



STATE OF CONNECTICUT  
*CONNECTICUT SITING COUNCIL*

Ten Franklin Square, New Britain, CT 06051  
Phone: (860) 827-2935 Fax: (860) 827-2950A  
E-Mail: [siting.council@ct.gov](mailto:siting.council@ct.gov)  
Web Site: [portal.ct.gov/csc](http://portal.ct.gov/csc)

**VIA ELECTRONIC MAIL**

March 12, 2021

G. Scott Shepherd  
Senior Property Specialist  
SBA Communications  
134 Flanders Road, Suite 125  
Westborough, MA 01581

RE: **EM-T-MOBILE-089-210119** – T-Mobile notice of intent to modify an existing telecommunications facility located at 1 Hartford Square, New Britain, Connecticut

Dear Mr. Shepherd:

The Connecticut Siting Council (Council) is in receipt of your correspondence of March 10, 2021 submitted in response to the Council's February 26, 2021 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

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

Thank you for your attention and cooperation.

Sincerely,

*s/ Melanie A. Bachman*

Melanie A. Bachman  
Executive Director

MAB/IN/emr

**From:** Glenn Shepherd <GShepherd@sbsite.com>

**Sent:** Wednesday, March 10, 2021 4:30 PM

**To:** Robidoux, Evan <Evan.Robidoux@ct.gov>

**Cc:** CSC-DL Siting Council <Siting.Council@ct.gov>; Rick Woods <RWoods@sbsite.com>; Kri Pelletier <KPelletier@sbsite.com>

**Subject:** RE: [External] Council Incomplete Letter for EM-T-MOBILE-089-210119 (1 Hartford Square, New Britain)

Good Afternoon Evan –

Per your letter of incomplete dated February 26, 2021 (attached for your reference), the deadline to remedy the error in the original filing dated January 19, 2021 is March 26, 2021. The reason for the incomplete was an inaccurate Structural Analysis dated November 10, 2020, that did not include AT&T's equipment.

Attached, you will find an updated Structural Analysis dated March 8, 2021 that accurately depicts all of the existing and proposed equipment on the Tower. If you could kindly accept this as a remedy to correct the original filing of January 19, 2021 and not as a new Notice of Exempt Modifications it would be greatly appreciated.

Please let me know if this does not in fact remedy the requirements in the letter of incomplete of February 26, 2021.

I apologize for the confusion and thank you in advance for your cooperation.

Thank you,

**G. Scott Shepherd**

*Site Development Specialist II*

508.251.0720 Ext.3807 + **T**

508.366.2610 + F + **F**

508.868.6000 + C + **C**



**Tower Engineering Solutions**

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

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**Structural Analysis Report**

**Existing 176 ft Rohn Self Supporting Tower**

**Customer Name: SBA Communications Corp**

**Customer Site Number: CT04382-S**

**Customer Site Name: New Britain 2, CT**

**Carrier Name: T-Mobile (App#: 141543, V1)**

**Carrier Site ID / Name: CT11351C / New Britain/RT 72 Wooster**

**Site Location: 1 Hartford Square**

**New Britain, Connecticut**

**Hartford County**

**Latitude: 41.666411**

**Longitude: -72.812803**

**Analysis Result:**

**Max Structural Usage: 76.2% [Pass]**

**Max Foundation Usage: 50.0% [Pass]**

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



**Report Prepared By : Cesar Rojas**



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### **Analysis Result:**

**Max Structural Usage: 76.2% [Pass]**

**Max Foundation Usage: 50.0% [Pass]**

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

**Report Prepared By : Cesar Rojas**

## Introduction

The purpose of this report is to summarize the analysis results on the 176 ft Rohn Self Supporting Tower to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

## Sources of Information

<b>Tower Drawings</b>	Rohn Eng. File # 44545AE, Dwg. # C000882, dated 08/21/2000
<b>Foundation Drawing</b>	Rohn Eng. File # 44545AE, Dwg. # A001473, dated 07/26/2000
<b>Geotechnical Report</b>	Jaworski Geotech, Project # 00309G, dated 07/05/2000
<b>Modification Drawings</b>	Allpro Consulting Group, Job # 17-0378 rev.1, dated 02/21/2017
<b>Mount Analysis</b>	TES, Project No. #99208, dated 11/09/2020

## Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the TIA-222-G-2. In accordance with this standard, the structure was analyzed using **TESTowers**, a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

<b>Wind Speed Used in the Analysis:</b>	Ultimate Design Wind Speed $V_{ult} = 125.0$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 97.0$ mph (3-Sec. Gust)
<b>Wind Speed with Ice:</b>	50 mph (3-Sec. Gust) with 1" radial ice concurrent
<b>Operational Wind Speed:</b>	60 mph + 0" Radial ice
<b>Standard/Codes:</b>	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
<b>Exposure Category:</b>	B
<b>Structure Class:</b>	II
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Seismic Parameters:</b>	$S_S = 0.183$ , $S_1 = 0.064$

This structural analysis is based upon the tower being classified as a Structure Class 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	177.0	3	Kathrein 840 10054 Panel	(3) Sector Frames w/ (3) VBrace Kits (SitePro SFSV- L) & (6) 2-3/8"x6" Pipe Masts (BBPM-K1)	(4) 1/2" Fiber (6) 5/16" Fiber (1) 5/16" RET	Sprint Nextel
2		4	Andrew VHLP2.5 Dish			
3		3	Samsung U-RAS Flexible FRH			
4		3	Dragonwave Horizon Duo			
5	166.0	3	Cci Antennas DMP65R-BU6DA Panel	(3) Commscope SFG22HDX Mount	(6) 1 5/8" (4) 3/4" DC (2) 1/2" Fiber (1) 3" Conduit [(4) existing DC & (2) existing fiber in (1) 3" conduit]	AT&T
6		3	Cci Antennas OPA65R-BU6DA Panel			
7		3	Quintel QS66512-2 Panel			
8		3	Ericsson 8843 B2/B66A RRU			
9		6	CCI TPX-070821 Diplexer			
10		3	Ericsson RRUS-32 RRU			
11		3	Ericsson 4449 B5/B12 RRU			
12		3	Ericsson 4478 B14 RRU			
13		3	Commscope ION23 SDARS RRU			
14		3	Commscope CBC23SR-43 Combiners			
15		2	Raycap DC6-48-60-18-8F OVP			
16		1	Raycap DC6-48-60-0-8C-EV OVP			
17	1	Raycap DC6-48-60-18-8C-EV OVP				
-	155.0	3	Ericsson Air21 B2A/B4P Panel	(3) Sector Frames	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
-		3	Ericsson AIR 21 B4A/B2P Panel			
-		3	Commscope LNX-6515DS-A1M Panel			
-		3	Ericsson KRY 112 144/1 TMA			
-		3	Ericsson RRUS-11 (Band 12)			
25	140.0	3	Kathrein 800 10735v01 Panel	(3) T-Frames	(12) 1 5/8" (2) 1 5/8" Hybrid (1) 1/2"	Verizon
26		3	Antel BXA-80080/4CF Panel			
27		6	Andrew SBNHH-1D65B Panel			
26		3	ALU RRH-2x60-AWS			
28		3	ALU RRH-2x60-PCS			
29		3	ALU RRH-2X60W-700U			
30		1	RFS DB-T1-6Z-8AB-OZ Box			
31	1	GPS				
32	82.0	1	GPS	Pipe	(2) 1/2"	Sprint Nextel

\*inside (1) 3" Flex conduit

**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
18	152.0	3	Ericsson AIR32 KRD901146-1_B66A_B2A (Octo)	(3) Sector Frame	(1) 1 1/4" Fiber (8) 1 5/8" Coax (5) 1 5/8" Fiber	T-Mobile
19		3	RFS APXVAARR24_43-U-NA20			
20		3	Ericsson AIR6449 B41			
21		3	Ericsson KRY 112 144/1			
22		3	Commscope SDX1926Q-43			
23		3	Ericsson 4449 B71+B85			
24		3	Ericsson 4415 B25			

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

## **Analysis Results**

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

Tower Component	Legs	Diagonals	Horizontals
Max. Usage:	<b>53.3%</b>	<b>76.2%</b>	<b>3.9%</b>
Pass/Fail	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>

## **Foundations**

	Compression (Kips)	Uplift (Kips)	Shear (Kips)
Analysis Reactions	262.1	222.8	25.4

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.

## **Operational Condition (Rigidity):**

The maximum twist and sway of the microwave dishes under the operational wind speed as specified in the Analysis Criteria are listed in the table below:

Elevation (ft)	Antenna / Dish	Carrier	Twist (deg)	Sway (deg)
176.0	Andrew - VHLP2.5 - Dish	Sprint Nextel	0.007	0.187

It is recommended that the carriers review the twist and sway values of the microwave dishes.

## **Conclusions**

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



## Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC**. Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.
2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.
3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the ANSI/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.
4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.
5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.
6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

## Structure: CT04382-S-SBA

**Site Name:** New Britain 2, CT

**Code:** EIA/TIA-222-G

3/8/2021

**Type:** Self Support

**Base Shape:** Triangle

**Basic WS:** 97.00

**Height:** 176.00 (ft)

**Base Width:** 21.00

**Basic Ice WS:** 50.00

**Base Elev:** 0.00 (ft)

**Top Width:** 4.69

**Operational WS:** 60.00

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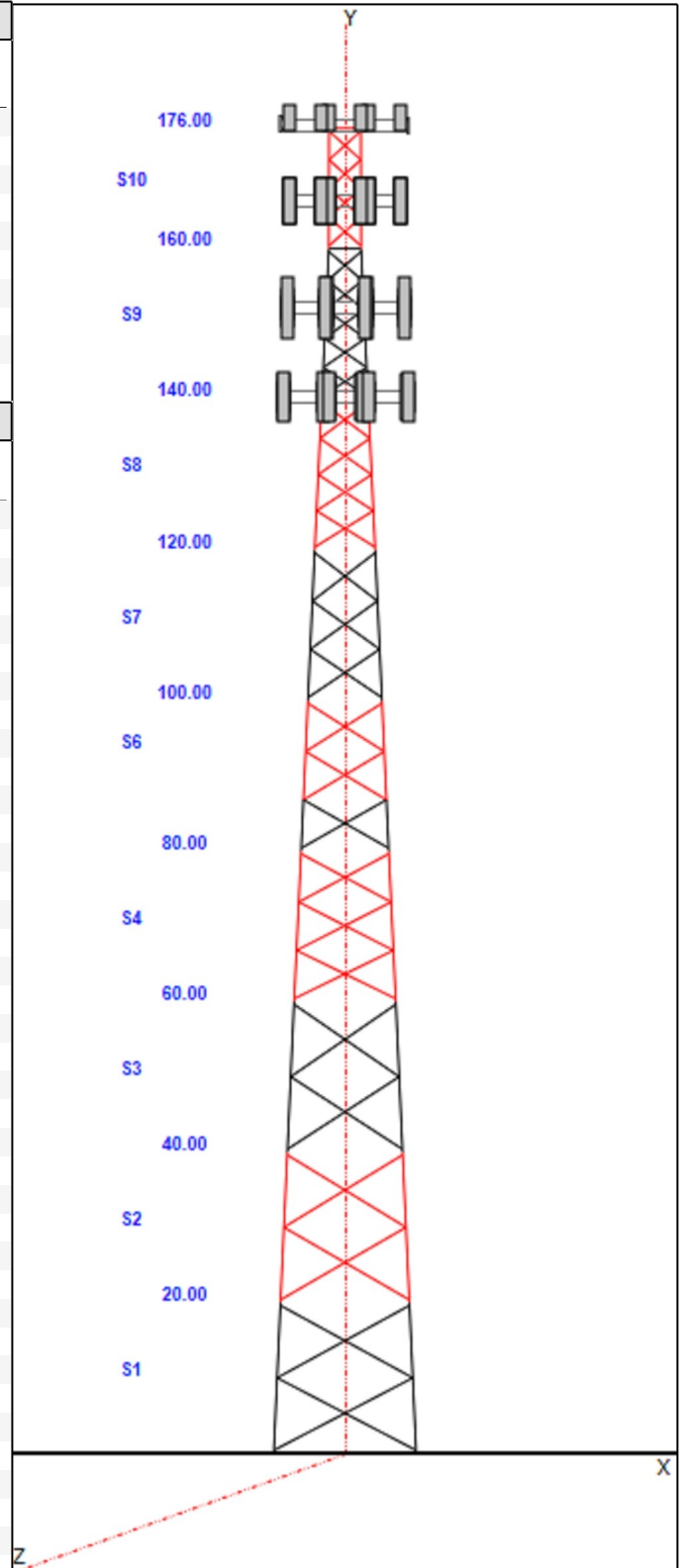


