000	1.00	2.250	1.35	60.3	0.0	45.0
119.00		1.00	1.04	40.998	45.10	284.74	0.600	0.000	4.00	9.000	5.40	243.5	0.0	179.9
Totals:									119.00			8,511.0		10,491.5

Discrete Appurtenance Forces

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

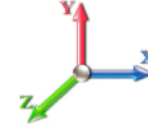


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Load Case: 0.9D + 1.0W 125 mph Wind

Dead Load Factor 0.90

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	114.00	RFS Twin PCS TMAs	3	40.499	44.548	0.00	1.00	0.00	29.70	0.000	0.000	0.00	0.00	0.00
2	114.00	V18-209014	3	40.499	44.548	0.00	1.00	0.00	50.49	0.000	0.000	0.00	0.00	0.00
3	114.00	27" Canister at 114.0'	1	40.499	44.548	1.00	1.00	0.00	135.00	0.000	0.000	0.00	0.00	0.00
4	114.00	RFS Twin AWS TMAs	3	40.499	44.548	0.00	1.00	0.00	47.52	0.000	0.000	0.00	0.00	0.00
5	113.00	Flag (12'x18')	1	40.397	44.436	1.00	1.00	7.92	90.00	0.000	0.000	351.94	0.00	0.00
6	108.00	APXVBLL09B43-C-I20	3	39.772	43.749	0.00	1.00	0.00	96.39	0.000	-1.000	0.00	0.00	0.00
7	104.00	28" Canister at 104.0'	1	39.450	43.395	1.00	1.00	0.00	135.00	0.000	0.000	0.00	0.00	0.00
8	103.50	MT6407-77A	3	39.287	43.215	0.00	1.00	0.00	214.38	0.000	-1.000	0.00	0.00	0.00
9	103.00	Commscope	3	39.341	43.275	0.00	1.00	0.00	47.52	0.000	0.000	0.00	0.00	0.00
10	97.00	Raycap	1	38.672	42.540	0.00	1.00	0.00	19.71	0.000	0.000	0.00	0.00	0.00
11	97.00	FFVV-65B-R3	3	38.443	42.287	0.00	1.00	0.00	339.39	0.000	-2.000	0.00	0.00	0.00
12	94.00	29" Canister at 94.0'	1	38.327	42.160	1.00	1.00	0.00	135.00	0.000	0.000	0.00	0.00	0.00
13	87.00	Redconnex AN-80i	3	37.489	41.238	1.00	1.00	0.00	12.15	0.000	0.000	0.00	0.00	0.00
14	87.00	RFS	6	37.489	41.238	1.00	1.00	0.00	34.56	0.000	0.000	0.00	0.00	0.00
15	87.00	Andrew FPA5250D06-N	2	37.489	41.238	1.00	1.00	0.00	3.60	0.000	0.000	0.00	0.00	0.00
16	87.00	Commscope	3	37.240	40.964	1.00	1.00	0.00	122.58	0.000	-2.000	0.00	0.00	0.00
17	84.00	Redconnex AN-80i BTSs	3	37.115	40.826	1.00	1.00	0.00	12.15	0.000	0.000	0.00	0.00	0.00
18	84.00	Andrew FPA5250D06-N	1	36.860	40.546	1.00	1.00	0.00	12.60	0.000	-2.000	0.00	0.00	0.00
19	84.00	Argus LLPX310R	3	36.860	40.546	1.00	1.00	0.00	77.22	0.000	-2.000	0.00	0.00	0.00
20	84.00	30" Canister at 84.0'	1	37.115	40.826	1.00	1.00	0.00	135.00	0.000	0.000	0.00	0.00	0.00

Totals: 1,749.96

351.94

Total Applied Force Summary

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

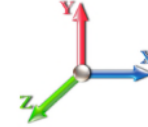


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Load Case: 0.9D + 1.0W 125 mph Wind

Dead Load Factor 0.90

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
5.00		384.67	666.45	0.00	0.00
10.00		377.63	728.39	0.00	0.00
15.00		370.59	717.00	0.00	0.00
20.00		363.55	705.61	0.00	0.00
25.00		356.51	694.22	0.00	0.00
30.00		349.76	682.83	0.00	0.00
35.00		358.15	671.44	0.00	0.00
40.00		364.43	660.05	0.00	0.00
40.50		36.15	65.38	0.00	0.00
45.00		336.48	968.06	0.00	0.00
50.00		377.54	541.09	0.00	0.00
55.00		379.59	531.98	0.00	0.00
60.00		380.55	522.87	0.00	0.00
65.00		380.57	513.75	0.00	0.00
70.00		379.73	504.64	0.00	0.00
75.00		378.14	495.53	0.00	0.00
79.00		300.34	389.86	0.00	0.00
80.00		60.39	98.99	0.00	0.00
84.00	(8) attachments	244.96	632.94	0.00	0.00
85.00		61.45	98.18	0.00	0.00
87.00	(14) attachments	123.71	369.24	0.00	0.00
89.00		124.52	183.06	0.00	0.00
90.00		62.46	91.53	0.00	0.00
94.00	(1) attachments	252.96	501.12	0.00	0.00
95.00		63.43	91.53	0.00	0.00
97.00	(4) attachments	127.62	542.16	0.00	0.00
99.00		128.37	182.79	0.00	0.00
100.00		77.24	51.80	0.00	0.00
103.00	(3) attachments	233.69	202.91	0.00	0.00
103.50	(3) attachments	39.00	240.28	0.00	0.00
104.00	(1) attachments	39.06	160.90	0.00	0.00
105.00		78.32	51.80	0.00	0.00
108.00	(3) attachments	236.87	240.55	0.00	0.00
109.00		79.17	40.56	0.00	0.00
110.00		59.53	50.58	0.00	0.00
113.00	(1) attachments	531.90	241.74	0.00	0.00
114.00	(10) attachments	60.14	313.29	0.00	0.00
115.00		60.29	44.96	0.00	0.00
119.00		243.53	179.86	0.00	0.00
	Totals:	8,862.98	14,669.93	0.00	0.00

Calculated Forces

Structure: CT13616-A-SBA
Site Name: St. Judes
Height: 119.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Code: TIA-222-H
Exposure: B
Crest Height: 674.00
Site Class: D - Stiff Soil
Struct Class: II

12/6/2022



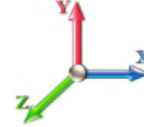
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Load Case: 0.9D + 1.0W 125 mph Wind

Iterations 29

Dead Load Factor 0.90

Wind Load 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	-14.66	-8.87	0.00	-562.37	0.00	562.37	2770.05	714.33	2432.17	2339.53	0.00	0.000	0.000	0.246
5.00	-13.98	-8.51	0.00	-517.99	0.00	517.99	2737.33	701.28	2344.09	2269.31	0.05	-0.089	0.000	0.234
10.00	-13.24	-8.15	0.00	-475.44	0.00	475.44	2703.94	688.22	2257.62	2199.58	0.19	-0.175	0.000	0.221
15.00	-12.52	-7.80	0.00	-434.69	0.00	434.69	2669.88	675.17	2172.78	2130.35	0.42	-0.259	0.000	0.209
20.00	-11.80	-7.44	0.00	-395.71	0.00	395.71	2635.15	662.11	2089.57	2061.66	0.73	-0.339	0.000	0.197
25.00	-11.10	-7.10	0.00	-358.49	0.00	358.49	2599.76	649.06	2007.98	1993.54	1.13	-0.417	0.000	0.184
30.00	-10.41	-6.76	0.00	-322.99	0.00	322.99	2563.70	636.00	1928.02	1926.02	1.61	-0.492	0.000	0.172
35.00	-9.74	-6.40	0.00	-289.21	0.00	289.21	2526.98	622.95	1849.68	1859.13	2.16	-0.563	0.000	0.160
40.00	-9.08	-6.04	0.00	-257.19	0.00	257.19	2489.59	609.89	1772.96	1792.91	2.79	-0.631	0.000	0.147
40.50	-9.01	-6.01	0.00	-254.17	0.00	254.17	2485.81	608.58	1765.38	1786.32	2.85	-0.637	0.000	0.146
45.00	-8.04	-5.67	0.00	-227.14	0.00	227.14	1840.21	485.30	1403.23	1320.44	3.48	-0.695	0.000	0.177
50.00	-7.50	-5.29	0.00	-198.81	0.00	198.81	1815.76	474.86	1343.48	1274.66	4.24	-0.755	0.000	0.160
55.00	-6.97	-4.91	0.00	-172.35	0.00	172.35	1790.64	464.41	1285.03	1229.18	5.07	-0.821	0.000	0.144
60.00	-6.44	-4.53	0.00	-147.79	0.00	147.79	1764.86	453.97	1227.89	1184.03	5.96	-0.883	0.000	0.129
65.00	-5.93	-4.15	0.00	-125.14	0.00	125.14	1738.40	443.52	1172.04	1139.25	6.92	-0.938	0.000	0.113
70.00	-5.43	-3.76	0.00	-104.41	0.00	104.41	1711.29	433.08	1117.49	1094.86	7.93	-0.989	0.000	0.099
75.00	-4.94	-3.38	0.00	-85.59	0.00	85.59	1683.50	422.64	1064.24	1050.90	8.99	-1.034	0.000	0.084
79.00	-4.55	-3.07	0.00	-72.07	0.00	72.07	1660.79	414.28	1022.58	1016.07	9.87	-1.066	0.000	0.074
79.00	-4.55	-3.07	0.00	-72.07	0.00	72.07	930.23	279.07	18866.3	173.90	9.87	-1.066	0.000	0.419
80.00	-4.44	-3.03	0.00	-69.00	0.00	69.00	930.23	279.07	18866.3	173.90	10.09	-1.073	0.000	0.402
84.00	-3.80	-2.79	0.00	-56.86	0.00	56.86	930.23	279.07	18866.3	173.90	11.22	-1.604	0.000	0.331
85.00	-3.69	-2.74	0.00	-54.07	0.00	54.07	930.23	279.07	18866.3	173.90	11.57	-1.722	0.000	0.315
87.00	-3.32	-2.62	0.00	-48.58	0.00	48.58	930.23	279.07	18866.3	173.90	12.34	-1.938	0.000	0.283
89.00	-3.14	-2.49	0.00	-43.35	0.00	43.35	930.23	279.07	18866.3	173.90	13.19	-2.132	0.000	0.253
89.00	-3.14	-2.49	0.00	-43.35	0.00	43.35	930.23	279.07	18866.3	173.90	13.19	-2.132	0.000	0.253
90.00	-3.04	-2.44	0.00	-40.86	0.00	40.86	930.23	279.07	18866.3	173.90	13.65	-2.221	0.000	0.238
94.00	-2.54	-2.17	0.00	-31.10	0.00	31.10	930.23	279.07	18866.3	173.90	15.64	-2.525	0.000	0.182
95.00	-2.45	-2.11	0.00	-28.92	0.00	28.92	930.23	279.07	18866.3	173.90	16.17	-2.588	0.000	0.169
97.00	-1.91	-1.96	0.00	-24.70	0.00	24.70	930.23	279.07	18866.3	173.90	17.28	-2.701	0.000	0.144
99.00	-1.73	-1.83	0.00	-20.78	0.00	20.78	930.23	279.07	18866.3	173.90	18.43	-2.797	0.000	0.121
99.00	-1.73	-1.83	0.00	-20.78	0.00	20.78	541.19	162.36	3641.39	63.23	18.43	-2.797	0.000	0.332
100.00	-1.67	-1.76	0.00	-18.96	0.00	18.96	541.19	162.36	3641.39	63.23	19.03	-2.839	0.000	0.303
103.00	-1.47	-1.52	0.00	-13.68	0.00	13.68	541.19	162.36	3641.39	63.23	21.03	-3.517	0.000	0.219
103.50	-1.23	-1.47	0.00	-12.92	0.00	12.92	541.19	162.36	3641.39	63.23	21.41	-3.609	0.000	0.207
104.00	-1.07	-1.42	0.00	-12.19	0.00	12.19	541.19	162.36	3641.39	63.23	21.79	-3.695	0.000	0.195
105.00	-1.02	-1.35	0.00	-10.77	0.00	10.77	541.19	162.36	3641.39	63.23	22.58	-3.854	0.000	0.172
108.00	-0.79	-1.10	0.00	-6.73	0.00	6.73	541.19	162.36	3641.39	63.23	25.12	-4.217	0.000	0.108
109.00	-0.76	-1.02	0.00	-5.63	0.00	5.63	541.19	162.36	3641.39	63.23	26.01	-4.302	0.000	0.090
109.00	-0.76	-1.02	0.00	-5.63	0.00	5.63	791.68	237.50	8195.40	85.75	26.01	-4.302	0.000	0.067
110.00	-0.71	-0.95	0.00	-4.61	0.00	4.61	791.68	237.50	8195.40	85.75	26.92	-4.373	0.000	0.055
113.00	-0.51	-0.40	0.00	-1.75	0.00	1.75	791.68	237.50	8195.40	85.75	29.71	-4.481	0.000	0.021
114.00	-0.20	-0.32	0.00	-1.35	0.00	1.35	791.68	237.50	8195.40	85.75	30.64	-4.499	0.000	0.016
115.00	-0.16	-0.26	0.00	-1.03	0.00	1.03	791.68	237.50	8195.40	85.75	31.59	-4.512	0.000	0.012
119.00	0.00	-0.24	0.00	0.00	0.00	0.00	791.68	237.50	8195.40	85.75	35.38	-4.536	0.000	0.000

