

August 4, 2022

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

**Regarding: Notice of Exempt Modification – AT&T Site CT1125 / FA# 10035415**  
**Address: 299 Sheffield Street, Waterbury, CT 06704**

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC (“AT&T”) currently maintains a wireless telecommunications facility on an existing +/- 158’ monopole at the above-referenced address, latitude 41.5940750, longitude -73.0505550. Said monopole is operated by SBA Towers, LLC.

AT&T desires to modify its existing telecommunications facility by swapping nine (9) antennas, swapping six (6) remote radio units (RRUS), adding one (1) surge arrestor and accompanying feedlines, and mount reinforcements as more particularly detailed and described on the enclosed Construction Drawings prepared by Hudson Design Group, last revised August 3, 2022. The centerline height of the existing antennas is and will remain at 137 feet. This modification may include B2, B5, B17, B14, B29, B30, B66, & n77 hardware that is 4G(LTE) and/or 5GNR capable through remote software configuration and either or both services may be turned off at various times.

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 the following individuals: The Honorable Neil M. O’Leary, Mayor of the City of Waterbury, as elected official, Cliff Brammer, Zoning Enforcement Officer, City of Waterbury, Robert Nerney, City Planner of the City of Waterbury, SBA Towers II, LLC, as tower operator, and Level Development Corporation, as property owner. We have reached out to the Building and Zoning Departments for the City of Waterbury who conducted a search and could not locate the original tower approval.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2). Specifically:

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require an 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 operation of the modified facility will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. *Please see the RF emissions calculation for AT&T's modified facility enclosed herewith.*
5. The proposed modifications will not cause an ineligible change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading. *Please see the structural analysis dated June 9, 2022, and prepared by Tower Engineering Solutions, enclosed herewith.*

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

Sincerely,

*Evan Renwick*

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

Enclosures: Exhibit 1 – Construction Drawings  
Exhibit 2 – Property Card and GIS  
Exhibit 3 – Structural Analysis  
Exhibit 4 – Mount Analysis  
Exhibit 5 – RF Emissions Analysis Report Evaluation  
Exhibit 6 – Notice Delivery Confirmations

Cc: The Honorable Neil M. O'Leary, Mayor, City of Waterbury, elected official  
Cliff Brammer, Zoning Enforcement Officer  
Robert Nerney, City Planner, City of Waterbury  
SBA Towers II, LLC, as tower operator  
Level Development Corporation, as property owner

# EXHIBIT 1

**PROJECT INFORMATION**

SCOPE OF WORK: ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE:

- NEW AT&T ANTENNAS: QD6616-7 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6449 B77D (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNAS: 800 10965 K (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 4).
- NEW AT&T RRUS: RRUS-4426 B66 (AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: RRUS-4449 B5/B12 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS: RRUS-4478 B14 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 2).
- EXISTING AT&T RRUS: RRUS-32 B2 (1900) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 2).
- EXISTING AT&T RRUS: RRUS-32 B30 (WCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 4).
- NEW AT&T SURGE ARRESTOR: DC9-48-60-24-8C-EV (TOTAL OF 1).
- NEW AT&T (3) Y-CABLES.
- NEW AT&T (3) 6 AWG DC POWER CABLES.
- NEW AT&T (1) 24 PAIR FIBER RUN.

ITEMS TO BE MOUNTED IN EQUIPMENT LOCATION:

- INSTALL (1) 6648 + XCEDE CABLE.
- INSTALL (1) 6630 + IDLE CABLE. FINAL=1x5216+2xXMU+1x6630+IDLe+1x6648+Xcede.
- INSTALL (4) -48V RECTIFIERS FOR TOTAL OF (10) INSIDE EXISTING POWER PLANT

ITEMS TO BE REMOVED:

- EXISTING AT&T ANTENNA: AM-X-CD-16-65-00T-RET (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNA: OPA-65R-LCUU-H6 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNA: QS66512-2 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS: RRUS-12 B5 (850) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS: RRUS-11 B12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T TMAS: DTMABP7819VG12A (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T DIPLEXERS: LGP21901 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T DIPLEXERS: DBC0061F1V51-2 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T SURGE ARRESTOR: APTDC-BDFDM-DB (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T (6) 1-5/8" COAX CABLES.

