August 1, 2023

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

Re:	**Notice of Exempt Modification – Antenna and RRU Add**
Property Address:	**1210 Highland Ave, Torrington, CT 06790**
Applicant:	**AT&T Mobility, LLC**

Dear Ms. Bachman:

On behalf of AT&T, please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16- 50j-72(b) (2).

AT&T currently maintains a wireless telecommunications facility consisting of twelve (12) wireless telecommunication antennas at an antenna center line height of 245-feet on an existing 260-foot Guyed Tower, owned by SBA Properties at 8051 Congress Street, Boca Raton, FL 33487. AT&T now intends to remove three (3) 4' Kathrein 7770 Panel Antennas, each currently installed in position [1], and remove two (2) 6' KMW AM-X-CD-16-65-00T-RET Panel Antenna, One (1) 5.5' Katherin 800-10764, all currently installed in position [2]. AT&T then swap these for three (3) 6' Quintel QD6616-7 Panel Antennas, each to be installed in position [2], add Three (3) 2.5' Ericsson AIR 6419 B77G Panel Antennas, and Three (3) Ericsson AIR6449 B77D Panel Antenna, in position [3] stacked in all sectors. All of the changes will take place on a new antenna mount. This modification/proposal includes B2, B5, and B12 hardware that is both 4G(LTE) and 5GNR capable through remote software configuration and either or both services may be turned on or off at various times.

Attached is a summary of the planned modifications including power density calculations reflecting the change in AT&T's operations at the site. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration.

Please accept this letter pursuant to Regulation of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-5I0j-72(b) (2). In accordance with R.C.S.A., a copy of this letter is being sent to Kevin Gillette– City Building Official, City of Torrington, CT at 140 Main Street, Torrington, CT 06790 and Elinor Carbone – Mayor, City of Torrington, CT at 140 Main Street, Torrington, CT 06790. A copy of this letter is being sent to the property owner SBA at 8051 Congress Ave, Boca Raton, FL 33487.

The following is a list of subsequent decisions by the Connecticut Siting Council:

- **EM-CING-143-050914** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 1210 Highland Avenue, Torrington, Connecticut.
- **EM-CING-143-130122** – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 1210 Highland Avenue, Torrington, Connecticut.
- **EM-AT&T-143-140730** – AT&T notice of intent to modify an existing telecommunications facility located at 1210 Highland Avenue, Torrington, Connecticut
- **EM-AT&T-143-191223** – AT&T Mobility, LLC notice of intent to modify an existing telecommunications facility located at 1210 Highland Avenue, Torrington, Connecticut.
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The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72(b) (2).

1. The proposed modifications will not result in an increase in the height of the existing tower. AT&T's replacement antennas will be installed at the 245-foot level of the 260'-foot Guyed Tower.

2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore, will not require and extension of the site boundary.
3. The proposed modifications will not increase the noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative worst-case RF emissions calculation for AT&T's modified facility is provided in the RF Emissions Compliance Report, included in Tab 2.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (See Structural Analysis Report included in Tab 3).

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above referenced telecommunications facility constitutes an exempt modification under R.C.S.A. §16-50j-72(b) (2).

Sincerely,

Kristina Robinson

CC w/enclosures:
Kevin Gillette– City Building Official, City of Torrington, CT
Elinor Carbone – Mayor, City of Torrington, CT
SBA - Property Owner

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2019.

Information on the Property Records for the Municipality of Torrington was last updated on 7/31/2023.

Parcel Information

Location:	1210 HIGHLAND AVE 2	Property Use:	Industrial	Primary Use:	Warehouse
Unique ID:	4278	Map Block Lot:	217/003/013/002	Acres:	6.1600
490 Acres:	0.00	Zone:	R60	Volume / Page:	0725/0929
Developers Map / Lot:		Census:	3108-2N		
Location:	1210 HIGHLAND AVE 2	Property Use:	Industrial	Primary Use:	Warehouse
Unique ID:	4278	Map Block Lot:	217/003/013/002	Acres:	6.1600
490 Acres:	0.00	Zone:	R60	Volume / Page:	0725/0929
Developers Map / Lot:		Census:	3108-2N		

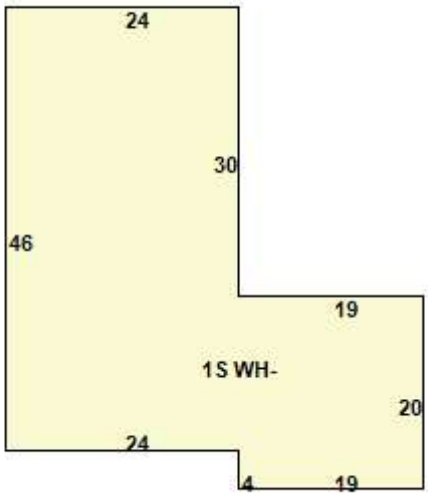
Value Information

	Appraised Value	Assessed Value
Land	113,108	79,180
Buildings	53,629	37,540
Detached Outbuildings	396,587	277,610
Total	563,324	394,330

Owner's Information

Owner's Data
SBA PROPERTIES INC TAX DEPT 02303A 8051 CONGRESS AVE BOCA RATON, FL 33487

Building 1

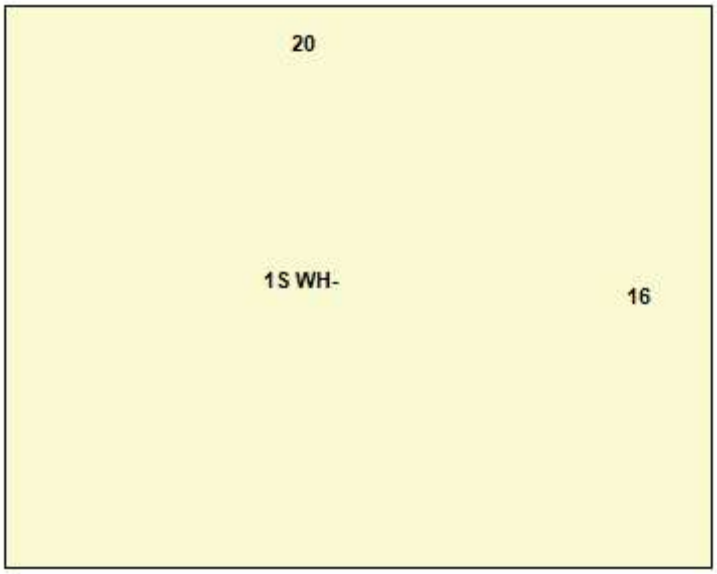


Category:	Industrial	Use:	Warehouse	GLA:	1,484
Stories:	1.00	Construction:	Masonry and Wood Frame	Year Built:	1991
Heating:	Electric Baseboard	Fuel:	Heat Pump	Cooling Percent:	100
Siding:	Concrete Block	Roof Material:	Asphalt	Beds/Units:	0

Special Features

Attached Components

Building 2

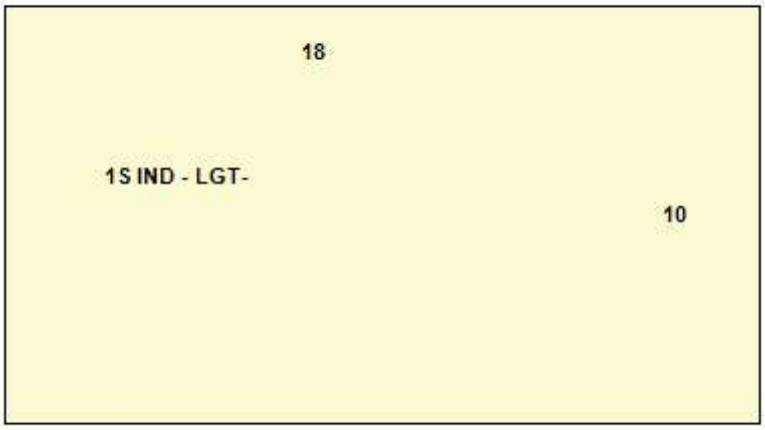


Category:	Industrial	Use:	Warehouse	GLA:	320
Stories:	1.00	Construction:	Masonry and Wood Frame	Year Built:	1960
Heating:		Fuel:		Cooling Percent:	0
Siding:	Concrete Block	Roof Material:	Asphalt	Beds/Units:	0

Special Features

Attached Components

Building 3



Category:	Industrial	Use:	Light Industrial	GLA:	180
Stories:	1.00	Construction:	Masonry and Wood Frame	Year Built:	2000
Heating:		Fuel:		Cooling Percent:	0
Siding:	Pre-Cast Concrete	Roof Material:	Asphalt	Beds/Units:	0

Special Features

Attached Components

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Metal Radio Tower	1991	0.00	0.00	241
Metal Radio Tower	1991	0.00	0.00	261
Metal Radio Tower	1991	0.00	0.00	102

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Sale Price
SBA PROPERTIES INC	0725	0929	07/14/2000		$0
SBA TOWERS INC	0715	1038	02/03/2000		$185,000
GERBI HUGO S - TRUSTEE	0616	0026	05/16/1995		$0

Building Permits

Permit Number	Permit Type	Date Opened	Reason
23-23	Certificate of Completion	06/07/2023	
22-86 EL	Electrical	03/16/2022	UPGRADE VERIZON EQUIP
BP	Building	03/16/2022	VERIZON- UPGRADE EQUIPMENT
22-7 Z	Commercial	02/22/2022	MODIFY ANTENNA & EQUIPMENT ON CELL TOWER
COC	Certificate of Completion	08/04/2021	CERT OF COMPL- MODIFICATIONS FOR AT&T
20-108 BP	Building	03/18/2020	GUY TOWER MODIFICATION
20-60 BP	Building	02/21/2020	REPL ANTENNAS/REM RADIO UNITS/CABLES/FIBER LINE/ETC= PP
14-1959	Building	10/02/2014	ADD 1 REMOTE RADIO UNIT=PP
14-702	Building	04/23/2014	CABINET/8 KW GENERATOR/ANTENNA

Permit Number	Permit Type	Date Opened	Reason
13-5031	Certificate of Completion	06/05/2013	CERT OF COMPL- 9 ANTENNAS
13-4676	Commercial	04/24/2013	REPLC N ANTENNAS ON TWR
13-4008	Building	03/20/2013	REINFORCE EXISTING 260FT STEEL TOWER STRUCTURE
13-3796	Building	03/05/2013	3 NEW ANTENNA/SUPPORT EQUIP/ NEW CABINET
08-2294	Commercial	11/07/2008	REINFORCE TOWER FOND
05-543CO	Certificate of Occupancy	02/22/2006	CO PERMIT #05-543
05-543	Commercial	11/02/2005	ATTACH ANTENNAE
02-493	Commercial	12/18/2002	NEW ANTENNAS
02-206	Commercial	06/03/2002	ADD 2 ANTENNAS
00-334	Commercial	09/25/2000	TELECOMM SHELTER FOR EQUIP

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

Site Name:	TORRINGTON HIGHLAND AVE
AT&T Mobility FA#	10071282
Site ID:	CTL01253
Project Name:	5G NR 1SR CBAND
Address:	1210 HIGHLAND AVENUE, TORRINGTON, CT 06790
County:	LITCHFIELD
Latitude:	41.8026169
Longitude:	-73.1633961
Structure Type:	GUYED
Property Owner:	NA
Property Contact:	NA

AT&T Existing Facility

Report Information

Report Writer: Monti Kumar **Report Generated Date:** 05-11-2023

Site Compliance Statement

Compliance Status	Compliant
Cumulative General Population % MPE (Ground Level)	0.0909%

May 11, 2023

Emissions Analysis for Site: **CTL01253– TORRINGTON HIGHLAND AVE**

MobileComm Professionals, Inc was directed to analyze the proposed AT&T facility located at **1210 HIGHLAND AVENUE, TORRINGTON, CT 06790**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of milliwatts per square centimeter (mW/cm^2) or microwatts per square centimeter (µW/cm2). The number of mW/cm^2 or µW/cm2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public 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 public 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.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the 700 and 850 MHz Bands are approximately 0.467 mW/cm^2 and 0.567 mW/cm^2 respectively or 466.667 µW/cm2 and 566.667 µW/cm2 respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS), 2300 MHz (WCS), 3540 MHz (DoD Band) and 3840 MHz (C-Band) bands is 1 mW/cm^2 or 1000 µW/cm2. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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 (see below), 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.

1. Theoretical Calculations: Methods and Procedures

MobileComm Professionals, Inc has performed theoretical modeling of the site using a software tool, RoofMaster® Version 40.12.23.2022, 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.

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.

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.

2. Antenna Inventory & Power Data

Sector	Ant ID	Operator	Antenna Mfg	Antenna Model	Antenna Type	FREQ. (MHz)	TECH.	AZ. (^{0})	HBW (^{0})	Antenna Gain (dBd)	Antenna Aperture (ft)	#of Channels	Transmitter Power Per Channel (Watts)	Total ERP (Watts)	Total EIRP (Watts)	Height (ft)	Calculated Power Density ($\mu W/cm^2$)	Allowable MPE ($\mu W/cm^2$)	Calculated MPE%
A	1	AT&T	Quintel	QD6616-7	Panel	700	LTE(FN)	30	71	12.05	6	4	40.00	2286.23	3750.77	245.00	0.000049	466.67	0.000010
A	1	AT&T	Quintel	QD6616-7	Panel	700	LTE(B29)	30	71	12.05	6	2	40.00	1143.12	1875.38	245.00	0.000024	466.67	0.000005
A	1	AT&T	Quintel	QD6616-7	Panel	1900	LTE/5G	30	67	15.05	6	4	40.00	4561.63	7483.76	245.00	0.000010	1000.00	0.000001
A	1	AT&T	Quintel	QD6616-7	Panel	2100	LTE/5G	30	62	15.55	6	4	40.00	5118.23	8396.92	245.00	0.000087	1000.00	0.000009
A	2-1	AT&T	Ericsson	AIR 6419 B77G	Panel	3450	5G	30	11	23.5	2.55	64	54.22	12138.53	19914.34	246.77	0.000038	1000.00	0.000004
A	2-2	AT&T	Ericsson	AIR 6449 B77D	Panel	3840	5G	30	11	23.5	2.55	64	86.75	19421.64	31862.94	243.23	0.000061	1000.00	0.000006
A	3	AT&T	Commscope	NNHH-65B-R4	Panel	700	LTE(B12)	30	66	12.45	6	4	40.00	2506.80	4112.63	245.00	0.000069	466.67	0.000015
A	3	AT&T	Commscope	NNHH-65B-R4	Panel	850	5G	30	64	12.85	6	4	40.00	2748.65	4509.41	245.00	0.000003	566.67	0.000001
A	3	AT&T	Commscope	NNHH-65B-R4	Panel	2300	LTE	30	59	15.75	6	4	25.00	3349.65	5495.41	245.00	0.000014	1000.00	0.000001
B	4	AT&T	Quintel	QD6616-7	Panel	700	LTE(FN)	160	71	12.05	6	4	40.00	2286.23	3750.77	245.00	0.021370	466.67	0.004579
B	4	AT&T	Quintel	QD6616-7	Panel	700	LTE(B29)	160	71	12.05	6	2	40.00	1143.12	1875.38	245.00	0.010685	466.67	0.002290
B	4	AT&T	Quintel	QD6616-7	Panel	1900	LTE/5G	160	67	15.05	6	4	40.00	4561.63	7483.76	245.00	0.024068	1000.00	0.002407
B	4	AT&T	Quintel	QD6616-7	Panel	2100	LTE/5G	160	62	15.55	6	4	40.00	5118.23	8396.92	245.00	0.029395	1000.00	0.002939
B	5-1	AT&T	Ericsson	AIR 6419 B77G	Panel	3450	5G	160	11	23.5	2.55	64	54.22	12138.53	19914.34	246.77	0.092968	1000.00	0.009297
B	5-2	AT&T	Ericsson	AIR 6449 B77D	Panel	3840	5G	160	11	23.5	2.55	64	86.75	19421.64	31862.94	243.23	0.148748	1000.00	0.014875
B	6	AT&T	CCI	OPA65R-BU4DA	Panel	700	LTE(B12)	160	65	11.05	4	4	40.00	1816.02	2979.34	245.00	0.042411	466.67	0.009088
B	6	AT&T	CCI	OPA65R-BU4DA	Panel	850	5G	160	65	11.85	4	4	40.00	2183.33	3581.95	245.00	0.040995	566.67	0.007234
B	6	AT&T	CCI	OPA65R-BU4DA	Panel	2300	LTE	160	65	14.85	4	4	25.00	2722.70	4466.84	245.00	0.025076	1000.00	0.002508
C	7	AT&T	Quintel	QD6616-7	Panel	700	LTE(FN)	280	71	12.05	6	4	40.00	2286.23	3750.77	245.00	0.000060	466.67	0.000013
C	7	AT&T	Quintel	QD6616-7	Panel	700	LTE(B29)	280	71	12.05	6	2	40.00	1143.12	1875.38	245.00	0.000030	466.67	0.000006
C	7	AT&T	Quintel	QD6616-7	Panel	1900	LTE/5G	280	67	15.05	6	4	40.00	4561.63	7483.76	245.00	0.000000	1000.00	0.000000
C	7	AT&T	Quintel	QD6616-7	Panel	2100	LTE/5G	280	62	15.55	6	4	40.00	5118.23	8396.92	245.00	0.000010	1000.00	0.000001
C	8-1	AT&T	Ericsson	AIR 6419 B77G	Panel	3450	5G	280	11	23.5	2.55	64	54.22	12138.53	19914.34	246.77	0.000059	1000.00	0.000006
C	8-2	AT&T	Ericsson	AIR 6449 B77D	Panel	3840	5G	280	11	23.5	2.55	64	86.75	19421.64	31862.94	243.23	0.000094	1000.00	0.000009
C	9	AT&T	Commscope	NNHH-65B-R4	Panel	700	LTE(B12)	280	66	12.45	6	4	40.00	2506.80	4112.63	245.00	0.000058	466.67	0.000012
C	9	AT&T	Commscope	NNHH-65B-R4	Panel	850	5G	280	64	12.85	6	4	40.00	2748.65	4509.41	245.00	0.000038	566.67	0.000007
C	9	AT&T	Commscope	NNHH-65B-R4	Panel	2300	LTE	280	59	15.75	6	4	25.00	3349.65	5495.41	245.00	0.000005	1000.00	0.000000

Table 2.1: Antenna Inventory & Power Data

**NOTE: 75% Duty Cycle and adjusted power reduction factor of 0.32 was applied to the AIR6449 & AIR6449 antennas per guidance from AT&T. Specifications were not available for the Ericsson AIR 6449 antenna. Per AT&T, specifications for the AIR 6449 antenna were used to model the 6449 due to its similarity.*

Sector	Ant ID	Operator	Antenna Mfg	Antenna Model	Antenna Type	FREQ. (MHz)	TECH.	AZ. (^{0})	HBW (^{0})	Antenna Gain (dBd)	Antenna Aperture (ft)	#of Channels	Transmitter Power Per Channel (Watts)	Total ERP (Watts)	Total EIRP (Watts)	Height (ft)	Calculated Power Density ($\mu W/cm^2$)	Allowable MPE ($\mu W/cm^2$)	Calculated MPE%
A	10	Verizon	Antel	BXA-80063-6CF	Panel	850	LTE	60	63	14.5	5.9	1	40.00	1004.75	1648.39	201.00	0.000007	566.67	0.000001
A	11	Verizon	Quintel	QS6656-5D	Panel	700	LTE	60	67.2	11.35	6	2	40.00	972.95	1596.21	201.00	0.000010	466.67	0.000002
A	11	Verizon	Quintel	QS6656-5D	Panel	850	LTE	60	62.5	11.25	6	2	40.00	950.80	1559.88	201.00	0.000174	566.67	0.000031
A	11	Verizon	Quintel	QS6656-5D	Panel	2100	LTE	60	60.8	15.55	6	4	40.00	5118.23	8396.92	201.00	0.000016	1000.00	0.000002
A	12	Verizon	Quintel	QS6656-5D	Panel	700	LTE	60	67.2	11.35	6	2	40.00	972.95	1596.21	201.00	0.000710	466.67	0.000152
A	12	Verizon	Quintel	QS6656-5D	Panel	850	LTE	60	62.5	11.25	6	2	40.00	950.80	1559.88	201.00	0.000699	566.67	0.000123
A	12	Verizon	Quintel	QS6656-5D	Panel	1900	LTE	60	66.1	15.15	6	4	40.00	4667.88	7658.08	201.00	0.000675	1000.00	0.000068
A	13	Verizon	Samsung	MT6407-77A	Panel	3700	5G	60	17	22.85	2.93	4	35.00	26985.35	44271.89	201.00	0.003786	1000.00	0.000379
B	14	Verizon	Antel	BXA-80063-6CF	Panel	850	LTE	180	63	14.5	5.9	1	40.00	1004.75	1648.39	201.00	0.006975	566.67	0.001231
B	15	Verizon	Quintel	QS6656-5D	Panel	700	LTE	180	67.2	11.35	6	2	40.00	972.95	1596.21	201.00	0.016084	466.67	0.003446
B	15	Verizon	Quintel	QS6656-5D	Panel	850	LTE	180	62.5	11.25	6	2	40.00	950.80	1559.88	201.00	0.014769	566.67	0.002606
B	15	Verizon	Quintel	QS6656-5D	Panel	2100	LTE	180	60.8	15.55	6	4	40.00	5118.23	8396.92	201.00	0.042130	1000.00	0.004213
B	16	Verizon	Quintel	QS6656-5D	Panel	700	LTE	180	67.2	11.35	6	2	40.00	972.95	1596.21	201.00	0.006155	466.67	0.001319
B	16	Verizon	Quintel	QS6656-5D	Panel	850	LTE	180	62.5	11.25	6	2	40.00	950.80	1559.88	201.00	0.005397	566.67	0.000952
B	16	Verizon	Quintel	QS6656-5D	Panel	1900	LTE	180	66.1	15.15	6	4	40.00	4667.88	7658.08	201.00	0.009493	1000.00	0.000949
B	17	Verizon	Samsung	MT6407-77A	Panel	3700	5G	180	17	22.85	2.93	4	35.00	26985.35	44271.89	201.00	0.085692	1000.00	0.008569
C	18	Verizon	Antel	BXA-80063-6CF	Panel	850	LTE	300	63	14.5	5.9	1	40.00	1004.75	1648.39	201.00	0.000001	566.67	0.000000
C	19	Verizon	Quintel	QS6656-5D	Panel	700	LTE	300	67.2	11.35	6	2	40.00	972.95	1596.21	201.00	0.000045	466.67	0.000010
C	19	Verizon	Quintel	QS6656-5D	Panel	850	LTE	300	62.5	11.25	6	2	40.00	950.80	1559.88	201.00	0.000047	566.67	0.000008
C	19	Verizon	Quintel	QS6656-5D	Panel	2100	LTE	300	60.8	15.55	6	4	40.00	5118.23	8396.92	201.00	0.000118	1000.00	0.000012
C	20	Verizon	Quintel	QS6656-5D	Panel	700	LTE	300	67.2	11.35	6	2	40.00	972.95	1596.21	201.00	0.000061	466.67	0.000013
C	20	Verizon	Quintel	QS6656-5D	Panel	850	LTE	300	62.5	11.25	6	2	40.00	950.80	1559.88	201.00	0.000035	566.67	0.000006
C	20	Verizon	Quintel	QS6656-5D	Panel	1900	LTE	300	66.1	15.15	6	4	40.00	4667.88	7658.08	201.00	0.000179	1000.00	0.000018
C	21	Verizon	Samsung	MT6407-77A	Panel	3700	5G	300	17	22.85	2.93	4	35.00	26985.35	44271.89	201.00	0.000135	1000.00	0.000013

Table 2.2: Antenna Inventory & Power Data

**NOTE: 75% Duty Cycle and adjusted power reduction factor of 0.32 was applied to the AIR6449 & AIR6449 antennas per guidance from AT&T. Specifications were not available for the Ericsson AIR 6449 antenna. Per AT&T, specifications for the AIR 6449 antenna were used to model the 6449 due to its similarity.*

Sector	Ant ID	Operator	Antenna Mfg	Antenna Model	Antenna Type	FREQ. (MHz)	TECH.	AZ. (^{0})	HBW (^{0})	Antenna Gain (dBd)	Antenna Aperture (ft)	#of Channels	Transmitter Power Per Channel (Watts)	Total ERP (Watts)	Total EIRP (Watts)	Height (ft)	Calculated Power Density ($\mu W/cm^2$)	Allowable MPE ($\mu W/cm^2$)	Calculated MPE%
A	22	Other Carrier	Generic	Generic	Omni	2100	Unknown	360	360	2.85	20	1	60.00	103.07	169.10	282.00	0.000421	1000.00	0.000042
A	23	Other Carrier	Generic	Generic	Omni	2100	Unknown	360	360	2.85	20	1	60.00	103.07	169.10	282.00	0.000434	1000.00	0.000043
A	24	Other Carrier	Generic	Generic	Omni	2100	Unknown	360	360	2.85	15	1	60.00	103.07	169.10	275.00	0.000558	1000.00	0.000056
A	25	Other Carrier	Generic	Generic	Omni	2100	Unknown	360	360	2.85	18	1	60.00	103.07	169.10	257.00	0.000586	1000.00	0.000059
A	26	Other Carrier	Generic	Generic	Omni	2100	Unknown	360	360	2.85	18	1	60.00	103.07	169.10	233.00	0.000709	1000.00	0.000071
A	27	Other Carrier	Generic	Generic	Omni	150	Unknown	360	360	9	8	1	60.00	424.92	696.87	222.50	0.001682	200.00	0.000841
A	28	Other Carrier	Generic	Generic	Omni	2100	Unknown	360	360	2.85	15	1	60.00	103.07	169.10	222.50	0.000857	1000.00	0.000086
A	29	Other Carrier	Generic	Generic	Omni	2100	Unknown	360	360	2.85	15	1	60.00	103.07	169.10	210.00	0.000960	1000.00	0.000096
A	30	Other Carrier	Generic	Generic	Omni	2100	Unknown	360	360	2.85	15	1	60.00	103.07	169.10	210.00	0.000988	1000.00	0.000099
A	31	Other Carrier	Generic	Generic	Omni	2100	Unknown	360	360	2.85	18	1	60.00	103.07	169.10	222.50	0.000786	1000.00	0.000079
A	32	Other Carrier	Generic	Generic	Omni	850	Unknown	360	360	5.96	6	1	60.00	210.94	346.06	180.00	0.003451	566.67	0.000609
A	33	Other Carrier	Generic	Generic	Omni	850	Unknown	360	360	5.96	6	1	60.00	210.94	346.06	180.00	0.003457	566.67	0.000610
A	34	Other Carrier	Generic	Generic	Omni	850	Unknown	360	360	5.96	6	1	60.00	210.94	346.06	180.00	0.003454	566.67	0.000610
A	35	Other Carrier	Generic	Generic	Omni	850	Unknown	360	360	5.96	6	1	60.00	210.94	346.06	180.00	0.003373	566.67	0.000595
A	36	Other Carrier	Generic	Generic	Omni	150	Unknown	360	360	9	8	1	60.00	424.92	696.87	178.00	0.002722	200.00	0.001361
A	37	Other Carrier	Generic	Generic	Omni	450	Unknown	360	360	5.96	10	1	60.00	211.01	346.06	177.00	0.002312	200.00	0.001156
A	38	Other Carrier	Generic	Generic	Omni	850	Unknown	360	360	8.96	14	1	60.00	420.87	690.48	166.50	0.002048	566.67	0.000361
A	39	Other Carrier	Generic	Generic	Omni	850	Unknown	360	360	2.6	3	1	60.00	97.31	159.64	118.00	0.009800	566.67	0.001729
A	40	Other Carrier	Generic	Generic	Omni	850	Unknown	360	360	2.6	3	1	60.00	97.31	159.64	83.80	0.017218	566.67	0.003038
																Calculated Power Density ($\mu W/cm^2$)	**0.685634%**	**Calculated MPE%**	**0.0909%**

Table 2.3: Antenna Inventory & Power Data

**NOTE: 75% Duty Cycle and adjusted power reduction factor of 0.32 was applied to the AIR6449 & AIR6449 antennas per guidance from AT&T. Specifications were not available for the Ericsson AIR 6449 antenna. Per AT&T, specifications for the AIR 6449 antenna were used to model the 6449 due to its similarity.*

3. Compliance Summary

The theoretical calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated composite MPE value for this site assuming all carriers present is 0.0909% of the allowable FCC established general public limit sampled at the ground level.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were within the allowable 100% threshold standard per the federal government.

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

Structural Analysis Report

Existing 260 ft PIROD Guyed Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT02303-A-3

Customer Site Name: Torrington 2 CT

Carrier Name: AT&T(App#: 227884, v2)

Carrier Site ID / Name: CTL01253 / Torrington Highland Ave

Site Location: 1210 Highland Ave

Torrington, Connecticut

Litchfield County

Latitude: 41.802597

Longitude: -73.164664

Analysis Result:

Max Structural Usage: 86% [Pass]

Max Foundation Usage: 75% [Pass]

Additional Usage Caused by New Mount/Mount Modification: +3%

Report Prepared By: Ram Kodali

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Analysis Result:

Max Structural Usage: 86% [Pass]

Max Foundation Usage: 75% [Pass]

Additional Usage Caused by New Mount/Mount Modification: +3%

Report Prepared By: Ram Kodali

Introduction

The purpose of this report is to summarize the analysis results on the 260 ft PIROD Guyed 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, Dwg # 114905-B, dated 9/23/1996
Foundation Drawing	Pirod, Dwg # 11405-B, dated 9/23/1996
Geotechnical Report	FDH, Project No. 12-08779E G1, Dated 10/08/12
Modification Drawings	FDH, Project No. 05-0827E, Dated 08/29/05; TES, Job # 112253, dated 8/17/21
Mount Analysis	TEP Northeast, Project # CT1253, dated 6/20/23

Analysis Criteria

The comprehensive analysis was performed in accordance with the requirements and stipulations of the TIA-222-H**.** In accordance with this standard, the structure was analyzed using **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:	115.0 mph (3-Sec. Gust) (Ultimate wind speed)
Wind Speed with Ice:	40 mph (3-Sec. Gust) with 1" radial ice concurrent
Service Load Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
Exposure Category:	C
Risk Category:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.174, S_1 = 0.054

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	260.0	1	RFI OA40-41 248" x 3" Omni - Whip	(3) Stand-Off	(1) 7/8"	Torrington PD
2	260.0	1	38" x 18"Ø Light		(1) 0.59"	SBA
3	260.0	1	PCSS090-19-0 - Panel		(1) 0.5"	Cablevision
-	245.0	3	Powerwave - 7770 - Panel	(3) Sector Frames	(12) 1 5/8" (3) 3" Flex (Housing (6) 3/4" DC power & (2) 7/16" Fiber cables)	AT&T
-		2	KMW - AM-X-CD-16-65-00T-RET - Panel			
-		1	Kathrein - 800 10764 - Panel			
-		3	KMW - EPBQ-654L8H6-L2 - Panel			
-		2	CCI - DMP65R-BU6DA - Panel			
-		1	CCI - DMP65R-BU4DA - Panel			
-		12	Powerwave LGP21401 TMA			
-		3	RRUS 4478 B14			
-		3	RRUS 32 B30			
-		3	RRUS 4449 B5/B12			
-		3	RRUS 8843 B2 B66A			
-		3	Raycap DC6-48-60-18-8F - OVP			
-		3	Andrew ABT-DFDM-ADBH			
15	201.0	6	QS6656-5D - Panel	(3) 10' T-Frames w/ Mount mods	(11) 1 5/8" (1) 1 5/8" Hybrid	Verizon
16		3	MT6407-77A - Panel			
17		3	BXA-80063-6CF-EDIN-3 - Panel			
18		3	B2/B66A RRH-BR049 (RFV01U-D1A)			
19		3	B5/B13 RRH-BR04C (RFV01U-D2A)			
20		1	RFS DB-C1-12C-24AB-0Z			
21	195.0	1	SPD2-5.8 - Dish	Pipe	(1) 1/2"	Marcus Comm
22	121.0	1	Shively 6813-HW	Leg	(1) 1 5/8" Heliax	Local Girls & Boys Broadcasting
23	100.0	2	Maxrad MPRD2449 - Dish	Pipe	(1) 3/8" CAT5E	Torrington PD
24	100.0	1	Shively 6812 w/ Radome	Leg	(1) Foam Cableware	Litchfield County Com
25	60.0	1	SPD2-5.8 - Dish	Pipe	(1) 1/2"	Marcus Comm

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
4	246.8	3	Ericsson AIR 6419 B77G - Panel	Site Pro (3) VFA14-H10-2120	(6) 1 5/8" (3) 3" Flex (Housing (6)3/4) & (2) 7/16")	AT&T
5	245.0	3	Quintel QD6616-7 - Panel			
6		2	Commscope NNHH-65B-R4 - Panel			
7		1	CCI OPA65R-BU4DA - Panel			
8		3	Ericsson RRUS 4478 B14			
9		3	Ericsson RRUS 32 B30			
10		3	Ericsson RRUS 4449 B5/B12			
11		3	Ericsson RRUS 8843 B2 B66A			
12		3	Raycap DC6-48-60-18-8F - OVP			
13		3	Andrew ABT-DFDM-ADBH			
14	243.1	3	Ericsson AIR 6449 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	Guy Wires
Max. Usage:	**86.0%**	**68.0%**	**60.0%**	**66.4%**
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**

Foundations

	Base Reactions		Anchors	
Reactions (kips)	Axial	Shear	Uplift	Shear
Analysis Reactions	117.7	1.4	35.2	44.9

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

Service Load Condition (Rigidity)

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.1746 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: CT02303-A-3-SBA

Site Name:	Torrington 2 CT			**Code:**	TIA-222-H	7/20/2023
Type:	Guyed	**Base Shape:**	Triangle	**Basic WS:**	115.00	
Height:	260.00 (ft)	**Base Width:**	0.00	**Basic Ice WS:**	40.00	
Base Elev:	0.00 (ft)	**Top Width:**	3.00	**Operational WS:**	60.00	Page: 1

IES Tower Engineering Solutions

Section Properties

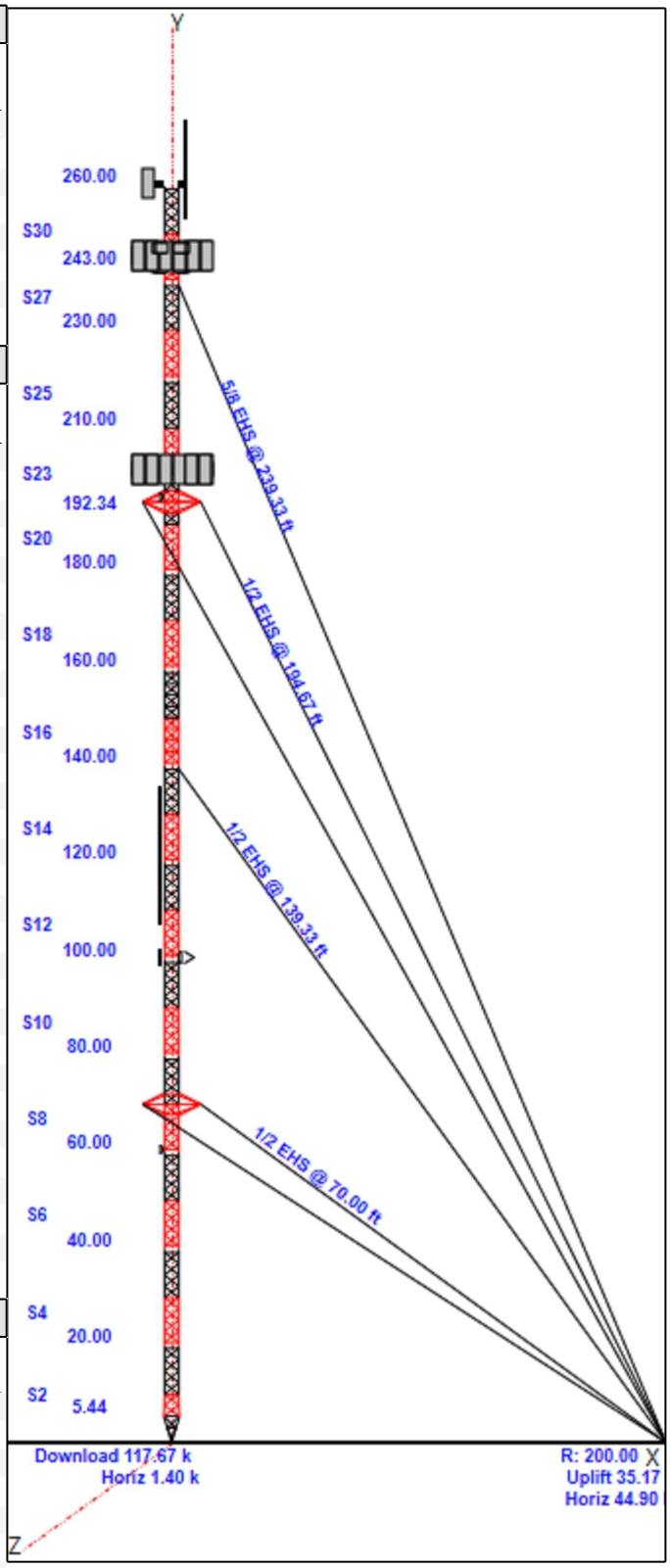
Sect	Leg Members	Diagonal Members	Horizontal Members
1-11	SOL 1 3/4" SOLID	SOL 5/8" SOLID	SOL 3/4" SOLID
12-15	SOL 1 1/2" SOLID	SOL 9/16" SOLID	SOL 3/4" SOLID
16-17	SOL 1 1/2" SOLID	SOL 9/16" SOLID	SAE 2X2X0.25
18-21	SOL 1 1/2" SOLID	SOL 9/16" SOLID	SOL 3/4" SOLID
22	SOL 1 1/2" SOLID	SOL 9/16" SOLID	CHN C3 x 6
23-28	SOL 1 1/2" SOLID	SOL 9/16" SOLID	SOL 3/4" SOLID
29	SOL 1 1/2" SOLID	SOL 9/16" SOLID	CHN C3 x 6
30-31	SOL 1 1/2" SOLID	SOL 9/16" SOLID	SOL 3/4" SOLID

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description
260.00	263.00	1	RFI OA40-41 248" x 3" Omni
260.00	260.00	1	38" x 18"Ø Light
260.00	260.00	3	Stand-Off
260.00	260.00	1	PCSS090-19-0
246.80	246.80	3	AIR 6419 B77G
245.00	245.00	3	VFA14-H10-2120
245.00	245.00	3	QD6616-7
245.00	245.00	2	NNHH-65B-R4
245.00	245.00	1	OPA65R-BU4DA
245.00	245.00	3	RRUS 4478 B14
245.00	245.00	3	RRUS 32 B30
245.00	245.00	3	RRUS 4449 B5/B12
245.00	245.00	3	RRUS 8843 B2 B66A
245.00	245.00	3	Raycap DC6-48-60-18-8F
245.00	245.00	3	ABT-DFDM-ADBH
243.10	243.10	3	AIR 6449 B77D
201.00	201.00	3	10' T-Frames
201.00	201.00	6	QS6656-5D
201.00	201.00	3	MT6407-77A
201.00	201.00	3	BXA-80063-6CF-EDIN-3
201.00	201.00	3	B2/B66A RRH-BR049 (RFV01U-D1A)
201.00	201.00	3	B5/B13 RRH-BR04C (RFV01U-D2A)
201.00	201.00	1	RFS DB-C1-12C-24AB-0Z
201.00	201.00	1	V-Brace Kits
201.00	201.00	3	Stabilizer Kit
195.00	195.00	1	SPD2-5.8
121.00	121.00	1	Shively 6813-HW
100.00	100.00	2	Maxrad MPRD2449
100.00	100.00	1	Shively 6812 w/ Radome
60.00	60.00	1	SPD2-5.8

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Qty	Description
0.00	260.00	1	1/2" Coax
0.00	260.00	1	7/8"
0.00	260.00	1	Safety Climb
0.00	245.00	6	1 5/8" Coax
0.00	245.00	3	3" Flex(Housing 6-3/4",2-7/16)
0.00	201.00	11	1 5/8"
0.00	201.00	1	1 5/8" Hybrid
0.00	195.00	1	1/2" Coax



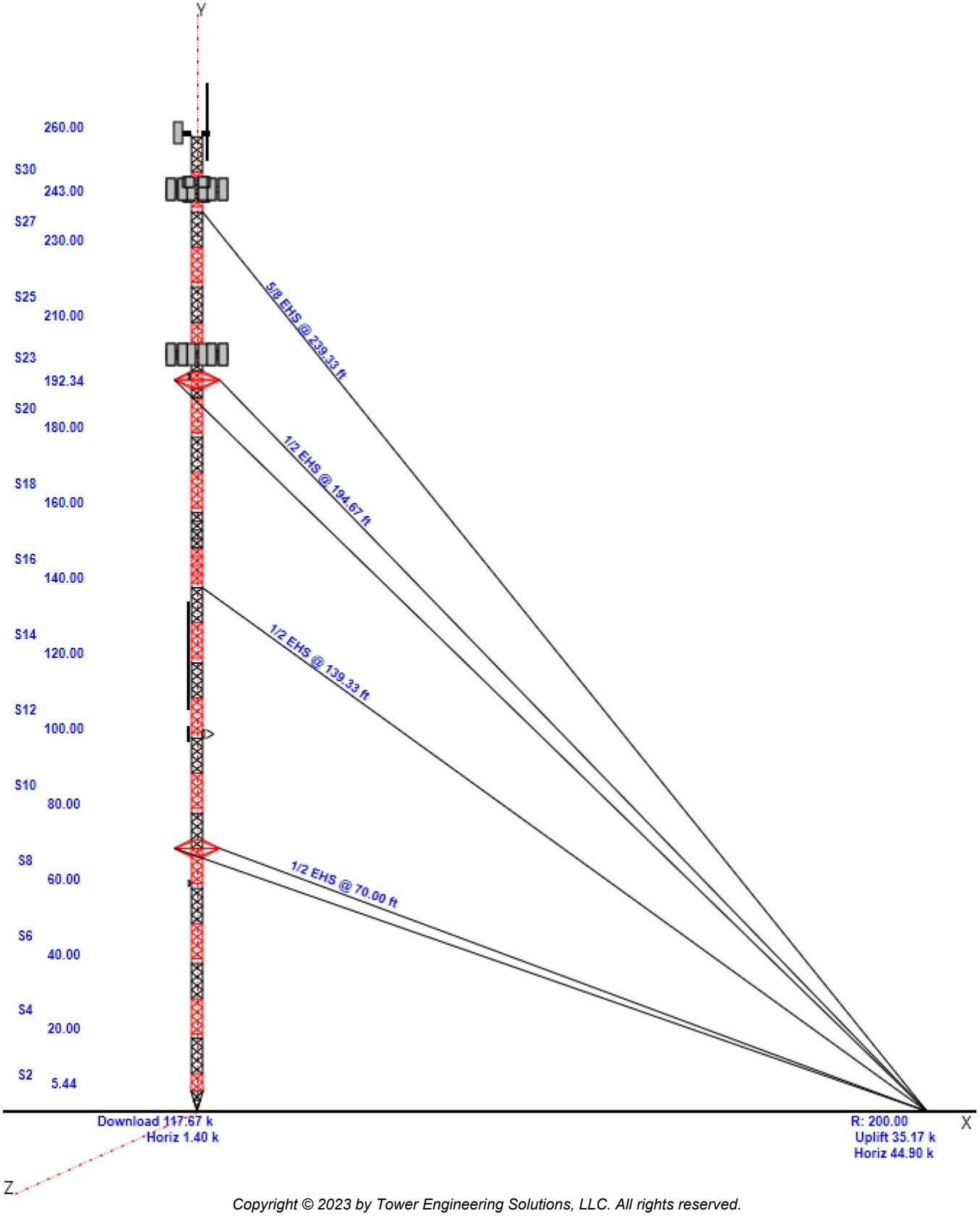
0.00	121.00	1	1 5/8" Heliax
0.00	100.00	1	3/8" CAT5E
0.00	100.00	1	Foam Cableware
0.00	60.00	1	1/2" Coax

