

March 24, 2023

*Via Electronic Mail*

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

Re: **Notice of Exempt Modification – Facility Modification  
1 Westerberg Drive, Farmington, Connecticut**

Dear Attorney Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains an existing wireless telecommunications facility at the above-referenced property address (the “Property”). The facility consists of antennas inside the flagpole tower and related equipment on the ground, near the base of the tower. The original tower was approved by the Siting Council (the “Council”) in June of 2004 (Docket No. 282). Cellco’s shared use of the tower was approved by the Siting Council in April of 2015 (PE1133-VER-20150319). A copy of the Docket No 282 Decision and Order and Cellco’s eligible facilities request approval are included in Attachment 1.

Cellco now intends to modify its facility by removing its three (3) antennas and installing three (3) new NHHSS-65B-R2BT4 antennas inside the flagpole tower. A set of project plans showing Cellco’s proposed facility modifications and the new antenna specifications are included in Attachment 2.

Please accept this letter 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). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Farmington’s Chief Elected Official and Land Use Officer. The Town of Farmington is the owner of the Property.

Melanie A. Bachman, Esq.  
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Page 2

The planned modifications to the 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. Cellco's new antennas will be installed inside the flagpole tower.
2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The installation of Cellco's new antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. Included in Attachment 3 is a Calculated Radio Frequency Emissions Report demonstrating that the proposed modified facility will comply with the FCC safety standards. The modified facility will be capable of providing Cellco's 5G wireless service.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. According to the attached Structural Analysis ("SA") and Mount Analysis ("MA"), the existing tower, tower foundation and antenna mounts can support Cellco's proposed modifications. Copies of the SA and MA are included in Attachment 4.

A copy of the parcel map and Property owner information is included in Attachment 5. A Certificate of Mailing verifying that this filing was sent to municipal officials and the property owner is included in Attachment 6.

For the foregoing reasons, Cellco 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).

Melanie A. Bachman, Esq.  
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Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth C. Baldwin". The signature is fluid and cursive, with a long horizontal stroke at the end.

Kenneth C. Baldwin

Enclosures

Copy to:

Kathleen Blonski, Farmington Town Manager  
Shannon Rutherford, P.E., Town Planner  
Aleksy Tyurin

# **ATTACHMENT 1**

<b>DOCKET NO. 282</b> – Sprint Spectrum, L.P. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility in Farmington, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		June 9, 2004

## Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Sprint Spectrum, L.P. for the construction, maintenance and operation of a wireless telecommunications facility at 1 Westerberg Drive, Farmington, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be designed as a flagpole and shall be constructed no taller than 156 feet above ground level to provide the proposed telecommunications services to both public and private entities.
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on all parties and intervenors, as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
  - a. a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment building, access road, utility line, and landscaping; and
    - b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.
4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.
7. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
8. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.
9. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved. Any request for extensions of the period shall be filed with the Council not later than sixty days prior to expiration date of the Certificate and shall be served on all parties and intervenors, as listed in the service list. Any proposed modifications to this Decision and Order shall likewise be so served.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the Hartford Courant and the Valley News.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

<p><b><u>Applicant</u></b></p> <p>Sprint Spectrum L.P. d/b/a Sprint PCS</p>	<p><b><u>Its Representative</u></b></p> <p>Thomas J. Regan Brown, Rudnick, Berlack, Israels, LLP City Place I 185 Asylum Avenue Hartford, CT 06103-3402 (860) 509-6500</p>
<p><b><u>Intervenor</u></b></p> <p>Omnipoint Facilities Network 2 L.L.C. ("T-Mobile")</p>	<p><b><u>Its Representative</u></b></p> <p>Stephen J. Humes LeBoeuf, Lamb, Greene &amp; MacRae, LLP Goodwin Square 225 Asylum Street Hartford, CT 06103</p>
<p><b><u>Intervenor</u></b></p> <p>Nextel Communications of the Mid-Atlantic, Inc. d/b/a Nextel Communications</p>	<p><b><u>Its Representative</u></b></p> <p>Julie Donaldson Kohler, Esq. Hurwitz &amp; Sagarin, LLC 147 N. Broad Street Milford, CT 06460 (203) 877-8000</p>



# STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: [siting.council@ct.gov](mailto:siting.council@ct.gov)

[www.ct.gov/csc](http://www.ct.gov/csc)

April 30, 2015

Kenneth C. Baldwin, Esq.  
Robinson & Cole LLP  
280 Trumbull Street  
Hartford, CT 06103-3597

RE: **PE1133-VER-20150319** – Cellco Partnership d/b/a Verizon Wireless sub-petition for a declaratory ruling for approval of an eligible facility request for modifications to an existing telecommunications facility located at 1 Westerberg Drive, Farmington, Connecticut.

Dear Attorney Baldwin:

The Connecticut Siting Council (Council) hereby approves your Eligible Facilities Request (EFR) to install antennas and associated equipment at the above-referenced facility pursuant to the Federal Communications Commission Wireless Infrastructure Report and Order, with the following conditions:

- Install coax inside the pole's shaft in accordance with the structural analysis report prepared by FDH Engineering, dated November 7, 2014 and stamped by Bradley Newman;
- Within 45 days following completion of the equipment installation, Cellco shall provide documentation that its installation complied with the recommendations of the Structural Engineer;
- Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed; and
- Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by the Petitioner shall be removed within 60 days of the date the antenna ceased to function.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the EFR dated March 19, 2015.

Thank you for your attention and cooperation.

Very truly yours,

Melanie Bachman  
Acting Executive Director

MB/MP

c: Honorable Nancy Nickerson, Chairman Town Council, Town of Farmington  
Kathleen A. Eagen, Town Manager, Town of Farmington  
William Warner, Town Planner, Town of Farmington

# **ATTACHMENT 2**



# verizon

FARMINGTON 2 CT  
1 WESTERBERG DRIVE  
FARMINGTON, CT 06032

### GENERAL NOTES AND SPECIFICATIONS

- ALL WORK SHALL BE IN ACCORDANCE WITH THE BEST INTERNATIONAL STANDARDS AS APPROVED BY THE BEST CONTRACTOR APPROVAL, INCLUDING THE 11/18/2022 EDITION OF THE SPECIFICATIONS FOR STEEL REINFORCED CONCRETE, MASONRY, PAINTS, AND ALL OTHER MATERIALS AND FINISHES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS, LICENSES, AND APPROVALS FROM ALL APPLICABLE AGENCIES, AUTHORITIES, AND LOCAL GOVERNMENT.
- THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AND UTILITIES AT ALL TIMES. ANY OBSTRUCTION OF ACCESS SHALL BE REMOVED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITIES UNLESS OTHERWISE SPECIFIED.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS AND ORDINANCES.
- ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND PRESERVATION OF ALL EXISTING UTILITIES AND STRUCTURES.
- ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE APPROVED BY THE ARCHITECT AND ENGINEER.
- THE CONTRACTOR SHALL MAINTAIN A LOG OF ALL CONSTRUCTION ACTIVITIES AND SUBMIT IT TO THE ARCHITECT AND ENGINEER UPON REQUEST.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE DESIGN AND SPECIFICATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND PRESERVATION OF ALL EXISTING UTILITIES AND STRUCTURES.
- ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE APPROVED BY THE ARCHITECT AND ENGINEER.
- THE CONTRACTOR SHALL MAINTAIN A LOG OF ALL CONSTRUCTION ACTIVITIES AND SUBMIT IT TO THE ARCHITECT AND ENGINEER UPON REQUEST.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE DESIGN AND SPECIFICATIONS.

- ANY AND ALL PERMITS, LICENSING, AND INSURANCE REQUIREMENTS ARE TO BE OBTAINED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND PRESERVATION OF ALL EXISTING UTILITIES AND STRUCTURES.
- ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVISED BY THE CONTRACTOR TO MATCH THE MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND PRESERVATION OF ALL EXISTING UTILITIES AND STRUCTURES.
- ALL DAMAGE CAUSED BY ANY EXISTING STRUCTURES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL MAINTAIN AND PROTECT ALL EXISTING UTILITIES THROUGHOUT THE PROJECT.
- ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE DESIGN AND SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND PRESERVATION OF ALL EXISTING UTILITIES AND STRUCTURES.
- ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE APPROVED BY THE ARCHITECT AND ENGINEER. THE CONTRACTOR SHALL MAINTAIN A LOG OF ALL CONSTRUCTION ACTIVITIES AND SUBMIT IT TO THE ARCHITECT AND ENGINEER UPON REQUEST.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE DESIGN AND SPECIFICATIONS.
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- THE CONTRACTOR SHALL MAINTAIN A LOG OF ALL CONSTRUCTION ACTIVITIES AND SUBMIT IT TO THE ARCHITECT AND ENGINEER UPON REQUEST.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE DESIGN AND SPECIFICATIONS.

### SITE DIRECTIONS

- FROM:** 25 WALLINGTON CONCEPT
- TO:** WESTERBERG DRIVE, FARMINGTON, CT 06032
- TURN RIGHT TO GO TO WESTERBERG DRIVE, FARMINGTON, CT 06032.
  - TRAVEL WEST ON WESTERBERG DRIVE FOR APPROXIMATELY 0.10 MILES.
  - TURN LEFT AT THE INTERSECTION TO TAKE THE LEFT HAND TURN TO THE WESTERBERG DRIVE CONCEPT STRAIGHT INTO PROPERTY.
  - TRAVEL WEST ON WESTERBERG DRIVE FOR APPROXIMATELY 0.10 MILES.
  - USE THE LEFT HAND TURN TO TAKE THE LEFT HAND TURN TO WESTERBERG DRIVE.
  - USE THE RIGHT HAND TURN TO TAKE THE RIGHT HAND TURN TO WESTERBERG DRIVE.
  - TURN LEFT WITH BEARING 346.58 TO ARRIVE AT WESTERBERG DRIVE.
  - WESTERBERG WILL BE ON THE RIGHT.

### SITE DIRECTION

- FROM:** 25 WALLINGTON CONCEPT
- TO:** WESTERBERG DRIVE, FARMINGTON, CT 06032
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  - USE THE RIGHT HAND TURN TO TAKE THE RIGHT HAND TURN TO WESTERBERG DRIVE.
  - TURN LEFT WITH BEARING 346.58 TO ARRIVE AT WESTERBERG DRIVE.
  - WESTERBERG WILL BE ON THE RIGHT.

### VICINITY MAP



### PROJECT SUMMARY

- THE REQUESTED SERVICE TYPE OF WORK AT THE EXISTING UNARMED TELECOMMUNICATIONS FACILITY INCLUDES THE FOLLOWING:
  - A. ALL THE EXISTING STANDARD MONUMENTED, ANTI-TERRITORY:
    - REMOVE (2) MONUMENT - 20" DIA. x 20" HIGH MONUMENT.
    - REMOVE (2) CONCRETE - 12" x 12" x 12" CONCRETE.
    - INSTALL (2) CONCRETE - CONCRETE-12" x 12" x 12" CONCRETE.
    - INSTALL (18) 7/8" CORRAL PIPES.
  - B. ALL THE EXISTING CONDUIT, MANHOLE, AND DUCTS:
    - INSTALL (2) CONDUIT - 4" DIA. x 10' LONG.
    - INSTALL (2) MANHOLE - 48" DIA. x 24" HIGH.
    - INSTALL (2) DUCT - 4" DIA. x 10' LONG.
    - REMOVE (2) MANHOLE - 48" DIA. x 24" HIGH.
    - REMOVE (2) DUCT - 4" DIA. x 10' LONG.

- ### DESIGN BASIS:
- THE DESIGN BASIS FOR ALL WORK SHALL BE AS NOTED BY THE ARCHITECT AND ENGINEER.
- DESIGN BASIS:
    - NEW CONDUIT 1 BASED ON TABLE 10.4.4 OF THE 2021 NEC
    - NEW MANHOLE BASED ON TABLE 10.4.5 OF THE 2021 NEC
    - INSTALLATION, MATERIALS, AND METHODS SHALL BE AS NOTED BY THE ARCHITECT AND ENGINEER.
    - ALL WORK SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS AND ORDINANCES.

SHEET INDEX	
REV.	DESCRIPTION
1	TITLE SHEET
1	25 WESTERBERG DRIVE, FARMINGTON, CT 06032

PROJECT INFORMATION	
SITE NAME:	FARMINGTON 2 CT
BTE ADDRESS:	1 WESTERBERG DRIVE, FARMINGTON, CT 06032
OWNER:	CELLO COMMUNICATIONS, INC. 25 WALLINGTON DRIVE, 2ND FLOOR, WALLINGTON, CT 06032 (TEL) 484-1800 (CELL) 860-760-1800
CONTACT PERSON:	VERONICA WALKER (COMMUNICATIONS MANAGER)
DRAWN BY:	CELLO COMMUNICATIONS, INC. 25 WALLINGTON DRIVE, 2ND FLOOR, WALLINGTON, CT 06032 (TEL) 484-1800 (CELL) 860-760-1800
PROJECT COMMENTS:	(COMMUNICATIONS PROJECT, WESTERBERG DRIVE DATED 06/23/23)

DATE	REVISED	BY
06/23/23	1	VERONICA WALKER
06/23/23	1	VERONICA WALKER
06/23/23	1	VERONICA WALKER

T-1  
TITLE SHEET

CELLO COMMUNICATIONS, INC. 25 WALLINGTON DRIVE, 2ND FLOOR, WALLINGTON, CT 06032 (TEL) 484-1800 (CELL) 860-760-1800

VERONICA WALKER (COMMUNICATIONS MANAGER)

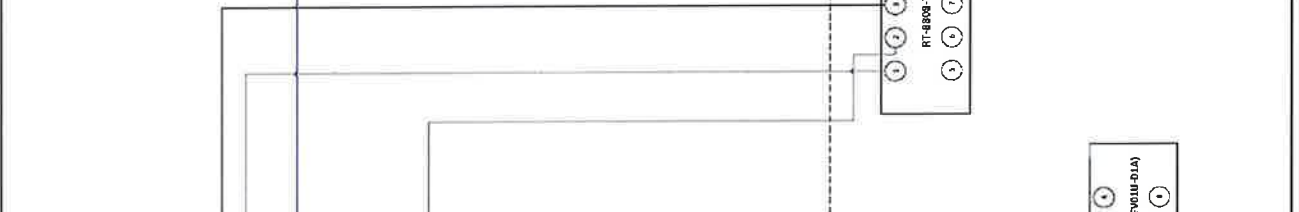
REV.	DATE	BY	CHK'D BY	DESCRIPTION
1	04/20/12	CAO	CAO	CONTRACTOR DRAWING - REVISION FOR CONSTRUCTION
0	04/27/12	CAO	CAO	CONTRACTOR DRAWING - REVISION FOR CONSTRUCTION
0	04/27/12	CAO	CAO	CONTRACTOR DRAWING - REVISION FOR CONSTRUCTION
0	04/27/12	CAO	CAO	CONTRACTOR DRAWING - REVISION FOR CONSTRUCTION
0	04/27/12	CAO	CAO	CONTRACTOR DRAWING - REVISION FOR CONSTRUCTION
0	04/27/12	CAO	CAO	CONTRACTOR DRAWING - REVISION FOR CONSTRUCTION
0	04/27/12	CAO	CAO	CONTRACTOR DRAWING - REVISION FOR CONSTRUCTION
0	04/27/12	CAO	CAO	CONTRACTOR DRAWING - REVISION FOR CONSTRUCTION
0	04/27/12	CAO	CAO	CONTRACTOR DRAWING - REVISION FOR CONSTRUCTION
0	04/27/12	CAO	CAO	CONTRACTOR DRAWING - REVISION FOR CONSTRUCTION

**NOTES:**  
 1. INFORMATION SHOWN HEREIN IS FOR USE BY VERIZON WIRELESS EQUIPMENT OPERATIONS.  
 2. THE B.O.L. DRAWING IS BASED ON FACILITY UPGRADE DESIGN DRAWINGS PROVIDED BY CENTER FOR WIRELESS (COW) (2011), A VERIZON WIRELESS RF ANTENNA COMPONENT RECOMMENDATION (DATED 04/20/12).

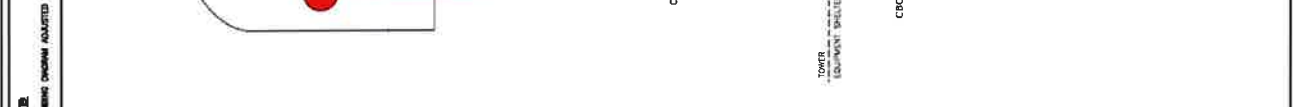
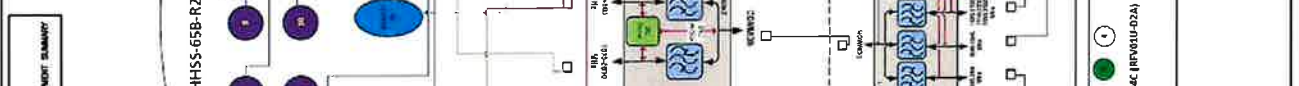
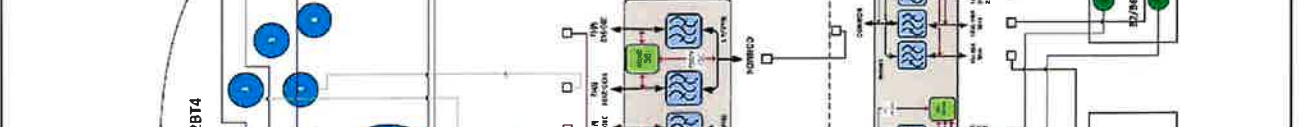
ITEM NO.	DESCRIPTION	QUANTITY	UNIT	REMARKS
1	ANTENNA	3	EA	COMPOSITE MODEL: NHSS-65B-R2B14
2	COAXIAL CABLE	18	FT	1/2" DIA. 7/8" O.D. COAX CABLE
3	AMPLIFIER	3	EA	COMPOSITE MODEL: CBG218T-DS-43
4	TRIP	3	EA	COMPOSITE MODEL: CPO5192-DS-43

**BILL OF MATERIALS**  
 TECHNOLOGY: ANTENNA  
 LITE 700  
 LITE 800  
 LITE 900  
 LITE 1900  
 LITE WBS 1100  
 IS

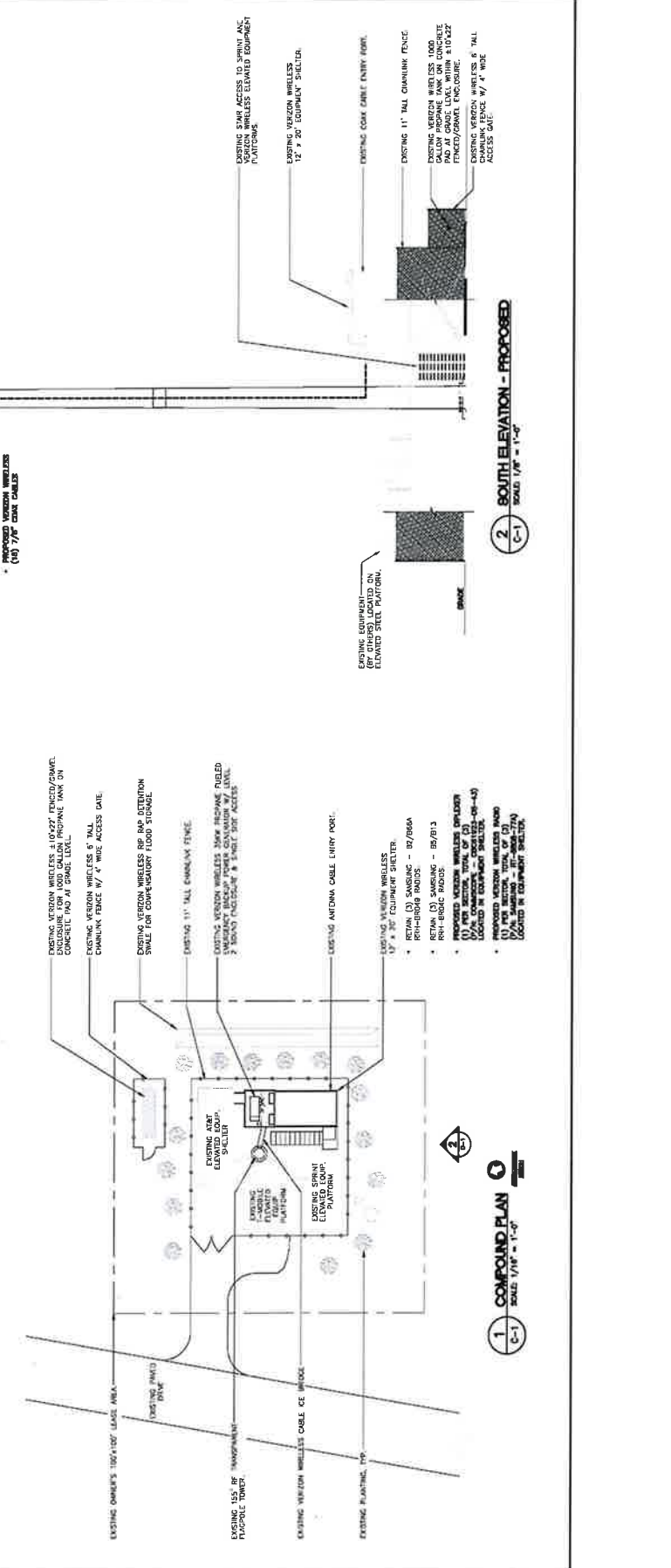
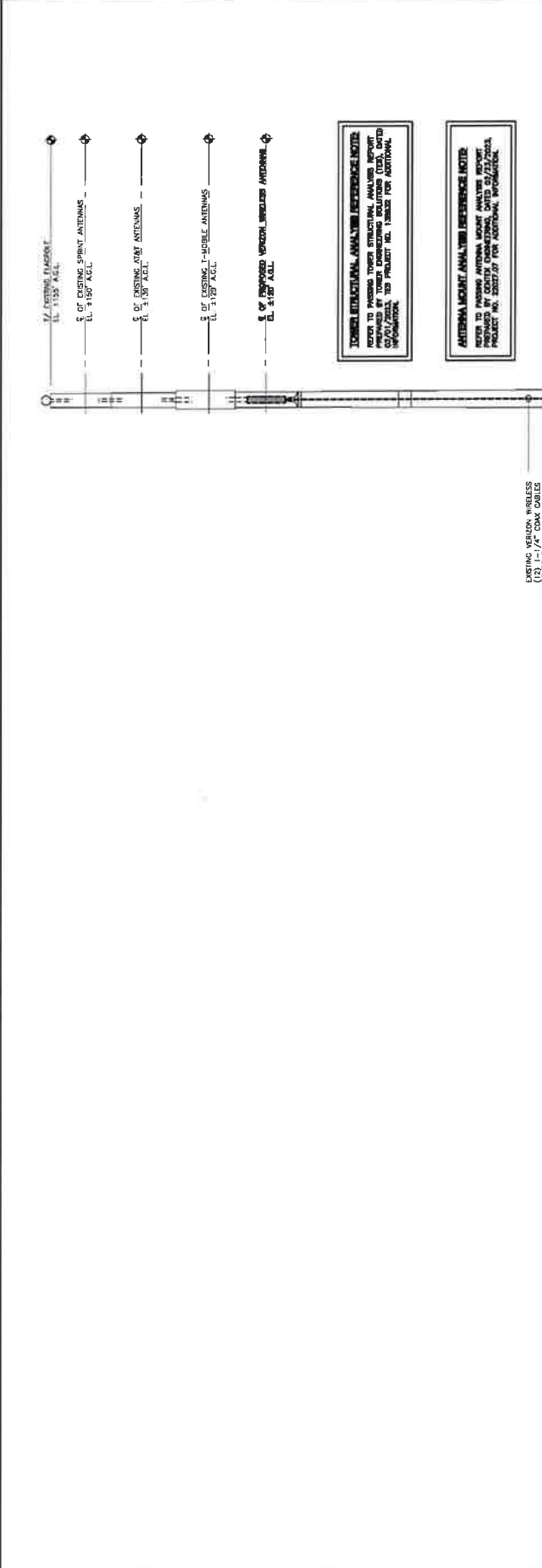
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**FLAMINGO DIAGRAM COMMENTS:**  
 A. SIGNAL STOPS COMPONENTS AS VIEWED FROM BELOW  
 B. ANTENNAS WILL BE INSTALLED IN THAT ORDER FROM LEFT TO RIGHT AS VIEWED FROM BELOW.  
 C. COW AND WIRELESSPORT UNLESS ANTENNA PORTS.  
 D. ALL PULLING DIAGRAM COLORS ARE IRRELEVANT EXCEPT FOR ANTENNA PORTS AND THE COAX CABLES. FOLLOW COW COLORS (SEE COW).

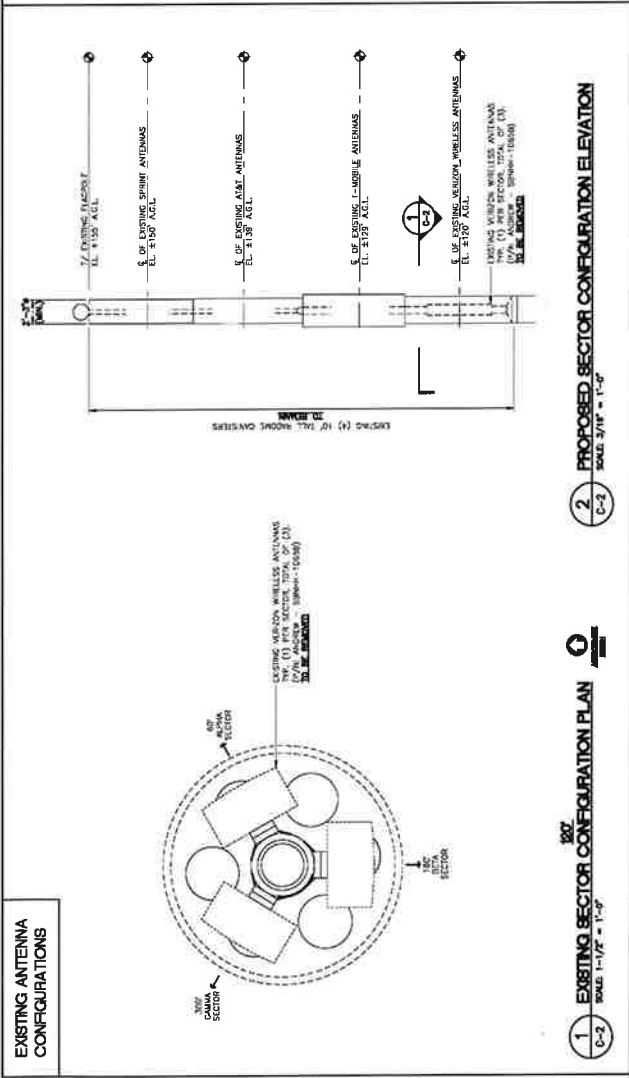


REV.	DATE	DESCRIPTION
1	08/24/23	1. ADDED 18" CHAIN LINK FENCE - BEARS FOR IMPACT RAILROAD CROSSING
2	08/24/23	2. ADDED 18" CHAIN LINK FENCE - BEARS FOR IMPACT RAILROAD CROSSING
3	08/24/23	3. ADDED 18" CHAIN LINK FENCE - BEARS FOR IMPACT RAILROAD CROSSING
4	08/24/23	4. ADDED 18" CHAIN LINK FENCE - BEARS FOR IMPACT RAILROAD CROSSING
5	08/24/23	5. ADDED 18" CHAIN LINK FENCE - BEARS FOR IMPACT RAILROAD CROSSING
6	08/24/23	6. ADDED 18" CHAIN LINK FENCE - BEARS FOR IMPACT RAILROAD CROSSING
7	08/24/23	7. ADDED 18" CHAIN LINK FENCE - BEARS FOR IMPACT RAILROAD CROSSING
8	08/24/23	8. ADDED 18" CHAIN LINK FENCE - BEARS FOR IMPACT RAILROAD CROSSING



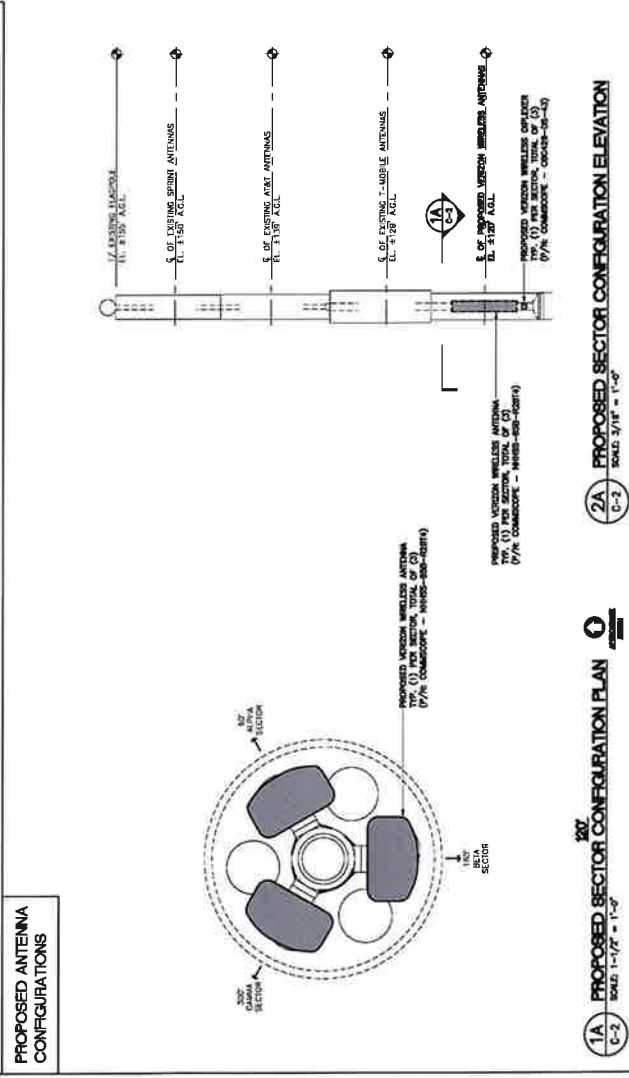
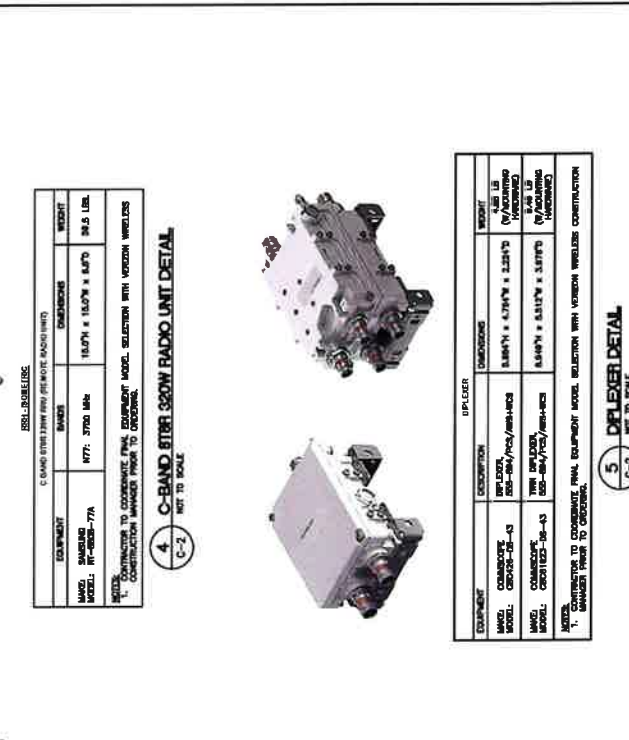
**GENERAL STRUCTURAL ANALYSIS REFERENCE NOTE:**  
REFER TO PASSING TOWER STRUCTURAL ANALYSIS REPORT DATED 11/20/2018 FOR MORE INFORMATION. REPORT NO. 2018.11 FOR PROJECT NO. 2022.07 FOR ASSISTANT, IN CHARGE.