Wind Loading - Shaft

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

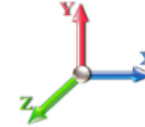


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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Iterations 28

Dead Load Factor 1.20
Wind Load Factor 1.00



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	0.70	4.421	4.86	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	4.421	4.86	0.00	1.200	0.828	5.00	18.026	21.63	105.2	212.7	1036.1
10.00		1.00	0.70	4.421	4.86	0.00	1.200	0.887	5.00	17.759	21.31	103.6	224.2	1032.4
15.00		1.00	0.70	4.421	4.86	0.00	1.200	0.924	5.00	17.472	20.97	102.0	229.4	1022.4
20.00		1.00	0.70	4.421	4.86	0.00	1.200	0.951	5.00	17.177	20.61	100.2	231.8	1009.6
25.00		1.00	0.70	4.421	4.86	0.00	1.200	0.973	5.00	16.878	20.25	98.5	232.6	995.3
30.00		1.00	0.70	4.425	4.87	0.00	1.200	0.991	5.00	16.575	19.89	96.8	232.4	979.9
35.00		1.00	0.73	4.624	5.09	0.00	1.200	1.006	5.00	16.271	19.52	99.3	231.4	963.7
40.00		1.00	0.76	4.804	5.28	0.00	1.200	1.019	5.00	15.965	19.16	101.2	229.9	947.0
40.50	Bot - Section 2	1.00	0.76	4.821	5.30	0.00	1.200	1.021	0.50	1.579	1.89	10.0	23.0	93.8
45.00	Top - Section 1	1.00	0.79	4.968	5.47	0.00	1.200	1.032	4.50	14.268	17.12	93.6	208.0	1352.0
50.00		1.00	0.81	5.120	5.63	0.00	1.200	1.042	5.00	15.561	18.67	105.2	228.7	787.2
55.00		1.00	0.83	5.262	5.79	0.00	1.200	1.052	5.00	15.252	18.30	105.9	226.1	772.5
60.00		1.00	0.85	5.394	5.93	0.00	1.200	1.062	5.00	14.942	17.93	106.4	223.2	757.4
65.00		1.00	0.87	5.519	6.07	0.00	1.200	1.070	5.00	14.632	17.56	106.6	220.1	742.1
70.00		1.00	0.89	5.637	6.20	0.00	1.200	1.078	5.00	14.321	17.19	106.6	216.7	726.6
75.00		1.00	0.91	5.749	6.32	0.00	1.200	1.086	5.00	14.010	16.81	106.3	213.2	711.0
79.00	Top - Section 2	1.00	0.92	5.835	6.42	0.00	1.200	1.091	4.00	10.983	13.18	84.6	168.3	557.7
80.00		1.00	0.93	5.856	6.44	0.00	1.200	1.093	1.00	2.500	3.00	19.3	53.7	153.1
84.00	Appurtenance(s)	1.00	0.94	5.938	6.53	0.00	1.200	1.098	4.00	10.000	12.00	78.4	214.9	612.5
85.00		1.00	0.94	5.958	6.55	0.00	1.200	1.099	1.00	2.500	3.00	19.7	53.7	153.1
87.00	Appurtenance(s)	1.00	0.95	5.998	6.60	0.00	1.200	1.102	2.00	5.000	6.00	39.6	107.5	306.3
89.00	Top - Section 3	1.00	0.96	6.037	6.64	0.00	1.200	1.104	2.00	5.000	6.00	39.8	107.6	306.4
90.00		1.00	0.96	6.057	6.66	0.00	1.200	1.106	1.00	2.500	3.00	20.0	53.8	153.2
94.00	Appurtenance(s)	1.00	0.97	6.132	6.75	0.00	1.200	1.110	4.00	10.000	12.00	80.9	215.5	613.1
95.00		1.00	0.97	6.151	6.77	0.00	1.200	1.112	1.00	2.500	3.00	20.3	53.9	153.3
97.00	Appurtenance(s)	1.00	0.98	6.188	6.81	0.00	1.200	1.114	2.00	5.000	6.00	40.8	107.8	306.6
99.00	Top - Section 4	1.00	0.99	6.224	6.85	0.00	1.200	1.116	2.00	5.000	6.00	41.1	107.9	306.7
100.00		1.00	0.99	6.242	6.87	0.00	1.200	1.117	1.00	3.000	3.60	24.7	58.0	104.6
103.00	Appurtenance(s)	1.00	1.00	6.295	6.92	0.00	1.200	1.121	3.00	9.000	10.80	74.8	174.2	314.0
103.50	Appurtenance(s)	1.00	1.00	6.303	6.93	0.00	1.200	1.121	0.50	1.500	1.80	12.5	29.0	52.3
104.00	Appurtenance(s)	1.00	1.00	6.312	6.94	0.00	1.200	1.122	0.50	1.500	1.80	12.5	29.0	52.3
105.00		1.00	1.00	6.329	6.96	0.00	1.200	1.123	1.00	3.000	3.60	25.1	58.1	104.7
108.00	Appurtenance(s)	1.00	1.01	6.380	7.02	0.00	1.200	1.126	3.00	9.000	10.80	75.8	174.3	314.1
109.00	Top - Section 5	1.00	1.01	6.397	7.04	0.00	1.200	1.127	1.00	3.000	3.60	25.3	58.1	104.7
110.00		1.00	1.02	6.414	7.06	0.00	1.200	1.128	1.00	2.250	2.70	19.0	45.9	105.8
113.00	Appurtenance(s)	1.00	1.02	6.463	7.11	0.00	1.200	1.131	3.00	6.750	8.10	57.6	137.7	317.6
114.00	Appurtenance(s)	1.00	1.03	6.480	7.13	0.00	1.200	1.132	1.00	2.250	2.70	19.2	45.9	105.9
115.00		1.00	1.03	6.496	7.15	0.00	1.200	1.133	1.00	2.250	2.70	19.3	45.9	105.9
119.00		1.00	1.04	6.560	7.22	0.00	1.200	1.137	4.00	9.000	10.80	77.9	183.8	423.7
Totals:								119.00			2,475.8	19,657.0		

Discrete Appurtenance Forces

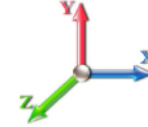
Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 28

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	114.00	RFS Twin PCS TMAs	3	6.480	7.128	0.00	1.00	0.00	53.02	0.000	0.000	0.00	0.00	0.00
2	114.00	V18-209014	3	6.480	7.128	0.00	1.00	12.49	221.29	0.000	0.000	89.05	0.00	0.00
3	114.00	27" Canister at 114.0'	1	6.480	7.128	1.00	1.00	0.00	126.42	0.000	0.000	0.00	0.00	0.00
4	114.00	RFS Twin AWS TMAs	3	6.480	7.128	0.00	1.00	0.00	85.18	0.000	0.000	0.00	0.00	0.00
5	113.00	Flag (12'x18')	1	6.463	7.110	1.00	1.00	8.28	124.52	0.000	0.000	58.86	0.00	0.00
6	108.00	APXVBLL09B43-C-I20	3	6.364	7.000	0.00	1.00	15.14	366.59	0.000	-1.000	105.95	0.00	-105.95
7	104.00	28" Canister at 104.0'	1	6.312	6.943	1.00	1.00	0.00	120.96	0.000	0.000	0.00	0.00	0.00
8	103.50	MT6407-77A	3	6.286	6.914	0.00	1.00	15.74	497.77	0.000	-1.000	108.84	0.00	-108.84
9	103.00	Commscope	3	6.295	6.924	0.00	1.00	0.00	85.04	0.000	0.000	0.00	0.00	0.00
10	97.00	Raycap	1	6.188	6.806	0.00	1.00	0.00	47.56	0.000	0.000	0.00	0.00	0.00
11	97.00	FFVV-65B-R3	3	6.151	6.766	0.00	1.00	61.33	1367.11	0.000	-2.000	414.99	0.00	-829.97
12	94.00	29" Canister at 94.0'	1	6.132	6.746	1.00	1.00	0.00	546.61	0.000	0.000	0.00	0.00	0.00
13	87.00	Redconnex AN-80i	3	5.998	6.598	1.00	1.00	0.00	163.03	0.000	0.000	0.00	0.00	0.00
14	87.00	RFS	6	5.998	6.598	1.00	1.00	0.00	77.15	0.000	0.000	0.00	0.00	0.00
15	87.00	Andrew FPA5250D06-N	2	5.998	6.598	1.00	1.00	0.00	43.48	0.000	0.000	0.00	0.00	0.00
16	87.00	Commscope	3	5.958	6.554	1.00	1.00	0.00	403.54	0.000	-2.000	0.00	0.00	0.00
17	84.00	Redconnex AN-80i BTSs	3	5.938	6.532	1.00	1.00	0.00	33.18	0.000	0.000	0.00	0.00	0.00
18	84.00	Andrew FPA5250D06-N	1	5.898	6.487	1.00	1.00	0.58	28.25	0.000	-2.000	3.77	0.00	-7.54
19	84.00	Argus LLPX310R	3	5.898	6.487	1.00	1.00	0.00	195.69	0.000	-2.000	0.00	0.00	0.00
20	84.00	30" Canister at 84.0'	1	5.938	6.532	1.00	1.00	0.00	539.97	0.000	0.000	0.00	0.00	0.00
Totals:									5,126.39			781.46		

Total Applied Force Summary

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

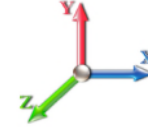


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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 28

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
5.00		105.20	1101.32	0.00	0.00
10.00		103.64	1195.37	0.00	0.00
15.00		101.97	1185.36	0.00	0.00
20.00		100.24	1172.60	0.00	0.00
25.00		98.50	1158.25	0.00	0.00
30.00		96.81	1142.84	0.00	0.00
35.00		99.31	1126.68	0.00	0.00
40.00		101.24	1109.94	0.00	0.00
40.50		10.05	110.14	0.00	0.00
45.00		93.57	1498.71	0.00	0.00
50.00		105.17	950.20	0.00	0.00
55.00		105.93	935.41	0.00	0.00
60.00		106.39	920.36	0.00	0.00
65.00		106.59	905.08	0.00	0.00
70.00		106.56	889.60	0.00	0.00
75.00		106.32	873.95	0.00	0.00
79.00		84.60	688.08	0.00	0.00
80.00		19.33	185.65	0.00	0.00
84.00	(8) attachments	82.15	1539.95	0.00	-7.54
85.00		19.66	184.64	0.00	0.00
87.00	(14) attachments	39.59	1056.57	0.00	0.00
89.00		39.85	351.69	0.00	0.00
90.00		19.99	175.86	0.00	0.00
94.00	(1) attachments	80.95	1250.29	0.00	0.00
95.00		20.30	175.94	0.00	0.00
97.00	(4) attachments	455.82	1766.60	0.00	-829.97
99.00		41.08	351.63	0.00	0.00
100.00		24.72	127.10	0.00	0.00
103.00	(3) attachments	74.78	466.43	0.00	0.00
103.50	(3) attachments	121.32	561.34	0.00	-108.84
104.00	(1) attachments	12.50	184.53	0.00	0.00
105.00		25.06	127.15	0.00	0.00
108.00	(3) attachments	181.75	733.15	0.00	-105.95
109.00		25.33	112.21	0.00	0.00
110.00		19.05	113.32	0.00	0.00
113.00	(1) attachments	116.45	464.57	0.00	0.00
114.00	(10) attachments	108.30	599.27	0.00	0.00
115.00		19.29	105.88	0.00	0.00
119.00		77.93	423.65	0.00	0.00
	Totals:	3,257.28	28,021.34	0.00	-1,052.30