Max Guy Wire

66.39% @ 239.333 ft - 5/8 EHS

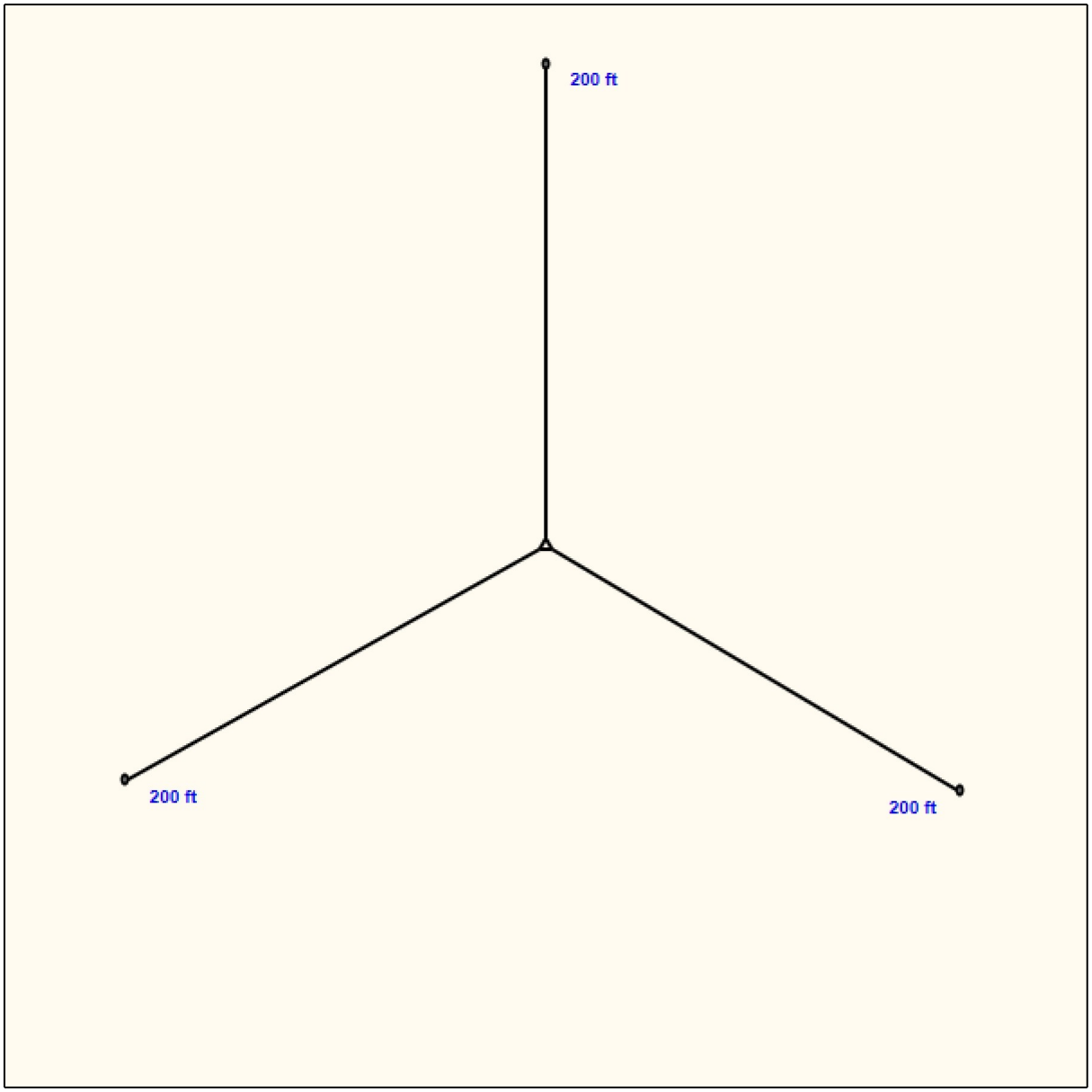
Structure: CT02303-A-3-SBA

Site Name:	Torrington 2 CT			**Code:**	TIA-222-H	7/20/2023
Type:	Guyed	**Base Shape:**	Triangle	**Basic WS:**	115.00	
Height:	260.00 (ft)	**Base Width:**	0.00	**Basic Ice WS:**	40.00	
Base Elev:	0.00 (ft)	**Top Width:**	3.00	**Operational WS:**	60.00	Page: 3



Anchor Drops with Guy Radius - Structure: CT02303-A-3-SBA

Site Name:	Torrington 2 CT			**Code:**	EIA_H	7/20/2023
Type:	Guyed	**Base Shape:**	Triangle	**Basic WS:**	115.00	
Height:	260.00 (ft)	**Base Width:**	0.00	**Basic Ice WS:**	40.00	
Base Elev:	0.00 (ft)	**Top Width:**	3.00	**Operational WS:**	60.00	Page: 4

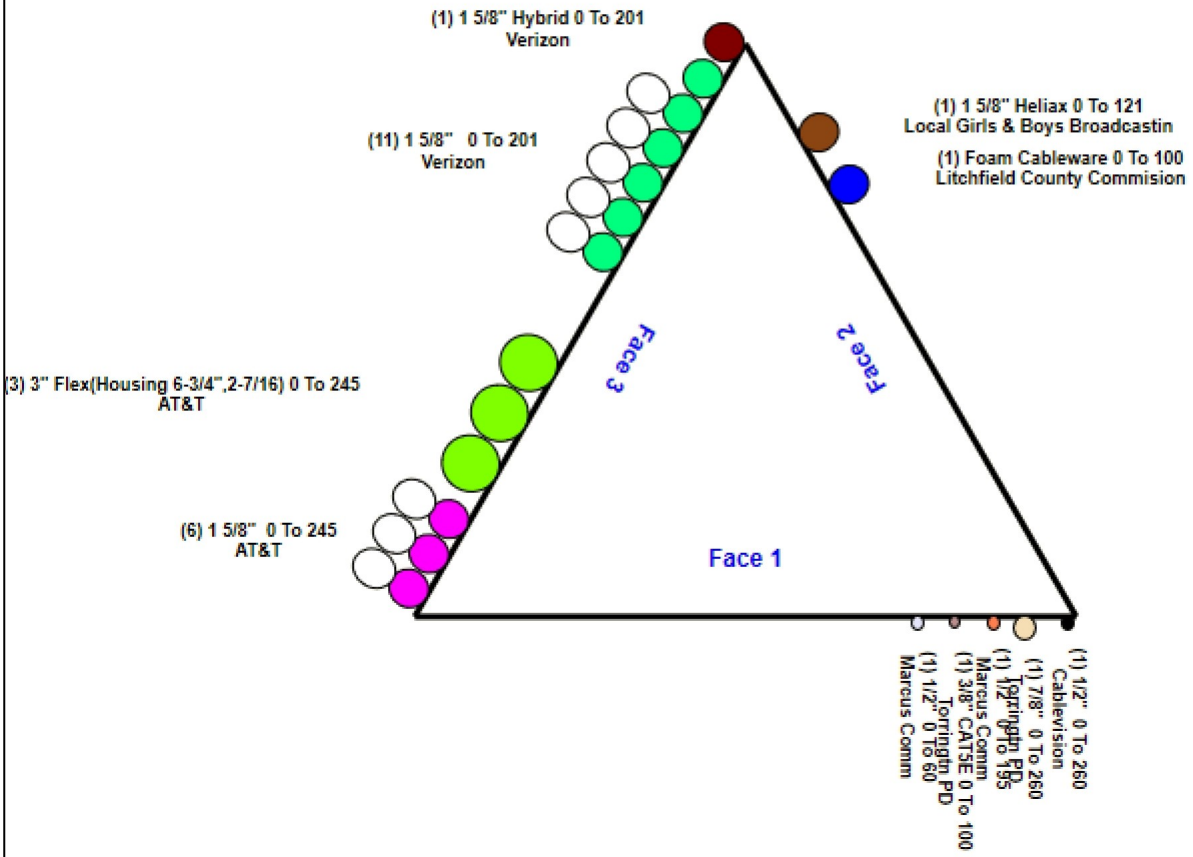


Structure: CT02303-A-3-SBA - Coax Line Placement

Type: Guyed
Site Name: Torrington 2 CT
Height: 260.00 (ft)

7/20/2023

Tower Engineering Solutions



Loading Summary

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	Ice Weight (lb)	Ice CaAa (sf)	Len (in)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
260.00	RFI OA40-41 248" x 3" Omni	1	60.00	6.200	179.55	11.385	248.000	3.000	3.000	1.00	1.00	3.000
260.00	38" x 18"Ø Light	1	5.00	6.000	19.72	20.723	72.000	1.000	1.000	1.00	1.00	0.000
260.00	Stand-Off	3	400.00	10.000	596.30	16.134	0.000	0.000	0.000	0.75	0.75	0.000
260.00	PCSS090-19-0	1	14.00	6.010	87.68	6.898	74.000	7.900	1.600	1.00	1.00	0.000
246.80	AIR 6419 B77G	3	66.10	3.800	133.47	4.357	28.300	16.100	7.900	0.80	0.76	0.000
245.00	VFA14-H10-2120	3	700.00	24.000	1179.08	45.119	0.000	0.000	0.000	0.75	0.75	0.000
245.00	QD6616-7	3	591.00	13.580	808.49	14.633	72.000	22.000	9.600	0.80	0.75	0.000
245.00	NNHH-65B-R4	2	77.40	12.270	265.50	13.290	72.000	19.600	7.800	0.80	0.94	0.000
245.00	OPA65R-BU4DA	1	43.00	4.960	142.47	5.629	48.000	11.700	10.100	0.80	0.94	0.000
245.00	RRUS 4478 B14	3	59.90	1.650	92.81	1.981	16.500	13.400	7.700	0.80	0.67	0.000
245.00	RRUS 32 B30	3	60.00	2.740	117.30	3.239	27.200	12.100	7.000	0.80	0.67	0.000
245.00	RRUS 4449 B5/B12	3	71.00	1.650	108.38	1.971	17.900	13.200	9.400	0.80	0.67	0.000
245.00	RRUS 8843 B2 B66A	3	72.00	1.640	104.80	1.988	14.900	13.200	10.900	0.80	0.67	0.000
245.00	Raycap DC6-48-60-18-8F	3	31.80	0.920	75.09	1.227	24.000	11.000	11.000	0.80	1.00	0.000
245.00	ABT-DFDM-ADBH	3	1.10	0.050	2.66	0.185	3.200	1.700	1.600	0.80	1.00	0.000
243.10	AIR 6449 B77D	3	88.00	4.130	178.89	4.718	30.800	16.100	10.800	0.80	0.85	0.000
201.00	10' T-Frames	3	450.00	15.500	692.00	20.859	0.000	0.000	0.000	0.75	0.75	0.000
201.00	QS6656-5D	6	65.00	8.130	212.89	9.005	72.000	12.000	9.600	0.80	0.93	0.000
201.00	MT6407-77A	3	79.40	4.690	156.32	5.335	35.100	16.100	5.500	0.80	0.70	0.000
201.00	BXA-80063-6CF-EDIN-3	3	17.00	7.570	119.00	9.471	71.000	11.200	5.200	0.80	0.73	0.000
201.00	B2/B66A RRH-BR049	3	84.50	1.880	119.76	2.259	15.000	15.000	10.000	0.80	0.67	0.000
201.00	B5/B13 RRH-BR04C (RFV01U-D2A)	3	70.30	1.870	114.28	2.253	15.000	15.000	8.100	0.80	0.67	0.000
201.00	RFS DB-C1-12C-24AB-0Z	1	32.00	4.060	110.36	4.625	29.500	16.500	12.500	1.00	1.00	0.000
201.00	V-Brace Kits	1	650.00	15.500	1211.78	26.664	0.000	0.000	0.000	0.75	1.00	0.000
201.00	Stabilizer Kit	3	60.00	2.380	111.86	4.094	0.000	0.000	0.000	0.75	0.75	0.000
195.00	SPD2-5.8	1	22.00	5.230	53.42	6.292	24.000	24.000	0.000	1.00	1.00	0.000
121.00	Shively 6813-HW	1	252.00	15.300	967.14	23.522	348.000	12.000	6.000	1.00	1.00	0.000
100.00	Maxrad MPRD2449	2	14.00	5.230	111.81	6.208	0.000	0.000	0.000	1.00	1.00	0.000
100.00	Shively 6812 w/ Radome	1	80.00	6.100	133.60	12.392	48.000	12.500	12.500	1.00	1.00	0.000
60.00	SPD2-5.8	1	22.00	5.230	49.69	6.166	24.000	24.000	0.000	1.00	1.00	0.000
	Totals:	**71**	**10,459.10**		**19,118.92**						**Number of Appurtenances :**	**30**

Loading Summary

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 7	

Tower Engineering Solutions

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
0.00	260.00	1/2" Coax	1	0.65	0.16	100.00	1	Individual IR		N	1.00	1.00	
0.00	260.00	7/8"	1	1.11	0.52	100.00	1	Individual NR		N	1.00	1.00	
0.00	260.00	Safety Climb	1	0.38	0.27	100.00	1	Individual NR		N	1.00	1.00	
0.00	245.00	1 5/8" Coax	6	1.98	1.04	50.00	3	Block		N	0.50	1.00	
0.00	245.00	3" Flex(Housing 6-3/4",2-7/16)	3	3.02	1.78	100.00	3	Individual IR		N	1.00	1.00	
0.00	201.00	1 5/8"	11	1.98	1.04	50.00	3	Block		N	0.50	1.00	
0.00	201.00	1 5/8" Hybrid	1	2.00	1.10	100.00	3	Individual NR		N	1.00	1.00	
0.00	195.00	1/2" Coax	1	0.65	0.16	100.00	1	Individual IR		N	1.00	1.00	
0.00	121.00	1 5/8" Heliax	1	1.98	1.04	100.00	2	Individual NR		N	1.00	1.00	
0.00	100.00	3/8" CAT5E	1	0.44	0.08	100.00	1	Individual IR		N	1.00	1.00	
0.00	100.00	Foam Cableware	1	1.98	1.04	100.00	2	Individual NR		N	1.00	1.00	
0.00	60.00	1/2" Coax	1	0.65	0.16	100.00	1	Individual IR		N	1.00	1.00	

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W Normal Wind — 1.2D + 1.0W 115 mph Wind at Normal To Face

Wind Load Factor: 1.00 — **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 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)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.7	23.39	0.000	2.61	0.00	0.27	2.38	1.00	1.00	0.00	1.57	18.23	0.00	430.0	0.0	74.44	295.53	369.96
2	7.7	23.39	0.000	2.26	0.00	0.16	2.74	1.00	1.00	0.00	1.31	15.28	0.00	361.6	0.0	71.37	247.72	319.09
3	15.0	23.39	0.000	4.63	0.00	0.15	2.78	1.00	1.00	0.00	2.67	33.51	0.00	764.5	0.0	147.40	543.25	690.65
4	25.0	26.01	0.000	4.80	0.00	0.15	2.76	1.00	1.00	0.00	2.77	33.51	0.00	780.0	0.0	169.05	604.13	773.19
5	35.0	27.92	0.000	4.62	0.00	0.15	2.78	1.00	1.00	0.00	2.66	33.51	0.00	763.7	0.0	175.62	648.48	824.10
6	45.0	29.43	0.000	4.80	0.00	0.15	2.76	1.00	1.00	0.00	2.77	33.51	0.00	780.0	0.0	191.32	683.71	875.04
7	55.0	30.71	0.000	4.62	0.00	0.15	2.78	1.00	1.00	0.00	2.66	33.51	0.00	763.7	0.0	193.16	713.22	906.37
8	65.0	31.80	0.000	4.80	0.00	0.15	2.76	1.00	1.00	0.00	2.77	32.97	0.00	778.0	0.0	206.72	728.20	934.92
9	75.0	32.78	0.000	4.62	0.00	0.15	2.78	1.00	1.00	0.00	2.66	32.97	0.00	761.8	0.0	206.19	750.48	956.67
10	85.0	33.65	0.000	4.80	0.00	0.15	2.76	1.00	1.00	0.00	2.77	32.97	0.00	778.0	0.0	218.73	770.51	989.25
11	95.0	34.45	0.000	4.62	0.00	0.15	2.78	1.00	1.00	0.00	2.66	32.97	0.00	761.8	0.0	216.71	788.77	1,005.48
12	105.0	35.18	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	30.95	0.00	664.7	0.0	205.66	762.14	967.80
13	115.0	35.86	0.000	4.06	0.00	0.13	2.85	1.00	1.00	0.00	2.33	30.95	0.00	648.5	0.0	201.89	776.88	978.77
14	125.0	36.50	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	29.47	0.00	653.5	0.0	213.35	757.47	970.82
15	135.0	37.09	0.500	3.88	0.00	0.14	2.81	1.00	1.00	0.00	2.72	29.30	0.00	654.2	0.0	241.14	766.09	1,007.23
16	145.0	37.66	2.396	3.88	0.00	0.20	2.59	1.00	1.00	0.00	4.65	29.30	0.00	792.0	0.0	386.05	777.71	1,163.76
17	155.0	38.19	2.396	3.88	0.00	0.20	2.59	1.00	1.00	0.00	4.65	29.30	0.00	792.0	0.0	391.51	788.70	1,180.21
18	165.0	38.70	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	29.30	0.00	652.2	0.0	226.19	799.15	1,025.34
19	175.0	39.18	0.000	4.06	0.00	0.13	2.85	1.00	1.00	0.00	2.33	29.30	0.00	636.0	0.0	220.55	809.11	1,029.66
20	185.0	39.64	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	29.30	0.00	652.2	0.0	231.71	818.63	1,050.34
21	191.2	39.91	0.000	1.29	0.00	0.18	2.68	1.00	1.00	0.00	0.75	6.84	0.00	178.7	0.0	68.14	192.48	260.62
22	194.7	40.07	2.156	1.86	0.00	0.27	2.36	1.00	1.00	0.00	3.27	13.58	0.00	486.5	0.0	263.19	383.76	646.95
23	198.5	40.23	0.000	1.45	0.00	0.16	2.75	1.00	1.00	0.00	0.84	8.61	0.00	212.9	0.0	79.11	244.85	323.96
24	205.0	40.50	0.000	4.06	0.00	0.13	2.85	1.00	1.00	0.00	2.33	16.48	0.00	498.6	0.0	228.02	451.72	679.74
25	215.0	40.91	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	15.11	0.00	499.8	0.0	239.15	414.60	653.75
26	225.0	41.31	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	15.11	0.00	499.8	0.0	241.45	418.58	660.04
27	235.0	41.69	0.500	3.88	0.00	0.14	2.81	1.00	1.00	0.00	2.72	15.11	0.00	501.8	0.0	270.98	422.43	693.42
28	241.5	41.93	0.000	1.45	0.00	0.16	2.75	1.00	1.00	0.00	0.84	4.53	0.00	168.0	0.0	82.54	127.46	210.00
29	245.3	42.07	2.156	1.86	0.00	0.28	2.36	1.00	1.00	0.00	3.27	3.50	0.00	376.4	0.0	276.19	97.46	373.65
30	248.8	42.19	0.000	1.11	0.00	0.15	2.76	1.00	1.00	0.00	0.64	0.42	0.00	92.6	0.0	63.46	10.73	74.18
31	255.0	42.41	0.000	4.06	0.00	0.13	2.85	1.00	1.00	0.00	2.33	1.78	0.00	336.7	0.0	238.74	46.18	284.91
														17,720.1	**0.0**			**22,879.86**

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 60° Wind — 1.2D + 1.0W 115 mph Wind at 60° From Face

Wind Load Factor: 1.00
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 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)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.7	23.39	0.000	2.61	0.00	0.27	2.38	0.80	1.00	0.00	1.57	18.23	0.00	430.0	0.0	74.44	295.53	369.96
2	7.7	23.39	0.000	2.26	0.00	0.16	2.74	0.80	1.00	0.00	1.31	15.28	0.00	361.6	0.0	71.37	247.72	319.09
3	15.0	23.39	0.000	4.63	0.00	0.15	2.78	0.80	1.00	0.00	2.67	33.51	0.00	764.5	0.0	147.40	543.25	690.65
4	25.0	26.01	0.000	4.80	0.00	0.15	2.76	0.80	1.00	0.00	2.77	33.51	0.00	780.0	0.0	169.05	604.13	773.19
5	35.0	27.92	0.000	4.62	0.00	0.15	2.78	0.80	1.00	0.00	2.66	33.51	0.00	763.7	0.0	175.62	648.48	824.10
6	45.0	29.43	0.000	4.80	0.00	0.15	2.76	0.80	1.00	0.00	2.77	33.51	0.00	780.0	0.0	191.32	683.71	875.04
7	55.0	30.71	0.000	4.62	0.00	0.15	2.78	0.80	1.00	0.00	2.66	33.51	0.00	763.7	0.0	193.16	713.22	906.37
8	65.0	31.80	0.000	4.80	0.00	0.15	2.76	0.80	1.00	0.00	2.77	32.97	0.00	778.0	0.0	206.72	728.20	934.92
9	75.0	32.78	0.000	4.62	0.00	0.15	2.78	0.80	1.00	0.00	2.66	32.97	0.00	761.8	0.0	206.19	750.48	956.67
10	85.0	33.65	0.000	4.80	0.00	0.15	2.76	0.80	1.00	0.00	2.77	32.97	0.00	778.0	0.0	218.73	770.51	989.25
11	95.0	34.45	0.000	4.62	0.00	0.15	2.78	0.80	1.00	0.00	2.66	32.97	0.00	761.8	0.0	216.71	788.77	1,005.48
12	105.0	35.18	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	30.95	0.00	664.7	0.0	205.66	762.14	967.80
13	115.0	35.86	0.000	4.06	0.00	0.13	2.85	0.80	1.00	0.00	2.33	30.95	0.00	648.5	0.0	201.89	776.88	978.77
14	125.0	36.50	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	29.47	0.00	653.5	0.0	213.35	757.47	970.82
15	135.0	37.09	0.500	3.88	0.00	0.14	2.81	0.80	1.00	0.00	2.62	29.30	0.00	654.2	0.0	232.28	766.09	998.38
16	145.0	37.66	2.396	3.88	0.00	0.20	2.59	0.80	1.00	0.00	4.17	29.30	0.00	792.0	0.0	346.27	777.71	1,123.98
17	155.0	38.19	2.396	3.88	0.00	0.20	2.59	0.80	1.00	0.00	4.17	29.30	0.00	792.0	0.0	351.17	788.70	1,139.87
18	165.0	38.70	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	29.30	0.00	652.2	0.0	226.19	799.15	1,025.34
19	175.0	39.18	0.000	4.06	0.00	0.13	2.85	0.80	1.00	0.00	2.33	29.30	0.00	636.0	0.0	220.55	809.11	1,029.66
20	185.0	39.64	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	29.30	0.00	652.2	0.0	231.71	818.63	1,050.34
21	191.2	39.91	0.000	1.29	0.00	0.18	2.68	0.80	1.00	0.00	0.75	6.84	0.00	178.7	0.0	68.14	192.48	260.62
22	194.7	40.07	2.156	1.86	0.00	0.27	2.36	0.80	1.00	0.00	2.84	13.58	0.00	486.5	0.0	228.46	383.76	612.22
23	198.5	40.23	0.000	1.45	0.00	0.16	2.75	0.80	1.00	0.00	0.84	8.61	0.00	212.9	0.0	79.11	244.85	323.96
24	205.0	40.50	0.000	4.06	0.00	0.13	2.85	0.80	1.00	0.00	2.33	16.48	0.00	498.6	0.0	228.02	451.72	679.74
25	215.0	40.91	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	15.11	0.00	499.8	0.0	239.15	414.60	653.75
26	225.0	41.31	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	15.11	0.00	499.8	0.0	241.45	418.58	660.04
27	235.0	41.69	0.500	3.88	0.00	0.14	2.81	0.80	1.00	0.00	2.62	15.11	0.00	501.8	0.0	261.03	422.43	683.47
28	241.5	41.93	0.000	1.45	0.00	0.16	2.75	0.80	1.00	0.00	0.84	4.53	0.00	168.0	0.0	82.54	127.46	210.00
29	245.3	42.07	2.156	1.86	0.00	0.28	2.36	0.80	1.00	0.00	2.84	3.50	0.00	376.4	0.0	239.74	97.46	337.20
30	248.8	42.19	0.000	1.11	0.00	0.15	2.76	0.80	1.00	0.00	0.64	0.42	0.00	92.6	0.0	63.46	10.73	74.18
31	255.0	42.41	0.000	4.06	0.00	0.13	2.85	0.80	1.00	0.00	2.33	1.78	0.00	336.7	0.0	238.74	46.18	284.91
														17,720.1	**0.0**			**22,709.75**

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 90° Wind — 1.2D + 1.0W 115 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: 0.00 — **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)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.7	23.39	0.000	2.61	0.00	0.27	2.38	0.85	1.00	0.00	1.57	18.23	0.00	430.0	0.0	74.44	295.53	369.96
2	7.7	23.39	0.000	2.26	0.00	0.16	2.74	0.85	1.00	0.00	1.31	15.28	0.00	361.6	0.0	71.37	247.72	319.09
3	15.0	23.39	0.000	4.63	0.00	0.15	2.78	0.85	1.00	0.00	2.67	33.51	0.00	764.5	0.0	147.40	543.25	690.65
4	25.0	26.01	0.000	4.80	0.00	0.15	2.76	0.85	1.00	0.00	2.77	33.51	0.00	780.0	0.0	169.05	604.13	773.19
5	35.0	27.92	0.000	4.62	0.00	0.15	2.78	0.85	1.00	0.00	2.66	33.51	0.00	763.7	0.0	175.62	648.48	824.10
6	45.0	29.43	0.000	4.80	0.00	0.15	2.76	0.85	1.00	0.00	2.77	33.51	0.00	780.0	0.0	191.32	683.71	875.04
7	55.0	30.71	0.000	4.62	0.00	0.15	2.78	0.85	1.00	0.00	2.66	33.51	0.00	763.7	0.0	193.16	713.22	906.37
8	65.0	31.80	0.000	4.80	0.00	0.15	2.76	0.85	1.00	0.00	2.77	32.97	0.00	778.0	0.0	206.72	728.20	934.92
9	75.0	32.78	0.000	4.62	0.00	0.15	2.78	0.85	1.00	0.00	2.66	32.97	0.00	761.8	0.0	206.19	750.48	956.67
10	85.0	33.65	0.000	4.80	0.00	0.15	2.76	0.85	1.00	0.00	2.77	32.97	0.00	778.0	0.0	218.73	770.51	989.25
11	95.0	34.45	0.000	4.62	0.00	0.15	2.78	0.85	1.00	0.00	2.66	32.97	0.00	761.8	0.0	216.71	788.77	1,005.48
12	105.0	35.18	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	30.95	0.00	664.7	0.0	205.66	762.14	967.80
13	115.0	35.86	0.000	4.06	0.00	0.13	2.85	0.85	1.00	0.00	2.33	30.95	0.00	648.5	0.0	201.89	776.88	978.77
14	125.0	36.50	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	29.47	0.00	653.5	0.0	213.35	757.47	970.82
15	135.0	37.09	0.500	3.88	0.00	0.14	2.81	0.85	1.00	0.00	2.65	29.30	0.00	654.2	0.0	234.50	766.09	1,000.59
16	145.0	37.66	2.396	3.88	0.00	0.20	2.59	0.85	1.00	0.00	4.29	29.30	0.00	792.0	0.0	356.22	777.71	1,133.92
17	155.0	38.19	2.396	3.88	0.00	0.20	2.59	0.85	1.00	0.00	4.29	29.30	0.00	792.0	0.0	361.25	788.70	1,149.96
18	165.0	38.70	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	29.30	0.00	652.2	0.0	226.19	799.15	1,025.34
19	175.0	39.18	0.000	4.06	0.00	0.13	2.85	0.85	1.00	0.00	2.33	29.30	0.00	636.0	0.0	220.55	809.11	1,029.66
20	185.0	39.64	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	29.30	0.00	652.2	0.0	231.71	818.63	1,050.34
21	191.2	39.91	0.000	1.29	0.00	0.18	2.68	0.85	1.00	0.00	0.75	6.84	0.00	178.7	0.0	68.14	192.48	260.62
22	194.7	40.07	2.156	1.86	0.00	0.27	2.36	0.85	1.00	0.00	2.94	13.58	0.00	486.5	0.0	237.14	383.76	620.90
23	198.5	40.23	0.000	1.45	0.00	0.16	2.75	0.85	1.00	0.00	0.84	8.61	0.00	212.9	0.0	79.11	244.85	323.96
24	205.0	40.50	0.000	4.06	0.00	0.13	2.85	0.85	1.00	0.00	2.33	16.48	0.00	498.6	0.0	228.02	451.72	679.74
25	215.0	40.91	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	15.11	0.00	499.8	0.0	239.15	414.60	653.75
26	225.0	41.31	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	15.11	0.00	499.8	0.0	241.45	418.58	660.04
27	235.0	41.69	0.500	3.88	0.00	0.14	2.81	0.85	1.00	0.00	2.65	15.11	0.00	501.8	0.0	263.52	422.43	685.96
28	241.5	41.93	0.000	1.45	0.00	0.16	2.75	0.85	1.00	0.00	0.84	4.53	0.00	168.0	0.0	82.54	127.46	210.00
29	245.3	42.07	2.156	1.86	0.00	0.28	2.36	0.85	1.00	0.00	2.94	3.50	0.00	376.4	0.0	248.85	97.46	346.31
30	248.8	42.19	0.000	1.11	0.00	0.15	2.76	0.85	1.00	0.00	0.64	0.42	0.00	92.6	0.0	63.46	10.73	74.18
31	255.0	42.41	0.000	4.06	0.00	0.13	2.85	0.85	1.00	0.00	2.33	1.78	0.00	336.7	0.0	238.74	46.18	284.91
														17,720.1	**0.0**			**22,752.28**

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W Normal Wind — 0.9D + 1.0W 115 mph Wind at Normal To Face

Wind Load Factor: 1.00 — **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 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)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.7	23.39	0.000	2.61	0.00	0.27	2.38	1.00	1.00	0.00	1.57	18.23	0.00	322.5	0.0	74.44	295.53	369.96
2	7.7	23.39	0.000	2.26	0.00	0.16	2.74	1.00	1.00	0.00	1.31	15.28	0.00	271.2	0.0	71.37	247.72	319.09
3	15.0	23.39	0.000	4.63	0.00	0.15	2.78	1.00	1.00	0.00	2.67	33.51	0.00	573.4	0.0	147.40	543.25	690.65
4	25.0	26.01	0.000	4.80	0.00	0.15	2.76	1.00	1.00	0.00	2.77	33.51	0.00	585.0	0.0	169.05	604.13	773.19
5	35.0	27.92	0.000	4.62	0.00	0.15	2.78	1.00	1.00	0.00	2.66	33.51	0.00	572.8	0.0	175.62	648.48	824.10
6	45.0	29.43	0.000	4.80	0.00	0.15	2.76	1.00	1.00	0.00	2.77	33.51	0.00	585.0	0.0	191.32	683.71	875.04
7	55.0	30.71	0.000	4.62	0.00	0.15	2.78	1.00	1.00	0.00	2.66	33.51	0.00	572.8	0.0	193.16	713.22	906.37
8	65.0	31.80	0.000	4.80	0.00	0.15	2.76	1.00	1.00	0.00	2.77	32.97	0.00	583.5	0.0	206.72	728.20	934.92
9	75.0	32.78	0.000	4.62	0.00	0.15	2.78	1.00	1.00	0.00	2.66	32.97	0.00	571.3	0.0	206.19	750.48	956.67
10	85.0	33.65	0.000	4.80	0.00	0.15	2.76	1.00	1.00	0.00	2.77	32.97	0.00	583.5	0.0	218.73	770.51	989.25
11	95.0	34.45	0.000	4.62	0.00	0.15	2.78	1.00	1.00	0.00	2.66	32.97	0.00	571.3	0.0	216.71	788.77	1,005.48
12	105.0	35.18	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	30.95	0.00	498.5	0.0	205.66	762.14	967.80
13	115.0	35.86	0.000	4.06	0.00	0.13	2.85	1.00	1.00	0.00	2.33	30.95	0.00	486.3	0.0	201.89	776.88	978.77
14	125.0	36.50	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	29.47	0.00	490.1	0.0	213.35	757.47	970.82
15	135.0	37.09	0.500	3.88	0.00	0.14	2.81	1.00	1.00	0.00	2.72	29.30	0.00	490.6	0.0	241.14	766.09	1,007.23
16	145.0	37.66	2.396	3.88	0.00	0.20	2.59	1.00	1.00	0.00	4.65	29.30	0.00	594.0	0.0	386.05	777.71	1,163.76
17	155.0	38.19	2.396	3.88	0.00	0.20	2.59	1.00	1.00	0.00	4.65	29.30	0.00	594.0	0.0	391.51	788.70	1,180.21
18	165.0	38.70	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	29.30	0.00	489.2	0.0	226.19	799.15	1,025.34
19	175.0	39.18	0.000	4.06	0.00	0.13	2.85	1.00	1.00	0.00	2.33	29.30	0.00	477.0	0.0	220.55	809.11	1,029.66
20	185.0	39.64	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	29.30	0.00	489.2	0.0	231.71	818.63	1,050.34
21	191.2	39.91	0.000	1.29	0.00	0.18	2.68	1.00	1.00	0.00	0.75	6.84	0.00	134.0	0.0	68.14	192.48	260.62
22	194.7	40.07	2.156	1.86	0.00	0.27	2.36	1.00	1.00	0.00	3.27	13.58	0.00	364.9	0.0	263.19	383.76	646.95
23	198.5	40.23	0.000	1.45	0.00	0.16	2.75	1.00	1.00	0.00	0.84	8.61	0.00	159.7	0.0	79.11	244.85	323.96
24	205.0	40.50	0.000	4.06	0.00	0.13	2.85	1.00	1.00	0.00	2.33	16.48	0.00	374.0	0.0	228.02	451.72	679.74
25	215.0	40.91	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	15.11	0.00	374.9	0.0	239.15	414.60	653.75
26	225.0	41.31	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	15.11	0.00	374.9	0.0	241.45	418.58	660.04
27	235.0	41.69	0.500	3.88	0.00	0.14	2.81	1.00	1.00	0.00	2.72	15.11	0.00	376.3	0.0	270.98	422.43	693.42
28	241.5	41.93	0.000	1.45	0.00	0.16	2.75	1.00	1.00	0.00	0.84	4.53	0.00	126.0	0.0	82.54	127.46	210.00
29	245.3	42.07	2.156	1.86	0.00	0.28	2.36	1.00	1.00	0.00	3.27	3.50	0.00	282.3	0.0	276.19	97.46	373.65
30	248.8	42.19	0.000	1.11	0.00	0.15	2.76	1.00	1.00	0.00	0.64	0.42	0.00	69.4	0.0	63.46	10.73	74.18
31	255.0	42.41	0.000	4.06	0.00	0.13	2.85	1.00	1.00	0.00	2.33	1.78	0.00	252.5	0.0	238.74	46.18	284.91
														13,290.1	**0.0**			**22,879.86**

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 60° Wind — 0.9D + 1.0W 115 mph Wind at 60° From Face

Wind Load Factor: 1.00 — **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 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)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.7	23.39	0.000	2.61	0.00	0.27	2.38	0.80	1.00	0.00	1.57	18.23	0.00	322.5	0.0	74.44	295.53	369.96
2	7.7	23.39	0.000	2.26	0.00	0.16	2.74	0.80	1.00	0.00	1.31	15.28	0.00	271.2	0.0	71.37	247.72	319.09
3	15.0	23.39	0.000	4.63	0.00	0.15	2.78	0.80	1.00	0.00	2.67	33.51	0.00	573.4	0.0	147.40	543.25	690.65
4	25.0	26.01	0.000	4.80	0.00	0.15	2.76	0.80	1.00	0.00	2.77	33.51	0.00	585.0	0.0	169.05	604.13	773.19
5	35.0	27.92	0.000	4.62	0.00	0.15	2.78	0.80	1.00	0.00	2.66	33.51	0.00	572.8	0.0	175.62	648.48	824.10
6	45.0	29.43	0.000	4.80	0.00	0.15	2.76	0.80	1.00	0.00	2.77	33.51	0.00	585.0	0.0	191.32	683.71	875.04
7	55.0	30.71	0.000	4.62	0.00	0.15	2.78	0.80	1.00	0.00	2.66	33.51	0.00	572.8	0.0	193.16	713.22	906.37
8	65.0	31.80	0.000	4.80	0.00	0.15	2.76	0.80	1.00	0.00	2.77	32.97	0.00	583.5	0.0	206.72	728.20	934.92
9	75.0	32.78	0.000	4.62	0.00	0.15	2.78	0.80	1.00	0.00	2.66	32.97	0.00	571.3	0.0	206.19	750.48	956.67
10	85.0	33.65	0.000	4.80	0.00	0.15	2.76	0.80	1.00	0.00	2.77	32.97	0.00	583.5	0.0	218.73	770.51	989.25
11	95.0	34.45	0.000	4.62	0.00	0.15	2.78	0.80	1.00	0.00	2.66	32.97	0.00	571.3	0.0	216.71	788.77	1,005.48
12	105.0	35.18	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	30.95	0.00	498.5	0.0	205.66	762.14	967.80
13	115.0	35.86	0.000	4.06	0.00	0.13	2.85	0.80	1.00	0.00	2.33	30.95	0.00	486.3	0.0	201.89	776.88	978.77
14	125.0	36.50	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	29.47	0.00	490.1	0.0	213.35	757.47	970.82
15	135.0	37.09	0.500	3.88	0.00	0.14	2.81	0.80	1.00	0.00	2.62	29.30	0.00	490.6	0.0	232.28	766.09	998.38
16	145.0	37.66	2.396	3.88	0.00	0.20	2.59	0.80	1.00	0.00	4.17	29.30	0.00	594.0	0.0	346.27	777.71	1,123.98
17	155.0	38.19	2.396	3.88	0.00	0.20	2.59	0.80	1.00	0.00	4.17	29.30	0.00	594.0	0.0	351.17	788.70	1,139.87
18	165.0	38.70	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	29.30	0.00	489.2	0.0	226.19	799.15	1,025.34
19	175.0	39.18	0.000	4.06	0.00	0.13	2.85	0.80	1.00	0.00	2.33	29.30	0.00	477.0	0.0	220.55	809.11	1,029.66
20	185.0	39.64	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	29.30	0.00	489.2	0.0	231.71	818.63	1,050.34
21	191.2	39.91	0.000	1.29	0.00	0.18	2.68	0.80	1.00	0.00	0.75	6.84	0.00	134.0	0.0	68.14	192.48	260.62
22	194.7	40.07	2.156	1.86	0.00	0.27	2.36	0.80	1.00	0.00	2.84	13.58	0.00	364.9	0.0	228.46	383.76	612.22
23	198.5	40.23	0.000	1.45	0.00	0.16	2.75	0.80	1.00	0.00	0.84	8.61	0.00	159.7	0.0	79.11	244.85	323.96
24	205.0	40.50	0.000	4.06	0.00	0.13	2.85	0.80	1.00	0.00	2.33	16.48	0.00	374.0	0.0	228.02	451.72	679.74
25	215.0	40.91	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	15.11	0.00	374.9	0.0	239.15	414.60	653.75
26	225.0	41.31	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	15.11	0.00	374.9	0.0	241.45	418.58	660.04
27	235.0	41.69	0.500	3.88	0.00	0.14	2.81	0.80	1.00	0.00	2.62	15.11	0.00	376.3	0.0	261.03	422.43	683.47
28	241.5	41.93	0.000	1.45	0.00	0.16	2.75	0.80	1.00	0.00	0.84	4.53	0.00	126.0	0.0	82.54	127.46	210.00
29	245.3	42.07	2.156	1.86	0.00	0.28	2.36	0.80	1.00	0.00	2.84	3.50	0.00	282.3	0.0	239.74	97.46	337.20
30	248.8	42.19	0.000	1.11	0.00	0.15	2.76	0.80	1.00	0.00	0.64	0.42	0.00	69.4	0.0	63.46	10.73	74.18
31	255.0	42.41	0.000	4.06	0.00	0.13	2.85	0.80	1.00	0.00	2.33	1.78	0.00	252.5	0.0	238.74	46.18	284.91
														13,290.1	**0.0**			**22,709.75**

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 90° Wind — 0.9D + 1.0W 115 mph Wind at 90° From Face

Wind Load Factor: 1.00 — **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 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)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.7	23.39	0.000	2.61	0.00	0.27	2.38	0.85	1.00	0.00	1.57	18.23	0.00	322.5	0.0	74.44	295.53	369.96
2	7.7	23.39	0.000	2.26	0.00	0.16	2.74	0.85	1.00	0.00	1.31	15.28	0.00	271.2	0.0	71.37	247.72	319.09
3	15.0	23.39	0.000	4.63	0.00	0.15	2.78	0.85	1.00	0.00	2.67	33.51	0.00	573.4	0.0	147.40	543.25	690.65
4	25.0	26.01	0.000	4.80	0.00	0.15	2.76	0.85	1.00	0.00	2.77	33.51	0.00	585.0	0.0	169.05	604.13	773.19
5	35.0	27.92	0.000	4.62	0.00	0.15	2.78	0.85	1.00	0.00	2.66	33.51	0.00	572.8	0.0	175.62	648.48	824.10
6	45.0	29.43	0.000	4.80	0.00	0.15	2.76	0.85	1.00	0.00	2.77	33.51	0.00	585.0	0.0	191.32	683.71	875.04
7	55.0	30.71	0.000	4.62	0.00	0.15	2.78	0.85	1.00	0.00	2.66	33.51	0.00	572.8	0.0	193.16	713.22	906.37
8	65.0	31.80	0.000	4.80	0.00	0.15	2.76	0.85	1.00	0.00	2.77	32.97	0.00	583.5	0.0	206.72	728.20	934.92
9	75.0	32.78	0.000	4.62	0.00	0.15	2.78	0.85	1.00	0.00	2.66	32.97	0.00	571.3	0.0	206.19	750.48	956.67
10	85.0	33.65	0.000	4.80	0.00	0.15	2.76	0.85	1.00	0.00	2.77	32.97	0.00	583.5	0.0	218.73	770.51	989.25
11	95.0	34.45	0.000	4.62	0.00	0.15	2.78	0.85	1.00	0.00	2.66	32.97	0.00	571.3	0.0	216.71	788.77	1,005.48
12	105.0	35.18	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	30.95	0.00	498.5	0.0	205.66	762.14	967.80
13	115.0	35.86	0.000	4.06	0.00	0.13	2.85	0.85	1.00	0.00	2.33	30.95	0.00	486.3	0.0	201.89	776.88	978.77
14	125.0	36.50	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	29.47	0.00	490.1	0.0	213.35	757.47	970.82
15	135.0	37.09	0.500	3.88	0.00	0.14	2.81	0.85	1.00	0.00	2.65	29.30	0.00	490.6	0.0	234.50	766.09	1,000.59
16	145.0	37.66	2.396	3.88	0.00	0.20	2.59	0.85	1.00	0.00	4.29	29.30	0.00	594.0	0.0	356.22	777.71	1,133.92
17	155.0	38.19	2.396	3.88	0.00	0.20	2.59	0.85	1.00	0.00	4.29	29.30	0.00	594.0	0.0	361.25	788.70	1,149.96
18	165.0	38.70	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	29.30	0.00	489.2	0.0	226.19	799.15	1,025.34
19	175.0	39.18	0.000	4.06	0.00	0.13	2.85	0.85	1.00	0.00	2.33	29.30	0.00	477.0	0.0	220.55	809.11	1,029.66
20	185.0	39.64	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	29.30	0.00	489.2	0.0	231.71	818.63	1,050.34
21	191.2	39.91	0.000	1.29	0.00	0.18	2.68	0.85	1.00	0.00	0.75	6.84	0.00	134.0	0.0	68.14	192.48	260.62
22	194.7	40.07	2.156	1.86	0.00	0.27	2.36	0.85	1.00	0.00	2.94	13.58	0.00	364.9	0.0	237.14	383.76	620.90
23	198.5	40.23	0.000	1.45	0.00	0.16	2.75	0.85	1.00	0.00	0.84	8.61	0.00	159.7	0.0	79.11	244.85	323.96
24	205.0	40.50	0.000	4.06	0.00	0.13	2.85	0.85	1.00	0.00	2.33	16.48	0.00	374.0	0.0	228.02	451.72	679.74
25	215.0	40.91	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	15.11	0.00	374.9	0.0	239.15	414.60	653.75
26	225.0	41.31	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	15.11	0.00	374.9	0.0	241.45	418.58	660.04
27	235.0	41.69	0.500	3.88	0.00	0.14	2.81	0.85	1.00	0.00	2.65	15.11	0.00	376.3	0.0	263.52	422.43	685.96
28	241.5	41.93	0.000	1.45	0.00	0.16	2.75	0.85	1.00	0.00	0.84	4.53	0.00	126.0	0.0	82.54	127.46	210.00
29	245.3	42.07	2.156	1.86	0.00	0.28	2.36	0.85	1.00	0.00	2.94	3.50	0.00	282.3	0.0	248.85	97.46	346.31
30	248.8	42.19	0.000	1.11	0.00	0.15	2.76	0.85	1.00	0.00	0.64	0.42	0.00	69.4	0.0	63.46	10.73	74.18
31	255.0	42.41	0.000	4.06	0.00	0.13	2.85	0.85	1.00	0.00	2.33	1.78	0.00	252.5	0.0	238.74	46.18	284.91
														13,290.1	**0.0**			**22,752.28**