ITEMS TO REMAIN:

- (3) ANTENNAS, (12) RRU'S, (2) SURGE ARRESTOR, (4) DC POWER, (2) FIBER & (6) 1-5/8" COAX CABLES

SITE ADDRESS: 299 SHEFFIELD STREET  
WATERBURY, CT 06704

LATITUDE: 41.5940833° N, 41° 35' 38.7" N  
LONGITUDE: -73.0505555° W, 73° 03' 02.0" W  
TYPE OF SITE: MONOPOLE / INDOOR EQUIPMENT  
STRUCTURE HEIGHT: 152'-0"±  
RAD CENTER: 137'-0"±(LTE), 138'-8"±(DoD) & 135'-0"±(C Band)  
CURRENT USE: TELECOMMUNICATIONS FACILITY  
PROPOSED USE: TELECOMMUNICATIONS FACILITY

**DRAWING INDEX**

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	2
GN-1	GENERAL NOTES	2
A-1	COMPOUND & EQUIPMENT PLANS	2
A-2	ANTENNA LAYOUT PLANS & ELEVATION	2
A-3	DETAILS	2
G-1	GROUNDING DETAILS	2
RF-1	RF PLUMBING DIAGRAM	2



SITE NUMBER: CTL01125

SITE NAME: NORTH WATERBURY

FA CODE: 10035415

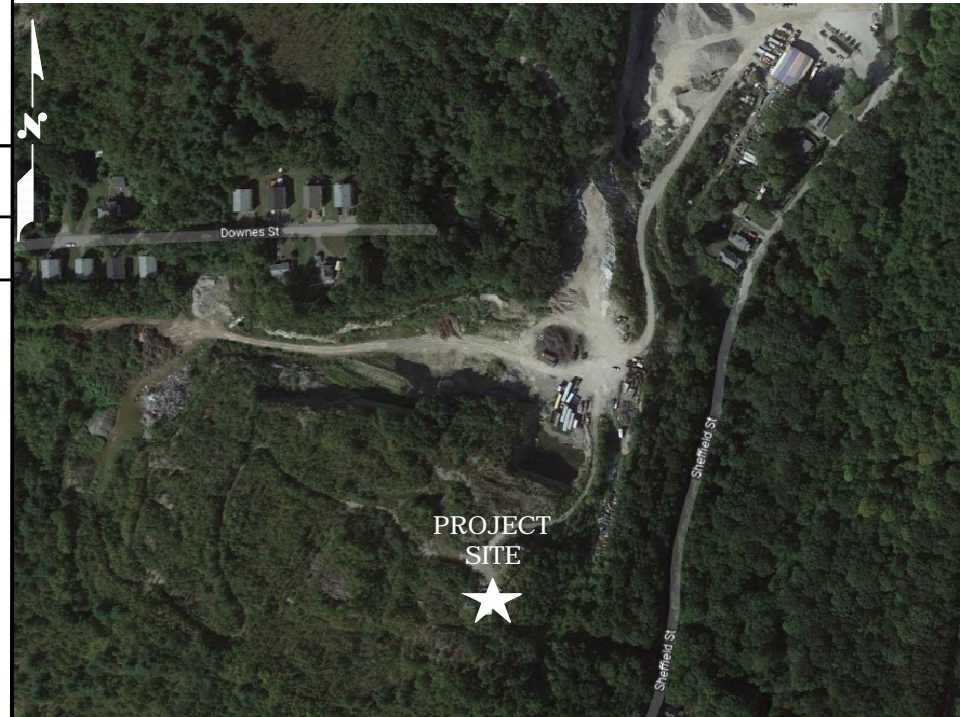
PACE ID: MRCTB056828,MRCTB053885,MRCTB056445,  
MRCTB054763,MRCTB054217,MRCTB056108

PROJECT: 5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS,  
4TX4RX SOFTWARE RETROFIT, 2022 UPGRADE

**VICINITY MAP**

DIRECTIONS TO SITE:

START OUT GOING EAST ON ENTERPRISE DR TOWARD CAPITAL BLVD. TURN LEFT ONTO CAPITAL BLVD. TURN LEFT ONTO WEST ST. MERGE ONTO I-91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN. MERGE ONTO I-691 W VIA EXIT 18 TOWARD WATERBURY/MERIDEN. TAKE THE I-84 W EXIT, EXIT 1, ON THE LEFT TOWARD DANBURY/WATERBURY. STAY STRAIGHT TO GO ONTO I 691. STAY STRAIGHT TO GO ONTO I-84 W. MERGE ONTO CT-8 N VIA EXIT 20 TOWARD TORRINGTON. TAKE THE HUNTINGDON AVE EXIT, EXIT 36, TOWARD COLONIAL AVE. TURN RIGHT ONTO HUNTINGDON AVE. TURN LEFT ONTO THOMASTON AVE. THOMASTON AVE IS 0.2 MILES PAST CHASE RIVER RD. HING WONG RESTAURANT IS ON THE CORNER. TURN RIGHT ONTO SHEFFIELD ST. SHEFFIELD ST IS JUST PAST WELCH ST. 299 SHEFFIELD STREET, WATERBURY, CT 06704 IS ON THE LEFT.



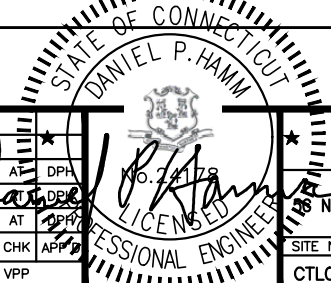
**GENERAL NOTES**

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

**UNDERGROUND SERVICE ALERT**



WWW.DIGSAFE.COM  
72 HOURS PRIOR



 45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845 TEL: (978) 557-5553 FAX: (978) 336-5586	 750 WEST CENTER STREET, SUITE #301 WEST BRIDGEWATER, MA 02379	SITE NUMBER: CTL01125 SITE NAME: NORTH WATERBURY  299 SHEFFIELD STREET WATERBURY, CT 06704 NEW HAVEN COUNTY	 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067	2 08/03/22 ISSUED FOR CONSTRUCTION 1 07/28/22 ISSUED FOR CONSTRUCTION A 03/29/22 ISSUED FOR REVIEW	DESIGNED BY: AT DRAWN BY: VPP	AT&T TITLE SHEET 5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TX4RX SOFTWARE RETROFIT, 2022 UPGRADE
				NO. DATE REVISIONS BY CHK APP'D	SCALE: AS SHOWN	SITE NUMBER: CTL01125 DRAWING NUMBER: T-1 REV: 2



**GROUNDING NOTES**

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTNING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

**GENERAL NOTES**

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
 CONTRACTOR – CENTERLINE  
 SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)  
 OWNER – AT&T MOBILITY
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. **APPLICABLE BUILDING CODES:**  
 SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

**BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS  
 ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)**

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

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

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

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

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

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

45 BEECHWOOD DRIVE  
NORTH ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586

750 WEST CENTER STREET, SUITE #301  
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CTL01125  
SITE NAME: NORTH WATERBURY

299 SHEFFIELD STREET  
WATERBURY, CT 06704  
NEW HAVEN COUNTY

500 ENTERPRISE DRIVE, SUITE 3A  
ROCKY HILL, CT 06067

2	08/03/22	ISSUED FOR CONSTRUCTION	SC	AT	DPH
1	07/28/22	ISSUED FOR CONSTRUCTION	KW	AT	DPH
A	03/29/22	ISSUED FOR REVIEW	VPP	AT	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: VPP		