**ANTENNA MOUNT ANALYSIS REFERENCE NOTE:**  
REFER TO PASSING ANTENNA MOUNT ANALYSIS REPORT DATED 11/20/2018 FOR MORE INFORMATION. REPORT NO. 2018.11 FOR PROJECT NO. 2022.07 FOR ASSISTANT, IN CHARGE.



**1**  
C-2  
SCALE 1-1/2" = 1'-0"

**EXISTING ANTENNA CONFIGURATIONS**



**2A**  
C-2  
SCALE 3/16" = 1'-0"

**PROPOSED ANTENNA CONFIGURATIONS**

**3**  
C-2  
NOT TO SCALE

**3 SECTOR ANTENNA DETAIL**

EQUIPMENT	DESCRIPTION	HEIGHT
COMPOSITE	19 PORT SECTOR ANTENNA	215' TO TOP
COMPOSITE	8' OF EXISTING L-MOBILE ANTENNAS	200' TO TOP
COMPOSITE	8' OF EXISTING CABLE ANTENNAS	205' TO TOP
COMPOSITE	8' OF EXISTING STRING ANTENNAS	210' TO TOP

**4**  
C-2  
NOT TO SCALE

**4 C-BAND 8TR1 320W RADIO UNIT DETAIL**

EQUIPMENT	DESCRIPTION	HEIGHT
COMPOSITE	C-BAND 8TR1 320W RADIO UNIT	215' TO TOP
COMPOSITE	8' OF EXISTING L-MOBILE ANTENNAS	200' TO TOP
COMPOSITE	8' OF EXISTING CABLE ANTENNAS	205' TO TOP
COMPOSITE	8' OF EXISTING STRING ANTENNAS	210' TO TOP

**5**  
C-2  
NOT TO SCALE

**5 DUPLEXER DETAIL**

EQUIPMENT	DESCRIPTION	HEIGHT
COMPOSITE	19 PORT SECTOR ANTENNA	215' TO TOP
COMPOSITE	8' OF EXISTING L-MOBILE ANTENNAS	200' TO TOP
COMPOSITE	8' OF EXISTING CABLE ANTENNAS	205' TO TOP
COMPOSITE	8' OF EXISTING STRING ANTENNAS	210' TO TOP

**5**  
C-2  
NOT TO SCALE

**5 DUPLEXER DETAIL**

### ELECTRICAL SPECIFICATIONS

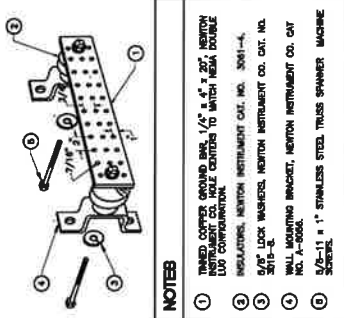
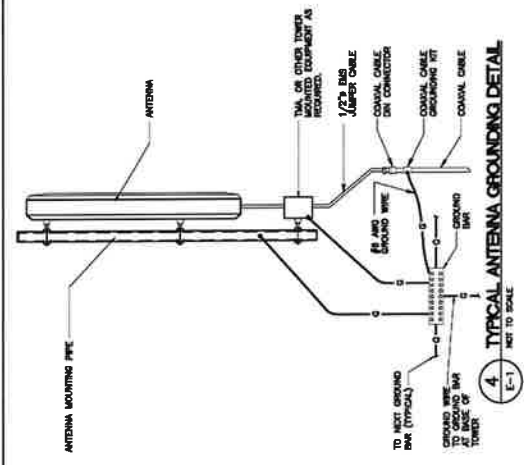
#### SECTION 8100

##### 1.01. SCOPE OF WORK

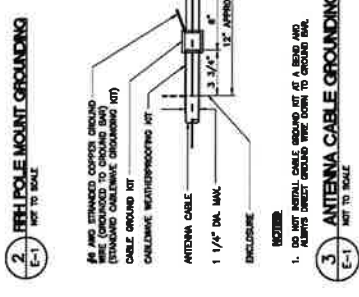
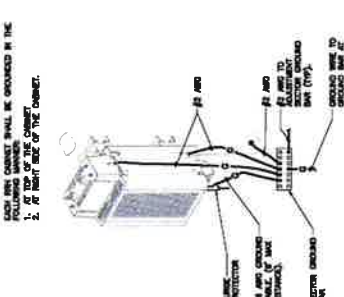
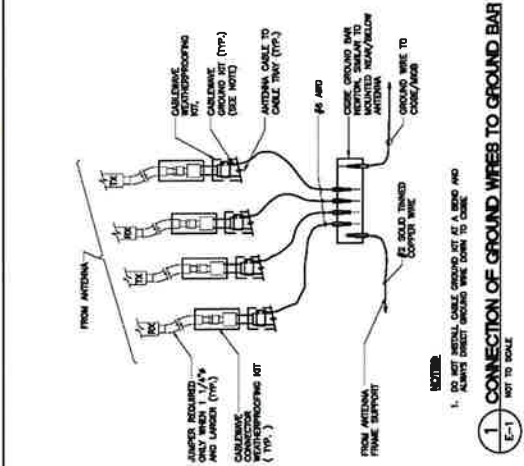
- WORK SHALL INCLUDE ALL LABOR, EQUIPMENT AND SERVICES REQUIRED TO COMPLETE (NAME BRANT FOR OPERATOR) ALL THE ELECTRICAL WORK INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
  - CELLULAR GROUNDING SYSTEMS CONSISTING OF ANTENNA GROUNDING, GROUND BARS, ETC.
  - GENERAL REQUIREMENTS
    - THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING SHALL BE DEEMED TO BE IN CONFLICT WITH ANY SUCH CODES OR REGULATIONS.
    - THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND CONNECTION OF ALL ELECTRICAL WORK, INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
      - CELLULAR GROUNDING SYSTEMS, INCLUDING GROUND BARS AND ANTENNA GROUNDING.
      - ANTENNA GROUNDING SYSTEMS, INCLUDING GROUND BARS AND ANTENNA GROUNDING.
      - ANTENNA GROUNDING SYSTEMS, INCLUDING GROUND BARS AND ANTENNA GROUNDING.

##### 1.02. GENERAL REQUIREMENTS

- THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING SHALL BE DEEMED TO BE IN CONFLICT WITH ANY SUCH CODES OR REGULATIONS.
- THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND CONNECTION OF ALL ELECTRICAL WORK, INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
  - CELLULAR GROUNDING SYSTEMS, INCLUDING GROUND BARS AND ANTENNA GROUNDING.
  - ANTENNA GROUNDING SYSTEMS, INCLUDING GROUND BARS AND ANTENNA GROUNDING.
  - ANTENNA GROUNDING SYSTEMS, INCLUDING GROUND BARS AND ANTENNA GROUNDING.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL INSPECTION FEES REQUIRED BY THE LOCAL AUTHORITY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE BUILDING OWNER FOR ANY AND ALL CONSTRUCTION WORK INVOLVED.
- NO MATERIAL OTHER THAN THAT CONTAINED IN THE LATEST LIST OF ELECTRICAL MATERIALS SHALL BE USED IN THIS INSTALLATION. ALL MATERIALS SHALL BE IDENTIFIED AS PART OF THE WORK. ALL MATERIALS FOR WHICH LABEL SERVICE HAS BEEN ESTABLISHED SHALL BEAR THE UL LABEL.
- THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE DATE OF COMPLETION OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND MAINTENANCE OF ALL EQUIPMENT MANUFACTURED FOR INSTALLATION TO THE OWNER.
- ALL ELECTRICAL CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH THE LATEST LIST OF APPROVED ELECTRICAL CONNECTIONS AND CONNECTIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND MAINTENANCE OF ALL EQUIPMENT MANUFACTURED FOR INSTALLATION TO THE OWNER.
- ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER AND WILL BE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE.
- ALL EQUIPMENT AND MATERIALS TO BE INSTALLED SHALL BE NEW, UNLESS OTHERWISE SPECIFIED.
- ALL WIRING SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST LIST OF APPROVED ELECTRICAL MATERIALS AND CONNECTIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND MAINTENANCE OF ALL EQUIPMENT MANUFACTURED FOR INSTALLATION TO THE OWNER.
- ALL WIRING SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST LIST OF APPROVED ELECTRICAL MATERIALS AND CONNECTIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND MAINTENANCE OF ALL EQUIPMENT MANUFACTURED FOR INSTALLATION TO THE OWNER.

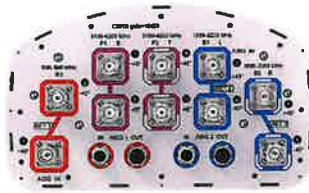


- #### NOTES
- THREADED COPPER GROUND BAR, 1/2" DIA. x 20", HEAT TREATED (ELECTROLYTICALLY TREATED) TO MATCH NEMA DOUBLE END CONFIGURATION.
  - INSULATORS, NEWTON INSTRUMENT CO. INC. 3041-14.
  - 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. INC. 3015-12.
  - WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. INC. NY-A-3068.
  - 5/8"-11 x 1" STAINLESS STEEL TRUSS SPACER, MACHINE SCREWS.



- #### NOTES
- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

# NHHSS-65B-R2BT4



10-port sector antenna, 2x 698–896, 4x 1695–2200 and 4x 3100–4200 MHz, 65° HPBW, 2x RETs and 2x SBTs. Both high bands share the same electrical tilt.

- Perfect antenna to add 3.5GHz CBRS to macro sites
- Low band and mid band performance mirrors the performance of existing NHH hex port antennas
- Interleaved dipole technology providing for attractive, low wind load mechanical package
- Internal SBT on low and high band allow remote RET control from the radio over the RF jumper cable
- One LB RET and one HB RET. Both high bands are controlled by one RET to ensure same tilt level for 4x MIMO

## General Specifications

<b>Antenna Type</b>	Sector
<b>Band</b>	Multiband
<b>Color</b>	Light gray
<b>Grounding Type</b>	RF connector inner conductor and body grounded to reflector and mounting bracket
<b>Performance Note</b>	Outdoor usage
<b>Radome Material</b>	Fiberglass, UV resistant
<b>Radiator Material</b>	Low loss circuit board
<b>Reflector Material</b>	Aluminum
<b>RF Connector Interface</b>	4.3-10 Female
<b>RF Connector Location</b>	Bottom
<b>RF Connector Quantity, high band</b>	4
<b>RF Connector Quantity, mid band</b>	4
<b>RF Connector Quantity, low band</b>	2
<b>RF Connector Quantity, total</b>	10

## Remote Electrical Tilt (RET) Information

<b>RET Hardware</b>	CommRET v2
<b>RET Interface</b>	4x 8 pin connector as per IEC 60130-9 Daisy chain in: Male / Daisy chain out: Female Pin3: RS485A(AISG_B), Pin5: RS485B(AISG_A), Pin6: DC 10~30V, Pin7: DC_ Return

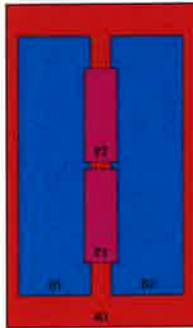
# NHHSS-65B-R2BT4

<b>RET Interface, quantity</b>	2 female   2 male
<b>Input Voltage</b>	10–30 Vdc
<b>Internal RET</b>	High band (1)   Low band (1)
<b>Power Consumption, active state, maximum</b>	10 W
<b>Power Consumption, idle state, maximum</b>	2 W
<b>Protocol</b>	3GPP/AISG 2.0 (Single RET)

## Dimensions

<b>Width</b>	301 mm   11.85 in
<b>Depth</b>	181 mm   7.126 in
<b>Length</b>	1828 mm   71.969 in
<b>Net Weight, without mounting kit</b>	23.1 kg   50.927 lb

## Array Layout

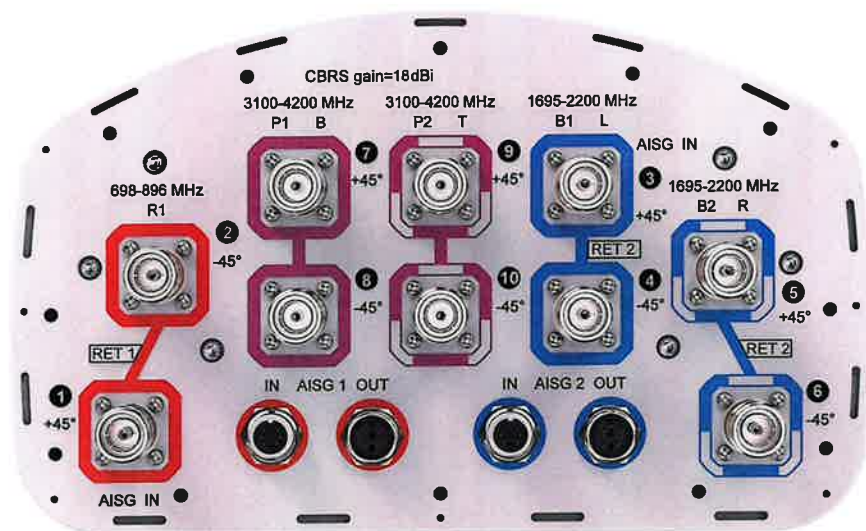


Array ID	Frequency (MHz)	RF Connector	RET (s&RT)	AISG No.	AISG RET UID
A1	698-896	1 - 2	1	AISG1	CPxxxxxxxxxxxxxxxxR1
A2	1695-2200	3 - 4	2	AISG2	CPxxxxxxxxxxxxxxxxB1
A3	1695-2200	5 - 6			
A4	3100-4200	7 - 8	N/A	NA	N/A
A5	3100-4200	9 - 10			

(Sizes of colored boxes are not true depictions of array sizes)

## Port Configuration

# NHHSS-65B-R2BT4



## Electrical Specifications

<b>Impedance</b>	50 ohm
<b>Operating Frequency Band</b>	1695 – 2200 MHz   3100 – 4200 MHz   698 – 896 MHz
<b>Polarization</b>	±45°
<b>Total Input Power, maximum</b>	1,000 W @ 50 °C

## Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	3100–3550	3550–3700	3700–4200
<b>Gain, dBi</b>	14.8	15.2	17.4	17.8	18	17.7	17.3	17.9
<b>Beamwidth, Horizontal, degrees</b>	65	62	66	61	64	54	64	60
<b>Beamwidth, Vertical, degrees</b>	13	11.6	5.5	5.2	4.9	5.7	5.3	4.9
<b>Beam Tilt, degrees</b>	0–14	0–14	0–7	0–7	0–7	4	4	4
<b>USLS (First Lobe), dB</b>	15	15	16	18	18	16	17	18
<b>Front-to-Back Ratio at 180°, dB</b>	26	29	31	28	27	30	33	29
<b>Isolation, Cross Polarization, dB</b>	25	25	25	25	25	25	25	25
<b>Isolation, Inter-band, dB</b>	25	25	25	25	25	28	28	28
<b>VSWR   Return loss, dB</b>	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0
<b>PIM, 3rd Order, 2 x 20 W, dBc</b>	-153	-153	-153	-153	-153	-140	-140	-140



# NHHSS-65B-R2BT4

<b>Input Power per Port at 50°C, maximum, watts</b>	300	300	300	300	300	100	100	100
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## Electrical Specifications, BASTA

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	3100–3550	3550–3700	3700–4200
<b>Gain by all Beam Tilts, average, dBi</b>	14.6	14.8	17	17.5	17.7	17.3	17	17.2
<b>Gain by all Beam Tilts Tolerance, dB</b>	±0.4	±0.4	±0.6	±0.3	±0.4	±0.6	±0.7	±0.8
<b>Gain by Beam Tilt, average, dBi</b>	0° 14.6 7° 14.6 14° 14.4	0° 15.0 7° 14.9 14° 14.5	0° 16.9 3° 17.0 7° 16.8	0° 17.4 3° 17.5 7° 17.4	0° 17.5 3° 17.8 7° 17.6			
<b>Beamwidth, Horizontal Tolerance, degrees</b>	±1.7	±1.3	±7.2	±3.1	±6.2	±10	±6.7	±10.5
<b>Beamwidth, Vertical Tolerance, degrees</b>	±0.8	±0.8	±0.2	±0.2	±0.4	±0.4	±0.3	±0.4
<b>USLS, beampeak to 20° above beampeak, dB</b>	18	16	14	15	17	14		
<b>Front-to-Back Total Power at 180° ± 30°, dB</b>	22	25	25	25	24	26	25	24
<b>CPR at Boresight, dB</b>	24	17	16	21	19	15	17	14
<b>CPR at Sector, dB</b>	12	6	11	10	8	8	9	7

## Mechanical Specifications

<b>Wind Loading @ Velocity, frontal</b>	278.0 N @ 150 km/h (62.5 lbf @ 150 km/h)
<b>Wind Loading @ Velocity, lateral</b>	230.0 N @ 150 km/h (51.7 lbf @ 150 km/h)
<b>Wind Loading @ Velocity, maximum</b>	537.0 N @ 150 km/h (120.7 lbf @ 150 km/h)
<b>Wind Loading @ Velocity, rear</b>	287.0 N @ 150 km/h (64.5 lbf @ 150 km/h)
<b>Wind Speed, maximum</b>	241 km/h   149.75 mph

## Packaging and Weights

<b>Width, packed</b>	1973 mm   77.677 in
<b>Depth, packed</b>	441 mm   17.362 in
<b>Length, packed</b>	337 mm   13.268 in
<b>Weight, gross</b>	35.1 kg   77.382 lb

## Regulatory Compliance/Certifications

Agency	Classification
CHINA-ROHS	Above maximum concentration value

# NHHSS-65B-R2BT4

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ROHS

Compliant/Exempted



## Included Products

BSAMNT-3

- Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

## \* Footnotes

### **Performance Note**

Severe environmental conditions may degrade optimum performance

# **ATTACHMENT 3**



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65 Dartmouth Drive  
Auburn, NH 03032  
(603) 644-2800  
[support@csquaredsystems.com](mailto:support@csquaredsystems.com)

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## Calculated Radio Frequency Emissions Report

**verizon**<sup>v</sup>

Farmington 2  
1 Westerberg Drive, Farmington, CT 06032

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March 17, 2023

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## 1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modification of Verizon's antenna arrays to be mounted at 120' AGL on an existing flagpole located at 1 Westerberg Drive in Farmington, CT. The coordinates of the flagpole tower are 41° 43' 49.8" N, 72° 50' 7.8" W.

Verizon is proposing the following:

- 1) Install 6 (six) multi-band antennas (two (2) per sector) to support its commercial LTE network.

This report considers the planned antenna configuration for Verizon<sup>1</sup> to derive the resulting % MPE of its proposed modification.

## 2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm<sup>2</sup>). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment C of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment C contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

---

<sup>1</sup> As referenced to Verizon's Radio Frequency Design Sheet updated 6/29/2022.

### 3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{PowerDensity} = \left( \frac{\text{EIRP}}{\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

$$R = \text{Radial Distance} = \sqrt{(H^2 + V^2)}$$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Off Beam Loss is determined by the selected antenna patterns

Ground reflection factor of 1.6

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

#### 4. Antenna Inventory

Table 1 below outlines Verizon's proposed antenna configuration for the site. The associated data sheets and antenna patterns for these specific antenna models are included in Attachments C.

Operator	Sector / Call Sign	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width	Mech. Tilt	Length (ft)	Antenna Centerline Height (ft)
Verizon	Alpha / 60°	700	160	14.8	4831	NHHSS-65B-R2BT4	65	0	5.99	120
		850	160	15.2	5298		62			
		1900	160	18	10095		64			
		2100	240	18	15142		64			
		3700	200	17.9	12331		60			
	Beta / 180°	700	160	14.8	4831	NHHSS-65B-R2BT4	65	0	5.99	120
		850	160	15.2	5298		62			
		1900	160	18	10095		64			
		2100	240	18	15142		64			
		3700	200	17.9	12331		60			
	Gamma / 300°	700	160	14.8	4831	NHHSS-65B-R2BT4	65	0	5.99	120
		850	160	15.2	5298		62			
		1900	160	18	10095		64			
		2100	240	18	15142		64			
		3700	200	17.9	12331		60			

**Table 1: Proposed Antenna Inventory<sup>2 3</sup>**

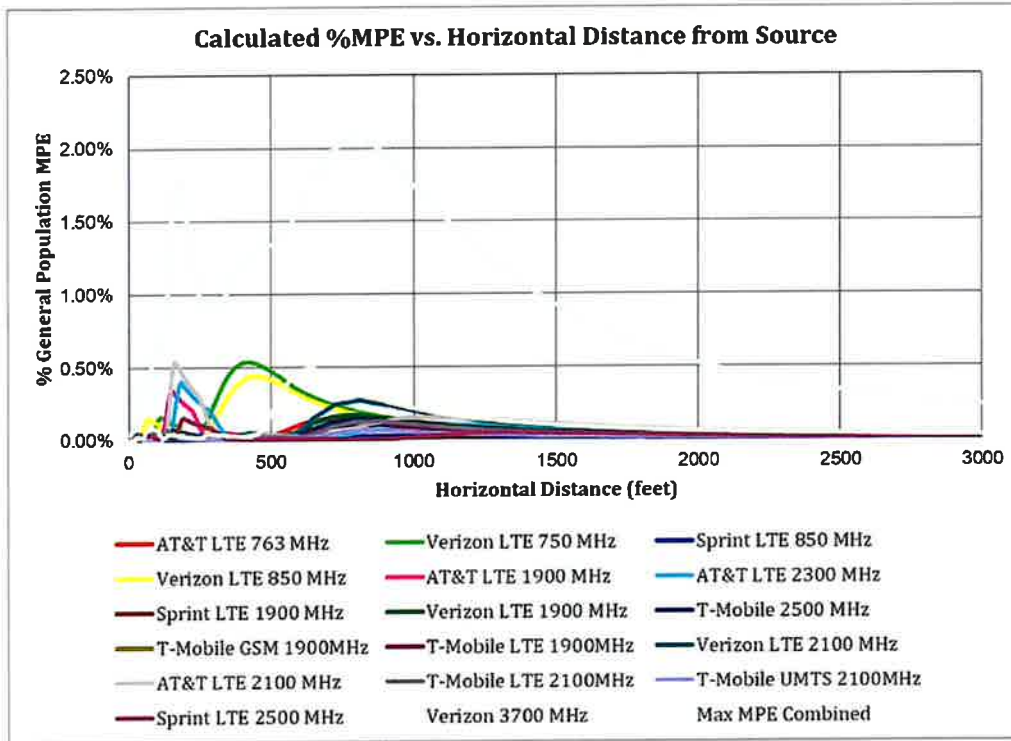
<sup>2</sup> Antenna heights are in reference to Verizon's Radio Frequency Design Sheet updated 6/29/2022.

<sup>3</sup> Transmit power assumes 0 dB of cable loss.



## 5. Calculation Results

The calculated power density results are shown in Figure 1 below. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antennas) to a value of 3,000 feet horizontal distance from the site. In addition to the other worst-case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antennas was completed using a local maximum off beam antenna gain (within  $\pm 5$  degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.



**Figure 1: Graph of General Population % MPE vs. Distance**

The highest percent of MPE (2.08% of the General Population limit) is calculated to occur at a horizontal distance of 783 feet from antennas. Please note that the percent of MPE calculations close to the site take into account off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 1500 feet and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, RF levels become calculated solely on distance from the site and the percent of MPE decreases significantly as distance from the site increases.

Table 2 below lists percent of MPE values as well as the associated parameters that were included in the calculations. The highest percent of MPE value was calculated to occur at a horizontal distance of 783 feet from the site (reference Figure 1).

As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. In addition, a six foot height offset was considered in this analysis to account for average human height. As a result, the predicted signal levels are significantly higher than the actual signal levels will be from the final configuration. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the tower out to the horizontal distances calculated.

Carrier	Number of Transmitters	Power out of Base Station Per Transmitter (Watts)	Antenna Height (Feet)	Distance to the Base of Antennas (Feet)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	% MPE
AT&T LTE 1900 MHz	1	160.0	139.0	783	0.000541	1.000	0.05%
AT&T LTE 2100 MHz	1	240.0	139.0	783	0.000765	1.000	0.08%
AT&T LTE 2300 MHz	1	160.0	139.0	783	0.000430	1.000	0.04%
AT&T LTE 763 MHz	1	80.0	139.0	783	0.000772	0.509	0.15%
Sprint LTE 1900 MHz	1	80.0	150.0	783	0.000039	1.000	0.00%
Sprint LTE 2500 MHz	1	160.0	150.0	783	0.000069	1.000	0.01%
Sprint LTE 850 MHz	1	40.0	150.0	783	0.000143	0.567	0.03%
T-Mobile 2500 MHz	1	160.0	130.0	783	0.001435	1.000	0.14%
T-Mobile GSM 1900MHz	1	120.0	130.0	783	0.001076	1.000	0.11%
T-Mobile LTE 1900MHz	1	120.0	130.0	783	0.001076	1.000	0.11%
T-Mobile LTE 2100MHz	1	120.0	130.0	783	0.001219	1.000	0.12%
T-Mobile UMTS 2100MHz	1	60.0	130.0	783	0.000610	1.000	0.06%
Verizon 3700 MHz	1	200.0	120.0	783	0.003493	1.000	0.35%
Verizon LTE 1900 MHz	1	160.0	120.0	783	0.001698	1.000	0.17%
Verizon LTE 2100 MHz	1	240.0	120.0	783	0.002642	1.000	0.26%
Verizon LTE 750 MHz	1	160.0	120.0	783	0.001017	0.497	0.20%
Verizon LTE 850 MHz	1	160.0	120.0	783	0.001060	0.567	0.19%
<b>Total</b>							<b>2.08%</b>

**Table 2: Maximum Percent of General Population Exposure Values<sup>456</sup>**

<sup>4</sup> Antenna information for T-Mobile was taken from EBI Consulting, Radio Frequency Emissions Analysis Report, dated 10/11/2022

<sup>5</sup> Antenna information for AT&T was taken from Connecticut Siting Council Notice of Exempt Modification – 1 Westerberg Drive, Farmington, Connecticut, dated 3/21/2019

<sup>6</sup> Antenna information for Sprint was taken from Connecticut Siting Council Notice of Exempt Modification – 1 Westerberg Drive, Farmington, Connecticut, dated 3/20/2018

## 6. Conclusion

The above analysis verifies that RF exposure levels from the site with Verizon's proposed antenna configuration will be well below the maximum permissible levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods and parameters detailed above, the maximum cumulative percent of MPE in consideration of all transmitters is calculated to be **2.08% of the FCC limit (General Population/Uncontrolled)**. This maximum cumulative percent of MPE value is calculated to occur 783 feet away from the site.