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi Normal Wind — 1.2D + 1.0Di + 1.0Wi 40 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)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.7	2.83	0.000	6.42	3.82	0.62	1.79	1.00	1.00	0.78	4.90	19.64	8.48	825.4	395.4	21.14	33.96	52.42
2	7.7	2.83	0.000	6.21	3.95	0.41	2.04	1.00	1.00	0.86	4.02	16.60	7.89	749.3	387.7	19.68	45.37	65.05
3	15.0	2.83	0.000	12.89	8.26	0.39	2.08	1.00	1.00	0.92	8.19	36.59	18.48	1,655.1	890.6	41.04	105.34	146.37
4	25.0	3.15	0.000	13.94	9.14	0.42	2.02	1.00	1.00	0.97	9.05	36.75	19.45	1,746.7	966.8	48.99	114.13	163.12
5	35.0	3.38	0.000	13.57	8.95	0.41	2.05	1.00	1.00	1.01	8.74	36.87	20.12	1,753.5	989.7	51.30	126.65	177.95
6	45.0	3.56	0.000	14.49	9.70	0.44	2.00	1.00	1.00	1.03	9.51	36.95	20.63	1,822.2	1042.3	57.48	128.63	186.11
7	55.0	3.71	0.000	13.99	9.37	0.42	2.02	1.00	1.00	1.05	9.07	37.02	21.05	1,812.5	1048.8	57.99	139.05	197.03
8	65.0	3.85	0.000	14.86	10.06	0.45	1.98	1.00	1.00	1.07	9.82	36.54	19.62	1,842.1	1064.1	63.57	133.48	197.05
9	75.0	3.97	0.000	14.28	9.66	0.43	2.01	1.00	1.00	1.09	9.32	36.59	19.90	1,823.8	1062.0	63.10	142.76	205.86
10	85.0	4.07	0.000	15.13	10.33	0.45	1.97	1.00	1.00	1.10	10.06	36.63	20.15	1,879.7	1101.7	68.45	140.78	209.24
11	95.0	4.17	0.000	14.51	9.89	0.44	2.00	1.00	1.00	1.11	9.51	36.68	20.38	1,856.8	1095.0	67.32	149.76	217.09
12	105.0	4.26	0.000	14.79	10.55	0.45	1.98	1.00	1.00	1.12	9.77	34.70	16.84	1,709.0	1044.4	69.94	136.75	206.69
13	115.0	4.34	0.000	14.14	10.08	0.43	2.01	1.00	1.00	1.13	9.20	34.73	16.99	1,681.8	1033.3	68.33	144.89	213.22
14	125.0	4.42	0.000	14.98	10.74	0.45	1.97	1.00	1.00	1.14	9.93	33.28	15.42	1,682.6	1029.1	73.43	133.57	207.00
15	135.0	4.49	0.500	14.13	10.25	0.44	1.99	1.00	1.00	1.15	9.78	33.14	15.35	1,691.5	1037.3	74.20	137.92	212.12
16	145.0	4.56	2.396	16.52	12.64	0.57	1.83	1.00	1.00	1.16	14.41	33.17	15.46	2,042.3	1250.3	101.86	107.98	209.84
17	155.0	4.62	2.396	16.60	12.72	0.57	1.82	1.00	1.00	1.17	14.49	33.20	15.56	2,053.2	1261.2	103.80	109.19	212.98
18	165.0	4.68	0.000	15.28	11.04	0.46	1.96	1.00	1.00	1.17	10.19	33.22	15.66	1,714.8	1062.6	79.37	139.99	219.35
19	175.0	4.74	0.000	14.57	10.52	0.44	1.99	1.00	1.00	1.18	9.56	33.24	15.75	1,681.8	1045.8	76.78	147.68	224.45
20	185.0	4.80	0.000	15.41	11.17	0.46	1.95	1.00	1.00	1.19	10.30	33.26	15.84	1,730.9	1078.7	81.97	143.09	225.05
21	191.2	4.83	0.000	4.92	3.63	0.63	1.79	1.00	1.00	1.19	3.79	7.77	3.71	474.6	295.9	27.77	23.00	50.77
22	194.7	4.85	2.156	8.53	6.68	0.69	1.78	1.00	1.00	1.19	9.03	15.44	7.04	1,151.6	665.1	66.05	38.50	104.55
23	198.5	4.87	0.000	5.36	3.91	0.54	1.86	1.00	1.00	1.20	3.80	9.81	4.18	552.8	339.9	29.20	35.81	65.01
24	205.0	4.90	0.000	14.74	10.68	0.44	1.98	1.00	1.00	1.20	9.71	18.68	12.20	1,350.4	851.8	80.24	92.31	172.55
25	215.0	4.95	0.000	15.58	11.34	0.47	1.94	1.00	1.00	1.21	10.45	17.12	12.06	1,362.6	862.8	85.51	83.57	169.08
26	225.0	5.00	0.000	15.63	11.39	0.47	1.94	1.00	1.00	1.21	10.50	17.13	12.12	1,367.8	868.0	86.62	84.33	170.95
27	235.0	5.04	0.500	14.71	10.83	0.46	1.96	1.00	1.00	1.22	10.28	17.14	12.17	1,376.2	874.4	86.46	87.32	173.78
28	241.5	5.07	0.000	5.44	3.99	0.54	1.85	1.00	1.00	1.22	3.88	5.14	3.66	455.7	287.7	30.95	22.12	53.06
29	245.3	5.09	2.156	8.69	6.83	0.70	1.78	1.00	1.00	1.22	9.21	3.90	4.07	858.3	481.9	70.74	13.11	83.85
30	248.8	5.10	0.000	4.22	3.12	0.54	1.85	1.00	1.00	1.22	3.01	0.42	1.43	230.8	138.2	24.16	4.38	28.54
31	255.0	5.13	0.000	14.98	10.92	0.45	1.97	1.00	1.00	1.23	9.91	1.78	6.13	825.8	489.1	85.29	22.78	108.08
														43,761.7	**26041.6**			**4,928.20**

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 60° Wind — 1.2D + 1.0Di + 1.0Wi 40 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)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.7	2.83	0.000	6.42	3.82	0.62	1.79	0.80	1.00	0.78	4.90	19.64	8.48	825.4	395.4	21.14	33.96	55.10
2	7.7	2.83	0.000	6.21	3.95	0.41	2.04	0.80	1.00	0.86	4.02	16.60	7.89	749.3	387.7	19.68	45.37	65.05
3	15.0	2.83	0.000	12.89	8.26	0.39	2.08	0.80	1.00	0.92	8.19	36.59	18.48	1,655.1	890.6	41.04	105.34	146.37
4	25.0	3.15	0.000	13.94	9.14	0.42	2.02	0.80	1.00	0.97	9.05	36.75	19.45	1,746.7	966.8	48.99	114.13	163.12
5	35.0	3.38	0.000	13.57	8.95	0.41	2.05	0.80	1.00	1.01	8.74	36.87	20.12	1,753.5	989.7	51.30	126.65	177.95
6	45.0	3.56	0.000	14.49	9.70	0.44	2.00	0.80	1.00	1.03	9.51	36.95	20.63	1,822.2	1042.3	57.48	128.63	186.11
7	55.0	3.71	0.000	13.99	9.37	0.42	2.02	0.80	1.00	1.05	9.07	37.02	21.05	1,812.5	1048.8	57.99	139.05	197.03
8	65.0	3.85	0.000	14.86	10.06	0.45	1.98	0.80	1.00	1.07	9.82	36.54	19.62	1,842.1	1064.1	63.57	133.48	197.05
9	75.0	3.97	0.000	14.28	9.66	0.43	2.01	0.80	1.00	1.09	9.32	36.59	19.90	1,823.8	1062.0	63.10	142.76	205.86
10	85.0	4.07	0.000	15.13	10.33	0.45	1.97	0.80	1.00	1.10	10.06	36.63	20.15	1,879.7	1101.7	68.45	140.78	209.24
11	95.0	4.17	0.000	14.51	9.89	0.44	2.00	0.80	1.00	1.11	9.51	36.68	20.38	1,856.8	1095.0	67.32	149.76	217.09
12	105.0	4.26	0.000	14.79	10.55	0.45	1.98	0.80	1.00	1.12	9.77	34.70	16.84	1,709.0	1044.4	69.94	136.75	206.69
13	115.0	4.34	0.000	14.14	10.08	0.43	2.01	0.80	1.00	1.13	9.20	34.73	16.99	1,681.8	1033.3	68.33	144.89	213.22
14	125.0	4.42	0.000	14.98	10.74	0.45	1.97	0.80	1.00	1.14	9.93	33.28	15.42	1,682.6	1029.1	73.43	133.57	207.00
15	135.0	4.49	0.500	14.13	10.25	0.44	1.99	0.80	1.00	1.15	9.68	33.14	15.35	1,691.5	1037.3	73.44	137.92	211.36
16	145.0	4.56	2.396	16.52	12.64	0.57	1.83	0.80	1.00	1.16	13.93	33.17	15.46	2,042.3	1250.3	98.47	107.98	206.45
17	155.0	4.62	2.396	16.60	12.72	0.57	1.82	0.80	1.00	1.17	14.01	33.20	15.56	2,053.2	1261.2	100.37	109.19	209.55
18	165.0	4.68	0.000	15.28	11.04	0.46	1.96	0.80	1.00	1.17	10.19	33.22	15.66	1,714.8	1062.6	79.37	139.99	219.35
19	175.0	4.74	0.000	14.57	10.52	0.44	1.99	0.80	1.00	1.18	9.56	33.24	15.75	1,681.8	1045.8	76.78	147.68	224.45
20	185.0	4.80	0.000	15.41	11.17	0.46	1.95	0.80	1.00	1.19	10.30	33.26	15.84	1,730.9	1078.7	81.97	143.09	225.05
21	191.2	4.83	0.000	4.92	3.63	0.63	1.79	0.80	1.00	1.19	3.79	7.77	3.71	474.6	295.9	27.77	23.00	50.77
22	194.7	4.85	2.156	8.53	6.68	0.69	1.78	0.80	1.00	1.19	8.60	15.44	7.04	1,151.6	665.1	62.90	38.50	101.40
23	198.5	4.87	0.000	5.36	3.91	0.54	1.86	0.80	1.00	1.20	3.80	9.81	4.18	552.8	339.9	29.20	35.81	65.01
24	205.0	4.90	0.000	14.74	10.68	0.44	1.98	0.80	1.00	1.20	9.71	18.68	12.20	1,350.4	851.8	80.24	92.31	172.55
25	215.0	4.95	0.000	15.58	11.34	0.47	1.94	0.80	1.00	1.21	10.45	17.12	12.06	1,362.6	862.8	85.51	83.57	169.08
26	225.0	5.00	0.000	15.63	11.39	0.47	1.94	0.80	1.00	1.21	10.50	17.13	12.12	1,367.8	868.0	86.62	84.33	170.95
27	235.0	5.04	0.500	14.71	10.83	0.46	1.96	0.80	1.00	1.22	10.18	17.14	12.17	1,376.2	874.4	85.62	87.32	172.94
28	241.5	5.07	0.000	5.44	3.99	0.54	1.85	0.80	1.00	1.22	3.88	5.14	3.66	455.7	287.7	30.95	22.12	53.06
29	245.3	5.09	2.156	8.69	6.83	0.70	1.78	0.80	1.00	1.22	8.78	3.90	4.07	858.3	481.9	67.42	13.11	80.53
30	248.8	5.10	0.000	4.22	3.12	0.54	1.85	0.80	1.00	1.22	3.01	0.42	1.43	230.8	138.2	24.16	4.38	28.54
31	255.0	5.13	0.000	14.98	10.92	0.45	1.97	0.80	1.00	1.23	9.91	1.78	6.13	825.8	489.1	85.29	22.78	108.08
														43,761.7	**26041.6**			**4,916.00**

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 90° Wind — 1.2D + 1.0Di + 1.0Wi 40 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)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.7	2.83	0.000	6.42	3.82	0.62	1.79	0.85	1.00	0.78	4.90	19.64	8.48	825.4	395.4	21.14	33.96	55.10
2	7.7	2.83	0.000	6.21	3.95	0.41	2.04	0.85	1.00	0.86	4.02	16.60	7.89	749.3	387.7	19.68	45.37	65.05
3	15.0	2.83	0.000	12.89	8.26	0.39	2.08	0.85	1.00	0.92	8.19	36.59	18.48	1,655.1	890.6	41.04	105.34	146.37
4	25.0	3.15	0.000	13.94	9.14	0.42	2.02	0.85	1.00	0.97	9.05	36.75	19.45	1,746.7	966.8	48.99	114.13	163.12
5	35.0	3.38	0.000	13.57	8.95	0.41	2.05	0.85	1.00	1.01	8.74	36.87	20.12	1,753.5	989.7	51.30	126.65	177.95
6	45.0	3.56	0.000	14.49	9.70	0.44	2.00	0.85	1.00	1.03	9.51	36.95	20.63	1,822.2	1042.3	57.48	128.63	186.11
7	55.0	3.71	0.000	13.99	9.37	0.42	2.02	0.85	1.00	1.05	9.07	37.02	21.05	1,812.5	1048.8	57.99	139.05	197.03
8	65.0	3.85	0.000	14.86	10.06	0.45	1.98	0.85	1.00	1.07	9.82	36.54	19.62	1,842.1	1064.1	63.57	133.48	197.05
9	75.0	3.97	0.000	14.28	9.66	0.43	2.01	0.85	1.00	1.09	9.32	36.59	19.90	1,823.8	1062.0	63.10	142.76	205.86
10	85.0	4.07	0.000	15.13	10.33	0.45	1.97	0.85	1.00	1.10	10.06	36.63	20.15	1,879.7	1101.7	68.45	140.78	209.24
11	95.0	4.17	0.000	14.51	9.89	0.44	2.00	0.85	1.00	1.11	9.51	36.68	20.38	1,856.8	1095.0	67.32	149.76	217.09
12	105.0	4.26	0.000	14.79	10.55	0.45	1.98	0.85	1.00	1.12	9.77	34.70	16.84	1,709.0	1044.4	69.94	136.75	206.69
13	115.0	4.34	0.000	14.14	10.08	0.43	2.01	0.85	1.00	1.13	9.20	34.73	16.99	1,681.8	1033.3	68.33	144.89	213.22
14	125.0	4.42	0.000	14.98	10.74	0.45	1.97	0.85	1.00	1.14	9.93	33.28	15.42	1,682.6	1029.1	73.43	133.57	207.00
15	135.0	4.49	0.500	14.13	10.25	0.44	1.99	0.85	1.00	1.15	9.71	33.14	15.35	1,691.5	1037.3	73.63	137.92	211.55
16	145.0	4.56	2.396	16.52	12.64	0.57	1.83	0.85	1.00	1.16	14.05	33.17	15.46	2,042.3	1250.3	99.32	107.98	207.29
17	155.0	4.62	2.396	16.60	12.72	0.57	1.82	0.85	1.00	1.17	14.13	33.20	15.56	2,053.2	1261.2	101.22	109.19	210.41
18	165.0	4.68	0.000	15.28	11.04	0.46	1.96	0.85	1.00	1.17	10.19	33.22	15.66	1,714.8	1062.6	79.37	139.99	219.35
19	175.0	4.74	0.000	14.57	10.52	0.44	1.99	0.85	1.00	1.18	9.56	33.24	15.75	1,681.8	1045.8	76.78	147.68	224.45
20	185.0	4.80	0.000	15.41	11.17	0.46	1.95	0.85	1.00	1.19	10.30	33.26	15.84	1,730.9	1078.7	81.97	143.09	225.05
21	191.2	4.83	0.000	4.92	3.63	0.63	1.79	0.85	1.00	1.19	3.79	7.77	3.71	474.6	295.9	27.77	23.00	50.77
22	194.7	4.85	2.156	8.53	6.68	0.69	1.78	0.85	1.00	1.19	8.70	15.44	7.04	1,151.6	665.1	63.68	38.50	102.19
23	198.5	4.87	0.000	5.36	3.91	0.54	1.86	0.85	1.00	1.20	3.80	9.81	4.18	552.8	339.9	29.20	35.81	65.01
24	205.0	4.90	0.000	14.74	10.68	0.44	1.98	0.85	1.00	1.20	9.71	18.68	12.20	1,350.4	851.8	80.24	92.31	172.55
25	215.0	4.95	0.000	15.58	11.34	0.47	1.94	0.85	1.00	1.21	10.45	17.12	12.06	1,362.6	862.8	85.51	83.57	169.08
26	225.0	5.00	0.000	15.63	11.39	0.47	1.94	0.85	1.00	1.21	10.50	17.13	12.12	1,367.8	868.0	86.62	84.33	170.95
27	235.0	5.04	0.500	14.71	10.83	0.46	1.96	0.85	1.00	1.22	10.20	17.14	12.17	1,376.2	874.4	85.83	87.32	173.15
28	241.5	5.07	0.000	5.44	3.99	0.54	1.85	0.85	1.00	1.22	3.88	5.14	3.66	455.7	287.7	30.95	22.12	53.06
29	245.3	5.09	2.156	8.69	6.83	0.70	1.78	0.85	1.00	1.22	8.88	3.90	4.07	858.3	481.9	68.25	13.11	81.36
30	248.8	5.10	0.000	4.22	3.12	0.54	1.85	0.85	1.00	1.22	3.01	0.42	1.43	230.8	138.2	24.16	4.38	28.54
31	255.0	5.13	0.000	14.98	10.92	0.45	1.97	0.85	1.00	1.23	9.91	1.78	6.13	825.8	489.1	85.29	22.78	108.08
														43,761.7	**26041.6**			**4,919.72**

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

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 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)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.7	6.37	0.000	2.61	0.00	0.27	2.38	1.00	1.00	0.00	1.57	18.23	0.00	358.3	0.0	20.26	80.45	100.71
2	7.7	6.37	0.000	2.26	0.00	0.16	2.74	1.00	1.00	0.00	1.31	15.28	0.00	301.4	0.0	19.43	67.43	86.86
3	15.0	6.37	0.000	4.63	0.00	0.15	2.78	1.00	1.00	0.00	2.67	33.51	0.00	637.1	0.0	40.13	147.88	188.00
4	25.0	7.08	0.000	4.80	0.00	0.15	2.76	1.00	1.00	0.00	2.77	33.51	0.00	650.0	0.0	46.02	164.45	210.47
5	35.0	7.60	0.000	4.62	0.00	0.15	2.78	1.00	1.00	0.00	2.66	33.51	0.00	636.4	0.0	47.81	176.52	224.33
6	45.0	8.01	0.000	4.80	0.00	0.15	2.76	1.00	1.00	0.00	2.77	33.51	0.00	650.0	0.0	52.08	186.11	238.19
7	55.0	8.36	0.000	4.62	0.00	0.15	2.78	1.00	1.00	0.00	2.66	33.51	0.00	636.4	0.0	52.58	194.15	246.73
8	65.0	8.66	0.000	4.80	0.00	0.15	2.76	1.00	1.00	0.00	2.77	32.97	0.00	648.4	0.0	56.27	198.23	254.50
9	75.0	8.92	0.000	4.62	0.00	0.15	2.78	1.00	1.00	0.00	2.66	32.97	0.00	634.8	0.0	56.13	204.29	260.42
10	85.0	9.16	0.000	4.80	0.00	0.15	2.76	1.00	1.00	0.00	2.77	32.97	0.00	648.4	0.0	59.54	209.74	269.28
11	95.0	9.38	0.000	4.62	0.00	0.15	2.78	1.00	1.00	0.00	2.66	32.97	0.00	634.8	0.0	58.99	214.71	273.70
12	105.0	9.58	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	30.95	0.00	553.9	0.0	55.98	207.46	263.45
13	115.0	9.76	0.000	4.06	0.00	0.13	2.85	1.00	1.00	0.00	2.33	30.95	0.00	540.4	0.0	54.96	211.48	266.43
14	125.0	9.94	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	29.47	0.00	544.5	0.0	58.08	206.19	264.27
15	135.0	10.10	0.500	3.88	0.00	0.14	2.81	1.00	1.00	0.00	2.72	29.30	0.00	545.2	0.0	65.64	208.54	274.18
16	145.0	10.25	2.396	3.88	0.00	0.20	2.59	1.00	1.00	0.00	4.65	29.30	0.00	660.0	0.0	105.09	211.70	316.79
17	155.0	10.40	2.396	3.88	0.00	0.20	2.59	1.00	1.00	0.00	4.65	29.30	0.00	660.0	0.0	106.57	214.69	321.27
18	165.0	10.53	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	29.30	0.00	543.5	0.0	61.57	217.54	279.11
19	175.0	10.66	0.000	4.06	0.00	0.13	2.85	1.00	1.00	0.00	2.33	29.30	0.00	530.0	0.0	60.04	220.25	280.28
20	185.0	10.79	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	29.30	0.00	543.5	0.0	63.07	222.84	285.91
21	191.2	10.86	0.000	1.29	0.00	0.18	2.68	1.00	1.00	0.00	0.75	6.84	0.00	148.9	0.0	18.55	52.39	70.94
22	194.7	10.91	2.156	1.86	0.00	0.27	2.36	1.00	1.00	0.00	3.27	13.58	0.00	405.4	0.0	71.64	104.46	176.11
23	198.5	10.95	0.000	1.45	0.00	0.16	2.75	1.00	1.00	0.00	0.84	8.61	0.00	177.4	0.0	21.53	66.65	88.19
24	205.0	11.03	0.000	4.06	0.00	0.13	2.85	1.00	1.00	0.00	2.33	16.48	0.00	415.5	0.0	62.07	122.96	185.03
25	215.0	11.14	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	15.11	0.00	416.5	0.0	65.10	112.86	177.96
26	225.0	11.24	0.000	4.24	0.00	0.14	2.83	1.00	1.00	0.00	2.43	15.11	0.00	416.5	0.0	65.73	113.94	179.67
27	235.0	11.35	0.500	3.88	0.00	0.14	2.81	1.00	1.00	0.00	2.72	15.11	0.00	418.2	0.0	73.77	114.99	188.76
28	241.5	11.41	0.000	1.45	0.00	0.16	2.75	1.00	1.00	0.00	0.84	4.53	0.00	140.0	0.0	22.47	34.70	57.16
29	245.3	11.45	2.156	1.86	0.00	0.28	2.36	1.00	1.00	0.00	3.27	3.50	0.00	313.6	0.0	75.18	26.53	101.71
30	248.8	11.48	0.000	1.11	0.00	0.15	2.76	1.00	1.00	0.00	0.64	0.42	0.00	77.2	0.0	17.27	2.92	20.19
31	255.0	11.54	0.000	4.06	0.00	0.13	2.85	1.00	1.00	0.00	2.33	1.78	0.00	280.6	0.0	64.99	12.57	77.56
														14,766.7	**0.0**			**6,228.16**

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

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 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)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.7	6.37	0.000	2.61	0.00	0.27	2.38	0.80	1.00	0.00	1.57	18.23	0.00	358.3	0.0	20.26	80.45	100.71
2	7.7	6.37	0.000	2.26	0.00	0.16	2.74	0.80	1.00	0.00	1.31	15.28	0.00	301.4	0.0	19.43	67.43	86.86
3	15.0	6.37	0.000	4.63	0.00	0.15	2.78	0.80	1.00	0.00	2.67	33.51	0.00	637.1	0.0	40.13	147.88	188.00
4	25.0	7.08	0.000	4.80	0.00	0.15	2.76	0.80	1.00	0.00	2.77	33.51	0.00	650.0	0.0	46.02	164.45	210.47
5	35.0	7.60	0.000	4.62	0.00	0.15	2.78	0.80	1.00	0.00	2.66	33.51	0.00	636.4	0.0	47.81	176.52	224.33
6	45.0	8.01	0.000	4.80	0.00	0.15	2.76	0.80	1.00	0.00	2.77	33.51	0.00	650.0	0.0	52.08	186.11	238.19
7	55.0	8.36	0.000	4.62	0.00	0.15	2.78	0.80	1.00	0.00	2.66	33.51	0.00	636.4	0.0	52.58	194.15	246.73
8	65.0	8.66	0.000	4.80	0.00	0.15	2.76	0.80	1.00	0.00	2.77	32.97	0.00	648.4	0.0	56.27	198.23	254.50
9	75.0	8.92	0.000	4.62	0.00	0.15	2.78	0.80	1.00	0.00	2.66	32.97	0.00	634.8	0.0	56.13	204.29	260.42
10	85.0	9.16	0.000	4.80	0.00	0.15	2.76	0.80	1.00	0.00	2.77	32.97	0.00	648.4	0.0	59.54	209.74	269.28
11	95.0	9.38	0.000	4.62	0.00	0.15	2.78	0.80	1.00	0.00	2.66	32.97	0.00	634.8	0.0	58.99	214.71	273.70
12	105.0	9.58	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	30.95	0.00	553.9	0.0	55.98	207.46	263.45
13	115.0	9.76	0.000	4.06	0.00	0.13	2.85	0.80	1.00	0.00	2.33	30.95	0.00	540.4	0.0	54.96	211.48	266.43
14	125.0	9.94	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	29.47	0.00	544.5	0.0	58.08	206.19	264.27
15	135.0	10.10	0.500	3.88	0.00	0.14	2.81	0.80	1.00	0.00	2.62	29.30	0.00	545.2	0.0	63.23	208.54	271.77
16	145.0	10.25	2.396	3.88	0.00	0.20	2.59	0.80	1.00	0.00	4.17	29.30	0.00	660.0	0.0	94.26	211.70	305.96
17	155.0	10.40	2.396	3.88	0.00	0.20	2.59	0.80	1.00	0.00	4.17	29.30	0.00	660.0	0.0	95.59	214.69	310.29
18	165.0	10.53	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	29.30	0.00	543.5	0.0	61.57	217.54	279.11
19	175.0	10.66	0.000	4.06	0.00	0.13	2.85	0.80	1.00	0.00	2.33	29.30	0.00	530.0	0.0	60.04	220.25	280.28
20	185.0	10.79	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	29.30	0.00	543.5	0.0	63.07	222.84	285.91
21	191.2	10.86	0.000	1.29	0.00	0.18	2.68	0.80	1.00	0.00	0.75	6.84	0.00	148.9	0.0	18.55	52.39	70.94
22	194.7	10.91	2.156	1.86	0.00	0.27	2.36	0.80	1.00	0.00	2.84	13.58	0.00	405.4	0.0	62.19	104.46	166.65
23	198.5	10.95	0.000	1.45	0.00	0.16	2.75	0.80	1.00	0.00	0.84	8.61	0.00	177.4	0.0	21.53	66.65	88.19
24	205.0	11.03	0.000	4.06	0.00	0.13	2.85	0.80	1.00	0.00	2.33	16.48	0.00	415.5	0.0	62.07	122.96	185.03
25	215.0	11.14	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	15.11	0.00	416.5	0.0	65.10	112.86	177.96
26	225.0	11.24	0.000	4.24	0.00	0.14	2.83	0.80	1.00	0.00	2.43	15.11	0.00	416.5	0.0	65.73	113.94	179.67
27	235.0	11.35	0.500	3.88	0.00	0.14	2.81	0.80	1.00	0.00	2.62	15.11	0.00	418.2	0.0	71.06	114.99	186.05
28	241.5	11.41	0.000	1.45	0.00	0.16	2.75	0.80	1.00	0.00	0.84	4.53	0.00	140.0	0.0	22.47	34.70	57.16
29	245.3	11.45	2.156	1.86	0.00	0.28	2.36	0.80	1.00	0.00	2.84	3.50	0.00	313.6	0.0	65.26	26.53	91.79
30	248.8	11.48	0.000	1.11	0.00	0.15	2.76	0.80	1.00	0.00	0.64	0.42	0.00	77.2	0.0	17.27	2.92	20.19
31	255.0	11.54	0.000	4.06	0.00	0.13	2.85	0.80	1.00	0.00	2.33	1.78	0.00	280.6	0.0	64.99	12.57	77.56
														14,766.7	**0.0**			**6,181.86**

Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

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 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)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	2.7	6.37	0.000	2.61	0.00	0.27	2.38	0.85	1.00	0.00	1.57	18.23	0.00	358.3	0.0	20.26	80.45	100.71
2	7.7	6.37	0.000	2.26	0.00	0.16	2.74	0.85	1.00	0.00	1.31	15.28	0.00	301.4	0.0	19.43	67.43	86.86
3	15.0	6.37	0.000	4.63	0.00	0.15	2.78	0.85	1.00	0.00	2.67	33.51	0.00	637.1	0.0	40.13	147.88	188.00
4	25.0	7.08	0.000	4.80	0.00	0.15	2.76	0.85	1.00	0.00	2.77	33.51	0.00	650.0	0.0	46.02	164.45	210.47
5	35.0	7.60	0.000	4.62	0.00	0.15	2.78	0.85	1.00	0.00	2.66	33.51	0.00	636.4	0.0	47.81	176.52	224.33
6	45.0	8.01	0.000	4.80	0.00	0.15	2.76	0.85	1.00	0.00	2.77	33.51	0.00	650.0	0.0	52.08	186.11	238.19
7	55.0	8.36	0.000	4.62	0.00	0.15	2.78	0.85	1.00	0.00	2.66	33.51	0.00	636.4	0.0	52.58	194.15	246.73
8	65.0	8.66	0.000	4.80	0.00	0.15	2.76	0.85	1.00	0.00	2.77	32.97	0.00	648.4	0.0	56.27	198.23	254.50
9	75.0	8.92	0.000	4.62	0.00	0.15	2.78	0.85	1.00	0.00	2.66	32.97	0.00	634.8	0.0	56.13	204.29	260.42
10	85.0	9.16	0.000	4.80	0.00	0.15	2.76	0.85	1.00	0.00	2.77	32.97	0.00	648.4	0.0	59.54	209.74	269.28
11	95.0	9.38	0.000	4.62	0.00	0.15	2.78	0.85	1.00	0.00	2.66	32.97	0.00	634.8	0.0	58.99	214.71	273.70
12	105.0	9.58	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	30.95	0.00	553.9	0.0	55.98	207.46	263.45
13	115.0	9.76	0.000	4.06	0.00	0.13	2.85	0.85	1.00	0.00	2.33	30.95	0.00	540.4	0.0	54.96	211.48	266.43
14	125.0	9.94	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	29.47	0.00	544.5	0.0	58.08	206.19	264.27
15	135.0	10.10	0.500	3.88	0.00	0.14	2.81	0.85	1.00	0.00	2.65	29.30	0.00	545.2	0.0	63.83	208.54	272.37
16	145.0	10.25	2.396	3.88	0.00	0.20	2.59	0.85	1.00	0.00	4.29	29.30	0.00	660.0	0.0	96.97	211.70	308.67
17	155.0	10.40	2.396	3.88	0.00	0.20	2.59	0.85	1.00	0.00	4.29	29.30	0.00	660.0	0.0	98.34	214.69	313.03
18	165.0	10.53	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	29.30	0.00	543.5	0.0	61.57	217.54	279.11
19	175.0	10.66	0.000	4.06	0.00	0.13	2.85	0.85	1.00	0.00	2.33	29.30	0.00	530.0	0.0	60.04	220.25	280.28
20	185.0	10.79	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	29.30	0.00	543.5	0.0	63.07	222.84	285.91
21	191.2	10.86	0.000	1.29	0.00	0.18	2.68	0.85	1.00	0.00	0.75	6.84	0.00	148.9	0.0	18.55	52.39	70.94
22	194.7	10.91	2.156	1.86	0.00	0.27	2.36	0.85	1.00	0.00	2.94	13.58	0.00	405.4	0.0	64.55	104.46	169.02
23	198.5	10.95	0.000	1.45	0.00	0.16	2.75	0.85	1.00	0.00	0.84	8.61	0.00	177.4	0.0	21.53	66.65	88.19
24	205.0	11.03	0.000	4.06	0.00	0.13	2.85	0.85	1.00	0.00	2.33	16.48	0.00	415.5	0.0	62.07	122.96	185.03
25	215.0	11.14	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	15.11	0.00	416.5	0.0	65.10	112.86	177.96
26	225.0	11.24	0.000	4.24	0.00	0.14	2.83	0.85	1.00	0.00	2.43	15.11	0.00	416.5	0.0	65.73	113.94	179.67
27	235.0	11.35	0.500	3.88	0.00	0.14	2.81	0.85	1.00	0.00	2.65	15.11	0.00	418.2	0.0	71.73	114.99	186.73
28	241.5	11.41	0.000	1.45	0.00	0.16	2.75	0.85	1.00	0.00	0.84	4.53	0.00	140.0	0.0	22.47	34.70	57.16
29	245.3	11.45	2.156	1.86	0.00	0.28	2.36	0.85	1.00	0.00	2.94	3.50	0.00	313.6	0.0	67.74	26.53	94.27
30	248.8	11.48	0.000	1.11	0.00	0.15	2.76	0.85	1.00	0.00	0.64	0.42	0.00	77.2	0.0	17.27	2.92	20.19
31	255.0	11.54	0.000	4.06	0.00	0.13	2.85	0.85	1.00	0.00	2.33	1.78	0.00	280.6	0.0	64.99	12.57	77.56
														14,766.7	**0.0**			**6,193.44**

Force/Stress Compression Summary

Structure:	CT02303-A-3-SBA	**Code:**	EIA/TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 20	

IES Tower Engineering Solutions

LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	5.44	SOL - 1 3/4" SOLID	-40.67	1.2D + 1.0Di + 1.0Wi 60° Wind	2.56	100	100	100	70.25	50.00	75.45	53.9	Member X
2	10	SOL - 1 3/4" SOLID	-39.83	1.2D + 1.0Di + 1.0Wi 60° Wind	2.28	100	100	100	62.54	50.00	81.32	49.0	Member X
3	20	SOL - 1 3/4" SOLID	-40.48	1.2D + 1.0Di + 1.0Wi 60° Wind	2.38	100	100	100	65.14	50.00	79.36	51.0	Member X
4	30	SOL - 1 3/4" SOLID	-40.36	1.2D + 1.0Di + 1.0Wi 60° Wind	2.33	100	100	100	64.00	50.00	80.23	50.3	Member X
5	40	SOL - 1 3/4" SOLID	-39.76	1.2D + 1.0Di + 1.0Wi 60° Wind	2.33	100	100	100	64.00	50.00	80.23	49.6	Member X
6	50	SOL - 1 3/4" SOLID	-38.34	1.2D + 1.0Di + 1.0Wi 60° Wind	2.33	100	100	100	64.00	50.00	80.23	47.8	Member X
7	60	SOL - 1 3/4" SOLID	-40.54	1.2D + 1.0W Normal Wind	2.33	100	100	100	64.00	50.00	80.23	50.5	Member X
8	70	SOL - 1 3/4" SOLID	-54.31	1.2D + 1.0W Normal Wind	2.33	100	100	100	64.00	50.00	80.23	67.7	Member X
9	80	SOL - 1 3/4" SOLID	-56.70	1.2D + 1.0W Normal Wind	2.33	100	100	100	64.00	50.00	80.23	70.7	Member X
10	90	SOL - 1 3/4" SOLID	-39.18	1.2D + 1.0W Normal Wind	2.33	100	100	100	64.00	50.00	80.23	48.8	Member X
11	100	SOL - 1 3/4" SOLID	-32.16	1.2D + 1.0Di + 1.0Wi 60° Wind	2.33	100	100	100	64.00	50.00	80.23	40.1	Member X
12	110	SOL - 1 1/2" SOLID	-34.94	1.2D + 1.0W 60° Wind	2.33	100	100	100	74.66	50.00	52.90	66.1	Member X
13	120	SOL - 1 1/2" SOLID	-35.04	1.2D + 1.0W 60° Wind	2.33	100	100	100	74.66	50.00	52.90	66.2	Member X
14	130	SOL - 1 1/2" SOLID	-32.56	1.2D + 1.0W 90° Wind	2.33	100	100	100	74.66	50.00	52.90	61.6	Member X
15	140	SOL - 1 1/2" SOLID	-30.44	1.2D + 1.0W Normal Wind	2.33	100	100	100	74.66	50.00	52.90	57.5	Member X
16	150	SOL - 1 1/2" SOLID	-28.13	1.2D + 1.0W Normal Wind	2.33	100	100	100	74.66	50.00	52.90	53.2	Member X
17	160	SOL - 1 1/2" SOLID	-22.76	1.2D + 1.0Di + 1.0Wi Normal	2.33	100	100	100	74.66	50.00	52.90	43.0	Member X
18	170	SOL - 1 1/2" SOLID	-23.44	1.2D + 1.0Di + 1.0Wi 60° Wind	2.33	100	100	100	74.66	50.00	52.90	44.3	Member X
19	180	SOL - 1 1/2" SOLID	-25.33	1.2D + 1.0W Normal Wind	2.33	100	100	100	74.66	50.00	52.90	47.9	Member X
20	190	SOL - 1 1/2" SOLID	-34.86	1.2D + 1.0W Normal Wind	2.33	100	100	100	74.66	50.00	52.90	65.9	Member X
21	192.3	SOL - 1 1/2" SOLID	-36.06	1.2D + 1.0W Normal Wind	2.34	100	100	100	74.72	50.00	52.87	68.2	Member X
22	197.0	SOL - 1 1/2" SOLID	-45.45	1.2D + 1.0W Normal Wind	2.33	100	100	100	74.72	50.00	52.87	86.0	Member X
23	200	SOL - 1 1/2" SOLID	-43.63	1.2D + 1.0W Normal Wind	2.33	100	100	100	74.50	50.00	53.00	82.3	Member X
24	210	SOL - 1 1/2" SOLID	-33.12	1.2D + 1.0W Normal Wind	2.33	100	100	100	74.66	50.00	52.90	62.6	Member X
25	220	SOL - 1 1/2" SOLID	-28.59	1.2D + 1.0W Normal Wind	2.33	100	100	100	74.66	50.00	52.90	54.0	Member X
26	230	SOL - 1 1/2" SOLID	-25.96	1.2D + 1.0W Normal Wind	2.33	100	100	100	74.66	50.00	52.90	49.1	Member X
27	240	SOL - 1 1/2" SOLID	-27.25	1.2D + 1.0W Normal Wind	2.33	100	100	100	74.66	50.00	52.90	51.5	Member X
28	243	SOL - 1 1/2" SOLID	-24.98	1.2D + 1.0W Normal Wind	2.33	100	100	100	74.66	50.00	52.90	47.2	Member X
29	247.6	SOL - 1 1/2" SOLID	-14.38	1.2D + 1.0W Normal Wind	2.33	100	100	100	74.64	50.00	52.91	27.2	Member X
30	250	SOL - 1 1/2" SOLID	-7.25	1.2D + 1.0W Normal Wind	2.34	100	100	100	74.72	50.00	52.87	13.7	Member X
31	260	SOL - 1 1/2" SOLID	-5.97	1.2D + 1.0W Normal Wind	2.33	100	100	100	74.66	50.00	52.90	11.3	Member X

HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	5.44										0.00	0	0				
2	10										0.00	0	0				
3	20	SOL - 3/4" SOLID	-0.10	0.9D + 1.0W 60° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			1.7	Member X
4	30										0.00	0	0				
5	40	SOL - 3/4" SOLID	-0.25	1.2D + 1.0W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			4.5	Member X
6	50	SOL - 3/4" SOLID	-0.33	0.9D + 1.0W 60° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			5.9	Member X
7	60	SOL - 3/4" SOLID	-0.83	1.2D + 1.0W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			15.1	Member X
8	70	SOL - 3/4" SOLID	-1.90	0.9D + 1.0W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			34.4	Member X
9	80	SOL - 3/4" SOLID	-1.17	1.2D + 1.0W 60° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			21.2	Member X
10	90	SOL - 3/4" SOLID	-1.05	1.2D + 1.0W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			19.0	Member X
11	100	SOL - 3/4" SOLID	-0.55	1.2D + 1.0W 60° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			10.0	Member X
12	110	SOL - 3/4" SOLID	-0.29	1.2D + 1.0W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			5.2	Member X
13	120	SOL - 3/4" SOLID	-0.14	1.2D + 1.0W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			2.5	Member X
14	130	SOL - 3/4" SOLID	-0.49	1.2D + 1.0W 90° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			8.9	Member X
15	140										0.00	0	0				
16	150										0.00	0	0				

Force/Stress Compression Summary

Structure:	CT02303-A-3-SBA	**Code:**	EIA/TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
17	160										0.00	0	0				
18	170										0.00	0	0				
19	180	SOL - 3/4" SOLID	-0.57	1.2D + 1.0W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			10.4	Member X
20	190	SOL - 3/4" SOLID	-0.55	1.2D + 1.0W 60° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			9.9	Member X
21	192.	SOL - 3/4" SOLID	-0.79	0.9D + 1.0W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			14.4	Member X
22	197.	CHN - C3 x 6	-3.17	0.9D + 1.0W Normal Wind	3.00	100	100	100	87.17	36.00	38.22	0	0			8.3	Member Y
23	200	SOL - 3/4" SOLID	-3.32	1.2D + 1.0W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			60.0	Member X
24	210	SOL - 3/4" SOLID	-1.11	1.2D + 1.0W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			20.1	Member X
25	220	SOL - 3/4" SOLID	-0.17	0.9D + 1.0W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			3.1	Member X
26	230	SOL - 3/4" SOLID	-0.10	1.2D + 1.0W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			1.8	Member X
27	240										0.00	0	0				
28	243	SOL - 3/4" SOLID	-2.83	1.2D + 1.0W 60° Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			51.2	Member X
29	247.	CHN - C3 x 6	-2.06	0.9D + 1.0W 90° Wind	3.00	100	100	100	61.02	36.00	46.87	0	0			4.4	Member Y
30	250	SOL - 3/4" SOLID	-0.05	0.9D + 1.0W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			1.0	Member X
31	260	SOL - 3/4" SOLID	-0.65	1.2D + 1.0W Normal Wind	3.00	100	100	100	134.40	50.00	5.53	0	0			11.8	Member X