### Section Properties

Sect	Leg Members	Diagonal Members	Horizontal Members
1	PX 8" DIA PIPE	SAE 4X4X0.25	
2	PX 8" DIA PIPE	SAE 3.5X3.5X0.25	
3	PSP ROHN 8 EHS	SAE 3.5X3.5X0.25	
4	PX 6" DIA PIPE	SAE 3X3X0.25	
5	PX 6" DIA PIPE	MOD 2L2.5x2.5x3/16_S	
6	PX 6" DIA PIPE	SAE 2.5X2.5X0.1875	
7	PSP ROHN 6 EHS	SAE 2.5X2.5X0.1875	
8	PX 5" DIA PIPE	SAE 2X2X0.1875	
9	PX 4" DIA PIPE	SAE 2X2X0.1875	SAE 2X2X0.1875
10	PX 3" DIA PIPE	SAE 2X2X0.25	SAE 2X2X0.25

### Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description
176.00	179.00	1	Lightning Rod
176.00	176.00	1	Beacon
176.00	176.00	3	Light Sector Frame
176.00	176.00	1	(3) SFS-H-L (V-Braces)
176.00	177.00	4	VHLP2.5
176.00	177.00	3	Horizon Duo
176.00	177.00	3	840 10054
176.00	177.00	3	U-RAS Flexible FRH
166.00	166.00	3	ION23 SDARS
166.00	166.00	3	CBC23SR-43
166.00	166.00	1	DC6-48-60-18-8C-EV
166.00	166.00	1	DC6-48-60-18-8C-EV
166.00	166.00	1	Commscope SFG22HDX
166.00	166.00	3	800-10121
166.00	166.00	3	QS66512-2
166.00	166.00	6	LGP21401
166.00	166.00	6	CCI TPX-070821
166.00	166.00	6	860 10025
166.00	166.00	6	RRUS 32 B2
166.00	166.00	3	RRUS 32 B66
166.00	166.00	3	RRUS 32
166.00	166.00	2	DC6-48-60-18-8F
166.00	166.00	3	DMP65R-BU6DA
166.00	166.00	3	Antennas OPA65R-BU6DA
166.00	166.00	3	4449 B5/B12
166.00	166.00	3	4478 B14
152.00	152.00	3	KRY 112 144/1
152.00	152.00	3	AIR32 KRD901146-1_B66A_B2A (Oc
152.00	152.00	3	APXVAARR24_43-U-NA20
152.00	152.00	3	AIR6449 B41
152.00	152.00	3	SDX1926Q-43
152.00	152.00	3	4449 B71 + B85
152.00	152.00	3	RRUS 4415 B25
152.00	152.00	3	Sector Frame
140.00	140.00	1	GPS
140.00	140.00	3	Sector Frame-Pipe
140.00	140.00	6	SBNHH-1D65B
140.00	140.00	3	800 10735
140.00	140.00	3	BXA-80080-4CF



## Structure: CT04382-S-SBA

<b>Site Name:</b> New Britain 2, CT	<b>Code:</b> EIA/TIA-222-G	3/8/2021
<b>Type:</b> Self Support	<b>Base Shape:</b> Triangle	<b>Basic WS:</b> 97.00
<b>Height:</b> 176.00 (ft)	<b>Base Width:</b> 21.00	<b>Basic Ice WS:</b> 50.00
<b>Base Elev:</b> 0.00 (ft)	<b>Top Width:</b> 4.69	<b>Operational WS:</b> 60.00



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140.00	140.00	3	RRH-2X60-AWS
140.00	140.00	3	RRH-2X60-PCS
140.00	140.00	3	RRH-2x60-700U
140.00	140.00	1	DB-T1-6Z-8AB-0Z Box
82.00	82.00	1	GPS

### Linear Appurtenances

Elev From (ft)	Elev To (ft)	Qty	Description
152.00	176.00	4	1/2" Fiber
152.00	176.00	6	5/16" Fiber
152.00	176.00	1	5/16" RET
152.00	176.00	1	W/G Ladder
0.00	166.00	6	1 5/8" Coax
0.00	166.00	2	1/2" Fiber
0.00	166.00	1	3" Conduit
0.00	166.00	4	3/4" DC
0.00	162.00	1	W/G Ladder
0.00	152.00	1	1 1/4" Fiber
0.00	152.00	8	1 5/8" Coax
0.00	152.00	5	1 5/8" Fiber
0.00	152.00	1	W/G Ladder
0.00	140.00	12	1 5/8" Coax
0.00	140.00	2	1 5/8" Hybrid
0.00	140.00	1	1/2" Coax
0.00	82.00	1	1/2" Coax

### Base Reactions

Leg	Overtuning
Max Uplift: -222.81 (kips)	Moment: 4452.96 (ft-kips)
Max Down: 262.14 (kips)	Total Down: 51.88 (kips)
Max Shear: 25.44 (kips)	Total Shear: 40.71 (kips)

# Structure: CT04382-S-SBA

**Site Name:** New Britain 2, CT

**Code:** EIA/TIA-222-G

3/8/2021

**Type:** Self Support

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**Height:** 176.00 (ft)

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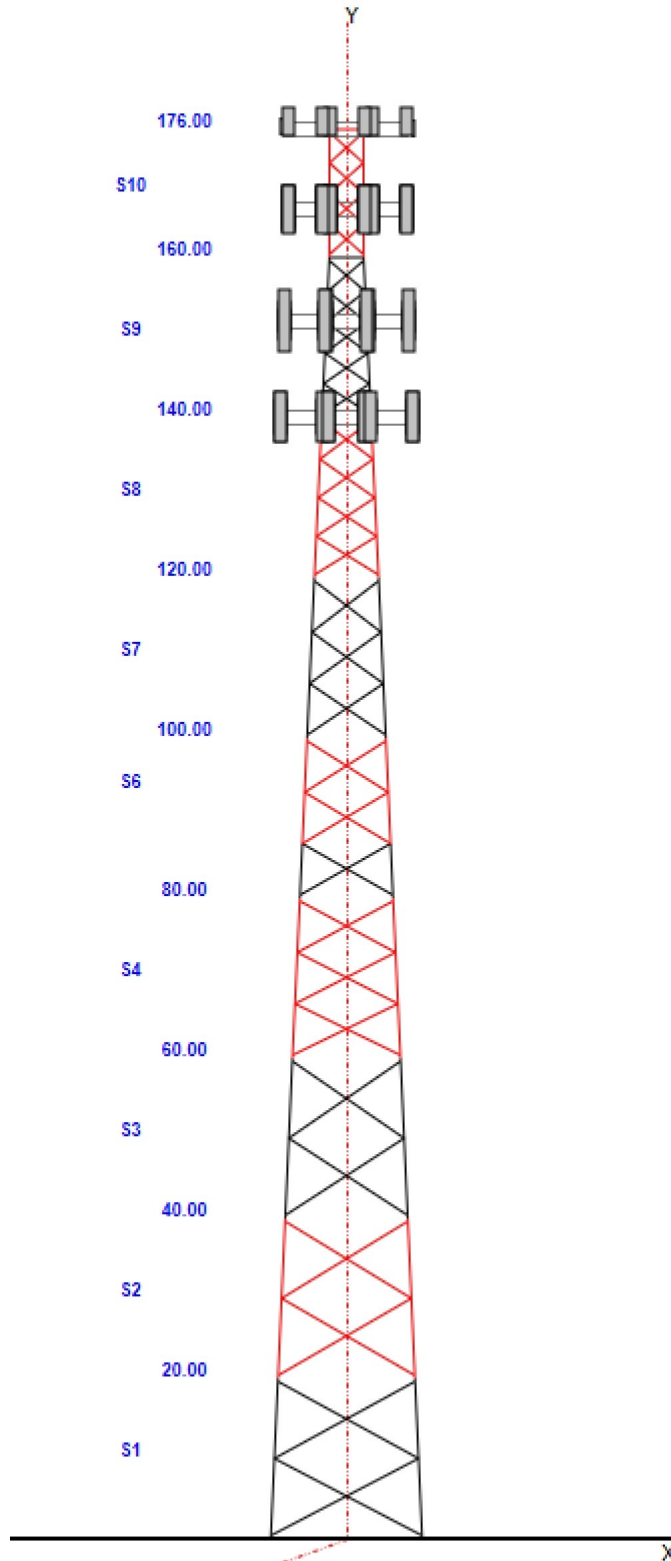
**Basic Ice WS:** 50.00

**Base Elev:** 0.00 (ft)

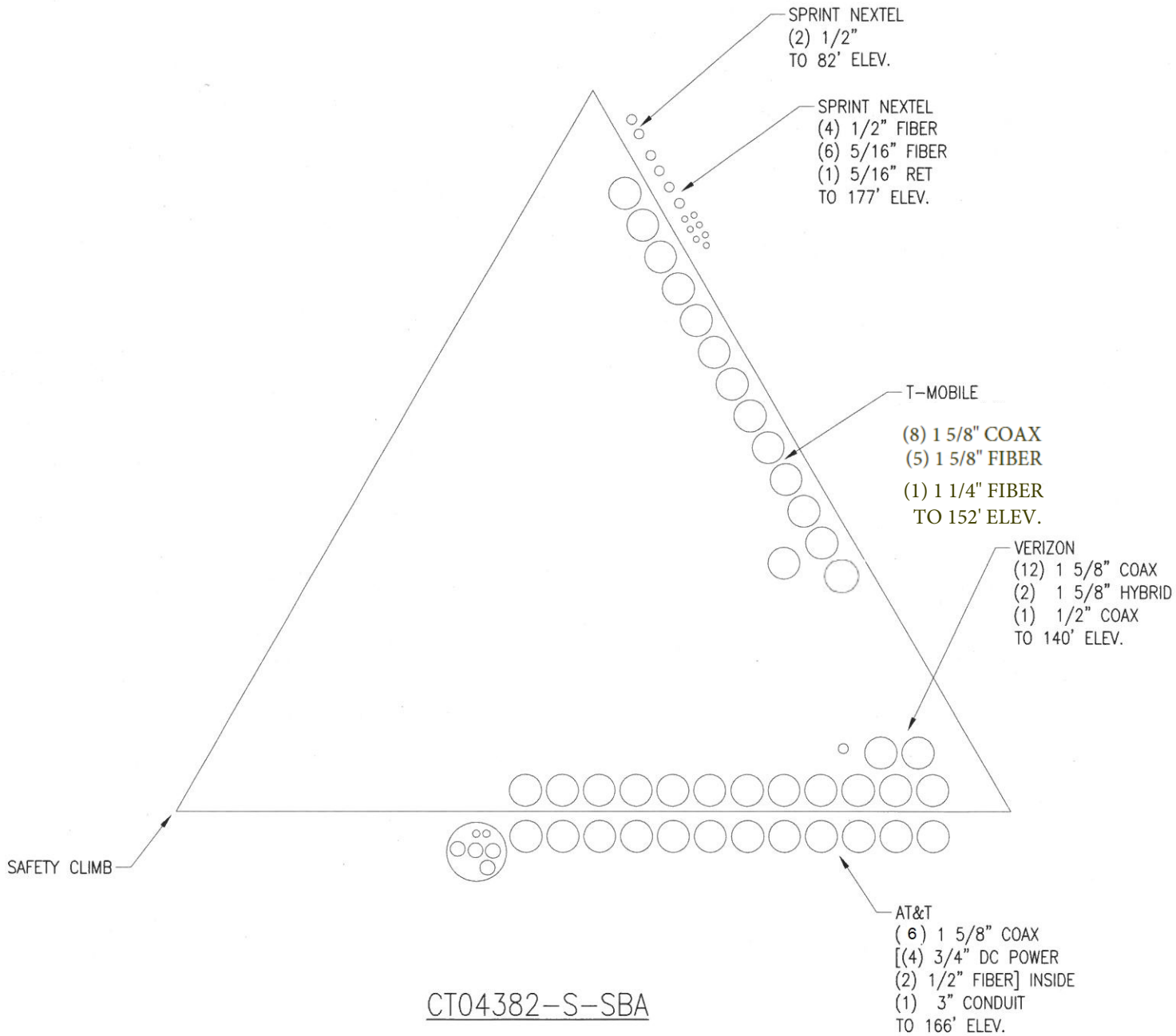
**Top Width:** 4.69

**Operational WS:** 60.00

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# Coax Layout



## Loading Summary

<b>Structure:</b> CT04382-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/8/2021
<b>Site Name:</b> New Britain 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 176.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Discrete Appurtenances Properties