Calculated Forces

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

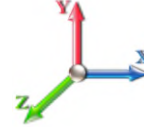


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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Iterations 28

Dead Load Factor 1.20
Wind Load Factor 1.00



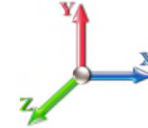
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-28.02	-3.27	0.00	-244.58	0.00	244.58	2770.05	714.33	2432.17	2339.53	0.00	0.000	0.000	0.115
5.00	-26.92	-3.18	0.00	-228.25	0.00	228.25	2737.33	701.28	2344.09	2269.31	0.02	-0.039	0.000	0.110
10.00	-25.72	-3.09	0.00	-212.35	0.00	212.35	2703.94	688.22	2257.62	2199.58	0.08	-0.077	0.000	0.106
15.00	-24.53	-3.00	0.00	-196.89	0.00	196.89	2669.88	675.17	2172.78	2130.35	0.18	-0.115	0.000	0.102
20.00	-23.36	-2.92	0.00	-181.88	0.00	181.88	2635.15	662.11	2089.57	2061.66	0.32	-0.151	0.000	0.097
25.00	-22.20	-2.83	0.00	-167.30	0.00	167.30	2599.76	649.06	2007.98	1993.54	0.50	-0.188	0.000	0.092
30.00	-21.05	-2.74	0.00	-153.16	0.00	153.16	2563.70	636.00	1928.02	1926.02	0.72	-0.223	0.000	0.088
35.00	-19.93	-2.65	0.00	-139.47	0.00	139.47	2526.98	622.95	1849.68	1859.13	0.97	-0.257	0.000	0.083
40.00	-18.82	-2.55	0.00	-126.24	0.00	126.24	2489.59	609.89	1772.96	1792.91	1.25	-0.290	0.000	0.078
40.50	-18.71	-2.54	0.00	-124.97	0.00	124.97	2485.81	608.58	1765.38	1786.32	1.29	-0.293	0.000	0.077
45.00	-17.21	-2.45	0.00	-113.53	0.00	113.53	1840.21	485.30	1403.23	1320.44	1.58	-0.321	0.000	0.095
50.00	-16.26	-2.35	0.00	-101.30	0.00	101.30	1815.76	474.86	1343.48	1274.66	1.93	-0.352	0.000	0.088
55.00	-15.32	-2.24	0.00	-89.56	0.00	89.56	1790.64	464.41	1285.03	1229.18	2.31	-0.386	0.000	0.081
60.00	-14.40	-2.14	0.00	-78.35	0.00	78.35	1764.86	453.97	1227.89	1184.03	2.74	-0.418	0.000	0.074
65.00	-13.49	-2.03	0.00	-67.66	0.00	67.66	1738.40	443.52	1172.04	1139.25	3.19	-0.448	0.000	0.067
70.00	-12.60	-1.92	0.00	-57.50	0.00	57.50	1711.29	433.08	1117.49	1094.86	3.67	-0.475	0.000	0.060
75.00	-11.73	-1.81	0.00	-47.89	0.00	47.89	1683.50	422.64	1064.24	1050.90	4.19	-0.500	0.000	0.053
79.00	-11.04	-1.73	0.00	-40.63	0.00	40.63	1660.79	414.28	1022.58	1016.07	4.61	-0.518	0.000	0.047
79.00	-11.04	-1.73	0.00	-40.63	0.00	40.63	930.23	279.07	18866.3	173.90	4.61	-0.518	0.000	0.246
80.00	-10.85	-1.73	0.00	-38.91	0.00	38.91	930.23	279.07	18866.3	173.90	4.72	-0.522	0.000	0.235
84.00	-9.31	-1.66	0.00	-31.97	0.00	31.97	930.23	279.07	18866.3	173.90	5.29	-0.822	0.000	0.194
85.00	-9.12	-1.66	0.00	-30.31	0.00	30.31	930.23	279.07	18866.3	173.90	5.47	-0.887	0.000	0.184
87.00	-8.06	-1.61	0.00	-27.00	0.00	27.00	930.23	279.07	18866.3	173.90	5.87	-1.008	0.000	0.164
89.00	-7.71	-1.58	0.00	-23.77	0.00	23.77	930.23	279.07	18866.3	173.90	6.31	-1.115	0.000	0.145
89.00	-7.71	-1.58	0.00	-23.77	0.00	23.77	930.23	279.07	18866.3	173.90	6.31	-1.115	0.000	0.145
90.00	-7.53	-1.57	0.00	-22.19	0.00	22.19	930.23	279.07	18866.3	173.90	6.55	-1.164	0.000	0.136
94.00	-6.28	-1.47	0.00	-15.92	0.00	15.92	930.23	279.07	18866.3	173.90	7.60	-1.325	0.000	0.098
95.00	-6.10	-1.45	0.00	-14.45	0.00	14.45	930.23	279.07	18866.3	173.90	7.88	-1.357	0.000	0.090
97.00	-4.35	-0.96	0.00	-11.54	0.00	11.54	930.23	279.07	18866.3	173.90	8.46	-1.412	0.000	0.071
99.00	-4.00	-0.91	0.00	-9.63	0.00	9.63	930.23	279.07	18866.3	173.90	9.06	-1.456	0.000	0.060
99.00	-4.00	-0.91	0.00	-9.63	0.00	9.63	541.19	162.36	3641.39	63.23	9.06	-1.456	0.000	0.160
100.00	-3.87	-0.89	0.00	-8.72	0.00	8.72	541.19	162.36	3641.39	63.23	9.37	-1.476	0.000	0.145
103.00	-3.40	-0.81	0.00	-6.04	0.00	6.04	541.19	162.36	3641.39	63.23	10.39	-1.782	0.000	0.102
103.50	-2.84	-0.68	0.00	-5.64	0.00	5.64	541.19	162.36	3641.39	63.23	10.58	-1.822	0.000	0.094
104.00	-2.66	-0.66	0.00	-5.30	0.00	5.30	541.19	162.36	3641.39	63.23	10.78	-1.860	0.000	0.089
105.00	-2.53	-0.64	0.00	-4.64	0.00	4.64	541.19	162.36	3641.39	63.23	11.17	-1.929	0.000	0.078
108.00	-1.80	-0.43	0.00	-2.73	0.00	2.73	541.19	162.36	3641.39	63.23	12.44	-2.082	0.000	0.046
109.00	-1.69	-0.40	0.00	-2.29	0.00	2.29	541.19	162.36	3641.39	63.23	12.88	-2.116	0.000	0.039
109.00	-1.69	-0.40	0.00	-2.29	0.00	2.29	791.68	237.50	8195.40	85.75	12.88	-2.116	0.000	0.029
110.00	-1.58	-0.38	0.00	-1.89	0.00	1.89	791.68	237.50	8195.40	85.75	13.32	-2.145	0.000	0.024
113.00	-1.12	-0.25	0.00	-0.74	0.00	0.74	791.68	237.50	8195.40	85.75	14.69	-2.190	0.000	0.010
114.00	-0.53	-0.12	0.00	-0.49	0.00	0.49	791.68	237.50	8195.40	85.75	15.15	-2.197	0.000	0.006
115.00	-0.42	-0.09	0.00	-0.38	0.00	0.38	791.68	237.50	8195.40	85.75	15.61	-2.202	0.000	0.005
119.00	0.00	-0.08	0.00	0.00	0.00	0.00	791.68	237.50	8195.40	85.75	17.46	-2.210	0.000	0.000

Seismic Segment Forces (Factored)

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0Ev + 1.0Eh					Iterations 25
Gust Response Factor	1.10	Sds	0.22	Ss	0.20
Dead Load Factor	1.20	Seismic Load Factor	1.00	Sd1	0.09
Wind Load Factor	0.00	Structure Frequency (f1)	0.52	SA	0.05
				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	
5.00		751.37	2.50	32.38	0.11	
10.00		836.49	7.50	36.05	0.88	
15.00		823.83	12.50	35.50	2.05	
20.00		811.17	17.50	34.96	3.54	
25.00		798.52	22.50	34.41	5.28	
30.00		785.86	27.50	33.87	7.24	
35.00		773.20	32.50	33.32	9.36	
40.00		760.55	37.50	32.77	11.61	
40.50	Bot - Section 2	75.36	40.25	3.25	0.26	
45.00	Top - Section 1	1100.0	42.75	47.41	27.23	
50.00		628.37	47.50	27.08	12.55	
55.00		618.25	52.50	26.64	14.47	
60.00		608.12	57.50	26.21	16.43	
65.00		598.00	62.50	25.77	18.41	
70.00		587.87	67.50	25.33	20.38	
75.00		577.75	72.50	24.90	22.35	
79.00	Top - Section 2	454.91	77.00	19.60	16.48	
80.00		107.42	79.50	4.63	1.49	
84.00	Appurtenance(s)	692.99	82.00	29.86	37.59	
85.00		106.34	84.50	4.58	1.62	
87.00	Appurtenance(s)	404.77	86.00	17.44	16.31	
89.00	Top - Section 3	194.95	88.00	8.40	4.88	
90.00		97.47	89.50	4.20	1.54	
94.00	Appurtenance(s)	539.90	92.00	23.27	29.88	
95.00		97.47	94.50	4.20	1.69	
97.00	Appurtenance(s)	593.95	96.00	25.60	37.80	
99.00	Top - Section 4	194.59	98.00	8.39	5.85	
100.00		51.69	99.50	2.23	0.63	
103.00	Appurtenance(s)	207.88	101.50	8.96	6.95	
103.50	Appurtenance(s)	264.05	103.25	11.38	10.75	
104.00	Appurtenance(s)	175.85	103.75	7.58	5.42	
105.00		51.69	104.50	2.23	0.68	
108.00	Appurtenance(s)	247.21	106.50	10.65	10.13	
109.00	Top - Section 5	36.72	108.50	1.58	0.41	
110.00		50.25	109.50	2.17	0.70	
113.00	Appurtenance(s)	250.75	111.50	10.81	11.22	
114.00	Appurtenance(s)	342.15	113.50	14.74	19.65	
115.00		42.76	114.50	1.84	0.58	
119.00		171.04	117.00	7.37	6.35	
Totals:		16,511.6		711.5	400.8	Total Wind: 8,863.0

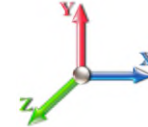
Calculated Forces

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0Ev + 1.0Eh										Iterations 25
Gust Response Factor 1.10					Sds 0.22					Ss 0.20
Dead Load Factor 1.20			Seismic Load Factor 1.00			Sd1 0.09		S1 0.05		
Wind Load Factor 0.00		Structure Frequency (f1) 0.52		SA 0.05		Seismic Importance Factor 1.00				



