



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

September 12, 2022

Evan Renwick
Site Acquisition Specialist
Centerline Communications, LLC
750 West Center Street, Suite 301
West Bridgewater, MA 02379
erenwick@clinellc.com

RE: **EM-CING-165-220822** – New Cingular Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 2-4 Volunteer Drive, Windsor Locks, Connecticut.

Dear Evan Renwick:

The Connecticut Siting Council (Council) is in receipt of your correspondence of September 9, 2022 submitted in response to the Council's September 7, 2022 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,

A handwritten signature in dark ink, appearing to read "Melanie Bachman".

Melanie Bachman
Executive Director

MAB/RDM/laf

From: Evan Renwick <erenwick@clinellc.com>
Sent: Friday, September 9, 2022 3:10 PM
To: Robidoux, Evan <Evan.Robidoux@ct.gov>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: RE: Council Incomplete Letter for EM-CING-165-220822 (2-4 Volunteer Drive, Windsor Locks)

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

Good afternoon,

Please see attached in response to the Council's Incomplete Letter for EM-CONG-165-220822 (2-4 Volunteer Drive, Windsor Locks) dated September 7, 2022. Please let me know if you have any questions or need any additional information. Thanks

Best Regards,

Evan Renwick

Centerline Communications, LLC

Site Acquisition Specialist

Cell: (774)428-0194

750 W Center St, #301, West Bridgewater, MA 02379

erenwick@clinellc.com



September 9, 2022

VIA UPS DELIVERY (1Z9Y45030304509645)

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

Regarding: Council Incomplete Letter for EM-CING-165-220822
Site Address: 2-4 Volunteer Drive, Windsor Locks, CT 06096
AT&T Site ID CT5270/FA # 10071333
Lessee: New Cingular Wireless, PCS, LLC (“AT&T”)

Dear Mrs. Bachman

This letter is in response to the Council’s Letter for EM-CING-165-220822 (2-4 Volunteer Drive, Windsor Locks, CT 06096) dated September 7, 2022.

The Council reviewed the exempt modification request for completeness and identified a deficiency in the Structural Analysis Report and RF Analysis Report provided with the filing. Per the Council’s recommendations, along with this letter is a revised Structural Analysis Report and a revised RF Analysis Report.

Provided to the Council is an electronic version of the revised Structural Analysis Report and revised RF Analysis Report, and two hard copies of these documents will be mailed to Council’s address listed above via UPS and should arrive shortly.

Please do not hesitate to contact me should you have any questions or concerns. Thank you for your attention to this matter.

Sincerely,

Evan Renwick

Evan Renwick
Site Acquisition Specialist
Direct Line: (774) 428-0194
Email: erenwick@clinellc.com



Radio Frequency Exposure Analysis Report

September 9, 2022

Centerline on behalf of AT&T
Centerline Communications Project Number: N/A

AT&T Site Name: WINDSOR LOCKS
Site Number: CT5270
FA#: 10071333
USID: 14370

Site Address: 2 VOLUNTEER DRIVE, WINDSOR LOCKS, CT 06096

Site Compliance Summary

AT&T Compliance Status:	Compliant
Cumulative Calculated Power Density (Ground Level):	53.48295 $\mu\text{W}/\text{cm}^2$
Cumulative General Population % MPE (Ground Level):	5.3484299999999996%



September 9, 2022

Centerline
Attn: Jennifer Iliades, Project Manager
750 W Center St, Suite 301
West Bridgewater, MA 02379

RF Exposure Analysis for Site: **WINDSOR LOCKS**

Centerline Communications, LLC ("Centerline") was contracted to analyze the proposed AT&T facility at **2 VOLUNTEER DRIVE, WINDSOR LOCKS, CT 06096** for the purpose of determining whether the predictive exposure from the proposed facility is within specified federal limits.

All information used in this report was analyzed as a percentage of the Maximum Permissible Exposure (% MPE) limits as detailed in 47 CFR § 1.1310 as well as Federal Communications Commission (FCC) OET Bulletin 65 Edition 97-01. The FCC MPE limits are typically expressed in units of milliwatts per square centimeter (mW/cm^2) or microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The exposure limits vary depending upon the frequencies being utilized. The General Population/Uncontrolled MPE limit (in mW/cm^2) for frequencies between 300 and 1500 is defined as frequency (in MHz) divided by 1500 ($f_{\text{MHz}}/1500$). Frequencies between 1500 and 100,000 MHz have a General Population/Uncontrolled MPE limit of $1 \text{ mW}/\text{cm}^2$ ($1000 \mu\text{W}/\text{cm}^2$). The calculated power density at each sample point divided by the limit at each calculated frequency provides a result in % MPE. Summing the calculated % MPE from all contributors provides a cumulative % MPE at a particular sample point. Wireless carriers use different frequency bands with varying MPE limits; therefore, it is useful to report results in terms of % MPE as opposed to power density.

All results were compared to the FCC radio frequency exposure rules as detailed in 47 CFR § 1.1307(b) to determine compliance with the MPE limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits, as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means. Additional details can be found in FCC OET 65.



Calculation Methodology

Centerline Communications, LLC has performed theoretical modeling of the site using a software tool, RoofMaster®, which incorporates calculation methodologies detailed in FCC OET 65. RoofMaster® uses a cylindrical model for conservative power density predictions within the near field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations, the power decreases inversely with the square of the distance. The modeling is based on worst-case assumptions in terms of transmitter power and duty cycle. No losses were included in the power calculations unless they were specifically provided for the project.

In OET 65, a far field model is presented to calculate the spatial peak power density. The RoofMaster® implementation of this model incorporates antenna manufacturer's horizontal and vertical pattern data to determine the power density in all directions. This model yields the power density at a single point in space. In order to determine the spatial power density for comparison to the FCC limits, the average of several points calculated within the human profile (0-6') must be conducted. RoofMaster® calculates seven power density values between 0-6' above the specified study plane and performs a linear spatial average.



Data & Results

The following table details the antennas and operating parameters for the AT&T antenna system as well as any other antenna systems at the site. This is based on antenna information provided by the client and data compiled from other sources where necessary. The data below was input into Roofmaster® to perform the theoretical exposure calculations at the ground level.

The theoretical calculations performed in Roofmaster® determine the cumulative exposure at all sample points at ground level (0-6' spatial average). The results from highest cumulative sample point at ground level surrounding the site are displayed in the table below. The contribution from directional antennas to the maximum cumulative totals varies greatly depending on location; therefore, the contribution from one antenna sector at the highest calculated exposure point may be greater or less than other sectors since sectorized directional antennas are pointed in different directions and there is not much overlapping exposure.

The contribution to the cumulative power density and % MPE for each antenna/frequency band is listed in the table. The cumulative power density and cumulative % MPE are displayed at the bottom of the table.



Maximum Calculated Cumulative Power Density (Location: approximately 380' southwest of site)

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/Channel (watts)	ERP (watts)	Calculated Power Density ($\mu\text{W}/\text{cm}^2$)	General Population MPE Limit ($\mu\text{W}/\text{cm}^2$)	General Population % MPE
AT&T A 1	CCI TPA65R-BU8D	700	12.95	164.00	4.00	30.00	2366.91	0.00000	466.67	0.00000
AT&T A 1	CCI TPA65R-BU8D	1900	15.45	164.00	4.00	30.00	4209.02	0.00000	1000.00	0.00000
AT&T A 1	CCI TPA65R-BU8D	2100	15.85	164.00	4.00	30.00	4615.10	0.00000	1000.00	0.00000
AT&T A 2	Ericsson AIR6449	3700	23.45	164.00	1.00	108.40	23989.95	0.00000	1000.00	0.00000
AT&T A 3	Ericsson AIR6419	3450	23.45	164.00	1.00	108.40	23989.95	0.00000	1000.00	0.00000
AT&T A 4	CCI DMP65R-BU8D	700	12.25	164.00	4.00	30.00	2014.56	0.00000	466.67	0.00000
AT&T A 4	CCI DMP65R-BU8D	850	12.75	164.00	4.00	30.00	2260.38	0.00000	566.67	0.00000
AT&T A 4	CCI DMP65R-BU8D	2300	14.95	164.00	4.00	18.00	2250.78	0.00000	1000.00	0.00000
AT&T B 5	CCI TPA65R-BU8D	700	12.85	164.00	4.00	30.00	2313.03	0.00000	466.67	0.00000
AT&T B 5	CCI TPA65R-BU8D	1900	15.45	164.00	4.00	30.00	4209.02	0.00000	1000.00	0.00000
AT&T B 5	CCI TPA65R-BU8D	2100	15.85	164.00	4.00	30.00	4615.10	0.00000	1000.00	0.00000
AT&T B 6	Ericsson AIR6449	3700	23.45	164.00	1.00	108.40	23989.95	0.00001	1000.00	0.00000
AT&T B 7	Ericsson AIR6419	3450	23.45	164.00	1.00	108.40	23989.95	0.00001	1000.00	0.00000
AT&T B 8	CCI DMP65R-BU8D	700	12.15	164.00	4.00	30.00	1968.71	0.00000	466.67	0.00000
AT&T B 8	CCI DMP65R-BU8D	850	12.65	164.00	4.00	30.00	2208.93	0.00000	566.67	0.00000
AT&T B 8	CCI DMP65R-BU8D	2300	14.95	164.00	4.00	18.00	2250.78	0.00000	1000.00	0.00000
AT&T C 9	CCI TPA65R-BU8D	700	12.95	164.00	4.00	30.00	2366.91	0.00013	466.67	0.00003
AT&T C 9	CCI TPA65R-BU8D	1900	15.15	164.00	4.00	30.00	3928.09	0.00009	1000.00	0.00001
AT&T C 9	CCI TPA65R-BU8D	2100	15.75	164.00	4.00	30.00	4510.05	0.00009	1000.00	0.00001
AT&T C 10	Ericsson AIR6449	3700	23.45	164.00	1.00	108.40	23989.95	5.36986	1000.00	0.53699
AT&T C 11	Ericsson AIR6419	3450	23.45	164.00	1.00	108.40	23989.95	5.36986	1000.00	0.53699
AT&T C 12	CCI DMP65R-BU8D	700	12.25	164.00	4.00	30.00	2014.56	0.00013	466.67	0.00003
AT&T C 12	CCI DMP65R-BU8D	850	12.75	164.00	4.00	30.00	2260.38	0.00012	566.67	0.00002
AT&T C 12	CCI DMP65R-BU8D	2300	14.95	164.00	4.00	18.00	2250.78	0.00006	1000.00	0.00001
WLPD 13	GENERIC OMNI 12FT	850	8.96	203.40	1.00	12.70	99.95	0.00000	566.67	0.00000
WLPD 14	GENERIC OMNI 12FT	850	8.96	183.70	1.00	12.70	99.95	0.00000	566.67	0.00000
WLPD 15	GENERIC OMNI 12FT	850	8.96	182.80	1.00	12.70	99.95	0.00000	566.67	0.00000
WLPD 16	GENERIC OMNI 12FT	850	8.96	180.60	1.00	12.70	99.95	0.00000	566.67	0.00000
WLPD 17	GENERIC OMNI 12FT	850	8.96	179.10	1.00	12.70	99.95	0.00000	566.67	0.00000
Verizon A 18	ANTEL BXA-70063-6CF-EDIN-5	850	14.50	150.00	7.00	20.00	3945.74	0.00000	566.67	0.00000
Verizon A 19	COMMSCOPE SBNHH-1D65B	700	12.38	150.00	4.00	40.00	2767.71	0.00000	466.67	0.00000
Verizon A 19	COMMSCOPE SBNHH-1D65B	1900	15.89	150.00	4.00	40.00	6210.41	0.00000	1000.00	0.00000
Verizon A 20	COMMSCOPE SBNHH-1D65B	850	12.67	150.00	4.00	40.00	2958.83	0.00000	566.67	0.00000
Verizon A 20	COMMSCOPE SBNHH-1D65B	2100	16.44	150.00	4.00	40.00	7048.88	0.00000	1000.00	0.00000
Verizon A 21	SAMSUNG MT6407	3700	23.35	150.00	4.00	50.00	43254.37	0.00003	1000.00	0.00000



Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density ($\mu\text{W}/\text{cm}^2$)	General Population MPE Limit ($\mu\text{W}/\text{cm}^2$)	General Population % MPE
Verizon B 22	ANTEL BXA-70063-6CF-EDIN-5	850	14.50	150.00	7.00	20.00	3945.74	0.00000	566.67	0.00000
Verizon B 23	COMMSCOPE SBNHH-1D65B	700	12.38	150.00	4.00	40.00	2767.71	0.00000	466.67	0.00000
Verizon B 23	COMMSCOPE SBNHH-1D65B	1900	15.89	150.00	4.00	40.00	6210.41	0.00000	1000.00	0.00000
Verizon B 24	COMMSCOPE SBNHH-1D65B	850	12.67	150.00	4.00	40.00	2958.83	0.00000	566.67	0.00000
Verizon B 24	COMMSCOPE SBNHH-1D65B	2100	16.44	150.00	4.00	40.00	7048.88	0.00000	1000.00	0.00000
Verizon B 25	SAMSUNG MT6407	3700	23.35	150.00	4.00	50.00	43254.37	0.00004	1000.00	0.00000
Verizon C 26	ANTEL BXA-70063-6CF-EDIN-5	850	14.50	150.00	7.00	20.00	3945.74	0.00014	566.67	0.00003
Verizon C 27	COMMSCOPE SBNHH-1D65B	700	12.38	150.00	4.00	40.00	2767.71	0.00010	466.67	0.00002
Verizon C 27	COMMSCOPE SBNHH-1D65B	1900	15.89	150.00	4.00	40.00	6210.41	0.00011	1000.00	0.00001
Verizon C 28	COMMSCOPE SBNHH-1D65B	850	12.67	150.00	4.00	40.00	2958.83	0.00011	566.67	0.00002
Verizon C 28	COMMSCOPE SBNHH-1D65B	2100	16.44	150.00	4.00	40.00	7048.88	0.00011	1000.00	0.00001
Verizon C 29	SAMSUNG MT6407	3700	23.35	150.00	4.00	50.00	43254.37	0.00131	1000.00	0.00013
T-Mobile A 30	RFS APXVAARR24 43-U-NA20	700	13.17	135.00	4.00	40.00	3319.86	0.00000	466.67	0.00000
T-Mobile A 30	RFS APXVAARR24 43-U-NA20	600	13.09	135.00	2.00	40.00	1629.63	0.00000	400.00	0.00000
T-Mobile A 30	RFS APXVAARR24 43-U-NA20	600	13.09	135.00	2.00	30.00	1222.23	0.00000	400.00	0.00000
T-Mobile A 31	ERICSSON AIR6419	2500	22.05	135.00	2.00	80.00	25651.93	0.35741	1000.00	0.03574
T-Mobile A 31	ERICSSON AIR6419	2500	22.05	135.00	2.00	80.00	25651.93	0.35741	1000.00	0.03574
T-Mobile A 32	ERICSSON AIR 32	1900	15.65	135.00	4.00	30.00	4407.39	0.00000	1000.00	0.00000
T-Mobile A 32	ERICSSON AIR 32	2100	15.65	135.00	4.00	40.00	5876.52	0.00000	1000.00	0.00000
T-Mobile B 33	RFS APXVAARR24 43-U-NA20	700	13.17	135.00	4.00	40.00	3319.86	0.00000	466.67	0.00000
T-Mobile B 33	RFS APXVAARR24 43-U-NA20	600	13.09	135.00	2.00	40.00	1629.63	0.00000	400.00	0.00000
T-Mobile B 33	RFS APXVAARR24 43-U-NA20	600	13.09	135.00	2.00	30.00	1222.23	0.00000	400.00	0.00000
T-Mobile B 34	ERICSSON AIR6419	2500	22.05	135.00	2.00	80.00	25651.93	0.15855	1000.00	0.01586
T-Mobile B 34	ERICSSON AIR6419	2500	22.05	135.00	2.00	80.00	25651.93	0.15855	1000.00	0.01586
T-Mobile B 35	ERICSSON AIR 32	1900	15.65	135.00	4.00	30.00	4407.39	0.00000	1000.00	0.00000
T-Mobile B 35	ERICSSON AIR 32	2100	15.65	135.00	4.00	40.00	5876.52	0.00000	1000.00	0.00000
T-Mobile C 36	RFS APXVAARR24 43-U-NA20	700	13.17	135.00	4.00	40.00	3319.86	0.00014	466.67	0.00003
T-Mobile C 36	RFS APXVAARR24 43-U-NA20	600	13.09	135.00	2.00	40.00	1629.63	0.00006	400.00	0.00002
T-Mobile C 36	RFS APXVAARR24 43-U-NA20	600	13.09	135.00	2.00	30.00	1222.23	0.00004	400.00	0.00001
T-Mobile C 37	ERICSSON AIR6419	2500	22.05	135.00	2.00	80.00	25651.93	20.85279	1000.00	2.08528
T-Mobile C 37	ERICSSON AIR6419	2500	22.05	135.00	2.00	80.00	25651.93	20.85279	1000.00	2.08528
T-Mobile C 38	ERICSSON AIR 32	1900	15.65	135.00	4.00	30.00	4407.39	0.00013	1000.00	0.00001
T-Mobile C 38	ERICSSON AIR 32	2100	15.65	135.00	4.00	40.00	5876.52	0.00017	1000.00	0.00002
Dish A 39	JMA MX08FRO665-21	700	12.05	125.00	4.00	40.00	2565.19	0.00000	466.67	0.00000
Dish A 39	JMA MX08FRO665-21	2000	15.75	125.00	4.00	40.00	6013.40	0.00000	1000.00	0.00000
Dish A 39	JMA MX08FRO665-21	2100	16.75	125.00	4.00	40.00	7570.42	0.00000	1000.00	0.00000



Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density ($\mu\text{W}/\text{cm}^2$)	General Population MPE Limit ($\mu\text{W}/\text{cm}^2$)	General Population % MPE
Dish B 40	JMA MX08FRO665-21	700	12.05	125.00	4.00	40.00	2565.19	0.00000	466.67	0.00000
Dish B 40	JMA MX08FRO665-21	2000	15.75	125.00	4.00	40.00	6013.40	0.00000	1000.00	0.00000
Dish B 40	JMA MX08FRO665-21	2100	16.75	125.00	4.00	40.00	7570.42	0.00000	1000.00	0.00000
Dish C 41	JMA MX08FRO665-21	700	12.05	125.00	4.00	40.00	2565.19	0.00024	466.67	0.00005
Dish C 41	JMA MX08FRO665-21	2000	15.75	125.00	4.00	40.00	6013.40	0.00018	1000.00	0.00002
Dish C 41	JMA MX08FRO665-21	2100	16.75	125.00	4.00	40.00	7570.42	0.00017	1000.00	0.00002
Sprint A 42	RFS APXVSPP18-C-A20	850	13.35	116.80	2.00	40.00	1730.17	0.00000	566.67	0.00000
Sprint A 42	RFS APXVSPP18-C-A20-	1900	15.85	116.80	2.00	60.00	4615.10	0.00000	1000.00	0.00000
Sprint A 43	RFS APXVTM14-C-I20 AZ0	2500	21.35	115.00	8.00	20.00	21833.33	0.00000	1000.00	0.00000
Sprint B 44	RFS APXVSPP18-C-A20	850	13.35	116.80	2.00	40.00	1730.17	0.00000	566.67	0.00000
Sprint B 44	RFS APXVSPP18-C-A20-	1900	15.85	116.80	2.00	60.00	4615.10	0.00000	1000.00	0.00000
Sprint B 45	RFS APXVTM14-C-I20 AZ0	2500	21.35	115.00	8.00	20.00	21833.33	0.00000	1000.00	0.00000
Sprint C 46	RFS APXVSPP18-C-A20	850	13.35	116.80	2.00	40.00	1730.17	0.00009	566.67	0.00002
Sprint C 46	RFS APXVSPP18-C-A20-	1900	15.85	116.80	2.00	60.00	4615.10	0.00013	1000.00	0.00001
Sprint C 47	RFS APXVTM14-C-I20 AZ0	2500	21.35	115.00	8.00	20.00	21833.33	0.00049	1000.00	0.00005
Clearwire A 48	ARGUS LLPX310R	2500	15.85	104.00	8.00	20.00	6153.47	0.00000	1000.00	0.00000
Clearwire A 49	GENERIC MICROWAVE 3FT	18000	39.45	104.60	1.00	0.10	881.05	0.00000	1000.00	0.00000
Clearwire A 50	ANDREW VHLP1-23	23000	38.55	104.00	1.00	0.10	716.14	0.00000	1000.00	0.00000
Clearwire B 51	ARGUS LLPX310R	2500	15.85	104.00	8.00	20.00	6153.47	0.00000	1000.00	0.00000
Clearwire C 52	ARGUS LLPX310R	2500	15.85	104.00	8.00	20.00	6153.47	0.00022	1000.00	0.00002
							Cumulative Power Density:	53.48295 $\mu\text{W}/\text{cm}^2$	Cumulative % MPE:	5.34843%



Summary

The theoretical calculations performed for this analysis yielded cumulative power density totals in all areas at ground level that are within the allowable federal limits for public exposure to RF energy. Therefore, the site is **Compliant** with FCC rules and regulations.

Katrina Styx
RF EME Technical Writer
Centerline Communications, LLC

A handwritten signature in black ink, appearing to read "Katrina Styx", with a long horizontal flourish extending to the right.



Tower Engineering Solutions

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

Structural Analysis Report

Existing 195 ft PIROD Self Supporting Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT22108-A

Customer Site Name: Windsor Locks @ Volunteer Drive

Carrier Name: AT&T (App#: 200368-1)

Carrier Site ID / Name: CT5270 / Windsor Locks

Site Location: 2-4 Volunteer Drive

Windsor Locks, Connecticut

HARTFORD County

Latitude: 41.928100

Longitude: -72.646800



Analysis Result:

Max Structural Usage: 97.9% [Pass]

Max Foundation Usage: 68.0% [Pass]

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

Report Prepared By: Mohammed Al Rubaye



Tower Engineering Solutions

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

Structural Analysis Report

Existing 195 ft PIROD Self Supporting Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT22108-A

Customer Site Name: Windsor Locks @ Volunteer Drive

Carrier Name: AT&T (App#: 200368-1)

Carrier Site ID / Name: CT5270 / Windsor Locks

Site Location: 2-4 Volunteer Drive

Windsor Locks, Connecticut

HARTFORD County

Latitude: 41.928100

Longitude: -72.646800

Analysis Result:

Max Structural Usage: 97.9% [Pass]

Max Foundation Usage: 68.0% [Pass]

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

Report Prepared By: Mohammed Al Rubaye

Introduction

The purpose of this report is to summarize the analysis results on the 195 ft PIROD Self Supporting Tower to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	PiROD Eng. File #A-115761-1, Archive #F-0078802, dated 10/06/00
Foundation Drawing	PiROD Eng. File #A-115761-1, Archive #F-0078802, dated 10/06/00
Geotechnical Report	Tectonic Engineering Consultants W.O. #2295 01, dated 05/18/99
Modification Drawings	N/A
Mount Analysis	Hudson Design Group LLC PACE Number: MRCTB056929. Dated 04/15/2022

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.

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

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	203.4	1	Andrew - DB224-A	Direct	(1) 7/8"	WLPD
2	183.7	5	Andrew - 20' Dipoles w/ (4) Element	(3) T-Frame	(8) 7/8"	
3	182.8	1	2.5" Ø x 20.0' Omni			
4	180.6	1	1.3" Ø x 13.0' Omni			
5	179.1	1	1.3" Ø x 10.0' Omni			
-	164.0	3	CCI - TPA-65R-LCUUUU-H8 - Panel	(3) Modified Sector Frame with new standoff 2" and 3" SCH.40 pipes at each sector and 3" SCH. 40 vertical pipe per sector	(9) 1 5/8" (1) 2" Conduit** (1) 3" Conduit**	AT&T
-		6	CCI - TPA65R-BU8D - Panel			
-		3	Powerwave LGP21401 TMA			
-		3	Kaelus DBCT108F1V92-1 Diplexer			
-		6	Kathrein 860 10025 RET			
-		3	Ericsson RRUS 32 B30			
-		3	Ericsson 4449 B5/B12			
-		3	Ericsson RRUS 8843 B2 B66A			
-		3	Ericsson RRUS 4478 B14			
-		2	Raycap DC6-48-60-18-8F - OVP			
18	150.0	3	Amphenol BXA-70063-6CF-5 - Panel	(3) Sector Frames w/ Mods [(9) Site Pro VZWSMART-SFK3 V-BRACING KIT & (6) 156" P2.5 STD]	(2) 1 5/8" Hybrid (12) 1 5/8"	Verizon
19		6	Commscope SBNHH-1D65B - Panel			
20		3	Samsung MT6407-77A - Panel			
21		6	RFS FD9R6004/2C-3L Diplexer			
22		3	Samsung LTE AWS/PCS RFV01U-D1A - RRU			
23		3	Samsung LTE 700/850 MHz RFV01U-D2A - RRU			
24		2	RFS DB-T1-6Z-8AB-OZ - DC Surge			
25	135.0	3	RFS - APXVAARR24_43-U-NA20 (Octa) - Panel	(3) Reinforced T-Frames	(11) 1 5/8" (3) 1-1/4" Hybrid (3) 1.9" Fiber	T-Mobile
26		3	Ericsson - AIR6419 B41 - Panel			
27		3	Ericsson - AIR32 KR901146-1_B66A (Octa) - Panel			
28		6	Ericsson - KRY 112 144/2 TMA			
29		3	Ericsson - 4449 B71 + B85 - RRU			
30		3	Ericsson - 4460 B25 + B66 - RRU			
31	125.0	3	JMA Wireless MX08FRO665-21 - Panel	(3) Sector Frames Commscope MTC3975083	(1) 1.6" Hybrid	Dish Wireless
32		3	Fujitsu TA08025-B604 - RRU			
33		3	Fujitsu TA08025-B605 - RRU			
34		1	Raycap RDIDC-9181-PF-48 - OVP			
35	116.8	3	RFS - APXVSP18-C-A20 - Panel	(3) T-Frame	(4) 1-1/4" Fiber	Sprint Nextel
36	115.0	3	RFS - APXVTM14-C-I20 - Panel			
37		3	Alcatel-Lucent - TD-RRH8x20-25 - RRH			
38	110.3	3	Alcatel-Lucent - 800 MHz RRH	Direct		
39	107.6	3	Alcatel-Lucent - 1900 MHz RRH	Direct		

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
40	104.6	1	Andrew - 3.3' Dish	(3) Standoffs	(2) 1/2" (1) 1-5/16" Conduit	Clearwire
41	104.0	1	Andrew - VHLP1-23-DW1			
42		3	Argus - LLPX310R-V1 - Panel			
43	103.8	3	Alcatel-Lucent - SPI-22132825WB -			
44	102.4	1	12" x 12" x 6.38" Junction Box	Direct		
45	75.9	1	3.5" Ø x 8" GPS	(1) Standoff	(1) 1/2"	Unknown
46	60.0	1	PCTEL - GPS-TMG-HR-26N - GPS	Direct	(1) 1/2"	Sprint Nextel

*Inside (1) 3" Conduit

**3" (housing (2) 0.78" DC Power & (1) 0.39" Fiber).

**2" (housing (2) 0.78" DC Power & (1) 0.39" Fiber)

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	165.75	3	Ericsson - AIR6419 B77G - Panel	(3) Modified Sector Frames w/ (6) Stiff Arm Connection	(2) 0.92" DC (9) 1 5/8" (1) 1/2" Fiber (1) 2" Conduit [housing (2) 0.78" DC & (1) 0.39" Fiber] (1) 3" Conduit [housing (2) 0.78" DC & (1) 0.39" Fiber]	AT&T	
7	164.0	3	CCI - TPA65R-BU8D - Panel				
8		3	CCI - DMP65R-BU8DA - Panel				
9		3	Powerwave - LGP21401 TMA				
10		3	KAelus - DBCT108F1V92-1 Diplexer				
11		6	Kathrein - 860 10025 RET				
12		3	Ericsson - RRUS 32 B30				
13		3	Ericsson - 4449 B5/B12 RRU				
14		3	Ericsson - RRUS 8843 B2 B66A				
15		3	Ericsson - RRUS 4478 B14				
16		3	Raycap - DC6-48-60-18-8F - OVP				
17		162.75	3				Ericsson - AIR6449 B77D - Panel

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:	82.5%	97.9%	34.2%
Pass/Fail	Pass	Pass	Pass

Foundations

	Compression (Kips)	Uplift (Kips)	Shear (Kips)
Analysis Reactions	423.6	372.0	41.7

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):

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 0.3122 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

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

Structure: CT22108-A-SBA

Site Name: Windsor Locks @ Volunteer Drive	Code: TIA-222-G	6/8/2022
Type: Self Support	Base Shape: Triangle	Basic WS: 97.00
Height: 195.00 (ft)	Base Width: 20.00	Basic Ice WS: 50.00
Base Elev: 5.00 (ft)	Top Width: 4.50	Operational WS: 60.00