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	5.44	SOL - 5/8" SOLID	-3.89	1.2D + 1.0Di + 1.0Wi Normal	2.69	50	50	50	92.96	50.00	7.34	0	0			52.9	Member X
2	10	SOL - 5/8" SOLID	-1.97	1.2D + 1.0Di + 1.0Wi 90° Wind	3.77	50	50	50	130.43	50.00	4.07	0	0			48.3	Member X
3	20	SOL - 5/8" SOLID	-0.48	1.2D + 1.0W 60° Wind	3.83	50	50	50	132.45	50.00	3.95	0	0			12.2	Member X
4	30	SOL - 5/8" SOLID	-0.26	1.2D + 1.0W 90° Wind	3.80	50	50	50	131.56	50.00	4.00	0	0			6.4	Member X
5	40	SOL - 5/8" SOLID	-0.83	1.2D + 1.0W 90° Wind	3.80	50	50	50	131.56	50.00	4.00	0	0			20.7	Member X
6	50	SOL - 5/8" SOLID	-1.04	1.2D + 1.0W 90° Wind	3.80	50	50	50	131.56	50.00	4.00	0	0			26.0	Member X
7	60	SOL - 5/8" SOLID	-1.90	1.2D + 1.0W 90° Wind	3.80	50	50	50	131.56	50.00	4.00	0	0			47.4	Member X
8	70	SOL - 5/8" SOLID	-2.72	1.2D + 1.0W 90° Wind	3.80	50	50	50	131.56	50.00	4.00	0	0			68.0	Member X
9	80	SOL - 5/8" SOLID	-2.45	1.2D + 1.0W 60° Wind	3.80	50	50	50	131.56	50.00	4.00	0	0			61.2	Member X
10	90	SOL - 5/8" SOLID	-2.18	1.2D + 1.0W Normal Wind	3.80	50	50	50	131.56	50.00	4.00	0	0			54.5	Member X
11	100	SOL - 5/8" SOLID	-1.38	1.2D + 1.0W 60° Wind	3.80	50	50	50	131.56	50.00	4.00	0	0			34.3	Member X
12	110	SOL - 9/16" SOLID	-0.72	1.2D + 1.0W Normal Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			27.5	Member X
13	120	SOL - 9/16" SOLID	-0.60	1.2D + 1.0W 90° Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			22.7	Member X
14	130	SOL - 9/16" SOLID	-1.00	1.2D + 1.0W 60° Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			38.0	Member X
15	140	SOL - 9/16" SOLID	-1.26	1.2D + 1.0W 60° Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			48.0	Member X
16	150	SOL - 9/16" SOLID	-2.01	1.2D + 1.0W Normal Wind	3.80	50	50	50	145.97	50.00	2.63	0	0				T-Only
17	160	SOL - 9/16" SOLID	-1.38	1.2D + 1.0W Normal Wind	3.80	50	50	50	145.97	50.00	2.63	0	0				T-Only
18	170	SOL - 9/16" SOLID	-0.36	1.2D + 1.0W Normal Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			13.8	Member X
19	180	SOL - 9/16" SOLID	-1.10	1.2D + 1.0W Normal Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			41.7	Member X
20	190	SOL - 9/16" SOLID	-1.25	1.2D + 1.0W 60° Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			47.4	Member X
21	192.	SOL - 9/16" SOLID	-0.03	1.2D + 1.0W Normal Wind	3.80	50	50	50	146.01	50.00	2.63	0	0				T-Only
22	197.	SOL - 9/16" SOLID	-0.45	1.2D + 1.0W Normal Wind	3.80	50	50	50	146.01	50.00	2.63	0	0				T-Only
23	200	SOL - 9/16" SOLID	-0.90	1.2D + 1.0W 60° Wind	3.80	50	50	50	145.84	50.00	2.64	0	0				T-Only
24	210	SOL - 9/16" SOLID	-1.71	1.2D + 1.0W Normal Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			64.9	Member X
25	220	SOL - 9/16" SOLID	-0.45	1.2D + 1.0W Normal Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			17.2	Member X
26	230	SOL - 9/16" SOLID	-0.28	1.2D + 1.0W Normal Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			10.6	Member X
27	240	SOL - 9/16" SOLID	-0.64	0.9D + 1.0W 60° Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			24.4	Member X
28	243	SOL - 9/16" SOLID	-0.09	1.2D + 1.0W Normal Wind	3.80	50	50	50	145.96	50.00	2.64	0	0				T-Only
29	247.	SOL - 9/16" SOLID	-2.38	1.2D + 1.0W Normal Wind	3.80	50	50	50	145.95	50.00	2.64	0	0				T-Only
30	250	SOL - 9/16" SOLID	-0.80	1.2D + 1.0W Normal Wind	3.80	50	50	50	146.01	50.00	2.63	0	0			30.4	Member X
31	260	SOL - 9/16" SOLID	-0.87	1.2D + 1.0W 60° Wind	3.80	50	50	50	145.97	50.00	2.63	0	0			33.1	Member X

Force/Stress Tension Summary

Structure:	CT02303-A-3-SBA	**Code:**	EIA/TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	5.44				0	0.00		
2	10				0	0.00		
3	20				0	0.00		
4	30				0	0.00		
5	40				0	0.00		
6	50				0	0.00		
7	60				0	0.00		
8	70	SOL - 1 3/4" SOLID	2.01	0.9D + 1.0W 60° Wind	50	108.24	1.9	Member
9	80	SOL - 1 3/4" SOLID	2.10	0.9D + 1.0W 60° Wind	50	108.24	1.9	Member
10	90				0	0.00		
11	100				0	0.00		
12	110				0	0.00		
13	120				0	0.00		
14	130				0	0.00		
15	140				0	0.00		
16	150				0	0.00		
17	160				0	0.00		
18	170				0	0.00		
19	180				0	0.00		
20	190				0	0.00		
21	192.33				0	0.00		
22	197.00	SOL - 1 1/2" SOLID	8.58	0.9D + 1.0W 60° Wind	50	79.52	10.8	Member
23	200	SOL - 1 1/2" SOLID	8.32	0.9D + 1.0W 60° Wind	50	79.52	10.5	Member
24	210	SOL - 1 1/2" SOLID	8.29	0.9D + 1.0W 60° Wind	50	79.52	10.4	Member
25	220	SOL - 1 1/2" SOLID	4.38	0.9D + 1.0W 60° Wind	50	79.52	5.5	Member
26	230	SOL - 1 1/2" SOLID	4.40	0.9D + 1.0W 60° Wind	50	79.52	5.5	Member
27	240	SOL - 1 1/2" SOLID	19.18	0.9D + 1.0W 60° Wind	50	79.52	24.1	Member
28	243	SOL - 1 1/2" SOLID	19.22	0.9D + 1.0W 60° Wind	50	79.52	24.2	Member
29	247.66	SOL - 1 1/2" SOLID	9.39	0.9D + 1.0W 60° Wind	50	79.52	11.8	Member
30	250	SOL - 1 1/2" SOLID	5.71	0.9D + 1.0W 60° Wind	50	79.52	7.2	Member
31	260	SOL - 1 1/2" SOLID	4.40	0.9D + 1.0W 60° Wind	50	79.52	5.5	Member

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	5.44	SOL - 3/4" SOLID	9.79	1.2D + 1.0Di + 1.0Wi Nc	50	19.88	0	0				49.2	Member
2	10	SOL - 3/4" SOLID	1.49	1.2D + 1.0Di + 1.0Wi Nc	50	19.88	0	0				7.5	Member
3	20	SOL - 3/4" SOLID	0.27	1.2D + 1.0W Normal Wi	50	19.88	0	0				1.3	Member
4	30	SOL - 3/4" SOLID	0.29	1.2D + 1.0Di + 1.0Wi Nc	50	19.88	0	0				1.4	Member
5	40	SOL - 3/4" SOLID	0.40	1.2D + 1.0W 60° Wind	50	19.88	0	0				2.0	Member
6	50	SOL - 3/4" SOLID	0.56	1.2D + 1.0W Normal Wi	50	19.88	0	0				2.8	Member
7	60	SOL - 3/4" SOLID	0.93	1.2D + 1.0W 60° Wind	50	19.88	0	0				4.7	Member
8	70	SOL - 3/4" SOLID	4.15	1.2D + 1.0W 60° Wind	50	19.88	0	0				20.9	Member
9	80	SOL - 3/4" SOLID	1.33	1.2D + 1.0W Normal Wi	50	19.88	0	0				6.7	Member
10	90	SOL - 3/4" SOLID	1.10	1.2D + 1.0W 60° Wind	50	19.88	0	0				5.6	Member
11	100	SOL - 3/4" SOLID	0.75	1.2D + 1.0W Normal Wi	50	19.88	0	0				3.8	Member
12	110	SOL - 3/4" SOLID	0.37	1.2D + 1.0W 60° Wind	50	19.88	0	0				1.8	Member
13	120	SOL - 3/4" SOLID	0.30	1.2D + 1.0W 60° Wind	50	19.88	0	0				1.5	Member
14	130	SOL - 3/4" SOLID	0.56	1.2D + 1.0W 90° Wind	50	19.88	0	0				2.8	Member
15	140	SOL - 3/4" SOLID			50	0.00	0	0					
16	150	SAE - 2X2X0.25	1.59	1.2D + 1.0Di + 1.0Wi Nc	36	30.46	0	0				5.2	Member

Force/Stress Tension Summary

Structure:	CT02303-A-3-SBA	**Code:**	EIA/TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

HORIZONTAL MEMBERS

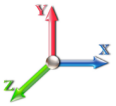
Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
17	160	SAE - 2X2X0.25	1.56	1.2D + 1.0Di + 1.0Wi No	36	30.46	0	0				5.1	Member
18	170	SOL - 3/4" SOLID	0.16	1.2D + 1.0W 90° Wind	50	19.88	0	0				0.8	Member
19	180	SOL - 3/4" SOLID	0.57	1.2D + 1.0W 60° Wind	50	19.88	0	0				2.8	Member
20	190	SOL - 3/4" SOLID	0.75	1.2D + 1.0W Normal Wi	50	19.88	0	0				3.8	Member
21	192.33	SOL - 3/4" SOLID	0.63	1.2D + 1.0W 60° Wind	50	19.88	0	0				3.2	Member
22	197.00	CHN - C3 x 6	6.54	1.2D + 1.0W 60° Wind	36	57.02	0	0				11.5	Member
23	200	SOL - 3/4" SOLID	1.64	1.2D + 1.0W 60° Wind	50	19.88	0	0				8.3	Member
24	210	SOL - 3/4" SOLID	0.88	1.2D + 1.0W 90° Wind	50	19.88	0	0				4.4	Member
25	220	SOL - 3/4" SOLID	0.27	1.2D + 1.0W 60° Wind	50	19.88	0	0				1.4	Member
26	230	SOL - 3/4" SOLID	0.13	1.2D + 1.0W Normal Wi	50	19.88	0	0				0.6	Member
27	240	SOL - 3/4" SOLID			50	0.00	0	0					
28	243	SOL - 3/4" SOLID	1.47	1.2D + 1.0W 60° Wind	50	19.88	0	0				7.4	Member
29	247.66	CHN - C3 x 6	0.38	1.2D + 1.0W Normal Wi	36	57.02	0	0				0.7	Member
30	250	SOL - 3/4" SOLID	0.11	1.2D + 1.0W 60° Wind	50	19.88	0	0				0.6	Member
31	260	SOL - 3/4" SOLID	0.59	1.2D + 1.0W Normal Wi	50	19.88	0	0				3.0	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	5.44	SOL - 5/8" SOLID	0.00		50	0.00	0	0					
2	10	SOL - 5/8" SOLID	0.74	1.2D + 1.0W 90° Wind	50	13.81	0	0				5.3	Member
3	20	SOL - 5/8" SOLID	0.42	1.2D + 1.0W 90° Wind	50	13.81	0	0				3.1	Member
4	30	SOL - 5/8" SOLID	0.12	1.2D + 1.0W 90° Wind	50	13.81	0	0				0.8	Member
5	40	SOL - 5/8" SOLID	0.59	1.2D + 1.0W 90° Wind	50	13.81	0	0				4.2	Member
6	50	SOL - 5/8" SOLID	0.87	1.2D + 1.0W 90° Wind	50	13.81	0	0				6.3	Member
7	60	SOL - 5/8" SOLID	1.68	1.2D + 1.0W 90° Wind	50	13.81	0	0				12.2	Member
8	70	SOL - 5/8" SOLID	1.70	1.2D + 1.0W 90° Wind	50	13.81	0	0				12.3	Member
9	80	SOL - 5/8" SOLID	2.31	0.9D + 1.0W 60° Wind	50	13.81	0	0				16.8	Member
10	90	SOL - 5/8" SOLID	2.07	1.2D + 1.0W 60° Wind	50	13.81	0	0				15.0	Member
11	100	SOL - 5/8" SOLID	1.14	1.2D + 1.0W Normal Wi	50	13.81	0	0				8.2	Member
12	110	SOL - 9/16" SOLID	0.63	1.2D + 1.0W 60° Wind	50	11.18	0	0				5.6	Member
13	120	SOL - 9/16" SOLID	0.50	1.2D + 1.0W 60° Wind	50	11.18	0	0				4.5	Member
14	130	SOL - 9/16" SOLID	0.92	1.2D + 1.0W 60° Wind	50	11.18	0	0				8.2	Member
15	140	SOL - 9/16" SOLID	1.20	1.2D + 1.0W 60° Wind	50	11.18	0	0				10.7	Member
16	150	SOL - 9/16" SOLID	0.50	0.9D + 1.0W 90° Wind	50	11.18	0	0				4.4	Member
17	160	SOL - 9/16" SOLID	0.00		50	0.00	0	0					
18	170	SOL - 9/16" SOLID	0.23	1.2D + 1.0W 60° Wind	50	11.18	0	0				2.1	Member
19	180	SOL - 9/16" SOLID	0.93	1.2D + 1.0W 60° Wind	50	11.18	0	0				8.3	Member
20	190	SOL - 9/16" SOLID	1.17	1.2D + 1.0W Normal Wi	50	11.18	0	0				10.5	Member
21	192.33	SOL - 9/16" SOLID	0.39	0.9D + 1.0W 60° Wind	50	11.18	0	0				3.5	Member
22	197.00	SOL - 9/16" SOLID	2.62	1.2D + 1.0W 90° Wind	50	11.18	0	0				23.4	Member
23	200	SOL - 9/16" SOLID	6.31	1.2D + 1.0W 90° Wind	50	11.18	0	0				56.4	Member
24	210	SOL - 9/16" SOLID	1.49	1.2D + 1.0W 60° Wind	50	11.18	0	0				13.4	Member
25	220	SOL - 9/16" SOLID	0.34	1.2D + 1.0W Normal Wi	50	11.18	0	0				3.0	Member
26	230	SOL - 9/16" SOLID	0.27	0.9D + 1.0W 60° Wind	50	11.18	0	0				2.4	Member
27	240	SOL - 9/16" SOLID	0.59	1.2D + 1.0W Normal Wi	50	11.18	0	0				5.2	Member
28	243	SOL - 9/16" SOLID	6.98	1.2D + 1.0W 90° Wind	50	11.18	0	0				62.4	Member
29	247.66	SOL - 9/16" SOLID	2.14	0.9D + 1.0W 90° Wind	50	11.18	0	0				19.2	Member
30	250	SOL - 9/16" SOLID	0.71	0.9D + 1.0W 60° Wind	50	11.18	0	0				6.4	Member
31	260	SOL - 9/16" SOLID	1.37	1.2D + 1.0W Normal Wi	50	11.18	0	0				12.2	Member

Seismic Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 24	



Tower Engineering Solutions

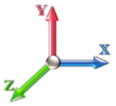
Load Case: 1.2D + 1.0Ev + 1.0Eh

Dead Load Factor	1.20	**Sds**	0.185	**Ss**	0.1740	**Fa**	1.6000	**Ke**	1.0154	**TL**	6.0000
Seismic Load Factor	1.00	**Sd1**	0.086	**S1**	0.0540	**Fv**	2.4000	**Kg**	0.0049	**Cs**	0.0543
Seismic Importance Factor	1.00	**W1**	0.000	**R**	3.0000	**Vs**	1.5883	**T**	0.5307	**f1**	1.8842

Sect #	Elev (ft)	Wz (lb)	Lateral Fsz (lbs)	Vertical Ev (lbs)
1	2.72	358.30	0.32	13.31
2	7.72	301.36	0.78	11.19
3	15.00	637.08	3.28	23.66
4	25.00	649.96	5.62	24.14
5	35.00	636.43	7.74	23.64
6	45.00	649.96	10.20	24.14
7	55.00	658.43	12.68	24.45
8	65.00	962.86	22.09	35.76
9	75.00	634.83	16.74	23.58
10	85.00	648.36	19.41	24.08
11	95.00	742.83	24.96	27.59
12	105.00	553.90	20.51	20.57
13	115.00	540.38	21.93	20.07
14	125.00	796.54	35.40	29.58
15	135.00	728.11	34.94	27.04
16	145.00	660.00	34.00	24.51
17	155.00	660.00	36.38	24.51
18	165.00	543.50	31.83	20.18
19	175.00	529.98	32.94	19.68
20	185.00	543.50	35.75	20.18
21	191.17	148.92	9.93	5.53
22	194.67	844.73	58.91	31.37
23	198.50	177.42	12.32	6.59
24	205.00	3771.1	283.62	140.05
25	215.00	416.50	31.78	15.47
26	225.00	416.50	33.28	15.47
27	235.00	796.20	67.16	29.57
28	241.50	140.03	11.82	5.20
29	245.33	5734.1	520.87	212.96
30	248.83	77.16	6.66	2.87
31	255.00	1559.5	144.42	57.92

Seismic Section Forces

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 25	



Tower Engineering Solutions

Load Case: 0.9D + 1.0Ev + 1.0Eh

Dead Load Factor	0.90	**Sds**	0.185	**Ss**	0.1740	**Fa**	1.6000	**Ke**	1.0154	**TL**	6.0000
Seismic Load Factor	1.00	**Sd1**	0.086	**S1**	0.0540	**Fv**	2.4000	**Kg**	0.0049	**Cs**	0.0543
Seismic Importance Factor	1.00	**W1**	0.000	**R**	3.0000	**Vs**	1.5883	**T**	0.5307	**f1**	1.8842

Sect #	Elev (ft)	Wz (lb)	Lateral Fsz (lbs)	Vertical Ev (lbs)
1	2.72	358.30	0.32	13.31
2	7.72	301.36	0.78	11.19
3	15.00	637.08	3.28	23.66
4	25.00	649.96	5.62	24.14
5	35.00	636.43	7.74	23.64
6	45.00	649.96	10.20	24.14
7	55.00	658.43	12.68	24.45
8	65.00	962.86	22.09	35.76
9	75.00	634.83	16.74	23.58
10	85.00	648.36	19.41	24.08
11	95.00	742.83	24.96	27.59
12	105.00	553.90	20.51	20.57
13	115.00	540.38	21.93	20.07
14	125.00	796.54	35.40	29.58
15	135.00	728.11	34.94	27.04
16	145.00	660.00	34.00	24.51
17	155.00	660.00	36.38	24.51
18	165.00	543.50	31.83	20.18
19	175.00	529.98	32.94	19.68
20	185.00	543.50	35.75	20.18
21	191.17	148.92	9.93	5.53
22	194.67	844.73	58.91	31.37
23	198.50	177.42	12.32	6.59
24	205.00	3771.1	283.62	140.05
25	215.00	416.50	31.78	15.47
26	225.00	416.50	33.28	15.47
27	235.00	796.20	67.16	29.57
28	241.50	140.03	11.82	5.20
29	245.33	5734.1	520.87	212.96
30	248.83	77.16	6.66	2.87
31	255.00	1559.5	144.42	57.92

Support Forces Summary

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 26	

Tower Engineering Solutions

Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.0W Normal Wind	1	0.00	93.06	-1.11	
	A1	0.00	-1.61	1.77	
	A1b	-31.13	-29.15	-19.34	
	A1a	31.13	-29.15	-19.33	
1.2D + 1.0W 60° Wind	1	-1.19	83.25	-0.69	
	A1	-1.04	-7.80	10.17	
	A1b	-38.86	-35.15	-22.44	
	A1a	8.28	-7.80	-5.98	
1.2D + 1.0W 90° Wind	1	-1.21	89.35	-0.13	
	A1	-1.38	-18.86	23.67	
	A1b	-38.17	-34.65	-21.35	
	A1a	2.86	-3.02	-2.19	
0.9D + 1.0W Normal Wind	1	0.00	85.44	-1.15	
	A1	0.00	-1.62	1.78	
	A1b	-31.11	-29.12	-19.32	
	A1a	31.11	-29.12	-19.32	
0.9D + 1.0W 60° Wind	1	-1.22	75.81	-0.70	
	A1	-1.04	-7.85	10.23	
	A1b	-38.88	-35.17	-22.45	
	A1a	8.33	-7.86	-6.01	
0.9D + 1.0W 90° Wind	1	-1.24	81.79	-0.13	
	A1	-1.38	-18.85	23.68	
	A1b	-38.16	-34.63	-21.34	
	A1a	2.88	-3.04	-2.21	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.00	117.67	-0.27	
	A1	0.00	-10.33	16.86	
	A1b	-21.33	-16.34	-13.04	
	A1a	21.33	-16.34	-13.04	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.21	117.04	-0.12	
	A1	-0.63	-12.24	19.26	
	A1b	-23.77	-18.29	-13.72	
	A1a	16.36	-12.25	-10.17	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-0.26	117.31	0.02	
	A1	-0.79	-14.29	22.12	
	A1b	-23.36	-17.74	-13.15	
	A1a	14.94	-10.83	-8.96	
1.2D + 1.0Ev + 1.0Eh	1	0.00	69.44	0.00	
	A1	0.00	-10.32	15.56	
	A1b	-14.80	-11.89	-8.55	
	A1a	14.80	-11.89	-8.55	
0.9D + 1.0Ev + 1.0Eh	1	0.00	61.96	0.00	
	A1	0.00	-10.47	15.73	
	A1b	-14.95	-12.04	-8.63	
	A1a	14.95	-12.04	-8.63	

1.0D + 1.0W Normal Wind	1	0.00	55.14	-0.44
	A1	0.00	-4.18	6.70
	A1b	-13.73	-11.55	-8.25
	A1a	13.73	-11.55	-8.25
1.0D + 1.0W 60° Wind	1	-0.37	55.89	-0.21
	A1	-0.28	-6.94	10.02
	A1b	-16.76	-14.31	-9.68
	A1a	8.54	-6.95	-5.25
1.0D + 1.0W 90° Wind	1	-0.44	55.51	0.01
	A1	-0.35	-9.24	13.00
	A1b	-15.98	-13.47	-9.08
	A1a	6.57	-5.02	-3.94

Max Reactions (kips)	Base	Anchor 1
Vertical	117.67	35.17
Horizontal	1.40	44.90

Cable Forces Summary

Structure:	CT02303-A-3-SBA	**Code:**	TIA-222-H	7/20/2023	
Site Name:	Torrington 2 CT	**Exposure:**	C		
Height:	260.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 28	

Load Case	Elevation (ft)	Cable	Node 1	Node 2	Allow Tension (kips)	Applied Tension (kips)	Use %
1.2D + 1.0W Normal Wind	70.00	1/2 EHS	A1	T1	16.02	0.46	3
			A1b	T1b	16.02	5.20	32
			A1a	T1a	16.02	5.35	33
			A1a	T1	16.02	5.20	32
			A1b	T1a	16.02	5.35	33
			A1	T1b	16.02	0.46	3
	139.33		A1	70	16.02	0.14	1
			A1a	70a	16.02	7.53	47
			A1b	70b	16.02	7.53	47
	194.67		A1	T3	16.02	0.54	3
			A1b	T3b	16.02	7.90	49
			A1a	T3a	16.02	8.09	50
			A1a	T3	16.02	7.87	49
			A1b	T3a	16.02	8.06	50
			A1	T3b	16.02	0.54	3
	239.33	5/8 EHS	A1	120	25.44	0.92	4
			A1a	120a	25.44	14.28	56
			A1b	120b	25.44	14.27	56
1.2D + 1.0W 60° Wind	70.00	1/2 EHS	A1	T1	16.02	2.03	13
			A1b	T1b	16.02	6.77	42
			A1a	T1a	16.02	1.97	12
			A1a	T1	16.02	2.00	12
			A1b	T1a	16.02	6.70	42
			A1	T1b	16.02	1.96	12
	139.33		A1	70	16.02	1.92	12
			A1a	70a	16.02	1.91	12
			A1b	70b	16.02	9.68	60
	194.67		A1	T3	16.02	2.35	15
			A1b	T3b	16.02	9.42	59
			A1a	T3a	16.02	2.26	14
			A1a	T3	16.02	2.32	14
			A1b	T3a	16.02	9.31	58
			A1	T3b	16.02	2.24	14
	239.33	5/8 EHS	A1	120	25.44	3.24	13
			A1a	120a	25.44	3.26	13
			A1b	120b	25.44	16.82	66
1.2D + 1.0W 90° Wind	70.00	1/2 EHS	A1	T1	16.02	3.59	22
			A1b	T1b	16.02	6.42	40
			A1a	T1a	16.02	0.71	4
			A1a	T1	16.02	0.77	5
			A1b	T1a	16.02	6.17	38
			A1	T1b	16.02	3.60	22
	139.33		A1	70	16.02	4.63	29
			A1a	70a	16.02	0.64	4
			A1b	70b	16.02	9.29	58
	194.67		A1	T3	16.02	5.34	33
			A1b	T3b	16.02	9.50	59
			A1a	T3a	16.02	0.91	6
			A1a	T3	16.02	0.97	6
			A1b	T3a	16.02	9.19	57
			A1	T3b	16.02	5.35	33
	239.33	5/8 EHS	A1	120	25.44	8.97	35
			A1a	120a	25.44	1.40	5
			A1b	120b	25.44	16.89	66

0.9D + 1.0W Normal Wind	70.00	1/2 EHS	A1	T1	16.02	0.46	3
			A1b	T1b	16.02	5.20	32
			A1a	T1a	16.02	5.36	33
			A1a	T1	16.02	5.20	32
			A1b	T1a	16.02	5.35	33
			A1	T1b	16.02	0.46	3
	139.33		A1	70	16.02	0.14	1
			A1a	70a	16.02	7.54	47
			A1b	70b	16.02	7.54	47
	194.67		A1	T3	16.02	0.55	3
			A1b	T3b	16.02	7.90	49
			A1a	T3a	16.02	8.08	50
			A1a	T3	16.02	7.87	49
			A1b	T3a	16.02	8.05	50
			A1	T3b	16.02	0.55	3
	239.33	5/8 EHS	A1	120	25.44	0.93	4
			A1a	120a	25.44	14.23	56
			A1b	120b	25.44	14.23	56
0.9D + 1.0W 60° Wind	70.00	1/2 EHS	A1	T1	16.02	2.03	13
			A1b	T1b	16.02	6.77	42
			A1a	T1a	16.02	1.98	12
			A1a	T1	16.02	2.00	13
			A1b	T1a	16.02	6.71	42
			A1	T1b	16.02	1.96	12
	139.33		A1	70	16.02	1.93	12
			A1a	70a	16.02	1.92	12
			A1b	70b	16.02	9.69	60
	194.67		A1	T3	16.02	2.36	15
			A1b	T3b	16.02	9.43	59
			A1a	T3a	16.02	2.28	14
			A1a	T3	16.02	2.34	15
			A1b	T3a	16.02	9.33	58
			A1	T3b	16.02	2.25	14
	239.33	5/8 EHS	A1	120	25.44	3.27	13
			A1a	120a	25.44	3.29	13
			A1b	120b	25.44	16.81	66
0.9D + 1.0W 90° Wind	70.00	1/2 EHS	A1	T1	16.02	3.60	22
			A1b	T1b	16.02	6.42	40
			A1a	T1a	16.02	0.72	4
			A1a	T1	16.02	0.77	5
			A1b	T1a	16.02	6.17	39
			A1	T1b	16.02	3.60	22
	139.33		A1	70	16.02	4.64	29
			A1a	70a	16.02	0.65	4
			A1b	70b	16.02	9.29	58
	194.67		A1	T3	16.02	5.35	33
			A1b	T3b	16.02	9.50	59
			A1a	T3a	16.02	0.92	6
			A1a	T3	16.02	0.98	6
			A1b	T3a	16.02	9.20	57
			A1	T3b	16.02	5.35	33
	239.33	5/8 EHS	A1	120	25.44	8.94	35
			A1a	120a	25.44	1.41	6
			A1b	120b	25.44	16.85	66
1.2D + 1.0Di + 1.0Wi Normal Wind	70.00	1/2 EHS	A1	T1	16.02	3.89	24
			A1b	T1b	16.02	4.98	31
			A1a	T1a	16.02	4.98	31
			A1a	T1	16.02	4.98	31
			A1b	T1a	16.02	4.98	31
			A1	T1b	16.02	3.89	24
	139.33		A1	70	16.02	3.58	22
			A1a	70a	16.02	5.22	33
			A1b	70b	16.02	5.22	33
	194.67		A1	T3	16.02	3.52	22
			A1b	T3b	16.02	5.27	33
			A1a	T3a	16.02	5.23	33
			A1a	T3	16.02	5.27	33

1.2D + 1.0Di + 1.0Wi Normal Wind	194.67	1/2 EHS	A1b	T3a	16.02	5.23	33
			A1	T3b	16.02	3.51	22
	239.33	5/8 EHS	A1	120	25.44	4.37	17
			A1a	120a	25.44	7.39	29
			A1b	120b	25.44	7.38	29
1.2D + 1.0Di + 1.0Wi 60° Wind	70.00	1/2 EHS	A1	T1	16.02	4.20	26
			A1b	T1b	16.02	5.28	33
			A1a	T1a	16.02	4.18	26
			A1a	T1	16.02	4.18	26
			A1b	T1a	16.02	5.27	33
			A1	T1b	16.02	4.18	26
	139.33		A1	70	16.02	4.03	25
			A1a	70a	16.02	4.04	25
			A1b	70b	16.02	5.73	36
	194.67		A1	T3	16.02	4.10	26
			A1b	T3b	16.02	5.76	36
			A1a	T3a	16.02	4.03	25
			A1a	T3	16.02	4.10	26
			A1b	T3a	16.02	5.75	36
			A1	T3b	16.02	4.02	25
	239.33	5/8 EHS	A1	120	25.44	5.37	21
			A1a	120a	25.44	5.37	21
			A1b	120b	25.44	8.44	33
1.2D + 1.0Di + 1.0Wi 90° Wind	70.00	1/2 EHS	A1	T1	16.02	4.60	29
			A1b	T1b	16.02	5.22	33
			A1a	T1a	16.02	3.96	25
			A1a	T1	16.02	3.94	25
			A1b	T1a	16.02	5.19	32
			A1	T1b	16.02	4.57	29
	139.33		A1	70	16.02	4.61	29
			A1a	70a	16.02	3.69	23
			A1b	70b	16.02	5.60	35
	194.67		A1	T3	16.02	4.71	29
			A1b	T3b	16.02	5.63	35
			A1a	T3a	16.02	3.64	23
			A1a	T3	16.02	3.66	23
			A1b	T3a	16.02	5.61	35
			A1	T3b	16.02	4.62	29
	239.33	5/8 EHS	A1	120	25.44	6.37	25
			A1a	120a	25.44	4.65	18
			A1b	120b	25.44	8.13	32
1.2D + 1.0Ev + 1.0Eh	70.00	1/2 EHS	A1	T1	16.02	3.71	23
			A1b	T1b	16.02	3.78	24
			A1a	T1a	16.02	3.78	24
			A1a	T1	16.02	3.78	24
			A1b	T1a	16.02	3.78	24
			A1	T1b	16.02	3.71	23
	139.33		A1	70	16.02	3.18	20
			A1a	70a	16.02	3.32	21
			A1b	70b	16.02	3.32	21
	194.67		A1	T3	16.02	2.70	17
			A1b	T3b	16.02	3.04	19
			A1a	T3a	16.02	3.09	19
			A1a	T3	16.02	3.04	19
			A1b	T3a	16.02	3.09	19
			A1	T3b	16.02	2.70	17
	239.33	5/8 EHS	A1	120	25.44	3.64	14
			A1a	120a	25.44	4.87	19
			A1b	120b	25.44	4.87	19
0.9D + 1.0Ev + 1.0Eh	70.00	1/2 EHS	A1	T1	16.02	3.72	23
			A1b	T1b	16.02	3.79	24
			A1a	T1a	16.02	3.79	24
			A1a	T1	16.02	3.79	24
			A1b	T1a	16.02	3.79	24
			A1	T1b	16.02	3.72	23
	139.33		A1	70	16.02	3.21	20

0.9D + 1.0Ev + 1.0Eh	139.33	1/2 EHS	A1a	70a	16.02	3.36	21
			A1b	70b	16.02	3.36	21
	194.67		A1	T3	16.02	2.75	17
			A1b	T3b	16.02	3.08	19
			A1a	T3a	16.02	3.13	20
			A1a	T3	16.02	3.08	19
			A1b	T3a	16.02	3.13	20
			A1	T3b	16.02	2.75	17
	239.33	5/8 EHS	A1	120	25.44	3.72	15
			A1a	120a	25.44	4.95	19
			A1b	120b	25.44	4.95	19
1.0D + 1.0W Normal Wind	70.00	1/2 EHS	A1	T1	16.02	1.81	11
			A1b	T1b	16.02	3.08	19
			A1a	T1a	16.02	3.10	19
			A1a	T1	16.02	3.08	19
			A1b	T1a	16.02	3.10	19
			A1	T1b	16.02	1.81	11
	139.33		A1	70	16.02	1.21	8
			A1a	70a	16.02	3.26	20
			A1b	70b	16.02	3.26	20
	194.67		A1	T3	16.02	1.17	7
			A1b	T3b	16.02	3.13	20
			A1a	T3a	16.02	3.10	19
			A1a	T3	16.02	3.12	20
			A1b	T3a	16.02	3.09	19
			A1	T3b	16.02	1.16	7
	239.33	5/8 EHS	A1	120	25.44	1.47	6
			A1a	120a	25.44	5.08	20
			A1b	120b	25.44	5.08	20
1.0D + 1.0W 60° Wind	70.00	1/2 EHS	A1	T1	16.02	2.23	14
			A1b	T1b	16.02	3.51	22
			A1a	T1a	16.02	2.23	14
			A1a	T1	16.02	2.22	14
			A1b	T1a	16.02	3.50	22
			A1	T1b	16.02	2.22	14
	139.33		A1	70	16.02	1.89	12
			A1a	70a	16.02	1.90	12
			A1b	70b	16.02	4.00	25
	194.67		A1	T3	16.02	1.95	12
			A1b	T3b	16.02	3.83	24
			A1a	T3a	16.02	1.90	12
			A1a	T3	16.02	1.94	12
			A1b	T3a	16.02	3.81	24
			A1	T3b	16.02	1.89	12
	239.33	5/8 EHS	A1	120	25.44	2.85	11
			A1a	120a	25.44	2.85	11
			A1b	120b	25.44	6.49	26
1.0D + 1.0W 90° Wind	70.00	1/2 EHS	A1	T1	16.02	2.66	17
			A1b	T1b	16.02	3.41	21
			A1a	T1a	16.02	1.92	12
			A1a	T1	16.02	1.90	12
			A1b	T1a	16.02	3.38	21
			A1	T1b	16.02	2.66	17
	139.33		A1	70	16.02	2.56	16
			A1a	70a	16.02	1.39	9
			A1b	70b	16.02	3.79	24
	194.67		A1	T3	16.02	2.55	16
			A1b	T3b	16.02	3.62	23
			A1a	T3a	16.02	1.39	9
			A1a	T3	16.02	1.41	9
			A1b	T3a	16.02	3.60	22
			A1	T3b	16.02	2.49	16
	239.33	5/8 EHS	A1	120	25.44	3.96	16
			A1a	120a	25.44	1.92	8
			A1b	120b	25.44	6.06	24

Max Reactions

Base:	117.67 (Vertical)	1.40 (Horizontal)
Anchor 1:	35.17 (Vertical)	44.90 (Horizontal)

Max Usages

Max Leg: 86.0% (1.2D + 1.0W Normal Wind - Sect 22)
Max Diag: 68.0% (1.2D + 1.0W 90° Wind - Sect 8)
Max Horiz: 60.0% (1.2D + 1.0W Normal Wind - Sect 23)
Max Cable: 66.4% (1.2D + 1.0W 90° Wind) - Elev: 239 ft

Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
0.9D + 1.0Ev + 1.0Eh - Normal To Face	60.00	0.0017	0.0000	0.0018
	100.00	0.0063	0.0000	0.0081
	120.67	0.0067	0.0000	0.0086
	194.67	0.0271	0.0000	0.0424
	200.67	0.0347	-0.0002	0.1118
	243.00	0.0918	-0.0001	0.0863
	245.33	0.0958	0.0000	0.1021
	247.66	0.0999	0.0000	0.0984
	260.00	0.1214	0.0000	0.1064
0.9D + 1.0W 115 mph Wind at 60° From Face	60.00	0.2467	0.0532	0.3519
	100.00	0.4962	0.0937	0.7543
	120.67	0.5992	0.1489	0.0339
	194.67	0.8150	0.0610	0.2348
	200.67	0.8797	0.0822	1.3642
	243.00	1.2880	0.2211	0.6200
	245.33	1.3183	0.2272	0.7495
	247.66	1.3481	0.2298	0.7265
	260.00	1.5144	0.4361	1.1697
0.9D + 1.0W 115 mph Wind at 90° From Face	60.00	0.2569	0.0977	0.3294
	100.00	0.5568	0.1463	0.8996
	120.67	0.7031	0.2026	0.2190
	194.67	1.1133	0.0521	0.4330
	200.67	1.1993	0.0568	1.6196
	243.00	1.7852	0.0420	0.8715
	245.33	1.8257	0.0441	1.0115
	247.66	1.8657	0.0462	0.9792
	260.00	2.0862	0.0389	1.4248
0.9D + 1.0W 115 mph Wind at Normal To Face	60.00	0.2864	0.0007	0.3249
	100.00	0.6128	0.0024	0.9022
	120.67	0.7722	0.0045	0.1920
	194.67	1.2602	0.0153	0.5006
	200.67	1.3589	0.0317	1.7725
	243.00	2.0390	0.1771	1.0153
	245.33	2.0852	0.1818	1.1490
	247.66	2.1311	0.1858	1.1221
	260.00	2.3926	0.1857	2.6458

1.0D + 1.0W 60 mph Wind at 60° From Face	60.00	0.0567	0.0006	0.0978
	100.00	0.1129	0.0033	0.1744
	120.67	0.1338	0.0193	0.0049
	194.67	0.1644	0.0112	0.0394
	200.67	0.1779	0.0132	0.3242
	243.00	0.2662	0.0525	0.1342
	245.33	0.2731	0.0536	0.1746
	247.66	0.2800	0.0543	0.1667
	260.00	0.3186	0.0601	0.2925
1.0D + 1.0W 60 mph Wind at 90° From Face	60.00	0.0550	0.0005	0.0994
	100.00	0.1087	0.0034	0.1762
	120.67	0.1278	0.0240	0.0198
	194.67	0.1450	0.0210	0.0304
	200.67	0.1575	0.0214	0.3124
	243.00	0.2399	0.0512	0.1251
	245.33	0.2465	0.0518	0.1684
	247.66	0.2530	0.0522	0.1590
	260.00	0.2899	0.0433	0.2807
1.0D + 1.0W 60 mph Wind at Normal To Face	60.00	0.0547	0.0000	0.1026
	100.00	0.1068	0.0001	0.1585
	120.67	0.1235	0.0005	0.0214
	194.67	0.1238	0.0038	0.0124
	200.67	0.1348	0.0052	0.3009
	243.00	0.2093	0.0464	0.1185
	245.33	0.2156	0.0473	0.1594
	247.66	0.2219	0.0483	0.1514
	260.00	0.2599	0.0409	0.5652
1.2D + 1.0Di + 1.0Wi 40 mph Wind at 60° From Face	60.00	0.0626	0.0007	0.0818
	100.00	0.1148	0.0033	0.1616
	120.67	0.1324	0.0167	0.0187
	194.67	0.1449	0.0090	0.0264
	200.67	0.1552	0.0105	0.2524
	243.00	0.2320	0.0300	0.1189
	245.33	0.2380	0.0306	0.1501
	247.66	0.2439	0.0309	0.1449
	260.00	0.2773	0.0372	0.2503
1.2D + 1.0Di + 1.0Wi 40 mph Wind at 90° From Face	60.00	0.0598	0.0009	0.0866
	100.00	0.1072	0.0046	0.1625
	120.67	0.1212	0.0272	0.0489
	194.67	0.1150	0.0250	0.0181
	200.67	0.1235	0.0251	0.2373
	243.00	0.1898	0.0458	0.1052
	245.33	0.1952	0.0460	0.1382
	247.66	0.2005	0.0459	0.1320
	260.00	0.2305	0.0400	0.2264
1.2D + 1.0Di + 1.0Wi 40 mph Wind at Normal From Face	60.00	0.0587	0.0000	0.0901
	100.00	0.1028	0.0002	0.1384
	120.67	0.1122	0.0006	0.0337
	194.67	0.0797	0.0044	0.0084
	200.67	0.0871	0.0059	0.2278
	243.00	0.1466	0.0395	0.0994
	245.33	0.1517	0.0402	0.1307
	247.66	0.1569	0.0409	0.1257
	260.00	0.1886	0.0361	0.4756
1.2D + 1.0Ev + 1.0Eh - Normal To Face	60.00	0.0017	0.0000	0.0018
	100.00	0.0063	0.0000	0.0081
	120.67	0.0067	0.0000	0.0096
	194.67	0.0271	0.0000	0.0430
	200.67	0.0348	0.0002	0.1140
	243.00	0.0927	0.0001	0.0873
	245.33	0.0968	0.0001	0.1033
	247.66	0.1009	0.0000	0.0996
	260.00	0.1227	0.0000	0.1077

1.2D + 1.0W 115 mph Wind at 60° From Face	60.00	0.2473	0.0570	0.3628
	100.00	0.4983	0.0983	0.7666
	120.67	0.6017	0.1527	0.0286
	194.67	0.8189	0.0614	0.2385
	200.67	0.8846	0.0830	1.3867
	243.00	1.2977	0.2228	0.6264
	245.33	1.3282	0.2290	0.7572
	247.66	1.3583	0.2316	0.7339
	260.00	1.5263	0.4397	1.1792
1.2D + 1.0W 115 mph Wind at 90° From Face	60.00	0.2574	0.0984	0.3399
	100.00	0.5594	0.1476	0.9143
	120.67	0.7069	0.2048	0.2176
	194.67	1.1239	0.0532	0.4389
	200.67	1.2115	0.0556	1.6548
	243.00	1.8097	0.0393	0.8884
	245.33	1.8509	0.0414	1.0302
	247.66	1.8917	0.0434	0.9975
	260.00	2.1162	0.0360	1.4456
1.2D + 1.0W 115 mph Wind at Normal To Face	60.00	0.2871	0.0007	0.3359
	100.00	0.6159	0.0024	0.9166
	120.67	0.7767	0.0045	0.1894
	194.67	1.2726	0.0153	0.5120
	200.67	1.3734	0.0321	1.8095
	243.00	2.0665	0.1788	1.0335
	245.33	2.1135	0.1835	1.1691
	247.66	2.1602	0.1876	1.1417
	260.00	2.4261	0.1875	2.6707

Guyed Tower Base Design

Tower Engineering Solutions

			Date: 7/20/2023
Customer Name:	SBA Communications Corp	**TIA Standard:**	TIA-222-H
Site Name:		**Structure Height (Ft.):**	260
Site Nmber:	CT02303-A-3-SBA	**Engineer Name:**	Rama K.
Engr. Number:	141761	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Guyed Tower

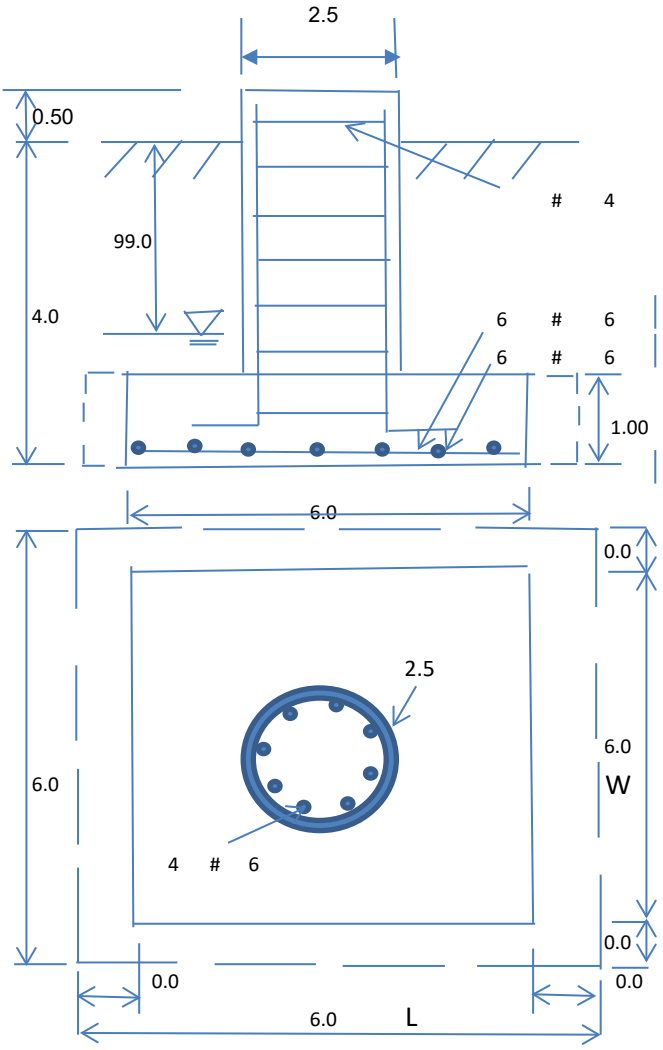
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	117.7	Shear Force (Kips):	1.4
Uplift Force (Kips):	0.0	Moment (Kips-ft):	
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	2.5	Depth of Base BG (ft.):	4.0
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	1.00
Length of Pad (ft.):	6	Width of Pad (ft.):	6
Final Length of pad (ft)	6.0	Final width of pad (ft):	6.0



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	6	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	4	Tie Spacing (in):	6.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	6	
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):	6	Qty. of Rebar in Pad (W):	6	

Soil Design Parameters:

Soil Unit Weight (pcf):	100.0	Soil Buoyant Weight:	37.6	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	30000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
					Angle from Bottm of Pad:	25

Foundation Analysis and Design: Uplift Strength Reduction Factor: 0.75 — Compression Strength Reduction Factor: 0.6

Total Dry Soil Volume (cu. Ft.):	93.27	Total Dry Soil Weight (Kips):	9.33
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	9.33	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	53.18	Total Dry Concrete Weight (Kips):	7.98
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	7.98	Total Vertical Load on Base (Kips):	134.97

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	3470.6	<	Allowable Factored Soil Bearing (psf):	18000	0.19	OK!
Calculated Foundation Allowable Axail Capacity (Kips):	648.0	>	Design Factored Axial Load (Kips):	121	0.19	OK!