## 7. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



Report Prepared By:

\_\_\_\_\_  
Ram Acharya  
RF Engineer 1  
C Squared Systems, LLC

March 16, 2023

Date



Reviewed/Approved By:

\_\_\_\_\_  
Martin J. Lavin  
Senior RF Engineer  
C Squared Systems, LLC

March 17, 2023

Date

### **Attachment A: References**

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

**Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)**

**(A) Limits for Occupational/Controlled Exposure<sup>7</sup>**

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f <sup>2</sup> )*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

**(B) Limits for General Population/Uncontrolled Exposure<sup>8</sup>**

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz \* Plane-wave equivalent power density

**Table 3: FCC Limits for Maximum Permissible Exposure**

<sup>7</sup> Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

<sup>8</sup> General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

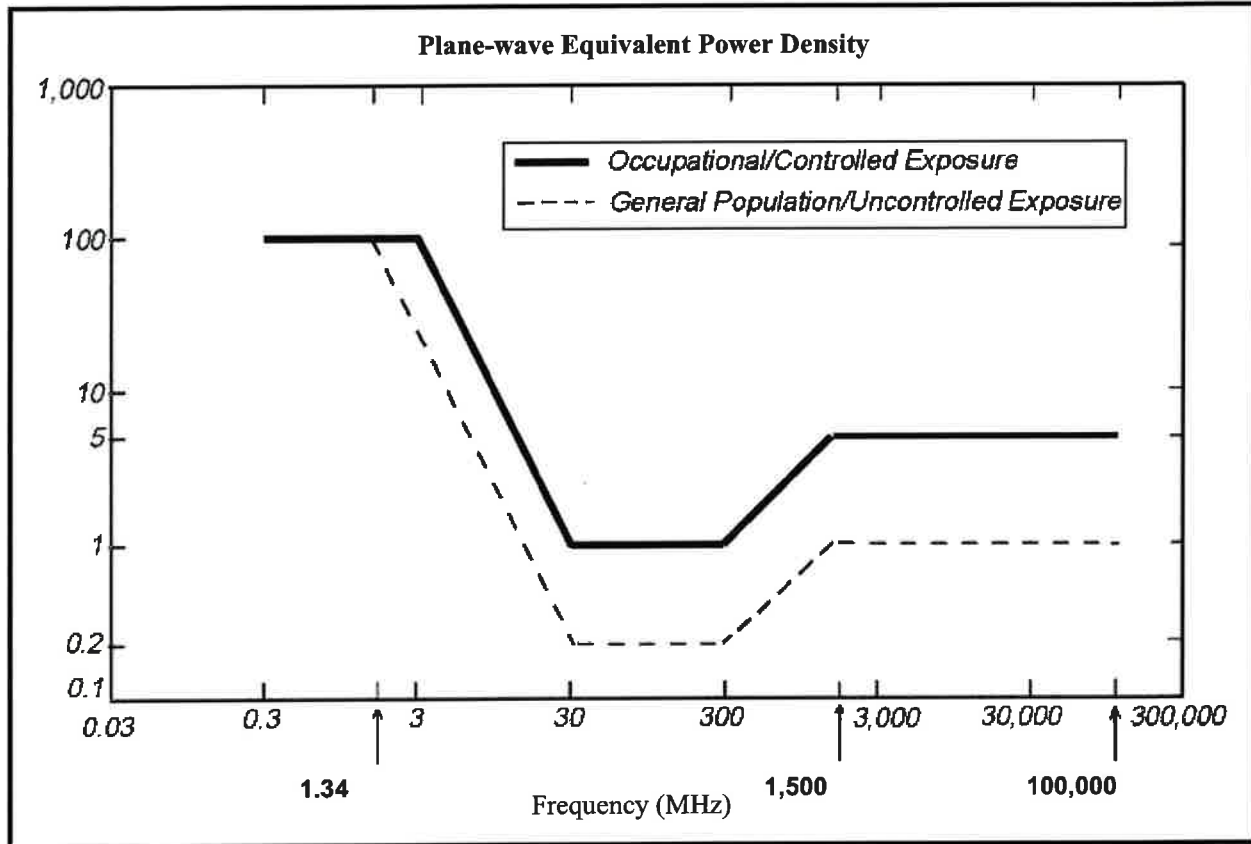
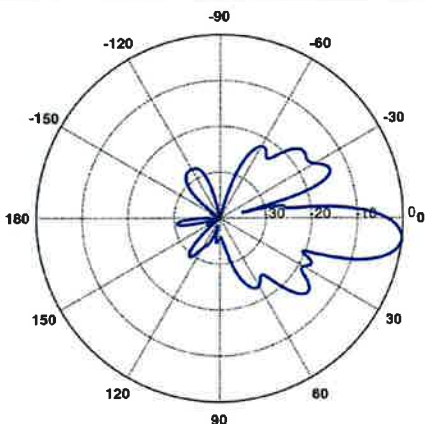
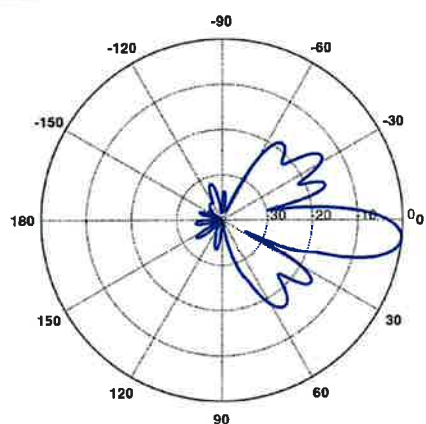
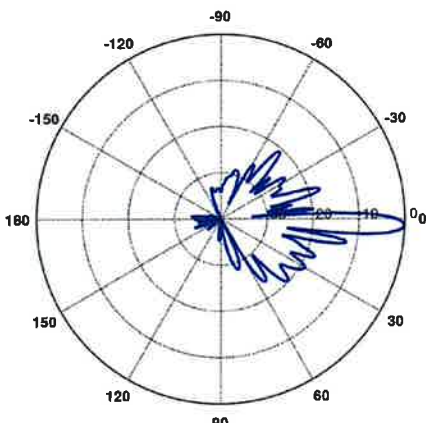
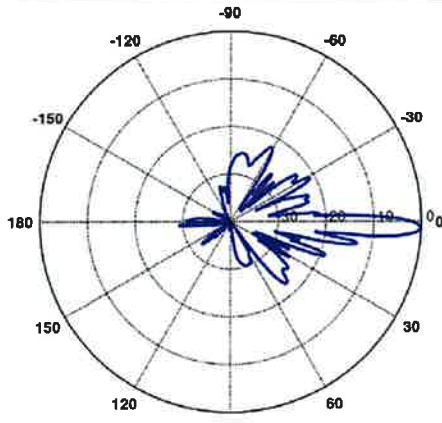
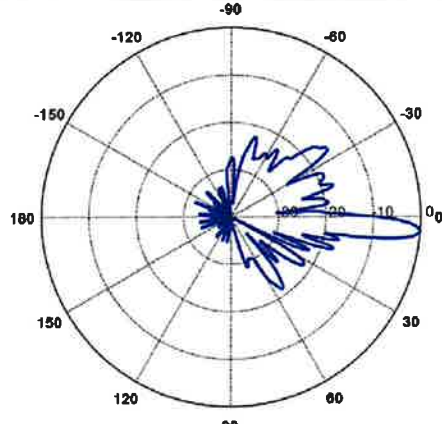


Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

**Attachment C: Verizon Antenna Model Data Sheets and Electrical Patterns**

<p><b>750 MHz</b></p> <p>Manufacturer: COMMSCOPE            Model #: NHHSS-65B-R2BT4            Frequency Band: 698-806 MHz            Gain: 14.8 dBi            Vertical Beamwidth: 13°            Horizontal Beamwidth: 65°            Polarization: ±45°            Dimensions (L x W x D): 71.9" x 11.8" x 7.1"</p>	 <p>A polar plot showing the radiation pattern for the 750 MHz antenna. The plot is circular with concentric grid lines representing gain levels and radial lines representing angles from 0 to 180 degrees. The main lobe is centered at 0 degrees, extending to approximately 180 degrees. The pattern shows a primary lobe with a peak gain of about 14.8 dBi and a secondary lobe on the opposite side.</p>
<p><b>885 MHz</b></p> <p>Manufacturer: COMMSCOPE            Model #: NHHSS-65B-R2BT4            Frequency Band: 806-896 MHz            Gain: 15.2 dBi            Vertical Beamwidth: 11.6°            Horizontal Beamwidth: 62°            Polarization: ±45°            Dimensions (L x W x D): 71.9" x 11.8" x 7.1"</p>	 <p>A polar plot showing the radiation pattern for the 885 MHz antenna. The plot is circular with concentric grid lines representing gain levels and radial lines representing angles from 0 to 180 degrees. The main lobe is centered at 0 degrees, extending to approximately 180 degrees. The pattern shows a primary lobe with a peak gain of about 15.2 dBi and a secondary lobe on the opposite side.</p>
<p><b>1900 MHz</b></p> <p>Manufacturer: COMMSCOPE            Model #: NHHSS-65B-R2BT4            Frequency Band: 1920-2200 MHz            Gain: 18 dBi            Vertical Beamwidth: 4.9°            Horizontal Beamwidth: 64°            Polarization: ±45°            Dimensions (L x W x D): 71.9" x 11.8" x 7.1"</p>	 <p>A polar plot showing the radiation pattern for the 1900 MHz antenna. The plot is circular with concentric grid lines representing gain levels and radial lines representing angles from 0 to 180 degrees. The main lobe is centered at 0 degrees, extending to approximately 180 degrees. The pattern shows a primary lobe with a peak gain of about 18 dBi and a secondary lobe on the opposite side.</p>

<p><b>2100 MHz</b></p> <p>Manufacturer: COMMSCOPE  Model #: NHHSS-65B-R2BT4  Frequency Band: 1920-2200 MHz  Gain: 18 dBi  Vertical Beamwidth: 4.9°  Horizontal Beamwidth: 64°  Polarization: ±45°  Dimensions (L x W x D): 71.9" x 11.8" x 7.1"</p>	
<p><b>3700 MHz</b></p> <p>Manufacturer: COMMSCOPE  Model #: NHHSS-65B-R2BT4  Frequency Band: 3700-4200 MHz  Gain: 17.9 dBi  Vertical Beamwidth: 4.9°  Horizontal Beamwidth: 60°  Polarization: ±45°  Dimensions (L x W x D): 71.9" x 11.8" x 7.1"</p>	



# **ATTACHMENT 4**



**Tower Engineering Solutions**

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

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## Structural Analysis Report

**Existing 155 ft SABRE Monopole**

**Customer Name: SBA Communications Corp**

**Customer Site Number: CT46141-A**

**Customer Site Name: Water Treatment Plant 2, CT**

**Carrier Name: Verizon (App#: 202228-2)**

**Carrier Site ID / Name: 467605 / Farmington 2\_CT**

**Site Location: 1 Westerberg Drive**

**Farmington, Connecticut**

**HARTFORD County**

**Latitude: 41.730499**

**Longitude: -72.835500**

Exp. 01/31/2024



03/01/2023

**Analysis Result:**

**Max Structural Usage: 87.4% [Pass]**

**Max Foundation Usage: 36.0% [Pass]**

**Report Prepared By : Tawfeeq Alajaj**



**Tower Engineering Solutions**

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

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## **Structural Analysis Report**

**Existing 155 ft SABRE Monopole**

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**HARTFORD County**

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**Longitude: -72.835500**

### **Analysis Result:**

**Max Structural Usage: 87.4% [Pass]**

**Max Foundation Usage: 36.0% [Pass]**

**Report Prepared By : Tawfeeq Alajaj**

## Introduction

The purpose of this report is to summarize the analysis results on the 155 ft SABRE Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

## Sources of Information

<b>Tower Drawings</b>	Tower Drawing by Sabre, Job #05-07054 Rev B dated 9/2/04 Canister Drawing by Stealth, Title #CUST-CELL-4C-80-40 Rav A dated 9/23/04
<b>Foundation Drawing</b>	Sabre, Job #05-07054 Rev B dated 9/2/04
<b>Geotechnical Report</b>	Clarence Welti Assoc, dated 6/18/04
<b>Modification Drawings</b>	Stealth, Job #AT12-00957W-05R1 dated 9/18/12 TES, Job#75342, Dated 07/24/19
<b>Mount Analysis</b>	N/A

## Analysis Criteria

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

<b>Wind Speed Used in the Analysis:</b>	120.0 mph (3-Sec. Gust) (Ultimate wind speed)
<b>Wind Speed with Ice:</b>	50 mph (3-Sec. Gust) with 1"1/2 radial ice concurrent
<b>Service Load Wind Speed:</b>	60 mph + 0" Radial ice
<b>Standard/Codes:</b>	TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
<b>Exposure Category:</b>	C
<b>Risk Category:</b>	II
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Seismic Parameters:</b>	$S_s = 0.188$ , $S_1 = 0.055$

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	150.0	3	Commscope DHHTT65B-3XR Panel	Inside Existing 40" Canister from 135.25' to 155.0'	(12) 1 5/8" (3) 3/8" RET Line	Sprint Nextel
2		3	RFS KIT-FD9R6004/1C-DL Diplexers			
3		3	CCI DPO-7126Y-0-T1 Diplexers			
4		4	RFS ACU-A20-N RETs			
5	139.0	3	Cci Antennas TPA-65R-LCUUUU-H8 Panel	Inside Existing 40" Canister from 135.25' to 155.0'	(6) 1 5/8"	AT&T
6		6	Cci DTMABP7819VG12A TMA			
7		6	Kaelus dbc0062f3v52-1			
8	130.0	3	Commscope FVV-65B-R3 Panel	Inside Existing 40" Canister from 135.25' to 155.0'	(12) 1 5/8"	T-Mobile
9		3	Commscope ATSBT-TOP-FM			
-	127.0	6	RFS - CBC721-DF - Diplexers	Inside Existing 40" Canister from 115.75' to 135.25'	(12) 1 5/8"	Verizon

### **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
10	120.0	3	Commscope NHHSS-65B-R2BT4 Panel	Inside Existing 40" Canister from 135.25' to 155.0'	(18) 7/8"	Verizon
11		3	Commscope CBC426T-DS-43 Diplexer			

All transmission lines are considered running inside of the pole shafts.

## **Analysis Results**

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

	Pole shafts	Anchor Bolts	Base Plate	Flange
Max. Usage:	<b>87.4%</b>	<b>75.2%</b>	<b>66.6%</b>	<b>79.7%</b>
Pass/Fail	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>

## **Foundations**

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	1555.1	17.4	26.8

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

### **Service Load Condition (Rigidity):**

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.9147 degrees under the operational wind speed as specified in the Analysis Criteria.

### **Conclusions**

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

## Standard Conditions

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



## Usage Diagram - Max Ratio 87.44% at 0.0ft

**Structure:** CT46141-A-SBA  
**Site Name:** Water Treatment Plant 2, CT  
**Height:** 155.00 (ft)  
**Base Elev:** 0.000 (ft)

**Code:** EIA/TIA-222-H  
**Exposure:** C  
**Gh:** 1.1

3/1/2023

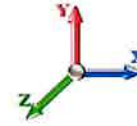
Page: 1



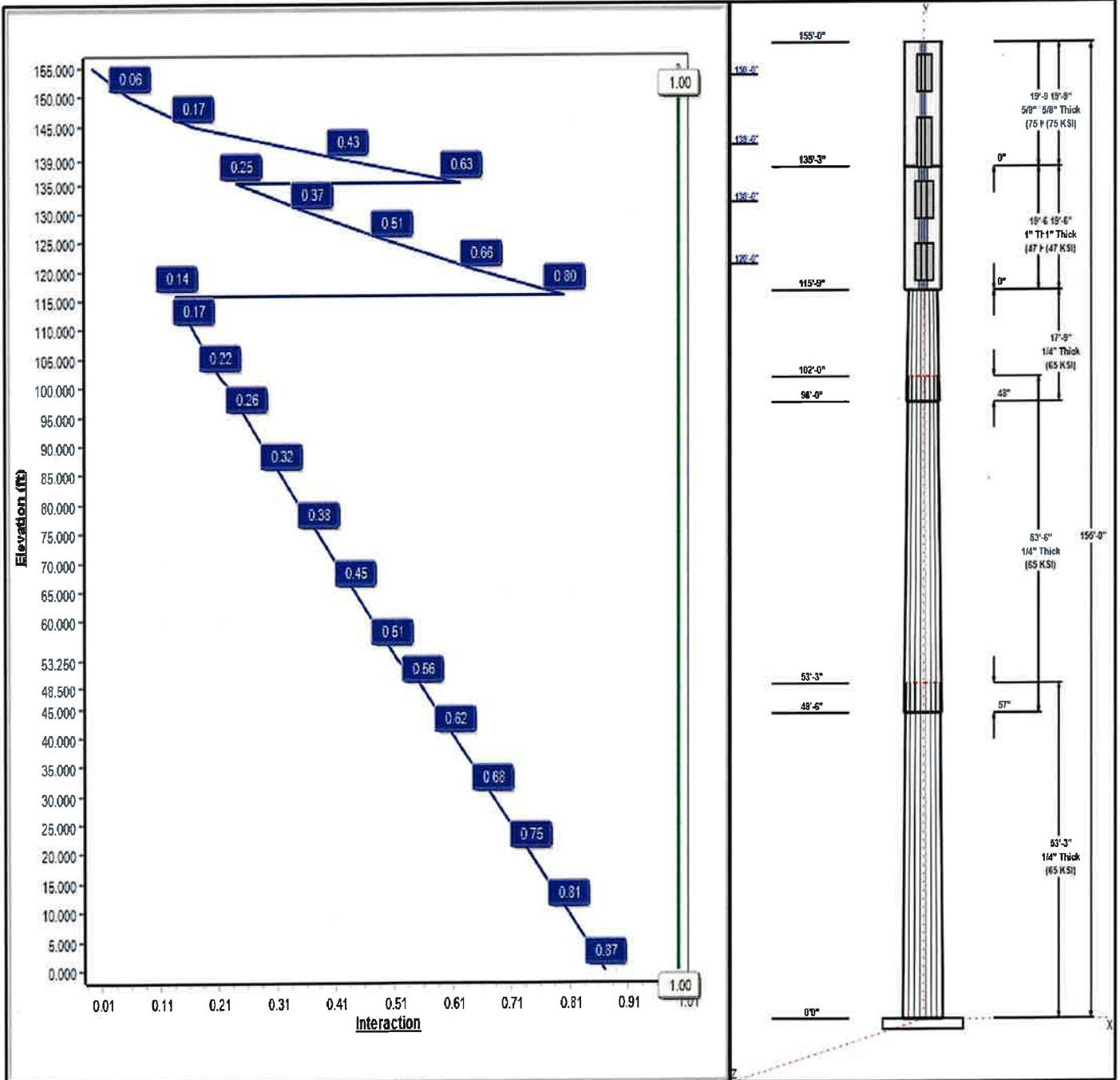
**Dead Load Factor:** 1.20  
**Wind Load Factor:** 1.00

**Load Case : 1.2D + 1.0W 120 mph Wind**

**Iterations:** 30



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**Structure: CT46141-A-SBA**

**Type:** Custom  
**Site Name:** Water Treatment Plant 2, CT  
**Height:** 155.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 16 Sided  
**Taper:** 0.12674

3/1/2023

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Shaft Properties							
Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.25	36.92	43.67	0.250		0.12674	65
2	53.50	31.24	38.02	0.250	Slip	0.12674	65
3	17.75	30.00	32.25	0.250	Slip	0.12674	65
4	19.50	8.00	8.00	1.000	Butt	0.00000	47
5	19.75	5.00	5.00	0.625	Butt	0.00000	75

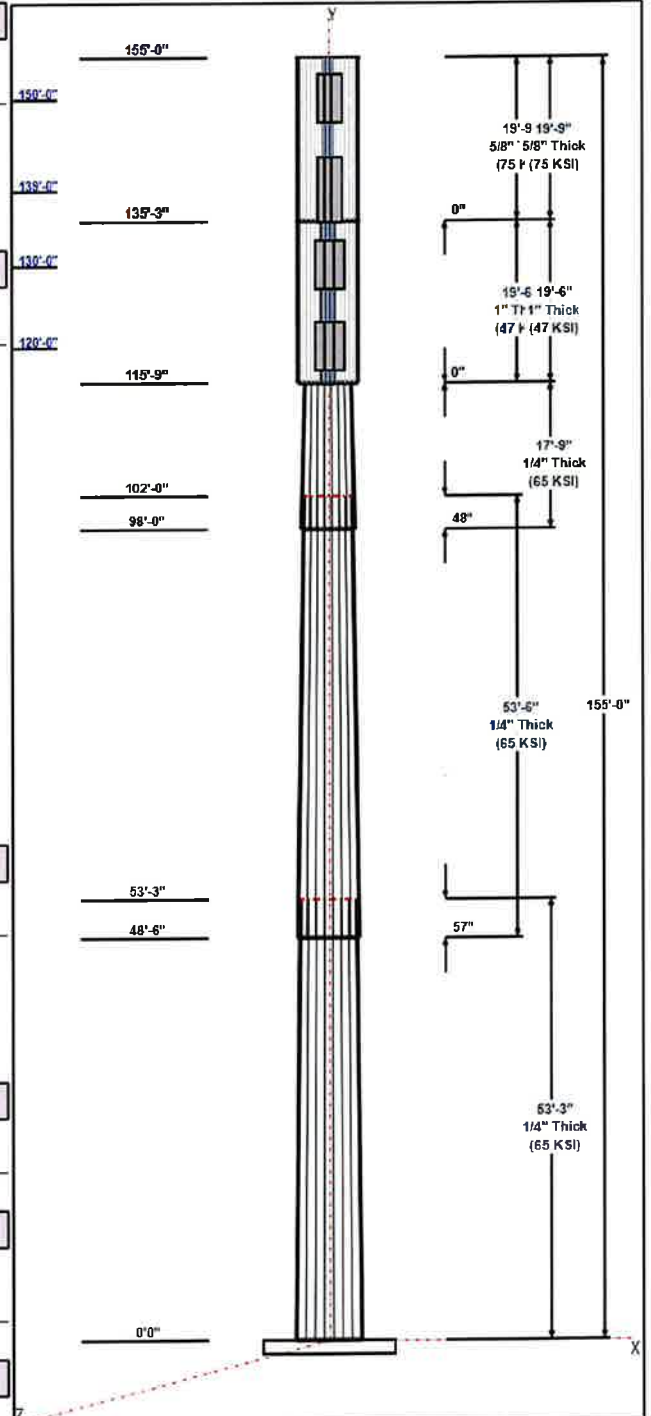
Discrete Appurtenances				
Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
155.00	155.00	1	40" Canister Weight	
155.00	155.00	1	Truck Ball	
150.00	150.00	4	RFS ACU-A20-N	Sprint Nextel
150.00	150.00	3	Commscope	Sprint Nextel
150.00	150.00	3	RFS	Sprint Nextel
150.00	150.00	3	CCI DPO-7126Y-0-T1	Sprint Nextel
145.00	145.00	1	40" Canister Weight	
145.00	145.00	1	Flag (20'x30')	
139.00	139.00	3	TPA-65R-LCUUUU-H8	AT&T
139.00	139.00	6	DTMABP0723VG12A	AT&T
139.00	139.00	6	DBC0062F3V52-1	AT&T
135.25	135.25	1	40" Canister Weight	
130.00	130.00	3	FV65-13-10DBL2	T-Mobile
130.00	130.00	3	ATSBT-TOP-FM	T-Mobile
125.50	125.50	1	40" Canister Weight	
120.00	120.00	3	SBNHH-1D65B	Verizon
120.00	120.00	3	CBC426T-DS-43	Verizon
115.75	115.75	1	40" Canister Weight	

Linear Appurtenances				
Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	150.00	Inside	1 5/8" Coax	Sprint Nextel
0.00	150.00	Inside	3/8" RET	Sprint Nextel
0.00	139.00	Inside	1 5/8" Coax	AT&T
0.00	130.00	Inside	1 5/8" Coax	T-Mobile
0.00	120.00	Inside	7/8" Coax	Verizon

Anchor Bolts			
Qty	Specifications	Grade (ksi)	Arrangement
8	2.25" 18J	75.0	Cluster

Base Plate			
Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.2500	47.0	60.0	Clipped

Reactions				
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)	
1.2D + 1.0W 120 mph Wind	1555.1	17.4	26.8	
0.9D + 1.0W 120 mph Wind	1533.6	17.3	20.1	
1.2D + 1.0Di + 1.0Wi 50 mph Wind	612.1	6.0	43.4	
1.2D + 1.0Ev + 1.0Eh	35.5	0.3	27.7	



**Structure: CT46141-A-SBA**

**Type:** Custom

**Base Shape:** 16 Sided

3/1/2023

**Site Name:** Water Treatment Plant 2, CT

**Taper:** 0.00000

**Height:** 155.00 (ft)

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**Base Elev:** 0.00 (ft)



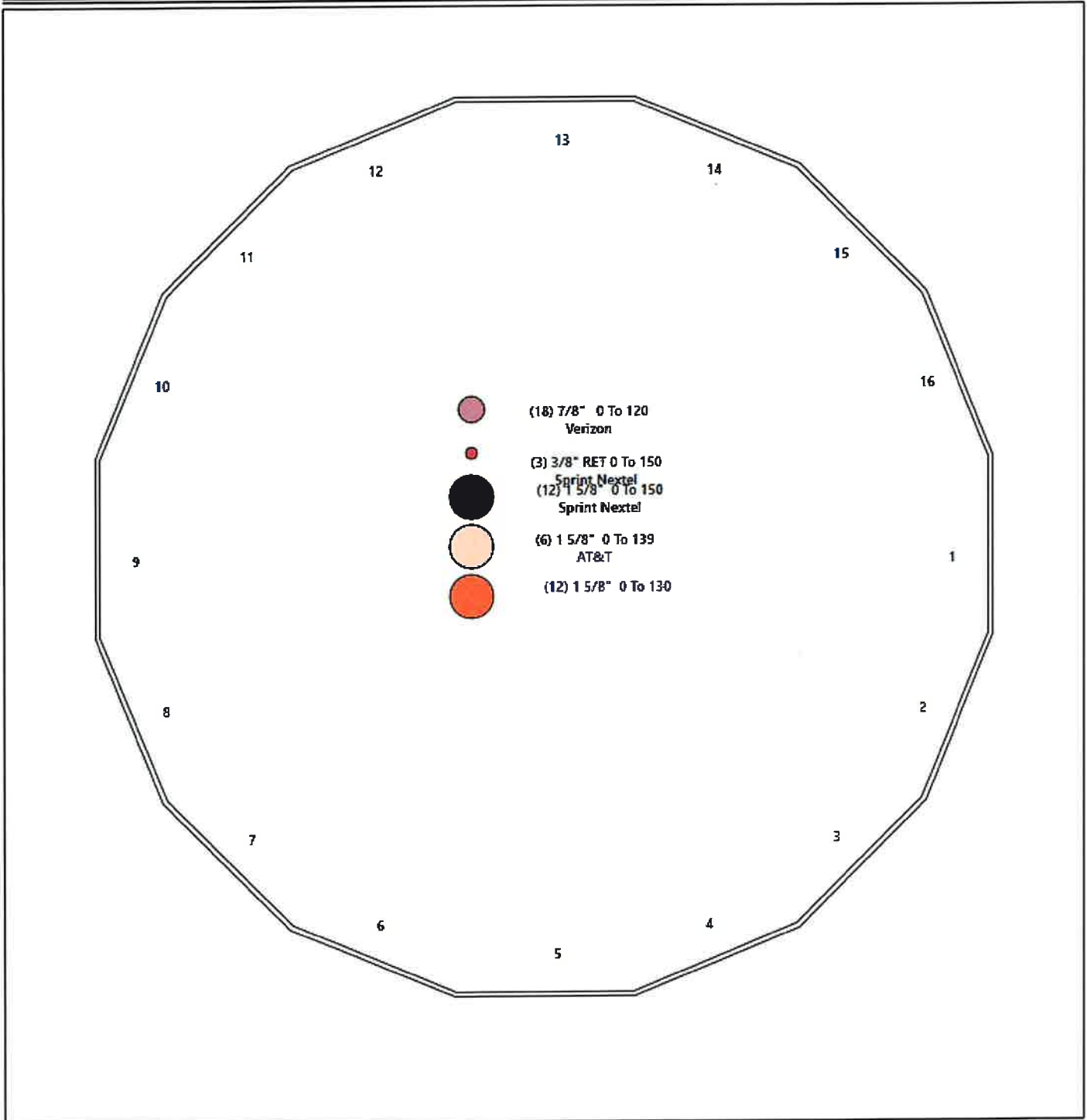
0.9D + 1.0Ev + 1.0Eh	35.3	0.3	21.0
1.0D + 1.0W 60 mph Wind	327.8	3.7	22.3

Structure: CT46141-A-SBA - Coax Line Placement

Type: Stealth  
Site Name: Water Treatment Plant 2, CT  
Height: 155.00 (ft)

3/1/2023

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## Shaft Properties

<b>Structure:</b> CT46141-A-SBA	<b>Code:</b> TIA-222-H	3/1/2023
<b>Site Name:</b> Water Treatment Plant 2, CT	<b>Exposure:</b> C	
<b>Height:</b> 155.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	16	53.250	0.2500	65		0.00	5,787
2	16	53.500	0.2500	65	Slip	57.00	4,992
3	16	17.750	0.2500	65	Slip	48.00	1,487
4	R	19.500	1.0000	47	Flange	0.00	1,459
5	R	19.750	0.6250	75	Flange	0.00	577
<b>Total Shaft Weight:</b>							<b>14,302</b>

Bottom

Top

Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper	Canister Diam (in)
1	43.67	0.00	34.63	8247.35	33.15	174.68	36.92	53.25	29.25	4968.43	27.79	147.6	0.126739	0.00
2	38.02	48.50	30.12	5429.95	28.66	152.09	31.24	102.00	24.72	2999.31	23.27	124.9	0.126739	0.00
3	32.25	98.00	25.52	3301.26	24.07	129.00	30.00	115.75	23.73	2652.81	22.28	120.0	0.126739	0.00
4	8.00	115.7	21.99	134.80	0.00	8.00	8.00	135.25	21.99	134.80	0.00	8.00	0.000000	40.00
5	5.00	135.2	8.59	20.57	0.00	8.00	5.00	155.00	8.59	20.57	0.00	8.00	0.000000	40.00