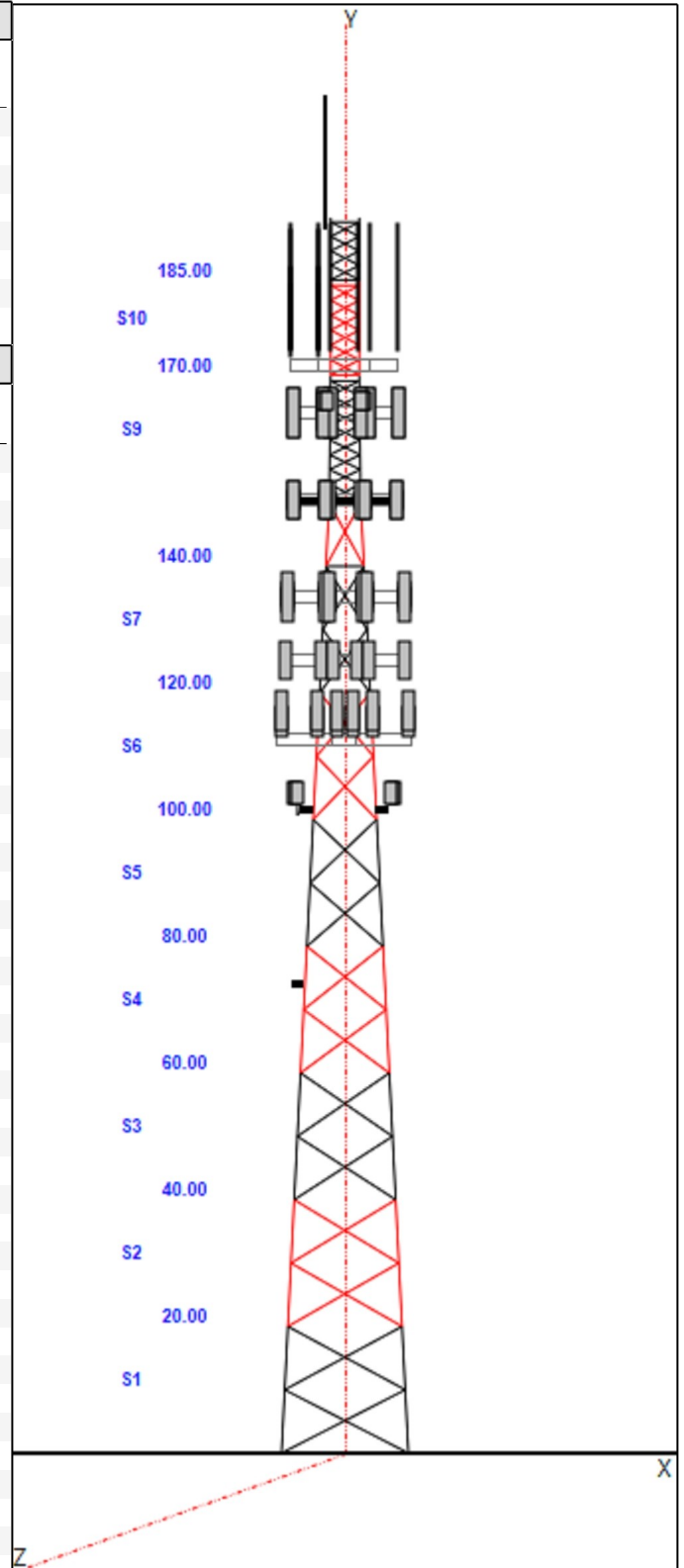
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Section Properties

Sect	Leg Members	Diagonal Members	Horizontal Members
1-2	12B 12"BD 2.25"	SAE 3.5X3.5X0.3125	
3-4	12B 12"BD 2"	SAE 3X3X0.3125	
5	12B 12"BD 1.75"	SAE 3X3X0.3125	
6	12B 12"BD 1.75"	SAE 3X3X0.1875	
7	12B 12"BD 1.5"	SAE 2.5X2.5X0.1875	SAE 2.5X2.5X0.1875
8	12B 12"BD 1.25"	SAE 2.5X2.5X0.1875	
9	SOL 2" SOLID	SOL 7/8" SOLID	SOL 7/8" SOLID
10-11	SOL 1 3/4" SOLID	SOL 3/4" SOLID	SOL 7/8" SOLID

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description
195.00	195.00	1	Lightning Rod
195.00	195.00	1	Beacon
195.00	203.40	1	Andrew - DB224-A
171.50	171.50	1	15' T-Frame
171.50	183.70	5	Andrew - 20' Dipoles w/ (4) Element
171.50	182.80	1	2.5" Ø x 20.0' Omni
171.50	180.60	1	1.3" Ø x 13.0' Omni
171.50	179.10	1	1.3" Ø x 10.0' Omni
165.75	165.75	3	AIR6419 B77G
164.00	164.00	1	Modified T-Frames
164.00	164.00	3	TPA65R-BU8D
164.00	164.00	3	DMP65R-BU8DA
164.00	164.00	3	LGP21401 TMA
164.00	164.00	3	DBCT108F1V92-1 Diplexer
164.00	164.00	6	860 10025 RET
164.00	164.00	3	RRUS 32 B30
164.00	164.00	3	4449 B5/B12
164.00	164.00	3	RRUS 8843 B2 B66A
164.00	164.00	3	RRUS 4478 B14
164.00	164.00	3	DC6-48-60-18-8F
162.75	162.75	3	AIR6449 B77D
150.00	150.00	3	Sector Frame
150.00	150.00	3	Amphenol - BXA-70063/6CF-EDIN
150.00	150.00	6	Commscope SBNHH-1D65B
150.00	150.00	3	Samsung MT6407-77A
150.00	150.00	6	RFS FD9R6004/2C-3L Diplexer
150.00	150.00	3	Samsung LTE AWS/PCS RFV01U-D1A
150.00	150.00	3	Samsung LTE 700/850 MHz RFV01U
150.00	150.00	2	RFS DB-T1-6Z-8AB-0Z
150.00	150.00	2	(3) 12.5' - 2.5" Horizontal Pi
150.00	150.00	3	(3) SFS-H (V-Braces)
135.00	135.00	1	(3) T-Frames
135.00	135.00	3	APXVAARR24_43-U-NA20 (Octa)
135.00	135.00	3	AIR6419 B41
135.00	135.00	3	AIR32 KRD901146-1_B66A (Octa)
135.00	135.00	6	KRY 112 144/2 TMA
135.00	135.00	3	4449 B71 + B85
135.00	135.00	3	4460 B25 + B66
135.00	135.00	1	T-arms Mods
125.00	125.00	3	JMA Wireless MX08FRO665-21
125.00	125.00	3	Fujitsu TA08025-B604



Structure: CT22108-A-SBA

Site Name: Windsor Locks @ Volunteer Drive	Code: TIA-222-G	6/8/2022
Type: Self Support	Base Shape: Triangle	Basic WS: 97.00
Height: 195.00 (ft)	Base Width: 20.00	Basic Ice WS: 50.00
Base Elev: 5.00 (ft)	Top Width: 4.50	Operational WS: 60.00



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125.00	125.00	3	Fujitsu TA08025-B605
125.00	125.00	1	Raycap RDIDC-9181-PF-48
125.00	125.00	1	(3) Commscope MTC3975083
112.30	112.30	3	Sector Frame
112.30	116.80	3	RFS - APXVSP18-C-A20
112.30	115.00	3	RFS - APXVTM14-C-I20
112.30	115.00	3	Alcatel-Lucent - TD-RRH8x20-25 - RRH
110.30	110.30	3	Alcatel-Lucent - 800 MHz RRH
107.60	107.60	3	Alcatel-Lucent - 1900 MHz RRH
102.40	102.40	1	12" x 12" x 6.38" Junction Box
101.40	101.40	3	Standoffs
101.40	104.60	1	Andrew - 3.3' Dish
101.40	104.00	1	Andrew - VHLP1-23-DW1
101.40	104.00	3	Argus - LLPX310R-V4
101.40	103.80	3	Alcatel-Lucent - SPI-22132825WB
74.00	75.90	1	3.5" Ø x 8" GPS
74.00	74.00	1	Standoff
60.00	60.00	1	PCTEL - GPS-TMG-HR-26N - GPS

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Qty	Description
171.50	195.00	1	7/8" Coax
0.00	171.50	8	7/8" Coax
0.00	164.00	2	0.92" DC
0.00	164.00	9	1 5/8" Coax
0.00	164.00	1	1/2" Fiber
0.00	164.00	1	2" Conduit
0.00	164.00	1	3" Conduit
0.00	150.00	12	1 5/8" Coax
0.00	150.00	2	1 5/8" Hybrid
0.00	135.00	11	1 5/8" Coax
0.00	135.00	3	1-1/4" Hybrid
0.00	135.00	3	1.9" Fiber
0.00	125.00	1	1.6" Hybrid
0.00	125.00	1	W/G Ladder
0.00	112.30	4	1-1/4" Fiber
0.00	101.40	1	1-5/16" Conduit
0.00	101.40	2	1/2" Coax
0.00	74.00	1	1/2" Coax
0.00	60.00	1	1/2" Coax

Base Reactions

Leg	Overturning
Max Uplift: -372.00 (kips)	Moment: 6947.84 (ft-kips)
Max Down: 423.62 (kips)	Total Down: 67.46 (kips)
Max Shear: 41.72 (kips)	Total Shear: 64.34 (kips)

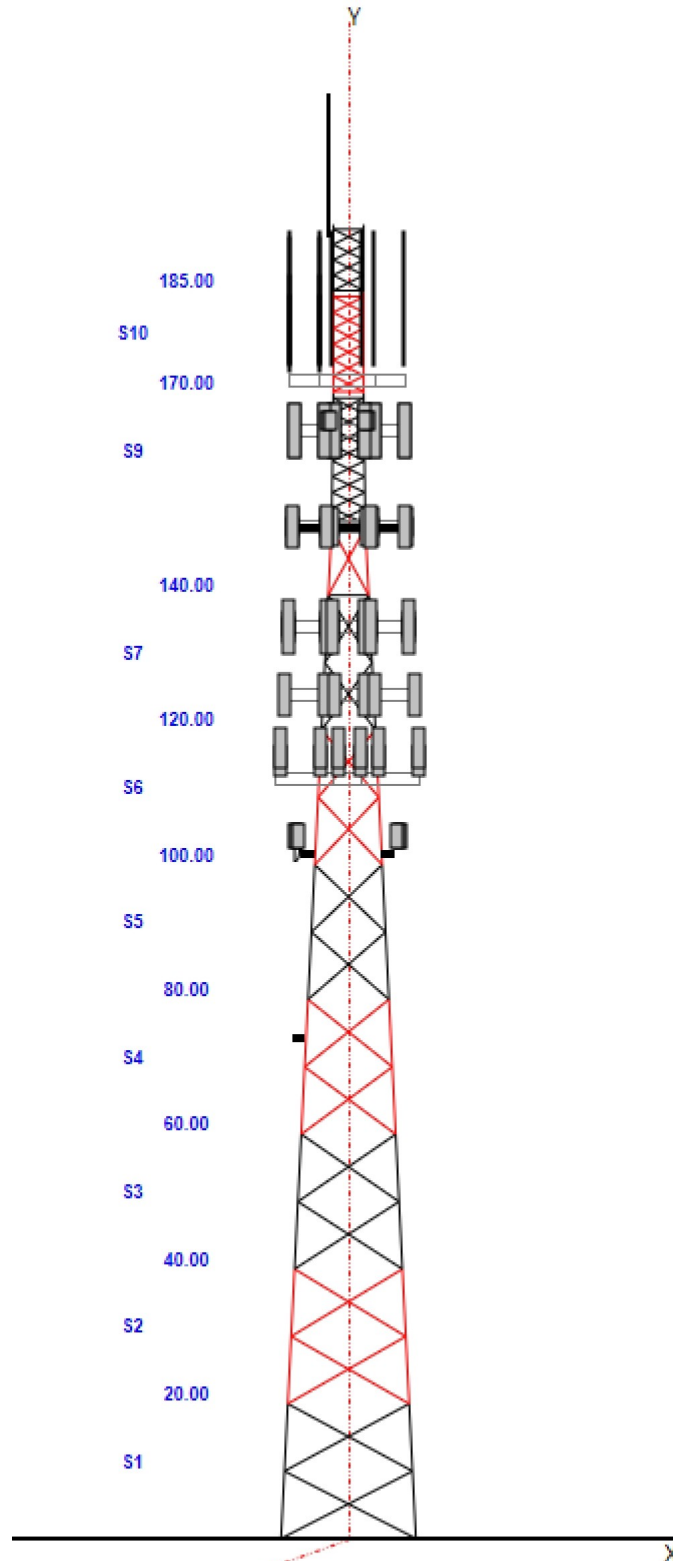
Structure: CT22108-A-SBA

Site Name: Windsor Locks @ Volunteer Drive
Type: Self Support
Height: 195.00 (ft)
Base Elev: 5.00 (ft)

Code: TIA-222-G
Base Shape: Triangle
Basic WS: 97.00
Basic Ice WS: 50.00
Operational WS: 60.00

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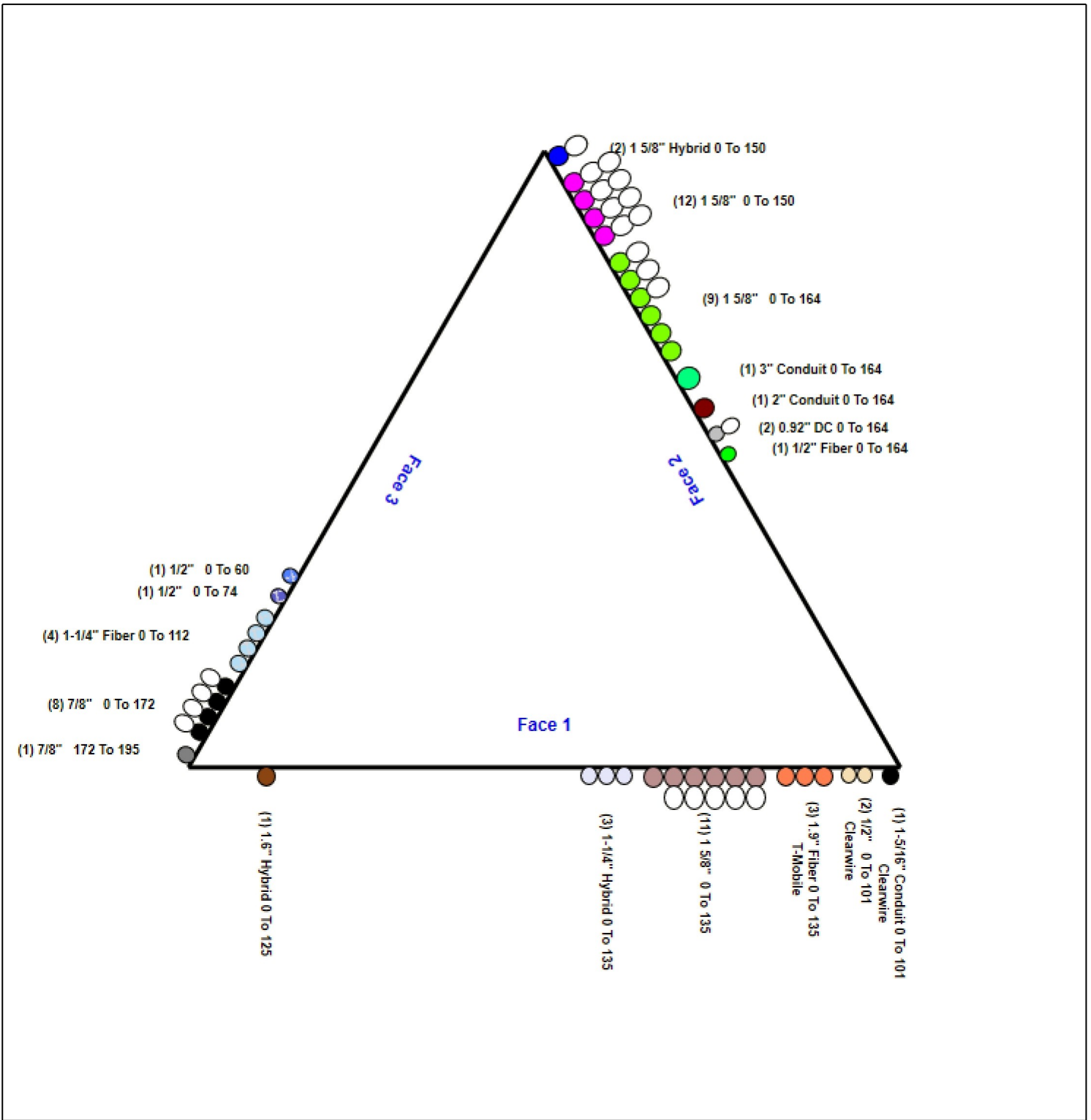
Structure: CT22108-A-SBA - Coax Line Placement