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00		
				Load/ Capacity Ratio	
(1) Concrete Pier:					
Vertical Steel Rebar Area (sq. in./each):	0.44	Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	92.1	>	Design Factored Moment (Mu, Kips-Ft	4.9	0.05	OK!
Calculated Shear Capacity (Kips):	154.1	>	Design Factored Shear (Kips):	1.4	0.01	OK!
Calculated Tension Capacity (Tn, Kips):	95.0	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	935.0	>	Design Factored Axial Load (Pu Kips):	117.7	0.13	OK!
Moment & Axial Strength Combination(Pu/Pn+Mu/Mn):	0.18	OK!				
Pier Reinforcement Ratio:	0.002					
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Dir. Kips);	51.0	>	One-Way Factored Shear (L-Dir Kips):	20.7	0.41	OK!
One-Way Design Shear Capacity (W-Dir. Kips):	51.0	>	One-Way Factored Shear (W-Dir Kips)	20.7	0.41	OK!
Two-Way Design Shear Capacity (Kips):	172.0	>	Two-Way Factored Shear (Kips):	90.9	0.53	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0043	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0043		OK!
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	97.3	>	Moment at Bottom (L-Direct. K-Ft):	30.8	0.32	OK!
Lower Steel Pad Moment Capacity (W-Dir. Kips-ft):	97.3	>	Moment at Bottom (W-Dir. Kips-Ft):	30.8	0.32	OK!

Last revised on 1/3/2022

Guy Anchor Analysis and Design

			Date: 7/20/2023
Customer Name:	SBA Communications Corp	**TIA Standard:**	EIA-222-H
Site Name:	0	**Structure Height (Ft.):**	260
Site Nmber:	CT02303-A-3-SBA	**Engineer Name:**	Rama K.
Engr. Number:	141761	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations **Number of Anchors:** 1 Set Failure model: New

Soil Design Parameters:

Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	50.0	Pcf	Cohesion of Soils (psf):	0
		Unit Weight of Water:	62.4	pcf	Internal Angle of Friction (°)	32
Ultimate lateral pressure (psf):		Ultimate Skin Friction:		Psf	Coefficient of Shear Friction:	0.30
Conical Failure Angle from Top:	30	Failure Angle from Bottm	25			

Material Properties:

Concrete Strength (psi):	3000	Unit Weight of Concrete:	150.0	psf	Horizontal Rebar Yield (psi):	60000
Shear Strength Reduction Factor:	0.75				Flexure Strength Reduction Factor:	0.9

A. Inner Anchors:

Radius (ft.): 200

1. Design Reactions (Factored):

Uplift (Kips:)	35.2	Shear (Kips)	44.9	Angle of force resultant (Ø):	38.1

2. Foundation Geometries:

Block Base Depth B.G.S. (ft):	8.0	Block with/without toe?	No		Water Table below grade (ft):	99.00
Length of Anchor Block (L, ft.):	10.0	Width of Anchor Block:	5.5	ft.	Thickness of Anchor Block (ft.):	2.5
Concrete Block @ top of Anchor?	No					

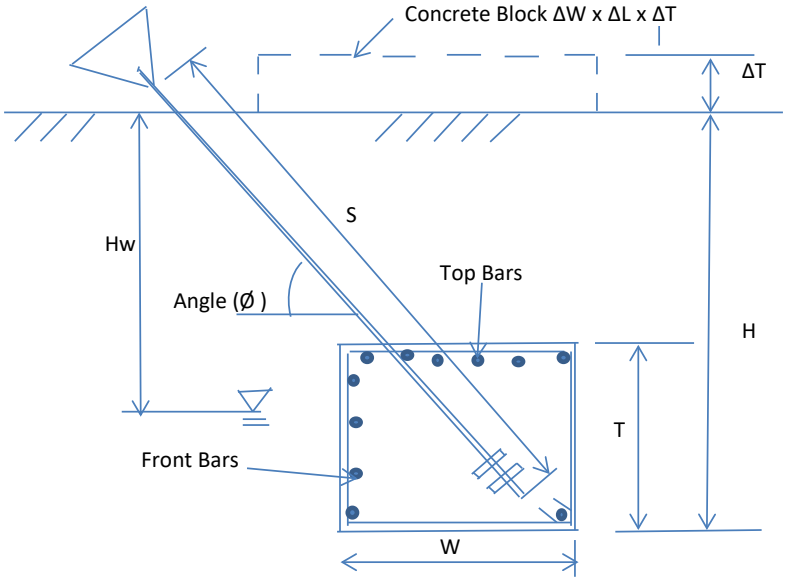
(1). Inner Anchors: *Radius (ft.):* 200

H (ft.):	8.0	*Hw(ft.):*	99.0
L (ft.):	10.0	*W (ft.):*	5.5
T (ft.):	2.5	*Angle (Ø):*	38.1
S (ft.):	13.79		

Top bars: 6 # 5

Front bars: 3 # 5

Concrete Volume (Cu. Yd.)/Each: 5.09



3. Foundation Analysis and Design:

Total Dry Soil Volume (cu. Ft.):	631.28	Total Dry Soil Weight (Kips):	110.21
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	78.91	Weight of the Concrete Block at Top (Kips):	0.00
Total Dry Concrete Volume (cu. Ft.):	137.50	Total Dry Concrete Weight (Kip):	20.63
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	20.63	Weight Reduction Factor:	0.9
Soil Uplift Strength Reduction Factor A:	0.75	Shear Strength Reduction Factor:	0.75
Soil Uplift Strength Reduction Factor B:	0.9		

4. Check Soil and Foundation Capacities:

Nominal Factored Uplift Resistance:	83.42	Kips >	Design Uplift Force (Kips):	35.2	OK!
Ultimate Shear Friction Resistance at base:	11.32	Kips	Ultimate Resistance Pressure:	2746.1	Psf
Factored Shear Resistance:	59.98	Kips >	Design Shear Force (Kips):	44.9	OK!

5. Design Concrete Block:

Rebar Size (#):	5	Wind Load Factor on Concrete Design:	1.00	
Qty. of the Rebar at top of the block:	6	Qty. of the Rebar in the front of the block:	3	
Area of Single Rebar (sq. in.):	0.31	Factor for concrete compression zone:	0.85	
One Way Shear due to Shear Force (Kips):	22.5	One Way Shear Capacity for shear (kips):	152.8	OK!
One Way Shear due to Uplift (Kips):	17.6	One Way Shear Capacity for uplift (kips):	141.0	OK!
Moment due to Shear Load (Kips-ft):	56.1	Flexural Capacity for Shear Load (Kips-ft):	259.4	OK!
Moment due to uplift Load (Kips-ft):	44.0	Flexural Capacity for uplift Load (Kips-ft):	217.5	OK!
Ratio of Design Moment/Moment capacity:	0.22	Minimum ratio of rebar (top & front) :	0.08	OK!
Max. Ratio of Shear Force/Shear capacity:	0.15	OK!		

0.0 0.0

August 26, 2022
March 14, 2023 (Rev. 1)
April 25, 2023 (Rev. 2)
June 20, 2023 (Rev. 3)

Smartlink, LLC
1997 Annapolis Exchange Pkwy, Suite 200
Annapolis, MD 21401

RE:	AT&T Site Number:	CT1253 (C-Band)
	FA Number:	10071282
	PACE Number:	MRCTB062969
	PT Number:	2051A14PLQ
	TEP Project Number:	315791.845436
	AT&T Site Name:	TORRINGTON HIGHLAND AVE
	Site Address:	1210 Highland Ave Torrington, CT 06790

To Whom It May Concern:

TEP Northeast (TEP NE) has been authorized by Smartlink, LLC to perform a mount analysis on the proposed AT&T antenna/RRH mounts to determine their capability of supporting the following additional loading (based on RFDS V6.0 dated 5/8/2023):

- (1) OPA65R-BU4DA Antenna (48.0"x20.7"x7.7"– Wt. = 46 lbs. /each)
- (2) NNHH-65B-R4 Antennas (72.0"x19.6"x7.8"– Wt. = 78 lbs. /each)
- (3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each) (Standoff)
- (3) 8843 B2/B66A RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each) (Standoff)
- (3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each) (Standoff)
- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each) (Standoff)
- (2) DC6-48-60-18-8C-EV Surge Arrestors (31.4"x10.2"Ø – Wt. = 29 lbs. /each) (Standoff)
- (1) DC-48-60-0-8F Surge Arrestor (31.4"x10.2"Ø – Wt. = 29 lbs. /each) (Standoff)
- **(3) QD6616-7 Antennas (72.0"x22.0"x9.6" – Wt. = 130 lbs. /each)**
- **(3) AIR6419 Antennas (31.1"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) AIR6449 Antennas (30.6"x15.9"x10.6" – Wt. 82 lbs. /each)**

**Proposed equipment shown in bold.*

Mount fabrication drawings prepared by SitePro1, P/N VFA14-H10-2120, dated December 7, 2020 were used to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2021 with 2022 Connecticut State Building Code, and AT&T Mount Technical Directive – R22.
- TEP NE considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix P of the Connecticut State Building Code, the max basic wind speed for this site is equal to 115 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.22 in was used for this analysis.
- TEP NE considers this site to be exposure category C; tower is located near large, flat, open, terrain/grasslands.
- TEP NE considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- TEP NE considers this site to have a spectral response acceleration parameter at short periods, S_S, of 0.175 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.054.
- The mounts have been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 1.
- The mounts have been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The proposed mounts are to be secured to the existing self supporting tower with threaded rods and steel plates tightened around the tower leg. TEP NE considers the threaded rods as the governing connection members.

Based on our evaluation, we have determined that the Proposed SitePro1 VFA14-H10-2120 mounts **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Proposed (C-Band) Mount Rating	10	LC77	64%	**PASS**

Reference Documents:

- Mount fabrication drawings prepared by SitePro1, P/N VFA14-H10-2120, dated December 7, 2020.

This determination was based on the following limitations and assumptions:

1. TEP NE is not responsible for any modifications completed prior to and hereafter which TEP NE was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The proposed mounts are to be adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. TEP NE performed a localized analysis on the mounts itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
TEP Northeast

Michael Cabral
Director

Daniel P. Hamm, PE
Vice President

FIELD PHOTOS:
(Existing mounts to be removed and replaced.)






Wind & Ice
Calculations

Date: 4/25/2023
Project Name: TORRINGTON HIGHLAND AVE
Project No.: CT1253
Designed By: JC **Checked By:** MSC

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

	z=	245 (ft)
	z_g=	900 (ft)
K_z= 1.528	α=	9.5

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c\ K_t/K_h)]^2$ $K_h = e^{(f*z/H)}$

K_{zt}= 1

(If Category 1 then K_{zt}=1.0)

Category= **1**

	K_h=	1
	K_c=	1.0 (from Table 2-4)
	K_t=	0 (from Table 2-5)
	f=	0 (from Table 2-5)
	z=	245
	z_s=	1232 (Mean elevation of base of structure above sea level)
	H=	0 (Ht. of the crest above surrounding terrain)
	K_{zt}=	1.00 (from 2.6.6.2.1)
	K_e=	0.96 (from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness =	t_i =	1.00 in
Importance Factor =	I=	1.00 (from Table 2-3)
	K_{iz} =	1.22 (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$ t_{iz} = 1.22 in

Date: 4/25/2023
Project Name: TORRINGTON HIGHLAND AVE
Project No.: CT1253
Designed By: JC Checked By: MSC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	260	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	**Gh=**	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

F= $q_z * G_h * (EPA)_A$

q_z= $0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

		K_z=	1.528	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**42.06**	K_e=	0.96	(from 2.6.8)
$q_{z\ (ice)}$=	**7.95**	K_d=	0.85	(from Table 2-2)
$q_{z\ (30)}$=	**2.86**	V_{max}=	115	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

Date: 4/25/2023
Project Name: TORRINGTON HIGHLAND AVE
Project No.: CT1253
Designed By: JC Checked By: MSC

Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	**C < 39** (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **1.22** **in** | **Angle =** **0 (deg)** | **Equivalent Angle =** **180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
QD6616-7 Antenna	72.0	22.0	9.6	11.00	3.27	1.23	**571**	**124**	**39**
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.93	1.20	**176**	**41**	**12**
AIR6449 Antenna	30.6	15.9	10.6	3.38	1.92	1.20	**171**	**40**	**12**
OPA65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.32	1.20	**348**	**77**	**24**
NNHH-65B-R4 Antenna	72.0	19.6	7.8	9.80	3.67	1.25	**516**	**113**	**35**
4478 B14 RRH	18.1	13.4	8.3	1.68	1.35	1.20	**85**	**22**	**6**
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	**53**	**15**	**4**
8843 B2/B66A RRH	14.9	13.2	10.9	1.37	1.13	1.20	**69**	**18**	**5**
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.20	**57**	**15**	**4**
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.36	1.20	**83**	**21**	**6**
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.90	1.20	**59**	**16**	**4**
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	2.25	1.20	**115**	**29**	**8**
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	3.89	1.26	**70**	**20**	**5**
Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	**65**	**17**	**4**
2" Pipe	2.4	12.0		0.20	0.20	1.20	**10**		
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	**12**		
3/4" Round Bar	0.8	12.0		0.06	0.06	1.20	**3**		
5/8" Round Bar	0.6	12.0		0.05	0.05	1.20	**3**		
PL 3-1/2x5/8	0.6	12.0		0.05	0.05	2.00	**4**		
PL 11-1/4x5/8	0.6	12.0		0.05	0.05	2.00	**4**		

Date: 4/25/2023
Project Name: TORRINGTON HIGHLAND AVE
Project No.: CT1253
Designed By: JC Checked By: MSC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.22	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	571	286	500
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	176	85	153
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	171	115	157
OPA65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	348	147	298
NNHH-65B-R4 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	516	242	448
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	85	53	77
4478 B14 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	43	85	53
8843 B2/B66A RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	69	57	66
8843 B2/B66A RRH (Side)	14.9	6.6	13.2	0.68	1.37	2.26	1.13	1.20	1.20	34	69	43
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	83	59	77
4449 B5/B12 RRH (Side)	17.9	6.6	13.2	0.82	1.64	2.71	1.36	1.21	1.20	42	83	52
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	115	70	104
RRUS-32 B30 RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	62	115	75

WIND LOADS WITH ICE:

QD6616-7 Antenna	74.4	24.4	12.0	12.64	6.23	3.05	6.18	1.22	1.36	123	68	109
AIR6419 Antenna	33.5	18.5	9.7	4.32	2.27	1.81	3.44	1.20	1.24	41	22	37
AIR6449 Antenna	33.0	18.3	13.0	4.21	2.99	1.80	2.53	1.20	1.20	40	29	37
OPA65R-BU4DA Antenna	50.4	23.1	10.1	8.11	3.55	2.18	4.97	1.20	1.31	77	37	67
NNHH-65B-R4 Antenna	74.4	22.0	10.2	11.40	5.30	3.38	7.27	1.24	1.41	112	59	99
4478 B14 RRH	20.5	15.8	10.7	2.26	1.53	1.30	1.91	1.20	1.20	22	15	20
4478 B14 RRH (Side)	20.5	7.9	15.8	1.13	2.26	2.59	1.30	1.20	1.20	11	22	14
8843 B2/B66A RRH	17.3	15.6	13.3	1.88	1.61	1.11	1.30	1.20	1.20	18	15	17
8843 B2/B66A RRH (Side)	17.3	7.8	15.6	0.94	1.88	2.22	1.11	1.20	1.20	9	18	11
4449 B5/B12 RRH	20.3	15.6	11.8	2.21	1.67	1.30	1.72	1.20	1.20	21	16	20
4449 B5/B12 RRH (Side)	20.3	7.8	15.6	1.11	2.21	2.60	1.30	1.20	1.20	11	21	13
RRUS-32 B30 RRH	29.6	14.5	9.4	2.99	1.94	2.04	3.14	1.20	1.23	29	19	26
RRUS-32 B30 RRH (Side)	29.6	7.3	14.5	1.50	2.99	4.08	2.04	1.27	1.20	15	29	18

WIND LOADS AT 30 MPH:

QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	39	19	34
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	12	6	10
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	12	8	11
OPA65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	24	10	20
NNHH-65B-R4 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	35	16	30
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	5
4478 B14 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	3	6	4
8843 B2/B66A RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	4
8843 B2/B66A RRH (Side)	14.9	6.6	13.2	0.68	1.37	2.26	1.13	1.20	1.20	2	5	3
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	6	4	5
4449 B5/B12 RRH (Side)	17.9	6.6	13.2	0.82	1.64	2.71	1.36	1.21	1.20	3	6	4
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	7
RRUS-32 B30 RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	4	8	5

Date: 4/25/2023
Project Name: TORRINGTON HIGHLAND AVE
Project No.: CT1253
Designed By: JC Checked By: MSC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.22	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	571	286	357
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	176	85	107
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	171	115	129
OPA65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	348	147	198
NNHH-65B-R4 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	516	242	310
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	85	53	61
4478 B14 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	64	85	80
8843 B2/B66A RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	69	57	60
8843 B2/B66A RRH (Side)	14.9	9.9	13.2	1.02	1.37	1.51	1.13	1.20	1.20	52	69	65
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	83	59	65
4449 B5/B12 RRH (Side)	17.9	9.9	13.2	1.23	1.64	1.81	1.36	1.20	1.20	62	83	78
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	115	70	81
RRUS-32 B30 RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	88	115	109

WIND LOADS WITH ICE:

QD6616-7 Antenna	74.4	24.4	12.0	12.64	6.23	3.05	6.18	1.22	1.36	123	68	81
AIR6419 Antenna	33.5	18.5	9.7	4.32	2.27	1.81	3.44	1.20	1.24	41	22	27
AIR6449 Antenna	33.0	18.3	13.0	4.21	2.99	1.80	2.53	1.20	1.20	40	29	31
OPA65R-BU4DA Antenna	50.4	23.1	10.1	8.11	3.55	2.18	4.97	1.20	1.31	77	37	47
NNHH-65B-R4 Antenna	74.4	22.0	10.2	11.40	5.30	3.38	7.27	1.24	1.41	112	59	73
4478 B14 RRH	20.5	15.8	10.7	2.26	1.53	1.30	1.91	1.20	1.20	22	15	16
4478 B14 RRH (Side)	20.5	11.9	15.8	1.70	2.26	1.73	1.30	1.20	1.20	16	22	20
8843 B2/B66A RRH	17.3	15.6	13.3	1.88	1.61	1.11	1.30	1.20	1.20	18	15	16
8843 B2/B66A RRH (Side)	17.3	11.7	15.6	1.41	1.88	1.48	1.11	1.20	1.20	13	18	17
4449 B5/B12 RRH	20.3	15.6	11.8	2.21	1.67	1.30	1.72	1.20	1.20	21	16	17
4449 B5/B12 RRH (Side)	20.3	11.7	15.6	1.66	2.21	1.73	1.30	1.20	1.20	16	21	20
RRUS-32 B30 RRH	29.6	14.5	9.4	2.99	1.94	2.04	3.14	1.20	1.23	29	19	21
RRUS-32 B30 RRH (Side)	29.6	10.9	14.5	2.25	2.99	2.72	2.04	1.21	1.20	22	29	27

WIND LOADS AT 30 MPH:

QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	39	19	24
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	12	6	7
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	12	8	9
OPA65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	24	10	13
NNHH-65B-R4 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	35	16	21
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	4
4478 B14 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	4	6	5
8843 B2/B66A RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	4
8843 B2/B66A RRH (Side)	14.9	9.9	13.2	1.02	1.37	1.51	1.13	1.20	1.20	4	5	4
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	6	4	4
4449 B5/B12 RRH (Side)	17.9	9.9	13.2	1.23	1.64	1.81	1.36	1.20	1.20	4	6	5
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	6
RRUS-32 B30 RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	6	8	7

Date: 4/25/2023
Project Name: TORRINGTON HIGHLAND AVE
Project No.: CT1253
Designed By: JC Checked By: MSC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.22	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	571	286	286
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	176	85	85
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	171	115	115
OPA65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	348	147	147
NNHH-65B-R4 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	516	242	242
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	85	53	53
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	53	85	85
8843 B2/B66A RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	69	57	57
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	57	69	69
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	83	59	59
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	59	83	83
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	115	70	70
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	70	115	115

WIND LOADS WITH ICE:

QD6616-7 Antenna	74.4	24.4	12.0	12.64	6.23	3.05	6.18	1.22	1.36	123	68	68
AIR6419 Antenna	33.5	18.5	9.7	4.32	2.27	1.81	3.44	1.20	1.24	41	22	22
AIR6449 Antenna	33.0	18.3	13.0	4.21	2.99	1.80	2.53	1.20	1.20	40	29	29
OPA65R-BU4DA Antenna	50.4	23.1	10.1	8.11	3.55	2.18	4.97	1.20	1.31	77	37	37
NNHH-65B-R4 Antenna	74.4	22.0	10.2	11.40	5.30	3.38	7.27	1.24	1.41	112	59	59
4478 B14 RRH	20.5	15.8	10.7	2.26	1.53	1.30	1.91	1.20	1.20	22	15	15
4478 B14 RRH (Side)	20.5	10.7	15.8	1.53	2.26	1.91	1.30	1.20	1.20	15	22	22
8843 B2/B66A RRH	17.3	15.6	13.3	1.88	1.61	1.11	1.30	1.20	1.20	18	15	15
8843 B2/B66A RRH (Side)	17.3	13.3	15.6	1.61	1.88	1.30	1.11	1.20	1.20	15	18	18
4449 B5/B12 RRH	20.3	15.6	11.8	2.21	1.67	1.30	1.72	1.20	1.20	21	16	16
4449 B5/B12 RRH (Side)	20.3	11.8	15.6	1.67	2.21	1.72	1.30	1.20	1.20	16	21	21
RRUS-32 B30 RRH	29.6	14.5	9.4	2.99	1.94	2.04	3.14	1.20	1.23	29	19	19
RRUS-32 B30 RRH (Side)	29.6	9.4	14.5	1.94	2.99	3.14	2.04	1.23	1.20	19	29	29

WIND LOADS AT 30 MPH:

QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	39	19	19
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	12	6	6
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	12	8	8
OPA65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	24	10	10
NNHH-65B-R4 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	35	16	16
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	4
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	4	6	6
8843 B2/B66A RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	4
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	5	5
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	6	4	4
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	6	6
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	5
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	5	8	8

Date: 4/25/2023
Project Name: TORRINGTON HIGHLAND AVE
Project No.: CT1253
Designed By: JC Checked By: MSC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.22	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	571	286	357
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	176	85	107
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	171	115	129
OPA65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	348	147	198
NNHH-65B-R4 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	516	242	310
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	85	53	61
4478 B14 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	64	85	80
8843 B2/B66A RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	69	57	60
8843 B2/B66A RRH (Side)	14.9	9.9	13.2	1.02	1.37	1.51	1.13	1.20	1.20	52	69	65
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	83	59	65
4449 B5/B12 RRH (Side)	17.9	9.9	13.2	1.23	1.64	1.81	1.36	1.20	1.20	62	83	78
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	115	70	81
RRUS-32 B30 RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	88	115	109

WIND LOADS WITH ICE:

QD6616-7 Antenna	74.4	24.4	12.0	12.64	6.23	3.05	6.18	1.22	1.36	123	68	81
AIR6419 Antenna	33.5	18.5	9.7	4.32	2.27	1.81	3.44	1.20	1.24	41	22	27
AIR6449 Antenna	33.0	18.3	13.0	4.21	2.99	1.80	2.53	1.20	1.20	40	29	31
OPA65R-BU4DA Antenna	50.4	23.1	10.1	8.11	3.55	2.18	4.97	1.20	1.31	77	37	47
NNHH-65B-R4 Antenna	74.4	22.0	10.2	11.40	5.30	3.38	7.27	1.24	1.41	112	59	73
4478 B14 RRH	20.5	15.8	10.7	2.26	1.53	1.30	1.91	1.20	1.20	22	15	16
4478 B14 RRH (Side)	20.5	11.9	15.8	1.70	2.26	1.73	1.30	1.20	1.20	16	22	20
8843 B2/B66A RRH	17.3	15.6	13.3	1.88	1.61	1.11	1.30	1.20	1.20	18	15	16
8843 B2/B66A RRH (Side)	17.3	11.7	15.6	1.41	1.88	1.48	1.11	1.20	1.20	13	18	17
4449 B5/B12 RRH	20.3	15.6	11.8	2.21	1.67	1.30	1.72	1.20	1.20	21	16	17
4449 B5/B12 RRH (Side)	20.3	11.7	15.6	1.66	2.21	1.73	1.30	1.20	1.20	16	21	20
RRUS-32 B30 RRH	29.6	14.5	9.4	2.99	1.94	2.04	3.14	1.20	1.23	29	19	21
RRUS-32 B30 RRH (Side)	29.6	10.9	14.5	2.25	2.99	2.72	2.04	1.21	1.20	22	29	27

WIND LOADS AT 30 MPH:

QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	39	19	24
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	12	6	7
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	12	8	9
OPA65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	24	10	13
NNHH-65B-R4 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	35	16	21
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	4
4478 B14 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	4	6	5
8843 B2/B66A RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	4
8843 B2/B66A RRH (Side)	14.9	9.9	13.2	1.02	1.37	1.51	1.13	1.20	1.20	4	5	4
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	6	4	4
4449 B5/B12 RRH (Side)	17.9	9.9	13.2	1.23	1.64	1.81	1.36	1.20	1.20	4	6	5
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	6
RRUS-32 B30 RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	6	8	7

Date: 4/25/2023
Project Name: TORRINGTON HIGHLAND AVE
Project No.: CT1253
Designed By: JC Checked By: MSC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.22	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	571	286	500
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	176	85	153
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	171	115	157
OPA65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	348	147	298
NNHH-65B-R4 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	516	242	448
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	85	53	77
4478 B14 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	43	85	53
8843 B2/B66A RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	69	57	66
8843 B2/B66A RRH (Side)	14.9	6.6	13.2	0.68	1.37	2.26	1.13	1.20	1.20	34	69	43
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	83	59	77
4449 B5/B12 RRH (Side)	17.9	6.6	13.2	0.82	1.64	2.71	1.36	1.21	1.20	42	83	52
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	115	70	104
RRUS-32 B30 RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	62	115	75

WIND LOADS WITH ICE:

QD6616-7 Antenna	74.4	24.4	12.0	12.64	6.23	3.05	6.18	1.22	1.36	123	68	109
AIR6419 Antenna	33.5	18.5	9.7	4.32	2.27	1.81	3.44	1.20	1.24	41	22	37
AIR6449 Antenna	33.0	18.3	13.0	4.21	2.99	1.80	2.53	1.20	1.20	40	29	37
OPA65R-BU4DA Antenna	50.4	23.1	10.1	8.11	3.55	2.18	4.97	1.20	1.31	77	37	67
NNHH-65B-R4 Antenna	74.4	22.0	10.2	11.40	5.30	3.38	7.27	1.24	1.41	112	59	99
4478 B14 RRH	20.5	15.8	10.7	2.26	1.53	1.30	1.91	1.20	1.20	22	15	20
4478 B14 RRH (Side)	20.5	7.9	15.8	1.13	2.26	2.59	1.30	1.20	1.20	11	22	14
8843 B2/B66A RRH	17.3	15.6	13.3	1.88	1.61	1.11	1.30	1.20	1.20	18	15	17
8843 B2/B66A RRH (Side)	17.3	7.8	15.6	0.94	1.88	2.22	1.11	1.20	1.20	9	18	11
4449 B5/B12 RRH	20.3	15.6	11.8	2.21	1.67	1.30	1.72	1.20	1.20	21	16	20
4449 B5/B12 RRH (Side)	20.3	7.8	15.6	1.11	2.21	2.60	1.30	1.20	1.20	11	21	13
RRUS-32 B30 RRH	29.6	14.5	9.4	2.99	1.94	2.04	3.14	1.20	1.23	29	19	26
RRUS-32 B30 RRH (Side)	29.6	7.3	14.5	1.50	2.99	4.08	2.04	1.27	1.20	15	29	18

WIND LOADS AT 30 MPH:

QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	39	19	34
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	12	6	10
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	12	8	11
OPA65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	24	10	20
NNHH-65B-R4 Antenna	72.0	19.6	7.8	9.80	3.90	3.67	9.23	1.25	1.47	35	16	30
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	5
4478 B14 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	3	6	4
8843 B2/B66A RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	5	4	4
8843 B2/B66A RRH (Side)	14.9	6.6	13.2	0.68	1.37	2.26	1.13	1.20	1.20	2	5	3
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	6	4	5
4449 B5/B12 RRH (Side)	17.9	6.6	13.2	0.82	1.64	2.71	1.36	1.21	1.20	3	6	4
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	7
RRUS-32 B30 RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	4	8	5

Date: 4/25/2023
Project Name: TORRINGTON HIGHLAND AVE
Project No.: CT1253
Designed By: JC **Checked By:** MSC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.22 in.
Density of ice: 56 pcf

QD6616-7 Antenna
Weight of ice based on total radial SF area:
Height (in): 72.0
Width (in): 22.0
Depth (in): 9.6
Total weight of ice on object: 226 lbs
Weight of object: 130.0 lbs
Combined weight of ice and object: 356 lbs

AIR6419 Antenna
Weight of ice based on total radial SF area:
Height (in): 31.1
Width (in): 16.1
Depth (in): 7.3
Total weight of ice on object: 73 lbs
Weight of object: 66.0 lbs
Combined weight of ice and object: 139 lbs

AIR6449 Antenna
Weight of ice based on total radial SF area:
Height (in): 30.6
Width (in): 15.9
Depth (in): 10.6
Total weight of ice on object: 77 lbs
Weight of object: 82.0 lbs
Combined weight of ice and object: 159 lbs

OPA65R-BU4DA Antenna
Weight of ice based on total radial SF area:
Height (in): 48.0
Width (in): 20.7
Depth (in): 7.7
Total weight of ice on object: 139 lbs
Weight of object: 46.0 lbs
Combined weight of ice and object: 185 lbs

NNHH-65B-R4 Antenna
Weight of ice based on total radial SF area:
Height (in): 72.0
Width (in): 19.6
Depth (in): 7.8
Total weight of ice on object: 200 lbs
Weight of object: 78.0 lbs
Combined weight of ice and object: 278 lbs

4478 B14 RRH
Weight of ice based on total radial SF area:
Height (in): 18.1
Width (in): 13.4
Depth (in): 8.3
Total weight of ice on object: 38 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 98 lbs

8843 B2/B66A RRH
Weight of ice based on total radial SF area:
Height (in): 14.9
Width (in): 13.2
Depth (in): 10.9
Total weight of ice on object: 34 lbs
Weight of object: 72.0 lbs
Combined weight of ice and object: 106 lbs

4449 B5/B12 RRH
Weight of ice based on total radial SF area:
Height (in): 17.9
Width (in): 13.2
Depth (in): 9.4
Total weight of ice on object: 39 lbs
Weight of object: 73.0 lbs
Combined weight of ice and object: 112 lbs

RRUS-32 B30 RRH
Weight of ice based on total radial SF area:
Height (in): 27.2
Width (in): 12.1
Depth (in): 7.0
Total weight of ice on object: 51 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 111 lbs

Squid Surge Arrestor
Weight of ice based on total radial SF area:
Depth (in): 31.4
Diameter(in): 10.2
Total weight of ice on object: 45 lbs
Weight of object: 29 lbs
Combined weight of ice and object: 74 lbs

2" pipe
Per foot weight of ice:
diameter (in): 2.38
Per foot weight of ice on object: 5 plf

2-1/2" pipe
Per foot weight of ice:
diameter (in): 2.88
Per foot weight of ice on object: 6 plf

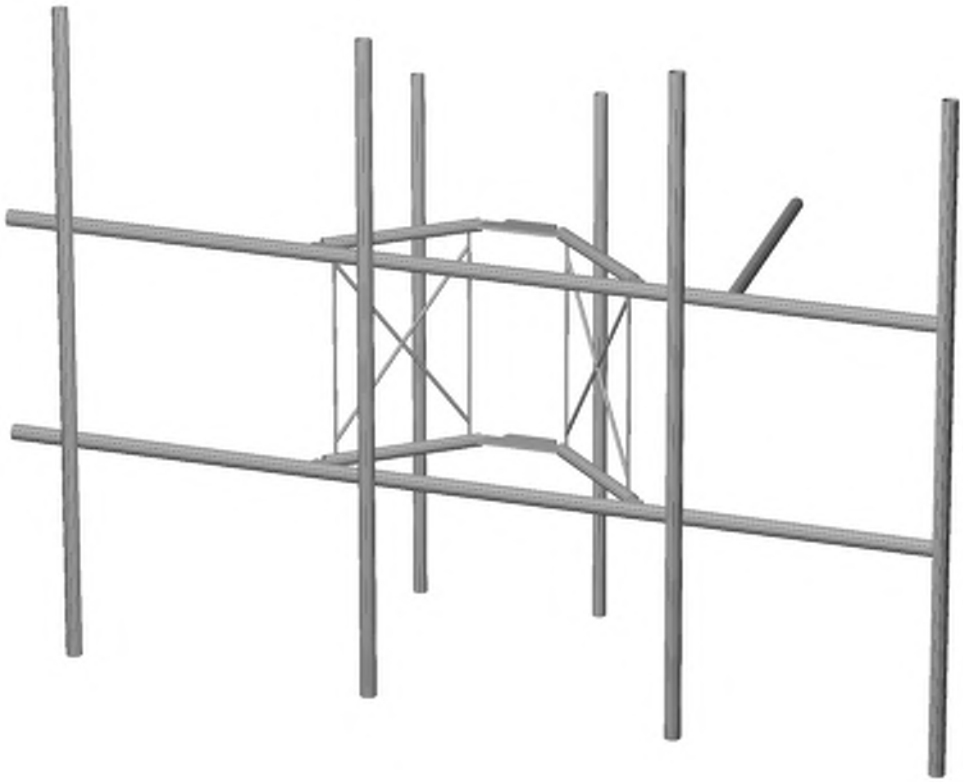
3/4" Round Bar
Per foot weight of ice:
diameter (in): 0.75
Per foot weight of ice on object: 3 plf

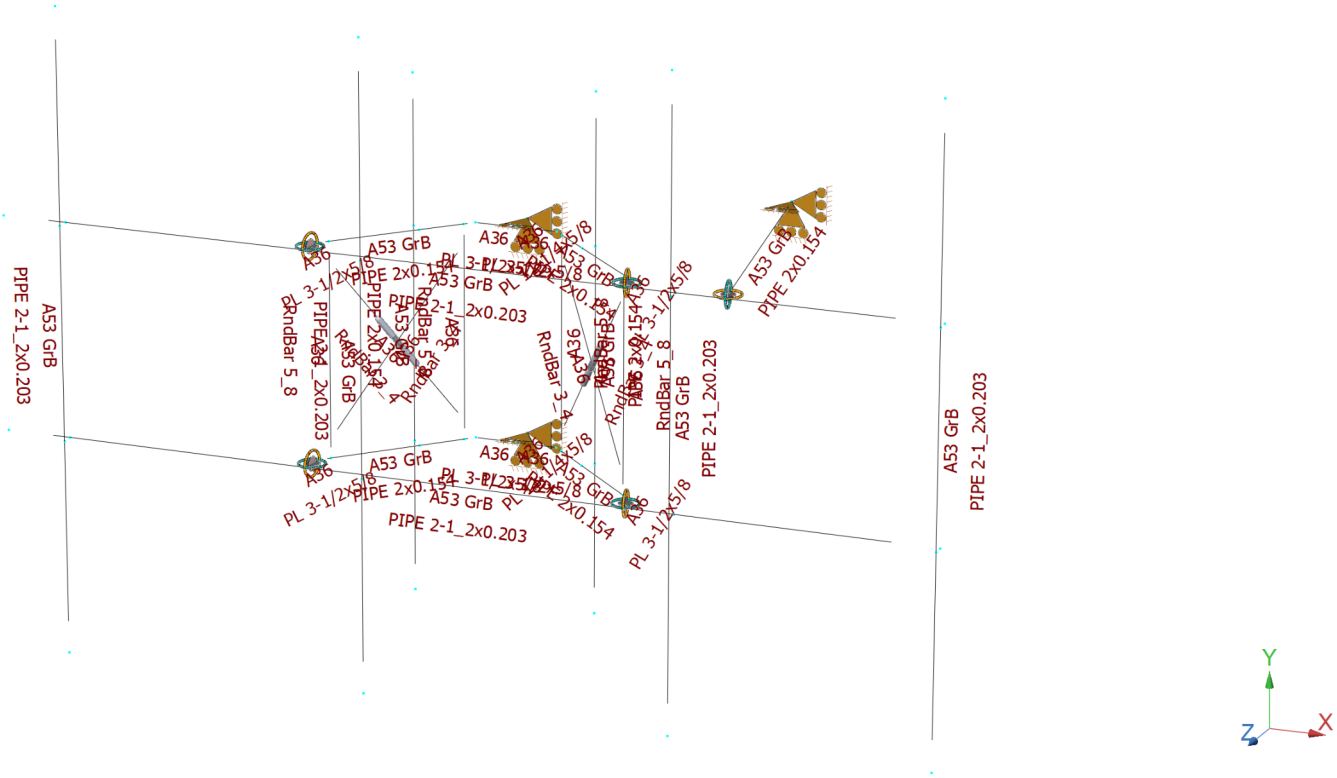
5/8" Round Bar
Per foot weight of ice:
diameter (in): 0.625
Per foot weight of ice on object: 3 plf

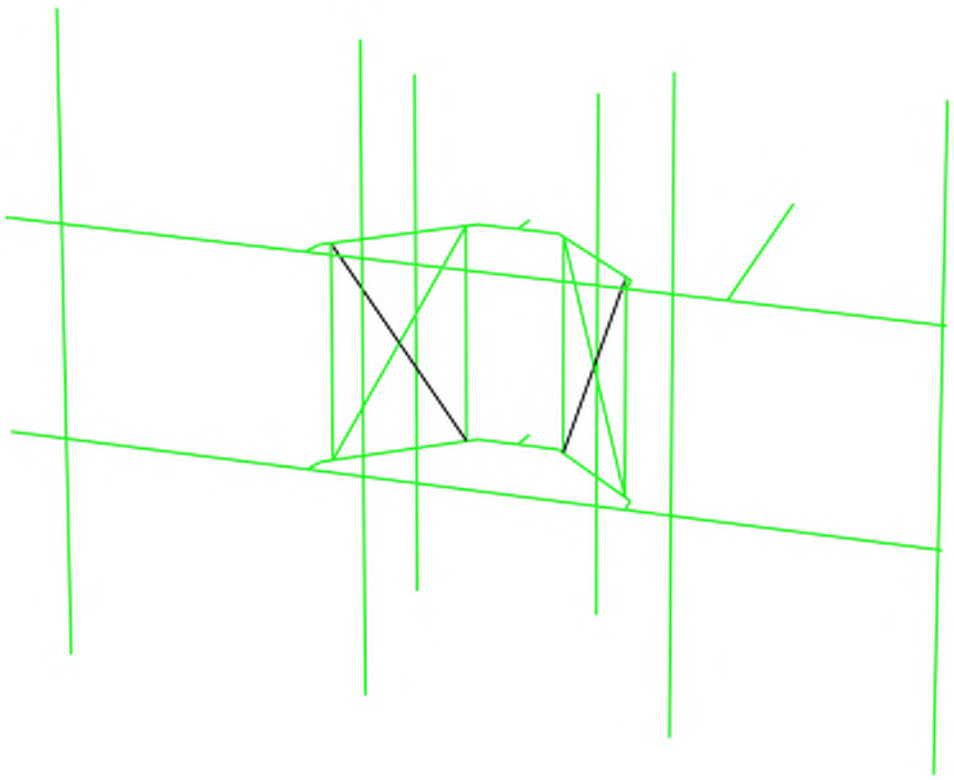
PL 3-1/2x5/8
Weight of ice based on total radial SF area:
Height (in): 3.5
Width (in): 0.625
Per foot weight of ice on object: 7 plf

PL 11-1/4x5/8
Weight of ice based on total radial SF area:
Height (in): 11.25
Width (in): 0.625
Per foot weight of ice on object: 19 plf

Mount Calculations
(Proposed Conditions)