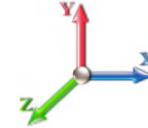
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-20.27	-0.40	0.00	-31.96	0.00	31.96	2770.05	714.33	2432.17	2339.53	0.00	0.00	0.00	0.021
5.00	-19.35	-0.40	0.00	-29.95	0.00	29.95	2737.33	701.28	2344.09	2269.31	0.00	-0.01	-0.01	0.020
10.00	-18.34	-0.40	0.00	-27.94	0.00	27.94	2703.94	688.22	2257.62	2199.58	0.01	-0.01	-0.01	0.019
15.00	-17.35	-0.40	0.00	-25.92	0.00	25.92	2669.88	675.17	2172.78	2130.35	0.02	-0.02	-0.02	0.019
20.00	-16.38	-0.40	0.00	-23.91	0.00	23.91	2635.15	662.11	2089.57	2061.66	0.04	-0.02	-0.02	0.018
25.00	-15.42	-0.40	0.00	-21.91	0.00	21.91	2599.76	649.06	2007.98	1993.54	0.07	-0.02	-0.02	0.017
30.00	-14.47	-0.39	0.00	-19.93	0.00	19.93	2563.70	636.00	1928.02	1926.02	0.09	-0.03	-0.03	0.016
35.00	-13.54	-0.38	0.00	-17.99	0.00	17.99	2526.98	622.95	1849.68	1859.13	0.13	-0.03	-0.03	0.015
40.00	-12.63	-0.37	0.00	-16.09	0.00	16.09	2489.59	609.89	1772.96	1792.91	0.16	-0.04	-0.04	0.014
40.50	-12.54	-0.37	0.00	-15.90	0.00	15.90	2485.81	608.58	1765.38	1786.32	0.17	-0.04	-0.04	0.014
45.00	-11.20	-0.34	0.00	-14.24	0.00	14.24	2440.21	485.30	1403.23	1320.44	0.21	-0.04	-0.04	0.017
50.00	-10.45	-0.33	0.00	-12.54	0.00	12.54	2415.76	474.86	1343.48	1274.66	0.25	-0.05	-0.05	0.016
55.00	-9.72	-0.31	0.00	-10.89	0.00	10.89	2390.64	464.41	1285.03	1229.18	0.30	-0.05	-0.05	0.014
60.00	-8.99	-0.30	0.00	-9.32	0.00	9.32	2364.86	453.97	1227.89	1184.03	0.36	-0.05	-0.05	0.013
65.00	-8.28	-0.28	0.00	-7.83	0.00	7.83	2338.40	443.52	1172.04	1139.25	0.41	-0.06	-0.06	0.012
70.00	-7.58	-0.26	0.00	-6.43	0.00	6.43	2311.29	433.08	1117.49	1094.86	0.48	-0.06	-0.06	0.010
75.00	-6.90	-0.24	0.00	-5.14	0.00	5.14	2283.50	422.64	1064.24	1050.90	0.54	-0.06	-0.06	0.009
79.00	-6.36	-0.22	0.00	-4.20	0.00	4.20	2260.79	414.28	1022.58	1016.07	0.59	-0.06	-0.06	0.008
79.00	-6.36	-0.22	0.00	-4.20	0.00	4.20	930.23	279.07	1886.3	173.90	0.59	-0.06	-0.06	0.031
80.00	-6.22	-0.22	0.00	-3.98	0.00	3.98	930.23	279.07	1886.3	173.90	0.61	-0.07	-0.07	0.030
84.00	-5.35	-0.18	0.00	-3.10	0.00	3.10	930.23	279.07	1886.3	173.90	0.68	-0.10	-0.10	0.024
85.00	-5.21	-0.18	0.00	-2.92	0.00	2.92	930.23	279.07	1886.3	173.90	0.70	-0.10	-0.10	0.022
87.00	-4.70	-0.16	0.00	-2.56	0.00	2.56	930.23	279.07	1886.3	173.90	0.74	-0.11	-0.11	0.020
89.00	-4.45	-0.16	0.00	-2.23	0.00	2.23	930.23	279.07	1886.3	173.90	0.79	-0.12	-0.12	0.018
89.00	-4.45	-0.16	0.00	-2.23	0.00	2.23	930.23	279.07	1886.3	173.90	0.79	-0.12	-0.12	0.018
90.00	-4.33	-0.16	0.00	-2.07	0.00	2.07	930.23	279.07	1886.3	173.90	0.82	-0.13	-0.13	0.017
94.00	-3.63	-0.13	0.00	-1.43	0.00	1.43	930.23	279.07	1886.3	173.90	0.93	-0.14	-0.14	0.012
95.00	-3.51	-0.13	0.00	-1.31	0.00	1.31	930.23	279.07	1886.3	173.90	0.96	-0.15	-0.15	0.011
97.00	-2.76	-0.09	0.00	-1.05	0.00	1.05	930.23	279.07	1886.3	173.90	1.02	-0.15	-0.15	0.009
99.00	-2.51	-0.08	0.00	-0.88	0.00	0.88	930.23	279.07	1886.3	173.90	1.09	-0.15	-0.15	0.008
99.00	-2.51	-0.08	0.00	-0.88	0.00	0.88	541.19	162.36	3641.39	63.23	1.09	-0.15	-0.15	0.019
100.00	-2.44	-0.08	0.00	-0.80	0.00	0.80	541.19	162.36	3641.39	63.23	1.12	-0.16	-0.16	0.017
103.00	-2.16	-0.07	0.00	-0.56	0.00	0.56	541.19	162.36	3641.39	63.23	1.23	-0.18	-0.18	0.013
103.50	-1.82	-0.06	0.00	-0.53	0.00	0.53	541.19	162.36	3641.39	63.23	1.25	-0.19	-0.19	0.012
104.00	-1.60	-0.05	0.00	-0.50	0.00	0.50	541.19	162.36	3641.39	63.23	1.27	-0.19	-0.19	0.011
105.00	-1.53	-0.05	0.00	-0.44	0.00	0.44	541.19	162.36	3641.39	63.23	1.31	-0.20	-0.20	0.010
108.00	-1.20	-0.04	0.00	-0.28	0.00	0.28	541.19	162.36	3641.39	63.23	1.44	-0.21	-0.21	0.007
109.00	-1.14	-0.04	0.00	-0.23	0.00	0.23	541.19	162.36	3641.39	63.23	1.48	-0.22	-0.22	0.006
109.00	-1.14	-0.04	0.00	-0.23	0.00	0.23	791.68	237.50	8195.40	85.75	1.48	-0.22	-0.22	0.004
110.00	-1.07	-0.04	0.00	-0.19	0.00	0.19	791.68	237.50	8195.40	85.75	1.53	-0.22	-0.22	0.004
113.00	-0.74	-0.03	0.00	-0.07	0.00	0.07	791.68	237.50	8195.40	85.75	1.67	-0.22	-0.22	0.002
114.00	-0.31	-0.01	0.00	-0.04	0.00	0.04	791.68	237.50	8195.40	85.75	1.72	-0.22	-0.22	0.001
115.00	-0.25	-0.01	0.00	-0.03	0.00	0.03	791.68	237.50	8195.40	85.75	1.76	-0.23	-0.23	0.001
119.00	0.00	-0.01	0.00	0.00	0.00	0.00	791.68	237.50	8195.40	85.75	1.95	-0.23	-0.23	0.000

Seismic Segment Forces (Factored)

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.0Ev + 1.0Eh					Iterations 25
Gust Response Factor	1.10	Sds	0.22	Ss	0.20
Dead Load Factor	0.90	Seismic Load Factor	1.00	Sd1	0.09
Wind Load Factor	0.00	Structure Frequency (f1)	0.52	SA	0.05
				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	
5.00		735.07	2.50	31.68	0.12	
10.00		795.75	7.50	34.29	0.88	
15.00		783.09	12.50	33.75	2.03	
20.00		770.43	17.50	33.20	3.51	
25.00		757.78	22.50	32.66	5.24	
30.00		745.12	27.50	32.11	7.16	
35.00		732.46	32.50	31.56	9.25	
40.00		719.81	37.50	31.02	11.46	
40.50	Bot - Section 2	71.28	40.25	3.07	0.25	
45.00	Top - Section 1	1063.4	42.75	45.83	27.85	
50.00		587.63	47.50	25.32	12.13	
55.00		577.51	52.50	24.89	13.97	
60.00		567.38	57.50	24.45	15.83	
65.00		557.26	62.50	24.01	17.69	
70.00		547.13	67.50	23.58	19.55	
75.00		537.01	72.50	23.14	21.39	
79.00	Top - Section 2	422.32	77.00	18.20	15.74	
80.00		99.27	79.50	4.28	1.41	
84.00	Appurtenance(s)	660.40	82.00	28.46	37.53	
85.00		98.46	84.50	4.24	1.54	
87.00	Appurtenance(s)	389.02	86.00	16.76	16.52	
89.00	Top - Section 3	183.63	88.00	7.91	4.78	
90.00		91.81	89.50	3.96	1.51	
94.00	Appurtenance(s)	517.26	92.00	22.29	30.11	
95.00		91.81	94.50	3.96	1.66	
97.00	Appurtenance(s)	582.63	96.00	25.11	39.65	
99.00	Top - Section 4	183.36	98.00	7.90	5.73	
100.00		46.08	99.50	1.99	0.56	
103.00	Appurtenance(s)	191.04	101.50	8.23	6.52	
103.50	Appurtenance(s)	261.24	103.25	11.26	11.44	
104.00	Appurtenance(s)	173.04	103.75	7.46	5.72	
105.00		46.08	104.50	1.99	0.61	
108.00	Appurtenance(s)	234.10	106.50	10.09	10.01	
109.00	Top - Section 5	34.85	108.50	1.50	0.40	
110.00		48.38	109.50	2.08	0.71	
113.00	Appurtenance(s)	245.13	111.50	10.56	11.71	
114.00	Appurtenance(s)	340.28	113.50	14.66	21.10	
115.00		42.76	114.50	1.84	0.63	
119.00		171.04	117.00	7.37	6.88	
Totals:		15,702.1		676.7	400.8	Total Wind: 8,863.0