## Load Summary

<b>Structure:</b> CT46141-A-SBA	<b>Code:</b> TIA-222-H	3/1/2023
<b>Site Name:</b> Water Treatment Plant 2, CT	<b>Exposure:</b> C	
<b>Height:</b> 155.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	155.00	40" Canister Weight	1	107.49	0.00	1.00	115.02	0.000	1.00	0.00	0.00
2	155.00	Truck Ball	1	50.00	3.77	1.00	53.50	4.034	1.00	0.00	0.00
3	150.00	RFS ACU-A20-N	4	1.00	0.00	1.00	5.30	0.000	1.00	0.00	0.00
4	150.00	Commscope DHHTT65B-3XR	3	45.40	0.00	1.00	48.57	0.000	1.00	0.00	0.00
5	150.00	RFS KIT-FD9R6004/1C-DL	3	6.50	0.00	1.00	18.67	0.000	1.00	0.00	0.00
6	150.00	CCI DPO-7126Y-0-T1	3	7.30	0.00	1.00	7.81	0.000	1.00	0.00	0.00
7	145.00	40" Canister Weight	1	212.28	0.00	1.00	227.05	0.000	1.00	0.00	0.00
8	145.00	Flag (20'x30')	1	200.00	14.56	1.00	213.91	15.573	1.00	0.00	0.00
9	139.00	TPA-65R-LCUUUU-H8	3	75.00	0.00	1.00	384.39	14.933	1.00	0.00	0.00
10	139.00	DTMABP0723VG12A	6	19.20	0.00	1.00	44.53	0.000	1.00	0.00	0.00
11	139.00	DBC0062F3V52-1	6	6.60	0.00	1.00	20.18	0.000	1.00	0.00	0.00
12	135.25	40" Canister Weight	1	209.60	0.00	1.00	224.08	0.000	1.00	0.00	0.00
13	130.00	FV65-13-10DBL2	3	90.00	0.00	0.00	697.65	0.000	0.00	0.00	0.00
14	130.00	ATSBT-TOP-FM	3	1.80	0.00	0.00	7.56	0.000	0.00	0.00	0.00
15	125.50	40" Canister Weight	1	209.60	0.00	1.00	223.97	0.000	1.00	0.00	0.00
16	120.00	SBNHH-1D65B	3	50.92	0.00	0.00	247.24	9.341	0.00	0.00	0.00
17	120.00	CBC426T-DS-43	3	5.95	0.00	0.00	22.29	0.589	0.00	0.00	0.00
18	115.75	40" Canister Weight	1	104.80	0.00	1.00	111.93	0.000	1.00	0.00	0.00
<b>Totals:</b>			<b>47</b>	<b>2,101.18</b>			<b>5,881.41</b>				

### Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	150.00	(12) 1 5/8" Coax	0.00	Inside
0.00	150.00	(3) 3/8" RET	0.00	Inside
0.00	139.00	(6) 1 5/8" Coax	0.00	Inside
0.00	130.00	(12) 1 5/8" Coax	0.00	Inside
0.00	120.00	(18) 7/8" Coax	0.00	Inside

## Shaft Section Properties

<b>Structure:</b> CT46141-A-SBA	<b>Code:</b> TIA-222-H	3/1/2023
<b>Site Name:</b> Water Treatment Plant 2, CT	<b>Exposure:</b> C	
<b>Height:</b> 155.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Increment Length:** 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in <sup>3</sup> )	Weight (lb)
0.00		0.2500	43.670	34.627	8247.4	33.15	174.68	65.1	370.5	0.0
5.00		0.2500	43.036	34.122	7891.5	32.65	172.15	65.6	359.7	584.8
10.00		0.2500	42.403	33.617	7546.0	32.15	169.61	66.2	349.1	576.3
15.00		0.2500	41.769	33.111	7210.8	31.64	167.08	66.8	338.6	567.7
20.00		0.2500	41.135	32.606	6885.6	31.14	164.54	67.3	328.3	559.1
25.00		0.2500	40.502	32.101	6570.4	30.63	162.01	67.9	318.2	550.5
30.00		0.2500	39.868	31.595	6264.9	30.13	159.47	68.5	308.2	541.9
35.00		0.2500	39.234	31.090	5969.1	29.63	156.94	69.1	298.4	533.3
40.00		0.2500	38.600	30.584	5682.7	29.12	154.40	69.6	288.8	524.7
45.00		0.2500	37.967	30.079	5405.7	28.62	151.87	70.2	279.3	516.1
48.50	Bot - Section 2	0.2500	37.523	29.725	5217.2	28.26	150.09	70.6	272.7	356.1
50.00		0.2500	37.333	29.574	5137.7	28.11	149.33	70.8	269.9	304.7
53.25	Top - Section 1	0.2500	37.421	29.644	5174.4	28.18	149.68	0.0	0.0	654.9
55.00		0.2500	37.199	29.467	5082.4	28.01	148.80	70.9	268.0	176.0
60.00		0.2500	36.566	28.962	4825.3	27.50	146.26	71.5	258.9	497.1
65.00		0.2500	35.932	28.456	4577.1	27.00	143.73	72.0	249.9	488.5
70.00		0.2500	35.298	27.951	4337.6	26.49	141.19	72.6	241.0	479.9
75.00		0.2500	34.665	27.446	4106.5	25.99	138.66	73.2	232.4	471.3
80.00		0.2500	34.031	26.940	3883.8	25.49	136.12	73.7	223.9	462.7
85.00		0.2500	33.397	26.435	3669.3	24.98	133.59	74.3	215.5	454.1
90.00		0.2500	32.764	25.930	3462.9	24.48	131.05	74.9	207.3	445.5
95.00		0.2500	32.130	25.424	3264.3	23.97	128.52	75.4	199.3	436.9
98.00	Bot - Section 3	0.2500	31.750	25.121	3148.9	23.67	127.00	75.8	194.5	258.0
100.00		0.2500	31.496	24.919	3073.5	23.47	125.98	76.0	191.4	343.3
102.00	Top - Section 2	0.2500	31.743	25.115	3146.8	23.66	126.97	0.0	0.0	340.5
105.00		0.2500	31.362	24.812	3034.2	23.36	125.45	76.1	189.8	254.8
110.00		0.2500	30.729	24.307	2852.6	22.86	122.91	76.7	182.1	417.9
115.00		0.2500	30.095	23.801	2678.3	22.35	120.38	77.3	174.6	409.3
115.75	Top - Section 3	0.2500	30.000	23.726	2652.8	22.28	120.00	77.4	173.5	60.6
115.75	Bot - Section 4	1.0000	8.000	21.991	134.8	5.57	30.00	47.0	33.7	
120.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	318.0
125.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	374.2
125.50		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	37.4
130.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	336.7
135.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	374.2
135.25	Top - Section 4	1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	18.7
135.25	Bot - Section 5	0.6250	5.000	8.590	20.6	0.00	12.80	75.0	8.2	
139.00		0.6250	5.000	8.590	20.6	0.00	8.00	75.0	8.2	109.6
140.00		0.6250	5.000	8.590	20.6	0.00	8.00	75.0	8.2	29.2
145.00		0.6250	5.000	8.590	20.6	0.00	8.00	75.0	8.2	146.2
150.00		0.6250	5.000	8.590	20.6	0.00	8.00	75.0	8.2	146.2
155.00		0.6250	5.000	8.590	20.6	0.00	8.00	75.0	8.2	146.2
<b>14302.3</b>										

## Wind Loading - Shaft

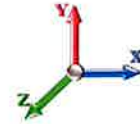
<b>Structure:</b> CT46141-A-SBA	<b>Code:</b> TIA-222-H	3/1/2023
<b>Site Name:</b> Water Treatment Plant 2, CT	<b>Exposure:</b> C	
<b>Height:</b> 155.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.0W 120 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 30

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	31.334	34.47	410.51	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	31.334	34.47	404.55	0.750	0.000	5.00	18.418	13.81	476.1	0.0	701.8
10.00		1.00	0.85	31.334	34.47	398.59	0.750	0.000	5.00	18.148	13.61	469.2	0.0	691.5
15.00		1.00	0.85	31.334	34.47	392.63	0.750	0.000	5.00	17.879	13.41	462.2	0.0	681.2
20.00		1.00	0.90	33.247	36.57	398.30	0.750	0.000	5.00	17.610	13.21	483.0	0.0	670.9
25.00		1.00	0.95	34.846	38.33	401.49	0.750	0.000	5.00	17.341	13.01	498.5	0.0	660.5
30.00		1.00	0.98	36.210	39.83	402.87	0.750	0.000	5.00	17.072	12.80	510.0	0.0	650.2
35.00		1.00	1.01	37.404	41.14	402.95	0.750	0.000	5.00	16.802	12.60	518.5	0.0	639.9
40.00		1.00	1.04	38.471	42.32	402.05	0.750	0.000	5.00	16.533	12.40	524.7	0.0	629.6
45.00		1.00	1.07	39.436	43.38	400.38	0.750	0.000	5.00	16.264	12.20	529.2	0.0	619.3
48.50	Bot - Section 2	1.00	1.09	40.063	44.07	398.84	0.750	0.000	3.50	11.225	8.42	371.0	0.0	427.4
50.00		1.00	1.09	40.321	44.35	398.09	0.750	0.000	1.50	4.834	3.63	160.8	0.0	365.6
53.25	Top - Section 1	1.00	1.11	40.859	44.94	396.32	0.750	0.000	3.25	10.390	7.79	350.2	0.0	785.9
55.00		1.00	1.12	41.138	45.25	400.67	0.750	0.000	1.75	5.548	4.16	188.3	0.0	211.2
60.00		1.00	1.14	41.899	46.09	397.46	0.750	0.000	5.00	15.669	11.75	541.6	0.0	596.5
65.00		1.00	1.16	42.611	46.87	393.88	0.750	0.000	5.00	15.400	11.55	541.4	0.0	586.1
70.00		1.00	1.17	43.281	47.61	389.97	0.750	0.000	5.00	15.130	11.35	540.3	0.0	575.8
75.00		1.00	1.19	43.914	48.31	385.76	0.750	0.000	5.00	14.861	11.15	538.4	0.0	565.5
80.00		1.00	1.21	44.515	48.97	381.29	0.750	0.000	5.00	14.592	10.94	535.9	0.0	555.2
85.00		1.00	1.22	45.086	49.60	376.58	0.750	0.000	5.00	14.323	10.74	532.8	0.0	544.9
90.00		1.00	1.24	45.632	50.20	371.66	0.750	0.000	5.00	14.054	10.54	529.1	0.0	534.6
95.00		1.00	1.25	46.155	50.77	366.56	0.750	0.000	5.00	13.784	10.34	524.9	0.0	524.2
98.00	Bot - Section 3	1.00	1.26	46.458	51.10	363.41	0.750	0.000	3.00	8.141	6.11	312.0	0.0	309.6
100.00		1.00	1.27	46.656	51.32	361.27	0.750	0.000	2.00	5.459	4.09	210.1	0.0	411.9
102.00	Top - Section 2	1.00	1.27	46.851	51.54	359.11	0.750	0.000	2.00	5.416	4.06	209.3	0.0	408.6
105.00		1.00	1.28	47.137	51.85	361.59	0.750	0.000	3.00	8.043	6.03	312.8	0.0	305.8
110.00		1.00	1.29	47.601	52.36	356.02	0.750	0.000	5.00	13.189	9.89	518.0	0.0	501.4
115.00		1.00	1.30	48.049	52.85	350.32	0.750	0.000	5.00	12.920	9.69	512.1	0.0	491.1
115.75	Top - Section 3	1.00	1.31	48.115	52.93	349.45	0.750	0.000	0.75	1.915	1.44	76.0	0.0	72.8
120.00	Appurtenance(s)	1.00	1.32	48.481	53.33	458.72	0.600	0.000	4.25	14.167	8.50	453.3	0.0	436.0
125.00		1.00	1.33	48.900	53.79	460.69	0.600	0.000	5.00	16.667	10.00	537.9	0.0	513.0
125.50	Appurtenance(s)	1.00	1.33	48.941	53.84	460.89	0.600	0.000	0.50	1.667	1.00	53.8	0.0	51.3
130.00	Appurtenance(s)	1.00	1.34	49.305	54.24	462.60	0.600	0.000	4.50	15.000	9.00	488.1	0.0	461.7
135.00		1.00	1.35	49.699	54.67	464.44	0.600	0.000	5.00	16.667	10.00	546.7	0.0	513.0
135.25	Top - Section 4	1.00	1.35	49.718	54.69	464.53	0.600	0.000	0.25	0.833	0.50	27.3	0.0	25.6
139.00	Appurtenance(s)	1.00	1.36	50.005	55.01	465.87	0.600	0.000	3.75	12.500	7.50	412.5	0.0	179.5
140.00		1.00	1.36	50.081	55.09	466.22	0.600	0.000	1.00	3.333	2.00	110.2	0.0	47.9
145.00	Appurtenance(s)	1.00	1.37	50.452	55.50	467.95	0.600	0.000	5.00	16.667	10.00	555.0	0.0	239.4
150.00	Appurtenance(s)	1.00	1.38	50.813	55.89	469.62	0.600	0.000	5.00	16.667	10.00	558.9	0.0	239.4
155.00	Appurtenance(s)	1.00	1.39	51.165	56.28	471.24	0.600	0.000	5.00	16.667	10.00	562.8	0.0	239.4
<b>Totals:</b>									<b>155.00</b>			<b>16,282.9</b>		<b>17,665.2</b>



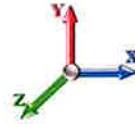
## Discrete Appurtenance Forces

<b>Structure:</b> CT46141-A-SBA	<b>Code:</b> TIA-222-H	3/1/2023
<b>Site Name:</b> Water Treatment Plant 2, CT	<b>Exposure:</b> C	
<b>Height:</b> 155.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Page:</b> 9
	<b>Struct Class:</b> II	



**Load Case:** 1.2D + 1.0W 120 mph Wind

**Dead Load Factor**    1.20  
**Wind Load Factor**    1.00



**Iterations**    30

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	155.00	Truck Ball	1	51.165	56.282	1.00	1.00	3.77	60.00	0.000	0.000	212.18	0.00	0.00
2	155.00	40" Canister Weight	1	51.165	56.282	1.00	1.00	0.00	128.99	0.000	0.000	0.00	0.00	0.00
3	150.00	CCI DPO-7126Y-0-T1	3	50.813	55.895	1.00	1.00	0.00	26.28	0.000	0.000	0.00	0.00	0.00
4	150.00	RFS	3	50.813	55.895	1.00	1.00	0.00	23.40	0.000	0.000	0.00	0.00	0.00
5	150.00	Commscope	3	50.813	55.895	1.00	1.00	0.00	163.44	0.000	0.000	0.00	0.00	0.00
6	150.00	RFS ACU-A20-N	4	50.813	55.895	1.00	1.00	0.00	4.80	0.000	0.000	0.00	0.00	0.00
7	145.00	40" Canister Weight	1	50.452	55.497	1.00	1.00	0.00	254.74	0.000	0.000	0.00	0.00	0.00
8	145.00	Flag (20'x30')	1	50.452	55.497	1.00	1.00	14.56	240.00	0.000	0.000	808.04	0.00	0.00
9	139.00	DBC0062F3V52-1	6	50.005	55.006	1.00	1.00	0.00	47.52	0.000	0.000	0.00	0.00	0.00
10	139.00	DTMABP0723VG12A	6	50.005	55.006	1.00	1.00	0.00	138.24	0.000	0.000	0.00	0.00	0.00
11	139.00	TPA-65R-LCUUUU-H8	3	50.005	55.006	1.00	1.00	0.00	270.00	0.000	0.000	0.00	0.00	0.00
12	135.25	40" Canister Weight	1	49.718	54.690	1.00	1.00	0.00	251.52	0.000	0.000	0.00	0.00	0.00
13	130.00	ATSBT-TOP-FM	3	49.305	54.236	0.00	1.00	0.00	6.48	0.000	0.000	0.00	0.00	0.00
14	130.00	FV65-13-10DBL2	3	49.305	54.236	0.00	1.00	0.00	324.00	0.000	0.000	0.00	0.00	0.00
15	125.50	40" Canister Weight	1	48.941	53.835	1.00	1.00	0.00	251.52	0.000	0.000	0.00	0.00	0.00
16	120.00	CBC426T-DS-43	3	48.481	53.330	0.00	1.00	0.00	21.42	0.000	0.000	0.00	0.00	0.00
17	120.00	SBNHH-1D65B	3	48.481	53.330	0.00	1.00	0.00	183.31	0.000	0.000	0.00	0.00	0.00
18	115.75	40" Canister Weight	1	48.115	52.926	1.00	1.00	0.00	125.76	0.000	0.000	0.00	0.00	0.00
<b>Totals:</b>								<b>2,521.42</b>				<b>1,020.22</b>		

## Total Applied Force Summary

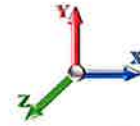
<b>Structure:</b> CT46141-A-SBA	<b>Code:</b> TIA-222-H	3/1/2023
<b>Site Name:</b> Water Treatment Plant 2, CT	<b>Exposure:</b> C	
<b>Height:</b> 155.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.0W 120 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 30

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		476.11	946.26	0.00	0.00
10.00		469.15	935.94	0.00	0.00
15.00		462.20	925.62	0.00	0.00
20.00		483.02	915.30	0.00	0.00
25.00		498.52	904.99	0.00	0.00
30.00		509.98	894.67	0.00	0.00
35.00		518.50	884.35	0.00	0.00
40.00		524.73	874.03	0.00	0.00
45.00		529.15	863.71	0.00	0.00
48.50		371.00	598.46	0.00	0.00
50.00		160.80	438.98	0.00	0.00
53.25		350.24	944.75	0.00	0.00
55.00		188.28	296.75	0.00	0.00
60.00		541.61	840.90	0.00	0.00
65.00		541.35	830.58	0.00	0.00
70.00		540.25	820.27	0.00	0.00
75.00		538.40	809.95	0.00	0.00
80.00		535.88	799.63	0.00	0.00
85.00		532.75	789.31	0.00	0.00
90.00		529.07	778.99	0.00	0.00
95.00		524.87	768.68	0.00	0.00
98.00		312.04	456.25	0.00	0.00
100.00		210.11	509.69	0.00	0.00
102.00		209.32	506.39	0.00	0.00
105.00		312.77	452.47	0.00	0.00
110.00		517.95	745.86	0.00	0.00
115.00		512.15	735.54	0.00	0.00
115.75	(1) attachments	76.01	235.20	0.00	0.00
120.00	(6) attachments	453.30	848.54	0.00	0.00
125.00		537.90	701.27	0.00	0.00
125.50	(1) attachments	53.84	321.65	0.00	0.00
130.00	(6) attachments	488.12	961.62	0.00	0.00
135.00		546.68	626.39	0.00	0.00
135.25	(1) attachments	27.34	282.84	0.00	0.00
139.00	(15) attachments	412.54	720.35	0.00	0.00
140.00		110.18	63.07	0.00	0.00
145.00	(2) attachments	1363.01	810.08	0.00	0.00
150.00	(13) attachments	558.95	533.27	0.00	0.00
155.00	(2) attachments	775.00	428.37	0.00	0.00
	<b>Totals:</b>	<b>17,303.10</b>	<b>26,800.98</b>	<b>0.00</b>	<b>0.00</b>

## Calculated Forces

**Structure:** CT46141-A-SBA  
**Site Name:** Water Treatment Plant 2, CT  
**Height:** 155.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

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

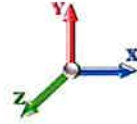
3/1/2023

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**Load Case:** 1.2D + 1.0W 120 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 30

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-26.76	-17.37	0.00	-1555.1	0.00	1555.14	2027.49	607.71	2192.01	1807.56	0.00	0.000	0.000	0.874
5.00	-25.74	-17.00	0.00	-1468.3	0.00	1468.31	2015.42	598.84	2128.49	1770.42	0.14	-0.261	0.000	0.843
10.00	-24.73	-16.64	0.00	-1383.3	0.00	1383.30	2002.83	589.97	2065.91	1733.15	0.55	-0.518	0.000	0.811
15.00	-23.74	-16.27	0.00	-1300.1	0.00	1300.11	1989.72	581.10	2004.26	1695.77	1.23	-0.771	0.000	0.779
20.00	-22.77	-15.87	0.00	-1218.7	0.00	1218.77	1976.09	572.23	1943.55	1658.30	2.17	-1.019	0.000	0.747
25.00	-21.81	-15.45	0.00	-1139.4	0.00	1139.42	1961.94	563.37	1883.77	1620.75	3.37	-1.263	0.000	0.715
30.00	-20.86	-15.00	0.00	-1062.2	0.00	1062.20	1947.28	554.50	1824.92	1583.16	4.82	-1.501	0.000	0.682
35.00	-19.93	-14.54	0.00	-987.20	0.00	987.20	1932.09	545.63	1767.01	1545.53	6.51	-1.734	0.000	0.650
40.00	-19.02	-14.06	0.00	-914.52	0.00	914.52	1916.39	536.76	1710.03	1507.89	8.45	-1.960	0.000	0.617
45.00	-18.14	-13.56	0.00	-844.23	0.00	844.23	1900.17	527.89	1653.99	1470.26	10.62	-2.180	0.000	0.584
48.50	-17.53	-13.19	0.00	-796.79	0.00	796.79	1888.50	521.68	1615.31	1443.94	12.28	-2.332	0.000	0.562
50.00	-17.07	-13.05	0.00	-776.99	0.00	776.99	1883.43	519.02	1598.87	1432.66	13.02	-2.396	0.000	0.552
53.25	-16.12	-12.68	0.00	-734.59	0.00	734.59	1885.78	520.25	1606.48	1437.89	14.70	-2.532	0.000	0.520
55.00	-15.80	-12.52	0.00	-712.40	0.00	712.40	1879.83	517.15	1587.37	1424.73	15.64	-2.604	0.000	0.509
60.00	-14.95	-11.99	0.00	-649.80	0.00	649.80	1862.46	508.28	1533.39	1387.20	18.47	-2.795	0.000	0.477
65.00	-14.11	-11.45	0.00	-589.86	0.00	589.86	1844.57	499.41	1480.34	1349.74	21.50	-2.978	0.000	0.445
70.00	-13.29	-10.91	0.00	-532.61	0.00	532.61	1826.16	490.54	1428.23	1312.37	24.71	-3.152	0.000	0.414
75.00	-12.48	-10.36	0.00	-478.08	0.00	478.08	1807.23	481.67	1377.05	1275.12	28.10	-3.318	0.000	0.382
80.00	-11.69	-9.81	0.00	-426.29	0.00	426.29	1787.79	472.80	1326.80	1238.00	31.65	-3.475	0.000	0.351
85.00	-10.91	-9.25	0.00	-377.26	0.00	377.26	1767.82	463.93	1277.49	1201.05	35.37	-3.622	0.000	0.321
90.00	-10.15	-8.70	0.00	-331.00	0.00	331.00	1747.34	455.06	1229.11	1164.27	39.23	-3.759	0.000	0.290
95.00	-9.40	-8.14	0.00	-287.51	0.00	287.51	1726.34	446.19	1181.67	1127.68	43.24	-3.886	0.000	0.261
98.00	-8.96	-7.81	0.00	-263.09	0.00	263.09	1713.49	440.87	1153.65	1105.83	45.70	-3.958	0.000	0.243
100.00	-8.46	-7.57	0.00	-247.48	0.00	247.48	1704.82	437.32	1135.16	1091.31	47.37	-4.004	0.000	0.232
102.00	-7.96	-7.33	0.00	-232.34	0.00	232.34	1713.25	440.78	1153.14	1105.44	49.05	-4.049	0.000	0.215
105.00	-7.53	-7.00	0.00	-210.35	0.00	210.35	1700.21	435.45	1125.46	1083.67	51.62	-4.112	0.000	0.199
110.00	-6.81	-6.44	0.00	-175.37	0.00	175.37	1678.06	426.58	1080.08	1047.60	55.97	-4.202	0.000	0.172
115.00	-6.11	-5.88	0.00	-143.18	0.00	143.18	1655.39	417.72	1035.64	1011.78	60.41	-4.281	0.000	0.145
115.75	-5.88	-5.79	0.00	-138.78	0.00	138.78	1651.95	416.38	1029.05	1006.43	61.08	-4.293	0.000	0.142
115.75	-5.88	-5.79	0.00	-138.78	0.00	138.78	930.23	279.07	16530.8	173.90	61.08	-4.293	0.000	0.805
120.00	-5.01	-5.32	0.00	-114.19	0.00	114.19	930.23	279.07	16530.8	173.90	64.93	-4.350	0.000	0.662
125.00	-4.31	-4.77	0.00	-87.58	0.00	87.58	930.23	279.07	16530.8	173.90	70.06	-5.415	0.000	0.509
125.50	-3.96	-4.71	0.00	-85.20	0.00	85.20	930.23	279.07	16530.8	173.90	70.63	-5.506	0.000	0.494
130.00	-3.01	-4.16	0.00	-63.99	0.00	63.99	930.23	279.07	16530.8	173.90	76.16	-6.215	0.000	0.371
135.00	-2.43	-3.56	0.00	-43.18	0.00	43.18	930.23	279.07	16530.8	173.90	82.97	-6.780	0.000	0.251
135.25	-2.15	-3.51	0.00	-42.29	0.00	42.29	930.23	279.07	16530.8	173.90	83.32	-6.803	0.000	0.246
135.25	-2.15	-3.51	0.00	-42.29	0.00	42.29	579.84	173.95	3501.45	67.75	83.32	-6.803	0.000	0.628
139.00	-1.46	-3.02	0.00	-29.14	0.00	29.14	579.84	173.95	3501.45	67.75	88.77	-7.085	0.000	0.433
140.00	-1.37	-2.92	0.00	-26.13	0.00	26.13	579.84	173.95	3501.45	67.75	90.29	-7.468	0.000	0.388
145.00	-0.74	-1.47	0.00	-11.52	0.00	11.52	579.84	173.95	3501.45	67.75	98.85	-8.769	0.000	0.171
150.00	-0.30	-0.83	0.00	-4.17	0.00	4.17	579.84	173.95	3501.45	67.75	108.33	-9.312	0.000	0.062
155.00	0.00	-0.77	0.00	0.00	0.00	0.00	579.84	173.95	3501.45	67.75	118.13	-9.456	0.000	0.000

## Wind Loading - Shaft

<b>Structure:</b> CT46141-A-SBA	<b>Code:</b> TIA-222-H	3/1/2023
<b>Site Name:</b> Water Treatment Plant 2, CT	<b>Exposure:</b> C	
<b>Height:</b> 155.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

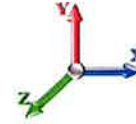


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**Load Case:** 0.9D + 1.0W 120 mph Wind