Type: Self Support
Site Name: Windsor Locks @ Volunteer Drive
Height: 195.00 (ft)

6/8/2022



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Loading Summary

Structure: CT22108-A-SBA	Code: TIA-222-G	6/8/2022
Site Name: Windsor Locks @ Volunteer Drive	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 5.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: 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)						
195.00	Lightning Rod	1	5.00	0.500	33.67	2.889	72.000	1.000	1.000	1.00	1.00	0.000
195.00	Beacon	1	36.00	2.720	218.31	4.019	28.000	17.500	17.500	1.00	1.00	0.000
195.00	Andrew - DB224-A	1	35.00	5.650	275.06	29.777	255.000	0.000	0.000	1.00	1.00	8.400
171.50	15' T-Frame	1	1500.0	44.000	2923.82	96.207	0.000	0.000	0.000	0.75	1.00	0.000
171.50	Andrew - 20' Dipoles w/ (4) Element	5	60.00	7.520	361.51	23.681	240.000	3.000	3.000	1.00	1.00	12.20
171.50	2.5" Ø x 20.0' Omni	1	55.00	5.000	259.86	13.040	240.000	3.000	3.000	1.00	1.00	11.30
171.50	1.3" Ø x 13.0' Omni	1	40.00	2.600	173.84	6.818	156.000	3.000	3.000	1.00	1.00	9.100
171.50	1.3" Ø x 10.0' Omni	1	25.00	1.380	128.42	3.636	120.000	3.000	3.000	1.00	1.00	7.600
165.75	AIR6419 B77G	3	88.00	4.130	285.27	5.311	30.800	16.100	10.800	0.80	0.85	0.000
164.00	Modified T-Frames	1	1500.0	50.500	2909.54	109.81	0.000	0.000	0.000	0.75	1.00	0.000
164.00	TPA65R-BU8D	3	82.50	17.870	616.34	20.288	96.000	20.700	7.700	0.80	0.72	0.000
164.00	DMP65R-BU8DA	3	82.50	17.870	616.34	20.288	96.000	20.700	7.700	0.80	0.72	0.000
164.00	LGP21401 TMA	3	14.10	1.290	47.75	2.415	14.400	9.200	2.600	0.80	0.50	0.000
164.00	DBCT108F1V92-1 Diplexer	3	13.20	0.700	43.59	1.179	10.600	7.900	2.900	0.80	0.50	0.000
164.00	860 10025 RET	6	1.20	0.180	9.27	0.690	7.600	2.400	2.000	0.80	0.50	0.000
164.00	RRUS 32 B30	3	60.00	2.740	188.49	3.748	27.200	12.100	7.000	0.80	0.50	0.000
164.00	4449 B5/B12	3	71.00	1.970	142.86	2.707	17.900	13.200	9.400	0.80	0.50	0.000
164.00	RRUS 8843 B2 B66A	3	75.00	1.650	184.29	2.401	15.000	13.200	11.100	0.80	0.50	0.000
164.00	RRUS 4478 B14	3	59.90	1.840	125.70	2.578	16.500	13.400	7.700	0.80	0.50	0.000
164.00	DC6-48-60-18-8F	3	31.80	0.920	115.02	1.510	24.000	11.000	11.000	1.00	1.00	0.000
162.75	AIR6449 B77D	3	88.00	4.130	285.27	5.311	30.800	16.100	10.800	0.80	0.85	0.000
150.00	Sector Frame	3	500.00	23.000	1430.78	47.405	0.000	0.000	0.000	0.75	0.75	0.000
150.00	Amphenol - BXA-70063/6CF-EDIN	3	17.00	7.570	214.73	11.255	71.000	11.200	5.200	0.80	0.78	0.000
150.00	Commscope SBNHH-1D65B	6	40.60	8.080	326.81	9.842	72.000	11.900	7.100	0.80	0.83	0.000
150.00	Samsung MT6407-77A	3	79.40	4.690	250.17	5.973	35.100	16.100	5.500	0.80	0.70	0.000
150.00	RFS FD9R6004/2C-3L Diplexer	6	3.10	0.360	13.80	0.951	5.800	6.500	1.500	0.80	0.50	0.000
150.00	Samsung LTE AWS/PCS	3	84.40	1.880	152.75	2.615	15.000	15.000	10.000	0.80	0.50	0.000
150.00	Samsung LTE 700/850 MHz	3	70.30	1.880	135.15	2.615	15.000	15.000	8.100	0.80	0.50	0.000
150.00	RFS DB-T1-6Z-8AB-OZ	2	18.90	4.800	180.34	6.140	24.000	24.000	10.000	0.80	0.71	0.000
150.00	(3) 12.5' - 2.5" Horizontal Pi	2	217.50	7.188	500.92	19.230	0.000	0.000	0.000	0.75	1.00	0.000
150.00	(3) SFS-H (V-Braces)	3	197.00	6.300	563.73	15.096	0.000	0.000	0.000	0.75	1.00	0.000
135.00	(3) T-Frames	1	1598.0	40.500	4541.60	96.452	0.000	0.000	0.000	0.75	1.00	0.000
135.00	APXVAARR24_43-U-NA20 (Octa)	3	128.00	20.240	701.99	22.777	95.900	24.000	7.800	0.80	0.70	0.000
135.00	AIR6419 B41	3	103.00	6.320	283.91	7.723	33.100	20.500	8.300	0.80	0.71	0.000
135.00	AIR32 KRD901146-1_B66A (Octa)	3	132.20	6.510	389.88	8.081	57.000	12.900	8.700	0.80	0.87	0.000
135.00	KRY 112 144/2 TMA	6	11.00	0.410	25.22	1.037	6.900	6.100	2.700	0.80	0.70	0.000
135.00	4449 B71 + B85	3	73.20	1.970	149.38	2.721	17.900	13.200	10.600	0.80	0.67	0.000
135.00	4460 B25 + B66	3	109.00	2.850	203.87	3.740	21.800	15.700	7.500	0.00	0.00	0.000
135.00	T-arms Mods	1	180.00	19.400	478.41	46.202	0.000	0.000	0.000	0.75	1.00	0.000
125.00	JMA Wireless MX08FRO665-21	3	64.50	12.490	442.16	14.392	72.000	20.000	8.000	0.80	0.74	0.000
125.00	Fujitsu TA08025-B604	3	63.90	1.960	129.64	2.688	15.800	15.000	7.900	0.80	0.67	0.000
125.00	Fujitsu TA08025-B605	3	75.00	1.960	142.91	2.688	15.800	15.000	9.100	0.80	0.67	0.000
125.00	Raycap RDIDC-9181-PF-48	1	21.90	2.010	91.04	2.748	16.600	14.600	8.500	1.00	1.00	0.000
125.00	(3) Commscope MTC3975083	1	1242.0	28.050	2818.01	73.813	0.000	0.000	0.000	0.75	1.00	0.000
112.30	Sector Frame	3	450.00	24.500	906.81	40.489	0.000	0.000	0.000	0.75	0.75	0.000
112.30	RFS - APXVSP18-C-A20	3	57.00	8.020	281.43	11.647	72.000	11.800	7.000	0.80	0.83	4.500
112.30	RFS - APXVTM14-C-I20	3	56.20	6.340	269.07	7.811	56.300	12.600	6.300	0.80	0.78	2.700
112.30	Alcatel-Lucent - TD-RRH8x20-25 -	3	70.00	4.050	196.89	5.885	26.100	18.600	6.700	0.80	0.50	2.700

Loading Summary

Structure: CT22108-A-SBA	Code: TIA-222-G	6/8/2022
Site Name: Windsor Locks @ Volunteer Drive	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 5.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Page: 6
	Struct Class: II	



110.30	Alcatel-Lucent - 800 MHz RRH	3	53.00	2.490	149.03	3.975	19.700	13.000	10.800	0.80	0.50	0.000
107.60	Alcatel-Lucent - 1900 MHz RRH	3	44.00	3.800	185.74	5.605	23.000	13.000	17.000	0.80	0.50	0.000
102.40	12" x 12" x 6.38" Junction Box	1	10.00	1.400	63.17	2.481	12.000	12.000	8.000	1.00	1.00	0.000
101.40	Standoffs	3	120.00	4.500	253.38	11.182	0.000	0.000	0.000	0.75	0.75	0.000
101.40	Andrew - 3.3' Dish	1	140.00	8.920	372.43	11.157	36.000	36.000	0.000	1.00	1.00	3.200
101.40	Andrew - VHLP1-23-DW1	1	14.00	1.610	59.10	2.576	15.300	15.300	8.700	1.00	1.00	2.600
101.40	Argus - LLPX310R-V4	3	28.70	4.310	144.33	6.426	42.100	11.800	4.500	0.80	0.73	2.600
101.40	Alcatel-Lucent - SPI-22132825WB	3	33.10	1.820	89.05	3.063	16.100	11.600	6.000	0.80	0.67	2.400
74.00	3.5" Ø x 8" GPS	1	10.00	0.160	16.90	0.638	8.000	2.000	2.000	1.00	1.00	1.900
74.00	Standoff	1	120.00	2.500	250.27	6.126	0.000	0.000	0.000	1.00	1.00	0.000
60.00	PCTEL - GPS-TMG-HR-26N - GPS	1	0.60	0.090	6.45	0.308	5.000	3.200	3.200	1.00	1.00	0.000
Totals:		153	17,465.40		51,993.64					Number of Appurtenances : 59		

Loading Summary

Structure: CT22108-A-SBA	Code: TIA-222-G	6/8/2022
Site Name: Windsor Locks @ Volunteer Drive	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 5.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Page: 7
	Struct Class: II	




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
171.50	195.00	7/8" Coax	1	1.11	0.52	100.00	3	Individual NR		N	1.00	1.00	
0.00	171.50	7/8" Coax	8	1.11	0.52	50.00	3	Block		N	0.25	1.00	
0.00	164.00	0.92" DC	2	0.92	0.40	50.00	2	Block		N	0.50	1.00	
0.00	164.00	1 5/8" Coax	9	1.98	1.04	66.60	2	Block		N	1.00	1.00	
0.00	164.00	1/2" Fiber	1	0.50	0.16	100.00	2	Individual NR		N	1.00	1.00	
0.00	164.00	2" Conduit	1	2.00	1.78	100.00	2	Individual NR		N	1.00	1.00	
0.00	164.00	3" Conduit	1	3.02	1.78	100.00	2	Individual NR		N	1.00	1.00	
0.00	150.00	1 5/8" Coax	12	1.98	1.04	33.30	2	Block		N	0.25	1.00	
0.00	150.00	1 5/8" Hybrid	2	2.00	1.10	50.00	2	Block		N	0.25	1.00	
0.00	135.00	1 5/8" Coax	11	1.98	1.04	50.00	1	Block		N	0.25	1.00	
0.00	135.00	1-1/4" Hybrid	3	1.25	0.95	100.00	1	Individual NR		N	1.00	1.00	0
0.00	135.00	1.9" Fiber	3	1.90	0.95	33.30	1	Individual IR		N	0.25	1.00	
0.00	125.00	1.6" Hybrid	1	1.60	1.00	100.00	1	Individual NR		N	1.00	1.00	
0.00	125.00	W/G Ladder	1	2.00	6.00	100.00	1	Individual NR		N	1.00	1.00	
0.00	112.30	1-1/4" Fiber	4	1.25	0.95	100.00	3	Individual IR		N	0.50	0.59	
0.00	101.40	1-5/16" Conduit	1	1.38	1.13	100.00	1	Individual NR		N	1.00	1.00	0
0.00	101.40	1/2" Coax	2	0.65	0.16	100.00	1	Individual NR		N	1.00	1.00	0
0.00	74.00	1/2" Coax	1	0.65	0.16	100.00	3	Individual NR		N	1.00	1.00	0
0.00	60.00	1/2" Coax	1	0.65	0.16	100.00	3	Individual NR		N	1.00	1.00	0

Section Forces

Structure: CT22108-A-SBA
Site Name: Windsor Locks @ Volunteer Drive
Height: 195.00 (ft)
Base Elev: 5.000 (ft)
Gh: 0.85 **Topography:** 1

Code: TIA-222-G
Exposure: C
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

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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)	qz (psf)	Total Area		Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice Area		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	17.40	24.365	23.64	0.00	0.12	2.88	1.00	1.00	0.00	35.27	119.13	0.00	7,702.8	0.0	2400.35	2077.99	4,478.33
2	30.0	20.77	22.326	23.64	0.00	0.13	2.84	1.00	1.00	0.00	32.73	119.13	0.00	7,521.7	0.0	2630.08	2480.51	5,110.59
3	50.0	22.85	17.472	22.04	0.00	0.13	2.86	1.00	1.00	0.00	27.28	119.13	0.00	6,411.3	0.0	2422.68	2728.14	5,150.82
4	70.0	24.39	15.857	22.04	0.00	0.14	2.81	1.00	1.00	0.00	25.58	117.73	0.00	6,263.5	0.0	2383.53	2911.66	5,295.19
5	90.0	25.63	14.383	18.83	0.00	0.14	2.79	1.00	1.00	0.00	23.37	116.97	0.00	5,354.4	0.0	2273.88	3059.91	5,333.79
6	110.0	26.69	12.992	18.83	0.00	0.17	2.71	1.00	1.00	0.00	22.05	109.60	0.00	4,699.5	0.0	2165.60	3099.85	5,265.45
7	130.0	27.60	10.974	17.23	0.00	0.19	2.63	1.00	1.00	0.00	19.67	91.84	0.00	3,842.0	0.0	1942.09	2688.66	4,630.75
8	145.0	28.22	4.586	7.81	0.00	0.21	2.56	1.00	1.00	0.00	8.71	33.43	0.00	1,474.4	0.0	856.41	1020.51	1,876.92
9	160.0	28.79	0.000	13.32	0.00	0.14	2.83	1.00	1.00	0.00	7.66	36.95	0.00	1,796.7	0.0	848.17	1110.41	1,958.58
10	177.5	29.41	0.000	8.71	0.00	0.12	2.87	1.00	1.00	0.00	5.00	1.90	0.00	853.8	0.0	572.92	59.32	632.24
11	190.0	29.82	0.000	6.00	0.00	0.13	2.85	1.00	1.00	0.00	3.45	0.93	0.00	585.5	0.0	398.52	27.01	425.53
														46,505.5	0.0			40,158.19