Attach Elev (ft)	Description	Qty	No Ice		Ice		Len (in)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
			Weight (lb)	CaAa (sf)	Weight (lb)	CaAa (sf)						
176.00	Lightning Rod	1	5.00	0.500	33.24	2.853	72.000	1.000	1.000	1.00	1.00	3.000
176.00	Beacon	1	36.00	2.720	215.62	4.000	28.000	17.500	17.500	1.00	1.00	0.000
176.00	Light Sector Frame	3	500.00	17.500	1441.39	36.281	0.000	0.000	0.000	0.75	0.75	0.000
176.00	(3) SFS-H-L (V-Braces)	1	230.00	6.700	663.04	16.161	0.000	0.000	0.000	0.75	1.00	0.000
176.00	VHLP2.5	4	27.00	4.680	158.97	6.398	26.100	26.100	13.200	1.00	1.00	1.000
176.00	Horizon Duo	3	10.60	0.430	40.99	1.119	4.700	7.500	7.500	0.80	0.67	1.000
176.00	840 10054	3	30.00	4.590	143.64	6.846	42.000	12.700	2.800	0.80	0.68	1.000
176.00	U-RAS Flexible FRH	3	33.00	1.820	89.17	3.134	16.000	11.600	5.000	0.80	0.67	1.000
166.00	ION23 SDARS	3	15.00	3.230	160.56	4.314	32.000	12.000	7.000	0.80	0.67	0.000
166.00	CBC23SR-43	3	4.90	0.420	19.92	0.802	8.000	6.300	4.900	0.80	0.67	0.000
166.00	DC6-48-60-18-8C-EV	1	16.00	4.780	182.86	5.973	31.400	18.300	10.200	1.00	1.00	0.000
166.00	DC6-48-60-18-8C-EV	1	16.00	4.780	182.86	5.973	31.400	18.300	10.200	1.00	1.00	0.000
166.00	Commscope SFG22HDX	1	1599.0	51.900	3706.40	139.84	0.000	0.000	0.000	0.75	1.00	0.000
166.00	800-10121	3	44.10	5.150	198.99	7.991	54.500	10.300	5.900	0.80	0.79	0.000
166.00	QS66512-2	3	111.00	8.130	436.39	9.922	72.000	12.000	9.600	0.80	0.92	0.000
166.00	LGP21401	6	14.10	1.290	47.81	2.417	14.400	9.200	2.600	0.80	0.67	0.000
166.00	CCI TPX-070821	6	20.00	2.180	87.27	3.600	16.000	14.000	6.000	0.80	0.67	0.000
166.00	860 10025	6	1.20	0.180	9.29	0.691	7.600	2.400	2.000	0.80	0.67	0.000
166.00	RRUS 32 B2	6	53.00	2.740	181.79	3.750	27.200	12.100	7.000	0.80	0.67	0.000
166.00	RRUS 32 B66	3	53.00	2.740	181.79	3.750	27.200	12.100	7.000	0.80	0.67	0.000
166.00	RRUS 32	3	77.00	1.650	150.17	2.458	20.900	9.500	3.300	0.80	0.67	0.000
166.00	DC6-48-60-18-8F	2	31.80	0.920	115.17	1.511	24.000	11.000	11.000	0.80	0.67	0.000
166.00	DMP65R-BU6DA	3	79.40	12.710	476.60	14.684	71.200	20.700	7.700	0.80	0.72	0.000
166.00	Antennas OPA65R-BU6DA	3	79.40	12.710	476.60	14.684	71.200	20.700	7.700	0.80	0.72	0.000
166.00	4449 B5/B12	3	71.00	1.970	142.99	2.708	17.900	13.200	9.400	0.80	0.67	0.000
166.00	4478 B14	3	59.90	1.840	123.28	2.550	16.500	13.400	7.700	0.80	0.67	0.000
152.00	KRY 112 144/1	3	11.00	0.410	25.38	1.044	6.900	6.100	2.700	0.80	0.67	0.000
152.00	AIR32 KRD901146-1_B66A_B2A	3	132.20	6.510	393.25	8.098	57.000	12.900	8.700	0.80	0.87	0.000
152.00	APXVAARR24_43-U-NA20	3	128.00	20.240	709.08	22.805	95.900	24.000	7.800	0.80	0.70	0.000
152.00	AIR6449 B41	3	103.00	5.650	285.82	6.917	33.100	20.500	8.300	0.80	0.71	0.000
152.00	SDX1926Q-43	3	6.10	0.230	17.47	0.721	4.000	6.000	3.000	0.80	0.67	0.000
152.00	4449 B71 + B85	3	74.00	1.970	151.83	2.729	17.900	13.200	10.600	0.80	0.67	0.000
152.00	RRUS 4415 B25	3	46.00	1.640	100.80	2.327	15.000	13.200	5.400	0.80	0.67	0.000
152.00	Sector Frame	3	500.00	17.500	1430.78	36.069	0.000	0.000	0.000	0.75	0.75	0.000
140.00	GPS	1	10.00	1.000	48.54	1.936	12.000	9.000	6.000	1.00	1.00	0.000
140.00	Sector Frame-Pipe	3	450.00	14.000	912.45	23.249	0.000	0.000	0.000	0.75	0.75	0.000
140.00	SBNHH-1D65B	6	40.00	8.160	314.13	9.905	72.600	11.900	7.100	0.80	0.83	0.000
140.00	800 10735	3	28.70	8.620	230.29	12.504	76.100	11.900	3.900	0.80	0.66	0.000
140.00	BXA-80080-4CF	3	48.20	4.800	527.57	7.262	48.200	11.200	5.900	0.80	0.76	0.000
140.00	RRH-2X60-AWS	3	55.00	3.500	160.17	4.537	21.000	11.500	7.000	0.80	0.67	0.000
140.00	RRH-2X60-PCS	3	55.00	2.200	145.64	3.209	21.000	12.000	7.000	0.80	0.67	0.000
140.00	RRH-2x60-700U	3	19.50	1.510	78.90	2.203	21.600	12.000	9.000	0.80	0.67	0.000
140.00	DB-T1-6Z-8AB-OZ Box	1	18.90	4.800	178.05	7.002	24.000	24.000	10.000	1.00	1.00	0.000
82.00	GPS	1	10.00	1.000	46.86	1.895	12.000	9.000	6.000	1.00	1.00	0.000

<b>Totals:</b>	<b>129</b>	<b>11,357.30</b>	<b>37,721.17</b>	<b>Number of Appurtenances :</b>	<b>44</b>
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## Loading Summary

<b>Structure:</b> CT04382-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/8/2021
<b>Site Name:</b> New Britain 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 176.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Linear Appurtenances Properties

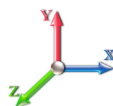
Elev. From (ft)	Elev. To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out of Zone	Spacing (in)	Orientation Factor	Ka Override
152.00	176.00	1/2" Fiber	4	0.50	0.16	50.00	3	Block		N	0.50	1.00	
152.00	176.00	5/16" Fiber	6	0.32	0.95	100.00	3	Individual IR		N	0.50	1.00	
152.00	176.00	5/16" RET	1	0.32	0.08	100.00	3	Individual NR		N	1.00	1.00	
152.00	176.00	W/G Ladder	1	2.00	6.00	100.00	3	Individual NR		N	0.50	1.00	
0.00	166.00	1 5/8" Coax	6	1.98	1.04	100.00	1	Individual IR		N	0.50	1.00	
0.00	166.00	1/2" Fiber	2	0.50	0.16	100.00	1	Individual IR		N	0.50	0.00	0
0.00	166.00	3" Conduit	1	3.02	1.78	100.00	1	Individual NR		N	0.50	1.00	
0.00	166.00	3/4" DC	4	0.75	0.40	50.00	1	Block		N	0.50	0.94	0
0.00	162.00	W/G Ladder	1	0.25	6.00	100.00	1	Individual NR		N	0.50	1.00	
0.00	152.00	1 1/4" Fiber	1	1.55	0.66	100.00	3	Individual NR		N	1.00	1.00	
0.00	152.00	1 5/8" Coax	8	1.98	1.04	100.00	3	Individual IR		N	0.50	1.00	
0.00	152.00	1 5/8" Fiber	5	2.00	1.10	100.00	3	Individual IR		N	0.50	1.00	
0.00	152.00	W/G Ladder	1	0.25	6.00	100.00	3	Individual NR		N	0.50	1.00	
0.00	140.00	1 5/8" Coax	12	1.98	1.04	100.00	1	Individual IR		N	0.50	1.00	0
0.00	140.00	1 5/8" Hybrid	2	2.00	1.10	100.00	1	Individual IR		N	0.50	1.00	0
0.00	140.00	1/2" Coax	1	0.65	0.16	100.00	1	Individual NR		N	1.00	1.00	
0.00	82.00	1/2" Coax	1	0.65	0.16	100.00	1	Individual NR		N	1.00	1.00	

## Section Forces

**Structure:** CT04382-S-SBA  
**Site Name:** New Britain 2, CT  
**Height:** 176.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** B  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

3/8/2021  
  
 Page: 7



**Load Case:** 1.2D + 1.6W Normal Wind

1.2D + 1.6W 97 mph Wind at Normal To Face

**Wind Load Factor:** 1.60  
**Dead Load Factor:** 1.20  
**Ice Dead Load Factor:** 0.00

**Wind Importance Factor:** 1.00  
**Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	28.639	28.80	0.00	0.14	2.81	1.00	1.00	0.00	41.32	123.08	0.00	6,476.0	0.0	2265.98	1050.78	3,316.76
2	30.0	14.34	22.974	28.80	0.00	0.14	2.81	1.00	1.00	0.00	35.64	123.08	0.00	6,071.0	0.0	1957.29	1051.66	3,008.95
3	50.0	16.60	20.940	28.80	0.00	0.15	2.78	1.00	1.00	0.00	33.15	123.08	0.00	5,178.9	0.0	2076.81	1216.92	3,293.73
4	70.0	18.27	22.213	22.12	0.00	0.15	2.76	1.00	1.00	0.00	32.88	123.08	0.00	4,920.6	0.0	2255.93	1339.72	3,595.64
5	83.4	19.21	0.000	17.99	0.00	0.20	2.59	1.00	1.00	0.00	9.80	41.54	0.00	1,747.2	0.0	663.12	473.43	1,136.54
6	93.4	19.84	10.586	14.61	0.00	0.16	2.74	1.00	1.00	0.00	17.51	80.57	0.00	2,759.2	0.0	1296.87	946.83	2,243.70
7	110.0	20.79	14.081	22.12	0.00	0.17	2.69	1.00	1.00	0.00	24.58	122.00	0.00	3,661.1	0.0	1868.66	1502.34	3,371.00
8	130.0	21.81	11.695	18.58	0.00	0.18	2.66	1.00	1.00	0.00	21.17	122.00	0.00	3,378.1	0.0	1669.70	1575.78	3,245.48
9	150.0	22.72	11.717	15.03	0.00	0.22	2.54	1.00	1.00	0.00	20.03	60.05	0.00	2,531.2	0.0	1573.00	1298.37	2,871.37
10	168.0	23.47	8.438	9.33	0.00	0.22	2.53	1.00	1.00	0.00	13.84	16.14	0.00	1,526.8	0.0	1115.49	401.42	1,516.91
														<b>38,249.9</b>	<b>0.0</b>			<b>27,600.10</b>