**Iterations** 30

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.00



Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	31.334	34.47	410.51	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	31.334	34.47	404.55	0.750	0.000	5.00	18.418	13.81	476.1	0.0	526.4
10.00		1.00	0.85	31.334	34.47	398.59	0.750	0.000	5.00	18.148	13.61	469.2	0.0	518.6
15.00		1.00	0.85	31.334	34.47	392.63	0.750	0.000	5.00	17.879	13.41	462.2	0.0	510.9
20.00		1.00	0.90	33.247	36.57	398.30	0.750	0.000	5.00	17.610	13.21	483.0	0.0	503.1
25.00		1.00	0.95	34.846	38.33	401.49	0.750	0.000	5.00	17.341	13.01	498.5	0.0	495.4
30.00		1.00	0.98	36.210	39.83	402.87	0.750	0.000	5.00	17.072	12.80	510.0	0.0	487.7
35.00		1.00	1.01	37.404	41.14	402.95	0.750	0.000	5.00	16.802	12.60	518.5	0.0	479.9
40.00		1.00	1.04	38.471	42.32	402.05	0.750	0.000	5.00	16.533	12.40	524.7	0.0	472.2
45.00		1.00	1.07	39.436	43.38	400.38	0.750	0.000	5.00	16.264	12.20	529.2	0.0	464.5
48.50	Bot - Section 2	1.00	1.09	40.063	44.07	398.84	0.750	0.000	3.50	11.225	8.42	371.0	0.0	320.5
50.00		1.00	1.09	40.321	44.35	398.09	0.750	0.000	1.50	4.834	3.63	160.8	0.0	274.2
53.25	Top - Section 1	1.00	1.11	40.859	44.94	396.32	0.750	0.000	3.25	10.390	7.79	350.2	0.0	589.4
55.00		1.00	1.12	41.138	45.25	400.67	0.750	0.000	1.75	5.548	4.16	188.3	0.0	158.4
60.00		1.00	1.14	41.899	46.09	397.46	0.750	0.000	5.00	15.669	11.75	541.6	0.0	447.3
65.00		1.00	1.16	42.611	46.87	393.88	0.750	0.000	5.00	15.400	11.55	541.4	0.0	439.6
70.00		1.00	1.17	43.281	47.61	389.97	0.750	0.000	5.00	15.130	11.35	540.3	0.0	431.9
75.00		1.00	1.19	43.914	48.31	385.76	0.750	0.000	5.00	14.861	11.15	538.4	0.0	424.1
80.00		1.00	1.21	44.515	48.97	381.29	0.750	0.000	5.00	14.592	10.94	535.9	0.0	416.4
85.00		1.00	1.22	45.086	49.60	376.58	0.750	0.000	5.00	14.323	10.74	532.8	0.0	408.7
90.00		1.00	1.24	45.632	50.20	371.66	0.750	0.000	5.00	14.054	10.54	529.1	0.0	400.9
95.00		1.00	1.25	46.155	50.77	366.56	0.750	0.000	5.00	13.784	10.34	524.9	0.0	393.2
98.00	Bot - Section 3	1.00	1.26	46.458	51.10	363.41	0.750	0.000	3.00	8.141	6.11	312.0	0.0	232.2
100.00		1.00	1.27	46.656	51.32	361.27	0.750	0.000	2.00	5.459	4.09	210.1	0.0	308.9
102.00	Top - Section 2	1.00	1.27	46.851	51.54	359.11	0.750	0.000	2.00	5.416	4.06	209.3	0.0	306.5
105.00		1.00	1.28	47.137	51.85	361.59	0.750	0.000	3.00	8.043	6.03	312.8	0.0	229.4
110.00		1.00	1.29	47.601	52.36	356.02	0.750	0.000	5.00	13.189	9.89	518.0	0.0	376.1
115.00		1.00	1.30	48.049	52.85	350.32	0.750	0.000	5.00	12.920	9.69	512.1	0.0	368.3
115.75	Top - Section 3	1.00	1.31	48.115	52.93	349.45	0.750	0.000	0.75	1.915	1.44	76.0	0.0	54.6
120.00	Appurtenance(s)	1.00	1.32	48.481	53.33	458.72	0.600	0.000	4.25	14.167	8.50	453.3	0.0	327.0
125.00		1.00	1.33	48.900	53.79	460.69	0.600	0.000	5.00	16.667	10.00	537.9	0.0	384.7
125.50	Appurtenance(s)	1.00	1.33	48.941	53.84	460.89	0.600	0.000	0.50	1.667	1.00	53.8	0.0	38.5
130.00	Appurtenance(s)	1.00	1.34	49.305	54.24	462.60	0.600	0.000	4.50	15.000	9.00	488.1	0.0	346.3
135.00		1.00	1.35	49.699	54.67	464.44	0.600	0.000	5.00	16.667	10.00	546.7	0.0	384.7
135.25	Top - Section 4	1.00	1.35	49.718	54.69	464.53	0.600	0.000	0.25	0.833	0.50	27.3	0.0	19.2
139.00	Appurtenance(s)	1.00	1.36	50.005	55.01	465.87	0.600	0.000	3.75	12.500	7.50	412.5	0.0	134.7
140.00		1.00	1.36	50.081	55.09	466.22	0.600	0.000	1.00	3.333	2.00	110.2	0.0	35.9
145.00	Appurtenance(s)	1.00	1.37	50.452	55.50	467.95	0.600	0.000	5.00	16.667	10.00	555.0	0.0	179.5
150.00	Appurtenance(s)	1.00	1.38	50.813	55.89	469.62	0.600	0.000	5.00	16.667	10.00	558.9	0.0	179.5
155.00	Appurtenance(s)	1.00	1.39	51.165	56.28	471.24	0.600	0.000	5.00	16.667	10.00	562.8	0.0	179.5
<b>Totals:</b>									<b>155.00</b>			<b>16,282.9</b>		<b>13,248.9</b>

## Discrete Appurtenance Forces

**Structure:** CT46141-A-SBA  
**Site Name:** Water Treatment Plant 2, CT  
**Height:** 155.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

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

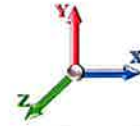
3/1/2023

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**Load Case:** 0.9D + 1.0W 120 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.00



**Iterations** 30

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	155.00	Truck Ball	1	51.165	56.282	1.00	1.00	3.77	45.00	0.000	0.000	212.18	0.00	0.00
2	155.00	40" Canister Weight	1	51.165	56.282	1.00	1.00	0.00	96.74	0.000	0.000	0.00	0.00	0.00
3	150.00	CCI DPO-7126Y-0-T1	3	50.813	55.895	1.00	1.00	0.00	19.71	0.000	0.000	0.00	0.00	0.00
4	150.00	RFS	3	50.813	55.895	1.00	1.00	0.00	17.55	0.000	0.000	0.00	0.00	0.00
5	150.00	Commscope	3	50.813	55.895	1.00	1.00	0.00	122.58	0.000	0.000	0.00	0.00	0.00
6	150.00	RFS ACU-A20-N	4	50.813	55.895	1.00	1.00	0.00	3.60	0.000	0.000	0.00	0.00	0.00
7	145.00	40" Canister Weight	1	50.452	55.497	1.00	1.00	0.00	191.05	0.000	0.000	0.00	0.00	0.00
8	145.00	Flag (20'x30')	1	50.452	55.497	1.00	1.00	14.56	180.00	0.000	0.000	808.04	0.00	0.00
9	139.00	DBC0062F3V52-1	6	50.005	55.006	1.00	1.00	0.00	35.64	0.000	0.000	0.00	0.00	0.00
10	139.00	DTMABP0723VG12A	6	50.005	55.006	1.00	1.00	0.00	103.68	0.000	0.000	0.00	0.00	0.00
11	139.00	TPA-65R-LCUUUU-H8	3	50.005	55.006	1.00	1.00	0.00	202.50	0.000	0.000	0.00	0.00	0.00
12	135.25	40" Canister Weight	1	49.718	54.690	1.00	1.00	0.00	188.64	0.000	0.000	0.00	0.00	0.00
13	130.00	ATSBT-TOP-FM	3	49.305	54.236	0.00	1.00	0.00	4.86	0.000	0.000	0.00	0.00	0.00
14	130.00	FV65-13-10DBL2	3	49.305	54.236	0.00	1.00	0.00	243.00	0.000	0.000	0.00	0.00	0.00
15	125.50	40" Canister Weight	1	48.941	53.835	1.00	1.00	0.00	188.64	0.000	0.000	0.00	0.00	0.00
16	120.00	CBC426T-DS-43	3	48.481	53.330	0.00	1.00	0.00	16.07	0.000	0.000	0.00	0.00	0.00
17	120.00	SBNHH-1D65B	3	48.481	53.330	0.00	1.00	0.00	137.48	0.000	0.000	0.00	0.00	0.00
18	115.75	40" Canister Weight	1	48.115	52.926	1.00	1.00	0.00	94.32	0.000	0.000	0.00	0.00	0.00
<b>Totals:</b>									<b>1,891.06</b>			<b>1,020.22</b>		

## Total Applied Force Summary

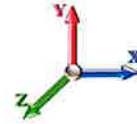
<b>Structure:</b> CT46141-A-SBA	<b>Code:</b> TIA-222-H	3/1/2023
<b>Site Name:</b> Water Treatment Plant 2, CT	<b>Exposure:</b> C	
<b>Height:</b> 155.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.0W 120 mph Wind

**Dead Load Factor**    0.90  
**Wind Load Factor**    1.00



**Iterations**    30

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		476.11	709.69	0.00	0.00
10.00		469.15	701.96	0.00	0.00
15.00		462.20	694.22	0.00	0.00
20.00		483.02	686.48	0.00	0.00
25.00		498.52	678.74	0.00	0.00
30.00		509.98	671.00	0.00	0.00
35.00		518.50	663.26	0.00	0.00
40.00		524.73	655.52	0.00	0.00
45.00		529.15	647.79	0.00	0.00
48.50		371.00	448.85	0.00	0.00
50.00		160.80	329.24	0.00	0.00
53.25		350.24	708.57	0.00	0.00
55.00		188.28	222.56	0.00	0.00
60.00		541.61	630.68	0.00	0.00
65.00		541.35	622.94	0.00	0.00
70.00		540.25	615.20	0.00	0.00
75.00		538.40	607.46	0.00	0.00
80.00		535.88	599.72	0.00	0.00
85.00		532.75	591.98	0.00	0.00
90.00		529.07	584.25	0.00	0.00
95.00		524.87	576.51	0.00	0.00
98.00		312.04	342.19	0.00	0.00
100.00		210.11	382.27	0.00	0.00
102.00		209.32	379.79	0.00	0.00
105.00		312.77	339.35	0.00	0.00
110.00		517.95	559.40	0.00	0.00
115.00		512.15	551.66	0.00	0.00
115.75	(1) attachments	76.01	176.40	0.00	0.00
120.00	(6) attachments	453.30	636.41	0.00	0.00
125.00		537.90	525.95	0.00	0.00
125.50	(1) attachments	53.84	241.23	0.00	0.00
130.00	(6) attachments	488.12	721.21	0.00	0.00
135.00		546.68	469.79	0.00	0.00
135.25	(1) attachments	27.34	212.13	0.00	0.00
139.00	(15) attachments	412.54	540.26	0.00	0.00
140.00		110.18	47.30	0.00	0.00
145.00	(2) attachments	1363.01	607.56	0.00	0.00
150.00	(13) attachments	558.95	399.95	0.00	0.00
155.00	(2) attachments	775.00	321.28	0.00	0.00
	<b>Totals:</b>	<b>17,303.10</b>	<b>20,100.74</b>	<b>0.00</b>	<b>0.00</b>

## Calculated Forces

**Structure:** CT46141-A-SBA  
**Site Name:** Water Treatment Plant 2, CT  
**Height:** 155.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

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

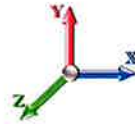
3/1/2023

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**Load Case:** 0.9D + 1.0W 120 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.00



**Iterations** 30

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-20.06	-17.35	0.00	-1533.5	0.00	1533.58	2027.49	607.71	2192.01	1807.56	0.00	0.000	0.000	0.859
5.00	-19.28	-16.96	0.00	-1446.8	0.00	1446.84	2015.42	598.84	2128.49	1770.42	0.14	-0.257	0.000	0.828
10.00	-18.51	-16.56	0.00	-1362.0	0.00	1362.06	2002.83	589.97	2065.91	1733.15	0.54	-0.510	0.000	0.796
15.00	-17.75	-16.17	0.00	-1279.2	0.00	1279.23	1989.72	581.10	2004.26	1695.77	1.21	-0.759	0.000	0.764
20.00	-17.00	-15.75	0.00	-1198.3	0.00	1198.38	1976.09	572.23	1943.55	1658.30	2.14	-1.004	0.000	0.732
25.00	-16.27	-15.31	0.00	-1119.6	0.00	1119.63	1961.94	563.37	1883.77	1620.75	3.32	-1.243	0.000	0.700
30.00	-15.55	-14.84	0.00	-1043.1	0.00	1043.11	1947.28	554.50	1824.92	1583.16	4.74	-1.477	0.000	0.668
35.00	-14.85	-14.36	0.00	-968.90	0.00	968.90	1932.09	545.63	1767.01	1545.53	6.41	-1.706	0.000	0.635
40.00	-14.16	-13.87	0.00	-897.08	0.00	897.08	1916.39	536.76	1710.03	1507.89	8.32	-1.928	0.000	0.603
45.00	-13.48	-13.36	0.00	-827.72	0.00	827.72	1900.17	527.89	1653.99	1470.26	10.45	-2.144	0.000	0.571
48.50	-13.03	-13.00	0.00	-780.95	0.00	780.95	1888.50	521.68	1615.31	1443.94	12.08	-2.292	0.000	0.548
50.00	-12.68	-12.85	0.00	-761.45	0.00	761.45	1883.43	519.02	1598.87	1432.66	12.81	-2.355	0.000	0.539
53.25	-11.97	-12.49	0.00	-719.70	0.00	719.70	1885.78	520.25	1606.48	1437.89	14.46	-2.488	0.000	0.507
55.00	-11.72	-12.32	0.00	-697.84	0.00	697.84	1879.83	517.15	1587.37	1424.73	15.39	-2.559	0.000	0.497
60.00	-11.08	-11.78	0.00	-636.25	0.00	636.25	1862.46	508.28	1533.39	1387.20	18.17	-2.746	0.000	0.465
65.00	-10.45	-11.24	0.00	-577.34	0.00	577.34	1844.57	499.41	1480.34	1349.74	21.14	-2.925	0.000	0.434
70.00	-9.84	-10.70	0.00	-521.13	0.00	521.13	1826.16	490.54	1428.23	1312.37	24.29	-3.096	0.000	0.403
75.00	-9.23	-10.15	0.00	-467.63	0.00	467.63	1807.23	481.67	1377.05	1275.12	27.62	-3.258	0.000	0.372
80.00	-8.64	-9.61	0.00	-416.86	0.00	416.86	1787.79	472.80	1326.80	1238.00	31.11	-3.411	0.000	0.342
85.00	-8.06	-9.06	0.00	-368.83	0.00	368.83	1767.82	463.93	1277.49	1201.05	34.76	-3.555	0.000	0.312
90.00	-7.49	-8.51	0.00	-323.54	0.00	323.54	1747.34	455.06	1229.11	1164.27	38.55	-3.689	0.000	0.283
95.00	-6.94	-7.96	0.00	-280.98	0.00	280.98	1726.34	446.19	1181.67	1127.68	42.48	-3.813	0.000	0.254
98.00	-6.61	-7.63	0.00	-257.10	0.00	257.10	1713.49	440.87	1153.65	1105.83	44.90	-3.884	0.000	0.237
100.00	-6.23	-7.40	0.00	-241.84	0.00	241.84	1704.82	437.32	1135.16	1091.31	46.53	-3.929	0.000	0.226
102.00	-5.86	-7.17	0.00	-227.03	0.00	227.03	1713.25	440.78	1153.14	1105.44	48.19	-3.972	0.000	0.209
105.00	-5.54	-6.84	0.00	-205.52	0.00	205.52	1700.21	435.45	1125.46	1083.67	50.70	-4.034	0.000	0.193
110.00	-5.01	-6.29	0.00	-171.30	0.00	171.30	1678.06	426.58	1080.08	1047.60	54.97	-4.122	0.000	0.167
115.00	-4.49	-5.75	0.00	-139.82	0.00	139.82	1655.39	417.72	1035.64	1011.78	59.33	-4.199	0.000	0.141
115.75	-4.32	-5.66	0.00	-135.51	0.00	135.51	1651.95	416.38	1029.05	1006.43	59.99	-4.210	0.000	0.137
115.75	-4.32	-5.66	0.00	-135.51	0.00	135.51	930.23	279.07	16530.8	173.90	59.99	-4.210	0.000	0.784
120.00	-3.66	-5.20	0.00	-111.45	0.00	111.45	930.23	279.07	16530.8	173.90	63.76	-4.267	0.000	0.645
125.00	-3.14	-4.65	0.00	-85.46	0.00	85.46	930.23	279.07	16530.8	173.90	68.79	-5.306	0.000	0.495
125.50	-2.87	-4.59	0.00	-83.13	0.00	83.13	930.23	279.07	16530.8	173.90	69.35	-5.395	0.000	0.481
130.00	-2.16	-4.06	0.00	-62.47	0.00	62.47	930.23	279.07	16530.8	173.90	74.77	-6.086	0.000	0.362
135.00	-1.74	-3.47	0.00	-42.17	0.00	42.17	930.23	279.07	16530.8	173.90	81.43	-6.638	0.000	0.245
135.25	-1.52	-3.42	0.00	-41.30	0.00	41.30	930.23	279.07	16530.8	173.90	81.78	-6.660	0.000	0.239
135.25	-1.52	-3.42	0.00	-41.30	0.00	41.30	579.84	173.95	3501.45	67.75	81.78	-6.660	0.000	0.613
139.00	-1.02	-2.96	0.00	-28.46	0.00	28.46	579.84	173.95	3501.45	67.75	87.12	-6.936	0.000	0.422
140.00	-0.94	-2.86	0.00	-25.51	0.00	25.51	579.84	173.95	3501.45	67.75	88.60	-7.310	0.000	0.378
145.00	-0.51	-1.43	0.00	-11.23	0.00	11.23	579.84	173.95	3501.45	67.75	96.98	-8.580	0.000	0.167
150.00	-0.19	-0.82	0.00	-4.08	0.00	4.08	579.84	173.95	3501.45	67.75	106.25	-9.109	0.000	0.061
155.00	0.00	-0.77	0.00	0.00	0.00	0.00	579.84	173.95	3501.45	67.75	115.85	-9.250	0.000	0.000

## Wind Loading - Shaft

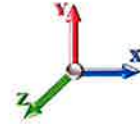
<b>Structure:</b> CT46141-A-SBA	<b>Code:</b> TIA-222-H	3/1/2023
<b>Site Name:</b> Water Treatment Plant 2, CT	<b>Exposure:</b> C	
<b>Height:</b> 155.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Dead Load Factor**    1.20  
**Wind Load Factor**    1.00



**Iterations**            29

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.440	5.98	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.440	5.98	0.00	1.200	1.242	5.00	19.453	23.34	139.7	342.3	1044.2
10.00		1.00	0.85	5.440	5.98	0.00	1.200	1.331	5.00	19.258	23.11	138.3	362.4	1053.9
15.00		1.00	0.85	5.440	5.98	0.00	1.200	1.386	5.00	19.035	22.84	136.7	372.4	1053.6
20.00		1.00	0.90	5.772	6.35	0.00	1.200	1.427	5.00	18.799	22.56	143.2	378.0	1048.8
25.00		1.00	0.95	6.050	6.65	0.00	1.200	1.459	5.00	18.557	22.27	148.2	381.0	1041.6
30.00		1.00	0.98	6.286	6.92	0.00	1.200	1.486	5.00	18.310	21.97	151.9	382.4	1032.6
35.00		1.00	1.01	6.494	7.14	0.00	1.200	1.509	5.00	18.060	21.67	154.8	382.6	1022.5
40.00		1.00	1.04	6.679	7.35	0.00	1.200	1.529	5.00	17.808	21.37	157.0	381.9	1011.5
45.00		1.00	1.07	6.847	7.53	0.00	1.200	1.547	5.00	17.553	21.06	158.6	380.5	999.8
48.50	Bot - Section 2	1.00	1.09	6.955	7.65	0.00	1.200	1.559	3.50	12.134	14.56	111.4	265.4	692.8
50.00		1.00	1.09	7.000	7.70	0.00	1.200	1.564	1.50	5.225	6.27	48.3	115.0	480.7
53.25	Top - Section 1	1.00	1.11	7.094	7.80	0.00	1.200	1.574	3.25	11.243	13.49	105.3	248.2	1034.1
55.00		1.00	1.12	7.142	7.86	0.00	1.200	1.579	1.75	6.008	7.21	56.6	133.3	344.5
60.00		1.00	1.14	7.274	8.00	0.00	1.200	1.592	5.00	16.996	20.39	163.2	378.2	974.6
65.00		1.00	1.16	7.398	8.14	0.00	1.200	1.605	5.00	16.737	20.08	163.4	375.0	961.1
70.00		1.00	1.17	7.514	8.27	0.00	1.200	1.617	5.00	16.478	19.77	163.4	371.5	947.3
75.00		1.00	1.19	7.624	8.39	0.00	1.200	1.628	5.00	16.218	19.46	163.2	367.8	933.3
80.00		1.00	1.21	7.728	8.50	0.00	1.200	1.639	5.00	15.958	19.15	162.8	363.8	919.0
85.00		1.00	1.22	7.828	8.61	0.00	1.200	1.649	5.00	15.697	18.84	162.2	359.6	904.5
90.00		1.00	1.24	7.922	8.71	0.00	1.200	1.658	5.00	15.435	18.52	161.4	355.2	889.7
95.00		1.00	1.25	8.013	8.81	0.00	1.200	1.667	5.00	15.174	18.21	160.5	350.6	874.9
98.00	Bot - Section 3	1.00	1.26	8.066	8.87	0.00	1.200	1.672	3.00	8.978	10.77	95.6	208.7	518.3
100.00		1.00	1.27	8.100	8.91	0.00	1.200	1.676	2.00	6.017	7.22	64.3	140.5	552.4
102.00	Top - Section 2	1.00	1.27	8.134	8.95	0.00	1.200	1.679	2.00	5.975	7.17	64.2	139.7	548.3
105.00		1.00	1.28	8.184	9.00	0.00	1.200	1.684	3.00	8.885	10.66	96.0	207.8	513.6
110.00		1.00	1.29	8.264	9.09	0.00	1.200	1.692	5.00	14.599	17.52	159.3	341.3	842.7
115.00		1.00	1.30	8.342	9.18	0.00	1.200	1.699	5.00	14.336	17.20	157.9	336.2	827.3
115.75	Top - Section 3	1.00	1.31	8.353	9.19	0.00	1.200	1.701	0.75	2.127	2.55	23.5	50.3	123.1
120.00	Appurtenance(s)	1.00	1.32	8.417	9.26	0.00	1.200	1.707	4.25	14.167	17.00	157.4	439.7	875.7
125.00		1.00	1.33	8.490	9.34	0.00	1.200	1.714	5.00	16.667	20.00	186.8	517.8	1030.7
125.50	Appurtenance(s)	1.00	1.33	8.497	9.35	0.00	1.200	1.714	0.50	1.667	2.00	18.7	51.8	103.1
130.00	Appurtenance(s)	1.00	1.34	8.560	9.42	0.00	1.200	1.720	4.50	15.000	18.00	169.5	466.4	928.1
135.00		1.00	1.35	8.628	9.49	0.00	1.200	1.727	5.00	16.667	20.00	189.8	518.7	1031.7
135.25	Top - Section 4	1.00	1.35	8.632	9.49	0.00	1.200	1.727	0.25	0.833	1.00	9.5	25.9	51.6
139.00	Appurtenance(s)	1.00	1.36	8.681	9.55	0.00	1.200	1.732	3.75	12.500	15.00	143.2	365.5	545.0
140.00		1.00	1.36	8.695	9.56	0.00	1.200	1.733	1.00	3.333	4.00	38.3	97.5	145.3
145.00	Appurtenance(s)	1.00	1.37	8.759	9.63	0.00	1.200	1.739	5.00	16.667	20.00	192.7	487.7	727.1
150.00	Appurtenance(s)	1.00	1.38	8.822	9.70	0.00	1.200	1.745	5.00	16.667	20.00	194.1	488.0	727.4
155.00	Appurtenance(s)	1.00	1.39	8.883	9.77	0.00	1.200	1.751	5.00	16.667	20.00	195.4	488.3	727.7
<b>Totals:</b>									<b>155.00</b>			<b>5,106.2</b>		<b>30,083.8</b>



## Discrete Appurtenance Forces

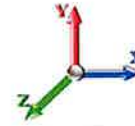
<b>Structure:</b> CT46141-A-SBA	<b>Code:</b> TIA-222-H	3/1/2023
<b>Site Name:</b> Water Treatment Plant 2, CT	<b>Exposure:</b> C	
<b>Height:</b> 155.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 29

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	155.00	Truck Ball	1	8.883	9.771	1.00	1.00	4.03	58.83	0.000	0.000	39.42	0.00	0.00
2	155.00	40" Canister Weight	1	8.883	9.771	1.00	1.00	0.00	189.34	0.000	0.000	0.00	0.00	0.00
3	150.00	CCI DPO-7126Y-0-T1	3	8.822	9.704	1.00	1.00	0.00	20.31	0.000	0.000	0.00	0.00	0.00
4	150.00	RFS	3	8.822	9.704	1.00	1.00	0.00	49.72	0.000	0.000	0.00	0.00	0.00
5	150.00	Commscope	3	8.822	9.704	1.00	1.00	0.00	34.35	0.000	0.000	0.00	0.00	0.00
6	150.00	RFS ACU-A20-N	4	8.822	9.704	1.00	1.00	0.00	16.78	0.000	0.000	0.00	0.00	0.00
7	145.00	40" Canister Weight	1	8.759	9.635	1.00	1.00	0.00	427.12	0.000	0.000	0.00	0.00	0.00
8	145.00	Flag (20'x30')	1	8.759	9.635	1.00	1.00	15.57	235.36	0.000	0.000	150.04	0.00	0.00
9	139.00	DBC0062F3V52-1	6	8.681	9.550	1.00	1.00	0.00	112.20	0.000	0.000	0.00	0.00	0.00
10	139.00	DTMABP0723VG12A	6	8.681	9.550	1.00	1.00	0.00	246.40	0.000	0.000	0.00	0.00	0.00
11	139.00	TPA-65R-LCUUUU-H8	3	8.681	9.550	1.00	1.00	44.80	1198.16	0.000	0.000	427.81	0.00	0.00
12	135.25	40" Canister Weight	1	8.632	9.495	1.00	1.00	0.00	420.93	0.000	0.000	0.00	0.00	0.00
13	130.00	ATSBT-TOP-FM	3	8.560	9.416	0.00	1.00	0.00	18.65	0.000	0.000	0.00	0.00	0.00
14	130.00	FV65-13-10DBL2	3	8.560	9.416	0.00	1.00	0.00	2190.44	0.000	0.000	0.00	0.00	0.00
15	125.50	40" Canister Weight	1	8.497	9.346	1.00	1.00	0.00	420.82	0.000	0.000	0.00	0.00	0.00
16	120.00	CBC426T-DS-43	3	8.417	9.259	0.00	1.00	1.77	70.44	0.000	0.000	16.36	0.00	0.00
17	120.00	SBNHH-1D65B	3	8.417	9.259	0.00	1.00	28.02	772.28	0.000	0.000	259.47	0.00	0.00
18	115.75	40" Canister Weight	1	8.353	9.189	1.00	1.00	0.00	183.02	0.000	0.000	0.00	0.00	0.00
<b>Totals:</b>									<b>6,665.15</b>			<b>893.10</b>		

## Total Applied Force Summary

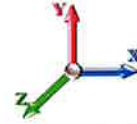
<b>Structure:</b> CT46141-A-SBA	<b>Code:</b> TIA-222-H	3/1/2023
<b>Site Name:</b> Water Treatment Plant 2, CT	<b>Exposure:</b> C	
<b>Height:</b> 155.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 29

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		139.69	1288.60	0.00	0.00
10.00		138.29	1298.33	0.00	0.00
15.00		136.68	1298.00	0.00	0.00
20.00		143.23	1293.27	0.00	0.00
25.00		148.19	1286.01	0.00	0.00
30.00		151.94	1277.09	0.00	0.00
35.00		154.80	1266.97	0.00	0.00
40.00		156.99	1255.94	0.00	0.00
45.00		158.64	1244.22	0.00	0.00
48.50		111.40	863.88	0.00	0.00
50.00		48.28	554.00	0.00	0.00
53.25		105.27	1192.97	0.00	0.00
55.00		56.64	430.09	0.00	0.00
60.00		163.19	1219.05	0.00	0.00
65.00		163.44	1205.56	0.00	0.00
70.00		163.44	1191.77	0.00	0.00
75.00		163.21	1177.71	0.00	0.00
80.00		162.79	1163.41	0.00	0.00
85.00		162.18	1148.90	0.00	0.00
90.00		161.41	1134.19	0.00	0.00
95.00		160.49	1119.31	0.00	0.00
98.00		95.58	664.94	0.00	0.00
100.00		64.34	650.14	0.00	0.00
102.00		64.16	646.07	0.00	0.00
105.00		95.98	660.24	0.00	0.00
110.00		159.26	1087.16	0.00	0.00
115.00		157.86	1071.74	0.00	0.00
115.75	(1) attachments	23.46	342.77	0.00	0.00
120.00	(6) attachments	433.22	1926.20	0.00	0.00
125.00		186.77	1219.02	0.00	0.00
125.50	(1) attachments	18.69	542.73	0.00	0.00
130.00	(6) attachments	169.49	3306.62	0.00	0.00
135.00		189.82	1145.06	0.00	0.00
135.25	(1) attachments	9.49	478.19	0.00	0.00
139.00	(15) attachments	571.05	2186.82	0.00	0.00
140.00		38.26	160.54	0.00	0.00
145.00	(2) attachments	342.74	1465.49	0.00	0.00
150.00	(13) attachments	194.08	924.48	0.00	0.00
155.00	(2) attachments	234.84	975.83	0.00	0.00
	<b>Totals:</b>	<b>5,999.28</b>	<b>43,363.31</b>	<b>0.00</b>	<b>0.00</b>

## Calculated Forces

**Structure:** CT46141-A-SBA  
**Site Name:** Water Treatment Plant 2, CT  
**Height:** 155.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