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)	qz (psf)	Total Area		Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice Area		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	17.40	24.365	23.64	0.00	0.12	2.88	0.80	1.00	0.00	30.40	119.13	0.00	7,702.8	0.0	2068.74	2077.99	4,146.73
2	30.0	20.77	22.326	23.64	0.00	0.13	2.84	0.80	1.00	0.00	28.27	119.13	0.00	7,521.7	0.0	2271.30	2480.51	4,751.81
3	50.0	22.85	17.472	22.04	0.00	0.13	2.86	0.80	1.00	0.00	23.79	119.13	0.00	6,411.3	0.0	2112.37	2728.14	4,840.51
4	70.0	24.39	15.857	22.04	0.00	0.14	2.81	0.80	1.00	0.00	22.41	117.73	0.00	6,263.5	0.0	2088.01	2911.66	4,999.67
5	90.0	25.63	14.383	18.83	0.00	0.14	2.79	0.80	1.00	0.00	20.50	116.97	0.00	5,354.4	0.0	1994.01	3059.91	5,053.92
6	110.0	26.69	12.992	18.83	0.00	0.17	2.71	0.80	1.00	0.00	19.45	109.60	0.00	4,699.5	0.0	1910.39	3099.85	5,010.24
7	130.0	27.60	10.974	17.23	0.00	0.19	2.63	0.80	1.00	0.00	17.47	91.84	0.00	3,842.0	0.0	1725.36	2688.66	4,414.02
8	145.0	28.22	4.586	7.81	0.00	0.21	2.56	0.80	1.00	0.00	7.79	33.43	0.00	1,474.4	0.0	766.25	1020.51	1,786.76
9	160.0	28.79	0.000	13.32	0.00	0.14	2.83	0.80	1.00	0.00	7.66	36.95	0.00	1,796.7	0.0	848.17	1110.41	1,958.58
10	177.5	29.41	0.000	8.71	0.00	0.12	2.87	0.80	1.00	0.00	5.00	1.90	0.00	853.8	0.0	572.92	59.32	632.24
11	190.0	29.82	0.000	6.00	0.00	0.13	2.85	0.80	1.00	0.00	3.45	0.93	0.00	585.5	0.0	398.52	27.01	425.53
														46,505.5	0.0			38,020.01

Section Forces

Structure: CT22108-A-SBA
Site Name: Windsor Locks @ Volunteer Drive
Height: 195.00 (ft)
Base Elev: 5.000 (ft)
Gh: 0.85 **Topography:** 1

Code: TIA-222-G
Exposure: C
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

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

Sect Seq	Wind Height (ft)	qz (psf)	Total	Total	Ice	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear	Linear	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)	Round Area (sqft)							Area (sqft)	Area (sqft)					
1	10.0	17.40	24.365	23.64	0.00	0.12	2.88	0.85	1.00	0.00	31.62	119.13	0.00	7,702.8	0.0	2151.64	2077.99	4,229.63
2	30.0	20.77	22.326	23.64	0.00	0.13	2.84	0.85	1.00	0.00	29.38	119.13	0.00	7,521.7	0.0	2360.99	2480.51	4,841.51
3	50.0	22.85	17.472	22.04	0.00	0.13	2.86	0.85	1.00	0.00	24.66	119.13	0.00	6,411.3	0.0	2189.95	2728.14	4,918.09
4	70.0	24.39	15.857	22.04	0.00	0.14	2.81	0.85	1.00	0.00	23.20	117.73	0.00	6,263.5	0.0	2161.89	2911.66	5,073.55
5	90.0	25.63	14.383	18.83	0.00	0.14	2.79	0.85	1.00	0.00	21.21	116.97	0.00	5,354.4	0.0	2063.98	3059.91	5,123.89
6	110.0	26.69	12.992	18.83	0.00	0.17	2.71	0.85	1.00	0.00	20.10	109.60	0.00	4,699.5	0.0	1974.19	3099.85	5,074.04
7	130.0	27.60	10.974	17.23	0.00	0.19	2.63	0.85	1.00	0.00	18.02	91.84	0.00	3,842.0	0.0	1779.54	2688.66	4,468.20
8	145.0	28.22	4.586	7.81	0.00	0.21	2.56	0.85	1.00	0.00	8.02	33.43	0.00	1,474.4	0.0	788.79	1020.51	1,809.30
9	160.0	28.79	0.000	13.32	0.00	0.14	2.83	0.85	1.00	0.00	7.66	36.95	0.00	1,796.7	0.0	848.17	1110.41	1,958.58
10	177.5	29.41	0.000	8.71	0.00	0.12	2.87	0.85	1.00	0.00	5.00	1.90	0.00	853.8	0.0	572.92	59.32	632.24
11	190.0	29.82	0.000	6.00	0.00	0.13	2.85	0.85	1.00	0.00	3.45	0.93	0.00	585.5	0.0	398.52	27.01	425.53
														46,505.5	0.0			38,554.56

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

Sect Seq	Wind Height (ft)	qz (psf)	Total	Total	Ice	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear	Linear	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)	Round Area (sqft)							Area (sqft)	Area (sqft)					
1	10.0	17.40	24.365	23.64	0.00	0.12	2.88	1.00	1.00	0.00	35.27	119.13	0.00	5,777.1	0.0	2400.35	2077.99	4,478.33
2	30.0	20.77	22.326	23.64	0.00	0.13	2.84	1.00	1.00	0.00	32.73	119.13	0.00	5,641.2	0.0	2630.08	2480.51	5,110.59
3	50.0	22.85	17.472	22.04	0.00	0.13	2.86	1.00	1.00	0.00	27.28	119.13	0.00	4,808.4	0.0	2422.68	2728.14	5,150.82
4	70.0	24.39	15.857	22.04	0.00	0.14	2.81	1.00	1.00	0.00	25.58	117.73	0.00	4,697.6	0.0	2383.53	2911.66	5,295.19
5	90.0	25.63	14.383	18.83	0.00	0.14	2.79	1.00	1.00	0.00	23.37	116.97	0.00	4,015.8	0.0	2273.88	3059.91	5,333.79
6	110.0	26.69	12.992	18.83	0.00	0.17	2.71	1.00	1.00	0.00	22.05	109.60	0.00	3,524.6	0.0	2165.60	3099.85	5,265.45
7	130.0	27.60	10.974	17.23	0.00	0.19	2.63	1.00	1.00	0.00	19.67	91.84	0.00	2,881.5	0.0	1942.09	2688.66	4,630.75
8	145.0	28.22	4.586	7.81	0.00	0.21	2.56	1.00	1.00	0.00	8.71	33.43	0.00	1,105.8	0.0	856.41	1020.51	1,876.92
9	160.0	28.79	0.000	13.32	0.00	0.14	2.83	1.00	1.00	0.00	7.66	36.95	0.00	1,347.5	0.0	848.17	1110.41	1,958.58
10	177.5	29.41	0.000	8.71	0.00	0.12	2.87	1.00	1.00	0.00	5.00	1.90	0.00	640.4	0.0	572.92	59.32	632.24
11	190.0	29.82	0.000	6.00	0.00	0.13	2.85	1.00	1.00	0.00	3.45	0.93	0.00	439.1	0.0	398.52	27.01	425.53
														34,879.1	0.0			40,158.19

Section Forces

Structure: CT22108-A-SBA
Site Name: Windsor Locks @ Volunteer Drive
Height: 195.00 (ft)
Base Elev: 5.000 (ft)
Gh: 0.85 **Topography:** 1

Code: TIA-222-G
Exposure: C
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

6/8/2022

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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)	qz (psf)	Total	Total	Ice	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)	Round Area (sqft)							Linear Area (sqft)	Linear Area (sqft)					
1	10.0	17.40	24.365	23.64	0.00	0.12	2.88	0.80	1.00	0.00	30.40	119.13	0.00	5,777.1	0.0	2068.74	2077.99	4,146.73
2	30.0	20.77	22.326	23.64	0.00	0.13	2.84	0.80	1.00	0.00	28.27	119.13	0.00	5,641.2	0.0	2271.30	2480.51	4,751.81
3	50.0	22.85	17.472	22.04	0.00	0.13	2.86	0.80	1.00	0.00	23.79	119.13	0.00	4,808.4	0.0	2112.37	2728.14	4,840.51
4	70.0	24.39	15.857	22.04	0.00	0.14	2.81	0.80	1.00	0.00	22.41	117.73	0.00	4,697.6	0.0	2088.01	2911.66	4,999.67
5	90.0	25.63	14.383	18.83	0.00	0.14	2.79	0.80	1.00	0.00	20.50	116.97	0.00	4,015.8	0.0	1994.01	3059.91	5,053.92
6	110.0	26.69	12.992	18.83	0.00	0.17	2.71	0.80	1.00	0.00	19.45	109.60	0.00	3,524.6	0.0	1910.39	3099.85	5,010.24
7	130.0	27.60	10.974	17.23	0.00	0.19	2.63	0.80	1.00	0.00	17.47	91.84	0.00	2,881.5	0.0	1725.36	2688.66	4,414.02
8	145.0	28.22	4.586	7.81	0.00	0.21	2.56	0.80	1.00	0.00	7.79	33.43	0.00	1,105.8	0.0	766.25	1020.51	1,786.76
9	160.0	28.79	0.000	13.32	0.00	0.14	2.83	0.80	1.00	0.00	7.66	36.95	0.00	1,347.5	0.0	848.17	1110.41	1,958.58
10	177.5	29.41	0.000	8.71	0.00	0.12	2.87	0.80	1.00	0.00	5.00	1.90	0.00	640.4	0.0	572.92	59.32	632.24
11	190.0	29.82	0.000	6.00	0.00	0.13	2.85	0.80	1.00	0.00	3.45	0.93	0.00	439.1	0.0	398.52	27.01	425.53
														34,879.1	0.0			38,020.01

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

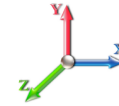
Sect Seq	Wind Height (ft)	qz (psf)	Total	Total	Ice	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)	Round Area (sqft)							Linear Area (sqft)	Linear Area (sqft)					
1	10.0	17.40	24.365	23.64	0.00	0.12	2.88	0.85	1.00	0.00	31.62	119.13	0.00	5,777.1	0.0	2151.64	2077.99	4,229.63
2	30.0	20.77	22.326	23.64	0.00	0.13	2.84	0.85	1.00	0.00	29.38	119.13	0.00	5,641.2	0.0	2360.99	2480.51	4,841.51
3	50.0	22.85	17.472	22.04	0.00	0.13	2.86	0.85	1.00	0.00	24.66	119.13	0.00	4,808.4	0.0	2189.95	2728.14	4,918.09
4	70.0	24.39	15.857	22.04	0.00	0.14	2.81	0.85	1.00	0.00	23.20	117.73	0.00	4,697.6	0.0	2161.89	2911.66	5,073.55
5	90.0	25.63	14.383	18.83	0.00	0.14	2.79	0.85	1.00	0.00	21.21	116.97	0.00	4,015.8	0.0	2063.98	3059.91	5,123.89
6	110.0	26.69	12.992	18.83	0.00	0.17	2.71	0.85	1.00	0.00	20.10	109.60	0.00	3,524.6	0.0	1974.19	3099.85	5,074.04
7	130.0	27.60	10.974	17.23	0.00	0.19	2.63	0.85	1.00	0.00	18.02	91.84	0.00	2,881.5	0.0	1779.54	2688.66	4,468.20
8	145.0	28.22	4.586	7.81	0.00	0.21	2.56	0.85	1.00	0.00	8.02	33.43	0.00	1,105.8	0.0	788.79	1020.51	1,809.30
9	160.0	28.79	0.000	13.32	0.00	0.14	2.83	0.85	1.00	0.00	7.66	36.95	0.00	1,347.5	0.0	848.17	1110.41	1,958.58
10	177.5	29.41	0.000	8.71	0.00	0.12	2.87	0.85	1.00	0.00	5.00	1.90	0.00	640.4	0.0	572.92	59.32	632.24
11	190.0	29.82	0.000	6.00	0.00	0.13	2.85	0.85	1.00	0.00	3.45	0.93	0.00	439.1	0.0	398.52	27.01	425.53
														34,879.1	0.0			38,554.56

Section Forces

Structure: CT22108-A-SBA
Site Name: Windsor Locks @ Volunteer Drive
Height: 195.00 (ft)
Base Elev: 5.000 (ft)
Gh: 0.85 **Topography:** 1

Code: TIA-222-G
Exposure: C
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		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	4.62	24.365	62.44	38.80	0.22	2.54	1.00	1.00	1.85	60.45	175.52	73.93	17,377.	9674.4	602.67	657.44	1,260.11	
2	30.0	5.52	22.326	63.53	39.89	0.24	2.47	1.00	1.00	2.01	59.33	180.42	80.47	18,015.	10494.1	687.43	810.51	1,497.94	
3	50.0	6.07	17.472	61.40	39.36	0.25	2.44	1.00	1.00	2.10	53.36	183.21	84.19	16,811.	10400.5	672.79	908.16	1,580.95	
4	70.0	6.48	15.857	60.28	38.25	0.27	2.37	1.00	1.00	2.17	51.49	183.79	77.44	16,638.	10375.0	671.80	976.09	1,647.89	
5	90.0	6.81	14.383	55.72	36.89	0.30	2.31	1.00	1.00	2.22	47.69	184.59	74.10	15,533.	10179.0	636.78	1030.65	1,667.44	
6	110.0	7.09	12.992	54.30	35.47	0.34	2.19	1.00	1.00	2.27	46.28	174.65	54.46	14,231.	9531.7	611.10	1044.48	1,655.58	
7	130.0	7.33	10.974	53.66	36.43	0.41	2.04	1.00	1.00	2.30	45.44	142.08	42.21	12,151.	8309.7	577.18	858.66	1,435.84	
8	145.0	7.50	4.586	24.44	16.62	0.46	1.95	1.00	1.00	2.33	20.85	52.04	11.63	4,757.8	3283.5	259.60	310.64	570.24	
9	160.0	7.65	0.000	65.87	52.55	0.62	1.79	1.00	1.00	2.35	50.02	54.65	16.44	6,964.8	5168.0	583.15	246.26	829.42	
10	177.5	7.81	0.000	48.23	39.52	0.64	1.79	1.00	1.00	2.37	37.15	2.49	5.34	3,473.1	2619.2	440.61	23.50	464.12	
11	190.0	7.92	0.000	33.61	27.61	0.67	1.78	1.00	1.00	2.39	26.54	0.93	3.98	2,415.8	1830.4	317.83	13.23	331.06	
														128,370.9	81865.4				12,940.57