**Load Case:** 1.2D + 1.6W 60° Wind

1.2D + 1.6W 97 mph Wind at 60° From Face

**Wind Load Factor:** 1.60  
**Dead Load Factor:** 1.20  
**Ice Dead Load Factor:** 0.00

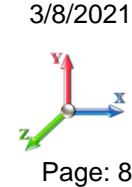
**Wind Importance Factor:** 1.00  
**Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	14.33	28.639	28.80	0.00	0.14	2.81	0.80	1.00	0.00	35.59	123.08	0.00	6,476.0	0.0	1951.84	1050.78	3,002.61
2	30.0	14.34	22.974	28.80	0.00	0.14	2.81	0.80	1.00	0.00	31.05	123.08	0.00	6,071.0	0.0	1704.98	1051.66	2,756.64
3	50.0	16.60	20.940	28.80	0.00	0.15	2.78	0.80	1.00	0.00	28.96	123.08	0.00	5,178.9	0.0	1814.40	1216.92	3,031.33
4	70.0	18.27	22.213	22.12	0.00	0.15	2.76	0.80	1.00	0.00	28.43	123.08	0.00	4,920.6	0.0	1951.08	1339.72	3,290.80
5	83.4	19.21	0.000	17.99	0.00	0.20	2.59	0.80	1.00	0.00	9.80	41.54	0.00	1,747.2	0.0	663.12	473.43	1,136.54
6	93.4	19.84	10.586	14.61	0.00	0.16	2.74	0.80	1.00	0.00	15.39	80.57	0.00	2,759.2	0.0	1140.05	946.83	2,086.88
7	110.0	20.79	14.081	22.12	0.00	0.17	2.69	0.80	1.00	0.00	21.76	122.00	0.00	3,661.1	0.0	1654.53	1502.34	3,156.87
8	130.0	21.81	11.695	18.58	0.00	0.18	2.66	0.80	1.00	0.00	18.83	122.00	0.00	3,378.1	0.0	1485.25	1575.78	3,061.03
9	150.0	22.72	11.717	15.03	0.00	0.22	2.54	0.80	1.00	0.00	17.69	60.05	0.00	2,531.2	0.0	1389.01	1298.37	2,687.38
10	168.0	23.47	8.438	9.33	0.00	0.22	2.53	0.80	1.00	0.00	12.15	16.14	0.00	1,526.8	0.0	979.45	401.42	1,380.87
														<b>38,249.9</b>	<b>0.0</b>			<b>25,590.95</b>



## Section Forces

<b>Structure:</b> CT04382-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/8/2021
<b>Site Name:</b> New Britain 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 176.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



<b>Load Case:</b> 1.2D + 1.6W 90° Wind	1.2D + 1.6W 97 mph Wind at 90° From Face
<b>Wind Load Factor:</b> 1.60	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 1.20	
<b>Ice Dead Load Factor:</b> 0.00	<b>Ice Importance Factor:</b> 1.00

Sect Seq	Wind Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1	10.0	14.33	28.639	28.80	0.00	0.14	2.81	0.85	1.00	0.00	37.02	123.08	0.00	6,476.0	0.0	2030.37	1050.78	3,081.15
2	30.0	14.34	22.974	28.80	0.00	0.14	2.81	0.85	1.00	0.00	32.20	123.08	0.00	6,071.0	0.0	1768.05	1051.66	2,819.72
3	50.0	16.60	20.940	28.80	0.00	0.15	2.78	0.85	1.00	0.00	30.00	123.08	0.00	5,178.9	0.0	1880.01	1216.92	3,096.93
4	70.0	18.27	22.213	22.12	0.00	0.15	2.76	0.85	1.00	0.00	29.55	123.08	0.00	4,920.6	0.0	2027.29	1339.72	3,367.01
5	83.4	19.21	0.000	17.99	0.00	0.20	2.59	0.85	1.00	0.00	9.80	41.54	0.00	1,747.2	0.0	663.12	473.43	1,136.54
6	93.4	19.84	10.586	14.61	0.00	0.16	2.74	0.85	1.00	0.00	15.92	80.57	0.00	2,759.2	0.0	1179.25	946.83	2,126.08
7	110.0	20.79	14.081	22.12	0.00	0.17	2.69	0.85	1.00	0.00	22.46	122.00	0.00	3,661.1	0.0	1708.07	1502.34	3,210.40
8	130.0	21.81	11.695	18.58	0.00	0.18	2.66	0.85	1.00	0.00	19.42	122.00	0.00	3,378.1	0.0	1531.36	1575.78	3,107.14
9	150.0	22.72	11.717	15.03	0.00	0.22	2.54	0.85	1.00	0.00	18.28	60.05	0.00	2,531.2	0.0	1435.01	1298.37	2,733.38
10	168.0	23.47	8.438	9.33	0.00	0.22	2.53	0.85	1.00	0.00	12.57	16.14	0.00	1,526.8	0.0	1013.46	401.42	1,414.88
													<b>38,249.9</b>	<b>0.0</b>	<b>26,093.24</b>			

<b>Load Case:</b> 0.9D + 1.6W Normal Wind	0.9D + 1.6W 97 mph Wind at Normal To Face
<b>Wind Load Factor:</b> 1.60	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 0.90	
<b>Ice Dead Load Factor:</b> 0.00	<b>Ice Importance Factor:</b> 1.00

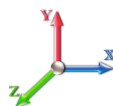
Sect Seq	Wind Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1	10.0	14.33	28.639	28.80	0.00	0.14	2.81	1.00	1.00	0.00	41.32	123.08	0.00	4,857.0	0.0	2265.98	1050.78	3,316.76
2	30.0	14.34	22.974	28.80	0.00	0.14	2.81	1.00	1.00	0.00	35.64	123.08	0.00	4,553.2	0.0	1957.29	1051.66	3,008.95
3	50.0	16.60	20.940	28.80	0.00	0.15	2.78	1.00	1.00	0.00	33.15	123.08	0.00	3,884.2	0.0	2076.81	1216.92	3,293.73
4	70.0	18.27	22.213	22.12	0.00	0.15	2.76	1.00	1.00	0.00	32.88	123.08	0.00	3,690.5	0.0	2255.93	1339.72	3,595.64
5	83.4	19.21	0.000	17.99	0.00	0.20	2.59	1.00	1.00	0.00	9.80	41.54	0.00	1,310.4	0.0	663.12	473.43	1,136.54
6	93.4	19.84	10.586	14.61	0.00	0.16	2.74	1.00	1.00	0.00	17.51	80.57	0.00	2,069.4	0.0	1296.87	946.83	2,243.70
7	110.0	20.79	14.081	22.12	0.00	0.17	2.69	1.00	1.00	0.00	24.58	122.00	0.00	2,745.8	0.0	1868.66	1502.34	3,371.00
8	130.0	21.81	11.695	18.58	0.00	0.18	2.66	1.00	1.00	0.00	21.17	122.00	0.00	2,533.5	0.0	1669.70	1575.78	3,245.48
9	150.0	22.72	11.717	15.03	0.00	0.22	2.54	1.00	1.00	0.00	20.03	60.05	0.00	1,898.4	0.0	1573.00	1298.37	2,871.37
10	168.0	23.47	8.438	9.33	0.00	0.22	2.53	1.00	1.00	0.00	13.84	16.14	0.00	1,145.1	0.0	1115.49	401.42	1,516.91
													<b>28,687.4</b>	<b>0.0</b>	<b>27,600.10</b>			

## Section Forces

**Structure:** CT04382-S-SBA  
**Site Name:** New Britain 2, CT  
**Height:** 176.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** B  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

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**Load Case:** 0.9D + 1.6W 60° Wind

0.9D + 1.6W 97 mph Wind at 60° From Face

**Wind Load Factor:** 1.60  
**Dead Load Factor:** 0.90  
**Ice Dead Load Factor:** 0.00

**Wind Importance Factor:** 1.00  
**Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1	10.0	14.33	28.639	28.80	0.00	0.14	2.81	0.80	1.00	0.00	35.59	123.08	0.00	4,857.0	0.0	1951.84	1050.78	3,002.61
2	30.0	14.34	22.974	28.80	0.00	0.14	2.81	0.80	1.00	0.00	31.05	123.08	0.00	4,553.2	0.0	1704.98	1051.66	2,756.64
3	50.0	16.60	20.940	28.80	0.00	0.15	2.78	0.80	1.00	0.00	28.96	123.08	0.00	3,884.2	0.0	1814.40	1216.92	3,031.33
4	70.0	18.27	22.213	22.12	0.00	0.15	2.76	0.80	1.00	0.00	28.43	123.08	0.00	3,690.5	0.0	1951.08	1339.72	3,290.80
5	83.4	19.21	0.000	17.99	0.00	0.20	2.59	0.80	1.00	0.00	9.80	41.54	0.00	1,310.4	0.0	663.12	473.43	1,136.54
6	93.4	19.84	10.586	14.61	0.00	0.16	2.74	0.80	1.00	0.00	15.39	80.57	0.00	2,069.4	0.0	1140.05	946.83	2,086.88
7	110.0	20.79	14.081	22.12	0.00	0.17	2.69	0.80	1.00	0.00	21.76	122.00	0.00	2,745.8	0.0	1654.53	1502.34	3,156.87
8	130.0	21.81	11.695	18.58	0.00	0.18	2.66	0.80	1.00	0.00	18.83	122.00	0.00	2,533.5	0.0	1485.25	1575.78	3,061.03
9	150.0	22.72	11.717	15.03	0.00	0.22	2.54	0.80	1.00	0.00	17.69	60.05	0.00	1,898.4	0.0	1389.01	1298.37	2,687.38
10	168.0	23.47	8.438	9.33	0.00	0.22	2.53	0.80	1.00	0.00	12.15	16.14	0.00	1,145.1	0.0	979.45	401.42	1,380.87
													<b>28,687.4</b>	<b>0.0</b>	<b>25,590.95</b>			

**Load Case:** 0.9D + 1.6W 90° Wind

0.9D + 1.6W 97 mph Wind at 90° From Face

**Wind Load Factor:** 1.60  
**Dead Load Factor:** 0.90  
**Ice Dead Load Factor:** 0.00

**Wind Importance Factor:** 1.00  
**Ice Importance Factor:** 1.00

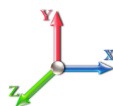
Sect Seq	Wind Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1	10.0	14.33	28.639	28.80	0.00	0.14	2.81	0.85	1.00	0.00	37.02	123.08	0.00	4,857.0	0.0	2030.37	1050.78	3,081.15
2	30.0	14.34	22.974	28.80	0.00	0.14	2.81	0.85	1.00	0.00	32.20	123.08	0.00	4,553.2	0.0	1768.05	1051.66	2,819.72
3	50.0	16.60	20.940	28.80	0.00	0.15	2.78	0.85	1.00	0.00	30.00	123.08	0.00	3,884.2	0.0	1880.01	1216.92	3,096.93
4	70.0	18.27	22.213	22.12	0.00	0.15	2.76	0.85	1.00	0.00	29.55	123.08	0.00	3,690.5	0.0	2027.29	1339.72	3,367.01
5	83.4	19.21	0.000	17.99	0.00	0.20	2.59	0.85	1.00	0.00	9.80	41.54	0.00	1,310.4	0.0	663.12	473.43	1,136.54
6	93.4	19.84	10.586	14.61	0.00	0.16	2.74	0.85	1.00	0.00	15.92	80.57	0.00	2,069.4	0.0	1179.25	946.83	2,126.08
7	110.0	20.79	14.081	22.12	0.00	0.17	2.69	0.85	1.00	0.00	22.46	122.00	0.00	2,745.8	0.0	1708.07	1502.34	3,210.40
8	130.0	21.81	11.695	18.58	0.00	0.18	2.66	0.85	1.00	0.00	19.42	122.00	0.00	2,533.5	0.0	1531.36	1575.78	3,107.14
9	150.0	22.72	11.717	15.03	0.00	0.22	2.54	0.85	1.00	0.00	18.28	60.05	0.00	1,898.4	0.0	1435.01	1298.37	2,733.38
10	168.0	23.47	8.438	9.33	0.00	0.22	2.53	0.85	1.00	0.00	12.57	16.14	0.00	1,145.1	0.0	1013.46	401.42	1,414.88
													<b>28,687.4</b>	<b>0.0</b>	<b>26,093.24</b>			