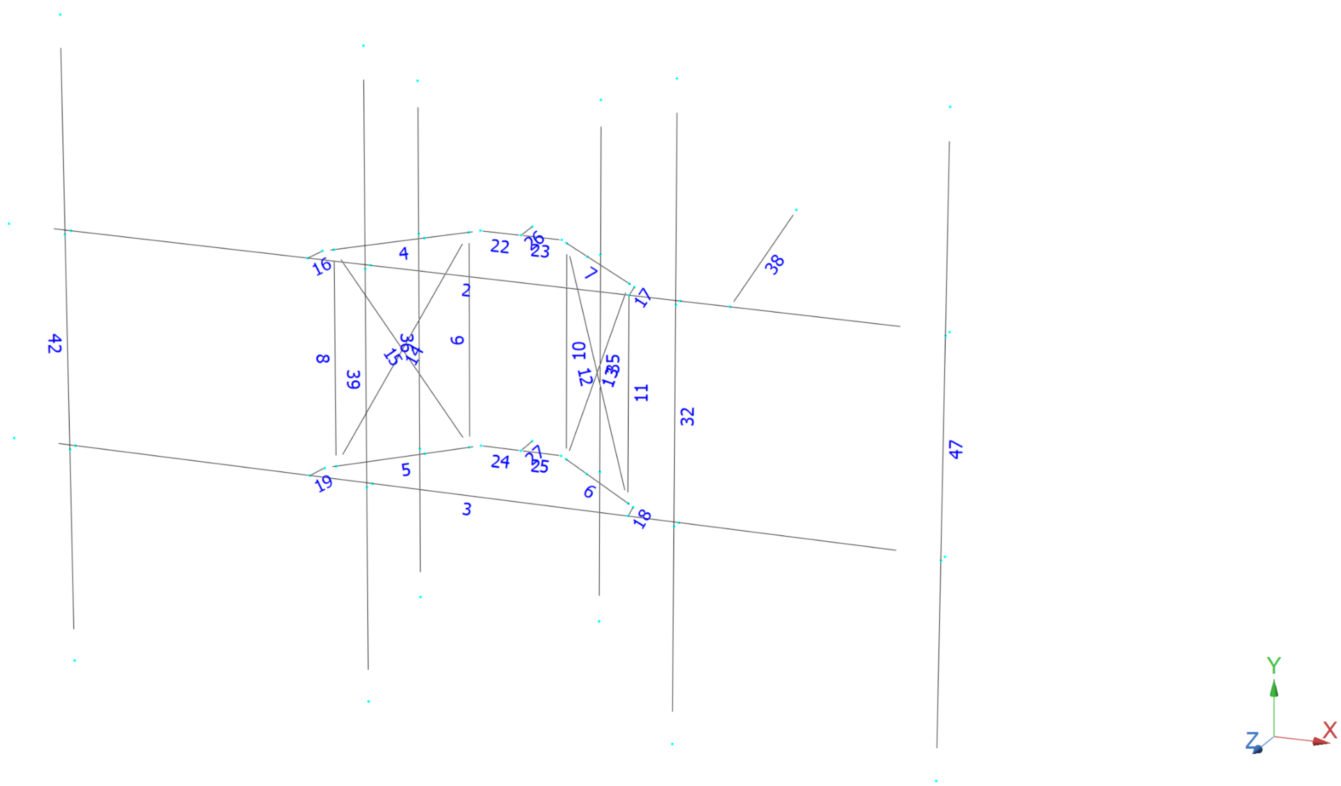

Y
Z
X


A53 GrB
PIPE 2-1_2x0.203
A36
PL 3-1/2x5/8
PIPE 2x0.154
RndBar 5_8
Y
Z
X


Design status
Not designed
Error on design
Design O.K.
With warnings
Y
X
Z

RAM® Elements
CONNECT Edition

Current Date: 3/14/2023 1:04 PM
Units system: English



RAM Elements CONNECT Edition

Current Date: 3/14/2023 1:05 PM
Units system: English

Load data

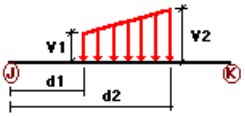
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load Right End of Mount	No	LL
LL3	250 lb Live Load Left End of Mount	No	LL
LLa1	500 lb Live Load Antenna 1	No	LL
LLa2	500 lb Live Load Antenna 2	No	LL
LLa3	500 lb Live Load Antenna 3	No	LL
LLa4	500 lb Live Load Antenna 4	No	LL

Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	2	z	-0.012	0.00	0.00	No	0.00	No
	3	z	-0.012	0.00	0.00	No	0.00	No
	4	z	-0.01	0.00	0.00	No	0.00	No
	5	z	-0.01	0.00	0.00	No	0.00	No
	6	z	-0.01	0.00	0.00	No	0.00	No
	7	z	-0.01	0.00	0.00	No	0.00	No
	8	z	-0.003	0.00	0.00	No	0.00	No
	9	z	-0.003	0.00	0.00	No	0.00	No
	10	z	-0.003	0.00	0.00	No	0.00	No
	11	z	-0.003	0.00	0.00	No	0.00	No

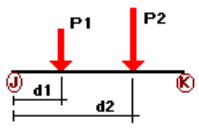
	12	z	-0.003	0.00	0.00	No	0.00	No
	13	z	-0.003	0.00	0.00	No	0.00	No
	14	z	-0.003	0.00	0.00	No	0.00	No
	15	z	-0.003	0.00	0.00	No	0.00	No
	22	z	-0.004	0.00	0.00	No	0.00	No
	23	z	-0.004	0.00	0.00	No	0.00	No
	24	z	-0.004	0.00	0.00	No	0.00	No
	25	z	-0.004	0.00	0.00	No	0.00	No
	32	z	-0.012	-0.012	0.00	No	2.50	No
		z	-0.012	-0.012	7.50	No	10.00	No
	35	z	-0.01	0.00	0.00	No	0.00	No
	36	z	-0.01	0.00	0.00	No	0.00	No
	38	z	-0.01	0.00	0.00	No	0.00	No
	39	z	-0.012	-0.012	0.00	No	2.00	No
		z	-0.012	-0.012	4.00	No	6.00	No
		z	-0.012	-0.012	8.00	No	10.00	No
	42	z	-0.012	-0.012	0.00	No	2.50	No
		z	-0.012	-0.012	7.50	No	10.00	No
	47	z	-0.012	-0.012	0.00	No	2.50	No
		z	-0.012	-0.012	7.50	No	10.00	No
W30	2	z	-0.012	0.00	0.00	No	0.00	No
	3	z	-0.012	0.00	0.00	No	0.00	No
	4	z	-0.01	0.00	0.00	No	0.00	No
	5	z	-0.01	0.00	0.00	No	0.00	No
	6	z	-0.01	0.00	0.00	No	0.00	No
	7	z	-0.01	0.00	0.00	No	0.00	No
	8	z	-0.003	0.00	0.00	No	0.00	No
	9	z	-0.003	0.00	0.00	No	0.00	No
	10	z	-0.003	0.00	0.00	No	0.00	No
	11	z	-0.003	0.00	0.00	No	0.00	No
	12	z	-0.003	0.00	0.00	No	0.00	No
	13	z	-0.003	0.00	0.00	No	0.00	No
	14	z	-0.003	0.00	0.00	No	0.00	No
	15	z	-0.003	0.00	0.00	No	0.00	No
	16	z	-0.004	0.00	0.00	No	0.00	No
	17	z	-0.004	0.00	0.00	No	0.00	No
	18	z	-0.004	0.00	0.00	No	0.00	No
	19	z	-0.004	0.00	0.00	No	0.00	No
	22	z	-0.004	0.00	0.00	No	0.00	No
	23	z	-0.004	0.00	0.00	No	0.00	No
	24	z	-0.004	0.00	0.00	No	0.00	No
	25	z	-0.004	0.00	0.00	No	0.00	No
	26	z	-0.004	0.00	0.00	No	0.00	No
	27	z	-0.004	0.00	0.00	No	0.00	No
	32	z	-0.012	-0.012	0.00	No	2.50	No
		z	-0.012	-0.012	7.50	No	10.00	No
	35	z	-0.01	0.00	0.00	No	0.00	No
	36	z	-0.01	0.00	0.00	No	0.00	No
	38	z	-0.01	0.00	0.00	No	0.00	No
	39	z	-0.012	-0.012	0.00	No	2.00	No
		z	-0.012	-0.012	4.00	No	6.00	No
		z	-0.012	-0.012	8.00	No	10.00	No
	42	z	-0.012	-0.012	0.00	No	2.50	No
		z	-0.012	-0.012	7.50	No	10.00	No
	47	z	-0.012	-0.012	0.00	No	2.50	No
		z	-0.012	-0.012	7.50	No	10.00	No
W60	2	x	-0.012	0.00	0.00	No	0.00	No
	3	x	-0.012	0.00	0.00	No	0.00	No
	4	x	-0.01	0.00	0.00	No	0.00	No
	5	x	-0.01	0.00	0.00	No	0.00	No
	6	x	-0.01	0.00	0.00	No	0.00	No
	7	x	-0.01	0.00	0.00	No	0.00	No
	8	x	-0.003	0.00	0.00	No	0.00	No
	9	x	-0.003	0.00	0.00	No	0.00	No
	10	x	-0.003	0.00	0.00	No	0.00	No
	11	x	-0.003	0.00	0.00	No	0.00	No

	12	x	-0.003	0.00	0.00	No	0.00	No
	13	x	-0.003	0.00	0.00	No	0.00	No
	14	x	-0.003	0.00	0.00	No	0.00	No
	15	x	-0.003	0.00	0.00	No	0.00	No
	16	x	-0.004	0.00	0.00	No	0.00	No
	17	x	-0.004	0.00	0.00	No	0.00	No
	18	x	-0.004	0.00	0.00	No	0.00	No
	19	x	-0.004	0.00	0.00	No	0.00	No
	22	x	-0.004	0.00	0.00	No	0.00	No
	23	x	-0.004	0.00	0.00	No	0.00	No
	24	x	-0.004	0.00	0.00	No	0.00	No
	25	x	-0.004	0.00	0.00	No	0.00	No
	26	x	-0.004	0.00	0.00	No	0.00	No
	27	x	-0.004	0.00	0.00	No	0.00	No
	32	x	-0.012	0.00	0.00	No	0.00	No
	35	x	-0.01	0.00	0.00	No	0.00	No
	36	x	-0.01	0.00	0.00	No	0.00	No
	38	x	-0.01	0.00	0.00	No	0.00	No
	39	x	-0.012	0.00	0.00	No	0.00	No
	42	x	-0.012	0.00	0.00	No	0.00	No
	47	x	-0.012	0.00	0.00	No	0.00	No
W90	4	x	-0.01	0.00	0.00	No	0.00	No
	5	x	-0.01	0.00	0.00	No	0.00	No
	6	x	-0.01	0.00	0.00	No	0.00	No
	7	x	-0.01	0.00	0.00	No	0.00	No
	8	x	-0.003	0.00	0.00	No	0.00	No
	9	x	-0.003	0.00	0.00	No	0.00	No
	10	x	-0.003	0.00	0.00	No	0.00	No
	11	x	-0.003	0.00	0.00	No	0.00	No
	12	x	-0.003	0.00	0.00	No	0.00	No
	13	x	-0.003	0.00	0.00	No	0.00	No
	14	x	-0.003	0.00	0.00	No	0.00	No
	15	x	-0.003	0.00	0.00	No	0.00	No
	16	x	-0.004	0.00	0.00	No	0.00	No
	17	x	-0.004	0.00	0.00	No	0.00	No
	18	x	-0.004	0.00	0.00	No	0.00	No
	19	x	-0.004	0.00	0.00	No	0.00	No
	26	x	-0.004	0.00	0.00	No	0.00	No
	27	x	-0.004	0.00	0.00	No	0.00	No
	32	x	-0.012	0.00	0.00	No	0.00	No
	35	x	-0.01	0.00	0.00	No	0.00	No
	36	x	-0.01	0.00	0.00	No	0.00	No
	38	x	-0.01	0.00	0.00	No	0.00	No
	39	x	-0.012	0.00	0.00	No	0.00	No
	42	x	-0.012	0.00	0.00	No	0.00	No
	47	x	-0.012	0.00	0.00	No	0.00	No
W120	2	x	-0.012	0.00	0.00	No	0.00	No
	3	x	-0.012	0.00	0.00	No	0.00	No
	4	x	-0.01	0.00	0.00	No	0.00	No
	5	x	-0.01	0.00	0.00	No	0.00	No
	6	x	-0.01	0.00	0.00	No	0.00	No
	7	x	-0.01	0.00	0.00	No	0.00	No
	8	x	-0.003	0.00	0.00	No	0.00	No
	9	x	-0.003	0.00	0.00	No	0.00	No
	10	x	-0.003	0.00	0.00	No	0.00	No
	11	x	-0.003	0.00	0.00	No	0.00	No
	12	x	-0.003	0.00	0.00	No	0.00	No
	13	x	-0.003	0.00	0.00	No	0.00	No
	14	x	-0.003	0.00	0.00	No	0.00	No
	15	x	-0.003	0.00	0.00	No	0.00	No
	16	x	-0.004	0.00	0.00	No	0.00	No
	17	x	-0.004	0.00	0.00	No	0.00	No
	18	x	-0.004	0.00	0.00	No	0.00	No
	19	x	-0.004	0.00	0.00	No	0.00	No
	22	x	-0.004	0.00	0.00	No	0.00	No
	23	x	-0.004	0.00	0.00	No	0.00	No

	24	x	-0.004	0.00	0.00	No	0.00	No
	25	x	-0.004	0.00	0.00	No	0.00	No
	26	x	-0.004	0.00	0.00	No	0.00	No
	27	x	-0.004	0.00	0.00	No	0.00	No
	32	x	-0.012	0.00	0.00	No	0.00	No
	35	x	-0.01	0.00	0.00	No	0.00	No
	36	x	-0.01	0.00	0.00	No	0.00	No
	38	x	-0.01	0.00	0.00	No	0.00	No
	39	x	-0.012	0.00	0.00	No	0.00	No
	42	x	-0.012	0.00	0.00	No	0.00	No
	47	x	-0.012	0.00	0.00	No	0.00	No
W150	2	z	0.012	0.00	0.00	No	0.00	No
	3	z	0.012	0.00	0.00	No	0.00	No
	4	z	0.01	0.00	0.00	No	0.00	No
	5	z	0.01	0.00	0.00	No	0.00	No
	6	z	0.01	0.00	0.00	No	0.00	No
	7	z	0.01	0.00	0.00	No	0.00	No
	8	z	0.003	0.00	0.00	No	0.00	No
	9	z	0.003	0.00	0.00	No	0.00	No
	10	z	0.003	0.00	0.00	No	0.00	No
	11	z	0.003	0.00	0.00	No	0.00	No
	12	z	0.003	0.00	0.00	No	0.00	No
	13	z	0.003	0.00	0.00	No	0.00	No
	14	z	0.003	0.00	0.00	No	0.00	No
	15	z	0.003	0.00	0.00	No	0.00	No
	16	z	0.004	0.00	0.00	No	0.00	No
	17	z	0.004	0.00	0.00	No	0.00	No
	18	z	0.004	0.00	0.00	No	0.00	No
	19	z	0.004	0.00	0.00	No	0.00	No
	22	z	0.004	0.00	0.00	No	0.00	No
	23	z	0.004	0.00	0.00	No	0.00	No
	24	z	0.004	0.00	0.00	No	0.00	No
	25	z	0.004	0.00	0.00	No	0.00	No
	26	z	0.004	0.00	0.00	No	0.00	No
	27	z	0.004	0.00	0.00	No	0.00	No
	32	z	0.012	0.00	0.00	No	0.00	No
	35	z	0.01	0.00	0.00	No	0.00	No
	36	z	0.01	0.00	0.00	No	0.00	No
	38	z	0.01	0.00	0.00	No	0.00	No
	39	z	0.012	0.00	0.00	No	0.00	No
	42	z	0.012	0.00	0.00	No	0.00	No
	47	z	0.012	0.00	0.00	No	0.00	No
Di	2	y	-0.006	0.00	0.00	No	0.00	No
	3	y	-0.006	0.00	0.00	No	0.00	No
	4	y	-0.005	0.00	0.00	No	0.00	No
	5	y	-0.005	0.00	0.00	No	0.00	No
	6	y	-0.005	0.00	0.00	No	0.00	No
	7	y	-0.005	0.00	0.00	No	0.00	No
	8	y	-0.003	0.00	0.00	No	0.00	No
	9	y	-0.003	0.00	0.00	No	0.00	No
	10	y	-0.003	0.00	0.00	No	0.00	No
	11	y	-0.003	0.00	0.00	No	0.00	No
	12	y	-0.003	0.00	0.00	No	0.00	No
	13	y	-0.003	0.00	0.00	No	0.00	No
	14	y	-0.003	0.00	0.00	No	0.00	No
	15	y	-0.003	0.00	0.00	No	0.00	No
	16	y	-0.007	0.00	0.00	No	0.00	No
	17	y	-0.007	0.00	0.00	No	0.00	No
	18	y	-0.007	0.00	0.00	No	0.00	No
	19	y	-0.007	0.00	0.00	No	0.00	No
	22	y	-0.007	0.00	0.00	No	0.00	No
	23	y	-0.007	0.00	0.00	No	0.00	No
	24	y	-0.007	0.00	0.00	No	0.00	No
	25	y	-0.007	0.00	0.00	No	0.00	No
	26	y	-0.019	0.00	0.00	No	0.00	No
	27	y	-0.019	0.00	0.00	No	0.00	No

32	y	-0.006	0.00	0.00	No	0.00	No
35	y	-0.005	0.00	0.00	No	0.00	No
36	y	-0.005	0.00	0.00	No	0.00	No
38	y	-0.005	0.00	0.00	No	0.00	No
39	y	-0.006	0.00	0.00	No	0.00	No
42	y	-0.006	0.00	0.00	No	0.00	No
47	y	-0.006	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	32	y	-0.065	2.50	No
		y	-0.065	7.50	No
	35	y	-0.06	4.00	No
		y	-0.072	4.00	No
		y	-0.029	1.50	No
	36	y	-0.073	4.00	No
		y	-0.06	4.00	No
	39	y	-0.033	2.00	No
		y	-0.033	4.00	No
		y	-0.041	6.00	No
		y	-0.041	8.00	No
	42	y	-0.039	2.50	No
		y	-0.029	7.50	No
Wo	32	z	-0.286	2.50	No
		z	-0.286	7.50	No
	35	z	-0.085	4.00	No
		z	-0.065	1.50	No
	36	z	-0.115	4.00	No
	39	z	-0.088	2.00	No
		z	-0.088	4.00	No
		z	-0.086	6.00	No
		z	-0.086	8.00	No
	42	z	-0.259	2.50	No
		z	-0.259	7.50	No
W30	32	3	-0.25	2.50	No
		3	-0.25	7.50	No
	35	3	-0.077	4.00	No
		3	-0.065	1.50	No
	36	3	-0.104	4.00	No
	39	3	-0.077	2.00	No
		3	-0.077	4.00	No
		3	-0.079	6.00	No
		3	-0.079	8.00	No
	42	3	-0.224	2.50	No
		3	-0.224	7.50	No
W60	32	3	-0.179	2.50	No
		3	-0.179	7.50	No
	35	3	-0.061	4.00	No
		3	-0.065	1.50	No
	36	3	-0.081	4.00	No
	39	3	-0.054	2.00	No
		3	-0.054	4.00	No
		3	-0.065	6.00	No
		3	-0.065	8.00	No
	42	3	-0.156	2.50	No

		3	-0.156	7.50	No
W90	32	x	-0.144	2.50	No
		x	-0.144	7.50	No
	35	x	-0.057	4.00	No
		x	-0.065	1.50	No
	36	x	-0.07	4.00	No
	39	x	-0.043	2.00	No
		x	-0.043	4.00	No
		x	-0.058	6.00	No
		x	-0.058	8.00	No
	42	x	-0.121	2.50	No
		x	-0.121	7.50	No
W120	32	2	-0.179	2.50	No
		2	-0.179	7.50	No
	35	2	-0.061	4.00	No
		2	-0.065	1.50	No
	36	2	-0.081	4.00	No
	39	2	-0.054	2.00	No
		2	-0.054	4.00	No
		2	-0.065	6.00	No
		2	-0.065	8.00	No
	42	2	-0.156	2.50	No
		2	-0.156	7.50	No
W150	32	2	-0.25	2.50	No
		2	-0.25	7.50	No
	35	2	-0.077	4.00	No
		2	-0.065	1.50	No
	36	2	-0.104	4.00	No
	39	2	-0.077	2.00	No
		2	-0.077	4.00	No
		2	-0.079	6.00	No
		2	-0.079	8.00	No
	42	2	-0.224	2.50	No
		2	-0.224	7.50	No
Di	32	y	-0.113	2.50	No
		y	-0.113	7.50	No
	35	y	-0.038	4.00	No
		y	-0.034	4.00	No
		y	-0.045	1.50	No
	36	y	-0.039	4.00	No
		y	-0.051	4.00	No
	39	y	-0.037	2.00	No
		y	-0.037	4.00	No
		y	-0.039	6.00	No
		y	-0.039	8.00	No
	42	y	-0.10	2.50	No
		y	-0.10	7.50	No
WI0	32	z	-0.063	2.50	No
		z	-0.063	7.50	No
	35	z	-0.022	4.00	No
		z	-0.017	1.50	No
	36	z	-0.029	4.00	No
	39	z	-0.021	2.00	No
		z	-0.021	4.00	No
		z	-0.021	6.00	No
		z	-0.021	8.00	No
	42	z	-0.057	2.50	No
		z	-0.057	7.50	No
WI30	32	3	-0.055	2.50	No
		3	-0.055	7.50	No
	35	3	-0.02	4.00	No
		3	-0.017	1.50	No
	36	3	-0.026	4.00	No
	39	3	-0.019	2.00	No
		3	-0.019	4.00	No
		3	-0.019	6.00	No

		3	-0.019	8.00	No
	42	3	-0.05	2.50	No
		3	-0.05	7.50	No
WI60	32	3	-0.041	2.50	No
		3	-0.041	7.50	No
	35	3	-0.016	4.00	No
		3	-0.017	1.50	No
	36	3	-0.021	4.00	No
	39	3	-0.014	2.00	No
		3	-0.014	4.00	No
		3	-0.016	6.00	No
		3	-0.016	8.00	No
	42	3	-0.037	2.50	No
		3	-0.037	7.50	No
WI90	32	x	-0.034	2.50	No
		x	-0.034	7.50	No
	35	x	-0.015	4.00	No
		x	-0.017	1.50	No
	36	x	-0.019	4.00	No
	39	x	-0.012	2.00	No
		x	-0.012	4.00	No
		x	-0.015	6.00	No
		x	-0.015	8.00	No
	42	x	-0.03	2.50	No
		x	-0.03	7.50	No
WI120	32	2	-0.041	2.50	No
		2	-0.041	7.50	No
	35	2	-0.016	4.00	No
		2	-0.017	1.50	No
	36	2	-0.021	4.00	No
	39	2	-0.014	2.00	No
		2	-0.014	4.00	No
		2	-0.016	6.00	No
		2	-0.016	8.00	No
	42	2	-0.037	2.50	No
		2	-0.037	7.50	No
WI150	32	2	-0.055	2.50	No
		2	-0.055	7.50	No
	35	2	-0.02	4.00	No
		2	-0.017	1.50	No
	36	2	-0.026	4.00	No
	39	2	-0.019	2.00	No
		2	-0.019	4.00	No
		2	-0.019	6.00	No
		2	-0.019	8.00	No
	42	2	-0.05	2.50	No
		2	-0.05	7.50	No
WL0	32	z	-0.02	2.50	No
		z	-0.02	7.50	No
	35	z	-0.006	4.00	No
		z	-0.004	1.50	No
	36	z	-0.008	4.00	No
	39	z	-0.006	2.00	No
		z	-0.006	4.00	No
		z	-0.006	6.00	No
		z	-0.006	8.00	No
	42	z	-0.018	2.50	No
		z	-0.018	7.50	No
WL30	32	3	-0.018	2.50	No
		3	-0.018	7.50	No
	35	3	-0.005	4.00	No
		3	-0.004	1.50	No
	36	3	-0.007	4.00	No
	39	3	-0.006	2.00	No
		3	-0.006	4.00	No
		3	-0.006	6.00	No

		3	-0.006	8.00	No
	42	3	-0.016	2.50	No
		3	-0.016	7.50	No
WL60	32	3	-0.013	2.50	No
		3	-0.013	7.50	No
	35	3	-0.004	4.00	No
		3	-0.004	1.50	No
	36	3	-0.006	4.00	No
	39	3	-0.004	2.00	No
		3	-0.004	4.00	No
		3	-0.005	6.00	No
		3	-0.005	8.00	No
	42	3	-0.011	2.50	No
		3	-0.011	7.50	No
WL90	32	x	-0.01	2.50	No
		x	-0.01	7.50	No
	35	x	-0.004	4.00	No
		x	-0.004	1.50	No
	36	x	-0.005	4.00	No
	39	x	-0.003	2.00	No
		x	-0.003	4.00	No
		x	-0.004	6.00	No
		x	-0.004	8.00	No
	42	x	-0.009	2.50	No
		x	-0.009	7.50	No
WL120	32	2	-0.013	2.50	No
		2	-0.013	7.50	No
	35	2	-0.004	4.00	No
		2	-0.004	1.50	No
	36	2	-0.006	4.00	No
	39	2	-0.004	2.00	No
		2	-0.004	4.00	No
		2	-0.005	6.00	No
		2	-0.005	8.00	No
	42	2	-0.011	2.50	No
		2	-0.011	7.50	No
WL150	32	2	-0.018	2.50	No
		2	-0.018	7.50	No
	35	2	-0.005	4.00	No
		2	-0.004	1.50	No
	36	2	-0.007	4.00	No
	39	2	-0.006	2.00	No
		2	-0.006	4.00	No
		2	-0.006	6.00	No
		2	-0.006	8.00	No
	42	2	-0.016	2.50	No
		2	-0.016	7.50	No
LL1	2	y	-0.25	50.00	Yes
LL2	2	y	-0.25	100.00	Yes
LL3	2	y	-0.25	0.00	Yes
LLa1	32	y	-0.50	5.00	No
LLa2	39	y	-0.50	50.00	Yes
LLa3	42	y	-0.50	50.00	Yes
LLa4	47	y	-0.50	5.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load Right End of Mount	No	0.00	0.00	0.00
LL3	250 lb Live Load Left End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

RAM Elements
CONNECT Edition

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Units system: English

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D+1.6LL1
LC38=1.2D+1.6LL2
LC39=1.2D+1.6LL3
LC40=1.2D+WL0+1.6LLa1
LC41=1.2D+WL30+1.6LLa1
LC42=1.2D+WL60+1.6LLa1
LC43=1.2D+WL90+1.6LLa1
LC44=1.2D+WL120+1.6LLa1
LC45=1.2D+WL150+1.6LLa1
LC46=1.2D-WL0+1.6LLa1
LC47=1.2D-WL30+1.6LLa1
LC48=1.2D-WL60+1.6LLa1
LC49=1.2D-WL90+1.6LLa1
LC50=1.2D-WL120+1.6LLa1
LC51=1.2D-WL150+1.6LLa1
LC52=1.2D+WL0+1.6LLa2
LC53=1.2D+WL30+1.6LLa2
LC54=1.2D+WL60+1.6LLa2
LC55=1.2D+WL90+1.6LLa2
LC56=1.2D+WL120+1.6LLa2
LC57=1.2D+WL150+1.6LLa2
LC58=1.2D-WL0+1.6LLa2
LC59=1.2D-WL30+1.6LLa2
LC60=1.2D-WL60+1.6LLa2

LC61=1.2D-WL90+1.6LLa2
LC62=1.2D-WL120+1.6LLa2
LC63=1.2D-WL150+1.6LLa2
LC64=1.2D+WL0+1.6LLa3
LC65=1.2D+WL30+1.6LLa3
LC66=1.2D+WL60+1.6LLa3
LC67=1.2D+WL90+1.6LLa3
LC68=1.2D+WL120+1.6LLa3
LC69=1.2D+WL150+1.6LLa3
LC70=1.2D-WL0+1.6LLa3
LC71=1.2D-WL30+1.6LLa3
LC72=1.2D-WL60+1.6LLa3
LC73=1.2D-WL90+1.6LLa3
LC74=1.2D-WL120+1.6LLa3
LC75=1.2D-WL150+1.6LLa3
LC76=1.2D+WL0+1.6LLa4
LC77=1.2D+WL30+1.6LLa4
LC78=1.2D+WL60+1.6LLa4
LC79=1.2D+WL90+1.6LLa4
LC80=1.2D+WL120+1.6LLa4
LC81=1.2D+WL150+1.6LLa4
LC82=1.2D-WL0+1.6LLa4
LC83=1.2D-WL30+1.6LLa4
LC84=1.2D-WL60+1.6LLa4
LC85=1.2D-WL90+1.6LLa4
LC86=1.2D-WL120+1.6LLa4
LC87=1.2D-WL150+1.6LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2-1_2x0.203	**2**	LC2 at 67.86%	0.42	OK	
		3	LC64 at 32.29%	**0.42**	**OK**	
		32	LC83 at 33.33%	0.26	OK	
		39	LC3 at 33.33%	0.13	OK	
		42	LC65 at 33.33%	0.33	OK	
		47	LC83 at 33.33%	0.32	OK	
	PIPE 2x0.154	**4**	LC71 at 93.75%	0.44	OK	
		5	LC64 at 93.75%	0.36	OK	
		6	LC77 at 93.75%	0.38	OK	
		7	LC83 at 93.75%	**0.46**	**OK**	
		35	LC87 at 29.17%	0.15	OK	
		36	LC70 at 29.17%	0.14	OK	
		38	LC9 at 100.00%	0.05	OK	
	PL 11-1/4x5/8	**26**	LC26 at 0.00%	0.21	OK	
		27	LC25 at 0.00%	**0.22**	**OK**	
	PL 3-1/2x5/8	**16**	LC71 at 100.00%	0.34	OK	
		17	LC87 at 100.00%	0.34	OK	
		18	LC77 at 100.00%	0.42	OK	
		19	LC71 at 100.00%	0.39	OK	
		22	LC71 at 0.00%	0.47	OK	
		23	LC81 at 100.00%	**0.50**	**OK**	
		24	LC75 at 0.00%	0.38	OK	
		25	LC77 at 100.00%	0.42	OK	
	RndBar 3_4	**12**	LC77 at 100.00%	0.23	OK	
		13	LC77 at 0.00%	0.24	With warnings	
		14	LC71 at 0.00%	**0.24**	**OK**	
		15	LC71 at 100.00%	0.21	With warnings	
	RndBar 5_8	**8**	LC75 at 87.50%	0.58	OK	
		9	LC71 at 87.50%	0.61	OK	
		10	LC77 at 87.50%	**0.64**	**OK**	
		11	LC77 at 87.50%	0.58	OK	

RAM Elements
CONNECT Edition

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Geometry data

GLOSSARY

Cb22, Cb33 : Moment gradient coefficients
Cm22, Cm33 : Coefficients applied to bending term in interaction formula
d0 : Tapered member section depth at J end of member
DJX : Rigid end offset distance measured from J node in axis X
DJY : Rigid end offset distance measured from J node in axis Y
DJZ : Rigid end offset distance measured from J node in axis Z
DKX : Rigid end offset distance measured from K node in axis X
DKY : Rigid end offset distance measured from K node in axis Y
DKZ : Rigid end offset distance measured from K node in axis Z
dL : Tapered member section depth at K end of member
Ig factor : Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22 : Effective length factor about axis 2
K33 : Effective length factor about axis 3
L22 : Member length for calculation of axial capacity
L33 : Member length for calculation of axial capacity
LB pos : Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg : Lateral unbraced length of the compression flange in the negative side of local axis 2
RX : Rotation about X
RY : Rotation about Y
RZ : Rotation about Z
TO : 1 = Tension only member 0 = Normal member
TX : Translation in X
TY : Translation in Y
TZ : Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	2.00	0
2	-0.6362	0.00	2.4783	0
3	0.00	-3.3333	2.00	0
4	-0.6362	-3.3333	2.4783	0
5	0.6362	-3.3333	2.4783	0
6	0.6362	0.00	2.4783	0
9	-7.25	0.00	4.63	0
10	7.25	0.00	4.63	0
11	-7.25	-3.3333	4.63	0
12	7.25	-3.3333	4.63	0
13	-2.4126	0.00	4.2374	0
14	-2.4126	-3.3333	4.2374	0
15	2.4126	-3.3333	4.2374	0
16	2.4126	0.00	4.2374	0
17	-2.2835	0.00	4.1096	0
18	-2.2835	-3.3333	4.1096	0
19	-0.7653	0.00	2.6062	0
20	-0.7653	-3.3333	2.6062	0
21	0.7653	0.00	2.6062	0
22	0.7653	-3.3333	2.6062	0
23	2.2835	0.00	4.1096	0
24	2.2835	-3.3333	4.1096	0
25	-2.4792	0.00	4.63	0
26	2.4792	0.00	4.63	0
27	2.4792	-3.3333	4.63	0
28	-2.4792	-3.3333	4.63	0
31	0.00	0.00	2.4783	0
32	0.00	-3.3333	2.4783	0
33	-1.2713	0.00	3.1073	0

34	-1.2713	-3.3333	3.1073	0
35	-1.4213	0.00	2.9573	0
36	-1.4213	-3.3333	2.9573	0
37	1.2713	0.00	3.1073	0
38	1.2713	-3.3333	3.1073	0
39	1.4213	0.00	2.9573	0
40	1.4213	-3.3333	2.9573	0
41	3.25	-6.6667	4.83	0
42	3.25	3.3333	4.83	0
45	1.4213	-5.6667	2.9573	0
46	-1.4213	-5.6667	2.9573	0
47	1.4213	2.3333	2.9573	0
48	-1.4213	2.3333	2.9573	0
51	4.00	0.00	4.63	0
52	3.3572	0.00	-0.1711	0
53	-1.50	-6.6667	4.83	0
54	-1.50	3.3333	4.83	0
55	3.25	0.00	4.63	0
56	3.25	-3.3333	4.63	0
57	3.25	3.33E-06	4.83	0
58	3.25	-3.3333	4.83	0
59	-6.25	-6.6667	4.83	0
60	-6.25	3.3333	4.83	0
61	-1.50	0.00	4.63	0
62	-1.50	-3.3333	4.63	0
63	-1.50	3.33E-06	4.83	0
64	-1.50	-3.3333	4.83	0
65	-6.25	0.00	4.63	0
66	-6.25	3.33E-06	4.83	0
67	-6.25	-3.3333	4.63	0
68	-6.25	-3.3333	4.83	0
69	7.25	-3.3333	4.83	0
70	7.25	3.33E-06	4.83	0
71	7.25	3.3333	4.83	0
72	7.25	-6.6667	4.83	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	0	0	0
3	1	1	1	0	0	0
52	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
2	9	10		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
3	11	12		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
4	13	2		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
5	14	4		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
6	15	5		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
7	16	6		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
8	17	18		RndBar 5_8	A36	0.00	0.00	0.00
9	19	20		RndBar 5_8	A36	0.00	0.00	0.00
10	21	22		RndBar 5_8	A36	0.00	0.00	0.00
11	23	24		RndBar 5_8	A36	0.00	0.00	0.00

12	21	24	RndBar 3_4	A36	0.00	0.00	0.00
13	22	23	RndBar 3_4	A36	0.00	0.00	0.00
14	18	19	RndBar 3_4	A36	0.00	0.00	0.00
15	17	20	RndBar 3_4	A36	0.00	0.00	0.00
16	13	25	PL 3-1/2x5/8	A36	0.00	0.00	0.00
17	16	26	PL 3-1/2x5/8	A36	0.00	0.00	0.00
18	15	27	PL 3-1/2x5/8	A36	0.00	0.00	0.00
19	14	28	PL 3-1/2x5/8	A36	0.00	0.00	0.00
22	2	31	PL 3-1/2x5/8	A36	0.00	0.00	0.00
23	31	6	PL 3-1/2x5/8	A36	0.00	0.00	0.00
24	4	32	PL 3-1/2x5/8	A36	0.00	0.00	0.00
25	32	5	PL 3-1/2x5/8	A36	0.00	0.00	0.00
26	31	1	PL 11-1/4x5/8	A36	11.25	9.25	0.00
27	32	3	PL 11-1/4x5/8	A36	11.25	9.25	0.00
32	42	41	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
35	47	45	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
36	48	46	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
38	52	51	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
39	54	53	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
42	60	59	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
47	71	72	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00

Orientation of local axes

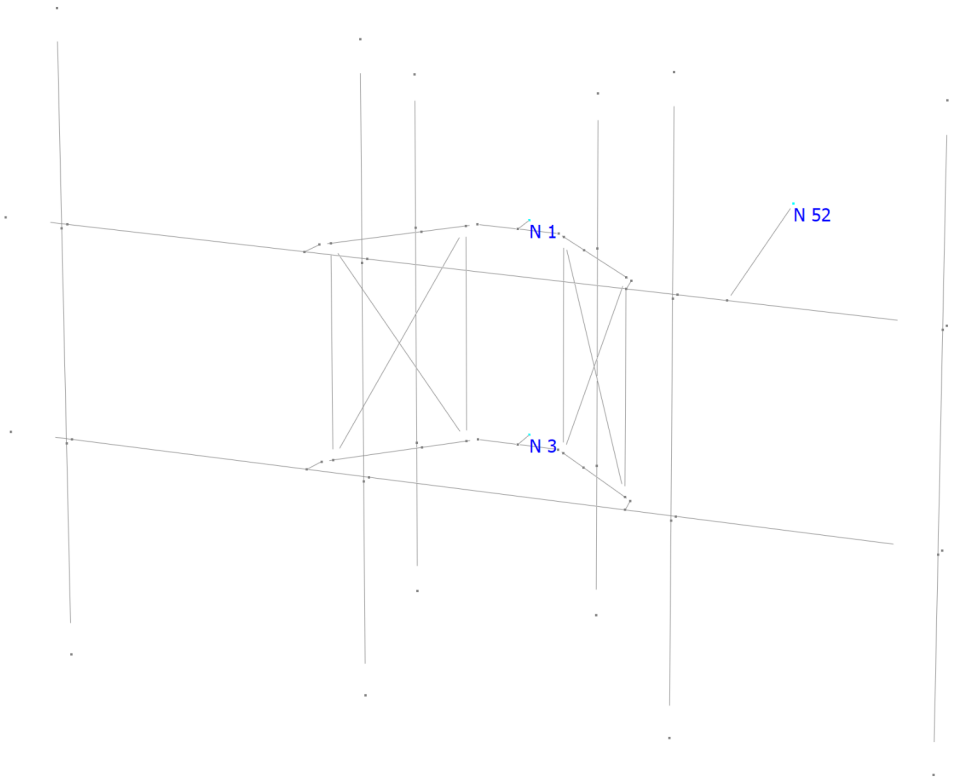
Member	Rotation [Deg]	Axes23	NX	NY	NZ
8	0.00	2	0.00	0.00	1.00
9	0.00	2	0.00	0.00	1.00
10	0.00	2	0.00	0.00	1.00
11	0.00	2	0.00	0.00	1.00
16	90.00	0	0.00	0.00	0.00
17	90.00	0	0.00	0.00	0.00
18	90.00	0	0.00	0.00	0.00
19	90.00	0	0.00	0.00	0.00
22	90.00	0	0.00	0.00	0.00
23	90.00	0	0.00	0.00	0.00
24	90.00	0	0.00	0.00	0.00
25	90.00	0	0.00	0.00	0.00
26	90.00	0	0.00	0.00	0.00
27	90.00	0	0.00	0.00	0.00
32	315.00	0	0.00	0.00	0.00
35	315.00	0	0.00	0.00	0.00
36	315.00	0	0.00	0.00	0.00
39	315.00	0	0.00	0.00	0.00
42	315.00	0	0.00	0.00	0.00
47	315.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
12	0.00	-3.50	0.00	0.00	3.50	0.00
13	0.00	3.50	0.00	0.00	-3.50	0.00
14	0.00	3.50	0.00	0.00	-3.50	0.00
15	0.00	-3.50	0.00	0.00	3.50	0.00
26	0.00	-0.625	0.00	0.00	-0.625	0.00
27	0.00	-0.625	0.00	0.00	-0.625	0.00

Hinges

Member	Node-J				Node-K				TOR	AXL	Axial rigidity
	M33	M22	V3	V2	M33	M22	V3	V2			
13	0	0	0	0	0	0	0	0	0	0	Tension only
15	0	0	0	0	0	0	0	0	0	0	Tension only
16	1	1	0	0	0	0	0	0	0	0	Full
17	1	1	0	0	0	0	0	0	0	0	Full
18	1	1	0	0	0	0	0	0	0	0	Full
19	1	1	0	0	0	0	0	0	0	0	Full
38	0	0	0	0	1	1	0	0	0	0	Full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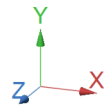
N 52
N 3

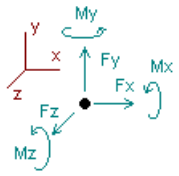

Y
Z
X

RAM Elements
CONNECT Edition

Current Date: 3/14/2023 1:07 PM
Units system: English

Analysis result

Reactions



Direction of positive forces and moments

Node	Forces [Kip] FX	FY	FZ	Moments [Kip*ft] MX	MY	MZ
Condition **LC1=1.2D+Wo**						
1	0.06405	0.78669	0.92295	0.00000	0.00000	0.00000
3	-0.00177	0.66253	2.17259	0.00000	0.00000	0.00000
52	-0.06228	0.01074	-0.46718	0.00000	0.00000	0.00000
SUM	0.00000	1.45996	2.62836	0.00000	0.00000	0.00000
Condition **LC2=1.2D+W30**						
1	0.70101	0.77800	1.12127	0.00000	0.00000	0.00000
3	0.49652	0.67000	1.87155	0.00000	0.00000	0.00000
52	-0.13264	0.01196	-1.00149	0.00000	0.00000	0.00000
SUM	1.06490	1.45996	1.99133	0.00000	0.00000	0.00000
Condition **LC3=1.2D+W60**						
1	1.00911	0.77540	0.74790	0.00000	0.00000	0.00000
3	0.76522	0.67204	1.27875	0.00000	0.00000	0.00000
52	-0.13981	0.01252	-1.23823	0.00000	0.00000	0.00000
SUM	1.63452	1.45996	0.78842	0.00000	0.00000	0.00000
Condition **LC4=1.2D+W90**						
1	1.06493	0.77941	0.20119	0.00000	0.00000	0.00000
3	0.82833	0.66845	0.90816	0.00000	0.00000	0.00000
52	-0.12317	0.01210	-1.10934	0.00000	0.00000	0.00000
SUM	1.77009	1.45996	0.00000	0.00000	0.00000	0.00000
Condition **LC5=1.2D+W120**						
1	0.95195	0.78736	-0.50753	0.00000	0.00000	0.00000
3	0.76759	0.66126	0.53752	0.00000	0.00000	0.00000
52	-0.08502	0.01134	-0.81842	0.00000	0.00000	0.00000
SUM	1.63452	1.45996	-0.78842	0.00000	0.00000	0.00000
Condition **LC6=1.2D+W150**						
1	0.63500	0.79185	-1.52022	0.00000	0.00000	0.00000
3	0.50059	0.65742	-0.16973	0.00000	0.00000	0.00000
52	-0.07069	0.01070	-0.52937	0.00000	0.00000	0.00000
SUM	1.06490	1.45996	-2.21933	0.00000	0.00000	0.00000

Condition **LC7=1.2D-Wo**

1	-0.06523	0.81130	-2.72601	0.00000	0.00000	0.00000
3	0.00325	0.63938	-0.35692	0.00000	0.00000	0.00000
52	0.06198	0.00928	0.45457	0.00000	0.00000	0.00000
SUM	0.00000	1.45996	-2.62836	0.00000	0.00000	0.00000