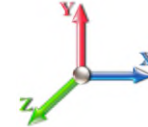
Calculated Forces

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.0Ev + 1.0Eh		Iterations 25
Gust Response Factor 1.10	Sds 0.22	Ss 0.20
Dead Load Factor 0.90	Seismic Load Factor 1.00	S1 0.05
Wind Load Factor 0.00	Structure Frequency (f1) 0.52	SA 0.05
	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	-15.35	-0.40	0.00	-31.96	0.00	31.96	2770.05	714.33	2432.17	2339.53	0.00	0.00	0.00	0.019
5.00	-14.65	-0.40	0.00	-29.95	0.00	29.95	2737.33	701.28	2344.09	2269.31	0.00	-0.01	0.019	
10.00	-13.89	-0.40	0.00	-27.94	0.00	27.94	2703.94	688.22	2257.62	2199.58	0.01	-0.01	0.018	
15.00	-13.13	-0.40	0.00	-25.93	0.00	25.93	2669.88	675.17	2172.78	2130.35	0.02	-0.02	0.017	
20.00	-12.40	-0.40	0.00	-23.92	0.00	23.92	2635.15	662.11	2089.57	2061.66	0.04	-0.02	0.016	
25.00	-11.67	-0.39	0.00	-21.93	0.00	21.93	2599.76	649.06	2007.98	1993.54	0.07	-0.02	0.015	
30.00	-10.95	-0.39	0.00	-19.96	0.00	19.96	2563.70	636.00	1928.02	1926.02	0.09	-0.03	0.015	
35.00	-10.25	-0.38	0.00	-18.02	0.00	18.02	2526.98	622.95	1849.68	1859.13	0.13	-0.03	0.014	
40.00	-9.56	-0.37	0.00	-16.13	0.00	16.13	2489.59	609.89	1772.96	1792.91	0.16	-0.04	0.013	
40.50	-9.49	-0.37	0.00	-15.95	0.00	15.95	2485.81	608.58	1765.38	1786.32	0.17	-0.04	0.013	
45.00	-8.48	-0.34	0.00	-14.29	0.00	14.29	2440.21	485.30	1403.23	1320.44	0.21	-0.04	0.015	
50.00	-7.91	-0.33	0.00	-12.60	0.00	12.60	2415.76	474.86	1343.48	1274.66	0.25	-0.05	0.014	
55.00	-7.35	-0.31	0.00	-10.96	0.00	10.96	2390.64	464.41	1285.03	1229.18	0.30	-0.05	0.013	
60.00	-6.81	-0.30	0.00	-9.40	0.00	9.40	2364.86	453.97	1227.89	1184.03	0.36	-0.05	0.012	
65.00	-6.27	-0.28	0.00	-7.91	0.00	7.91	2338.40	443.52	1172.04	1139.25	0.42	-0.06	0.011	
70.00	-5.74	-0.26	0.00	-6.51	0.00	6.51	2311.29	433.08	1117.49	1094.86	0.48	-0.06	0.009	
75.00	-5.22	-0.24	0.00	-5.22	0.00	5.22	2283.50	422.64	1064.24	1050.90	0.54	-0.06	0.008	
79.00	-4.81	-0.22	0.00	-4.26	0.00	4.26	2260.79	414.28	1022.58	1016.07	0.60	-0.07	0.007	
79.00	-4.81	-0.22	0.00	-4.26	0.00	4.26	930.23	279.07	1886.3	173.90	0.60	-0.07	0.030	
80.00	-4.71	-0.22	0.00	-4.04	0.00	4.04	930.23	279.07	1886.3	173.90	0.61	-0.07	0.028	
84.00	-4.05	-0.18	0.00	-3.16	0.00	3.16	930.23	279.07	1886.3	173.90	0.68	-0.10	0.022	
85.00	-3.95	-0.18	0.00	-2.97	0.00	2.97	930.23	279.07	1886.3	173.90	0.70	-0.10	0.021	
87.00	-3.56	-0.17	0.00	-2.60	0.00	2.60	930.23	279.07	1886.3	173.90	0.74	-0.11	0.019	
89.00	-3.37	-0.16	0.00	-2.27	0.00	2.27	930.23	279.07	1886.3	173.90	0.79	-0.12	0.017	
89.00	-3.37	-0.16	0.00	-2.27	0.00	2.27	930.23	279.07	1886.3	173.90	0.79	-0.12	0.017	
90.00	-3.27	-0.16	0.00	-2.11	0.00	2.11	930.23	279.07	1886.3	173.90	0.82	-0.13	0.016	
94.00	-2.75	-0.13	0.00	-1.46	0.00	1.46	930.23	279.07	1886.3	173.90	0.94	-0.14	0.011	
95.00	-2.66	-0.13	0.00	-1.33	0.00	1.33	930.23	279.07	1886.3	173.90	0.97	-0.15	0.011	
97.00	-2.09	-0.09	0.00	-1.08	0.00	1.08	930.23	279.07	1886.3	173.90	1.03	-0.15	0.008	
99.00	-1.90	-0.08	0.00	-0.90	0.00	0.90	930.23	279.07	1886.3	173.90	1.09	-0.16	0.007	
99.00	-1.90	-0.08	0.00	-0.90	0.00	0.90	541.19	162.36	3641.39	63.23	1.09	-0.16	0.018	
100.00	-1.84	-0.08	0.00	-0.82	0.00	0.82	541.19	162.36	3641.39	63.23	1.13	-0.16	0.016	
103.00	-1.63	-0.07	0.00	-0.58	0.00	0.58	541.19	162.36	3641.39	63.23	1.24	-0.19	0.012	
103.50	-1.38	-0.06	0.00	-0.54	0.00	0.54	541.19	162.36	3641.39	63.23	1.26	-0.19	0.011	
104.00	-1.21	-0.06	0.00	-0.51	0.00	0.51	541.19	162.36	3641.39	63.23	1.28	-0.19	0.010	
105.00	-1.16	-0.06	0.00	-0.46	0.00	0.46	541.19	162.36	3641.39	63.23	1.32	-0.20	0.009	
108.00	-0.91	-0.04	0.00	-0.29	0.00	0.29	541.19	162.36	3641.39	63.23	1.45	-0.22	0.006	
109.00	-0.87	-0.04	0.00	-0.24	0.00	0.24	541.19	162.36	3641.39	63.23	1.50	-0.22	0.005	
109.00	-0.87	-0.04	0.00	-0.24	0.00	0.24	791.68	237.50	8195.40	85.75	1.50	-0.22	0.004	
110.00	-0.81	-0.04	0.00	-0.20	0.00	0.20	791.68	237.50	8195.40	85.75	1.54	-0.22	0.003	
113.00	-0.56	-0.03	0.00	-0.07	0.00	0.07	791.68	237.50	8195.40	85.75	1.68	-0.23	0.002	
114.00	-0.23	-0.01	0.00	-0.04	0.00	0.04	791.68	237.50	8195.40	85.75	1.73	-0.23	0.001	
115.00	-0.19	-0.01	0.00	-0.03	0.00	0.03	791.68	237.50	8195.40	85.75	1.78	-0.23	0.001	
119.00	0.00	-0.01	0.00	0.00	0.00	0.00	791.68	237.50	8195.40	85.75	1.97	-0.23	0.000	

Wind Loading - Shaft

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Iterations 27

Dead Load Factor 1.00

Wind Load Factor 1.00



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	0.70	5.412	5.95	174.49	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	5.412	5.95	171.33	0.730	0.000	5.00	17.336	12.66	75.3	0.0	686.2
10.00		1.00	0.70	5.412	5.95	168.16	0.730	0.000	5.00	17.019	12.42	74.0	0.0	673.5
15.00		1.00	0.70	5.412	5.95	165.00	0.730	0.000	5.00	16.702	12.19	72.6	0.0	660.9
20.00		1.00	0.70	5.412	5.95	161.83	0.730	0.000	5.00	16.384	11.96	71.2	0.0	648.2
25.00		1.00	0.70	5.412	5.95	158.67	0.730	0.000	5.00	16.067	11.73	69.8	0.0	635.6
30.00		1.00	0.70	5.416	5.96	155.57	0.730	0.000	5.00	15.750	11.50	68.5	0.0	622.9
35.00		1.00	0.73	5.660	6.23	155.79	0.730	0.000	5.00	15.432	11.27	70.1	0.0	610.2
40.00		1.00	0.76	5.880	6.47	155.50	0.730	0.000	5.00	15.115	11.03	71.4	0.0	597.6
40.50	Bot - Section 2	1.00	0.76	5.901	6.49	155.44	0.730	0.000	0.50	1.494	1.09	7.1	0.0	59.1
45.00	Top - Section 1	1.00	0.79	6.081	6.69	154.78	0.730	0.000	4.50	13.494	9.85	65.9	0.0	953.4
50.00		1.00	0.81	6.267	6.89	155.99	0.730	0.000	5.00	14.692	10.73	73.9	0.0	465.4
55.00		1.00	0.83	6.440	7.08	154.68	0.730	0.000	5.00	14.375	10.49	74.3	0.0	455.3
60.00		1.00	0.85	6.602	7.26	153.12	0.730	0.000	5.00	14.057	10.26	74.5	0.0	445.2
65.00		1.00	0.87	6.755	7.43	151.34	0.730	0.000	5.00	13.740	10.03	74.5	0.0	435.0
70.00		1.00	0.89	6.900	7.59	149.38	0.730	0.000	5.00	13.423	9.80	74.4	0.0	424.9
75.00		1.00	0.91	7.037	7.74	147.25	0.730	0.000	5.00	13.105	9.57	74.1	0.0	414.8
79.00	Top - Section 2	1.00	0.92	7.142	7.86	145.44	0.730	0.000	4.00	10.256	7.49	58.8	0.0	324.5
80.00		1.00	0.93	7.168	7.88	143.49	0.600	0.000	1.00	2.500	1.50	11.8	0.0	82.8
84.00	Appurtenance(s)	1.00	0.94	7.269	8.00	144.49	0.600	0.000	4.00	10.000	6.00	48.0	0.0	331.3
85.00		1.00	0.94	7.293	8.02	144.73	0.600	0.000	1.00	2.500	1.50	12.0	0.0	82.8
87.00	Appurtenance(s)	1.00	0.95	7.342	8.08	145.22	0.600	0.000	2.00	5.000	3.00	24.2	0.0	165.7
89.00	Top - Section 3	1.00	0.96	7.390	8.13	145.69	0.600	0.000	2.00	5.000	3.00	24.4	0.0	165.7
90.00		1.00	0.96	7.413	8.15	145.92	0.600	0.000	1.00	2.500	1.50	12.2	0.0	82.8
94.00	Appurtenance(s)	1.00	0.97	7.506	8.26	146.83	0.600	0.000	4.00	10.000	6.00	49.5	0.0	331.3
95.00		1.00	0.97	7.529	8.28	147.05	0.600	0.000	1.00	2.500	1.50	12.4	0.0	82.8
97.00	Appurtenance(s)	1.00	0.98	7.574	8.33	147.49	0.600	0.000	2.00	5.000	3.00	25.0	0.0	165.7
99.00	Top - Section 4	1.00	0.99	7.618	8.38	147.92	0.600	0.000	2.00	5.000	3.00	25.1	0.0	165.7
100.00		1.00	0.99	7.640	8.40	177.76	0.600	0.000	1.00	3.000	1.80	15.1	0.0	38.8
103.00	Appurtenance(s)	1.00	1.00	7.705	8.48	178.51	0.600	0.000	3.00	9.000	5.40	45.8	0.0	116.5
103.50	Appurtenance(s)	1.00	1.00	7.715	8.49	178.64	0.600	0.000	0.50	1.500	0.90	7.6	0.0	19.4
104.00	Appurtenance(s)	1.00	1.00	7.726	8.50	178.76	0.600	0.000	0.50	1.500	0.90	7.6	0.0	19.4
105.00		1.00	1.00	7.747	8.52	179.00	0.600	0.000	1.00	3.000	1.80	15.3	0.0	38.8
108.00	Appurtenance(s)	1.00	1.01	7.810	8.59	179.72	0.600	0.000	3.00	9.000	5.40	46.4	0.0	116.5
109.00	Top - Section 5	1.00	1.01	7.830	8.61	179.96	0.600	0.000	1.00	3.000	1.80	15.5	0.0	38.8
110.00		1.00	1.02	7.851	8.64	135.15	0.600	0.000	1.00	2.250	1.35	11.7	0.0	50.0
113.00	Appurtenance(s)	1.00	1.02	7.911	8.70	135.67	0.600	0.000	3.00	6.750	4.05	35.2	0.0	149.9
114.00	Appurtenance(s)	1.00	1.03	7.931	8.72	135.84	0.600	0.000	1.00	2.250	1.35	11.8	0.0	50.0
115.00		1.00	1.03	7.951	8.75	136.01	0.600	0.000	1.00	2.250	1.35	11.8	0.0	50.0
119.00		1.00	1.04	8.029	8.83	136.67	0.600	0.000	4.00	9.000	5.40	47.7	0.0	199.8
Totals:									119.00			1,666.8		11,657.2

Discrete Appurtenance Forces

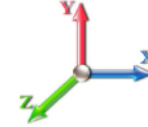
Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 25



Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 27

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	114.00	RFS Twin PCS TMAs	3	7.931	8.724	0.00	1.00	0.00	33.00	0.000	0.000	0.00	0.00	0.00
2	114.00	V18-209014	3	7.931	8.724	0.00	1.00	0.00	56.10	0.000	0.000	0.00	0.00	0.00
3	114.00	27" Canister at 114.0'	1	7.931	8.724	1.00	1.00	0.00	150.00	0.000	0.000	0.00	0.00	0.00
4	114.00	RFS Twin AWS TMAs	3	7.931	8.724	0.00	1.00	0.00	52.80	0.000	0.000	0.00	0.00	0.00
5	113.00	Flag (12'x18')	1	7.911	8.702	1.00	1.00	7.92	100.00	0.000	0.000	68.92	0.00	0.00
6	108.00	APXVBLL09B43-C-I20	3	7.789	8.568	0.00	1.00	0.00	107.10	0.000	-1.000	0.00	0.00	0.00
7	104.00	28" Canister at 104.0'	1	7.726	8.498	1.00	1.00	0.00	150.00	0.000	0.000	0.00	0.00	0.00
8	103.50	MT6407-77A	3	7.694	8.463	0.00	1.00	0.00	238.20	0.000	-1.000	0.00	0.00	0.00
9	103.00	Commscope	3	7.705	8.475	0.00	1.00	0.00	52.80	0.000	0.000	0.00	0.00	0.00
10	97.00	Raycap	1	7.574	8.331	0.00	1.00	0.00	21.90	0.000	0.000	0.00	0.00	0.00
11	97.00	FFVV-65B-R3	3	7.529	8.282	0.00	1.00	0.00	377.10	0.000	-2.000	0.00	0.00	0.00
12	94.00	29" Canister at 94.0'	1	7.506	8.257	1.00	1.00	0.00	150.00	0.000	0.000	0.00	0.00	0.00
13	87.00	Redconnex AN-80i	3	7.342	8.076	1.00	1.00	0.00	13.50	0.000	0.000	0.00	0.00	0.00
14	87.00	RFS	6	7.342	8.076	1.00	1.00	0.00	38.40	0.000	0.000	0.00	0.00	0.00
15	87.00	Andrew FPA5250D06-N	2	7.342	8.076	1.00	1.00	0.00	4.00	0.000	0.000	0.00	0.00	0.00
16	87.00	Commscope	3	7.293	8.022	1.00	1.00	0.00	136.20	0.000	-2.000	0.00	0.00	0.00
17	84.00	Redconnex AN-80i BTSs	3	7.269	7.995	1.00	1.00	0.00	13.50	0.000	0.000	0.00	0.00	0.00
18	84.00	Andrew FPA5250D06-N	1	7.219	7.941	1.00	1.00	0.00	14.00	0.000	-2.000	0.00	0.00	0.00
19	84.00	Argus LLPX310R	3	7.219	7.941	1.00	1.00	0.00	85.80	0.000	-2.000	0.00	0.00	0.00
20	84.00	30" Canister at 84.0'	1	7.269	7.995	1.00	1.00	0.00	150.00	0.000	0.000	0.00	0.00	0.00
Totals:									1,944.40			68.92		