## Section Forces

**Structure:** CT04382-S-SBA  
**Site Name:** New Britain 2, CT  
**Height:** 176.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** B  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

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**Load Case:** 1.2D + 1.0Di + 1.0Wi Normal Wind

1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face

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

**Wind Importance Factor:** 1.00  
**Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	3.81	28.639	66.92	38.12	0.23	2.51	1.00	1.00	1.77	67.44	193.75	23.67	15,916.	9440.1	547.27	426.99	974.27
2	30.0	3.81	22.974	68.98	40.18	0.24	2.46	1.00	1.00	1.98	63.19	199.24	26.41	16,111.	10040.7	504.26	445.08	949.34
3	50.0	4.41	20.940	68.67	39.87	0.26	2.40	1.00	1.00	2.08	61.33	202.01	27.80	15,550.	10371.4	551.76	522.82	1,074.59
4	70.0	4.86	22.213	69.64	47.52	0.31	2.27	1.00	1.00	2.16	64.12	203.92	28.75	15,751.	10831.1	601.34	575.27	1,176.60
5	83.4	5.10	0.000	33.28	15.29	0.36	2.14	1.00	1.00	2.19	20.93	69.33	8.18	5,706.6	3959.4	194.52	196.56	391.08
6	93.4	5.27	10.586	44.01	29.40	0.33	2.22	1.00	1.00	2.22	37.39	135.06	14.66	9,461.7	6702.5	371.55	394.60	766.16
7	110.0	5.52	14.081	63.84	41.72	0.36	2.15	1.00	1.00	2.26	53.64	205.49	22.56	13,661.	10000.4	541.57	625.41	1,166.99
8	130.0	5.79	11.695	62.14	43.57	0.42	2.02	1.00	1.00	2.29	51.88	206.50	22.94	13,132.	9754.0	516.06	627.85	1,143.91
9	150.0	6.04	11.717	59.43	44.41	0.54	1.85	1.00	1.00	2.33	53.84	117.92	15.51	9,787.0	7255.8	511.33	436.57	947.91
10	168.0	6.23	8.438	42.77	33.44	0.59	1.81	1.00	1.00	2.35	40.03	45.05	8.63	5,543.8	4017.0	383.85	167.24	551.09
														<b>120,622.2</b>	<b>82372.3</b>			<b>9,141.92</b>

**Load Case:** 1.2D + 1.0Di + 1.0Wi 60° Wind

1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face

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

**Wind Importance Factor:** 1.00  
**Ice Importance Factor:** 1.00

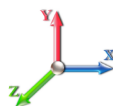
Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	10.0	3.81	28.639	66.92	38.12	0.23	2.51	0.80	1.00	1.77	61.71	193.75	23.67	15,916.	9440.1	500.79	426.99	927.79
2	30.0	3.81	22.974	68.98	40.18	0.24	2.46	0.80	1.00	1.98	58.59	199.24	26.41	16,111.	10040.7	467.60	445.08	912.67
3	50.0	4.41	20.940	68.67	39.87	0.26	2.40	0.80	1.00	2.08	57.14	202.01	27.80	15,550.	10371.4	514.09	522.82	1,036.91
4	70.0	4.86	22.213	69.64	47.52	0.31	2.27	0.80	1.00	2.16	59.68	203.92	28.75	15,751.	10831.1	559.67	575.27	1,134.94
5	83.4	5.10	0.000	33.28	15.29	0.36	2.14	0.80	1.00	2.19	20.93	69.33	8.18	5,706.6	3959.4	194.52	196.56	391.08
6	93.4	5.27	10.586	44.01	29.40	0.33	2.22	0.80	1.00	2.22	35.27	135.06	14.66	9,461.7	6702.5	350.51	394.60	745.12
7	110.0	5.52	14.081	63.84	41.72	0.36	2.15	0.80	1.00	2.26	50.82	205.49	22.56	13,661.	10000.4	513.14	625.41	1,138.55
8	130.0	5.79	11.695	62.14	43.57	0.42	2.02	0.80	1.00	2.29	49.54	206.50	22.94	13,132.	9754.0	492.79	627.85	1,120.65
9	150.0	6.04	11.717	59.43	44.41	0.54	1.85	0.80	1.00	2.33	51.50	117.92	15.51	9,787.0	7255.8	489.07	436.57	925.65
10	168.0	6.23	8.438	42.77	33.44	0.59	1.81	0.80	1.00	2.35	38.34	45.05	8.63	5,543.8	4017.0	367.67	167.24	534.90
														<b>120,622.2</b>	<b>82372.3</b>			<b>8,868.25</b>

## Section Forces

**Structure:** CT04382-S-SBA  
**Site Name:** New Britain 2, CT  
**Height:** 176.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** B  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

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**Load Case:** 1.2D + 1.0Di + 1.0Wi 90° Wind

1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face

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

**Wind Importance Factor:** 1.00  
**Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1	10.0	3.81	28.639	66.92	38.12	0.23	2.51	0.85	1.00	1.77	63.14	193.75	23.67	15,916.	9440.1	512.41	426.99	939.41
2	30.0	3.81	22.974	68.98	40.18	0.24	2.46	0.85	1.00	1.98	59.74	199.24	26.41	16,111.	10040.7	476.76	445.08	921.84
3	50.0	4.41	20.940	68.67	39.87	0.26	2.40	0.85	1.00	2.08	58.19	202.01	27.80	15,550.	10371.4	523.51	522.82	1,046.33
4	70.0	4.86	22.213	69.64	47.52	0.31	2.27	0.85	1.00	2.16	60.79	203.92	28.75	15,751.	10831.1	570.09	575.27	1,145.36
5	83.4	5.10	0.000	33.28	15.29	0.36	2.14	0.85	1.00	2.19	20.93	69.33	8.18	5,706.6	3959.4	194.52	196.56	391.08
6	93.4	5.27	10.586	44.01	29.40	0.33	2.22	0.85	1.00	2.22	35.80	135.06	14.66	9,461.7	6702.5	355.77	394.60	750.38
7	110.0	5.52	14.081	63.84	41.72	0.36	2.15	0.85	1.00	2.26	51.52	205.49	22.56	13,661.	10000.4	520.25	625.41	1,145.66
8	130.0	5.79	11.695	62.14	43.57	0.42	2.02	0.85	1.00	2.29	50.12	206.50	22.94	13,132.	9754.0	498.61	627.85	1,126.46
9	150.0	6.04	11.717	59.43	44.41	0.54	1.85	0.85	1.00	2.33	52.08	117.92	15.51	9,787.0	7255.8	494.64	436.57	931.21
10	168.0	6.23	8.438	42.77	33.44	0.59	1.81	0.85	1.00	2.35	38.77	45.05	8.63	5,543.8	4017.0	371.71	167.24	538.95
													<b>120,622.2</b>	<b>82372.3</b>			<b>8,936.67</b>	

**Load Case:** 1.0D + 1.0W Normal Wind

1.0D + 1.0W 60 mph Wind at Normal To Face

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

**Wind Importance Factor:** 1.00  
**Ice Importance Factor:** 1.00

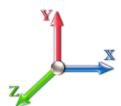
Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1	10.0	5.48	28.639	28.80	0.00	0.14	2.81	1.00	1.00	0.00	44.39	123.08	0.00	5,396.6	0.0	582.18	251.28	833.45
2	30.0	5.49	22.974	28.80	0.00	0.14	2.81	1.00	1.00	0.00	38.72	123.08	0.00	5,059.2	0.0	508.45	251.49	759.94
3	50.0	6.35	20.940	28.80	0.00	0.15	2.78	1.00	1.00	0.00	36.36	123.08	0.00	4,315.7	0.0	544.84	291.01	835.85
4	70.0	6.99	22.213	22.12	0.00	0.15	2.76	1.00	1.00	0.00	34.78	123.08	0.00	4,100.5	0.0	570.61	320.37	890.98
5	83.4	7.35	0.000	17.99	0.00	0.20	2.59	1.00	1.00	0.00	10.58	41.54	0.00	1,456.0	0.0	171.24	113.21	284.46
6	93.4	7.59	10.586	14.61	0.00	0.16	2.74	1.00	1.00	0.00	18.85	80.57	0.00	2,299.3	0.0	333.85	226.42	560.27
7	110.0	7.96	14.081	22.12	0.00	0.17	2.69	1.00	1.00	0.00	26.56	122.00	0.00	3,050.9	0.0	482.97	359.26	842.23
8	130.0	8.34	11.695	18.58	0.00	0.18	2.66	1.00	1.00	0.00	22.31	122.00	0.00	2,815.0	0.0	420.75	376.82	797.57
9	150.0	8.69	11.717	15.03	0.00	0.22	2.54	1.00	1.00	0.00	20.40	60.05	0.00	2,109.3	0.0	382.96	310.48	693.44
10	168.0	8.98	8.438	9.33	0.00	0.22	2.53	1.00	1.00	0.00	13.84	16.14	0.00	1,272.4	0.0	266.75	95.99	362.74
													<b>31,874.9</b>	<b>0.0</b>			<b>6,860.93</b>	

## Section Forces

**Structure:** CT04382-S-SBA  
**Site Name:** New Britain 2, CT  
**Height:** 176.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** B  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

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<b>Load Case:</b> 1.0D + 1.0W 60° Wind	1.0D + 1.0W 60 mph Wind at 60° From Face
<b>Wind Load Factor:</b> 1.00	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 1.00	
<b>Ice Dead Load Factor:</b> 0.00	<b>Ice Importance Factor:</b> 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total		Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)								Linear Area (sqft)	Linear Area (sqft)					
1	10.0	5.48	28.639	28.80	0.00	0.14	2.81	0.80	1.00	0.00	38.66	123.08	0.00	5,396.6	0.0	507.05	251.28	758.33
2	30.0	5.49	22.974	28.80	0.00	0.14	2.81	0.80	1.00	0.00	34.13	123.08	0.00	5,059.2	0.0	448.12	251.49	699.61
3	50.0	6.35	20.940	28.80	0.00	0.15	2.78	0.80	1.00	0.00	32.17	123.08	0.00	4,315.7	0.0	482.09	291.01	773.10
4	70.0	6.99	22.213	22.12	0.00	0.15	2.76	0.80	1.00	0.00	30.33	123.08	0.00	4,100.5	0.0	497.72	320.37	818.09
5	83.4	7.35	0.000	17.99	0.00	0.20	2.59	0.80	1.00	0.00	10.58	41.54	0.00	1,456.0	0.0	171.24	113.21	284.46
6	93.4	7.59	10.586	14.61	0.00	0.16	2.74	0.80	1.00	0.00	16.73	80.57	0.00	2,299.3	0.0	296.35	226.42	522.76
7	110.0	7.96	14.081	22.12	0.00	0.17	2.69	0.80	1.00	0.00	23.75	122.00	0.00	3,050.9	0.0	431.76	359.26	791.02
8	130.0	8.34	11.695	18.58	0.00	0.18	2.66	0.80	1.00	0.00	19.97	122.00	0.00	2,815.0	0.0	376.64	376.82	753.46
9	150.0	8.69	11.717	15.03	0.00	0.22	2.54	0.80	1.00	0.00	18.05	60.05	0.00	2,109.3	0.0	338.96	310.48	649.44
10	168.0	8.98	8.438	9.33	0.00	0.22	2.53	0.80	1.00	0.00	12.15	16.14	0.00	1,272.4	0.0	234.22	95.99	330.21
														<b>31,874.9</b>	<b>0.0</b>			