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

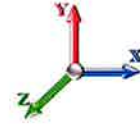
3/1/2023

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

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 29

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-43.36	-6.04	0.00	-612.14	0.00	612.14	2027.49	607.71	2192.01	1807.56	0.00	0.000	0.000	0.360
5.00	-42.06	-5.97	0.00	-581.95	0.00	581.95	2015.42	598.84	2128.49	1770.42	0.06	-0.103	0.000	0.350
10.00	-40.75	-5.90	0.00	-552.09	0.00	552.09	2002.83	589.97	2065.91	1733.15	0.22	-0.205	0.000	0.339
15.00	-39.44	-5.83	0.00	-522.57	0.00	522.57	1989.72	581.10	2004.26	1695.77	0.49	-0.306	0.000	0.328
20.00	-38.14	-5.75	0.00	-493.42	0.00	493.42	1976.09	572.23	1943.55	1658.30	0.86	-0.407	0.000	0.317
25.00	-36.85	-5.65	0.00	-464.70	0.00	464.70	1961.94	563.37	1883.77	1620.75	1.34	-0.506	0.000	0.306
30.00	-35.56	-5.55	0.00	-436.45	0.00	436.45	1947.28	554.50	1824.92	1583.16	1.92	-0.603	0.000	0.294
35.00	-34.29	-5.43	0.00	-408.72	0.00	408.72	1932.09	545.63	1767.01	1545.53	2.61	-0.699	0.000	0.282
40.00	-33.02	-5.31	0.00	-381.55	0.00	381.55	1916.39	536.76	1710.03	1507.89	3.39	-0.793	0.000	0.270
45.00	-31.78	-5.18	0.00	-354.99	0.00	354.99	1900.17	527.89	1653.99	1470.26	4.27	-0.886	0.000	0.258
48.50	-30.91	-5.08	0.00	-336.86	0.00	336.86	1888.50	521.68	1615.31	1443.94	4.94	-0.949	0.000	0.250
50.00	-30.35	-5.04	0.00	-329.24	0.00	329.24	1883.43	519.02	1598.87	1432.66	5.24	-0.976	0.000	0.246
53.25	-29.16	-4.94	0.00	-312.85	0.00	312.85	1885.78	520.25	1606.48	1437.89	5.93	-1.034	0.000	0.233
55.00	-28.72	-4.90	0.00	-304.20	0.00	304.20	1879.83	517.15	1587.37	1424.73	6.31	-1.065	0.000	0.229
60.00	-27.50	-4.76	0.00	-279.68	0.00	279.68	1862.46	508.28	1533.39	1387.20	7.47	-1.147	0.000	0.216
65.00	-26.29	-4.60	0.00	-255.90	0.00	255.90	1844.57	499.41	1480.34	1349.74	8.72	-1.226	0.000	0.204
70.00	-25.10	-4.45	0.00	-232.88	0.00	232.88	1826.16	490.54	1428.23	1312.37	10.04	-1.302	0.000	0.191
75.00	-23.92	-4.29	0.00	-210.65	0.00	210.65	1807.23	481.67	1377.05	1275.12	11.44	-1.375	0.000	0.179
80.00	-22.76	-4.12	0.00	-189.22	0.00	189.22	1787.79	472.80	1326.80	1238.00	12.92	-1.444	0.000	0.166
85.00	-21.61	-3.95	0.00	-168.62	0.00	168.62	1767.82	463.93	1277.49	1201.05	14.47	-1.509	0.000	0.153
90.00	-20.48	-3.78	0.00	-148.86	0.00	148.86	1747.34	455.06	1229.11	1164.27	16.08	-1.571	0.000	0.140
95.00	-19.36	-3.61	0.00	-129.94	0.00	129.94	1726.34	446.19	1181.67	1127.68	17.76	-1.628	0.000	0.127
98.00	-18.69	-3.50	0.00	-119.13	0.00	119.13	1713.49	440.87	1153.65	1105.83	18.79	-1.661	0.000	0.119
100.00	-18.05	-3.42	0.00	-112.13	0.00	112.13	1704.82	437.32	1135.16	1091.31	19.49	-1.682	0.000	0.113
102.00	-17.40	-3.35	0.00	-105.28	0.00	105.28	1713.25	440.78	1153.14	1105.44	20.20	-1.702	0.000	0.105
105.00	-16.74	-3.24	0.00	-95.24	0.00	95.24	1700.21	435.45	1125.46	1083.67	21.28	-1.730	0.000	0.098
110.00	-15.66	-3.06	0.00	-79.03	0.00	79.03	1678.06	426.58	1080.08	1047.60	23.11	-1.771	0.000	0.085
115.00	-14.59	-2.87	0.00	-63.73	0.00	63.73	1655.39	417.72	1035.64	1011.78	24.99	-1.807	0.000	0.072
115.75	-14.25	-2.84	0.00	-61.58	0.00	61.58	1651.95	416.38	1029.05	1006.43	25.27	-1.812	0.000	0.070
115.75	-14.25	-2.84	0.00	-61.58	0.00	61.58	930.23	279.07	16530.8	173.90	25.27	-1.812	0.000	0.370
120.00	-12.33	-2.40	0.00	-49.49	0.00	49.49	930.23	279.07	16530.8	173.90	26.90	-1.837	0.000	0.298
125.00	-11.11	-2.22	0.00	-37.48	0.00	37.48	930.23	279.07	16530.8	173.90	29.07	-2.296	0.000	0.228
125.50	-10.56	-2.21	0.00	-36.37	0.00	36.37	930.23	279.07	16530.8	173.90	29.31	-2.335	0.000	0.221
130.00	-7.25	-1.93	0.00	-26.42	0.00	26.42	930.23	279.07	16530.8	173.90	31.66	-2.633	0.000	0.160
135.00	-6.11	-1.70	0.00	-16.77	0.00	16.77	930.23	279.07	16530.8	173.90	34.55	-2.861	0.000	0.103
135.25	-5.64	-1.67	0.00	-16.34	0.00	16.34	930.23	279.07	16530.8	173.90	34.70	-2.870	0.000	0.100
135.25	-5.64	-1.67	0.00	-16.34	0.00	16.34	579.84	173.95	3501.45	67.75	34.70	-2.870	0.000	0.251
139.00	-3.48	-1.00	0.00	-10.08	0.00	10.08	579.84	173.95	3501.45	67.75	36.99	-2.974	0.000	0.155
140.00	-3.31	-0.97	0.00	-9.08	0.00	9.08	579.84	173.95	3501.45	67.75	37.63	-3.107	0.000	0.140
145.00	-1.87	-0.55	0.00	-4.24	0.00	4.24	579.84	173.95	3501.45	67.75	41.15	-3.568	0.000	0.066
150.00	-0.96	-0.30	0.00	-1.49	0.00	1.49	579.84	173.95	3501.45	67.75	45.01	-3.766	0.000	0.024
155.00	0.00	-0.23	0.00	0.00	0.00	0.00	579.84	173.95	3501.45	67.75	48.98	-3.818	0.000	0.000

## Seismic Segment Forces (Factored)

<b>Structure:</b> CT46141-A-SBA	<b>Code:</b> TIA-222-H	3/1/2023
<b>Site Name:</b> Water Treatment Plant 2, CT	<b>Exposure:</b> C	
<b>Height:</b> 155.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 1.2D + 1.0Ev + 1.0Eh				<b>Iterations</b> 25
<b>Gust Response Factor</b>	1.10	<b>Sds</b>	0.20	<b>Ss</b> 0.19
<b>Dead Load Factor</b>	1.20	<b>Seismic Load Factor</b>	1.00	<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency (f1)</b>	0.32	<b>SA</b> 0.03
				<b>Seismic Importance Factor</b> 1.00



Top Elev (ft)	Description	Wz (lb)	Hz (lb)	Vertical Ev (lb)	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	
5.00		829.29	2.50	33.26	0.01	
10.00		820.69	7.50	32.92	0.12	
15.00		812.09	12.50	32.57	0.33	
20.00		803.49	17.50	32.23	0.63	
25.00		794.90	22.50	31.88	1.02	
30.00		786.30	27.50	31.54	1.49	
35.00		777.70	32.50	31.19	2.03	
40.00		769.10	37.50	30.85	2.65	
45.00		760.50	42.50	30.50	3.33	
48.50	Bot - Section 2	527.24	46.75	21.15	1.93	
50.00		378.04	49.25	15.16	1.10	
53.25	Top - Section 1	813.78	51.63	32.64	5.62	
55.00		261.55	54.13	10.49	0.64	
60.00		741.49	57.50	29.74	5.79	
65.00		732.89	62.50	29.39	6.68	
70.00		724.29	67.50	29.05	7.61	
75.00		715.70	72.50	28.70	8.57	
80.00		707.10	77.50	28.36	9.56	
85.00		698.50	82.50	28.01	10.57	
90.00		689.90	87.50	27.67	11.60	
95.00		681.30	92.50	27.32	12.65	
98.00	Bot - Section 3	404.65	96.50	16.23	4.86	
100.00		441.04	99.00	17.69	6.07	
102.00	Top - Section 2	438.29	101.00	17.58	6.24	
105.00		401.50	103.50	16.10	5.50	
110.00		662.29	107.50	26.56	16.14	
115.00		653.69	112.50	26.22	17.22	
115.75	Top - Section 3	202.11	115.38	8.11	1.73	
120.00	Appurtenance(s)	696.42	117.88	27.93	21.46	
125.00		562.43	122.50	22.56	15.11	
125.50	Appurtenance(s)	265.84	125.25	10.66	3.53	
130.00	Appurtenance(s)	781.59	127.75	31.35	31.74	
135.00		487.55	132.50	19.55	13.29	
135.25	Top - Section 4	233.98	135.13	9.38	3.18	
139.00	Appurtenance(s)	574.47	137.13	23.04	19.76	
140.00		44.42	139.50	1.78	0.12	
145.00	Appurtenance(s)	634.39	142.50	25.44	26.02	
150.00	Appurtenance(s)	403.71	147.50	16.19	11.29	
155.00	Appurtenance(s)	303.64	152.50	12.18	6.83	
<b>Totals:</b>		<b>23,017.9</b>		<b>923.2</b>	<b>304.0</b>	<b>Total Wind: 17,303.1</b>

## Calculated Forces

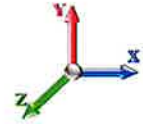
**Structure:** CT46141-A-SBA  
**Site Name:** Water Treatment Plant 2, CT  
**Height:** 155.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

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

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<b>Load Case:</b> 1.2D + 1.0Ev + 1.0Eh		<b>Iterations</b> 25	
<b>Gust Response Factor</b>	1.10	<b>Sds</b>	0.20
<b>Dead Load Factor</b>	1.20	<b>Seismic Load Factor</b>	1.00
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency (f1)</b>	0.32
		<b>SA</b>	0.03
		<b>Seismic Importance Factor</b>	1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-27.72	-0.30	0.00	-35.50	0.00	35.50	2027.49	607.71	2192.01	1807.56	0.00	0.00	0.00	0.033
5.00	-26.74	-0.31	0.00	-33.98	0.00	33.98	2015.42	598.84	2128.49	1770.42	0.00	-0.01	0.032	0.032
10.00	-25.78	-0.31	0.00	-32.45	0.00	32.45	2002.83	589.97	2065.91	1733.15	0.01	-0.01	0.032	0.032
15.00	-24.82	-0.31	0.00	-30.90	0.00	30.90	1989.72	581.10	2004.26	1695.77	0.03	-0.02	0.031	0.031
20.00	-23.87	-0.31	0.00	-29.34	0.00	29.34	1976.09	572.23	1943.55	1658.30	0.05	-0.02	0.030	0.030
25.00	-22.93	-0.31	0.00	-27.77	0.00	27.77	1961.94	563.37	1883.77	1620.75	0.08	-0.03	0.029	0.029
30.00	-22.01	-0.31	0.00	-26.20	0.00	26.20	1947.28	554.50	1824.92	1583.16	0.11	-0.04	0.028	0.028
35.00	-21.09	-0.31	0.00	-24.63	0.00	24.63	1932.09	545.63	1767.01	1545.53	0.15	-0.04	0.027	0.027
40.00	-20.19	-0.31	0.00	-23.07	0.00	23.07	1916.39	536.76	1710.03	1507.89	0.20	-0.05	0.026	0.026
45.00	-19.29	-0.31	0.00	-21.50	0.00	21.50	1900.17	527.89	1653.99	1470.26	0.25	-0.05	0.025	0.025
48.50	-18.67	-0.31	0.00	-20.42	0.00	20.42	1888.50	521.68	1615.31	1443.94	0.29	-0.06	0.024	0.024
50.00	-18.22	-0.31	0.00	-19.96	0.00	19.96	1883.43	519.02	1598.87	1432.66	0.31	-0.06	0.024	0.024
53.25	-17.24	-0.30	0.00	-18.96	0.00	18.96	1885.78	520.25	1606.48	1437.89	0.35	-0.06	0.022	0.022
55.00	-16.93	-0.30	0.00	-18.43	0.00	18.43	1879.83	517.15	1587.37	1424.73	0.37	-0.06	0.022	0.022
60.00	-16.06	-0.30	0.00	-16.92	0.00	16.92	1862.46	508.28	1533.39	1387.20	0.44	-0.07	0.021	0.021
65.00	-15.20	-0.29	0.00	-15.44	0.00	15.44	1844.57	499.41	1480.34	1349.74	0.52	-0.07	0.020	0.020
70.00	-14.35	-0.28	0.00	-13.99	0.00	13.99	1826.16	490.54	1428.23	1312.37	0.60	-0.08	0.019	0.019
75.00	-13.51	-0.27	0.00	-12.58	0.00	12.58	1807.23	481.67	1377.05	1275.12	0.68	-0.08	0.017	0.017
80.00	-12.69	-0.26	0.00	-11.21	0.00	11.21	1787.79	472.80	1326.80	1238.00	0.77	-0.09	0.016	0.016
85.00	-11.87	-0.25	0.00	-9.90	0.00	9.90	1767.82	463.93	1277.49	1201.05	0.86	-0.09	0.015	0.015
90.00	-11.06	-0.24	0.00	-8.63	0.00	8.63	1747.34	455.06	1229.11	1164.27	0.96	-0.09	0.014	0.014
95.00	-10.27	-0.23	0.00	-7.43	0.00	7.43	1726.34	446.19	1181.67	1127.68	1.06	-0.10	0.013	0.013
98.00	-9.79	-0.22	0.00	-6.75	0.00	6.75	1713.49	440.87	1153.65	1105.83	1.12	-0.10	0.012	0.012
100.00	-9.27	-0.21	0.00	-6.31	0.00	6.31	1704.82	437.32	1135.16	1091.31	1.16	-0.10	0.011	0.011
102.00	-8.74	-0.21	0.00	-5.88	0.00	5.88	1713.25	440.78	1153.14	1105.44	1.20	-0.10	0.010	0.010
105.00	-8.27	-0.20	0.00	-5.26	0.00	5.26	1700.21	435.45	1125.46	1083.67	1.27	-0.10	0.010	0.010
110.00	-7.50	-0.18	0.00	-4.25	0.00	4.25	1678.06	426.58	1080.08	1047.60	1.38	-0.11	0.009	0.009
115.00	-6.74	-0.17	0.00	-3.33	0.00	3.33	1655.39	417.72	1035.64	1011.78	1.49	-0.11	0.007	0.007
115.75	-6.50	-0.16	0.00	-3.20	0.00	3.20	1651.95	416.38	1029.05	1006.43	1.50	-0.11	0.007	0.007
115.75	-6.50	-0.16	0.00	-3.20	0.00	3.20	930.23	279.07	16530.8	173.90	1.50	-0.11	0.025	0.025
120.00	-5.62	-0.14	0.00	-2.50	0.00	2.50	930.23	279.07	16530.8	173.90	1.60	-0.11	0.020	0.020
125.00	-4.90	-0.13	0.00	-1.79	0.00	1.79	930.23	279.07	16530.8	173.90	1.73	-0.13	0.016	0.016
125.50	-4.56	-0.12	0.00	-1.73	0.00	1.73	930.23	279.07	16530.8	173.90	1.74	-0.13	0.015	0.015
130.00	-3.57	-0.09	0.00	-1.18	0.00	1.18	930.23	279.07	16530.8	173.90	1.87	-0.15	0.011	0.011
135.00	-2.93	-0.07	0.00	-0.73	0.00	0.73	930.23	279.07	16530.8	173.90	2.03	-0.16	0.007	0.007
135.25	-2.63	-0.07	0.00	-0.71	0.00	0.71	930.23	279.07	16530.8	173.90	2.04	-0.16	0.007	0.007
135.25	-2.63	-0.07	0.00	-0.71	0.00	0.71	579.84	173.95	3501.45	67.75	2.04	-0.16	0.015	0.015
139.00	-1.89	-0.05	0.00	-0.44	0.00	0.44	579.84	173.95	3501.45	67.75	2.17	-0.16	0.010	0.010
140.00	-1.83	-0.05	0.00	-0.40	0.00	0.40	579.84	173.95	3501.45	67.75	2.20	-0.17	0.009	0.009
145.00	-0.99	-0.02	0.00	-0.15	0.00	0.15	579.84	173.95	3501.45	67.75	2.39	-0.19	0.004	0.004
150.00	-0.44	-0.01	0.00	-0.04	0.00	0.04	579.84	173.95	3501.45	67.75	2.59	-0.19	0.001	0.001
155.00	0.00	-0.01	0.00	0.00	0.00	0.00	579.84	173.95	3501.45	67.75	2.79	-0.19	0.000	0.000

## Seismic Segment Forces (Factored)

**Structure:** CT46141-A-SBA  
**Site Name:** Water Treatment Plant 2, CT  
**Height:** 155.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

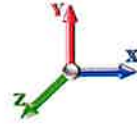
**Code:** TIA-222-H  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

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<b>Load Case:</b> 0.9D + 1.0Ev + 1.0Eh				<b>Iterations</b> 25
<b>Gust Response Factor</b>	1.10	<b>Sds</b>	0.20	<b>Ss</b> 0.19
<b>Dead Load Factor</b>	0.90	<b>Seismic Load Factor</b>	1.00	<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency (f1)</b>	0.32	<b>SA</b> 0.03 <b>Seismic Importance Factor</b> 1.00



Top Elev (ft)	Description	Wz (lb)	Hz (lb)	Vertical Ev (lb)	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	
5.00		768.18	2.50	30.81	0.01	
10.00		759.58	7.50	30.46	0.12	
15.00		750.98	12.50	30.12	0.32	
20.00		742.38	17.50	29.77	0.62	
25.00		733.79	22.50	29.43	0.99	
30.00		725.19	27.50	29.08	1.45	
35.00		716.59	32.50	28.74	1.98	
40.00		707.99	37.50	28.40	2.57	
45.00		699.39	42.50	28.05	3.22	
48.50	Bot - Section 2	484.46	46.75	19.43	1.87	
50.00		359.71	49.25	14.43	1.14	
53.25	Top - Section 1	774.06	51.63	31.04	5.82	
55.00		240.16	54.13	9.63	0.62	
60.00		680.38	57.50	27.29	5.58	
65.00		671.78	62.50	26.94	6.43	
70.00		663.18	67.50	26.60	7.31	
75.00		654.59	72.50	26.25	8.21	
80.00		645.99	77.50	25.91	9.14	
85.00		637.39	82.50	25.56	10.09	
90.00		628.79	87.50	25.22	11.04	
95.00		620.19	92.50	24.87	12.00	
98.00	Bot - Section 3	367.99	96.50	14.76	4.60	
100.00		416.59	99.00	16.71	6.20	
102.00	Top - Section 2	413.84	101.00	16.60	6.37	
105.00		364.84	103.50	14.63	5.20	
110.00		601.18	107.50	24.11	15.23	
115.00		592.58	112.50	23.77	16.21	
115.75	Top - Section 3	192.95	115.38	7.74	1.81	
120.00	Appurtenance(s)	644.47	117.88	25.85	21.05	
125.00		515.36	122.50	20.67	14.54	
125.50	Appurtenance(s)	261.14	125.25	10.47	3.90	
130.00	Appurtenance(s)	739.23	127.75	29.65	32.53	
135.00		459.20	132.50	18.42	13.50	
135.25	Top - Section 4	232.56	135.13	9.33	3.60	
139.00	Appurtenance(s)	553.20	137.13	22.19	20.99	
140.00		40.62	139.50	1.63	0.12	
145.00	Appurtenance(s)	615.40	142.50	24.68	28.05	
150.00	Appurtenance(s)	384.72	147.50	15.43	11.75	
155.00	Appurtenance(s)	303.64	152.50	12.18	7.82	
<b>Totals:</b>		<b>21,364.3</b>		<b>856.9</b>	<b>304.0</b>	<b>Total Wind: 17,303.1</b>

## Calculated Forces

**Structure:** CT46141-A-SBA  
**Site Name:** Water Treatment Plant 2, CT  
**Height:** 155.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

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

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<b>Load Case:</b> 0.9D + 1.0Ev + 1.0Eh		<b>Iterations</b> 25	
<b>Gust Response Factor</b> 1.10	<b>Sds</b> 0.20	<b>Ss</b> 0.19	
<b>Dead Load Factor</b> 0.90	<b>Seismic Load Factor</b> 1.00	<b>Sd1</b> 0.09	
<b>Wind Load Factor</b> 0.00	<b>Structure Frequency (f1)</b> 0.32	<b>SA</b> 0.03	
<b>Seismic Importance Factor</b> 1.00			

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-20.96	-0.30	0.00	-35.30	0.00	35.30	2027.49	607.71	2192.01	1807.56	0.00	0.00	0.00	0.030
5.00	-20.22	-0.31	0.00	-33.78	0.00	33.78	2015.42	598.84	2128.49	1770.42	0.00	-0.01	0.029	0.029
10.00	-19.48	-0.31	0.00	-32.25	0.00	32.25	2002.83	589.97	2065.91	1733.15	0.01	-0.01	0.028	0.028
15.00	-18.76	-0.31	0.00	-30.71	0.00	30.71	1989.72	581.10	2004.26	1695.77	0.03	-0.02	0.028	0.028
20.00	-18.04	-0.31	0.00	-29.16	0.00	29.16	1976.09	572.23	1943.55	1658.30	0.05	-0.02	0.027	0.027
25.00	-17.34	-0.31	0.00	-27.61	0.00	27.61	1961.94	563.37	1883.77	1620.75	0.08	-0.03	0.026	0.026
30.00	-16.64	-0.31	0.00	-26.06	0.00	26.06	1947.28	554.50	1824.92	1583.16	0.11	-0.04	0.025	0.025
35.00	-15.94	-0.31	0.00	-24.50	0.00	24.50	1932.09	545.63	1767.01	1545.53	0.15	-0.04	0.024	0.024
40.00	-15.26	-0.31	0.00	-22.96	0.00	22.96	1916.39	536.76	1710.03	1507.89	0.20	-0.05	0.023	0.023
45.00	-14.58	-0.31	0.00	-21.41	0.00	21.41	1900.17	527.89	1653.99	1470.26	0.25	-0.05	0.022	0.022
48.50	-14.12	-0.30	0.00	-20.34	0.00	20.34	1888.50	521.68	1615.31	1443.94	0.29	-0.06	0.022	0.022
50.00	-13.77	-0.30	0.00	-19.89	0.00	19.89	1883.43	519.02	1598.87	1432.66	0.31	-0.06	0.021	0.021
53.25	-13.03	-0.30	0.00	-18.90	0.00	18.90	1885.78	520.25	1606.48	1437.89	0.35	-0.06	0.020	0.020
55.00	-12.80	-0.30	0.00	-18.38	0.00	18.38	1879.83	517.15	1587.37	1424.73	0.37	-0.06	0.020	0.020
60.00	-12.14	-0.29	0.00	-16.90	0.00	16.90	1862.46	508.28	1533.39	1387.20	0.44	-0.07	0.019	0.019
65.00	-11.49	-0.29	0.00	-15.44	0.00	15.44	1844.57	499.41	1480.34	1349.74	0.51	-0.07	0.018	0.018
70.00	-10.85	-0.28	0.00	-14.01	0.00	14.01	1826.16	490.54	1428.23	1312.37	0.59	-0.08	0.017	0.017
75.00	-10.22	-0.27	0.00	-12.62	0.00	12.62	1807.23	481.67	1377.05	1275.12	0.68	-0.08	0.016	0.016
80.00	-9.59	-0.26	0.00	-11.27	0.00	11.27	1787.79	472.80	1326.80	1238.00	0.76	-0.09	0.014	0.014
85.00	-8.97	-0.25	0.00	-9.97	0.00	9.97	1767.82	463.93	1277.49	1201.05	0.86	-0.09	0.013	0.013
90.00	-8.36	-0.24	0.00	-8.72	0.00	8.72	1747.34	455.06	1229.11	1164.27	0.95	-0.09	0.012	0.012
95.00	-7.76	-0.23	0.00	-7.53	0.00	7.53	1726.34	446.19	1181.67	1127.68	1.05	-0.10	0.011	0.011
98.00	-7.41	-0.22	0.00	-6.85	0.00	6.85	1713.49	440.87	1153.65	1105.83	1.11	-0.10	0.011	0.011
100.00	-7.01	-0.21	0.00	-6.41	0.00	6.41	1704.82	437.32	1135.16	1091.31	1.16	-0.10	0.010	0.010
102.00	-6.61	-0.21	0.00	-5.98	0.00	5.98	1713.25	440.78	1153.14	1105.44	1.20	-0.10	0.009	0.009
105.00	-6.26	-0.20	0.00	-5.36	0.00	5.36	1700.21	435.45	1125.46	1083.67	1.26	-0.10	0.009	0.009
110.00	-5.67	-0.19	0.00	-4.35	0.00	4.35	1678.06	426.58	1080.08	1047.60	1.37	-0.10	0.008	0.008
115.00	-5.10	-0.17	0.00	-3.42	0.00	3.42	1655.39	417.72	1035.64	1011.78	1.48	-0.11	0.006	0.006
115.75	-4.91	-0.17	0.00	-3.29	0.00	3.29	1651.95	416.38	1029.05	1006.43	1.50	-0.11	0.006	0.006
115.75	-4.91	-0.17	0.00	-3.29	0.00	3.29	930.23	279.07	16530.8	173.90	1.50	-0.11	0.024	0.024
120.00	-4.25	-0.15	0.00	-2.59	0.00	2.59	930.23	279.07	16530.8	173.90	1.59	-0.11	0.019	0.019
125.00	-3.70	-0.13	0.00	-1.86	0.00	1.86	930.23	279.07	16530.8	173.90	1.72	-0.13	0.015	0.015
125.50	-3.45	-0.13	0.00	-1.79	0.00	1.79	930.23	279.07	16530.8	173.90	1.74	-0.13	0.014	0.014
130.00	-2.70	-0.09	0.00	-1.23	0.00	1.23	930.23	279.07	16530.8	173.90	1.87	-0.15	0.010	0.010
135.00	-2.21	-0.08	0.00	-0.76	0.00	0.76	930.23	279.07	16530.8	173.90	2.03	-0.16	0.007	0.007
135.25	-1.99	-0.07	0.00	-0.74	0.00	0.74	930.23	279.07	16530.8	173.90	2.04	-0.16	0.006	0.006
135.25	-1.99	-0.07	0.00	-0.74	0.00	0.74	579.84	173.95	3501.45	67.75	2.04	-0.16	0.014	0.014
139.00	-1.43	-0.05	0.00	-0.46	0.00	0.46	579.84	173.95	3501.45	67.75	2.17	-0.16	0.009	0.009
140.00	-1.38	-0.05	0.00	-0.41	0.00	0.41	579.84	173.95	3501.45	67.75	2.20	-0.17	0.008	0.008
145.00	-0.75	-0.02	0.00	-0.15	0.00	0.15	579.84	173.95	3501.45	67.75	2.39	-0.19	0.004	0.004
150.00	-0.33	-0.01	0.00	-0.04	0.00	0.04	579.84	173.95	3501.45	67.75	2.59	-0.20	0.001	0.001
155.00	0.00	-0.01	0.00	0.00	0.00	0.00	579.84	173.95	3501.45	67.75	2.80	-0.20	0.000	0.000

## Wind Loading - Shaft

**Structure:** CT46141-A-SBA  
**Site Name:** Water Treatment Plant 2, CT  
**Height:** 155.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

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

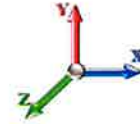
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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 28