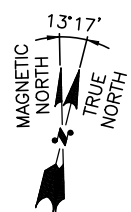
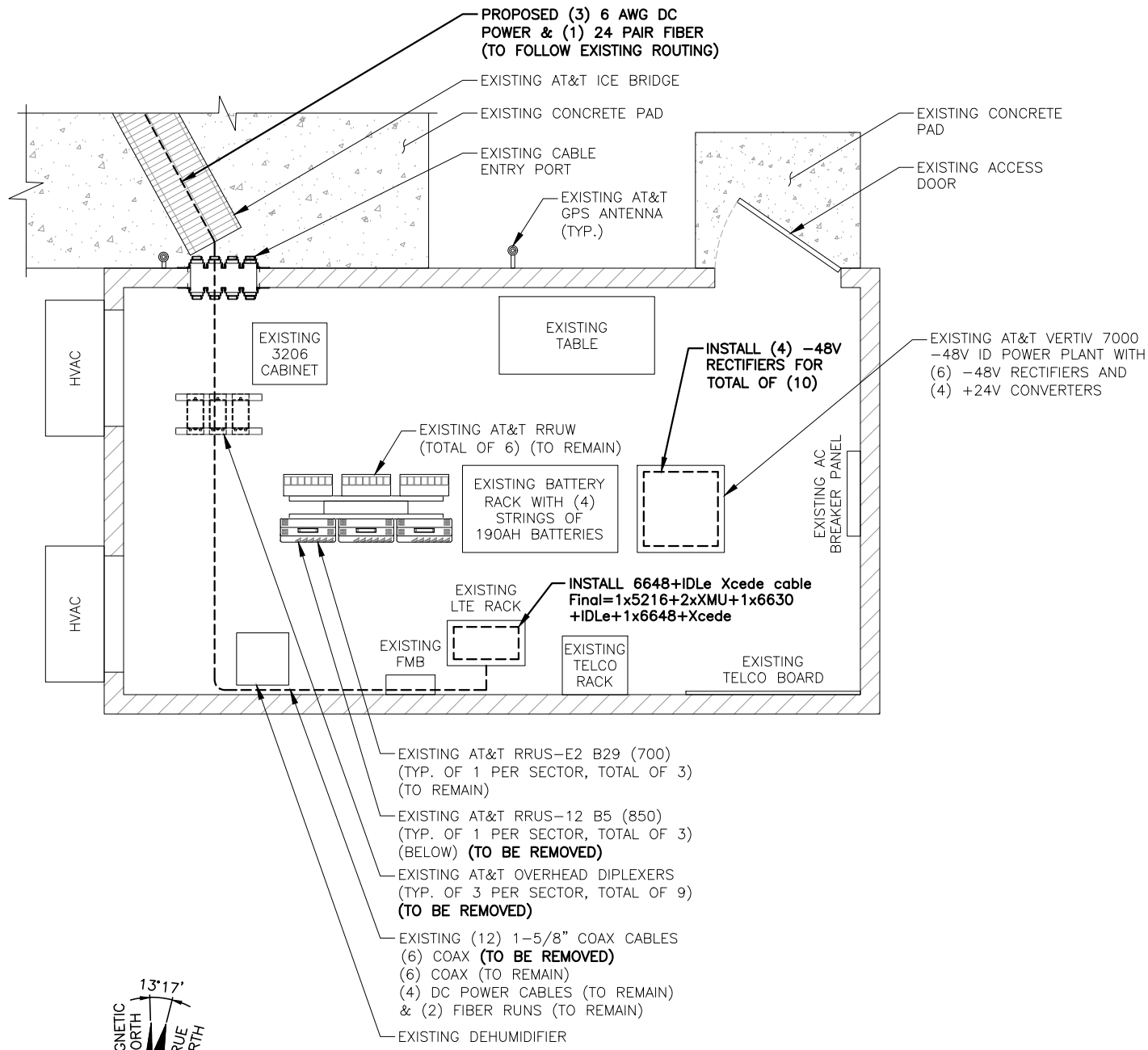