<b>Load Case:</b> 1.0D + 1.0W 90° Wind	1.0D + 1.0W 60 mph Wind at 90° From Face
<b>Wind Load Factor:</b> 1.00	<b>Wind Importance Factor:</b> 1.00
<b>Dead Load Factor:</b> 1.00	
<b>Ice Dead Load Factor:</b> 0.00	<b>Ice Importance Factor:</b> 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total		Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)								Linear Area (sqft)	Linear Area (sqft)					
1	10.0	5.48	28.639	28.80	0.00	0.14	2.81	0.85	1.00	0.00	40.09	123.08	0.00	5,396.6	0.0	525.83	251.28	777.11
2	30.0	5.49	22.974	28.80	0.00	0.14	2.81	0.85	1.00	0.00	35.27	123.08	0.00	5,059.2	0.0	463.20	251.49	714.69
3	50.0	6.35	20.940	28.80	0.00	0.15	2.78	0.85	1.00	0.00	33.22	123.08	0.00	4,315.7	0.0	497.78	291.01	788.79
4	70.0	6.99	22.213	22.12	0.00	0.15	2.76	0.85	1.00	0.00	31.44	123.08	0.00	4,100.5	0.0	515.94	320.37	836.31
5	83.4	7.35	0.000	17.99	0.00	0.20	2.59	0.85	1.00	0.00	10.58	41.54	0.00	1,456.0	0.0	171.24	113.21	284.46
6	93.4	7.59	10.586	14.61	0.00	0.16	2.74	0.85	1.00	0.00	17.26	80.57	0.00	2,299.3	0.0	305.72	226.42	532.14
7	110.0	7.96	14.081	22.12	0.00	0.17	2.69	0.85	1.00	0.00	24.45	122.00	0.00	3,050.9	0.0	444.57	359.26	803.82
8	130.0	8.34	11.695	18.58	0.00	0.18	2.66	0.85	1.00	0.00	20.56	122.00	0.00	2,815.0	0.0	387.67	376.82	764.49
9	150.0	8.69	11.717	15.03	0.00	0.22	2.54	0.85	1.00	0.00	18.64	60.05	0.00	2,109.3	0.0	349.96	310.48	660.44
10	168.0	8.98	8.438	9.33	0.00	0.22	2.53	0.85	1.00	0.00	12.57	16.14	0.00	1,272.4	0.0	242.35	95.99	338.34
														<b>31,874.9</b>	<b>0.0</b>			

## Force/Stress Compression Summary

**Structure:** CT04382-S-SBA  
**Site Name:** New Britain 2, CT  
**Height:** 176.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** B  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

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### LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
						X	Y	Z				
1	20	PX - 8" DIA PIPE	-256.40	1.2D + 1.6W Normal Wind	9.64	100	100	100	40.20	50.00	510.21	50.3 Member X
2	40	PX - 8" DIA PIPE	-233.06	1.2D + 1.6W Normal Wind	9.64	100	100	100	40.20	50.00	510.21	45.7 Member X
3	60	PSP - ROHN 8 EHS	-207.85	1.2D + 1.6W Normal Wind	9.64	100	100	100	39.62	50.00	389.96	53.3 Member X
4	80	PX - 6" DIA PIPE	-183.72	1.2D + 1.6W Normal Wind	6.43	100	100	100	35.22	50.00	345.22	53.2 Member X
5	86.79	PX - 5" DIA PIPE	-156.49	1.2D + 1.6W Normal Wind	6.43	100	100	100	35.22	50.00	345.22	45.3 Member X
6	100	PX - 6" DIA PIPE	-147.36	1.2D + 1.6W Normal Wind	6.43	100	100	100	35.22	50.00	345.23	42.7 Member X
7	120	PSP - ROHN 6 EHS	-126.34	1.2D + 1.6W Normal Wind	6.43	100	100	100	34.66	50.00	276.68	45.7 Member X
8	140	PX - 5" DIA PIPE	-94.28	1.2D + 1.6W Normal Wind	4.82	100	100	100	31.44	50.00	255.78	36.9 Member X
9	160	PX - 4" DIA PIPE	-59.11	1.2D + 1.6W Normal Wind	0.38	100	100	100	3.05	50.00	198.32	29.8 Member X
10	176	PX - 3" DIA PIPE	-20.13	1.2D + 1.6W Normal Wind	0.38	100	100	100	3.95	50.00	135.75	14.8 Member X

### Splices

Sect	Top Elev	Load Case	Top Splice				Load Case	Bottom Splice				
			Force (kips)	Cap (kips)	Use %	Bolt Type		Num Bolts	Force (kips)	Cap (kips)	Use %	Bolt Type
1	20	1.2D + 1.6W Normal Wind	240.27	0.00	0.0		1.2D + 1.6W Normal Wind	262.73	0.00			
2	40	1.2D + 1.6W Normal Wind	215.30	0.00	0.0		1.2D + 1.6W Normal Wind	240.27	0.00		1 A325	8
3	60	1.2D + 1.6W Normal Wind	188.96	0.00	0.0		1.2D + 1.6W Normal Wind	215.30	0.00		1 A325	8
4	80	1.2D + 1.6W Normal Wind	162.38	0.00	0.0		1.2D + 1.6W Normal Wind	188.96	0.00		1 A325	8
5	86.79	1.2D + 1.6W Normal Wind	151.52	0.00	0.0		1.2D + 1.6W Normal Wind	162.38	0.00		1 A325	6
6	100	1.2D + 1.6W Normal Wind	132.51	0.00	0.0		1.2D + 1.6W Normal Wind	151.52	0.00		1 A325	6
7	120	1.2D + 1.6W Normal Wind	99.41	0.00	0.0		1.2D + 1.6W Normal Wind	132.51	0.00		1 A325	6
8	140	1.2D + 1.6W Normal Wind	60.25	0.00	0.0		1.2D + 1.6W Normal Wind	99.41	0.00		1 A325	6
9	160	1.2D + 1.6W Normal Wind	20.47	0.00	0.0		1.2D + 1.6W Normal Wind	60.25	0.00		1 A325	4
10	176	1.2D + 1.0Di + 1.0Wi Normal Wi	2.46	0.00	0.0		1.2D + 1.6W Normal Wind	20.47	0.00		7/8 A325	4

### HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Bear		Use %	Controls
						X	Y	Z					Cap (kips)	Cap (kips)		
1	20								0.00	0	0					
2	40								0.00	0	0					
3	60								0.00	0	0					
4	80								0.00	0	0					
5	86.7								0.00	0	0					
6	100								0.00	0	0					
7	120								0.00	0	0					
8	140								0.00	0	0					
9	160	SAE - 2X2X0.1875	-0.29	1.2D + 1.6W Normal Wind	4.76	100	100	100	144.97	36.00	7.63	1	1	12.43	7.84	4 Member Z
10	176	SAE - 2X2X0.25	-0.27	1.2D + 1.6W 60° Wind	4.69	100	100	100	143.88	36.00	10.26	1	1	12.43	10.45	3 Member Z

### DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Bear		Use %	Controls
						X	Y	Z					Cap (kips)	Cap (kips)		
1	20	SAE - 4X4X0.25	-7.09	0.9D + 1.6W 90° Wind	21.76	50	50	50	164.26	36.00	16.24	1	1	17.89	12.6	56 Bolt Bear
2	40	SAE - 3.5X3.5X0.25	-6.73	1.2D + 1.6W 90° Wind	20.84	50	50	50	180.15	36.00	11.76	1	1	17.89	12.6	57 Member Z
3	60	SAE - 3.5X3.5X0.25	-6.75	1.2D + 1.6W 90° Wind	18.25	50	50	50	157.82	36.00	15.33	1	1	17.89	12.6	54 Bolt Bear
4	80	SAE - 3X3X0.25	-5.80	1.2D + 1.6W 90° Wind	14.76	50	50	50	149.57	36.00	14.54	1	1	17.89	12.6	46 Bolt Bear
5	86.7	MOD - 2L2.5x2.5x3/16	-5.82	1.2D + 1.6W 90° Wind	14.10	50	50	8	113.59	36.00	29.91	1	1	12.43		47 Bolt Shear
6	100	SAE - 2.5X2.5X0.1875	-5.93	1.2D + 1.6W 90° Wind	12.97	50	50	50	157.27	36.00	8.24	1	1	12.43	7.84	76 Bolt Bear

## Force/Stress Compression Summary

<b>Structure:</b> CT04382-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/8/2021
<b>Site Name:</b> New Britain 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 176.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing %			KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap		Bear Cap (kips)	Use %	Controls
						X	Y	Z						(kips)	(kips)			
7	120	SAE - 2.5X2.5X0.1875	-5.97	1.2D + 1.6W 90° Wind	11.28	50	50	50	136.73	36.00	10.90	1	1	12.43	7.84	76	Bolt Bear	
8	140	SAE - 2X2X0.1875	-5.81	1.2D + 1.6W 90° Wind	8.60	50	50	50	130.93	36.00	9.33	1	1	12.43	7.84	74	Bolt Bear	
9	160	SAE - 2X2X0.1875	-4.23	1.2D + 1.6W 90° Wind	7.64	50	50	50	117.23	36.00	11.16	1	1	12.43	7.84	54	Bolt Bear	
10	176	SAE - 2X2X0.25	-3.97	1.2D + 1.6W 90° Wind	6.09	50	50	50	100.10	36.00	17.97	1	1	12.43	10.4	38	Bolt Bear	

## Force/Stress Tension Summary

**Structure:** CT04382-S-SBA  
**Site Name:** New Britain 2, CT  
**Height:** 176.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Code:** EIA/TIA-222-G  
**Exposure:** B  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II  
**Topography:** 1

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### LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	20	PX - 8" DIA PIPE	224.05	0.9D + 1.6W 60° Wind	50	574.20	39.0	Member
2	40	PX - 8" DIA PIPE	205.49	0.9D + 1.6W 60° Wind	50	574.20	35.8	Member
3	60	PSP - ROHN 8 EHS	185.27	0.9D + 1.6W 60° Wind	50	437.40	42.4	Member
4	80	PX - 6" DIA PIPE	163.28	0.9D + 1.6W 60° Wind	50	378.00	43.2	Member
5	86.792	PX - 6" DIA PIPE	140.71	0.9D + 1.6W 60° Wind	50	378.00	37.2	Member
6	100	PX - 6" DIA PIPE	127.66	0.9D + 1.6W 60° Wind	50	378.00	33.8	Member
7	120	PSP - ROHN 6 EHS	114.62	0.9D + 1.6W 60° Wind	50	302.09	37.9	Member
8	140	PX - 5" DIA PIPE	84.73	0.9D + 1.6W 60° Wind	50	274.95	30.8	Member
9	160	PX - 4" DIA PIPE	49.05	0.9D + 1.6W 60° Wind	50	198.45	24.7	Member
10	176	PX - 3" DIA PIPE	14.33	0.9D + 1.6W 60° Wind	50	135.90	10.5	Member