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	6.659	7.32	205.25	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	6.659	7.32	202.27	0.750	0.000	5.00	18.418	13.81	101.2	0.0	584.8
10.00		1.00	0.85	6.659	7.32	199.30	0.750	0.000	5.00	18.148	13.61	99.7	0.0	576.3
15.00		1.00	0.85	6.659	7.32	196.32	0.750	0.000	5.00	17.879	13.41	98.2	0.0	567.7
20.00		1.00	0.90	7.065	7.77	199.15	0.750	0.000	5.00	17.610	13.21	102.6	0.0	559.1
25.00		1.00	0.95	7.405	8.15	200.74	0.750	0.000	5.00	17.341	13.01	105.9	0.0	550.5
30.00		1.00	0.98	7.695	8.46	201.43	0.750	0.000	5.00	17.072	12.80	108.4	0.0	541.9
35.00		1.00	1.01	7.948	8.74	201.47	0.750	0.000	5.00	16.802	12.60	110.2	0.0	533.3
40.00		1.00	1.04	8.175	8.99	201.03	0.750	0.000	5.00	16.533	12.40	111.5	0.0	524.7
45.00		1.00	1.07	8.380	9.22	200.19	0.750	0.000	5.00	16.264	12.20	112.4	0.0	516.1
48.50	Bot - Section 2	1.00	1.09	8.513	9.36	199.42	0.750	0.000	3.50	11.225	8.42	78.8	0.0	356.1
50.00		1.00	1.09	8.568	9.43	199.05	0.750	0.000	1.50	4.834	3.63	34.2	0.0	304.7
53.25	Top - Section 1	1.00	1.11	8.683	9.55	198.16	0.750	0.000	3.25	10.390	7.79	74.4	0.0	654.9
55.00		1.00	1.12	8.742	9.62	200.33	0.750	0.000	1.75	5.548	4.16	40.0	0.0	176.0
60.00		1.00	1.14	8.903	9.79	198.73	0.750	0.000	5.00	15.669	11.75	115.1	0.0	497.1
65.00		1.00	1.16	9.055	9.96	196.94	0.750	0.000	5.00	15.400	11.55	115.0	0.0	488.5
70.00		1.00	1.17	9.197	10.12	194.98	0.750	0.000	5.00	15.130	11.35	114.8	0.0	479.9
75.00		1.00	1.19	9.332	10.26	192.88	0.750	0.000	5.00	14.861	11.15	114.4	0.0	471.3
80.00		1.00	1.21	9.459	10.41	190.64	0.750	0.000	5.00	14.592	10.94	113.9	0.0	462.7
85.00		1.00	1.22	9.581	10.54	188.29	0.750	0.000	5.00	14.323	10.74	113.2	0.0	454.1
90.00		1.00	1.24	9.697	10.67	185.83	0.750	0.000	5.00	14.054	10.54	112.4	0.0	445.5
95.00		1.00	1.25	9.808	10.79	183.28	0.750	0.000	5.00	13.784	10.34	111.5	0.0	436.9
98.00	Bot - Section 3	1.00	1.26	9.872	10.86	181.70	0.750	0.000	3.00	8.141	6.11	66.3	0.0	258.0
100.00		1.00	1.27	9.914	10.91	180.64	0.750	0.000	2.00	5.459	4.09	44.6	0.0	343.3
102.00	Top - Section 2	1.00	1.27	9.956	10.95	179.56	0.750	0.000	2.00	5.416	4.06	44.5	0.0	340.5
105.00		1.00	1.28	10.017	11.02	180.80	0.750	0.000	3.00	8.043	6.03	66.5	0.0	254.8
110.00		1.00	1.29	10.115	11.13	178.01	0.750	0.000	5.00	13.189	9.89	110.1	0.0	417.9
115.00		1.00	1.30	10.210	11.23	175.16	0.750	0.000	5.00	12.920	9.69	108.8	0.0	409.3
115.75	Top - Section 3	1.00	1.31	10.224	11.25	174.73	0.750	0.000	0.75	1.915	1.44	16.2	0.0	60.6
120.00	Appurtenance(s)	1.00	1.32	10.302	11.33	229.36	0.600	0.000	4.25	14.167	8.50	96.3	0.0	363.4
125.00		1.00	1.33	10.391	11.43	230.35	0.600	0.000	5.00	16.667	10.00	114.3	0.0	427.5
125.50	Appurtenance(s)	1.00	1.33	10.400	11.44	230.44	0.600	0.000	0.50	1.667	1.00	11.4	0.0	42.7
130.00	Appurtenance(s)	1.00	1.34	10.477	11.53	231.30	0.600	0.000	4.50	15.000	9.00	103.7	0.0	384.7
135.00		1.00	1.35	10.561	11.62	232.22	0.600	0.000	5.00	16.667	10.00	116.2	0.0	427.5
135.25	Top - Section 4	1.00	1.35	10.565	11.62	232.27	0.600	0.000	0.25	0.833	0.50	5.8	0.0	21.4
139.00	Appurtenance(s)	1.00	1.36	10.626	11.69	232.94	0.600	0.000	3.75	12.500	7.50	87.7	0.0	149.6
140.00		1.00	1.36	10.642	11.71	233.11	0.600	0.000	1.00	3.333	2.00	23.4	0.0	39.9
145.00	Appurtenance(s)	1.00	1.37	10.721	11.79	233.97	0.600	0.000	5.00	16.667	10.00	117.9	0.0	199.5
150.00	Appurtenance(s)	1.00	1.38	10.798	11.88	234.81	0.600	0.000	5.00	16.667	10.00	118.8	0.0	199.5
155.00	Appurtenance(s)	1.00	1.39	10.873	11.96	235.62	0.600	0.000	5.00	16.667	10.00	119.6	0.0	199.5
<b>Totals:</b>									<b>155.00</b>			<b>3,460.1</b>	<b>14,721.0</b>	



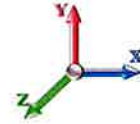
## Discrete Appurtenance Forces

<b>Structure:</b> CT46141-A-SBA	<b>Code:</b> TIA-222-H	3/1/2023
<b>Site Name:</b> Water Treatment Plant 2, CT	<b>Exposure:</b> C	
<b>Height:</b> 155.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Page:</b> 25
	<b>Struct Class:</b> II	



**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 28

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	155.00	Truck Ball	1	10.873	11.960	1.00	1.00	3.77	50.00	0.000	0.000	45.09	0.00	0.00
2	155.00	40" Canister Weight	1	10.873	11.960	1.00	1.00	0.00	107.49	0.000	0.000	0.00	0.00	0.00
3	150.00	CCI DPO-7126Y-0-T1	3	10.798	11.878	1.00	1.00	0.00	21.90	0.000	0.000	0.00	0.00	0.00
4	150.00	RFS	3	10.798	11.878	1.00	1.00	0.00	19.50	0.000	0.000	0.00	0.00	0.00
5	150.00	Commscope	3	10.798	11.878	1.00	1.00	0.00	136.20	0.000	0.000	0.00	0.00	0.00
6	150.00	RFS ACU-A20-N	4	10.798	11.878	1.00	1.00	0.00	4.00	0.000	0.000	0.00	0.00	0.00
7	145.00	40" Canister Weight	1	10.721	11.793	1.00	1.00	0.00	212.28	0.000	0.000	0.00	0.00	0.00
8	145.00	Flag (20'x30')	1	10.721	11.793	1.00	1.00	14.56	200.00	0.000	0.000	171.71	0.00	0.00
9	139.00	DBC0062F3V52-1	6	10.626	11.689	1.00	1.00	0.00	39.60	0.000	0.000	0.00	0.00	0.00
10	139.00	DTMABP0723VG12A	6	10.626	11.689	1.00	1.00	0.00	115.20	0.000	0.000	0.00	0.00	0.00
11	139.00	TPA-65R-LCUUUU-H8	3	10.626	11.689	1.00	1.00	0.00	225.00	0.000	0.000	0.00	0.00	0.00
12	135.25	40" Canister Weight	1	10.565	11.622	1.00	1.00	0.00	209.60	0.000	0.000	0.00	0.00	0.00
13	130.00	ATSBT-TOP-FM	3	10.477	11.525	0.00	1.00	0.00	5.40	0.000	0.000	0.00	0.00	0.00
14	130.00	FV65-13-10DBL2	3	10.477	11.525	0.00	1.00	0.00	270.00	0.000	0.000	0.00	0.00	0.00
15	125.50	40" Canister Weight	1	10.400	11.440	1.00	1.00	0.00	209.60	0.000	0.000	0.00	0.00	0.00
16	120.00	CBC426T-DS-43	3	10.302	11.333	0.00	1.00	0.00	17.85	0.000	0.000	0.00	0.00	0.00
17	120.00	SBNHH-1D65B	3	10.302	11.333	0.00	1.00	0.00	152.76	0.000	0.000	0.00	0.00	0.00
18	115.75	40" Canister Weight	1	10.224	11.247	1.00	1.00	0.00	104.80	0.000	0.000	0.00	0.00	0.00
<b>Totals:</b>									<b>2,101.18</b>			<b>216.80</b>		

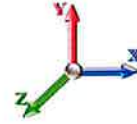
## Total Applied Force Summary

<b>Structure:</b> CT46141-A-SBA	<b>Code:</b> TIA-222-H	3/1/2023
<b>Site Name:</b> Water Treatment Plant 2, CT	<b>Exposure:</b> C	
<b>Height:</b> 155.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Page:</b> 26
	<b>Struct Class:</b> II	



**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 28

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		101.17	788.55	0.00	0.00
10.00		99.70	779.95	0.00	0.00
15.00		98.22	771.35	0.00	0.00
20.00		102.64	762.75	0.00	0.00
25.00		105.93	754.16	0.00	0.00
30.00		108.37	745.56	0.00	0.00
35.00		110.18	736.96	0.00	0.00
40.00		111.51	728.36	0.00	0.00
45.00		112.44	719.76	0.00	0.00
48.50		78.84	498.72	0.00	0.00
50.00		34.17	365.82	0.00	0.00
53.25		74.43	787.30	0.00	0.00
55.00		40.01	247.29	0.00	0.00
60.00		115.09	700.75	0.00	0.00
65.00		115.04	692.15	0.00	0.00
70.00		114.80	683.55	0.00	0.00
75.00		114.41	674.96	0.00	0.00
80.00		113.88	666.36	0.00	0.00
85.00		113.21	657.76	0.00	0.00
90.00		112.43	649.16	0.00	0.00
95.00		111.54	640.56	0.00	0.00
98.00		66.31	380.21	0.00	0.00
100.00		44.65	424.74	0.00	0.00
102.00		44.48	421.99	0.00	0.00
105.00		66.46	377.06	0.00	0.00
110.00		110.06	621.55	0.00	0.00
115.00		108.83	612.95	0.00	0.00
115.75	(1) attachments	16.15	196.00	0.00	0.00
120.00	(6) attachments	96.33	707.12	0.00	0.00
125.00		114.30	584.39	0.00	0.00
125.50	(1) attachments	11.44	268.04	0.00	0.00
130.00	(6) attachments	103.73	801.35	0.00	0.00
135.00		116.17	521.99	0.00	0.00
135.25	(1) attachments	5.81	235.70	0.00	0.00
139.00	(15) attachments	87.67	600.29	0.00	0.00
140.00		23.41	52.56	0.00	0.00
145.00	(2) attachments	289.64	675.07	0.00	0.00
150.00	(13) attachments	118.78	444.39	0.00	0.00
155.00	(2) attachments	164.69	356.98	0.00	0.00
	<b>Totals:</b>	<b>3,676.91</b>	<b>22,334.15</b>	<b>0.00</b>	<b>0.00</b>

## Calculated Forces

**Structure:** CT46141-A-SBA  
**Site Name:** Water Treatment Plant 2, CT  
**Height:** 155.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

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

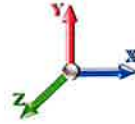
3/1/2023

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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 28

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-22.33	-3.69	0.00	-327.78	0.00	327.78	2027.49	607.71	2192.01	1807.56	0.00	0.000	0.000	0.192
5.00	-21.54	-3.61	0.00	-309.34	0.00	309.34	2015.42	598.84	2128.49	1770.42	0.03	-0.055	0.000	0.185
10.00	-20.76	-3.52	0.00	-291.31	0.00	291.31	2002.83	589.97	2065.91	1733.15	0.12	-0.109	0.000	0.178
15.00	-19.98	-3.44	0.00	-273.69	0.00	273.69	1989.72	581.10	2004.26	1695.77	0.26	-0.162	0.000	0.171
20.00	-19.22	-3.36	0.00	-256.47	0.00	256.47	1976.09	572.23	1943.55	1658.30	0.46	-0.215	0.000	0.164
25.00	-18.46	-3.26	0.00	-239.69	0.00	239.69	1961.94	563.37	1883.77	1620.75	0.71	-0.266	0.000	0.157
30.00	-17.71	-3.17	0.00	-223.38	0.00	223.38	1947.28	554.50	1824.92	1583.16	1.01	-0.316	0.000	0.150
35.00	-16.97	-3.07	0.00	-207.55	0.00	207.55	1932.09	545.63	1767.01	1545.53	1.37	-0.365	0.000	0.143
40.00	-16.24	-2.96	0.00	-192.22	0.00	192.22	1916.39	536.76	1710.03	1507.89	1.78	-0.413	0.000	0.136
45.00	-15.52	-2.86	0.00	-177.41	0.00	177.41	1900.17	527.89	1653.99	1470.26	2.24	-0.459	0.000	0.129
48.50	-15.02	-2.78	0.00	-167.42	0.00	167.42	1888.50	521.68	1615.31	1443.94	2.59	-0.491	0.000	0.124
50.00	-14.66	-2.75	0.00	-163.25	0.00	163.25	1883.43	519.02	1598.87	1432.66	2.74	-0.504	0.000	0.122
53.25	-13.87	-2.67	0.00	-154.33	0.00	154.33	1885.78	520.25	1606.48	1437.89	3.09	-0.533	0.000	0.115
55.00	-13.62	-2.63	0.00	-149.66	0.00	149.66	1879.83	517.15	1587.37	1424.73	3.29	-0.548	0.000	0.112
60.00	-12.92	-2.52	0.00	-136.49	0.00	136.49	1862.46	508.28	1533.39	1387.20	3.89	-0.588	0.000	0.105
65.00	-12.23	-2.41	0.00	-123.88	0.00	123.88	1844.57	499.41	1480.34	1349.74	4.52	-0.626	0.000	0.098
70.00	-11.54	-2.29	0.00	-111.85	0.00	111.85	1826.16	490.54	1428.23	1312.37	5.20	-0.663	0.000	0.092
75.00	-10.87	-2.18	0.00	-100.40	0.00	100.40	1807.23	481.67	1377.05	1275.12	5.91	-0.698	0.000	0.085
80.00	-10.20	-2.06	0.00	-89.52	0.00	89.52	1787.79	472.80	1326.80	1238.00	6.66	-0.731	0.000	0.078
85.00	-9.55	-1.94	0.00	-79.23	0.00	79.23	1767.82	463.93	1277.49	1201.05	7.44	-0.762	0.000	0.071
90.00	-8.90	-1.83	0.00	-69.52	0.00	69.52	1747.34	455.06	1229.11	1164.27	8.26	-0.790	0.000	0.065
95.00	-8.26	-1.71	0.00	-60.39	0.00	60.39	1726.34	446.19	1181.67	1127.68	9.10	-0.817	0.000	0.058
98.00	-7.88	-1.64	0.00	-55.27	0.00	55.27	1713.49	440.87	1153.65	1105.83	9.62	-0.832	0.000	0.055
100.00	-7.45	-1.59	0.00	-51.99	0.00	51.99	1704.82	437.32	1135.16	1091.31	9.97	-0.842	0.000	0.052
102.00	-7.03	-1.54	0.00	-48.82	0.00	48.82	1713.25	440.78	1153.14	1105.44	10.32	-0.851	0.000	0.048
105.00	-6.66	-1.47	0.00	-44.20	0.00	44.20	1700.21	435.45	1125.46	1083.67	10.86	-0.864	0.000	0.045
110.00	-6.04	-1.35	0.00	-36.86	0.00	36.86	1678.06	426.58	1080.08	1047.60	11.78	-0.883	0.000	0.039
115.00	-5.43	-1.23	0.00	-30.11	0.00	30.11	1655.39	417.72	1035.64	1011.78	12.71	-0.900	0.000	0.033
115.75	-5.23	-1.21	0.00	-29.18	0.00	29.18	1651.95	416.38	1029.05	1006.43	12.85	-0.903	0.000	0.032
115.75	-5.23	-1.21	0.00	-29.18	0.00	29.18	930.23	279.07	16530.8	173.90	12.85	-0.903	0.000	0.173
120.00	-4.52	-1.12	0.00	-24.02	0.00	24.02	930.23	279.07	16530.8	173.90	13.66	-0.915	0.000	0.143
125.00	-3.94	-1.00	0.00	-18.44	0.00	18.44	930.23	279.07	16530.8	173.90	14.74	-1.139	0.000	0.110
125.50	-3.67	-0.99	0.00	-17.94	0.00	17.94	930.23	279.07	16530.8	173.90	14.86	-1.158	0.000	0.107
130.00	-2.87	-0.87	0.00	-13.49	0.00	13.49	930.23	279.07	16530.8	173.90	16.03	-1.307	0.000	0.081
135.00	-2.35	-0.75	0.00	-9.11	0.00	9.11	930.23	279.07	16530.8	173.90	17.46	-1.426	0.000	0.055
135.25	-2.11	-0.74	0.00	-8.93	0.00	8.93	930.23	279.07	16530.8	173.90	17.54	-1.431	0.000	0.054
135.25	-2.11	-0.74	0.00	-8.93	0.00	8.93	579.84	173.95	3501.45	67.75	17.54	-1.431	0.000	0.135
139.00	-1.51	-0.64	0.00	-6.16	0.00	6.16	579.84	173.95	3501.45	67.75	18.69	-1.491	0.000	0.094
140.00	-1.46	-0.62	0.00	-5.52	0.00	5.52	579.84	173.95	3501.45	67.75	19.01	-1.572	0.000	0.084
145.00	-0.79	-0.31	0.00	-2.43	0.00	2.43	579.84	173.95	3501.45	67.75	20.82	-1.847	0.000	0.037
150.00	-0.35	-0.18	0.00	-0.88	0.00	0.88	579.84	173.95	3501.45	67.75	22.82	-1.961	0.000	0.014
155.00	0.00	-0.16	0.00	0.00	0.00	0.00	579.84	173.95	3501.45	67.75	24.90	-1.992	0.000	0.000

## Final Analysis Summary

<b>Structure:</b> CT46141-A-SBA	<b>Code:</b> TIA-222-H	3/1/2023
<b>Site Name:</b> Water Treatment Plant 2, CT	<b>Exposure:</b> C	
<b>Height:</b> 155.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.0W 120 mph Wind	17.4	0.00	26.76	0.00	0.00	1555.14
0.9D + 1.0W 120 mph Wind	17.3	0.00	20.06	0.00	0.00	1533.58
1.2D + 1.0Di + 1.0Wi 50 mph Wind	6.0	0.00	43.36	0.00	0.00	612.14
1.2D + 1.0Ev + 1.0Eh	0.3	0.00	27.72	0.00	0.00	35.50
0.9D + 1.0Ev + 1.0Eh	0.3	0.00	20.96	0.00	0.00	35.30
1.0D + 1.0W 60 mph Wind	3.7	0.00	22.33	0.00	0.00	327.78

### Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.0W 120 mph Wind	-26.76	-17.37	0.00	-1555.1	0.00	-1555.1	2027.49	607.71	2192.01	1807.56	0.00	0.874
0.9D + 1.0W 120 mph Wind	-20.06	-17.35	0.00	-1533.5	0.00	-1533.5	2027.49	607.71	2192.01	1807.56	0.00	0.859
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-14.25	-2.84	0.00	-61.58	0.00	-61.58	1651.95	416.38	1029.05	1006.43	115.75	0.370
1.2D + 1.0Ev + 1.0Eh	-27.72	-0.30	0.00	-35.50	0.00	-35.50	2027.49	607.71	2192.01	1807.56	0.00	0.033
0.9D + 1.0Ev + 1.0Eh	-20.96	-0.30	0.00	-35.30	0.00	-35.30	2027.49	607.71	2192.01	1807.56	0.00	0.030
1.0D + 1.0W 60 mph Wind	-22.33	-3.69	0.00	-327.78	0.00	-327.78	2027.49	607.71	2192.01	1807.56	0.00	0.192

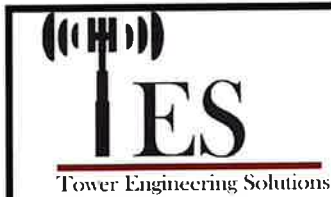
## Base Plate Summary

<b>Structure:</b> CT46141-A-SB	<b>Code:</b> TIA-222-H	3/1/2023
<b>Site Name:</b> Water Treatment Plant 2, CT	<b>Exposure:</b> C	
<b>Height:</b> 155.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



Page: 29

Reactions	Base Plate	Anchor Bolts
Original Design	<b>Yield (ksi):</b> 60.00	<b>Bolt Circle:</b> 50.00
<b>Moment (kip-ft):</b> 1230.00	<b>Width (in):</b> 47.00	<b>Number Bolts:</b> 8.00
<b>Axial (kip):</b> 22.50	<b>Style:</b> Clipped	<b>Bolt Type:</b> 2.25" 18J
<b>Shear (kip):</b> 13.20	<b>Polygon Sides:</b> 0.00	<b>Bolt Diameter (in):</b> 2.25
Analysis (1.2D + 1.0W)	<b>Clip Length (in):</b> 7.00	<b>Yield (ksi):</b> 75.00
<b>Moment (kip-ft):</b> 1555.14	<b>Effective Len (in):</b> 13.20	<b>Ultimate (ksi):</b> 100.00
<b>Axial (kip):</b> 26.76	<b>Moment (kip-in):</b> 601.23	<b>Arrangement:</b> Clustered
<b>Shear (kip):</b> 17.37	<b>Allow Stress (ksi):</b> 81.00	<b>Cluster Dist (in):</b> 6.00
	<b>Applied Stress (ksi):</b> 54.27	<b>Start Angle (deg):</b> 45.00
	<b>Stress Ratio:</b> 0.67	Compression
		<b>Force (kip):</b> 189.96
		<b>Allowable (kip):</b> 268.39
		<b>Ratio:</b> 0.71
		Tension
		<b>Force (kip):</b> 183.27
		<b>Allowable (kip):</b> 243.75
		<b>Ratio:</b> 0.75



## Pier Foundation Design For Monopole

Date

3/1/2023

<b>Customer Name:</b>	Verizon	<b>EIA/TIA Standard:</b>	TIA-222-H
<b>Site Name:</b>		<b>Structure Height (Ft.):</b>	155
<b>Site Number:</b>	CT46141-A-SBA	<b>Engineer Name:</b>	H. You
<b>Engr. Number:</b>	138932	<b>Engineer Login ID:</b>	

**Foundation Info Obtained from:**

Drawings/Calculations

**Structure Type:**

Monopole

**Analysis or Design?**

Analysis

**Base Reactions (Factored):**

Axial Load (Kips):	26.8	Shear Force (Kips):	17.4
Uplift Force (Kips):	0.0	Moment (Kips-ft):	1555.1

**Foundation Geometries:**

Diameter of Pier (ft.):	6.0	Depth of Base B. G. S. :	29.0 ft.
Pier Height A. G. (ft.):	1.00		

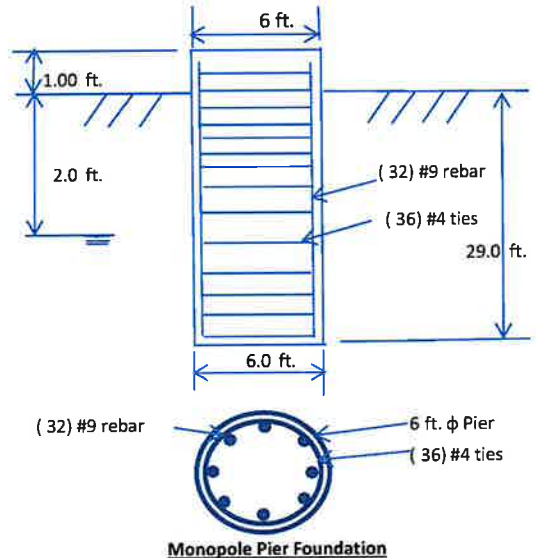
**Material Properties and Reabr Info:**

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000 ksi
Vertical bar yield (ksi):	60	Tie steel yield strength:	60 ksi
Vertical Rebar Size #:	9	Tie / Stirrup Size #:	4
Qty. of Vertical Rebars:	32	Tie Spacing:	12.0 in.
Concrete Cover (in.):	3	Concrete unit weight:	150.0 pcf

**Soil Design Parameters:**

Water Table B.G.S. (ft):	2.0	Unit weight of water:	62.4 psf
Ratio of Uplift/Axial Skin Friction:	1.0	Pullout failure Angle:	30 (°)

Skin Frictions are to be obtained from: Soil Report



**Monopole Pier Foundation**

Depth of Layers (ft)		$\gamma_{soil}$ (pcf)	$\phi$ (°)	Cohesion (psf)	Ultimate Skin Friction (psf)	Ultimate Bearing (psf)	Soil Types							
Top	Bottom													
0.0	3.0	127	34	0	0	0	Clay							
3.0	7.0	127	34	0	140	0	Clay							
7.0	30.0	127	34	0	400	16000	Clay							
30.0	35.0													

Soil weight increase Factor for bouyant soils (1.0 to 1.15): 1.1

**Foundation Analysis and Design:**

	Uplift Strength Reduction Factor:	0.75	Soil Bearing Strength Reduction Factor:	0.75	
Total Dry Soil Volume from Conical Failure (cu. Ft.):	2224	Dry Soil Weight from Conical Failure:	282	Kips	
Total Buoyant Soil Volume from Conical Failure (cu. Ft.):	10837	Buoyant Soil Weight from Conical Failure (Kips):	667	Kips	
Total Dry Concrete Volume (cu. Ft.):	85	Total Dry Concrete Weight:	12.7	Kips	
Total Buoyant Concrete Volume (cu. Ft.):	763.4	Total Buoyant Concrete Weight:	66.87	Kips	
Total Effective Concrete Weight (Kips):	79.6	Total Effective Soil Weight:	949.2	Kips	
Total Effective Vertical Load on Base (Kips):	52.3				

**Check Soil Capacities:**

Allowable Foundation Overturning Resistance (kips-ft.):	7349.4	>	Design Factored Moment (kips-ft):	1915	Usage	0.26	OK!
Factor of Safety of Passive Soil Resistance against Moment:	3.84	OK!					

**Check the capacities of Reinforcing Concrete:**

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

**Reinforcing Concrete Pier:**

Vertical Steel Rebar Area (sq. in./each):	1.00	Tie / Stirrup Area (sq. in./each):	0.20	Usage	
Calculated Moment Capacity (Mn, Kips-Ft):	4465.7	>	Design Factored Moment (Mu, K-Ft):	1618.9	0.36 OK!
Calculated Shear Capacity (Kips):	818.1	>	Design Factored Shear (Kips):	142.4	0.17 OK!
Calculated Tension Capacity (Tn, Kips):	1728.0	>	Design Factored Tension (Tu Kips):	0.0	0.00 OK!
Calculated Compression Capacity (Pn, Kips):	7142	>	Design Factored Axial Load (Pu Kips):	26.8	0.00 OK!
Moment & Axial Strength Combination:	0.36	OK!	Max. Allowable Tie/Stirrup Spacing:	12.00	in.
Pier Reinforcement Ratio:	0.008	Reinforcement Ratio is satisfied per ACI			

**Structural Analysis Report**

*Antenna Mount Analysis*

*Verizon Site Ref: Farmington 2 CT*

*1 Westerberg Drive,  
Farmington, CT*

*Centek Project No. 22027.07*

*Date: February 23, 2023*



**Prepared for:**  
Verizon Wireless  
20 Alexander Drive  
Wallingford, CT 06492



## **Table of Contents**

### **SECTION 1 – REPORT**

- STRUCTURAL LETTER

### **SECTION 2 – CALCULATIONS**

- WIND LOAD CALCULATION
- CONNECTION TO HOST FLAGPOLE CALCULATION

### **SECTION 3 – REFERENCE MATERIALS**

- RF DATA SHEET, DATED 06/29/2022

February 23, 2023

Mr. Walter Charcznski  
20 Alexander Drive, 2<sup>nd</sup> Floor  
Wallingford, CT 06492

Re: *Antenna Mount Analysis*  
*Verizon Site Ref: Farmington 2 CT*  
*1 Westerberg Drive*  
*Farmington, CT 06032*

Centek Project No. 22027.07

Dear Mr. Walter Charcznski,

Centek Engineering, Inc. has reviewed the Verizon antenna installation at the above-referenced site. The purpose of the review is to determine the structural adequacy of installing the proposed antennas, three (3) Commscope NHHSS-65B-R2BT4 antennas, as detailed on the Centek Engineering construction drawings entitled "Verizon, Farmington 2 CT, 1 Westerberg Dr., Farmington, CT" dated 09/27/2022 (Rev. 0). The antennas are being proposed inside concealment canisters in an existing flagpole. The review considered the effects of dead load, wind load and ice load in accordance with the 2021 International Building Code as modified by the 2022 Connecticut State Building Code (CSBC), including ASCE 7-16 and ANSI/TIA-222-H *Structural Standards for Steel Antenna Towers and Supporting Structures*.

The loads considered in this analysis consist of the following:

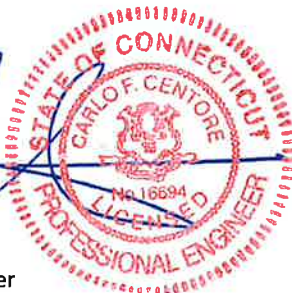
- **Verizon:**  
**Three (3) Commscope NNH4-65B-R2BT4 panel antennas and three (3) Commscope CBC426T-DS-43 diplexers inside the concealments canister with RAD center elevations of 120 ft +/- AGL. Three (3) Samsung RT-8808-77A RRUs and three (3) Commscope CBC61923-DS-43-DS-43 diplexers inside the existing equipment shelter.**

The antenna mount was analyzed per the requirements of the 2021 International Building Code as modified by the 2022 Connecticut State Building Code, considering a design ice thickness of 1.0 inch for Farmington as required in Annex B of the ANSI/TIA-222-H *Structural Standards for Steel Antenna Towers and Supporting Structures*.


Based on our review of the installation, it is our opinion that **the proposed antenna connection have sufficient capacity** to support the aforementioned antenna configuration. If there are any questions regarding this matter, please feel free to call.