Total Applied Force Summary

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II

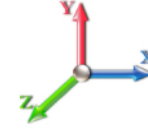


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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 27

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
5.00		75.33	740.50	0.00	0.00
10.00		73.96	809.33	0.00	0.00
15.00		72.58	796.67	0.00	0.00
20.00		71.20	784.01	0.00	0.00
25.00		69.82	771.36	0.00	0.00
30.00		68.50	758.70	0.00	0.00
35.00		70.14	746.04	0.00	0.00
40.00		71.37	733.39	0.00	0.00
40.50		7.08	72.64	0.00	0.00
45.00		65.90	1075.62	0.00	0.00
50.00		73.94	601.21	0.00	0.00
55.00		74.34	591.09	0.00	0.00
60.00		74.53	580.96	0.00	0.00
65.00		74.53	570.84	0.00	0.00
70.00		74.37	560.71	0.00	0.00
75.00		74.05	550.59	0.00	0.00
79.00		58.82	433.18	0.00	0.00
80.00		11.83	109.99	0.00	0.00
84.00	(8) attachments	47.97	703.26	0.00	0.00
85.00		12.03	109.09	0.00	0.00
87.00	(14) attachments	24.23	410.27	0.00	0.00
89.00		24.39	203.40	0.00	0.00
90.00		12.23	101.70	0.00	0.00
94.00	(1) attachments	49.54	556.80	0.00	0.00
95.00		12.42	101.70	0.00	0.00
97.00	(4) attachments	24.99	602.40	0.00	0.00
99.00		25.14	203.10	0.00	0.00
100.00		15.13	57.55	0.00	0.00
103.00	(3) attachments	45.77	225.45	0.00	0.00
103.50	(3) attachments	7.64	266.98	0.00	0.00
104.00	(1) attachments	7.65	178.78	0.00	0.00
105.00		15.34	57.55	0.00	0.00
108.00	(3) attachments	46.39	267.27	0.00	0.00
109.00		15.50	45.07	0.00	0.00
110.00		11.66	56.20	0.00	0.00
113.00	(1) attachments	104.17	268.60	0.00	0.00
114.00	(10) attachments	11.78	348.10	0.00	0.00
115.00		11.81	49.96	0.00	0.00
119.00		47.69	199.84	0.00	0.00
	Totals:	1,735.73	16,299.92	0.00	0.00

Calculated Forces

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



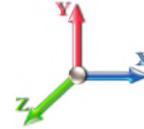
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Load Case: 1.0D + 1.0W 60 mph Wind

Iterations 27

Dead Load Factor 1.00

Wind Load 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	-16.30	-1.74	0.00	-110.36	0.00	110.36	2770.05	714.33	2432.17	2339.53	0.00	0.000	0.000	0.053
5.00	-15.56	-1.67	0.00	-101.67	0.00	101.67	2737.33	701.28	2344.09	2269.31	0.01	-0.017	0.000	0.050
10.00	-14.75	-1.60	0.00	-93.33	0.00	93.33	2703.94	688.22	2257.62	2199.58	0.04	-0.034	0.000	0.048
15.00	-13.95	-1.53	0.00	-85.35	0.00	85.35	2669.88	675.17	2172.78	2130.35	0.08	-0.051	0.000	0.045
20.00	-13.17	-1.46	0.00	-77.71	0.00	77.71	2635.15	662.11	2089.57	2061.66	0.14	-0.067	0.000	0.043
25.00	-12.40	-1.39	0.00	-70.41	0.00	70.41	2599.76	649.06	2007.98	1993.54	0.22	-0.082	0.000	0.040
30.00	-11.64	-1.33	0.00	-63.45	0.00	63.45	2563.70	636.00	1928.02	1926.02	0.32	-0.097	0.000	0.037
35.00	-10.89	-1.26	0.00	-56.83	0.00	56.83	2526.98	622.95	1849.68	1859.13	0.42	-0.111	0.000	0.035
40.00	-10.16	-1.18	0.00	-50.54	0.00	50.54	2489.59	609.89	1772.96	1792.91	0.55	-0.124	0.000	0.032
40.50	-10.08	-1.18	0.00	-49.95	0.00	49.95	2485.81	608.58	1765.38	1786.32	0.56	-0.125	0.000	0.032
45.00	-9.01	-1.11	0.00	-44.65	0.00	44.65	1840.21	485.30	1403.23	1320.44	0.68	-0.136	0.000	0.039
50.00	-8.41	-1.04	0.00	-39.09	0.00	39.09	1815.76	474.86	1343.48	1274.66	0.83	-0.148	0.000	0.035
55.00	-7.82	-0.96	0.00	-33.90	0.00	33.90	1790.64	464.41	1285.03	1229.18	1.00	-0.161	0.000	0.032
60.00	-7.24	-0.89	0.00	-29.07	0.00	29.07	1764.86	453.97	1227.89	1184.03	1.17	-0.173	0.000	0.029
65.00	-6.66	-0.81	0.00	-24.63	0.00	24.63	1738.40	443.52	1172.04	1139.25	1.36	-0.184	0.000	0.025
70.00	-6.10	-0.74	0.00	-20.56	0.00	20.56	1711.29	433.08	1117.49	1094.86	1.56	-0.194	0.000	0.022
75.00	-5.55	-0.66	0.00	-16.86	0.00	16.86	1683.50	422.64	1064.24	1050.90	1.77	-0.203	0.000	0.019
79.00	-5.12	-0.60	0.00	-14.20	0.00	14.20	1660.79	414.28	1022.58	1016.07	1.94	-0.209	0.000	0.017
79.00	-5.12	-0.60	0.00	-14.20	0.00	14.20	930.23	279.07	18866.3	173.90	1.94	-0.209	0.000	0.087
80.00	-5.01	-0.60	0.00	-13.60	0.00	13.60	930.23	279.07	18866.3	173.90	1.98	-0.211	0.000	0.084
84.00	-4.31	-0.55	0.00	-11.21	0.00	11.21	930.23	279.07	18866.3	173.90	2.20	-0.316	0.000	0.069
85.00	-4.20	-0.54	0.00	-10.66	0.00	10.66	930.23	279.07	18866.3	173.90	2.27	-0.339	0.000	0.066
87.00	-3.79	-0.52	0.00	-9.59	0.00	9.59	930.23	279.07	18866.3	173.90	2.42	-0.381	0.000	0.059
89.00	-3.58	-0.49	0.00	-8.55	0.00	8.55	930.23	279.07	18866.3	173.90	2.59	-0.420	0.000	0.053
89.00	-3.58	-0.49	0.00	-8.55	0.00	8.55	930.23	279.07	18866.3	173.90	2.59	-0.420	0.000	0.053
90.00	-3.48	-0.48	0.00	-8.06	0.00	8.06	930.23	279.07	18866.3	173.90	2.68	-0.437	0.000	0.050
94.00	-2.92	-0.43	0.00	-6.14	0.00	6.14	930.23	279.07	18866.3	173.90	3.07	-0.497	0.000	0.038
95.00	-2.82	-0.42	0.00	-5.71	0.00	5.71	930.23	279.07	18866.3	173.90	3.18	-0.510	0.000	0.036
97.00	-2.22	-0.39	0.00	-4.88	0.00	4.88	930.23	279.07	18866.3	173.90	3.40	-0.532	0.000	0.030
99.00	-2.02	-0.36	0.00	-4.11	0.00	4.11	930.23	279.07	18866.3	173.90	3.63	-0.551	0.000	0.026
99.00	-2.02	-0.36	0.00	-4.11	0.00	4.11	541.19	162.36	3641.39	63.23	3.63	-0.551	0.000	0.069
100.00	-1.96	-0.35	0.00	-3.75	0.00	3.75	541.19	162.36	3641.39	63.23	3.74	-0.559	0.000	0.063
103.00	-1.73	-0.30	0.00	-2.70	0.00	2.70	541.19	162.36	3641.39	63.23	4.14	-0.693	0.000	0.046
103.50	-1.47	-0.29	0.00	-2.55	0.00	2.55	541.19	162.36	3641.39	63.23	4.21	-0.711	0.000	0.043
104.00	-1.29	-0.28	0.00	-2.41	0.00	2.41	541.19	162.36	3641.39	63.23	4.29	-0.729	0.000	0.040
105.00	-1.23	-0.27	0.00	-2.13	0.00	2.13	541.19	162.36	3641.39	63.23	4.44	-0.760	0.000	0.036
108.00	-0.96	-0.22	0.00	-1.33	0.00	1.33	541.19	162.36	3641.39	63.23	4.94	-0.832	0.000	0.023
109.00	-0.92	-0.20	0.00	-1.11	0.00	1.11	541.19	162.36	3641.39	63.23	5.12	-0.849	0.000	0.019
109.00	-0.92	-0.20	0.00	-1.11	0.00	1.11	791.68	237.50	8195.40	85.75	5.12	-0.849	0.000	0.014
110.00	-0.86	-0.19	0.00	-0.91	0.00	0.91	791.68	237.50	8195.40	85.75	5.30	-0.863	0.000	0.012
113.00	-0.60	-0.08	0.00	-0.35	0.00	0.35	791.68	237.50	8195.40	85.75	5.85	-0.884	0.000	0.005
114.00	-0.25	-0.06	0.00	-0.27	0.00	0.27	791.68	237.50	8195.40	85.75	6.03	-0.887	0.000	0.003
115.00	-0.20	-0.05	0.00	-0.20	0.00	0.20	791.68	237.50	8195.40	85.75	6.22	-0.890	0.000	0.003
119.00	0.00	-0.05	0.00	0.00	0.00	0.00	791.68	237.50	8195.40	85.75	6.97	-0.895	0.000	0.000

Final Analysis Summary

Structure: CT13616-A-SBA	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 28



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 125 mph Wind	8.9	0.00	19.55	0.00	0.00	565.87
0.9D + 1.0W 125 mph Wind	8.9	0.00	14.66	0.00	0.00	562.37
1.2D + 1.0Di + 1.0Wi 50 mph Wind	3.3	0.00	28.02	0.00	0.00	244.58
1.2D + 1.0Ev + 1.0Eh	0.4	0.00	20.27	0.00	0.00	31.96
0.9D + 1.0Ev + 1.0Eh	0.4	0.00	15.35	0.00	0.00	31.96
1.0D + 1.0W 60 mph Wind	1.7	0.00	16.30	0.00	0.00	110.36

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 125 mph Wind	-6.09	-3.10	0.00	-73.31	0.00	-73.31	1660.79	414.28	1022.58	1016.07	79.00	0.428
0.9D + 1.0W 125 mph Wind	-4.55	-3.07	0.00	-72.07	0.00	-72.07	1660.79	414.28	1022.58	1016.07	79.00	0.419
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-11.04	-1.73	0.00	-40.63	0.00	-40.63	1660.79	414.28	1022.58	1016.07	79.00	0.246
1.2D + 1.0Ev + 1.0Eh	-6.36	-0.22	0.00	-4.20	0.00	-4.20	1660.79	414.28	1022.58	1016.07	79.00	0.031
0.9D + 1.0Ev + 1.0Eh	-4.81	-0.22	0.00	-4.26	0.00	-4.26	1660.79	414.28	1022.58	1016.07	79.00	0.030
1.0D + 1.0W 60 mph Wind	-5.12	-0.60	0.00	-14.20	0.00	-14.20	1660.79	414.28	1022.58	1016.07	79.00	0.087

Base Plate Summary

Structure: CT13616-A-SB	Code: TIA-222-H	12/6/2022
Site Name: St. Judes	Exposure: B	
Height: 119.00 (ft)	Crest Height: 674.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 29



Reactions	Base Plate	Anchor Bolts
Original Design	Yield (ksi): 50.00	Bolt Circle: 48.00
Moment (kip-ft): 1550.00	Width (in): 46.00	Number Bolts: 12.00
Axial (kip): 19.00	Style: Clipped	Bolt Type: 2.25" 18J
Shear (kip): 23.00	Polygon Sides: 0.00	Bolt Diameter (in): 2.25
Analysis (1.2D + 1.0W)	Clip Length (in): 6.00	Yield (ksi): 75.00
Moment (kip-ft): 565.87	Effective Len (in): 9.38	Ultimate (ksi): 100.00
Axial (kip): 19.55	Moment (kip-in): 162.21	Arrangement: Clustered
Shear (kip): 8.88	Allow Stress (ksi): 67.50	Cluster Dist (in): 6.00
	Applied Stress (ksi): 13.50	Start Angle (deg): 45.00
	Stress Ratio: 0.20	Compression
		Force (kip): 48.79
		Allowable (kip): 268.39
		Ratio: 0.18
		Tension
		Force (kip): 45.53
		Allowable (kip): 243.75
		Ratio: 0.19



Monopole Mat Foundation Design

Date

12/6/2022

Customer Name:	Verizon	TIA Standard:	TIA-222-H
Site Name:		Structure Height (Ft.):	119
Site Number:	CT13616-A-SBA	Engineer Name:	H. You
Engr. Number:	136686	Engineer Login ID:	

Foundation Info Obtained from:

Drawings/Calculations
Monopole
Analysis

Structure Type:

Analysis or Design?