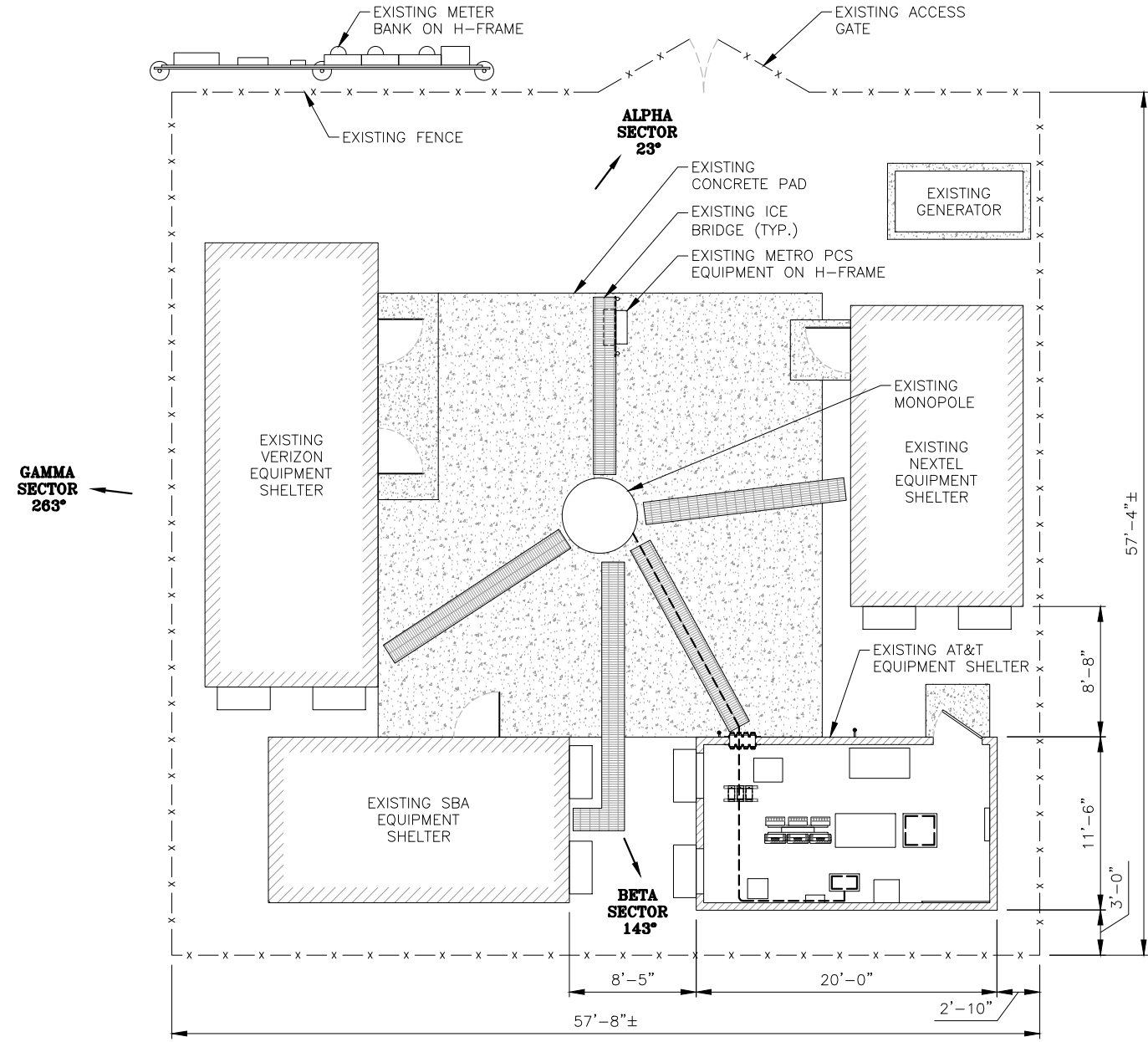
AT&T