Respectfully Submitted by:

  
Carlo F. Centore, PE  
Principal ~ Structural Engineer



Prepared by:

  
Pablo Perez-Gomez  
Engineer

CEN TEK Engineering, Inc.  
Structural Analysis Report  
Verizon | Farmington 2 CT  
February 23, 2023

## **Section 2 - Calculations**

**Design Wind Load on Other Structures:**

(Based on IBC 2021, CSBC 2022 and ASCE 7-16)

Wind Speed =	$V := 93$	mph	(User Input)	(CSBC Appendix-N)
Risk Category =	$BC := II$		(User Input)	(IBC Table 1604.5)
Exposure Category =	$Exp := B$		(User Input)	
Height Above Grade =	$Z := 120$	ft	(User Input)	
Structure Type =	$StructureType := Square\_Chimney$			
Structure Height =	$Height := 6$	ft	(User Input)	
Horizontal Dimension of Structure =	$Width := 1$	ft	(User Input)	

**Terrain Exposure Constants:**

Nominal Height of the Atmospheric Boundary Layer =  $z_g := \begin{cases} \text{if } Exp = B \\ 1200 \\ \text{if } Exp = C \\ 900 \\ \text{if } Exp = D \\ 700 \end{cases} = 1.2 \cdot 10^3$  (Table 26.9-1)

3-Sec Gust Speed Power Law Exponent =  $\alpha := \begin{cases} \text{if } Exp = B \\ 7 \\ \text{if } Exp = C \\ 9.5 \\ \text{if } Exp = D \\ 11.5 \end{cases} = 7$  (Table 26.9-1)

Integral Length Scale Factor =  $l := \begin{cases} \text{if } Exp = B \\ 320 \\ \text{if } Exp = C \\ 500 \\ \text{if } Exp = D \\ 650 \end{cases} = 320$  (Table 26.9-1)

Integral Length Scale Power Law Exponent =  $E := \begin{cases} \text{if } Exp = B \\ \frac{1}{3} \\ \text{if } Exp = C \\ \frac{1}{5} \\ \text{if } Exp = D \\ \frac{1}{8} \end{cases} = 0.333$  (Table 26.9-1)

Turbulence Intensity Factor =  $c := \begin{cases} \text{if } Exp = B \\ 0.3 \\ \text{if } Exp = C \\ 0.2 \\ \text{if } Exp = D \\ 0.15 \end{cases} = 0.3$  (Table 26.9-1)

Exposure Constant =	$Z_{min} := \begin{cases} \text{if } Exp = B & = 30 \\ \text{if } Exp = C & = 15 \\ \text{if } Exp = D & = 7 \end{cases}$	(Table 26.9-1)
Exposure Coefficient =	$K_z := \begin{cases} \text{if } 15 \leq Z \leq z_g & = 1.04 \\ & \left( \frac{Z}{z_g} \right)^{\left( \frac{2}{\alpha} \right)} \\ \text{if } Z < 15 & = 2.01 \cdot \left( \frac{15}{z_g} \right)^{\left( \frac{2}{\alpha} \right)} \end{cases}$	(Table 29.3-1)
Topographic Factor =	$K_{zt} := 1$	(Eq. 26.8-2)
Wind Directionality Factor =	$K_d = 0.9$	(Table 26.6-1)
Velocity Pressure =	$q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 = 20.75$	(Eq. 29.3-1)
Peak Factor for Background Response =	$g_Q := 3.4$	(Sec 26.9.4)
Peak Factor for Wind Response =	$g_v := 3.4$	(Sec 26.9.4)
Equivalent Height of Structure =	$z := \begin{cases} \text{if } Z_{min} > 0.6 \cdot Height & = 30 \\ & Z_{min} \\ \text{else} & = 0.6 \cdot Height \end{cases}$	(Sec 26.9.4)
Intensity of Turbulence =	$I_z := c \cdot \left( \frac{33}{z} \right)^{\left( \frac{1}{6} \right)} = 0.305$	(Eq. 26.9-7)
Integral Length Scale of Turbulence =	$L_z := l \cdot \left( \frac{z}{33} \right)^E = 309.993$	(Eq. 26.9-9)
Background Response Factor =	$Q := \sqrt{\frac{1}{1 + 0.63 \cdot \left( \frac{Width + Height}{L_z} \right)^{0.63}}} = 0.972$	(Eq. 26.9-8)
Gust Response Factor =	$G := 0.925 \cdot \left( \frac{(1 + 1.7 \cdot g_Q \cdot I_z \cdot Q)}{1 + 1.7 \cdot g_v \cdot I_z} \right) = 0.909$	(Eq. 26.9-6)
Force Coefficient =	$C_f = 1.383$	(Fig 29.5-1 - 29.5-3)
<b>Wind Force =</b>	<b><math>F := q_z \cdot G \cdot C_f = 26</math></b>	<b>psf</b>

**Development of Wind on Antennas**

**Antenna Data:**

Antenna Model =	Commscope NHHSS-65B-R2BT4	
Antenna Shape =	Flat	(User Input)
Antenna Height =	$L_{ant} := 71.9$	in (User Input)
Antenna Width =	$W_{ant} := 11.8$	in (User Input)
Antenna Thickness =	$T_{ant} := 7.1$	in (User Input)
Antenna Weight =	$WT_{ant} := 64.4$	lbs (User Input)
Number of Antennas =	$N_{ant} := 1$	(User Input)

**Wind Load (Front)**

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot W_{ant}}{144} = 5.9$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 5.9$	sf
<b>Total Antenna Wind Force =</b>	<b><math>F_{ant} := F \cdot A_{ant} = 154</math></b>	<b>lbs</b>

**Wind Load (Side)**

Surface Area for One Antenna =	$SA_{ant} := \frac{L_{ant} \cdot T_{ant}}{144} = 3.5$	sf
Antenna Projected Surface Area =	$A_{ant} := SA_{ant} \cdot N_{ant} = 3.5$	sf
<b>Total Antenna Wind Force =</b>	<b><math>F_{ant} := F \cdot A_{ant} = 92</math></b>	<b>lbs</b>

**Gravity Load (without ice)**

<b>Weight of All Antennas =</b>	<b><math>WT_{ant} \cdot N_{ant} = 64</math></b>	<b>lbs</b>
---------------------------------	---	------------

**CONNECTION TO HOST FLAGPOLE CALCULATION**

$P_t = F_t A_n \geq P_f$  , where Yield Strength = 68,170 psi for AISI 301 1/4 HARD

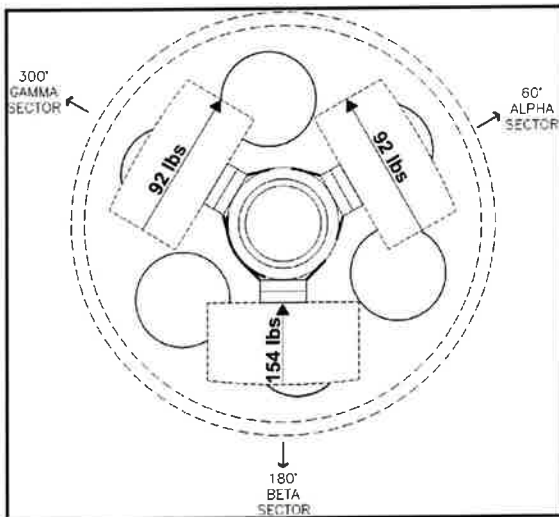
$A_n = (d)[(w) - (w_{hole})] = (0.021")[(0.557") - (0.25")] = 0.00645 \text{ in}^2$

$P_f = [F_{front} + (2)F_{side}] / (N_{clamps}) = [154 \text{ lbs} + (2)(92 \text{ lbs})] / (2)$   
 $= 169 \text{ lbs}$

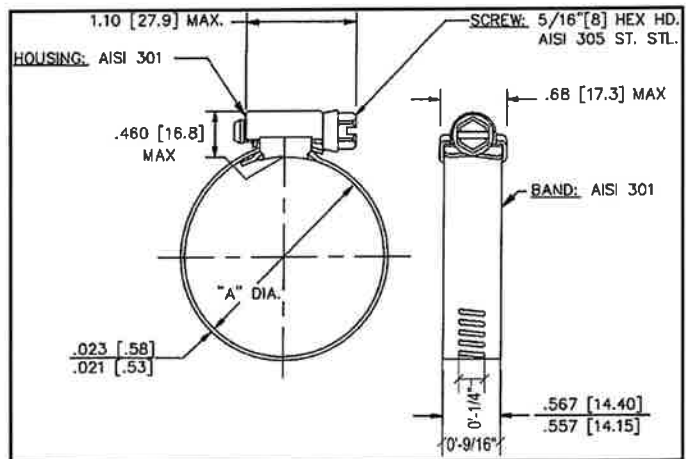
$F_t = 0.6(68,170 \text{ psi}) = 40,902 \text{ psi}$

$P_t = (40,902 \text{ psi})(0.00645 \text{ in}^2) = 264 \text{ lbs}$

% Capacity =  $P_f / P_t = (169 \text{ lbs}) / (264 \text{ lbs}) = 0.64 = 64\%$  PASS



**Image 1: Loading on Antennas**



**Image 2: Hose Clamp Specs**

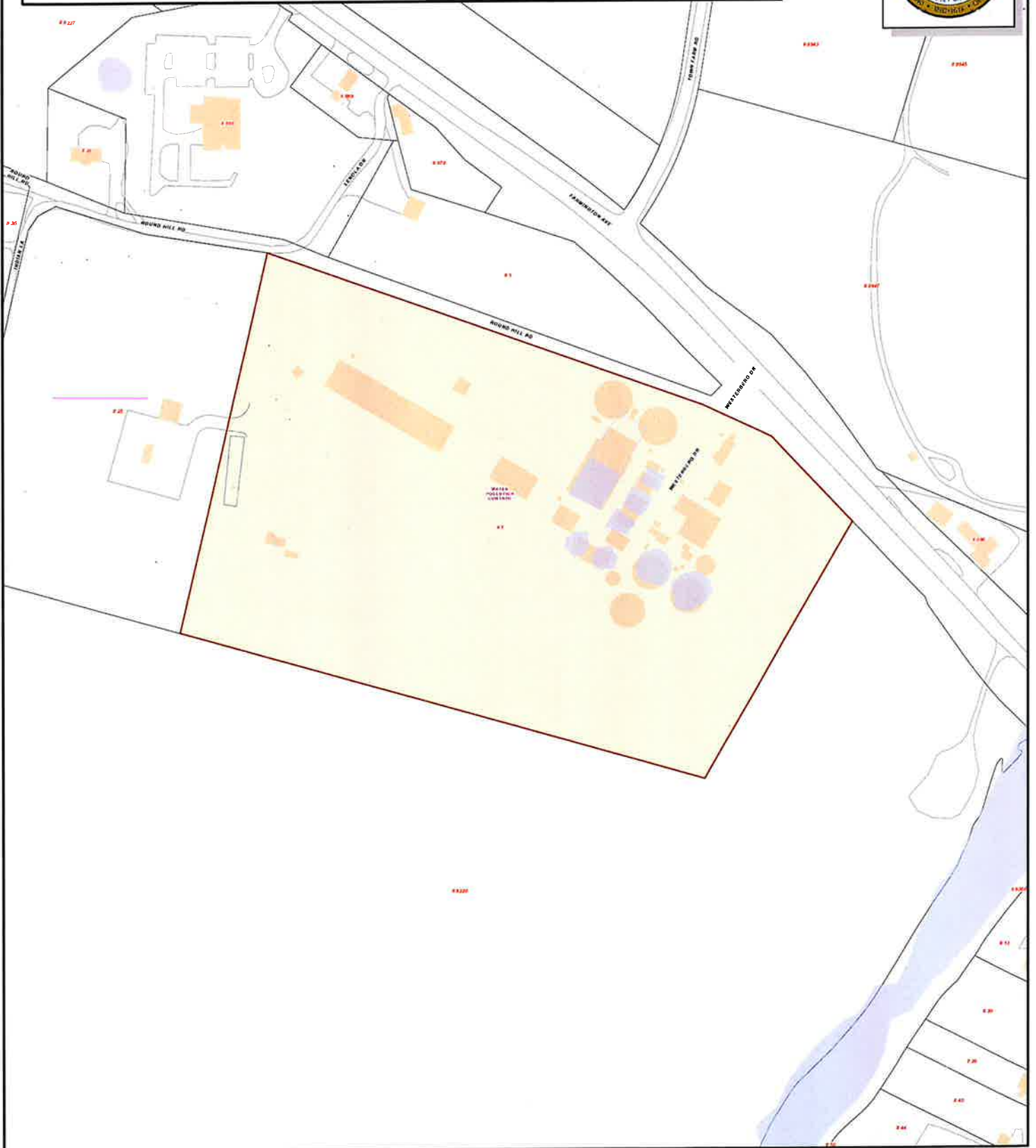
# **ATTACHMENT 5**



# Town of Farmington, Connecticut - Assessment Parcel Map

UNIQUE ID: 21350001

Address: 1 WESTERBERG DR



Approximate Scale: 1:3,600

Map Produced August 2022

Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of Farmington and its mapping contractors assume no legal responsibility for the information contained herein.



# Town of Farmington, CT

## Property Listing Report

Map Block Lot **078 38**

Building # **1**

Unique Identifier **21350001**

### Property Information

Property Location	1 WESTERBERG DR
Mailing Address	NA NA 00000
Land Use	Sewage Treatment Plant
Zoning Code	CR
Neighborhood	99

Owner	FARMINGTON TOWN OF
Co-Owner	TREATMENT PLANT
Book / Page	0148/0503
Land Class	Commercial
Census Tract	4602
Acreage	28

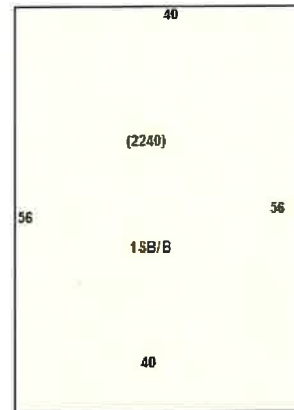
### Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	26286900	18400830
Outbuildings	107200	75040
Land	21000000	14700000
Total	47394100	33175870

### Utility Information

Electric	No
Gas	No
Sewer	No
Public Water	No
Well	No



### Primary Construction Details

Year Built	1994
Building Desc.	Commercial
Building Style	
Stories	1
Exterior Walls	BR/CB
Exterior Walls 2	
Interior Walls	Drywall
Interior Walls 2	
Interior Floors 1	Concrete
Interior Floors 2	

Heating Fuel	Natural Gas
Heating Type	FHA
AC Type	Central
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	
Occupancy	0

Building Use	Office/Warehouse
Building Condition	Very Good
Frame Type	B
Fireplaces	0
Bsmt Gar	0
Fin Bsmt Area	
Fin Bsmt Quality	
Building Grade	500
Roof Style	Flat
Roof Cover	Other

Report Created On **2/27/2023**



# Town of Farmington, CT

Property Listing Report

Map Block Lot **078 38**

Building # **1**

Unique Identifier **21350001**

## Detached Outbuildings

Type	Description	Area (sq ft)	Condition	Year Built
Paving	Paving	24000	Average	1994
Garage	Det Brick Stone	1054	Average	2018

## Attached Extra Features

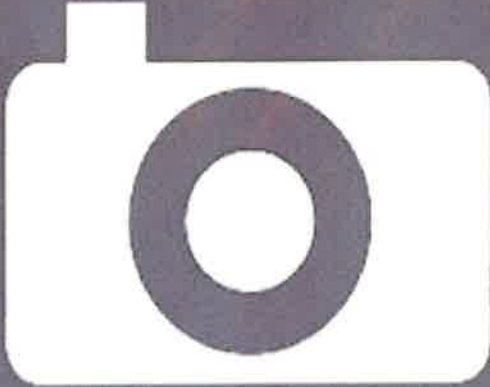
Type	Description	Area (sq ft)	Condition	Year Built

## Sales History

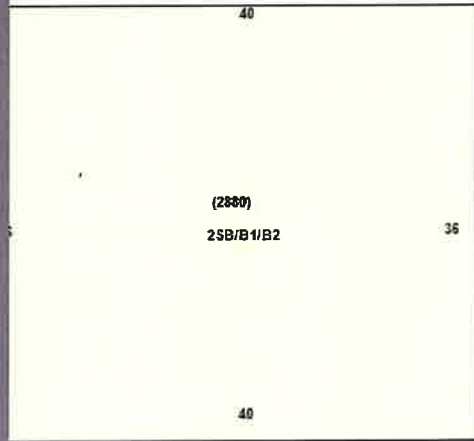
Owner of Record	Book/ Page	Sale Date	Sale Price
FARMINGTON TOWN OF	0148_0503	1/1/1900	0
FARMINGTON TOWN OF	0000_0000	1/1/1900	0



Building # 2 Unique Identifier 21350001



No Photo Available



**Primary Construction Details**

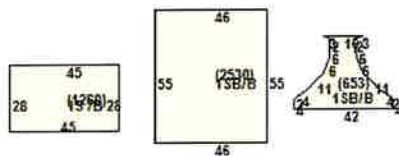
Year Built	1980
Building Desc.	Office/Warehouse
Building Style	
Stories	3
Exterior Walls	BR/CB
Exterior Walls 2	
Interior Walls	Masonry
Interior Walls 2	
Interior Floors 1	Concrete
Interior Floors 2	

Heating Fuel	Natural Gas
Heating Type	FHA
AC Type	Central
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	
Occupancy	0

Building Use	Commercial
Building Condition	Very Good
Frame Type	B
Fireplaces	0
Bsmt Gar	0
Fin Bsmt Area	
Fin Bsmt Quality	
Building Grade	500
Roof Style	Flat
Roof Cover	Other

**Attached Extra Features**

Type	Description	Area (sq ft)	Condition	Year Built



**Primary Construction Details**

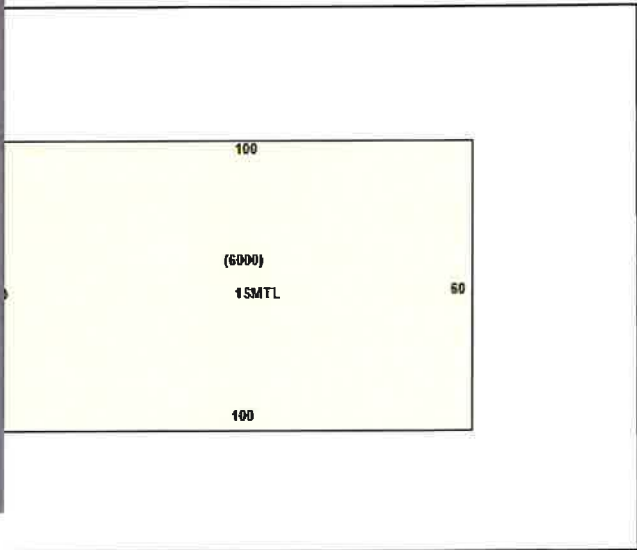
Year Built	1970
Building Desc.	Office/Warehouse
Building Style	
Stories	1
Exterior Walls	Brick
Exterior Walls 2	Other
Interior Walls	Painted Concrete Block
Interior Walls 2	
Interior Floors 1	Concrete
Interior Floors 2	

Heating Fuel	Natural Gas
Heating Type	Unit Heater/AC
AC Type	
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	
Occupancy	0

Building Use	Commercial
Building Condition	Very Good
Frame Type	B
Fireplaces	0
Bsmt Gar	0
Fin Bsmt Area	
Fin Bsmt Quality	
Building Grade	500
Roof Style	
Roof Cover	

**Attached Extra Features**

Type	Description	Area (sq ft)	Condition	Year Built



Primary Construction Details

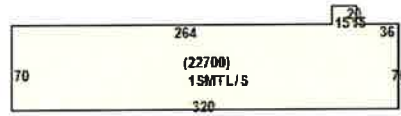
Table with 2 columns: Field Name, Value. Includes Year Built (1994), Building Desc. (Industrial), Stories (1), Exterior Walls (Metal), Interior Walls (Panel), Interior Floors 1 (Concrete).

Table with 2 columns: Field Name, Value. Includes Heating Fuel (Natural Gas), Heating Type (Unit Heater/AC), Bedrooms (0), Full Bathrooms (0), Half Bathrooms (0), Total Rooms (0), Bath Style (NA), Kitchen Style, Occupancy (0).

Table with 2 columns: Field Name, Value. Includes Building Use (Commercial), Building Condition (Good), Frame Type (C), Fireplaces (0), Bsmt Gar (0), Building Grade (500), Roof Style (Flat), Roof Cover (Asphalt).

Attached Extra Features

Table with 5 columns: Type, Description, Area (sq ft), Condition, Year Built. Multiple empty rows for data entry.



Primary Construction Details

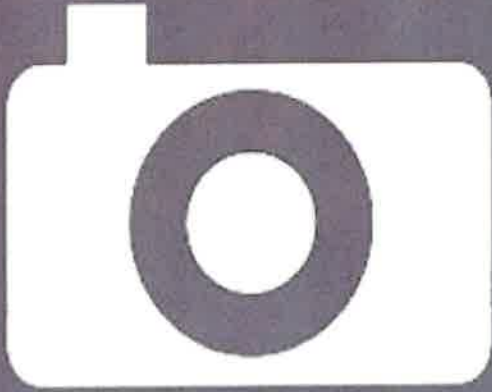
Year Built	1994
Building Desc.	Industrial
Building Style	
Stories	1
Exterior Walls	Metal
Exterior Walls 2	
Interior Walls	Panel
Interior Walls 2	
Interior Floors 1	Concrete
Interior Floors 2	

Heating Fuel	Natural Gas
Heating Type	Radiator
AC Type	
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	
Occupancy	0

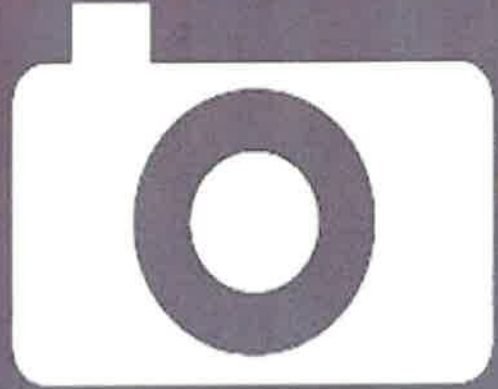
Building Use	Commercial
Building Condition	Average
Frame Type	C
Fireplaces	0
Bsmt Gar	0
Fin Bsmt Area	
Fin Bsmt Quality	
Building Grade	500
Roof Style	Flat
Roof Cover	Asphalt

Attached Extra Features

Type	Description	Area (sq ft)	Condition	Year Built



No Photo Available



No Photo Available

**Primary Construction Details**

Year Built	2018
Building Desc.	Industrial
Building Style	
Stories	0
Exterior Walls	Brick
Exterior Walls 2	
Interior Walls	Painted Concrete Block
Interior Walls 2	
Interior Floors 1	Concrete
Interior Floors 2	

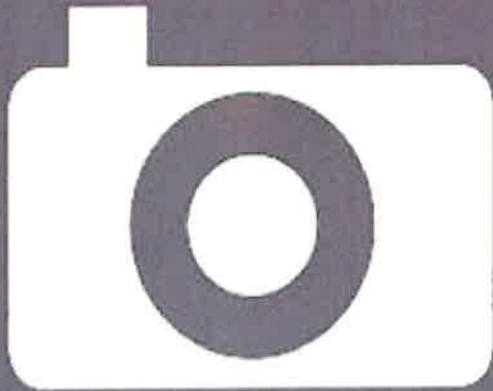
Heating Fuel	Natural Gas
Heating Type	FHA
AC Type	Central
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	
Occupancy	0

Building Use	Commercial
Building Condition	Average
Frame Type	B
Fireplaces	0
Bsmt Gar	0
Fin Bsmt Area	
Fin Bsmt Quality	
Building Grade	0
Roof Style	
Roof Cover	Other

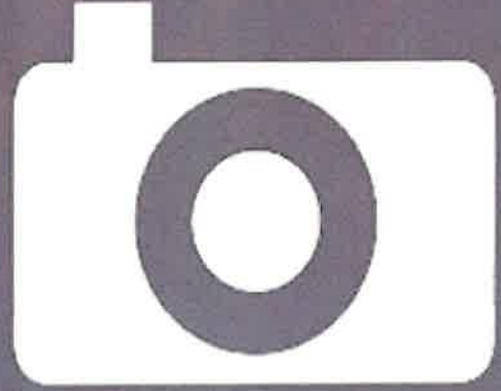
**Attached Extra Features**

Type	Description	Area (sq ft)	Condition	Year Built





No Photo Available



No Photo Available

**Primary Construction Details**

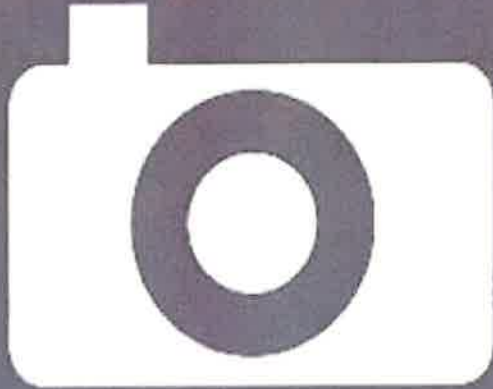
Year Built	2018
Building Desc.	Industrial
Building Style	
Stories	0
Exterior Walls	Brick
Exterior Walls 2	
Interior Walls	Painted Concrete Block
Interior Walls 2	
Interior Floors 1	Concrete
Interior Floors 2	

Heating Fuel	Natural Gas
Heating Type	FHA
AC Type	Central
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	
Occupancy	0

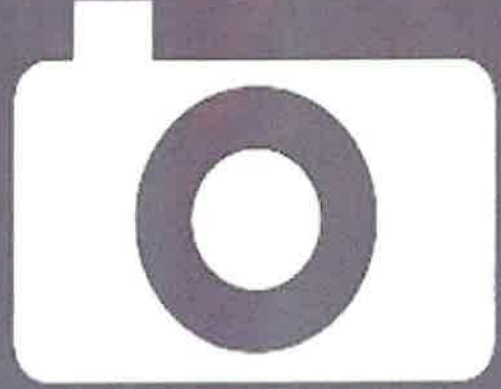
Building Use	Commercial
Building Condition	Average
Frame Type	B
Fireplaces	0
Bsmt Gar	0
Fin Bsmt Area	
Fin Bsmt Quality	
Building Grade	0
Roof Style	
Roof Cover	Other

**Attached Extra Features**

Type	Description	Area (sq ft)	Condition	Year Built



No Photo Available



No Photo Available

**Primary Construction Details**

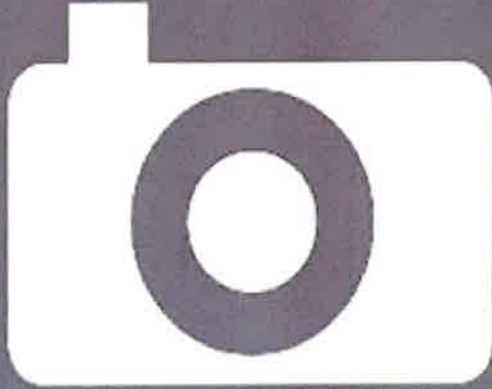
Year Built	1994
Building Desc.	Industrial
Building Style	
Stories	0
Exterior Walls	Brick
Exterior Walls 2	
Interior Walls	Painted Concrete Block
Interior Walls 2	
Interior Floors 1	Concrete
Interior Floors 2	

Heating Fuel	Natural Gas
Heating Type	FHA
AC Type	Central
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	
Occupancy	0

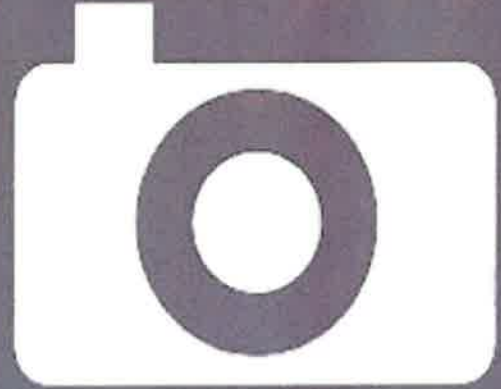
Building Use	Commercial
Building Condition	Good
Frame Type	B
Fireplaces	0
Bsmt Gar	0
Fin Bsmt Area	
Fin Bsmt Quality	
Building Grade	0
Roof Style	
Roof Cover	Other

**Attached Extra Features**

Type	Description	Area (sq ft)	Condition	Year Built



No Photo Available



No Photo Available

**Primary Construction Details**

Year Built	2018
Building Desc.	Industrial
Building Style	
Stories	0
Exterior Walls	Brick
Exterior Walls 2	
Interior Walls	Painted Concrete Block
Interior Walls 2	
Interior Floors 1	Concrete
Interior Floors 2	

Heating Fuel	Electric
Heating Type	Unit Heater/AC
AC Type	
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	
Occupancy	0

Building Use	Commercial
Building Condition	Average
Frame Type	B
Fireplaces	0
Bsmt Gar	0
Fin Bsmt Area	
Fin Bsmt Quality	
Building Grade	0
Roof Style	
Roof Cover	Other



**Attached Extra Features**

Type	Description	Area (sq ft)	Condition	Year Built

# **ATTACHMENT 6**



Farmington 2  
**Certificate of Mailing — Firm**

Name and Address of Sender  <b>Kenneth C. Baldwin, Esq.</b> <b>Robinson &amp; Cole LLP</b> <b>280 Trumbull Street</b> <b>Hartford, CT 06103</b>	TOTAL NO. of Pieces Listed by Sender  <p style="font-size: 2em; text-align: center;">2</p>	TOTAL NO. of Pieces Received at Post Office™  <p style="font-size: 2em; text-align: center;">2</p>	Affix Stamp Here <i>Postmark with Date of Receipt.</i>  <div style="text-align: center;">               03/24/2023  <b>US POSTAGE \$003.19</b> </div> <div style="text-align: center; margin-top: 10px;">               ZIP 06103              041L12203937           </div>																																				
Postmaster, per (name of receiving employee)  <p style="font-size: 2em; text-align: center;">AS</p>																																							
USPS® Tracking Number Firm-specific Identifier	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Address (Name, Street, City, State, and ZIP Code™)</th> <th style="width: 15%;">Postage</th> <th style="width: 15%;">Fee</th> <th style="width: 15%;">Special Handling</th> <th style="width: 25%;">Parcel Airlift</th> </tr> </thead> <tbody> <tr> <td>1. Kathleen Blonski, Town Manager Town of Farmington 1 Monteith Drive Farmington, CT 06032</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2. Shannon Rutherford P.E., Town Planner Town of Farmington 1 Monteith Drive Farmington, CT 06032</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. _____</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4. _____</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5. _____</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>6. _____</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift	1. Kathleen Blonski, Town Manager Town of Farmington 1 Monteith Drive Farmington, CT 06032					2. Shannon Rutherford P.E., Town Planner Town of Farmington 1 Monteith Drive Farmington, CT 06032					3. _____					4. _____					5. _____					6. _____				
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