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		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	4.62	24.365	62.44	38.80	0.22	2.54	0.80	1.00	1.85	55.58	175.52	73.93	17,377.	9674.4	554.09	657.44	1,211.53	
2	30.0	5.52	22.326	63.53	39.89	0.24	2.47	0.80	1.00	2.01	54.87	180.42	80.47	18,015.	10494.1	635.69	810.51	1,446.20	
3	50.0	6.07	17.472	61.40	39.36	0.25	2.44	0.80	1.00	2.10	49.86	183.21	84.19	16,811.	10400.5	628.73	908.16	1,536.89	
4	70.0	6.48	15.857	60.28	38.25	0.27	2.37	0.80	1.00	2.17	48.32	183.79	77.44	16,638.	10375.0	630.42	976.09	1,606.51	
5	90.0	6.81	14.383	55.72	36.89	0.30	2.31	0.80	1.00	2.22	44.81	184.59	74.10	15,533.	10179.0	598.37	1030.65	1,629.02	
6	110.0	7.09	12.992	54.30	35.47	0.34	2.19	0.80	1.00	2.27	43.68	174.65	54.46	14,231.	9531.7	576.79	1044.48	1,621.27	
7	130.0	7.33	10.974	53.66	36.43	0.41	2.04	0.80	1.00	2.30	43.24	142.08	42.21	12,151.	8309.7	549.30	858.66	1,407.96	
8	145.0	7.50	4.586	24.44	16.62	0.46	1.95	0.80	1.00	2.33	19.93	52.04	11.63	4,757.8	3283.5	248.18	310.64	558.81	
9	160.0	7.65	0.000	65.87	52.55	0.62	1.79	0.80	1.00	2.35	50.02	54.65	16.44	6,964.8	5168.0	583.15	246.26	829.42	
10	177.5	7.81	0.000	48.23	39.52	0.64	1.79	0.80	1.00	2.37	37.15	2.49	5.34	3,473.1	2619.2	440.61	23.50	464.12	
11	190.0	7.92	0.000	33.61	27.61	0.67	1.78	0.80	1.00	2.39	26.54	0.93	3.98	2,415.8	1830.4	317.83	13.23	331.06	
														128,370.9	81865.4				12,642.79

Section Forces

Structure: CT22108-A-SBA
Site Name: Windsor Locks @ Volunteer Drive
Height: 195.00 (ft)
Base Elev: 5.000 (ft)
Gh: 0.85 **Topography:** 1

Code: TIA-222-G
Exposure: C
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	Wind Importance Factor: 1.00
Dead Load Factor: 1.20	
Ice Dead Load Factor: 1.00	Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Area		Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice Area		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	4.62	24.365	62.44	38.80	0.22	2.54	0.85	1.00	1.85	56.80	175.52	73.93	17,377.	9674.4	566.23	657.44	1,223.68
2	30.0	5.52	22.326	63.53	39.89	0.24	2.47	0.85	1.00	2.01	55.98	180.42	80.47	18,015.	10494.1	648.63	810.51	1,459.14
3	50.0	6.07	17.472	61.40	39.36	0.25	2.44	0.85	1.00	2.10	50.74	183.21	84.19	16,811.	10400.5	639.74	908.16	1,547.90
4	70.0	6.48	15.857	60.28	38.25	0.27	2.37	0.85	1.00	2.17	49.12	183.79	77.44	16,638.	10375.0	640.77	976.09	1,616.86
5	90.0	6.81	14.383	55.72	36.89	0.30	2.31	0.85	1.00	2.22	45.53	184.59	74.10	15,533.	10179.0	607.97	1030.65	1,638.63
6	110.0	7.09	12.992	54.30	35.47	0.34	2.19	0.85	1.00	2.27	44.33	174.65	54.46	14,231.	9531.7	585.37	1044.48	1,629.85
7	130.0	7.33	10.974	53.66	36.43	0.41	2.04	0.85	1.00	2.30	43.79	142.08	42.21	12,151.	8309.7	556.27	858.66	1,414.93
8	145.0	7.50	4.586	24.44	16.62	0.46	1.95	0.85	1.00	2.33	20.16	52.04	11.63	4,757.8	3283.5	251.03	310.64	561.67
9	160.0	7.65	0.000	65.87	52.55	0.62	1.79	0.85	1.00	2.35	50.02	54.65	16.44	6,964.8	5168.0	583.15	246.26	829.42
10	177.5	7.81	0.000	48.23	39.52	0.64	1.79	0.85	1.00	2.37	37.15	2.49	5.34	3,473.1	2619.2	440.61	23.50	464.12
11	190.0	7.92	0.000	33.61	27.61	0.67	1.78	0.85	1.00	2.39	26.54	0.93	3.98	2,415.8	1830.4	317.83	13.23	331.06
														128,370.9	81865.4			12,717.24

Load Case: 1.0D + 1.0W Normal Wind	1.0D + 1.0W 60 mph Wind at Normal To Face
Wind Load Factor: 1.00	Wind Importance Factor: 1.00
Dead Load Factor: 1.00	
Ice Dead Load Factor: 0.00	Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Area		Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice Area		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	6.66	24.365	23.64	0.00	0.12	2.88	1.00	1.00	0.00	37.65	119.13	0.00	6,419.0	0.0	612.73	496.91	1,109.64
2	30.0	7.95	22.326	23.64	0.00	0.13	2.84	1.00	1.00	0.00	35.28	119.13	0.00	6,268.1	0.0	677.86	593.17	1,271.03
3	50.0	8.74	17.472	22.04	0.00	0.13	2.86	1.00	1.00	0.00	29.62	119.13	0.00	5,342.7	0.0	629.08	652.39	1,281.47
4	70.0	9.33	15.857	22.04	0.00	0.14	2.81	1.00	1.00	0.00	27.92	117.73	0.00	5,219.6	0.0	622.12	696.27	1,318.39
5	90.0	9.81	14.383	18.83	0.00	0.14	2.79	1.00	1.00	0.00	25.06	116.97	0.00	4,462.0	0.0	583.06	731.72	1,314.78
6	110.0	10.21	12.992	18.83	0.00	0.17	2.71	1.00	1.00	0.00	23.70	109.60	0.00	3,916.3	0.0	556.70	741.27	1,297.98
7	130.0	10.56	10.974	17.23	0.00	0.19	2.63	1.00	1.00	0.00	20.84	91.84	0.00	3,201.7	0.0	492.15	642.95	1,135.10
8	145.0	10.80	4.586	7.81	0.00	0.21	2.56	1.00	1.00	0.00	9.09	33.43	0.00	1,228.6	0.0	213.67	244.04	457.71
9	160.0	11.02	0.000	13.32	0.00	0.14	2.83	1.00	1.00	0.00	7.66	36.95	0.00	1,497.3	0.0	202.83	265.54	468.36
10	177.5	11.25	0.000	8.71	0.00	0.12	2.87	1.00	1.00	0.00	5.00	1.90	0.00	711.5	0.0	137.00	14.18	151.19
11	190.0	11.41	0.000	6.00	0.00	0.13	2.85	1.00	1.00	0.00	3.45	0.93	0.00	487.9	0.0	95.30	6.46	101.76
														38,754.6	0.0			9,907.40

Section Forces

Structure: CT22108-A-SBA
Site Name: Windsor Locks @ Volunteer Drive
Height: 195.00 (ft)
Base Elev: 5.000 (ft)
Gh: 0.85 **Topography:** 1

Code: TIA-222-G
Exposure: C
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

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

Sect Seq	Wind Height (ft)	qz (psf)	Total		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	6.66	24.365	23.64	0.00	0.12	2.88	0.80	1.00	0.00	32.78	119.13	0.00	6,419.0	0.0	533.43	496.91	1,030.34
2	30.0	7.95	22.326	23.64	0.00	0.13	2.84	0.80	1.00	0.00	30.81	119.13	0.00	6,268.1	0.0	592.06	593.17	1,185.23
3	50.0	8.74	17.472	22.04	0.00	0.13	2.86	0.80	1.00	0.00	26.13	119.13	0.00	5,342.7	0.0	554.87	652.39	1,207.26
4	70.0	9.33	15.857	22.04	0.00	0.14	2.81	0.80	1.00	0.00	24.75	117.73	0.00	5,219.6	0.0	551.45	696.27	1,247.73
5	90.0	9.81	14.383	18.83	0.00	0.14	2.79	0.80	1.00	0.00	22.18	116.97	0.00	4,462.0	0.0	516.13	731.72	1,247.86
6	110.0	10.21	12.992	18.83	0.00	0.17	2.71	0.80	1.00	0.00	21.10	109.60	0.00	3,916.3	0.0	495.68	741.27	1,236.95
7	130.0	10.56	10.974	17.23	0.00	0.19	2.63	0.80	1.00	0.00	18.65	91.84	0.00	3,201.7	0.0	440.33	642.95	1,083.27
8	145.0	10.80	4.586	7.81	0.00	0.21	2.56	0.80	1.00	0.00	8.17	33.43	0.00	1,228.6	0.0	192.11	244.04	436.15
9	160.0	11.02	0.000	13.32	0.00	0.14	2.83	0.80	1.00	0.00	7.66	36.95	0.00	1,497.3	0.0	202.83	265.54	468.36
10	177.5	11.25	0.000	8.71	0.00	0.12	2.87	0.80	1.00	0.00	5.00	1.90	0.00	711.5	0.0	137.00	14.18	151.19
11	190.0	11.41	0.000	6.00	0.00	0.13	2.85	0.80	1.00	0.00	3.45	0.93	0.00	487.9	0.0	95.30	6.46	101.76
														38,754.6	0.0			9,396.10

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

Sect Seq	Wind Height (ft)	qz (psf)	Total		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	6.66	24.365	23.64	0.00	0.12	2.88	0.85	1.00	0.00	34.00	119.13	0.00	6,419.0	0.0	553.25	496.91	1,050.17
2	30.0	7.95	22.326	23.64	0.00	0.13	2.84	0.85	1.00	0.00	31.93	119.13	0.00	6,268.1	0.0	613.51	593.17	1,206.68
3	50.0	8.74	17.472	22.04	0.00	0.13	2.86	0.85	1.00	0.00	27.00	119.13	0.00	5,342.7	0.0	573.42	652.39	1,225.81
4	70.0	9.33	15.857	22.04	0.00	0.14	2.81	0.85	1.00	0.00	25.54	117.73	0.00	5,219.6	0.0	569.12	696.27	1,265.39
5	90.0	9.81	14.383	18.83	0.00	0.14	2.79	0.85	1.00	0.00	22.90	116.97	0.00	4,462.0	0.0	532.86	731.72	1,264.59
6	110.0	10.21	12.992	18.83	0.00	0.17	2.71	0.85	1.00	0.00	21.75	109.60	0.00	3,916.3	0.0	510.93	741.27	1,252.21
7	130.0	10.56	10.974	17.23	0.00	0.19	2.63	0.85	1.00	0.00	19.20	91.84	0.00	3,201.7	0.0	453.28	642.95	1,096.23
8	145.0	10.80	4.586	7.81	0.00	0.21	2.56	0.85	1.00	0.00	8.40	33.43	0.00	1,228.6	0.0	197.50	244.04	441.54
9	160.0	11.02	0.000	13.32	0.00	0.14	2.83	0.85	1.00	0.00	7.66	36.95	0.00	1,497.3	0.0	202.83	265.54	468.36
10	177.5	11.25	0.000	8.71	0.00	0.12	2.87	0.85	1.00	0.00	5.00	1.90	0.00	711.5	0.0	137.00	14.18	151.19
11	190.0	11.41	0.000	6.00	0.00	0.13	2.85	0.85	1.00	0.00	3.45	0.93	0.00	487.9	0.0	95.30	6.46	101.76
														38,754.6	0.0			9,523.92

Force/Stress Compression Summary

Structure: CT22108-A-SBA	Code: TIA-222-G	6/8/2022
Site Name: Windsor Locks @ Volunteer Drive	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 5.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II
		Page: 14



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	12B - 12"BD 2.25"	-413.88	1.2D + 1.6W	Normal Wind	10.02	100	100	100	24.38	514.03	80.5	Member X
2	40	12B - 12"BD 2.25"	-377.25	1.2D + 1.6W	Normal Wind	10.02	100	100	100	24.38	514.03	73.4	Member X
3	60	12B - 12"BD 2"	-334.82	1.2D + 1.6W	Normal Wind	10.02	100	100	100	24.41	405.83	82.5	Member X
4	80	12B - 12"BD 2"	-289.84	1.2D + 1.6W	Normal Wind	10.02	100	100	100	24.41	405.83	71.4	Member X
5	100	12B - 12"BD 1.75"	-240.40	1.2D + 1.6W	Normal Wind	10.02	100	100	100	25.99	308.82	77.8	Member X
6	120	12B - 12"BD 1.75"	-184.18	1.2D + 1.6W	Normal Wind	10.02	100	100	100	25.99	308.82	59.6	Member X
7	140	12B - 12"BD 1.5"	-126.38	1.2D + 1.6W	Normal Wind	10.02	100	100	100	30.32	222.99	56.7	Member X
8	150	12B - 12"BD 1.25"	-68.71	1.2D + 1.6W	Normal Wind	10.02	100	100	100	36.38	150.33	45.7	Member X
9	170	SOL - 2" SOLID	-56.30	1.2D + 1.6W	Normal Wind	2.33	100	100	100	56.01	112.40	50.1	Member X
10	185	SOL - 1 3/4" SOLID	-13.11	1.2D + 1.6W	Normal Wind	2.35	100	100	100	64.48	79.87	16.4	Member X
11	195	SOL - 1 3/4" SOLID	-2.71	1.2D + 1.0Di + 1.0Wi	Normal	0.21	100	100	100	5.71	107.98	2.7	Bolt Shear

Splices

Sect	Top Elev	Load Case	Top Splice				Load Case	Bottom Splice			
			Force (kips)	Cap (kips)	Use %	Bolt Type		Force (kips)	Cap (kips)	Use %	Bolt Type
1	20	1.2D + 1.6W Normal Wind	387.28	0.00	0.0	1.2D + 1.6W Normal Wind	424.43	0.00			
2	40	1.2D + 1.6W Normal Wind	346.05	0.00	0.0	1.2D + 1.6W Normal Wind	387.28	0.00	1/4 A325	6	
3	60	1.2D + 1.6W Normal Wind	301.92	0.00	0.0	1.2D + 1.6W Normal Wind	346.05	0.00	1/4 A325	6	
4	80	1.2D + 1.6W Normal Wind	253.90	0.00	0.0	1.2D + 1.6W Normal Wind	301.92	0.00	1/4 A325	6	
5	100	1.2D + 1.6W Normal Wind	199.58	0.00	0.0	1.2D + 1.6W Normal Wind	253.90	0.00	1 A325	6	
6	120	1.2D + 1.6W Normal Wind	141.60	0.00	0.0	1.2D + 1.6W Normal Wind	199.58	0.00	1 A325	6	
7	140	1.2D + 1.6W Normal Wind	88.62	0.00	0.0	1.2D + 1.6W Normal Wind	141.60	0.00	1 A325	6	
8	150	1.2D + 1.6W Normal Wind	61.32	0.00	0.0	1.2D + 1.6W Normal Wind	88.62	0.00	1 A325	6	
9	170	1.2D + 1.6W Normal Wind	16.46	0.00	0.0	1.2D + 1.6W Normal Wind	61.32	0.00	1 A325	6	
10	185	1.2D + 1.0Di + 1.0Wi Normal Wi	2.85	0.00	0.0	1.2D + 1.6W Normal Wind	16.46	0.00			
11	195	1.2D + 1.0Di + 1.0Wi 90° Wind	0.40	0.00	0.0	1.2D + 1.0Di + 1.0Wi Normal Wi	2.85	0.00			