### Splices

Sect	Top Elev	Top Splice					Bottom Splice						
		Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts	Load Case	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts
1	20	0.9D + 1.6W 60° Wind	205.18	0.00	0.0		0.9D + 1.6W 60° Wind	224.0	0.00				
2	40	0.9D + 1.6W 60° Wind	184.90	0.00	0.0		0.9D + 1.6W 60° Wind	205.1	424.08	48.4	1 A325	8	
3	60	0.9D + 1.6W 60° Wind	162.96	0.00	0.0		0.9D + 1.6W 60° Wind	184.9	424.08	43.6	1 A325	8	
4	80	0.9D + 1.6W 60° Wind	140.50	0.00	0.0		0.9D + 1.6W 60° Wind	162.9	424.08	38.4	1 A325	8	
5	86.792	0.9D + 1.6W 60° Wind	131.08	0.00	0.0		0.9D + 1.6W 60° Wind	140.5	318.06	44.2	1 A325	6	
6	100	0.9D + 1.6W 60° Wind	114.40	0.00	0.0		0.9D + 1.6W 60° Wind	131.0	318.06	41.2	1 A325	6	
7	120	0.9D + 1.6W 60° Wind	84.54	0.00	0.0		0.9D + 1.6W 60° Wind	114.4	318.06	36.0	1 A325	6	
8	140	0.9D + 1.6W 60° Wind	48.32	0.00	0.0		0.9D + 1.6W 60° Wind	84.54	318.06	26.6	1 A325	6	
9	160	0.9D + 1.6W 60° Wind	14.45	0.00	0.0		0.9D + 1.6W 60° Wind	48.32	212.04	22.8	1 A325	4	
10	176		0.00	0.00	0.0		0.9D + 1.6W 60° Wind	14.45	166.24	8.7	7/8 A325	4	

### HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	-			36	0.00	0	0					
2	40	-			36	0.00	0	0					
3	60	-			36	0.00	0	0					
4	80	-			36	0.00	0	0					
5	86.792	-			36	0.00	0	0					
6	100	-			36	0.00	0	0					
7	120	-			36	0.00	0	0					
8	140	-			36	0.00	0	0					
9	160	SAE - 2X2X0.1875	0.30	1.2D + 1.6W 60° Wind	36	23.00	1	1	12.43	7.84	7.85	3.9	Bolt Bear
10	176	SAE - 2X2X0.25	0.40	0.9D + 1.6W Normal Wi	36	30.46	1	1	12.43	10.45	10.47	3.8	Bolt Bear

### DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	SAE - 4X4X0.25	6.97	0.9D + 1.6W 90° Wind	36	62.86	1	1	17.89	12.62	26.92	55.3	Bolt Bear
2	40	SAE - 3.5X3.5X0.25	6.74	0.9D + 1.6W 90° Wind	36	54.76	1	1	17.89	12.62	21.48	53.4	Bolt Bear
3	60	SAE - 3.5X3.5X0.25	6.57	0.9D + 1.6W 90° Wind	36	54.76	1	1	17.89	12.62	21.48	52.1	Bolt Bear
4	80	SAE - 3X3X0.25	5.69	0.9D + 1.6W 90° Wind	36	46.66	1	1	17.89	12.62	16.04	45.1	Bolt Bear
5	86.792	MOD - 2L2.5x2.5x3/16_Spec	5.70	0.9D + 1.6W 90° Wind	36	59.00	1	1	12.43			45.9	Bolt Shear
6	100	SAE - 2.5X2.5X0.1875	5.82	1.2D + 1.6W 90° Wind	36	29.22	1	1	12.43	7.84	9.89	74.3	Bolt Bear
7	120	SAE - 2.5X2.5X0.1875	5.84	1.2D + 1.6W 90° Wind	36	29.22	1	1	12.43	7.84	9.89	74.5	Bolt Bear



## Force/Stress Tension Summary

<b>Structure:</b> CT04382-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/8/2021
<b>Site Name:</b> New Britain 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 176.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II

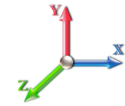


### DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
8	140	SAE - 2X2X0.1875	5.72	1.2D + 1.6W 90° Wind	36	23.00	1	1	12.43	7.84	7.85	73.1	Bolt Bear
9	160	SAE - 2X2X0.1875	4.18	1.2D + 1.6W 90° Wind	36	23.00	1	1	12.43	7.84	7.85	53.4	Bolt Bear
10	176	SAE - 2X2X0.25	3.84	0.9D + 1.6W 90° Wind	36	30.46	1	1	12.43	10.45	10.47	36.8	Bolt Bear

## Seismic Section Forces

<b>Structure:</b> CT04382-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/8/2021
<b>Site Name:</b> New Britain 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 176.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case: 1.2D + 1.0E**

<b>Dead Load Factor</b>	1.20	<b>Sds</b> 0.195	<b>Ss</b> 0.1830	<b>Fa</b> 1.6000	<b>Ke</b> 0.0000
<b>Seismic Load Factor</b>	1.00	<b>Sd1</b> 0.102	<b>S1</b> 0.0640	<b>Fv</b> 2.4000	<b>Kg</b> 0.0000
<b>Seismic Importance Factor</b>	1.00	<b>SA</b> 0.172	<b>R</b> 3.0000	<b>Vs</b> 2.9769	<b>f1</b> 1.6803

Sect #	Elev (ft)	Wz (lb)	Lateral			Fsz (lb)
			a	b	c	
1	10.00	5396.6	0.01	0.05	0.03	20.49
2	30.00	5059.1	0.05	0.07	0.04	41.52
3	50.00	4315.7	0.15	0.07	0.03	58.24
4	70.00	4100.5	0.30	0.05	0.01	83.47
5	83.40	1465.9	0.42	0.01	0.01	36.66
6	93.40	2299.3	0.53	-0.03	0.01	65.11
7	110.00	3050.8	0.74	-0.10	0.04	104.67
8	130.00	5053.1	1.03	-0.10	0.15	239.64
9	150.00	5110.2	1.37	0.23	0.40	398.23
10	168.00	7380.6	1.72	1.21	0.85	959.27

**Load Case: 0.9D + 1.0E**

<b>Dead Load Factor</b>	0.90	<b>Sds</b> 0.195	<b>Ss</b> 0.1830	<b>Fa</b> 1.6000	<b>Ke</b> 0.0000
<b>Seismic Load Factor</b>	1.00	<b>Sd1</b> 0.102	<b>S1</b> 0.0640	<b>Fv</b> 2.4000	<b>Kg</b> 0.0000
<b>Seismic Importance Factor</b>	1.00	<b>SA</b> 0.172	<b>R</b> 3.0000	<b>Vs</b> 2.9769	<b>f1</b> 1.6803

Sect #	Elev (ft)	Wz (lb)	Lateral			Fsz (lb)
			a	b	c	
1	10.00	5396.6	0.01	0.05	0.03	20.49
2	30.00	5059.1	0.05	0.07	0.04	41.52
3	50.00	4315.7	0.15	0.07	0.03	58.24
4	70.00	4100.5	0.30	0.05	0.01	83.47
5	83.40	1465.9	0.42	0.01	0.01	36.66
6	93.40	2299.3	0.53	-0.03	0.01	65.11
7	110.00	3050.8	0.74	-0.10	0.04	104.67
8	130.00	5053.1	1.03	-0.10	0.15	239.64
9	150.00	5110.2	1.37	0.23	0.40	398.23
10	168.00	7380.6	1.72	1.21	0.85	959.27

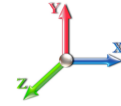
## Support Forces Summary

**Structure:** CT04382-S-SBA  
**Site Name:** New Britain 2, CT  
**Height:** 176.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 0.85

**Topography:** 1

**Code:** EIA/TIA-222-G  
**Exposure:** B  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

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Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal Wind	1	-0.01	262.14	-25.44	
	1a	8.48	-105.14	-7.63	
	1b	-8.47	-105.13	-7.64	
1.2D + 1.6W 60° Wind	1	-2.16	135.38	-12.71	
	1a	-12.09	135.29	4.49	
	1b	-19.29	-218.79	-11.14	
1.2D + 1.6W 90° Wind	1	-2.56	17.29	-1.07	
	1a	-19.22	223.63	9.64	
	1b	-17.44	-189.04	-8.57	
0.9D + 1.6W Normal Wind	1	-0.01	257.50	-25.16	
	1a	8.71	-109.30	-7.77	
	1b	-8.70	-109.29	-7.78	
0.9D + 1.6W 60° Wind	1	-2.16	130.90	-12.43	
	1a	-11.85	130.82	4.35	
	1b	-19.53	-222.81	-11.28	
0.9D + 1.6W 90° Wind	1	-2.57	12.97	-0.80	
	1a	-18.98	219.04	9.50	
	1b	-17.68	-193.10	-8.70	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.00	127.61	-7.62	
	1a	2.87	14.19	-2.49	
	1b	-2.87	14.23	-2.49	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.69	89.13	-3.76	
	1a	-3.60	89.10	1.28	
	1b	-6.37	-22.20	-3.68	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-0.81	52.00	-0.05	
	1a	-5.84	116.69	2.91	
	1b	-5.75	-12.67	-2.85	
1.2D + 1.0E	1	0.00	32.91	4.73	
	1a	5.73	9.48	-3.36	
	1b	-5.73	9.48	-3.36	
0.9D + 1.0E	1	0.00	28.57	5.01	
	1a	5.98	5.17	-3.50	
	1b	-5.98	5.17	-3.50	
1.0D + 1.0W Normal Wind	1	0.00	73.68	-6.88	
	1a	1.50	-15.23	-1.54	
	1b	-1.49	-15.22	-1.55	
1.0D + 1.0W 60° Wind	1	-0.55	42.99	-3.76	
	1a	-3.53	42.97	1.41	
	1b	-4.14	-42.72	-2.39	
1.0D + 1.0W 90° Wind	1	-0.64	14.41	-0.92	
	1a	-5.28	64.34	2.68	
	1b	-3.69	-35.52	-1.76	

### Max Reactions

Leg

Overturing

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Max Uplift: -222.81 (kips)

Max Down: 262.14 (kips)

Max Shear: 25.44 (kips)

Moment: 4452.96 (ft-kips)

Total Down: 51.88 (kips)

Total Shear: 40.71 (kips)

## Analysis Summary

<b>Structure:</b> CT04382-S-SBA	<b>Code:</b> EIA/TIA-222-G	3/8/2021
<b>Site Name:</b> New Britain 2, CT	<b>Exposure:</b> B	
<b>Height:</b> 176.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 0.85	<b>Topography:</b> 1	<b>Struct Class:</b> II
		<b>Page:</b> 20



### Max Reactions

	Leg	Overturning
Max Uplift:	-222.81 (kips)	Moment: 4452.96 (ft-kips)
Max Down:	262.14 (kips)	Total Down: 51.88 (kips)
Max Shear:	25.44 (kips)	Total Shear: 40.71 (kips)

### Anchor Bolts

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

**Interaction Ratio: 0.44**


### Max Usages

Max Leg: 53.3% (1.2D + 1.6W Normal Wind - Sect 3)  
 Max Diag: 76.2% (1.2D + 1.6W 90° Wind - Sect 7)  
 Max Horiz: 3.9% (1.2D + 1.6W 60° Wind - Sect 9)

### Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
0.9D + 1.0E - Normal To Face	80.38	0.0158	0.0008	0.0237
	140.00	0.0516	-0.0016	0.0529
	151.93	0.0624	-0.0015	0.0556
	164.19	0.0747	-0.0016	0.0580
	176.00	0.0871	-0.0016	0.0627
0.9D + 1.6W 97 mph Wind at 60° From Face	80.38	0.2098	0.0148	0.3357
	140.00	0.6868	0.0273	0.6586
	151.93	0.8176	0.0259	0.6531
	164.19	0.9614	0.0289	0.6650
	176.00	1.1014	0.0325	0.7034
0.9D + 1.6W 97 mph Wind at 90° From Face	80.38	0.2113	-0.0159	0.3344
	140.00	0.6917	-0.0283	0.6552
	151.93	0.8233	-0.0255	0.6555
	164.19	0.9679	-0.0270	0.6718
	176.00	1.1084	-0.0281	0.6834
0.9D + 1.6W 97 mph Wind at Normal To Face	80.38	0.2170	0.0128	0.3468
	140.00	0.7077	0.0222	0.6756
	151.93	0.8419	0.0193	0.6704
	164.19	0.9898	0.0196	0.6835
	176.00	1.1340	0.0187	0.7820
1.0D + 1.0W 60 mph Wind at 60° From Face	80.38	0.0507	0.0033	0.0811
	140.00	0.1654	0.0058	0.1583
	151.93	0.1967	0.0052	0.1565
	164.19	0.2313	0.0054	0.1592
	176.00	0.2647	0.0056	0.1687