Condition **LC8=1.2D-W30**

1	-0.70421	0.81945	-2.93162	0.00000	0.00000	0.00000
3	-0.49643	0.63169	-0.05605	0.00000	0.00000	0.00000
52	0.13574	0.00882	0.99635	0.00000	0.00000	0.00000
SUM	-1.06490	1.45996	-1.99133	0.00000	0.00000	0.00000

Condition **LC9=1.2D-W60**

1	-1.01323	0.82208	-2.56303	0.00000	0.00000	0.00000
3	-0.76510	0.62923	0.53619	0.00000	0.00000	0.00000
52	0.14381	0.00865	1.23841	0.00000	0.00000	0.00000
SUM	-1.63452	1.45996	-0.78842	0.00000	0.00000	0.00000

Condition **LC10=1.2D-W90**

1	-1.06855	0.81855	-2.01862	0.00000	0.00000	0.00000
3	-0.82780	0.63278	0.90669	0.00000	0.00000	0.00000
52	0.12627	0.00863	1.11193	0.00000	0.00000	0.00000
SUM	-1.77009	1.45996	0.00000	0.00000	0.00000	0.00000

Condition **LC11=1.2D-W120**

1	-0.95451	0.81109	-1.30905	0.00000	0.00000	0.00000
3	-0.76639	0.64009	1.27738	0.00000	0.00000	0.00000
52	0.08638	0.00878	0.82010	0.00000	0.00000	0.00000
SUM	-1.63452	1.45996	0.78842	0.00000	0.00000	0.00000

Condition **LC12=1.2D-W150**

1	-0.63519	0.80687	-0.28923	0.00000	0.00000	0.00000
3	-0.49918	0.64403	1.98487	0.00000	0.00000	0.00000
52	0.06946	0.00906	0.52369	0.00000	0.00000	0.00000
SUM	-1.06490	1.45996	2.21933	0.00000	0.00000	0.00000

Condition **LC13=0.9D+Wo**

1	0.06363	0.58603	1.15094	0.00000	0.00000	0.00000
3	-0.00137	0.50084	1.94445	0.00000	0.00000	0.00000
52	-0.06226	0.00810	-0.46703	0.00000	0.00000	0.00000
SUM	0.00000	1.09497	2.62836	0.00000	0.00000	0.00000

Condition **LC14=0.9D+W30**

1	0.70040	0.57794	1.34891	0.00000	0.00000	0.00000
3	0.49710	0.50792	1.64362	0.00000	0.00000	0.00000
52	-0.13259	0.00910	-1.00120	0.00000	0.00000	0.00000
SUM	1.06490	1.09497	1.99133	0.00000	0.00000	0.00000

Condition **LC15=0.9D+W60**

1	1.00853	0.57567	0.97499	0.00000	0.00000	0.00000
3	0.76574	0.50973	1.05131	0.00000	0.00000	0.00000
52	-0.13976	0.00958	-1.23788	0.00000	0.00000	0.00000
SUM	1.63452	1.09497	0.78842	0.00000	0.00000	0.00000

Condition **LC16=0.9D+W90**

1	1.06455	0.57954	0.42795	0.00000	0.00000	0.00000
3	0.82867	0.50622	0.68109	0.00000	0.00000	0.00000
52	-0.12312	0.00921	-1.10904	0.00000	0.00000	0.00000
SUM	1.77009	1.09497	0.00000	0.00000	0.00000	0.00000

Condition **LC17=0.9D+W120**

1	0.95185	0.58718	-0.28107	0.00000	0.00000	0.00000
3	0.76765	0.49922	0.31085	0.00000	0.00000	0.00000
52	-0.08499	0.00857	-0.81820	0.00000	0.00000	0.00000
SUM	1.63452	1.09497	-0.78842	0.00000	0.00000	0.00000

Condition **LC18=0.9D+W150**

1	0.63526	0.59144	-1.29439	0.00000	0.00000	0.00000
3	0.50031	0.49549	-0.39571	0.00000	0.00000	0.00000
52	-0.07066	0.00804	-0.52923	0.00000	0.00000	0.00000
SUM	1.06490	1.09497	-2.21933	0.00000	0.00000	0.00000

Condition **LC19=0.9D-Wo**

1	-0.06436	0.60985	-2.50023	0.00000	0.00000	0.00000
3	0.00240	0.47813	-0.58259	0.00000	0.00000	0.00000
52	0.06197	0.00700	0.45446	0.00000	0.00000	0.00000
SUM	0.00000	1.09497	-2.62836	0.00000	0.00000	0.00000

Condition **LC20=0.9D-W30**

1	-0.70314	0.61741	-2.70551	0.00000	0.00000	0.00000
3	-0.49745	0.47081	-0.28191	0.00000	0.00000	0.00000
52	0.13570	0.00675	0.99609	0.00000	0.00000	0.00000
SUM	-1.06490	1.09497	-1.99133	0.00000	0.00000	0.00000

Condition **LC21=0.9D-W60**

1	-1.01219	0.61971	-2.33637	0.00000	0.00000	0.00000
3	-0.76608	0.46859	0.30986	0.00000	0.00000	0.00000
52	0.14376	0.00667	1.23809	0.00000	0.00000	0.00000
SUM	-1.63452	1.09497	-0.78842	0.00000	0.00000	0.00000

Condition **LC22=0.9D-W90**

1	-1.06770	0.61629	-1.79164	0.00000	0.00000	0.00000
3	-0.82861	0.47207	0.67999	0.00000	0.00000	0.00000
52	0.12622	0.00661	1.11165	0.00000	0.00000	0.00000
SUM	-1.77009	1.09497	0.00000	0.00000	0.00000	0.00000

Condition **LC23=0.9D-W120**

1	-0.95394	0.60913	-1.08177	0.00000	0.00000	0.00000
3	-0.76692	0.47920	1.05028	0.00000	0.00000	0.00000
52	0.08634	0.00665	0.81991	0.00000	0.00000	0.00000
SUM	-1.63452	1.09497	0.78842	0.00000	0.00000	0.00000

Condition **LC24=0.9D-W150**

1	-0.63498	0.60513	-0.06131	0.00000	0.00000	0.00000
3	-0.49936	0.48303	1.75707	0.00000	0.00000	0.00000
52	0.06944	0.00681	0.52357	0.00000	0.00000	0.00000
SUM	-1.06490	1.09497	2.21933	0.00000	0.00000	0.00000

Condition **LC25=1.2D+Di+WI0**

1	0.21205	1.41185	-1.32621	0.00000	0.00000	0.00000
3	-0.19683	1.13188	1.83208	0.00000	0.00000	0.00000
52	-0.01522	0.02223	-0.11387	0.00000	0.00000	0.00000
SUM	0.00000	2.56596	0.39200	0.00000	0.00000	0.00000

Condition **LC26=1.2D+Di+WI30**

1	0.36151	1.40947	-1.27633	0.00000	0.00000	0.00000
3	-0.08271	1.13392	1.76288	0.00000	0.00000	0.00000
52	-0.03202	0.02257	-0.23977	0.00000	0.00000	0.00000
SUM	0.24678	2.56596	0.24678	0.00000	0.00000	0.00000

Condition **LC27=1.2D+Di+WI60**

1	0.32375	1.41085	-1.36468	0.00000	0.00000	0.00000
3	-0.10867	1.13270	1.73640	0.00000	0.00000	0.00000
52	-0.02416	0.02241	-0.18080	0.00000	0.00000	0.00000
SUM	0.19092	2.56596	0.19092	0.00000	0.00000	0.00000

Condition **LC28=1.2D+Di+WI90**

1	0.34285	1.41183	-1.49300	0.00000	0.00000	0.00000
3	-0.08917	1.13180	1.64764	0.00000	0.00000	0.00000
52	-0.02068	0.02234	-0.15464	0.00000	0.00000	0.00000
SUM	0.23300	2.56596	0.00000	0.00000	0.00000	0.00000

Condition **LC29=1.2D+Di+WI120**

1	0.30903	1.41419	-1.67341	0.00000	0.00000	0.00000
3	-0.10790	1.12964	1.55883	0.00000	0.00000	0.00000
52	-0.01022	0.02213	-0.07633	0.00000	0.00000	0.00000
SUM	0.19092	2.56596	-0.19092	0.00000	0.00000	0.00000

Condition **LC30=1.2D+Di+WI150**

1	0.34151	1.41405	-1.68153	0.00000	0.00000	0.00000
3	-0.08165	1.12973	1.53243	0.00000	0.00000	0.00000
52	-0.01308	0.02218	-0.09768	0.00000	0.00000	0.00000
SUM	0.24678	2.56596	-0.24678	0.00000	0.00000	0.00000

Condition **LC31=1.2D+Di-WI0**

1	0.17992	1.41912	-1.96881	0.00000	0.00000	0.00000
3	-0.19520	1.12518	1.46288	0.00000	0.00000	0.00000
52	0.01528	0.02166	0.11394	0.00000	0.00000	0.00000
SUM	0.00000	2.56596	-0.39200	0.00000	0.00000	0.00000

Condition **LC32=1.2D+Di-WI30**

1	0.03039	1.42148	-2.01900	0.00000	0.00000	0.00000
3	-0.30940	1.12312	1.53207	0.00000	0.00000	0.00000
52	0.03224	0.02137	0.24015	0.00000	0.00000	0.00000
SUM	-0.24678	2.56596	-0.24678	0.00000	0.00000	0.00000

Condition **LC33=1.2D+Di-WI60**

1	0.06818	1.42012	-1.93066	0.00000	0.00000	0.00000
3	-0.28340	1.12434	1.55855	0.00000	0.00000	0.00000
52	0.02431	0.02150	0.18119	0.00000	0.00000	0.00000
SUM	-0.19092	2.56596	-0.19092	0.00000	0.00000	0.00000

Condition **LC34=1.2D+Di-Wl90**

1	0.04909	1.41916	-1.80243	0.00000	0.00000	0.00000
3	-0.30289	1.12524	1.64730	0.00000	0.00000	0.00000
52	0.02080	0.02156	0.15513	0.00000	0.00000	0.00000
SUM	-0.23300	2.56596	0.00000	0.00000	0.00000	0.00000

Condition **LC35=1.2D+Di-Wl120**

1	0.08293	1.41682	-1.62193	0.00000	0.00000	0.00000
3	-0.28413	1.12740	1.73611	0.00000	0.00000	0.00000
52	0.01028	0.02175	0.07674	0.00000	0.00000	0.00000
SUM	-0.19092	2.56596	0.19092	0.00000	0.00000	0.00000

Condition **LC36=1.2D+Di-Wl150**

1	0.05047	1.41695	-1.61378	0.00000	0.00000	0.00000
3	-0.31038	1.12731	1.76251	0.00000	0.00000	0.00000
52	0.01313	0.02169	0.09805	0.00000	0.00000	0.00000
SUM	-0.24678	2.56596	0.24678	0.00000	0.00000	0.00000

Condition **LC37=1.2D+1.6LL1**

1	-0.00097	1.02581	-1.22312	0.00000	0.00000	0.00000
3	0.00098	0.82432	1.22319	0.00000	0.00000	0.00000
52	-0.00001	0.00983	-0.00007	0.00000	0.00000	0.00000
SUM	0.00000	1.85996	0.00000	0.00000	0.00000	0.00000

Condition **LC38=1.2D+1.6LL2**

1	-0.87094	1.02858	-1.22109	0.00000	0.00000	0.00000
3	0.87118	0.82155	1.22287	0.00000	0.00000	0.00000
52	-0.00024	0.00983	-0.00178	0.00000	0.00000	0.00000
SUM	0.00000	1.85996	0.00000	0.00000	0.00000	0.00000

Condition **LC39=1.2D+1.6LL3**

1	0.86913	1.02839	-1.22449	0.00000	0.00000	0.00000
3	-0.86934	0.82175	1.22296	0.00000	0.00000	0.00000
52	0.00020	0.00983	0.00153	0.00000	0.00000	0.00000
SUM	0.00000	1.85996	0.00000	0.00000	0.00000	0.00000

Condition **LC40=1.2D+WL0+1.6LLa1**

1	-0.77603	1.25791	-1.48922	0.00000	0.00000	0.00000
3	0.78084	0.99209	1.64317	0.00000	0.00000	0.00000
52	-0.00481	0.00996	-0.03595	0.00000	0.00000	0.00000
SUM	0.00000	2.25996	0.11800	0.00000	0.00000	0.00000

Condition **LC41=1.2D+WL30+1.6LLa1**

1	-0.73007	1.25720	-1.46999	0.00000	0.00000	0.00000
3	0.81672	0.99266	1.62317	0.00000	0.00000	0.00000
52	-0.01029	0.01011	-0.07681	0.00000	0.00000	0.00000
SUM	0.07637	2.25996	0.07637	0.00000	0.00000	0.00000

Condition **LC42=1.2D+WL60+1.6LLa1**

1	-0.74395	1.25765	-1.50287	0.00000	0.00000	0.00000
3	0.80783	0.99228	1.61401	0.00000	0.00000	0.00000
52	-0.00731	0.01003	-0.05458	0.00000	0.00000	0.00000
SUM	0.05657	2.25996	0.05657	0.00000	0.00000	0.00000

Condition **LC43=1.2D+WL90+1.6LLa1**

1	-0.74067	1.25797	-1.54228	0.00000	0.00000	0.00000
3	0.81164	0.99200	1.58681	0.00000	0.00000	0.00000
52	-0.00597	0.00999	-0.04454	0.00000	0.00000	0.00000
SUM	0.06500	2.25996	0.00000	0.00000	0.00000	0.00000

Condition **LC44=1.2D+WL120+1.6LLa1**

1	-0.74826	1.25854	-1.59157	0.00000	0.00000	0.00000
3	0.80812	0.99151	1.55959	0.00000	0.00000	0.00000
52	-0.00329	0.00992	-0.02459	0.00000	0.00000	0.00000
SUM	0.05657	2.25996	-0.05657	0.00000	0.00000	0.00000

Condition **LC45=1.2D+WL150+1.6LLa1**

1	-0.73655	1.25847	-1.59519	0.00000	0.00000	0.00000
3	0.81716	0.99155	1.55049	0.00000	0.00000	0.00000
52	-0.00424	0.00994	-0.03167	0.00000	0.00000	0.00000
SUM	0.07637	2.25996	-0.07637	0.00000	0.00000	0.00000

Condition **LC46=1.2D-WL0+1.6LLa1**

1	-0.78615	1.25999	-1.68278	0.00000	0.00000	0.00000
3	0.78153	0.99027	1.53030	0.00000	0.00000	0.00000
52	0.00462	0.00970	0.03448	0.00000	0.00000	0.00000
SUM	0.00000	2.25996	-0.11800	0.00000	0.00000	0.00000

Condition **LC47=1.2D-WL30+1.6LLa1**

1	-0.83212	1.26070	-1.70204	0.00000	0.00000	0.00000
3	0.74564	0.98970	1.55029	0.00000	0.00000	0.00000
52	0.01011	0.00956	0.07538	0.00000	0.00000	0.00000
SUM	-0.07637	2.25996	-0.07637	0.00000	0.00000	0.00000

Condition **LC48=1.2D-WL60+1.6LLa1**

1	-0.81823	1.26025	-1.66917	0.00000	0.00000	0.00000
3	0.75454	0.99008	1.55945	0.00000	0.00000	0.00000
52	0.00713	0.00964	0.05315	0.00000	0.00000	0.00000
SUM	-0.05657	2.25996	-0.05657	0.00000	0.00000	0.00000

Condition **LC49=1.2D-WL90+1.6LLa1**

1	-0.82151	1.25993	-1.62976	0.00000	0.00000	0.00000
3	0.75073	0.99036	1.58665	0.00000	0.00000	0.00000
52	0.00578	0.00967	0.04311	0.00000	0.00000	0.00000
SUM	-0.06500	2.25996	0.00000	0.00000	0.00000	0.00000

Condition **LC50=1.2D-WL120+1.6LLa1**

1	-0.81392	1.25937	-1.58046	0.00000	0.00000	0.00000
3	0.75424	0.99085	1.61387	0.00000	0.00000	0.00000
52	0.00310	0.00974	0.02316	0.00000	0.00000	0.00000
SUM	-0.05657	2.25996	0.05657	0.00000	0.00000	0.00000

Condition **LC51=1.2D-WL150+1.6LLa1**

1	-0.82563	1.25943	-1.57685	0.00000	0.00000	0.00000
3	0.74521	0.99081	1.62297	0.00000	0.00000	0.00000
52	0.00405	0.00972	0.03024	0.00000	0.00000	0.00000
SUM	-0.07637	2.25996	0.07637	0.00000	0.00000	0.00000

Condition **LC52=1.2D+WL0+1.6LLa2**

1	0.36403	1.25716	-1.49014	0.00000	0.00000	0.00000
3	-0.35933	0.99291	1.64327	0.00000	0.00000	0.00000
52	-0.00470	0.00989	-0.03513	0.00000	0.00000	0.00000
SUM	0.00000	2.25996	0.11800	0.00000	0.00000	0.00000

Condition **LC53=1.2D+WL30+1.6LLa2**

1	0.40990	1.25646	-1.47089	0.00000	0.00000	0.00000
3	-0.32336	0.99353	1.62324	0.00000	0.00000	0.00000
52	-0.01017	0.00997	-0.07598	0.00000	0.00000	0.00000
SUM	0.07637	2.25996	0.07637	0.00000	0.00000	0.00000

Condition **LC54=1.2D+WL60+1.6LLa2**

1	0.39609	1.25691	-1.50378	0.00000	0.00000	0.00000
3	-0.33233	0.99313	1.61411	0.00000	0.00000	0.00000
52	-0.00720	0.00992	-0.05377	0.00000	0.00000	0.00000
SUM	0.05657	2.25996	0.05657	0.00000	0.00000	0.00000

Condition **LC55=1.2D+WL90+1.6LLa2**

1	0.39942	1.25723	-1.54319	0.00000	0.00000	0.00000
3	-0.32856	0.99283	1.58693	0.00000	0.00000	0.00000
52	-0.00585	0.00991	-0.04374	0.00000	0.00000	0.00000
SUM	0.06500	2.25996	0.00000	0.00000	0.00000	0.00000

Condition **LC56=1.2D+WL120+1.6LLa2**

1	0.39191	1.25778	-1.59249	0.00000	0.00000	0.00000
3	-0.33215	0.99231	1.55973	0.00000	0.00000	0.00000
52	-0.00319	0.00987	-0.02381	0.00000	0.00000	0.00000
SUM	0.05657	2.25996	-0.05657	0.00000	0.00000	0.00000

Condition **LC57=1.2D+WL150+1.6LLa2**

1	0.40361	1.25772	-1.59610	0.00000	0.00000	0.00000
3	-0.32310	0.99236	1.55063	0.00000	0.00000	0.00000
52	-0.00414	0.00988	-0.03090	0.00000	0.00000	0.00000
SUM	0.07637	2.25996	-0.07637	0.00000	0.00000	0.00000

Condition **LC58=1.2D-WL0+1.6LLa2**

1	0.35421	1.25921	-1.68373	0.00000	0.00000	0.00000
3	-0.35893	0.99099	1.53051	0.00000	0.00000	0.00000
52	0.00472	0.00977	0.03522	0.00000	0.00000	0.00000
SUM	0.00000	2.25996	-0.11800	0.00000	0.00000	0.00000

Condition **LC59=1.2D-WL30+1.6LLa2**

1	0.30834	1.25990	-1.70301	0.00000	0.00000	0.00000
3	-0.39491	0.99037	1.55053	0.00000	0.00000	0.00000
52	0.01020	0.00970	0.07611	0.00000	0.00000	0.00000
SUM	-0.07637	2.25996	-0.07637	0.00000	0.00000	0.00000

Condition **LC60=1.2D-WL60+1.6LLa2**

1	0.32215	1.25946	-1.67013	0.00000	0.00000	0.00000
3	-0.38594	0.99077	1.55966	0.00000	0.00000	0.00000
52	0.00722	0.00973	0.05390	0.00000	0.00000	0.00000
SUM	-0.05657	2.25996	-0.05657	0.00000	0.00000	0.00000

Condition **LC61=1.2D-WL90+1.6LLa2**

1	0.31883	1.25914	-1.63073	0.00000	0.00000	0.00000
3	-0.38970	0.99107	1.58685	0.00000	0.00000	0.00000
52	0.00588	0.00975	0.04388	0.00000	0.00000	0.00000
SUM	-0.06500	2.25996	0.00000	0.00000	0.00000	0.00000

Condition **LC62=1.2D-WL120+1.6LLa2**

1	0.32634	1.25859	-1.58141	0.00000	0.00000	0.00000
3	-0.38611	0.99159	1.61404	0.00000	0.00000	0.00000
52	0.00321	0.00979	0.02394	0.00000	0.00000	0.00000
SUM	-0.05657	2.25996	0.05657	0.00000	0.00000	0.00000

Condition **LC63=1.2D-WL150+1.6LLa2**

1	0.31464	1.25865	-1.57780	0.00000	0.00000	0.00000
3	-0.39516	0.99154	1.62315	0.00000	0.00000	0.00000
52	0.00415	0.00977	0.03103	0.00000	0.00000	0.00000
SUM	-0.07637	2.25996	0.07637	0.00000	0.00000	0.00000

Condition **LC64=1.2D+WL0+1.6LLa3**

1	1.50361	1.26112	-1.49281	0.00000	0.00000	0.00000
3	-1.49927	0.98899	1.64330	0.00000	0.00000	0.00000
52	-0.00434	0.00985	-0.03249	0.00000	0.00000	0.00000
SUM	0.00000	2.25996	0.11800	0.00000	0.00000	0.00000

Condition **LC65=1.2D+WL30+1.6LLa3**

1	1.54925	1.26043	-1.47343	0.00000	0.00000	0.00000
3	-1.46306	0.98965	1.62325	0.00000	0.00000	0.00000
52	-0.00981	0.00988	-0.07345	0.00000	0.00000	0.00000
SUM	0.07637	2.25996	0.07637	0.00000	0.00000	0.00000

Condition **LC66=1.2D+WL60+1.6LLa3**

1	1.53554	1.26087	-1.50636	0.00000	0.00000	0.00000
3	-1.47213	0.98922	1.61413	0.00000	0.00000	0.00000
52	-0.00684	0.00987	-0.05121	0.00000	0.00000	0.00000
SUM	0.05657	2.25996	0.05657	0.00000	0.00000	0.00000

Condition **LC67=1.2D+WL90+1.6LLa3**

1	1.53888	1.26119	-1.54576	0.00000	0.00000	0.00000
3	-1.46838	0.98891	1.58697	0.00000	0.00000	0.00000
52	-0.00551	0.00986	-0.04121	0.00000	0.00000	0.00000
SUM	0.06500	2.25996	0.00000	0.00000	0.00000	0.00000

Condition **LC68=1.2D+WL120+1.6LLa3**

1	1.53144	1.26175	-1.59509	0.00000	0.00000	0.00000
3	-1.47203	0.98837	1.55980	0.00000	0.00000	0.00000
52	-0.00285	0.00984	-0.02128	0.00000	0.00000	0.00000
SUM	0.05657	2.25996	-0.05657	0.00000	0.00000	0.00000

Condition **LC69=1.2D+WL150+1.6LLa3**

1	1.54308	1.26169	-1.59867	0.00000	0.00000	0.00000
3	-1.46291	0.98843	1.55069	0.00000	0.00000	0.00000
52	-0.00380	0.00985	-0.02839	0.00000	0.00000	0.00000
SUM	0.07637	2.25996	-0.07637	0.00000	0.00000	0.00000

Condition **LC70=1.2D-WL0+1.6LLa3**

1	1.49398	1.26317	-1.68646	0.00000	0.00000	0.00000
3	-1.49904	0.98700	1.53064	0.00000	0.00000	0.00000
52	0.00506	0.00980	0.03782	0.00000	0.00000	0.00000
SUM	0.00000	2.25996	-0.11800	0.00000	0.00000	0.00000

Condition **LC71=1.2D-WL30+1.6LLa3**

1	1.44834	1.26385	-1.70587	0.00000	0.00000	0.00000
3	-1.53526	0.98634	1.55069	0.00000	0.00000	0.00000
52	0.01055	0.00977	0.07881	0.00000	0.00000	0.00000
SUM	-0.07637	2.25996	-0.07637	0.00000	0.00000	0.00000

Condition **LC72=1.2D-WL60+1.6LLa3**

1	1.46205	1.26341	-1.67294	0.00000	0.00000	0.00000
3	-1.52619	0.98676	1.55980	0.00000	0.00000	0.00000
52	0.00757	0.00979	0.05657	0.00000	0.00000	0.00000
SUM	-0.05657	2.25996	-0.05657	0.00000	0.00000	0.00000

Condition **LC73=1.2D-WL90+1.6LLa3**

1	1.45871	1.26310	-1.63354	0.00000	0.00000	0.00000
3	-1.52994	0.98707	1.58697	0.00000	0.00000	0.00000
52	0.00623	0.00979	0.04658	0.00000	0.00000	0.00000
SUM	-0.06500	2.25996	0.00000	0.00000	0.00000	0.00000

Condition **LC74=1.2D-WL120+1.6LLa3**

1	1.46616	1.26254	-1.58421	0.00000	0.00000	0.00000
3	-1.52629	0.98761	1.61413	0.00000	0.00000	0.00000
52	0.00356	0.00981	0.02664	0.00000	0.00000	0.00000
SUM	-0.05657	2.25996	0.05657	0.00000	0.00000	0.00000

Condition **LC75=1.2D-WL150+1.6LLa3**

1	1.45452	1.26260	-1.58063	0.00000	0.00000	0.00000
3	-1.53540	0.98756	1.62324	0.00000	0.00000	0.00000
52	0.00451	0.00980	0.03375	0.00000	0.00000	0.00000
SUM	-0.07637	2.25996	0.07637	0.00000	0.00000	0.00000

Condition **LC76=1.2D+WL0+1.6LLa4**

1	-1.73509	1.26028	-1.48537	0.00000	0.00000	0.00000
3	1.74046	0.98962	1.64340	0.00000	0.00000	0.00000
52	-0.00537	0.01006	-0.04004	0.00000	0.00000	0.00000
SUM	0.00000	2.25996	0.11800	0.00000	0.00000	0.00000

Condition **LC77=1.2D+WL30+1.6LLa4**

1	-1.68902	1.25954	-1.46607	0.00000	0.00000	0.00000
3	1.77624	0.99013	1.62338	0.00000	0.00000	0.00000
52	-0.01086	0.01030	-0.08094	0.00000	0.00000	0.00000
SUM	0.07637	2.25996	0.07637	0.00000	0.00000	0.00000

Condition **LC78=1.2D+WL60+1.6LLa4**

1	-1.70298	1.26001	-1.49901	0.00000	0.00000	0.00000
3	1.76741	0.98979	1.61423	0.00000	0.00000	0.00000
52	-0.00787	0.01017	-0.05865	0.00000	0.00000	0.00000
SUM	0.05657	2.25996	0.05657	0.00000	0.00000	0.00000

Condition **LC79=1.2D+WL90+1.6LLa4**

1	-1.69974	1.26034	-1.53849	0.00000	0.00000	0.00000
3	1.77125	0.98952	1.58702	0.00000	0.00000	0.00000
52	-0.00651	0.01011	-0.04853	0.00000	0.00000	0.00000
SUM	0.06500	2.25996	0.00000	0.00000	0.00000	0.00000

Condition **LC80=1.2D+WL120+1.6LLa4**

1	-1.70741	1.26092	-1.58788	0.00000	0.00000	0.00000
3	1.76780	0.98906	1.55980	0.00000	0.00000	0.00000
52	-0.00382	0.00999	-0.02849	0.00000	0.00000	0.00000
SUM	0.05657	2.25996	-0.05657	0.00000	0.00000	0.00000

Condition **LC81=1.2D+WL150+1.6LLa4**

1	-1.69568	1.26085	-1.59149	0.00000	0.00000	0.00000
3	1.77682	0.98908	1.55069	0.00000	0.00000	0.00000
52	-0.00477	0.01003	-0.03557	0.00000	0.00000	0.00000
SUM	0.07637	2.25996	-0.07637	0.00000	0.00000	0.00000

Condition **LC82=1.2D-WL0+1.6LLa4**

1	-1.74550	1.26241	-1.67927	0.00000	0.00000	0.00000
3	1.74137	0.98790	1.53052	0.00000	0.00000	0.00000
52	0.00413	0.00965	0.03075	0.00000	0.00000	0.00000
SUM	0.00000	2.25996	-0.11800	0.00000	0.00000	0.00000

Condition **LC83=1.2D-WL30+1.6LLa4**

1	-1.79158	1.26316	-1.69859	0.00000	0.00000	0.00000
3	1.70558	0.98739	1.55054	0.00000	0.00000	0.00000
52	0.00963	0.00942	0.07168	0.00000	0.00000	0.00000
SUM	-0.07637	2.25996	-0.07637	0.00000	0.00000	0.00000

Condition **LC84=1.2D-WL60+1.6LLa4**

1	-1.77762	1.26269	-1.66565	0.00000	0.00000	0.00000
3	1.71442	0.98773	1.55969	0.00000	0.00000	0.00000
52	0.00663	0.00954	0.04939	0.00000	0.00000	0.00000
SUM	-0.05657	2.25996	-0.05657	0.00000	0.00000	0.00000

Condition **LC85=1.2D-WL90+1.6LLa4**

1	-1.78085	1.26236	-1.62618	0.00000	0.00000	0.00000
3	1.71058	0.98800	1.58690	0.00000	0.00000	0.00000
52	0.00527	0.00960	0.03928	0.00000	0.00000	0.00000
SUM	-0.06500	2.25996	0.00000	0.00000	0.00000	0.00000

Condition **LC86=1.2D-WL120+1.6LLa4**

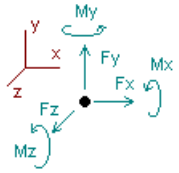
1	-1.77318	1.26178	-1.57679	0.00000	0.00000	0.00000
3	1.71403	0.98846	1.61412	0.00000	0.00000	0.00000
52	0.00258	0.00972	0.01924	0.00000	0.00000	0.00000
SUM	-0.05657	2.25996	0.05657	0.00000	0.00000	0.00000

Condition **LC87=1.2D-WL150+1.6LLa4**

1	-1.78491	1.26185	-1.57318	0.00000	0.00000	0.00000
3	1.70501	0.98843	1.62323	0.00000	0.00000	0.00000
52	0.00353	0.00968	0.02631	0.00000	0.00000	0.00000
SUM	-0.07637	2.25996	0.07637	0.00000	0.00000	0.00000

Envelope for nodal reactions

Note.- **Ic** is the controlling load condition



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D+1.6LL1
LC38=1.2D+1.6LL2
LC39=1.2D+1.6LL3
LC40=1.2D+WL0+1.6LLa1
LC41=1.2D+WL30+1.6LLa1
LC42=1.2D+WL60+1.6LLa1
LC43=1.2D+WL90+1.6LLa1
LC44=1.2D+WL120+1.6LLa1
LC45=1.2D+WL150+1.6LLa1
LC46=1.2D-WL0+1.6LLa1
LC47=1.2D-WL30+1.6LLa1
LC48=1.2D-WL60+1.6LLa1
LC49=1.2D-WL90+1.6LLa1
LC50=1.2D-WL120+1.6LLa1
LC51=1.2D-WL150+1.6LLa1
LC52=1.2D+WL0+1.6LLa2
LC53=1.2D+WL30+1.6LLa2
LC54=1.2D+WL60+1.6LLa2
LC55=1.2D+WL90+1.6LLa2
LC56=1.2D+WL120+1.6LLa2
LC57=1.2D+WL150+1.6LLa2
LC58=1.2D-WL0+1.6LLa2

LC59=1.2D-WL30+1.6LLa2
LC60=1.2D-WL60+1.6LLa2
LC61=1.2D-WL90+1.6LLa2
LC62=1.2D-WL120+1.6LLa2
LC63=1.2D-WL150+1.6LLa2
LC64=1.2D+WL0+1.6LLa3
LC65=1.2D+WL30+1.6LLa3
LC66=1.2D+WL60+1.6LLa3
LC67=1.2D+WL90+1.6LLa3
LC68=1.2D+WL120+1.6LLa3
LC69=1.2D+WL150+1.6LLa3
LC70=1.2D-WL0+1.6LLa3
LC71=1.2D-WL30+1.6LLa3
LC72=1.2D-WL60+1.6LLa3
LC73=1.2D-WL90+1.6LLa3
LC74=1.2D-WL120+1.6LLa3
LC75=1.2D-WL150+1.6LLa3
LC76=1.2D+WL0+1.6LLa4
LC77=1.2D+WL30+1.6LLa4
LC78=1.2D+WL60+1.6LLa4
LC79=1.2D+WL90+1.6LLa4
LC80=1.2D+WL120+1.6LLa4
LC81=1.2D+WL150+1.6LLa4
LC82=1.2D-WL0+1.6LLa4
LC83=1.2D-WL30+1.6LLa4
LC84=1.2D-WL60+1.6LLa4
LC85=1.2D-WL90+1.6LLa4
LC86=1.2D-WL120+1.6LLa4
LC87=1.2D-WL150+1.6LLa4

		Forces						Moments					
Node		**Fx** [Kip]	**lc**	**Fy** [Kip]	**lc**	**Fz** [Kip]	**lc**	**Mx** [Kip*ft]	**lc**	**My** [Kip*ft]	**lc**	**Mz** [Kip*ft]	**lc**
1	Max	1.549	LC65	1.421	LC32	1.349	LC14	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-1.792	LC83	0.576	LC15	-2.932	LC8	0.00000	LC1	0.00000	LC1	0.00000	LC1
3	Max	1.777	LC81	1.134	LC26	2.173	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-1.535	LC75	0.469	LC21	-0.583	LC19	0.00000	LC1	0.00000	LC1	0.00000	LC1
52	Max	0.144	LC9	0.023	LC26	1.238	LC9	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.140	LC3	0.007	LC22	-1.238	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1

Connection Check

Date: 4/25/2023
Project Name: TORRINGTON HIGHLAND AVE
Project No.: CT1253
Designed By: JC **Checked By:** MSC

CHECK CONNECTION CAPACITY (Worst Case)

Reference: AISC Steel Construction Manual 14th Edition (ASD)

Bolt Type = A36 5/8" Threaded Rod

Allowable Tensile Load =

F_{Tall} = 6673 lbs.

Allowable Shear Load =

F_{Vall} = 4004 lbs.

TENSILE FORCES

Reaction **F =** 2932 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 1792 lbs. (See Bentley Output)
Reactions in Y direction: 1421 lbs. (See Bentley Output)

Resultant: 2287 lbs.

No. of Supports = 1
No. of Bolts / Support = 4

Tension Design Load /Bolts =

f_t = 733.00 lbs. < 6673 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

f_v = 571.76 lbs. < 4004 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.110	+	0.143	=	0.253	<	1.0	**Therefore, OK !**

Kristina Robinson

From: TrackingUpdates@fedex.com
Sent: Thursday, August 3, 2023 10:05 AM
To: Kristina Robinson
Subject: FedEx Shipment 772912693310: Your package has been delivered

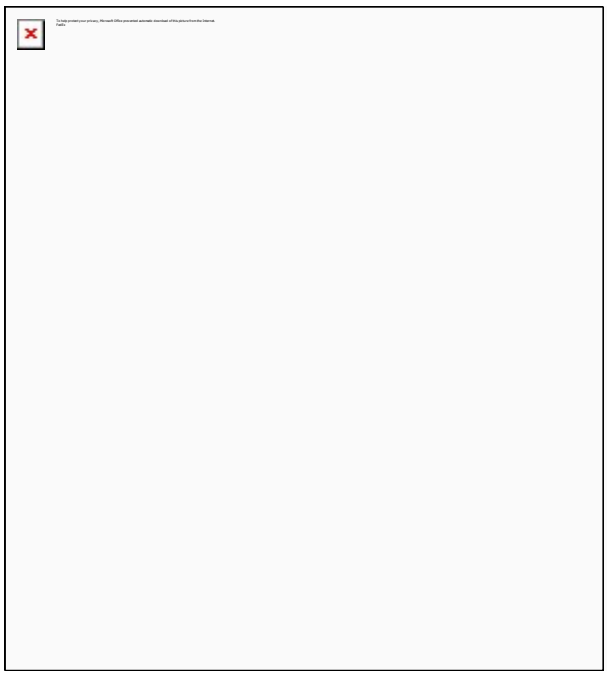
Hi. Your package was delivered Thu, 08/03/2023 at 9:54am.

Delivered to 140 MAIN ST, TORRINGTON, CT 06790
Received by E.BOWE

OBTAIN PROOF OF DELIVERY

How was your delivery ?

TRACKING NUMBER	772912693310
FROM	Smartlink LLC 85 Rangeway Road Building 3 Suite 102 NORTH BILLERICA, MA, US, 01862
TO	City of Torrington ATTN: Mayor Elinor Carbone 140 Main Street TORRINGTON, CT, US, 06790
REFERENCE	CTL01253 - Torrington
SHIPPER REFERENCE	CTL01253 - Torrington
SHIP DATE	Tue 8/01/2023 05:51 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	NORTH BILLERICA, MA, US, 01862
DESTINATION	TORRINGTON, CT, US, 06790
NUMBER OF PIECES	1
SERVICE TYPE	FedEx 2Day



Kristina Robinson

From: TrackingUpdates@fedex.com
Sent: Thursday, August 3, 2023 10:09 AM
To: Kristina Robinson
Subject: FedEx Shipment 772912679084: Your package has been delivered

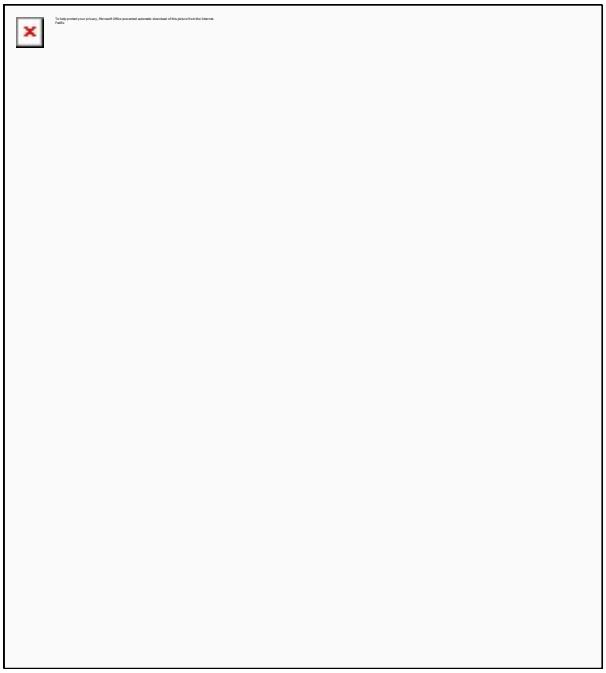
Hi. Your package was delivered Thu, 08/03/2023 at 9:54am.

Delivered to 140 MAIN ST, TORRINGTON, CT 06790
Received by E.BOWE

OBTAIN PROOF OF DELIVERY

How was your delivery ?

TRACKING NUMBER	772912679084
FROM	Smartlink LLC 85 Rangeway Road Building 3 Suite 102 NORTH BILLERICA, MA, US, 01862
TO	City of Torrington ATTN: Building Department Kevin G 140 Main Street TORRINGTON, CT, US, 06790
REFERENCE	CTL01253 - Torrington
SHIPPER REFERENCE	CTL01253 - Torrington
SHIP DATE	Tue 8/01/2023 05:51 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	NORTH BILLERICA, MA, US, 01862
DESTINATION	TORRINGTON, CT, US, 06790
NUMBER OF PIECES	1
SERVICE TYPE	FedEx 2Day



Kristina Robinson

From: TrackingUpdates@fedex.com
Sent: Thursday, August 3, 2023 10:05 AM
To: Kristina Robinson
Subject: FedEx Shipment 772912644105: Your package has been delivered

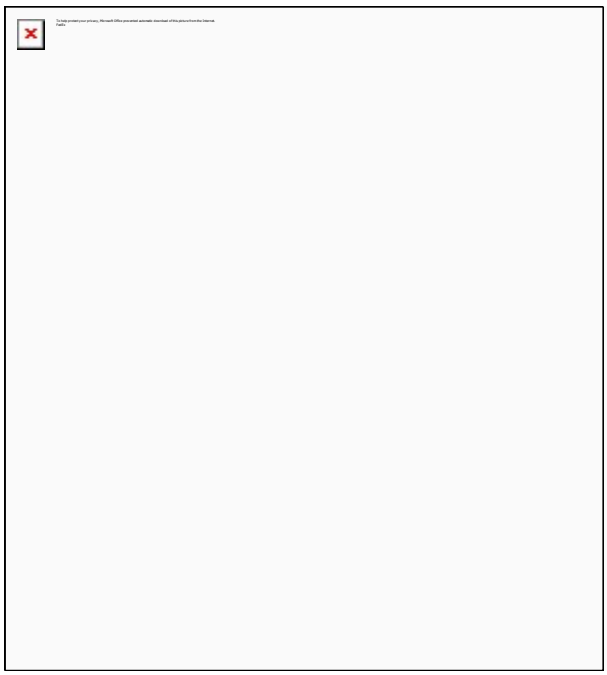
Hi. Your package was delivered Thu, 08/03/2023 at 9:53am.

Delivered to 8051 CONGRESS AVE, BOCA RATON, FL 33487
Received by T.BRICENO

OBTAIN PROOF OF DELIVERY

How was your delivery ?

TRACKING NUMBER	772912644105
FROM	Smartlink LLC 85 Rangeway Road Building 3 Suite 102 NORTH BILLERICA, MA, US, 01862
TO	SBA Site Management ATTN: TAX DEPT 02303A 8051 Congress Ave BOCA RATON, FL, US, 33487
REFERENCE	CTL01253 - Torrington
SHIPPER REFERENCE	CTL01253 - Torrington
SHIP DATE	Tue 8/01/2023 05:51 PM
DELIVERED TO	Mailroom
PACKAGING TYPE	FedEx Envelope
ORIGIN	NORTH BILLERICA, MA, US, 01862
DESTINATION	BOCA RATON, FL, US, 33487
NUMBER OF PIECES	1
SERVICE TYPE	FedEx 2Day



PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING GUYED TOWER:
- INSTALL AT&T 14'–6" SECTOR FRAME (SITEPRO1 PART# VFA14–H10–2120) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- INSTALL AT&T LTE ANTENNAS (QD6616–7) @ POS. 2 (TYP. 1 PER SECTOR, TOTAL OF 3).
- INSTALL ANTENNA (AIR6419 B77G) @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL ANTENNA (AIR6449 B77D) @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- ADD (6) Y CABLES FOR DUAL BAND RADIOS.
- RELOCATED EXISTING AT&T ANTENNA (DMP65R–BU6DA) @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED TO PROPOSED MOUNT)
- RELOCATED EXISTING AT&T RRUS 4478 B14 (700) @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED TO PROPOSED MOUNT & RECONNECTED TO POS. 2)
- RELOCATED EXISTING AT&T RRUS–32 B30 (WCS) @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED TO PROPOSED MOUNT & RECONNECTED TO POS. 4)
- RELOCATED EXISTING AT&T RRUS 4449 B5/B12 (700/850) @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED TO PROPOSED MOUNT)
- RELOCATED EXISTING AT&T RRUS 8843 B2/B66A (PCS/AWS) @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED TO PROPOSED MOUNT & RECONNECTED TO POS. 2)
- RELOCATED EXISTING AT&T SURGE ARRESTOR DC6–48–60–18–8F (GAMMA SECTOR, TOTAL OF 1), DC6–48–60–18–8C–EV (ALPHA & BETA SECTORS, TOTAL OF 2) (RELOCATED TO PROPOSED MOUNT)

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- ADD (1) NEW 6651+XCEDE CABLE IN EXISTING LTE FIF RACK FINAL=1x5216/1xXMU/1x6630+IDLe/1x6651+XCede CABLE
- INSTALL (5) NEW 190AH BATTERY STRINGS.
- INSTALL (3) NEW –48V RECTIFIERS.