HORIZONTAL MEMBERS

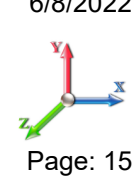
Sect	Top Elev	Member	Force (kips)		Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem		Shear Bear		Use %	Controls		
							X	Y	Z		Cap (kips)	Num Bolts	Num Holes	Cap (kips)			Cap (kips)	
1	20									0.00	0	0						
2	40									0.00	0	0						
3	60									0.00	0	0						
4	80									0.00	0	0						
5	100									0.00	0	0						
6	120									0.00	0	0						
7	140	SAE - 2.5X2.5X0.1875	-3.26	0.9D + 1.6W	Normal Wind	6.00	100	100	100	145.45	36.00	9.63	1	1	31.81	17.94	34	Member Z
8	150									0.00	0	0						
9	170	SOL - 7/8" SOLID	-1.24	1.2D + 1.6W	90° Wind	4.52	100	100	100	173.48	50.00	4.51	0	0			27	Member X
10	185	SOL - 7/8" SOLID	-1.56	1.2D + 1.6W	Normal Wind	4.50	100	100	100	172.76	50.00	4.55	0	0			34	Member X
11	195	SOL - 7/8" SOLID	-0.73	0.9D + 1.6W	90° Wind	4.50	100	100	100	172.76	50.00	4.55	0	0			16	Member X

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)		Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem		Shear Bear		Use %	Controls		
							X	Y	Z		Cap (kips)	Num Bolts	Num Holes	Cap (kips)			Cap (kips)	
1	20	SAE - 3.5X3.5X0.3125	-10.5	1.2D + 1.6W	Normal Wind	21.92	47	47	47	179.14	36.00	14.71	1	1	43.49	37.5	72	Member Z
2	40	SAE - 3.5X3.5X0.3125	-11.1	1.2D + 1.6W	90° Wind	20.16	47	47	47	164.77	36.00	17.39	1	1	43.49	37.5	64	Member Z
3	60	SAE - 3X3X0.3125	-10.9	1.2D + 1.6W	90° Wind	18.45	47	47	47	176.65	36.00	12.89	1	1	43.49	37.5	85	Member Z

Force/Stress Compression Summary

Structure: CT22108-A-SBA	Code: TIA-222-G	6/8/2022
Site Name: Windsor Locks @ Volunteer Drive	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 5.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II



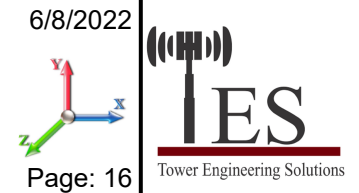
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DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap		Bear Cap (kips)	Use %	Controls
						X	Y	Z					KL/R	(kips)			
4	80	SAE - 3X3X0.3125	-10.9	1.2D + 1.6W 90° Wind	16.80	47	47	47	160.90	36.00	15.53	1	1	43.49	37.5	70	Member Z
5	100	SAE - 3X3X0.3125	-11.1	1.2D + 1.6W 90° Wind	15.24	47	47	47	145.96	36.00	18.88	1	1	31.81	29.9	59	Member Z
6	120	SAE - 3X3X0.1875	-11.0	1.2D + 1.6W 90° Wind	13.80	45	45	45	125.00	36.00	15.51	1	1	31.81	17.9	71	Member Z
7	140	SAE - 2.5X2.5X0.1875	-10.0	1.2D + 1.6W 90° Wind	12.50	44	44	44	133.37	36.00	11.46	1	1	31.81	17.9	87	Member Z
8	150	SAE - 2.5X2.5X0.1875	-11.3	1.2D + 1.6W Normal Wind	11.42	44	44	44	121.77	36.00	13.39	1	1	31.81	17.9	84	Member Z
9	170	SOL - 7/8" SOLID	-4.25	1.2D + 1.6W 90° Wind	5.48	50	50	50	135.20	50.00	7.43	0	0			57	Member X
10	185	SOL - 3/4" SOLID	-3.54	1.2D + 1.6W Normal Wind	5.08	50	50	50	146.22	50.00	4.67	0	0			76	Member X
11	195	SOL - 3/4" SOLID	-1.15	1.2D + 1.6W 60° Wind	5.04	50	50	50	145.23	50.00	4.73	0	0			24	Member X

Force/Stress Tension Summary

Structure: CT22108-A-SBA	Code: TIA-222-G	6/8/2022
Site Name: Windsor Locks @ Volunteer Drive	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 5.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II



LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	20	12B - 12"BD 2.25"	364.60	0.9D + 1.6W 60° Wind	50	536.85	67.9	Member
2	40	12B - 12"BD 2.25"	332.05	0.9D + 1.6W 60° Wind	50	536.85	61.9	Member
3	60	12B - 12"BD 2"	295.26	0.9D + 1.6W 60° Wind	50	423.90	69.7	Member
4	80	12B - 12"BD 2"	254.98	0.9D + 1.6W 60° Wind	50	423.90	60.2	Member
5	100	12B - 12"BD 1.75"	210.22	0.9D + 1.6W 60° Wind	50	324.45	64.8	Member
6	120	12B - 12"BD 1.75"	158.37	0.9D + 1.6W 60° Wind	50	324.45	48.8	Member
7	140	12B - 12"BD 1.5"	106.65	0.9D + 1.6W 60° Wind	50	238.50	44.7	Member
8	150	12B - 12"BD 1.25"	54.27	0.9D + 1.6W 60° Wind	50	165.60	32.8	Member
9	170	SOL - 2" SOLID	45.38	0.9D + 1.6W 60° Wind	50	141.37	32.1	Member
10	185	SOL - 1 3/4" SOLID	6.64	0.9D + 1.6W Normal Wind	50	108.24	6.1	Member
11	195	SOL - 1 3/4" SOLID	1.19	0.9D + 1.6W 60° Wind	50	108.24	1.2	Bolt Shear

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	339.90	0.00	0.0		0.9D + 1.6W 60° Wind	374.1	0.00				
2	40	0.9D + 1.6W 60° Wind	303.60	0.00	0.0		0.9D + 1.6W 60° Wind	339.9	457.92	74.2	1 1/4	A325	6
3	60	0.9D + 1.6W 60° Wind	264.57	0.00	0.0		0.9D + 1.6W 60° Wind	303.6	457.92	66.3	1 1/4	A325	6
4	80	0.9D + 1.6W 60° Wind	221.22	0.00	0.0		0.9D + 1.6W 60° Wind	264.5	457.92	57.8	1 1/4	A325	6
5	100	0.9D + 1.6W 60° Wind	170.86	0.00	0.0		0.9D + 1.6W 60° Wind	221.2	318.06	69.6	1	A325	6
6	120	0.9D + 1.6W 60° Wind	118.97	0.00	0.0		0.9D + 1.6W 60° Wind	170.8	318.06	53.7	1	A325	6
7	140	0.9D + 1.6W 60° Wind	71.25	0.00	0.0		0.9D + 1.6W 60° Wind	118.9	318.06	37.4	1	A325	6
8	150	0.9D + 1.6W 60° Wind	43.71	0.00	0.0		0.9D + 1.6W 60° Wind	71.25	318.06	22.4	1	A325	6
9	170	0.9D + 1.6W Normal Wind	6.61	0.00	0.0		0.9D + 1.6W 60° Wind	43.71	318.06	13.7	1	A325	6
10	185	0.9D + 1.6W 60° Wind	1.17	0.00	0.0		0.9D + 1.6W Normal Wind	6.61	0.00				
11	195		0.00	0.00	0.0		0.9D + 1.6W 60° Wind	1.17	0.00				

HORIZONTAL MEMBERS

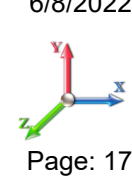
Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	-			36	0.00	0	0					
2	40	-			36	0.00	0	0					
3	60	-			36	0.00	0	0					
4	80	-			36	0.00	0	0					
5	100	-			36	0.00	0	0					
6	120	-			36	0.00	0	0					
7	140	SAE - 2.5X2.5X0.1875	3.64	1.2D + 1.6W 60° Wind	36	22.55	1	1	31.81	17.94	10.66	34.1	Blck Shear
8	150	-			36	0.00	0	0					
9	170	SOL - 7/8" SOLID	1.25	1.2D + 1.6W 90° Wind	50	27.06	0	0				4.6	Member
10	185	SOL - 7/8" SOLID	0.90	1.2D + 1.6W 60° Wind	50	27.06	0	0				3.3	Member
11	195	SOL - 7/8" SOLID	0.98	0.9D + 1.6W 60° Wind	50	27.06	0	0				3.6	Member

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 - 3.5X3.5X0.3125	10.54	1.2D + 1.6W 90° Wind	36	54.17	1	1	43.49	37.52	23.70	44.5	Blck Shear
2	40	SAE - 3.5X3.5X0.3125	10.71	0.9D + 1.6W 90° Wind	36	54.17	1	1	43.49	37.52	23.70	45.2	Blck Shear
3	60	SAE - 3X3X0.3125	10.49	1.2D + 1.6W 90° Wind	36	44.05	1	1	43.49	37.52	20.30	51.7	Blck Shear
4	80	SAE - 3X3X0.3125	10.57	1.2D + 1.6W 90° Wind	36	44.05	1	1	43.49	37.52	20.30	52.1	Blck Shear

Force/Stress Tension Summary

Structure: CT22108-A-SBA	Code: TIA-222-G	6/8/2022
Site Name: Windsor Locks @ Volunteer Drive	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 5.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II



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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
5	100	SAE - 3X3X0.3125	11.20	1.2D + 1.6W 90° Wind	36	46.60	1	1	31.81	29.91	19.47	57.5	Blck Shear
6	120	SAE - 3X3X0.1875	10.63	1.2D + 1.6W 90° Wind	36	28.68	1	1	31.81	17.94	11.68	91.0	Blck Shear
7	140	SAE - 2.5X2.5X0.1875	9.72	1.2D + 1.6W 90° Wind	36	22.55	1	1	31.81	17.94	10.66	91.1	Blck Shear
8	150	SAE - 2.5X2.5X0.1875	10.44	0.9D + 1.6W 60° Wind	36	22.55	1	1	31.81	17.94	10.66	97.9	Blck Shear
9	170	SOL - 7/8" SOLID	4.24	1.2D + 1.6W 90° Wind	50	27.06	0	0				15.7	Member
10	185	SOL - 3/4" SOLID	3.81	1.2D + 1.6W Normal Wi	50	19.88	0	0				19.2	Member
11	195	SOL - 3/4" SOLID	0.84	0.9D + 1.6W 90° Wind	50	19.88	0	0				4.2	Member

Support Forces Summary

Structure: CT22108-A-SBA

Code: TIA-222-G

6/8/2022

Site Name: Windsor Locks @ Volunteer Drive

Exposure: C

Height: 195.00 (ft)

Crest Height: 0.00

Base Elev: 5.000 (ft)

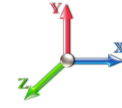
Site Class: D - Stiff Soil

Gh: 0.85

Topography: 1

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	423.62	-41.72	
	1a	14.84	-178.08	-11.31	
	1b	-14.84	-178.07	-11.32	
1.2D + 1.6W 60° Wind	1	-2.17	218.68	-21.13	
	1a	-19.27	215.87	8.76	
	1b	-32.44	-367.09	-18.73	
1.2D + 1.6W 90° Wind	1	-2.63	22.58	-1.66	
	1a	-31.35	360.92	16.74	
	1b	-28.76	-316.03	-15.08	
0.9D + 1.6W Normal Wind	1	-0.01	417.26	-41.28	
	1a	15.20	-183.33	-11.53	
	1b	-15.19	-183.33	-11.54	
0.9D + 1.6W 60° Wind	1	-2.18	212.68	-20.69	
	1a	-18.90	209.91	8.53	
	1b	-32.79	-372.00	-18.94	
0.9D + 1.6W 90° Wind	1	-2.65	16.94	-1.23	
	1a	-30.97	354.70	16.51	
	1b	-29.12	-321.04	-15.28	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.00	193.69	-12.27	
	1a	5.79	-6.55	-4.00	
	1b	-5.78	-6.51	-4.00	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.59	126.42	-5.77	
	1a	-5.23	124.84	2.41	
	1b	-11.47	-70.64	-6.63	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-0.70	60.37	0.57	
	1a	-9.16	173.25	4.94	
	1b	-10.19	-53.00	-5.51	
1.0D + 1.0W Normal Wind	1	0.00	115.87	-11.20	
	1a	2.73	-29.83	-2.24	
	1b	-2.72	-29.82	-2.24	
1.0D + 1.0W 60° Wind	1	-0.56	66.28	-6.17	
	1a	-5.59	65.54	2.62	
	1b	-7.00	-75.60	-4.04	
1.0D + 1.0W 90° Wind	1	-0.66	18.80	-1.42	
	1a	-8.53	100.43	4.57	
	1b	-6.09	-63.02	-3.15	

Max Reactions

Leg	Overturning
Max Uplift: -372.00 (kips)	Moment: 6947.84 (ft-kips)
Max Down: 423.62 (kips)	Total Down: 67.46 (kips)
Max Shear: 41.72 (kips)	Total Shear: 64.34 (kips)

Analysis Summary

Structure: CT22108-A-SBA	Code: TIA-222-G	6/8/2022
Site Name: Windsor Locks @ Volunteer Drive	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 5.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II
		Page: 19



Max Reactions

	Leg	Overturning
Max Uplift:	-372.00 (kips)	Moment: 6947.84 (ft-kips)
Max Down:	423.62 (kips)	Total Down: 67.46 (kips)
Max Shear:	41.72 (kips)	Total Shear: 64.34 (kips)

Anchor Bolts

Bolt Size (in.): 1.25	Number Bolts: 6
Yield Strength (Ksi): 105.00	Tensile Strength (Ksi): 150.00
Detail Type: C	

Interaction Ratio: 0.64

Max Usages

Max Leg: 82.5% (1.2D + 1.6W Normal Wind - Sect 3)
 Max Diag: 97.9% (0.9D + 1.6W 60° Wind - Sect 8)
 Max Horiz: 34.2% (1.2D + 1.6W Normal Wind - Sect 10)

Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
0.9D + 1.6W 97 mph Wind at 60° From Face	60.00	0.2050	0.0286	0.3877
	70.00	0.2761	-0.0100	0.4561
	100.00	0.5793	0.0536	0.7098
	110.00	0.7111	0.0602	0.7931
	120.00	0.8562	0.0655	0.8647
	130.00	1.0168	0.0748	0.9690
	150.00	1.3808	0.0952	1.1592
	162.25	1.6340	1.0086	1.2439
	164.58	1.6839	1.1989	1.2586
	166.92	1.7328	1.3900	1.1580
	172.56	1.8617	1.9597	1.6867
	195.00	2.3373	2.6742	1.6939
0.9D + 1.6W 97 mph Wind at 90° From Face	60.00	0.2045	-0.0280	0.3887
	70.00	0.2759	-0.0329	0.4557
	100.00	0.5786	-0.0517	0.7084
	110.00	0.7101	-0.0569	0.7880
	120.00	0.8546	-0.0594	0.8608
	130.00	1.0144	-0.0632	0.9647
	150.00	1.3781	-0.0648	1.1447
	162.25	1.6273	0.0243	1.2045
	164.58	1.6772	0.0222	1.2203
	166.92	1.7242	0.0192	1.0747
	172.56	1.8540	0.0300	0.5190
	195.00	2.3160	0.0365	1.2456