Base Reactions (Factored):

Axial Load (Kips):	19.6	Shear Force (Kips):	8.9
Uplift Force (Kips):	0.0	Moment (Kips-ft):	565.9

Allowable overstress %: 5.0%

Foundation Geometries:

Diameter of Pier (ft.):	6.0	Mods required -Yes/No ?:	No
Pier Height A. G. (ft.):	0.50	Depth of Base BG (ft.):	6.0
Length of Pad (ft.):	20	Thickness of Pad (ft.):	3.00
		Width of Pad (ft.):	20

Final Length of pad (ft)	20.0	Final width of pad (ft):	20.0
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Material Properties and Rebar Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	40	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	34	Tie Spacing (in):	6.0	
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):	20	Qty. of Rebar in Pad (W):	20
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Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	20	Qty. of Rebar in Pad (W):	20
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Apply 1.35 factor for e/w Per G: 1.35

Soil Design Parameters:

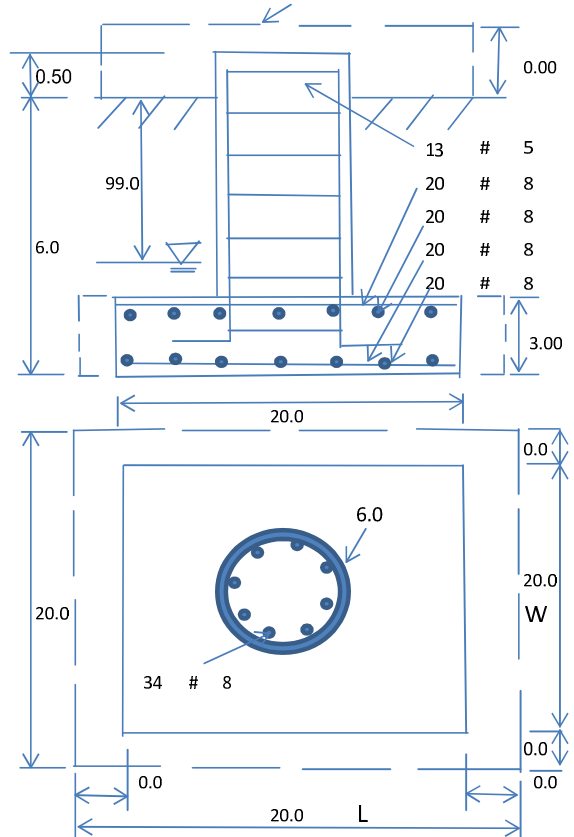
Soil Unit Weight (pcf):	120.0	Soil Buoyant Weight:	47.6	Pcf	Angle from Top of Pad:	30
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Bottm of Pad:	25
Ultimate Bearing Pressure (psf):	12000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Reduction factor on the maximum soil bearing pressure:	1.00
Consider soil hor. resist. for OTM.:	Yes					

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	1115.18	Total Dry Soil Weight (Kips):	133.82
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	133.82	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1298.96	Total Dry Concrete Weight (Kips):	194.84
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	194.84	Total Vertical Load on Base (Kips):	348.27

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	949	< Allowable Factored Soil Bearing (psf):	9000	0.11	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	3154.0	> Design Factored Momont (kips-ft):	502	0.16	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	6.29				OK!



Check the capacities of Reinforcing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75
Strength reduction factor (Axial compression):	0.65	Wind Load Factor on Concrete Design:	1.00

Load/
Capacity
Ratio

(1) Concrete Pier:

Vertical Steel Rebar Area (sq. in./each):	0.79	Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	3716.1	> Design Factored Moment (Mu, Kips-F	597.1	0.16	OK!
Calculated Shear Capacity (Kips):	572.6	> Design Factored Shear (Kips):	8.9	0.02	OK!
Calculated Tension Capacity (Tn, Kips):	1450.4	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	5363.2	> Design Factored Axial Load (Pu Kips):	19.6	0.00	OK!
Moment & Axial Strength Combination:	0.16	OK! Check Tie Spacing (Design/Required):	0.5		OK!
Pier Reinforcement Ratio:	0.007	Reinforcement Ratio is satisfied per ACI			

(2).Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	640.8	> One-Way Factored Shear (L-D. Kips):	55.3	0.09	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	640.8	> One-Way Factored Shear (W-D., Kips)	55.3	0.09	OK!
One-Way Design Shear Capacity (Corner-Corner, Kips):	540.5	> One-Way Factored Shear (C-C, Kips):	43.9	0.08	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0020	OK! Lower Steel Pad Reinf. Ratio (W-Direc	0.0020		
Lower Steel Pad Moment Capacity (L-Direction, Kips-ft):	2255.7	> Moment at Bottom (L-Dir. K-Ft):	264.9	0.12	OK!
Lower Steel Pad Moment Capacity (W-Direction, Kips-ft):	2255.7	> Moment at Bottom (W-Dir. K-Ft):	264.9	0.12	OK!
Lower Steel Pad Moment Capacity (Corner-Corner, K-ft):	3169.0	> Moment at Bottom (C-C Dir. K-Ft):	374.6	0.12	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0020	OK! Upper Steel Reinf. Ratio (W-Dir.):	0.0020		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	2255.7	> Moment at the top (L-Dir K-Ft):	75.8	0.03	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	2255.7	> Moment at the top (W-Dir K-Ft):	75.8	0.03	OK!
Upper Steel Pad Moment Capacity (Corner-Corner, K-ft):	3169.0	> Moment at the top (C-C Dir. K-Ft):	71.3	0.02	OK!

(3).Check Punching Shear Capacity due to Moment in the Pier:

Moment transferred by punching shear:	226.4	k-ft.	Max. factored shear stress $v_{u,CD}$:	0.1	Psi
Max. factored shear stress $v_{u,AB}$:	2.9	Psi	Factored shear Strength ϕv_n :	164.3	Psi
Max. factored shear stress v_u :	2.9	Psi	Check Usage of Punching Shear Capacity:	0.02	OK!

(4).Check Bending Capacity of the Pad Within the Effective Slab Width:

Overturning moment to be transferred by flexure:	169.8	k-ft.	Effective Width for resisting OT moment:	15.0	ft.
Calculated number of Rebar in Effective width:	15		Actual number of Rebar in Effective width:	13	
Steel Pad Moment Capacity (L-Direc. Kips-ft):	1471.0	k-ft.	Check Usage of the Flexure Capacity:	0.12	OK!

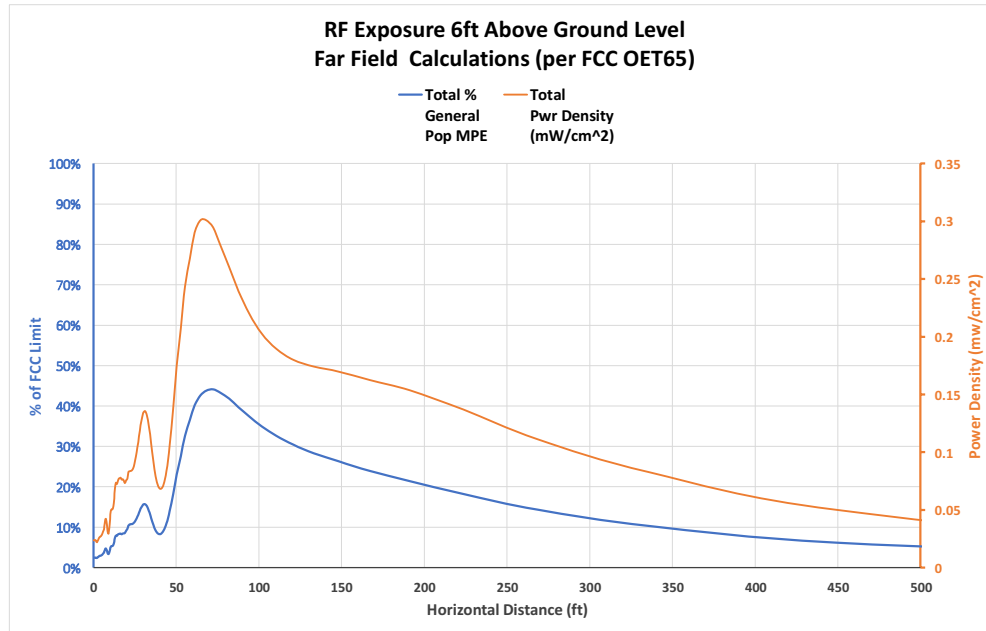
CUMULATIVE MPE TABLE

44.1Carrier	MPE %
Dish	10.04%
T-Mobile	0.70%
Sprint	7.00%
Sprint/Clearwire	0.12 %
MetroPCS	0.82%
*Verizon Wireless	44.1%
<i>Site Total</i>	<i>62.78 %</i>

*See attached Verizon Wireless far field tables for full detail.

Note: the data for the carriers in the above table was compiled from the Fox Hill Telecomm Radio Frequency Emissions Analysis Report, dated May 2, 2022 submitted by Dish on June 30, 2022 (TS-DISH-037-220708).