1.0D + 1.0W 60 mph Wind at 90° From Face	80.38	0.0512	-0.0038	0.0807
	140.00	0.1666	-0.0067	0.1575
	151.93	0.1982	-0.0060	0.1572
	164.19	0.2329	-0.0064	0.1610
	176.00	0.2665	-0.0066	0.1640
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1.0D + 1.0W 60 mph Wind at Normal To Face	80.38	0.0526	0.0031	0.0836
	140.00	0.1706	0.0054	0.1618
	151.93	0.2028	0.0046	0.1609
	164.19	0.2383	0.0047	0.1641
	176.00	0.2729	0.0045	0.1871
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1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	80.38	0.0671	0.0043	0.1056
	140.00	0.2140	0.0074	0.2032
	151.93	0.2541	0.0067	0.2007
	164.19	0.2980	0.0071	0.2045
	176.00	0.3414	0.0073	0.2194
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1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	80.38	0.0673	-0.0050	0.1047
	140.00	0.2151	-0.0086	0.2019
	151.93	0.2554	-0.0078	0.2017
	164.19	0.2997	-0.0083	0.2070
	176.00	0.3432	-0.0086	0.2141
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1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	80.38	0.0675	0.0040	0.1066
	140.00	0.2172	0.0068	0.2033
	151.93	0.2580	0.0059	0.2044
	164.19	0.3029	0.0060	0.2090
	176.00	0.3471	0.0059	0.2386
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1.2D + 1.0E - Normal To Face	80.38	0.0158	0.0008	0.0237
	140.00	0.0517	0.0016	0.0530
	151.93	0.0625	0.0015	0.0558
	164.19	0.0748	0.0016	0.0581
	176.00	0.0872	0.0016	0.0627
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1.2D + 1.6W 97 mph Wind at 60° From Face	80.38	0.2101	0.0148	0.3363
	140.00	0.6881	0.0274	0.6602
	151.93	0.8192	0.0259	0.6546
	164.19	0.9633	0.0289	0.6665
	176.00	1.1036	0.0326	0.7053
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1.2D + 1.6W 97 mph Wind at 90° From Face	80.38	0.2116	-0.0160	0.3350
	140.00	0.6930	-0.0283	0.6568
	151.93	0.8249	-0.0255	0.6570
	164.19	0.9698	-0.0271	0.6733
	176.00	1.1107	-0.0281	0.6853
-----				
1.2D + 1.6W 97 mph Wind at Normal To Face	80.38	0.2174	0.0129	0.3474
	140.00	0.7090	0.0222	0.6771
	151.93	0.8436	0.0193	0.6720
	164.19	0.9917	0.0197	0.6851
	176.00	1.1363	0.0187	0.7837
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	Mat Foundation Design for Self Supporting Tower			Date
				3/8/2021
	<b>Customer Name:</b>	SBA Communications Corp	<b>EIA/TIA Standard:</b>	EIA-222-G
	<b>Site Name:</b>		<b>Structure Height (Ft.):</b>	176
	<b>Site Number:</b>	CT04382-S-SBA	<b>Engineer Name:</b>	H. You
<b>Engr. Number:</b>	103620	<b>Engineer Login ID:</b>		

**Foundation Info Obtained from:**

**Analysis or Design?**

**Number of Tower Legs:**

**Base Reactions (Factored):**

(1). Individual Leg:

Axial Load (Kips):	262.1	Uplift Force (Kips):	222.8
Shear Force (Kips):	25.4		

(2). Tower Base:

Total Vertical Load (Kips):	51.9	Total Shear Force (Kips):	40.7
Moment (Kips-ft):	4453.0		

**Foundation Geometries:**

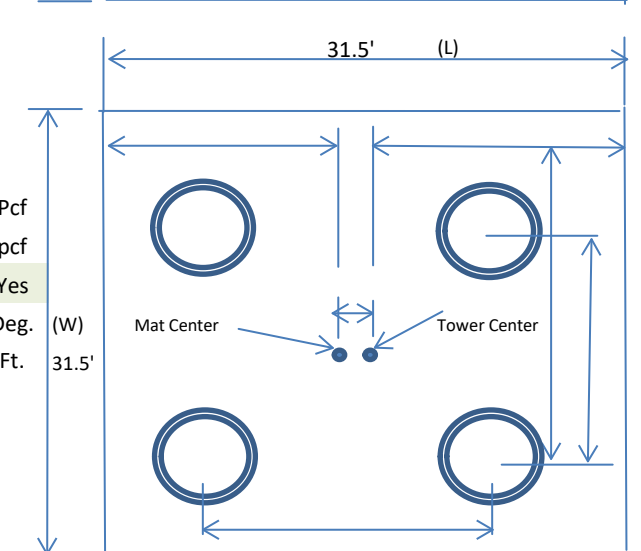
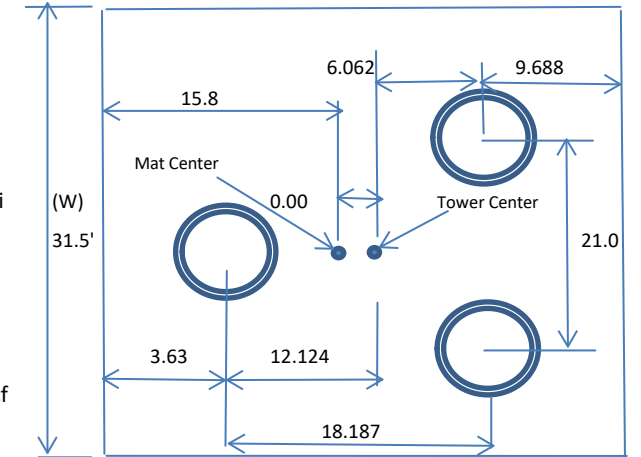
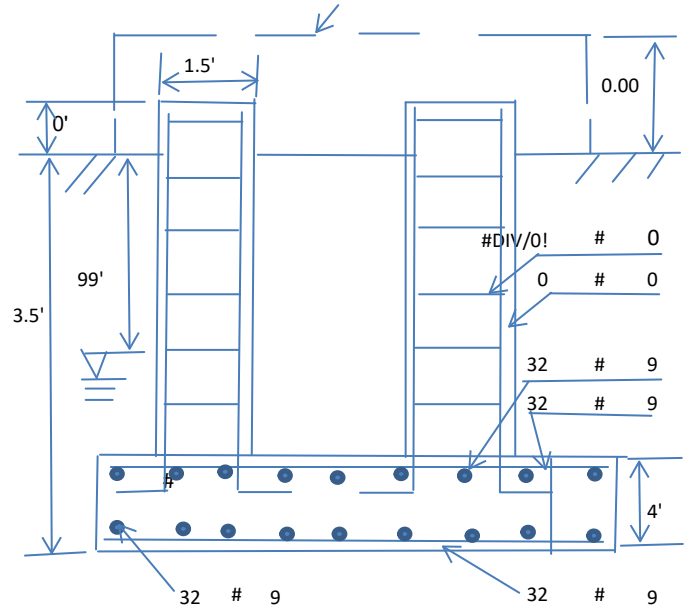
Leg distance (Center-to-Center ft.):	21.0	Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	Round 1.5	Pier Height A. G. (ft.):	0.00
Tower center to mat center (ft):	0	Depth of Base BG (ft.):	3.5
Length of Pad (ft.):	31.5	Width of Pad (ft.):	31.5
Thickness of Pad (ft):	4.00		

**Material Properties and Rebar Info:**

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)		Tie steel yield (ksi):	60	
Vertical Rebar Size #:		Tie / Stirrup Size #:		
Qty. of Vertical Rebars:		Tie Spacing (in):		
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	32	Qty. of Rebar in Pad (W):	32	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	32	Qty. of Rebar in Pad (W):	32	

**Soil Design Parameters:**

Soil Unit Weight (pcf):	115.0	Soil Buoyant Weight:	50.0	Pcf
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf
Ultimate Bearing Pressure (psf):	10000	Consider ties in concrete shear strength:	Yes	
Consider Soil Lateral Resistance ?	Yes	Enter soil C (psf) or Phi (deg.):	30.0	Deg. (W)
		Depth to ignor lateral resistance	1.0	Ft. 31.5'



Apply 1.35 for e/w per G/H: 1.35

<b>Foundation Analysis and Design:</b>	Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
	Total Dry Soil Volume (cu. Ft.):	1.97	Total Dry Soil Weight (Kips):	0.23
	Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
	Total Effective Soil Weight (Kips):	0.23	Weight from the Concrete Block at Top (K):	0.00
	Total Dry Concrete Volume (cu. Ft.):	3969.04	Total Dry Concrete Weight (Kips):	595.36
	Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
	Total Effective Concrete Weight (Kips):	595.36	Total Vertical Load on Base (Kips):	647.46

**Check Soil Capacities:**

Calculated Maxium Net Soil Pressure under the base (psf):	1662.74	<	Allowable Factored Soil Bearing (psf):	7500	0.22	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	9259.5	>	Design Factored Momont (kips-ft):	4616	0.50	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.01					OK!

**Check the capacities of Reinforceing Concrete:**

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

**(1) Concrete Pier:**

Vertical Steel Rebar Area (sq. in./each):	#N/A	Tie / Stirrup Area (sq. in./each):	#N/A		
Calculated Moment Capacity (Mn,Kips-Ft):	#N/A	#N/A Design Factored Moment (Mu, Kips-Ft):	0.2	#N/A	###
Calculated Shear Capacity (Kips):	#N/A	#N/A Design Factored Shear (Kips):	25.4	#N/A	###
Calculated Tension Capacity (Tn, Kips):	#N/A	#N/A Design Factored Tension (Tu Kips):	222.8	#N/A	###
Calculated Compression Capacity (Pn, Kips):	#N/A	#N/A Design Factored Axial Load (Pu Kips):	262.1	#N/A	###
Moment & Tension Strength Combination:	#N/A	#N/A Check Tie Spacing (Design/Req'd):	#DIV/0!		
Pier Reinforcement Ratio:	#N/A		#N/A		

**(2).Concrete Pad:**

One-Way Design Shear Capacity (L or W Direction, Kips):	1380.0	>	One-Way Factored Shear (L/W-Dir Kips)	298.5	0.22	OK!
One-Way Design Shear Capacity (Diagonal Dir., Kips):	1112.9	>	One-Way Factored Shear (Dia. Dir, Kips)	267.6	0.24	OK!
Lower Steel Pad Reinforcement Ratio (L or W-Direct. ):	0.0019		Lower Steel Reinf. Ratio (Dia. Dir.):	0.0017		
Lower Steel Pad Moment Capacity (L or W-Dir. Kips-ft):	6255.6	>	Moment at Bottom ( L-Direct. K-Ft):	1961.9	0.31	OK!
Lower Steel Pad Moment Capacity (Dia. Direction,K-ft):	6061.9	>	Moment at Bottom ( Dia. Dir. K-Ft):	1559.4	0.26	OK!
Upper Steel Pad Reinforcement Ratio (L or W -Direction):	0.0019		Upper Steel Reinf. Ratio (Dia. Dir.):	0.0017		
Upper Steel Pad Moment Capacity (L or W-Dir., Kips-ft):	6255.6	>	Moment at the top (L-Dir Kips-Ft):	969.1	0.15	OK!
Upper Steel Pad Moment Capacity (Dia. Direction, K-ft):	6061.9	>	Moment at the top (Dia. Dir., K-Ft):	572.7	0.09	OK!
Punching Failure Capacity (Kips):	1351.5	>	Punch. Failure Factored Shear (K):	262.1	0.19	OK!