0.9D + 1.6W 97 mph Wind at Normal To Face	60.00	0.2108	0.0086	0.3981
	70.00	0.2864	0.0000	0.4670
	100.00	0.5951	0.0144	0.7320
	110.00	0.7306	0.0164	0.8228
	120.00	0.8800	0.0186	0.8899
	130.00	1.0457	0.0234	0.9993
	150.00	1.4231	0.0281	1.2018
	162.25	1.6890	-0.1175	1.2940
	164.58	1.7422	-0.1340	1.2958
	166.92	1.7942	-0.1506	1.2811
	172.56	1.9241	-0.1769	2.8743
	195.00	2.4567	-0.1792	3.0880

1.0D + 1.0W 60 mph Wind at 60° From Face	60.00	0.0495	-0.0049	0.0936
	70.00	0.0670	-0.0058	0.1101
	100.00	0.1399	-0.0090	0.1710
	110.00	0.1717	-0.0098	0.1914
	120.00	0.2067	0.0102	0.2082
	130.00	0.2453	0.0114	0.2328
	150.00	0.3335	0.0132	0.2799
	162.25	0.3943	0.0608	0.2945
	164.58	0.4065	0.0698	0.2980
	166.92	0.4181	0.0799	0.2712
	172.56	0.4492	0.1126	0.3633
	195.00	0.5636	0.1533	0.3785

1.0D + 1.0W 60 mph Wind at 90° From Face	60.00	0.0496	-0.0067	0.0938
	70.00	0.0667	-0.0079	0.1099
	100.00	0.1398	-0.0124	0.1705
	110.00	0.1714	-0.0137	0.1898
	120.00	0.2062	-0.0143	0.2073
	130.00	0.2447	-0.0152	0.2317
	150.00	0.3317	-0.0155	0.2750
	162.25	0.3914	-0.0041	0.2883
	164.58	0.4033	-0.0019	0.2921
	166.92	0.4146	-0.0008	0.2573
	172.56	0.4456	-0.0015	0.1239
	195.00	0.5560	0.0020	0.2975

1.0D + 1.0W 60 mph Wind at Normal To Face	60.00	0.0513	0.0021	0.0966
	70.00	0.0697	0.0000	0.1130
	100.00	0.1444	0.0034	0.1772
	110.00	0.1772	0.0039	0.1990
	120.00	0.2133	0.0044	0.2154
	130.00	0.2534	0.0055	0.2417
	150.00	0.3440	0.0066	0.2890
	162.25	0.4082	-0.0251	0.3120
	164.58	0.4210	-0.0285	0.3122
	166.92	0.4335	-0.0319	0.3088
	172.56	0.4648	-0.0365	0.6899
	195.00	0.5934	-0.0363	0.7410

1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	60.00	0.0698	0.0074	0.1316
	70.00	0.0929	-0.0038	0.1558
	100.00	0.1978	0.0139	0.2456
	110.00	0.2436	0.0157	0.2776
	120.00	0.2943	0.0171	0.3036
	130.00	0.3507	0.0196	0.3450
	150.00	0.4830	0.0243	0.4271
	162.25	0.5776	0.2442	0.4636
	164.58	0.5964	0.2908	0.4747
	166.92	0.6151	0.3381	0.4210
	172.56	0.6659	0.4734	0.7600
	195.00	0.8495	0.7376	1.3208


1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	60.00	0.0692	-0.0078	0.1319
	70.00	0.0928	-0.0092	0.1552
	100.00	0.1965	-0.0144	0.2448
	110.00	0.2420	-0.0160	0.2750
	120.00	0.2923	-0.0167	0.3029
	130.00	0.3490	-0.0180	0.3427
	150.00	0.4796	-0.0183	0.4184
	162.25	0.5721	-0.0032	0.4500
	164.58	0.5908	0.0068	0.4624
	166.92	0.6084	0.0120	0.3884
	172.56	0.6596	0.0109	0.4211
	195.00	0.8340	0.0115	0.9130

1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	60.00	0.0697	0.0035	0.1351
	70.00	0.0952	0.0000	0.1586
	100.00	0.2018	0.0064	0.2536
	110.00	0.2489	0.0073	0.2868
	120.00	0.3015	0.0081	0.3156
	130.00	0.3609	0.0099	0.3585
	150.00	0.4973	0.0119	0.4402
	162.25	0.5981	-0.0544	0.4965
	164.58	0.6185	-0.0624	0.5016
	166.92	0.6387	-0.0703	0.4961
	172.56	0.6898	-0.0817	1.3079
	195.00	0.9088	-0.0821	2.0751

1.2D + 1.6W 97 mph Wind at 60° From Face	60.00	0.2054	0.0286	0.3886
	70.00	0.2766	-0.0100	0.4572
	100.00	0.5806	0.0538	0.7117
	110.00	0.7127	0.0604	0.7953
	120.00	0.8582	0.0657	0.8671
	130.00	1.0193	0.0750	0.9719
	150.00	1.3846	0.0955	1.1633
	162.25	1.6386	1.0117	1.2482
	164.58	1.6887	1.2026	1.2629
	166.92	1.7377	1.3943	1.1619
	172.56	1.8670	1.9658	1.6888
	195.00	2.3443	2.6827	1.6963

1.2D + 1.6W 97 mph Wind at 90° From Face	60.00	0.2049	-0.0280	0.3895
	70.00	0.2764	-0.0330	0.4567
	100.00	0.5798	-0.0518	0.7103
	110.00	0.7117	-0.0570	0.7903
	120.00	0.8566	-0.0595	0.8635
	130.00	1.0169	-0.0633	0.9676
	150.00	1.3817	-0.0649	1.1487
	162.25	1.6318	0.0246	1.2086
	164.58	1.6819	0.0224	1.2244
	166.92	1.7290	0.0195	1.0783
	172.56	1.8594	0.0303	0.5154
	195.00	2.3229	0.0369	1.2499

1.2D + 1.6W 97 mph Wind at Normal To Face	60.00	0.2112	0.0087	0.3991
	70.00	0.2870	0.0000	0.4681
	100.00	0.5966	0.0145	0.7341
	110.00	0.7324	0.0165	0.8252
	120.00	0.8822	0.0187	0.8927
	130.00	1.0485	0.0235	1.0025
	150.00	1.4270	0.0282	1.2055
	162.25	1.6938	-0.1177	1.2984
	164.58	1.7472	-0.1342	1.3002
	166.92	1.7994	-0.1509	1.2852
	172.56	1.9297	-0.1772	2.8784
	195.00	2.4641	-0.1795	3.0928

	Mat Foundation Design for Self Supporting Tower			Date
				6/8/2022
	Customer Name:	SBA Communications Corp	TIA Standard:	TIA-222-G
	Site Name:		Structure Height (Ft.):	195
	Site Nmber:	CT22108-A-SBA	Engineer Name:	J. Tibbetts
Engr. Number:	130159	Engineer Login ID:		

Foundation Info Obtained from:

Analysis or Design?

Number of Tower Legs:

Base Reactions (Factored):

(1). Individual Leg:

Axial Load (Kips):	423.6	Uplift Force (Kips):	372.0
Shear Force (Kips):	41.7		

(2). Tower Base:

Total Vertical Load (Kips):	67.5	Total Shear Force (Kips):	64.3
Moment (Kips-ft):	6947.8		

Foundation Geometries:

Leg distance (Center-to-Center ft.):	20.0	Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	Square 5.0	Pier Height A. G. (ft.):	5.00
Tower center to mat center (ft):	2.89	Depth of Base BG (ft.):	10.0
Length of Pad (ft.):	29.5	Width of Pad (ft.):	29.5
Thickness of Pad (ft):	3.50		

Material Properties and Rebar Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	27	Tie Spacing (in):	10.0	
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:

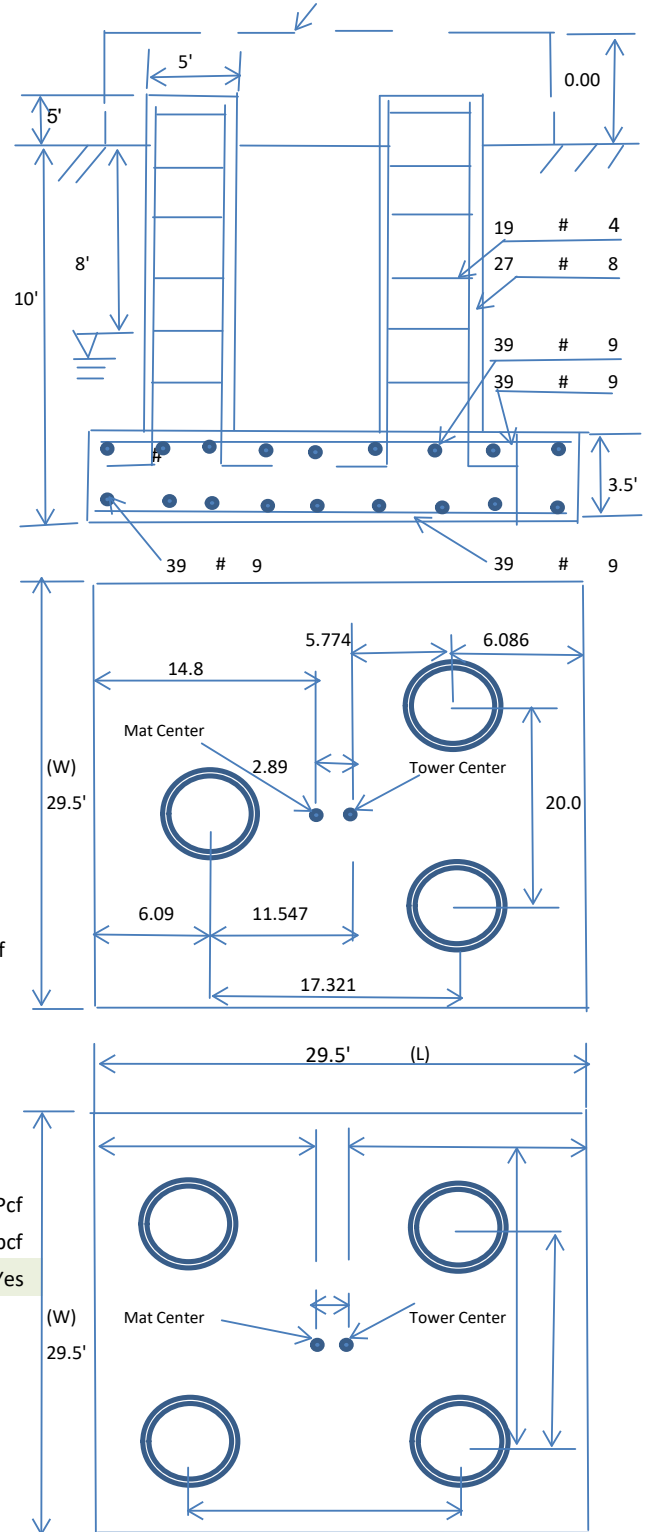
Qty. of Rebar in Pad (L):	39	Qty. of Rebar in Pad (W):	39
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Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	39	Qty. of Rebar in Pad (W):	39
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Soil Design Parameters:

Soil Unit Weight (pcf):	100.0	Soil Buoyant Weight:	50.0	Pcf
Water Table B.G.S. (ft):	8.0	Unit Weight of Water:	62.4	pcf
Ultimate Bearing Pressure (psf):	7000	Consider ties in concrete shear strength:	Yes	
Consider Soil Lateral Resistance ?	No			



Foundation Analysis and Design:	Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	5169.13	Total Dry Soil Weight (Kips):	516.91	
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00	
Total Effective Soil Weight (Kips):	516.91	Weight from the Concrete Block at Top (K):	0.00	
Total Dry Concrete Volume (cu. Ft.):	2167.88	Total Dry Concrete Weight (Kips):	325.18	
Total Buoyant Concrete Volume (cu. Ft.):	1740.50	Total Buoyant Concrete Weight (Kips):	152.47	
Total Effective Concrete Weight (Kips):	477.65	Total Vertical Load on Base (Kips):	1062.03	

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	3572.95	<	Allowable Factored Soil Bearing (psf):	5250	0.68	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	14197.9	>	Design Factored Momont (kips-ft):	8108	0.57	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.75					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):	0.79	Tie / Stirrup Area (sq. in./each):	0.20			
Calculated Moment Capacity (Mn,Kips-Ft):	1827.4	>	Design Factored Moment (Mu, Kips-Ft)	479.8	0.26	OK!
Calculated Shear Capacity (Kips):	322.7	>	Design Factored Shear (Kips):	41.7	0.13	OK!
Calculated Tension Capacity (Tn, Kips):	1151.8	>	Design Factored Tension (Tu Kips):	372.0	0.32	OK!
Calculated Compression Capacity (Pn, Kips):	4745.3	>	Design Factored Axial Load (Pu Kips):	423.6	0.09	OK!
Moment & Tension Strength Combination:	0.26	OK!	Check Tie Spacing (Design/Req'd):	0.83		
Pier Reinforcement Ratio:	0.006		Reinforcement Ratio is satisfied per ACI			

(2).Concrete Pad:

One-Way Design Shear Capacity (L or W Direction, Kips):	1117.9	>	One-Way Factored Shear (L/W-Dir Kips)	228.0	0.20	OK!
One-Way Design Shear Capacity (Diagonal Dir., Kips):	857.3	>	One-Way Factored Shear (Dia. Dir, Kips)	317.1	0.37	OK!
Lower Steel Pad Reinforcement Ratio (L or W-Direct.):	0.0029		Lower Steel Reinf. Ratio (Dia. Dir.):	0.0026		
Lower Steel Pad Moment Capacity (L or W-Dir. Kips-ft):	6518.3	>	Moment at Bottom (L-Direct. K-Ft):	860.9	0.13	OK!
Lower Steel Pad Moment Capacity (Dia. Direction,K-ft):	6147.7	>	Moment at Bottom (Dia. Dir. K-Ft):	1362.9	0.22	OK!
Upper Steel Pad Reinforcement Ratio (L or W -Direction):	0.0029		Upper Steel Reinf. Ratio (Dia. Dir.):	0.0026		
Upper Steel Pad Moment Capacity (L or W-Dir., Kips-ft):	6518.3	>	Moment at the top (L-Dir Kips-Ft):	240.1	0.04	OK!
Upper Steel Pad Moment Capacity (Dia. Direction, K-ft):	6147.7	>	Moment at the top (Dia. Dir., K-Ft):	534.1	0.09	OK!
Punching Failure Capacity (Kips):	1973.2	>	Punch. Failure Factored Shear (K):	423.6	0.21	OK!