Location	DERBY NORTH CT				
Date	12/13/2022				
Band	C-Band	AWS	PCS	850-LTE	700
Operating Frequency (MHz)	3,700	2,145	1,970	880	746
General Population MPE (mW/cm ²)	1	1	1	0.586666667	0.497333333
ERP Per Transmitter (Watts)	13,335	1,469	1,040	948	948
Number of Transmitters	1	4	4	4	4
Antenna Centerline (feet)	29.5	29.5	29.5	29.5	29.5
Total ERP (Watts)	13,335	5,876	4,160	3,794	3,794
Total ERP (dBm)	71	68	66	66	66
Maximum % of General Population Limit	44.1%				



Angle Below Horizon	Power Density (mW/cm ²)					Percent of General Population MPE										Distance	Total Pwr Density (mW/cm ²)	Total % General Pop MPE
	C-Band	AWS	PCS	850-LTE	700 MHz	39GHz	28GHz	C-Band	CBRS	AWS	PCS	Cellular	CDMA	700 MHz				
90	0.016931989	0.003696317	0.001948803	0.00089261	0.000134824	0.00%	0.00%	1.69%	0.00%	0.37%	0.19%	0.15%	0.00%	0.03%	0	0.023594544	2.44%	
89	0.016926832	0.003695191	0.00194821	0.000882341	0.000134783	0.00%	0.00%	1.69%	0.00%	0.37%	0.19%	0.15%	0.00%	0.03%	0.410194026	0.023587357	2.43%	
88	0.017305282	0.002826441	0.002577738	0.001030955	9.14618E-05	0.00%	0.00%	1.73%	0.00%	0.28%	0.26%	0.18%	0.00%	0.02%	0.820638083	0.023831878	2.47%	
87	0.017681405	0.002257241	0.002567893	0.001353872	8.1204E-05	0.00%	0.00%	1.77%	0.00%	0.23%	0.26%	0.23%	0.00%	0.02%	1.231582813	0.023941616	2.50%	
86	0.01805467	0.00164305	0.001110835	0.001801567	9.28219E-05	0.00%	0.00%	1.81%	0.00%	0.16%	0.11%	0.31%	0.00%	0.02%	1.643280081	0.022702944	2.41%	
85	0.01842453	0.00078857	0.00031729	0.002235925	0.000156479	0.00%	0.00%	1.84%	0.00%	0.08%	0.03%	0.38%	0.00%	0.03%	2.055983593	0.021913082	2.36%	
84	0.018790428	0.000118576	0.001235938	0.00249458	0.000338842	0.00%	0.00%	1.88%	0.00%	0.01%	0.12%	0.43%	0.00%	0.07%	2.469949529	0.022978365	2.51%	
83	0.018715843	6.35727E-05	0.00222469	0.002456237	0.000681193	0.00%	0.00%	1.87%	0.00%	0.01%	0.22%	0.42%	0.00%	0.14%	2.885437181	0.024141535	2.66%	
82	0.019508035	0.000300106	0.002473282	0.002106108	0.001135728	0.00%	0.00%	1.95%	0.00%	0.03%	0.25%	0.36%	0.00%	0.23%	3.302709616	0.025522259	2.82%	
81	0.020321129	0.000833699	0.002152821	0.001577643	0.001570394	0.00%	0.00%	2.03%	0.00%	0.08%	0.22%	0.27%	0.00%	0.32%	3.722034348	0.026455685	2.92%	
80	0.020673352	0.001231607	0.002020556	0.00114412	0.001821678	0.00%	0.00%	2.07%	0.00%	0.12%	0.20%	0.20%	0.00%	0.37%	4.143684047	0.026891314	2.95%	
79	0.021018471	0.000709026	0.002816185	0.00110322	0.001797471	0.00%	0.00%	2.10%	0.00%	0.07%	0.28%	0.19%	0.00%	0.36%	4.567937265	0.027444373	3.00%	
78	0.021355845	0.000373747	0.00351218	0.001635225	0.001508612	0.00%	0.00%	2.14%	0.00%	0.04%	0.35%	0.28%	0.00%	0.30%	4.995079199	0.02838561	3.11%	

6	0.062686945	0.011514321	0.009424041	0.026806366	0.026438569	0.00%	0.00%	6.27%	0.00%	1.15%	0.94%	4.57%	0.00%	5.32%	223.5875647	0.136870241	18.25%
5	0.05120354	0.012628775	0.009870975	0.01876553	0.01867931	0.00%	0.00%	5.12%	0.00%	1.26%	0.99%	3.20%	0.00%	3.76%	268.6062291	0.111148129	14.32%
4	0.038536921	0.011374655	0.008668363	0.011938172	0.012020924	0.00%	0.00%	3.85%	0.00%	1.14%	0.87%	2.03%	0.00%	2.42%	336.065657	0.082539035	10.31%
3	0.022714768	0.008135224	0.00608651	0.006567032	0.006751016	0.00%	0.00%	2.27%	0.00%	0.81%	0.61%	1.12%	0.00%	1.36%	448.4067122	0.05025455	6.17%
2	0.010335852	0.004211216	0.003100319	0.002801606	0.002967612	0.00%	0.00%	1.03%	0.00%	0.42%	0.31%	0.48%	0.00%	0.60%	672.9519521	0.023416606	2.84%
1	0.002644957	0.00114151	0.000825047	0.000661423	0.000725236	0.00%	0.00%	0.26%	0.00%	0.11%	0.08%	0.11%	0.00%	0.15%	1346.314098	0.005998174	0.72%

degree below horizon	AT1K02 (39GHz)	AT1K01 (28GHz)	MT6407-77A (3,730MHz)	XXDWMM- 12.5-65 (3,550MHz)	AWS (2,155MHz)	PCS (1,962MHz)
0	0.08	0.08	0.4	1.8	0	0.01
1	0.39	0.39	0	1.3	0.09	0
2	0.3	0.3	0.1	0.8	0.44	0.27
3	0	0	0.2	0.5	1.1	0.86
4	0.31	0.31	0.4	0.2	2.14	1.82
5	0.42	0.42	1.1	0.1	3.62	3.19
6	0.13	0.13	1.8	0	5.6	4.97
7	0.44	0.44	2.9	0	8.04	7.21
8	0.36	0.36	4.4	0.1	10.47	10.02
9	0.09	0.09	6.1	0.2	11.75	13.44
10	0.4	0.4	8.5	0.3	11.52	15.89
11	0.52	0.52	11.8	0.7	10.81	14.54
12	0.26	0.26	16.7	1	10.2	12.27
13	0.57	0.57	28.8	1.5	9.75	10.84
14	0.51	0.51	24	2	9.57	10.19
15	0.26	0.26	16.3	2.6	9.79	10.02
16	0.58	0.58	12.8	3.3	10.54	10.15
17	1.07	1.07	10.8	4.2	11.78	10.57
18	0.55	0.55	9.5	5.3	13.35	11.37
19	0.58	0.58	8.9	6.7	15.04	12.64
20	1.08	1.08	8.6	8.2	16.73	14.26
21	0.59	0.59	8.7	9.9	18.13	15.89
22	0.65	0.65	9.2	11.8	18.68	17.07
23	1.22	1.22	9.8	14.5	18.42	17.58
24	0.99	0.99	10.9	18.2	18.05	17.73
25	0.8	0.8	12	23.8	17.9	17.98
26	1.11	1.11	13.6	33.9	17.73	18.64
27	1.12	1.12	15.5	27.7	17.21	19.75
28	0.95	0.95	17.6	21.5	16.4	21.02
29	1.25	1.25	19.5	18	15.64	21.74
30	2.03	2.03	21	15.7	15.2	21.17
31	3.32	3.32	21.7	14.1	15.12	19.29
32	5.21	5.21	21.8	13	15.3	17
33	7.88	7.88	21.7	12.3	15.49	15.13
34	11.74	11.74	21.9	12.1	15.39	13.95
35	16.19	16.19	22.3	11.9	15.05	13.31
36	14.94	14.94	23.4	11.7	14.9	12.93
37	15.07	15.07	24.7	11.7	15.28	12.58
38	16.33	16.33	26.4	11.8	16.27	12.22
39	15.38	15.38	28.9	12	17.58	12.09

40	15.03	15.03	31.7	12.5	18.6	12.39
41	15.75	15.75	33.6	13.1	19.01	13.09
42	17.49	17.49	31.9	13.7	19.21	13.99
43	20.55	20.55	29.4	14.2	19.74	14.87
44	21.87	21.87	27	14.5	20.84	15.63
45	20.56	20.56	25.1	15.1	22.29	16.34
46	20.35	20.35	23.5	15.9	23.38	17.15
47	21.02	21.02	22.3	16.8	24.01	18.19
48	21.62	21.62	21.2	17.8	25.09	19.66
49	20.49	20.49	20.6	18.7	27.52	21.98
50	20.28	20.28	19.8	19.7	31.98	25.66
51	20.83	20.83	19.5	20.7	38.52	31.13
52	22.1	22.1	19.2	21.6	41.18	37.93
53	22.84	22.84	19.1	22.4	35.02	44.46
54	23.96	23.96	19.3	22.9	29.6	56.4
55	25.61	25.61	19.5	23.3	26.6	37.78
56	24.75	24.75	19.9	23.4	25.25	30.99
57	24.54	24.54	20.3	23.3	24.57	28
58	24.84	24.84	20.9	22.7	23.46	27.32
59	25.6	25.6	21.8	21.9	21.75	27.75
60	25.03	25.03	22.5	21.2	20.45	27.91
61	24.18	24.18	23.5	20.7	20.15	27.23
62	23.83	23.83	24.7	20.5	20.65	25.96
63	23.88	23.88	25.9	20.3	21.21	24.7
64	24.25	24.25	27.1	20.3	21.15	23.91
65	24.7	24.7	28.3	20.5	20.77	23.54
66	24.47	24.47	28.9	20.9	20.97	23.42
67	24.47	24.47	29.1	21.3	22.25	23.88
68	24.68	24.68	29	21.7	24.34	25.24
69	25.07	25.07	28.6	21.8	26	26.84
70	25.64	25.64	28	21.6	26.05	27.24
71	26.36	26.36	27.4	21.2	25.09	26.42
72	27.24	27.24	26.9	21	24.68	25.32
73	28.26	28.26	26.6	21	25.52	25.04
74	28.68	28.68	26.3	21.2	27.33	26.14
75	28.98	28.98	26.2	21.6	29.15	27.98
76	29.37	29.37	26	22.1	30.84	28.97
77	29.83	29.83	25.9	22.8	34.04	28.81
78	30.36	30.36	25.9	23.5	39.91	28.68
79	30.94	30.94	26	24.5	37.16	29.67
80	30.89	30.89	26.1	25.6	34.79	31.14
81	30.44	30.44	26.2	26.8	36.51	30.89
82	30.13	30.13	26.4	28.2	40.97	30.31

83	29.93	29.93	26.6	29.7	47.73	30.79
84	29.81	29.81	26.6	31.1	45.04	33.36
85	29.76	29.76	26.7	31.9	36.88	39.28
86	29.78	29.78	26.8	32.5	33.65	33.85
87	29.85	29.85	26.9	32.9	32.28	30.22
88	29.97	29.97	27	33.3	31.31	30.21
89	30.13	30.13	27.1	33.6	30.15	31.43
90	30.33	30.33	27.1	34.4	30.15	31.43

850-LTE (880MHz)	850-CDMA (869MHz)	700-LTE (746MHz)
0.89	0.56	0.31
0.56	0.17	0.16
0.31	0	0.06
0.13	0.05	0.01
0.03	0.3	0
0	0.78	0.02
0.03	1.49	0.09
0.12	2.47	0.19
0.27	3.75	0.31
0.47	5.4	0.48
0.72	7.53	0.67
1.03	10.37	0.9
1.41	14.39	1.17
1.86	21.2	1.49
2.39	34.25	1.85
3	21.05	2.27
3.7	16.42	2.73
4.49	14.1	3.25
5.39	12.89	3.83
6.39	12.38	4.46
7.53	12.4	5.15
8.82	12.89	5.9
10.3	13.83	6.71
12	15.23	7.61
13.98	17.16	8.58
16.28	19.66	9.65
18.87	22.63	10.83
21.45	24.91	12.15
22.98	24.51	13.62
22.52	22.64	15.28
20.95	21.01	17.16
19.32	19.96	19.25
17.94	19.44	21.53
16.85	19.4	23.79
16.05	19.78	25.63
15.5	20.56	26.64
15.18	21.77	26.88
15.08	23.43	26.74
15.18	25.6	26.46
15.43	28.35	25.98

15.81	31.53	25.19
16.29	33.84	24.12
16.84	33.31	22.92
17.43	31.43	21.78
18.09	29.8	20.81
18.83	28.7	20.08
19.71	28.04	19.61
20.8	27.75	19.41
22.19	27.78	19.48
24.01	28.12	19.82
26.5	28.78	20.39
30.17	29.83	21.18
36.65	31.33	22.12
49.43	33.46	23.16
35.5	36.4	24.2
30.51	39.61	25.18
27.83	39.34	26.07
26.26	35.86	26.93
25.4	32.77	27.82
25.04	30.47	28.85
25.05	28.78	30.13
25.36	27.54	31.75
25.85	26.65	33.85
26.42	26.04	36.63
26.95	25.68	40.46
27.28	25.53	45.7
27.31	25.57	48.06
27.03	25.78	44.29
26.54	26.13	41.53
26	26.63	40.25
25.51	27.26	40.18
25.18	28.01	41.36
25.05	28.87	44.19
25.15	29.84	48.19
25.55	30.91	44.74
26.33	32.08	39.37
27.59	33.37	35.78
29.39	34.8	33.42
31.6	36.41	31.95
33.34	38.26	31.22
33.21	40.33	31.19
31.84	42.23	31.86
30.61	42.92	33.29

29.96	41.91	35.53
29.91	40.2	38.58
30.4	38.63	41.95
31.35	37.42	44.23
32.6	36.56	44.82
33.79	36	44.31
34.47	35.65	42.63
34.47	35.43	42.63