ITEMS TO BE REMOVED:
- DECOMMISSION EXISTING AT&T SECTOR FRAMES (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- DECOMMISSION EXISTING AT&T ANTENNAS (7770) (TYP. 1 PER SECTOR, TOTAL OF 3).
- DECOMMISSION EXISTING AT&T ANTENNAS (AM–X–CD–16–65–00T–RET) (TYP. 1 PER ALPHA & GAMMA SECTORS, TOTAL OF 2).
- DECOMMISSION EXISTING AT&T ANTENNA (800–10764) (TOTAL OF 1 FOR BETA SECTOR).
- DECOMMISSION EXISTING AT&T ANTENNAS (EPBQ–654L8H6–L2) (TYP. 1 PER SECTOR, TOTAL OF 3).
- DECOMMISSION EXISTING AT&T TMAS LGP21401 (TYP. 2 PER SECTOR, TOTAL OF 6).
- DECOMMISSION EXISTING AT&T RRUW (TYP. 1 PER SECTOR, TOTAL OF 3).
- DECOMMISSION EXISTING AT&T (6) 1–5/8" COAX CABLES.
- EXISTING (4) STRINGS OF 190AH BATTERIES

ITEMS TO REMAIN:
- (3) ANTENNAS, (15) RRU'S, (6) 1–5/8" COAX CABLES, (6) DC POWER & (2) FIBER.

RFDS:	FINAL APPROVED V6 RFDS 05/08/2023
SITE ADDRESS:	1210 HIGHLAND AVENUE TORRINGTON, CT 06790
LATITUDE:	41.8026169° N, 41° 48' 9.42" N
LONGITUDE:	–73.1633961° W, 73° 9' 48.22" W
TYPE OF SITE:	GUYED TOWER / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	260'–0"±
RAD CENTER:	245'–0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T–1	TITLE SHEET	3
GN–1	GENERAL NOTES	3
A–1	COMPOUND & EQUIPMENT PLAN	3
A–2	ANTENNA LAYOUTS & ELEVATION	3
A–3	DETAILS	3
A–4	DETAILS	3
G–1	GROUNDING DETAILS	3
RF–1	RF PLUMBING DIAGRAM	3

NOTE TO GENERAL CONTRACTOR: (PRIOR TO CONSTRUCTION COMPLETION)
- TEP NORTHEAST (TEP OPCO, LLC.) TO PERFORM POST/CLIMB AND INSPECTION TO CONFIRM PROPOSED INSTALLATION COMPLIES WITH THE RECORD STAMPED DRAWINGS AND STRUCTURAL REPORTS PRIOR TO SUBMITTING FCCA (FINAL CONSTRUCTION CONTROL AFFIDAVIT). GC IS RESPONSIBLE FOR COORDINATING INSPECTIONS WITH TEP NORTHEAST (TEP OPCO, LLC.) PRIOR TO CONSTRUCTION BEING COMPLETED.

SITE NUMBER: CTL01253

SITE NAME: TORRINGTON HIGHLAND AVE

FA CODE: 10071282

PACE ID: MRCTB063159, MRCTB063166, MRCTB063118, MRCTB062969, MRCTB063161

PROJECT: 5G NR ACTIVATION, BBU RECONFIGURATION WITH NEW IDS, 5G NR RADIO, 5G NR 1SR CBAND, CELL SITE RF MODIFICATIONS, 2023 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

HEAD SOUTH TOWARD ENTERPRISE DR, TURN LEFT ONTO ENTERPRISE DR, TURN LEFT ONTO CAPITAL BLVD, USE THE LEFT 2 LANES TO TURN LEFT ONTO STATE HWY 411, TURN LEFT TO MERGE WITH I–91 S, MERGE WITH I–91 S, TAKE EXIT 18 FOR I–691 W TOWARD MERIDEN/WATERBURY, CONTINUE ONTO I–691 W, USE THE LEFT 2 LANES TO TAKE EXIT 1 FOR I–84 W TOWARD WATERBURY/DANBURY, MERGE WITH I–84, TAKE EXIT 20 TO MERGE WITH CT–8 N TOWARD TORRINGTON, CONTINUE ONTO CT–8 N/US–6 E, CONTINUE ONTO CT–8 N, TAKE EXIT 44 FOR US–202 TOWARD DOWNTOWN TORRINGTON, TURN LEFT ONTO US–202 W/E MAIN ST, USE THE 2ND FROM THE RIGHT LANE TO TURN RIGHT ONTO MAIN ST, TURN LEFT ONTO WATER ST, TURN LEFT ONTO CHURCH ST, TURN LEFT ONTO HIGHLAND AVE, TURN RIGHT ONTO WESTSIDE RD, TURN RIGHT, TORRINGTON, CT 06790.

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

CALL
BEFORE YOU DIG
CALL TOLL FREE 1–800–922–4455
OR CALL 811

UNDERGROUND SERVICE ALERT

TEP NORTHEAST
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TEL: (978) 557-5553

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: VS

STATE OF CONNECTICUT · DANIEL P. HAMM · 26,241 · LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
(2023 UPGRADE)

SITE NUMBER	DRAWING NUMBER	REV
CTL01253	T–1	3

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

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

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

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

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

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

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

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – SMARTLINK
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. **APPLICABLE BUILDING CODES:**
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

    BUILDING CODE: IBC 2021 WITH 2022 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2020 NATIONAL ELECTRICAL CODE (NFPA 70-2020)

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-H, STRUCTURAL STANDARDS FOR STEEL

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE ANTENNA	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

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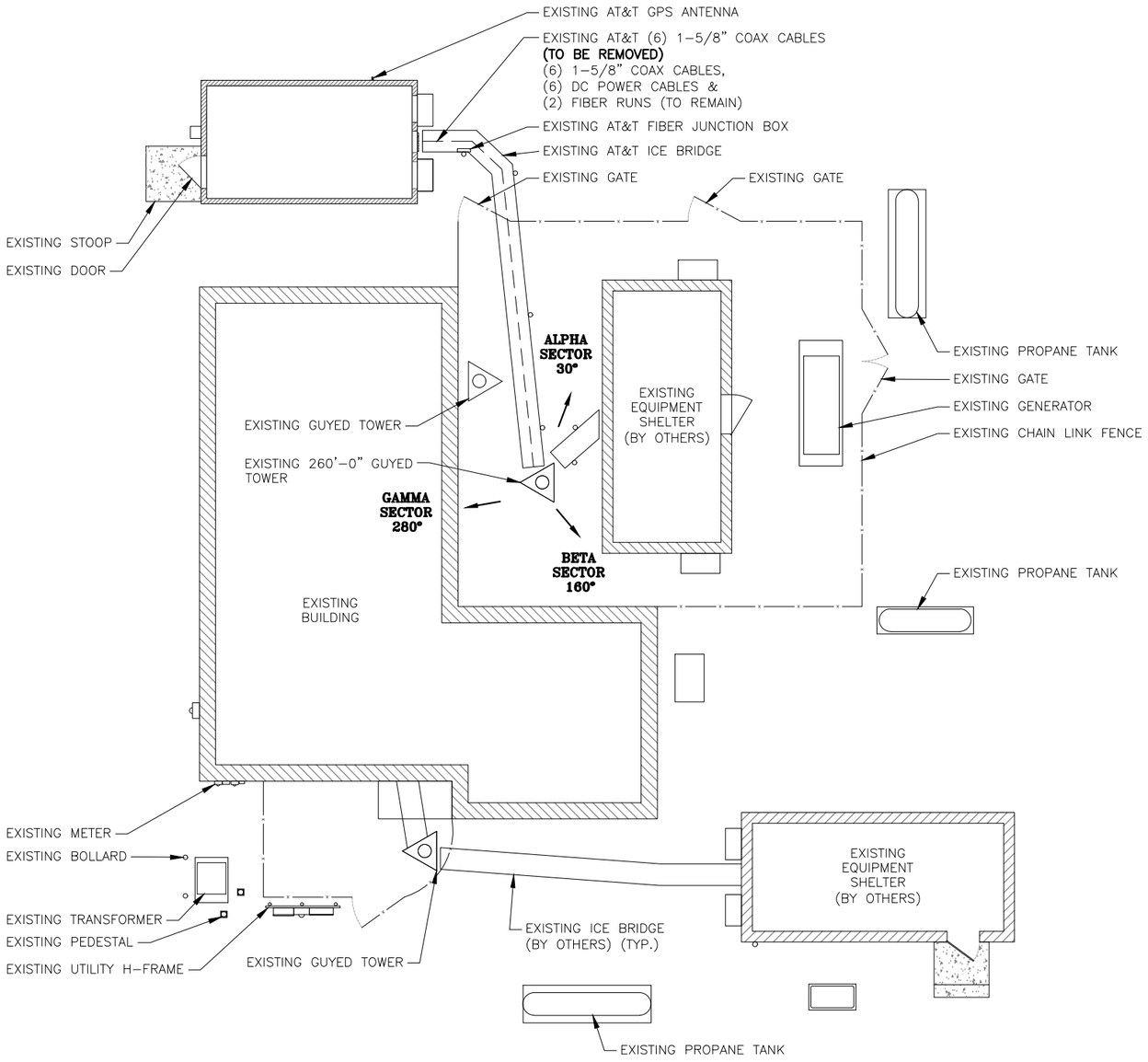
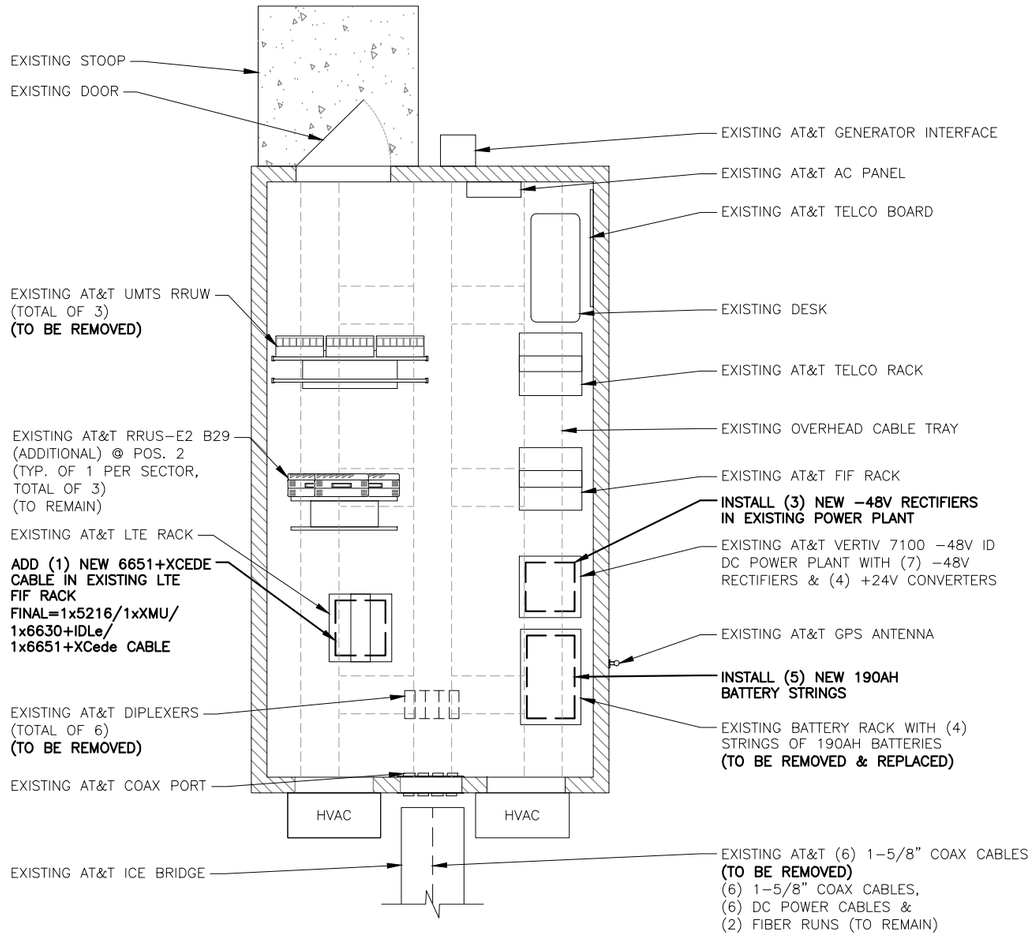
GENERAL NOTES
(2023 UPGRADE)

SITE NUMBER	DRAWING NUMBER	REV
CTL01253	GN-1	3





NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

NOTE:

REFER TO FINAL APPROVED V6 RFDS 05/08/2023

NOTE:

REFER TO MOUNT ANALYSIS BY: TOWER ENGINEERING PROFESSIONALS, DATED: JUNE 20, 2023 (REV.3), FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

COMPOUND PLAN (1 / A-1)
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-0"

EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1' 2'-0" 4'-0" 8'-0"

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DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

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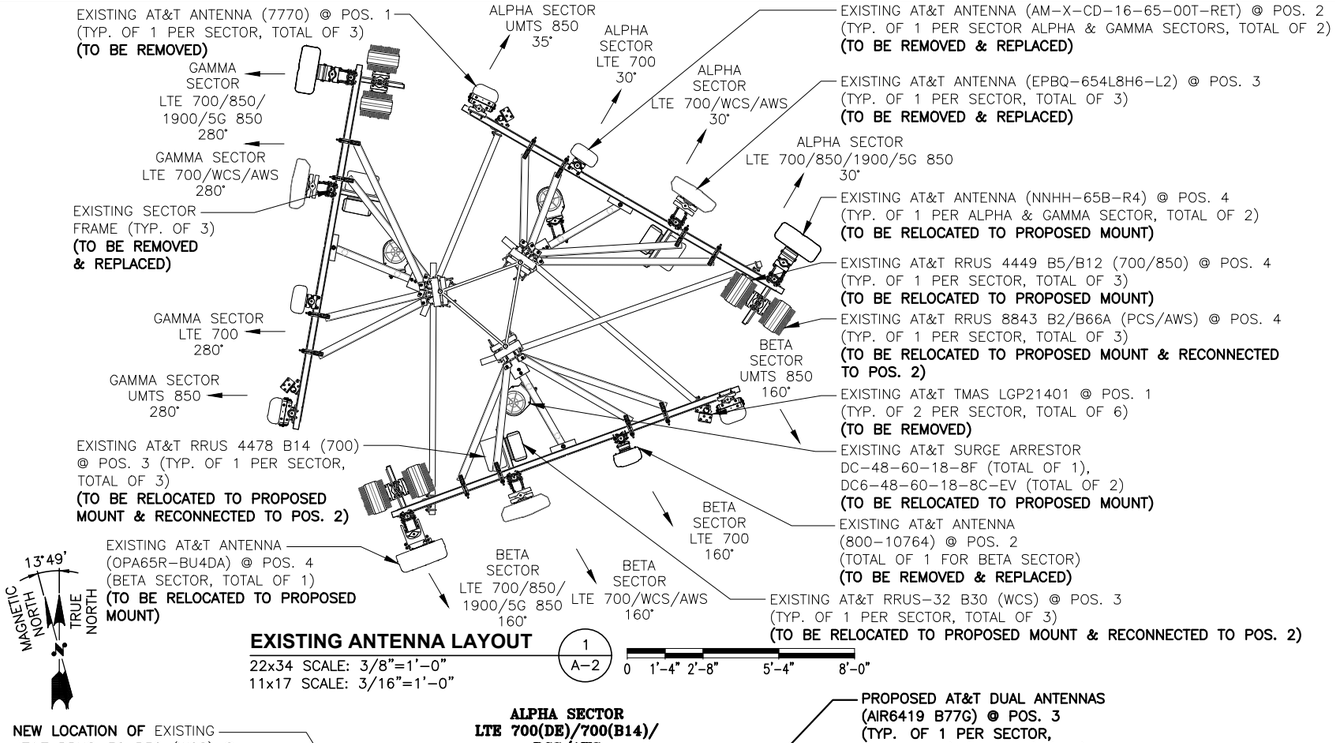
COMPOUND & EQUIPMENT PLANS
(2023 UPGRADE)

SITE NUMBER	DRAWING NUMBER	REV
CTL01253	A-1	3

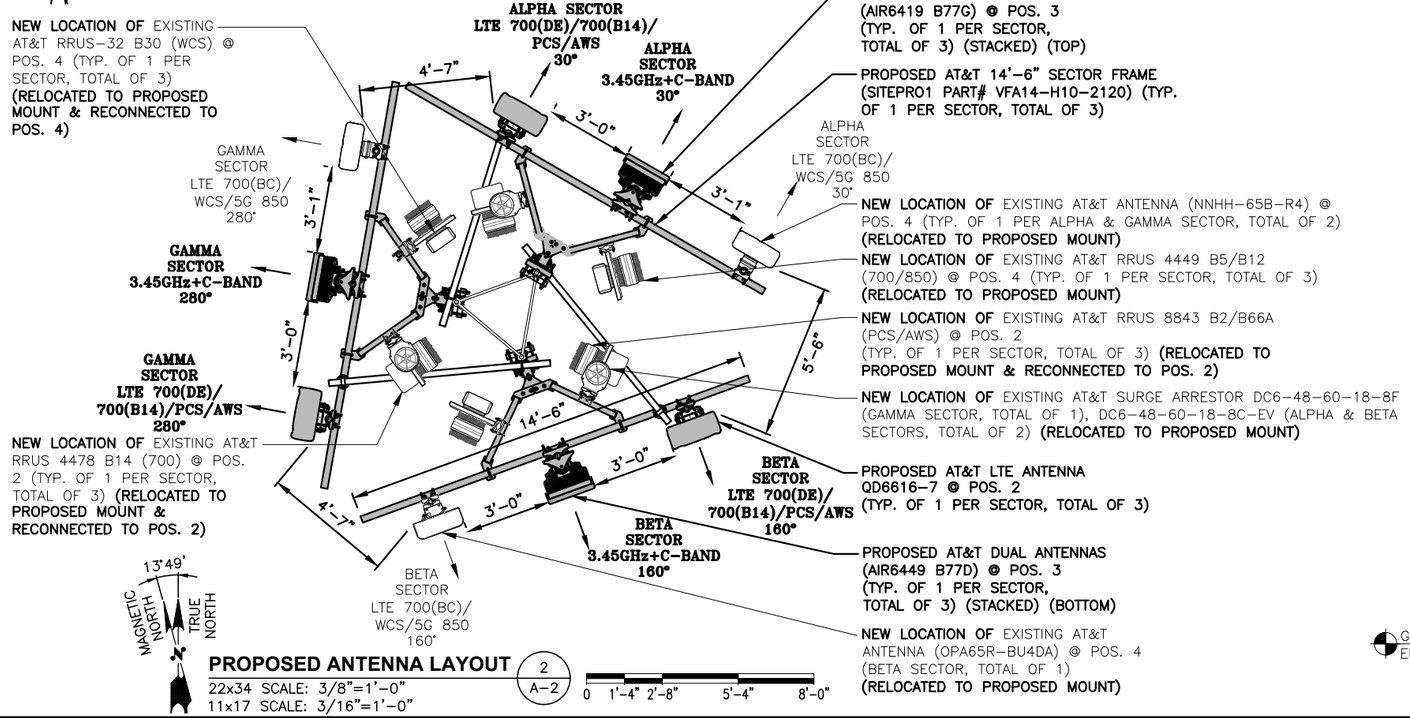


EXISTING ANTENNA LAYOUT

22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"

1 / A-2

0 1'-4" 2'-8" 5'-4" 8'-0"

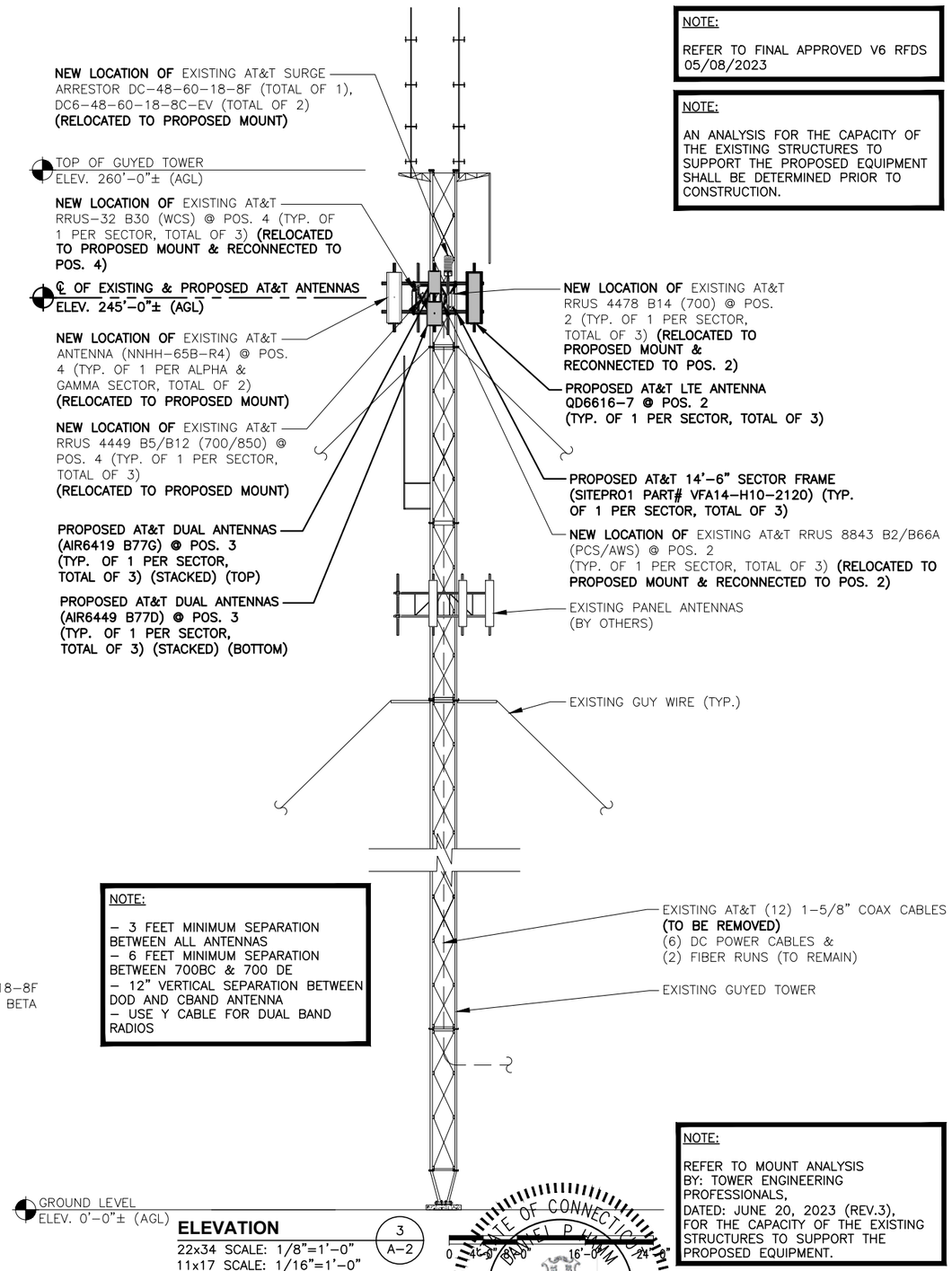


PROPOSED ANTENNA LAYOUT

22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"

2 / A-2

0 1'-4" 2'-8" 5'-4" 8'-0"



NOTE:

– 3 FEET MINIMUM SEPARATION BETWEEN ALL ANTENNAS
– 6 FEET MINIMUM SEPARATION BETWEEN 700BC & 700 DE
– 12" VERTICAL SEPARATION BETWEEN DOD AND CBAND ANTENNA
– USE Y CABLE FOR DUAL BAND RADIOS

ELEVATION

22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

3 / A-2

0 4'-0" 8'-0" 16'-0" 24'-0"

NOTE:

REFER TO FINAL APPROVED V6 RFDS 05/08/2023

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

NOTE:

REFER TO MOUNT ANALYSIS BY: TOWER ENGINEERING PROFESSIONALS, DATED: JUNE 20, 2023 (REV.3), FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

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AT&T

ANTENNA LAYOUTS & ELEVATION
(2023 UPGRADE)

SITE NUMBER	DRAWING NUMBER	REV
CTL01253	A-2	3

ANTENNA SCHEDULE

FINAL APPROVED V6 RFDS 05/08/2023

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8C-EV
A2	**PROPOSED**	**LTE 700(DE)/700(B14) /PCS/AWS**	**QD6616-7**	**72"X22"X9.6"**	**245'-0"±**	**30°**	–	(E)(1)RRUS-4478 B14 (700) (E)(1)RRUS-8843 B2/B66A (PCS/AWS) (E)(1)RRUS-E2 B29 (ADDITIONAL)(GROUND)	– – –	(E)(2) DC POWER & (1) FIBER (290'-0"±) **(P)(1)(Y-CABLE)**	
A3	**PROPOSED**	**3.45GHz C-BAND**	**AIR 6419 B77G AIR 6449 B77D**	**31.1"X16.1X7.3" 30.6"X15.9"X10.5"**	**245'-0"±**	**30°**	–	–	–	–	
A4	EXISTING	LTE 700(BC)/ WCS/5G 850	NNHH-65B-R4	72.0"X19.6"X7.8"	245'-0"±	30°	–	(E)(1)RRUS-32 B30 (WCS) (E)(1)RRUS-4449 B5/B12 (850/700)	– –	**(P)(1)(Y-CABLE)**	
B1	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8C-EV
B2	**PROPOSED**	**LTE 700(DE)/700(B14) /PCS/AWS**	**QD6616-7**	**72"X22"X9.6"**	**245'-0"±**	**160°**	–	(E)(1)RRUS-4478 B14 (700) (E)(1)RRUS-8843 B2/B66A (PCS/AWS) (E)(1)RRUS-E2 B29 (ADDITIONAL)(GROUND)	– – –	(E)(2) DC POWER & (1) FIBER (290'-0"±) **(P)(1)(Y-CABLE)**	
B3	**PROPOSED**	**3.45GHz C-BAND**	**AIR 6419 B77G AIR 6449 B77D**	**31.1"X16.1X7.3" 30.6"X15.9"X10.5"**	**245'-0"±**	**160°**	–	–	–	–	
B4	EXISTING	LTE 700(BC)/ WCS/5G 850	OPA65R-BU4DA	48"X20.7"X7.7"	245'-0"±	160°	–	(E)(1)RRUS-32 B30 (WCS) (E)(1)RRUS-4449 B5/B12 (850/700)	– –	**(P)(1)(Y-CABLE)**	
C1	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8F
C2	**PROPOSED**	**LTE 700(DE)/700(B14) /PCS/AWS**	**QD6616-7**	**72"X22"X9.6"**	**245'-0"±**	**280°**	–	(E)(1)RRUS-4478 B14 (700) (E)(1)RRUS-8843 B2/B66A (PCS/AWS) (E)(1)RRUS-E2 B29 (ADDITIONAL)(GROUND)	– – –	(E)(2) DC POWER (290'-0"±) **(P)(1)(Y-CABLE)**	
C3	**PROPOSED**	**3.45GHz C-BAND**	**AIR 6419 B77G AIR 6449 B77D**	**31.1"X16.1X7.3" 30.6"X15.9"X10.5"**	**245'-0"±**	**280°**	–	–	–	–	
C4	EXISTING	LTE 700(BC)/ WCS/5G 850	NNHH-65B-R4	72.0"X19.6"X7.8"	245'-0"±	280°	–	(E)(1)RRUS-32 B30 (WCS) (E)(1)RRUS-4449 B5/B12 (850/700)	– –	**(P)(1)(Y-CABLE)**	

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

NOTE:

REFER TO FINAL APPROVED V6 RFDS 05/08/2023

NOTE:

REFER TO MOUNT ANALYSIS BY: TOWER ENGINEERING PROFESSIONALS, DATED: JUNE 20, 2023 (REV.3), FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

RRU CHART

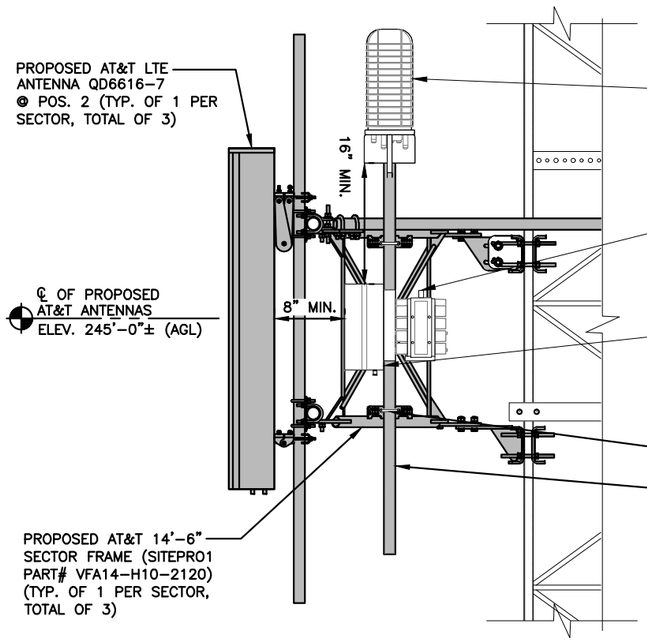
QUANTITY	MODEL	SIZE (L x W x D)
E(3)	4449 B5/B12 (850/700)	17.9"x13.2"x10.4"
E(3)	8843 B2/B66A (PCS)	14.9"x13.2"x10.9"
E(3)	4478 B14 (700)	18.1"x13.4"x8.3"
E(3)	RRUS-32 B30 (WCS)	27.2"X12.1"X7.0"
E(3)(G)	RRUS-E2 B29 (ADDITIONAL)	20.4"X18.5"X7.5"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

FINAL ANTENNA CONFIGURATION

SCALE: N.T.S

(1 / A-3)



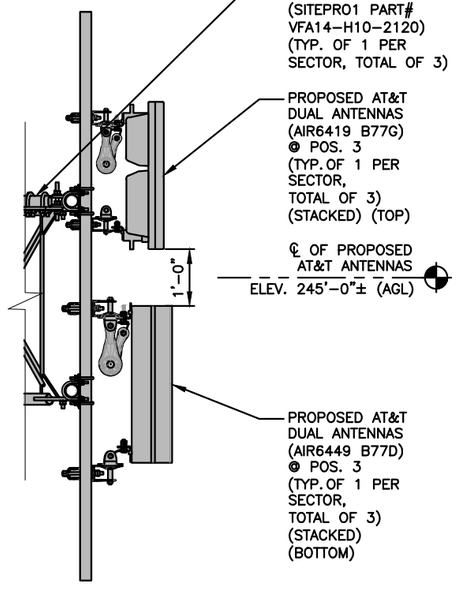
NOTE:

GENERAL CONTRACTOR TO CONFIRM PRIOR TO CONSTRUCTION THAT PROPOSED VFA14-H10-2120 MOUNT CONNECTION TO THE TOWER WILL ACTUALLY FIT BETWEEN THE TOWER DIAGONALS AND HORIZONTALS

PROPOSED ANTENNA @ POS. 2

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
0 8" 1'-4" 2'-8" 4'-0"

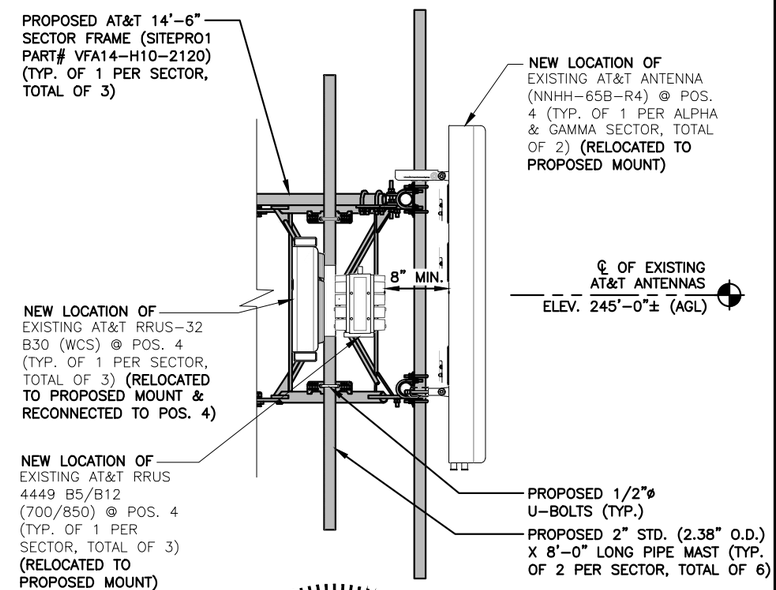
(2 / A-3)



PROPOSED ANTENNA @ POS. 3

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
0 8" 1'-4" 2'-8" 4'-0"

(3 / A-3)



EXISTING ANTENNA @ POS. 4 (ALPHA & GAMMA)

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
0 8" 1'-4" 2'-8" 4'-0"

(4 / A-3)

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SITE NUMBER: CTL01253
SITE NAME: TORRINGTON HIGHLAND AVE
SBA SITE ID: CT02303

1210 HIGHLAND AVENUE
TORRINGTON, CT 06790
LITCHFIELD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
3	06/21/23	ISSUED FOR CONSTRUCTION	SG	MKT	DPH
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0	08/30/22	ISSUED FOR REVIEW	JS	MKT	DPH

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: VS

STATE OF CONNECTICUT DANIEL P. HAMM No. 24178 LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
(2023 UPGRADE)

SITE NUMBER	DRAWING NUMBER	REV
CTL01253	A-3	3

NOTE:

REFER TO FINAL APPROVED V6 RFDS 05/08/2023

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

NOTE:

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DATED: JUNE 20, 2023 (REV.3),
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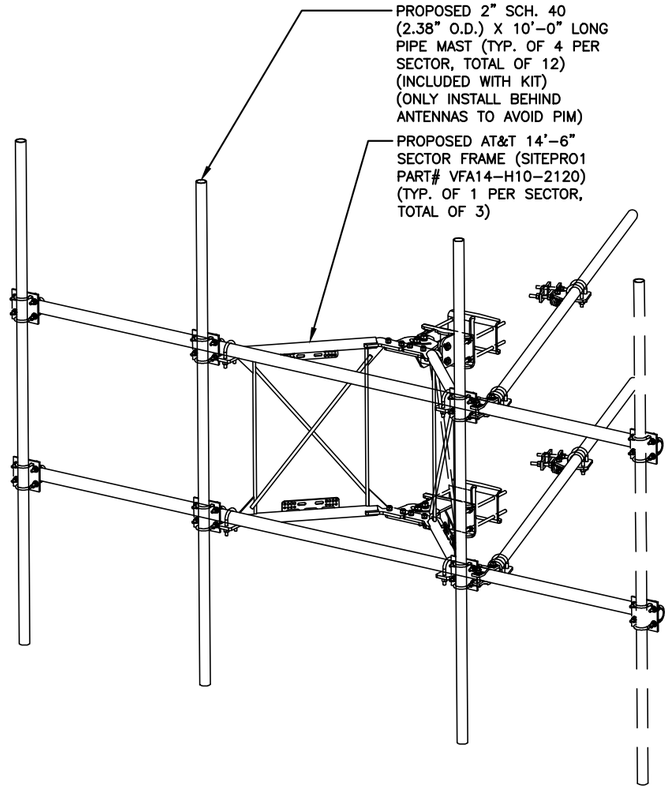

HEAVY DUTY V-FRAME DETAIL 1 / A-4
SCALE: N.T.S

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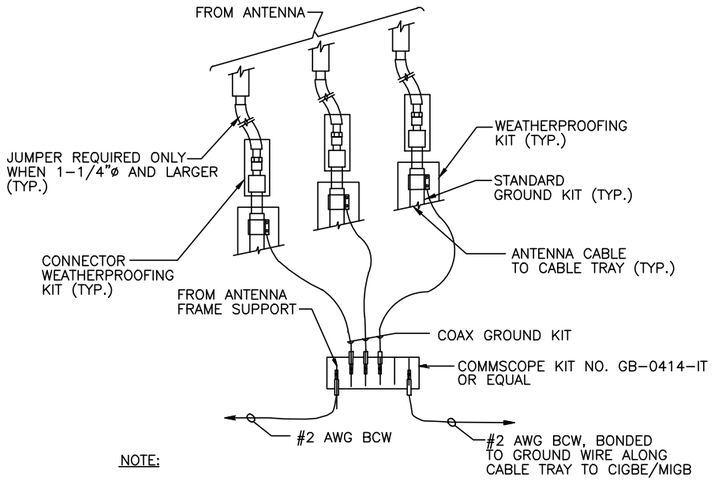
CTL01253	A-4	3



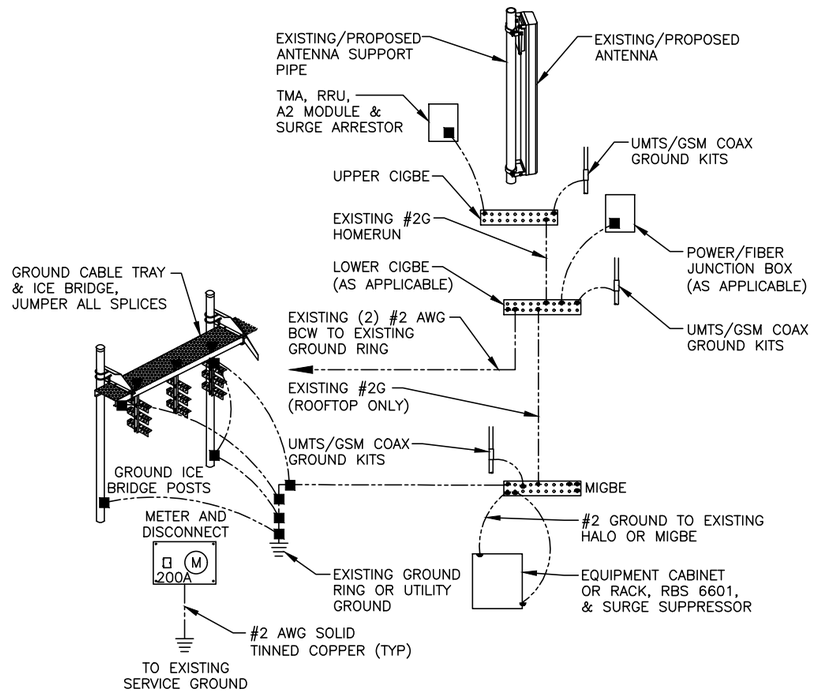
NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

1 / G-1



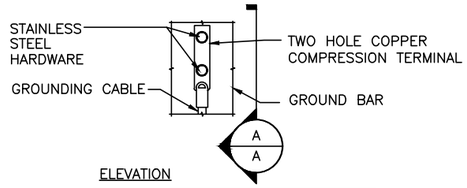
GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1

AT&T GROUNDING STANDARDS TO BE FOLLOWED:

ATT-TP-76416
ATT-TP-76300
ATT-CEM-18002
ATT-002-290-531
ATT-002-290-701
ATT-CEM-23001



NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G-1

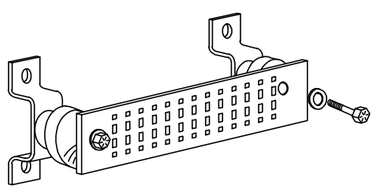
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2 AWG)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2 AWG)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2 AWG)
+24V POWER SUPPLY RETURN BAR (#2 AWG)
-48V POWER SUPPLY RETURN BAR (#2 AWG)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2 AWG)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2 AWG)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2 AWG)
BUILDING STEEL (IF AVAILABLE) (#2 AWG)



GROUND BAR - DETAIL (AS REQUIRED)

SCALE: N.T.S

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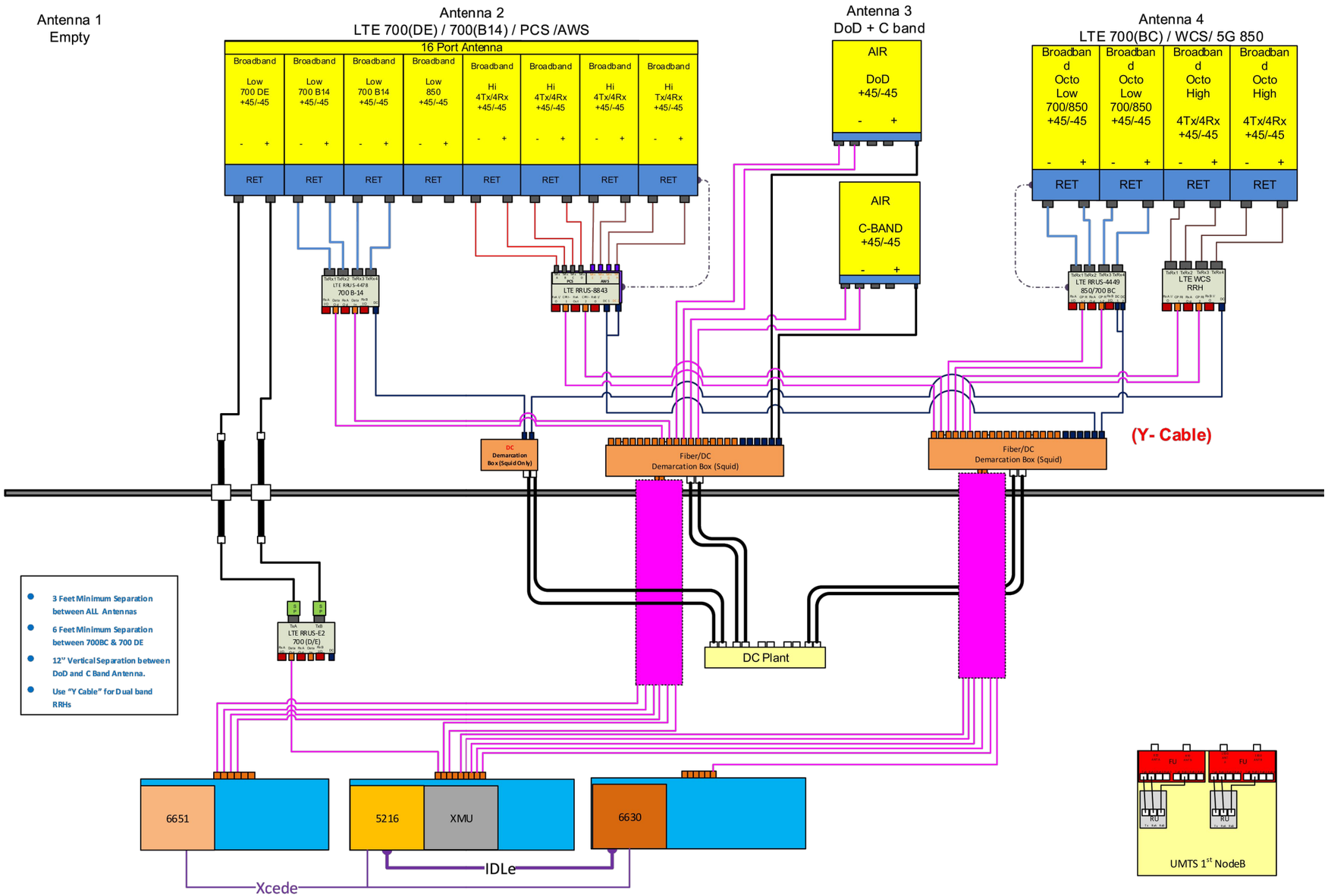

RF PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

NOTE:

REFER TO FINAL APPROVED V6 RFDS 05/08/2023

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RF PLUMBING DIAGRAM
(2023 UPGRADE)

SITE NUMBER	DRAWING NUMBER	REV
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