GENERAL NOTES  
 4G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS,  
 4TX4RX SOFTWARE RETROFIT, 2022 UPGRADE

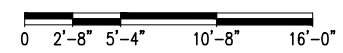
SITE NUMBER	DRAWING NUMBER	REV
CTL01125	GN-1	2

NOTE:  
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:  
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:  
HUDSON DESIGN ENGINEERING, PLLC.  
DATED: MAY 06, 2022

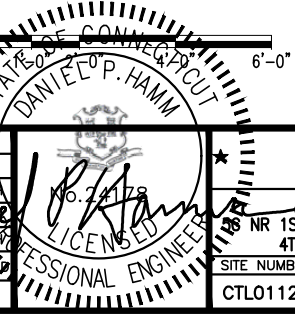


**COMPOUND PLAN**  
22x34 SCALE: 3/16"=1'-0"  
11x17 SCALE: 3/32"=1'-0"

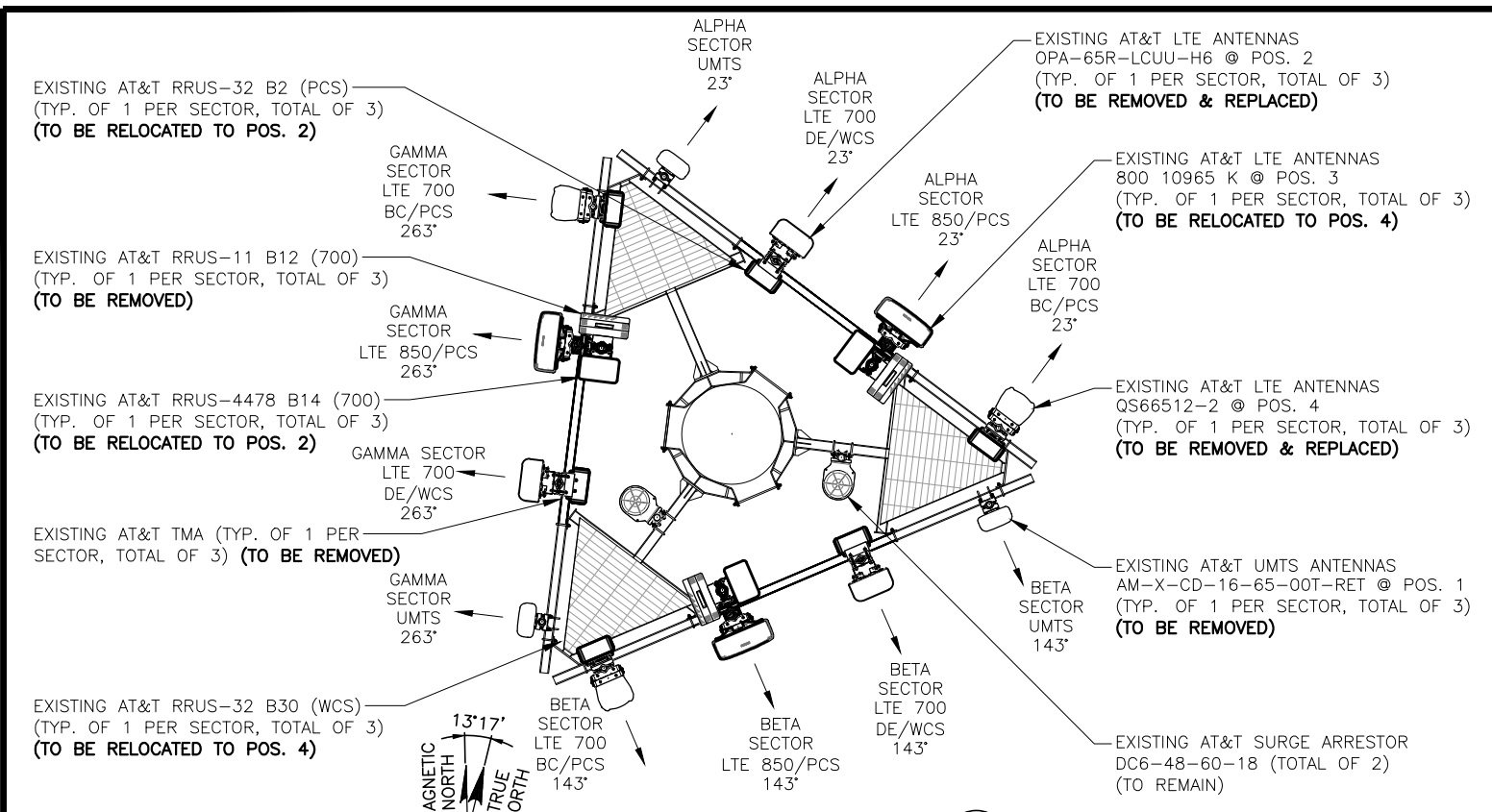


**EQUIPMENT PLAN**  
22x34 SCALE: 1/2"=1'-0"  
11x17 SCALE: 1/4"=1'-0"

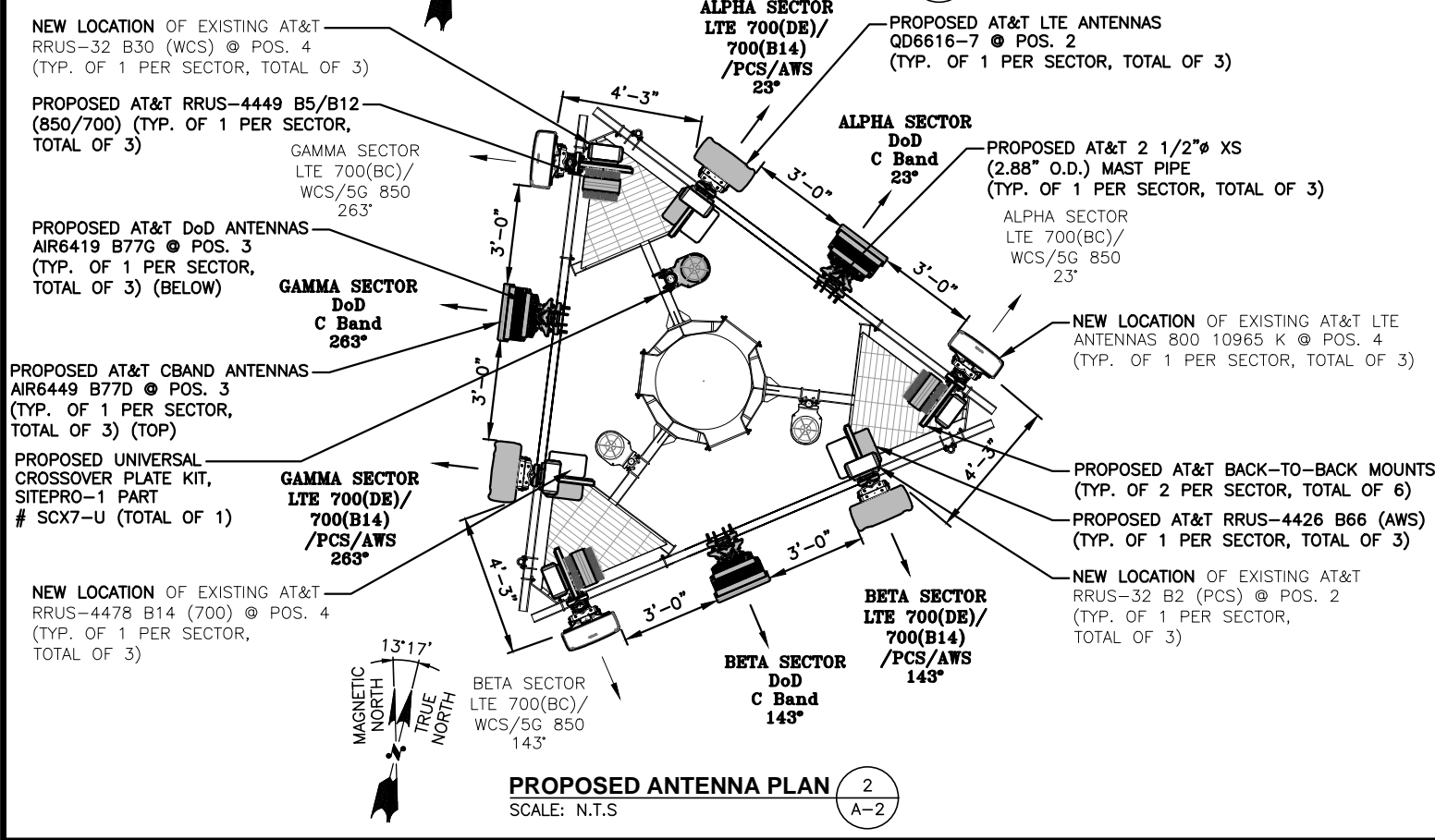
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1	07/28/22	ISSUED FOR CONSTRUCTION	KW	AT	DPH
A	03/29/22	ISSUED FOR REVIEW	VPP	AT	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: VPP		



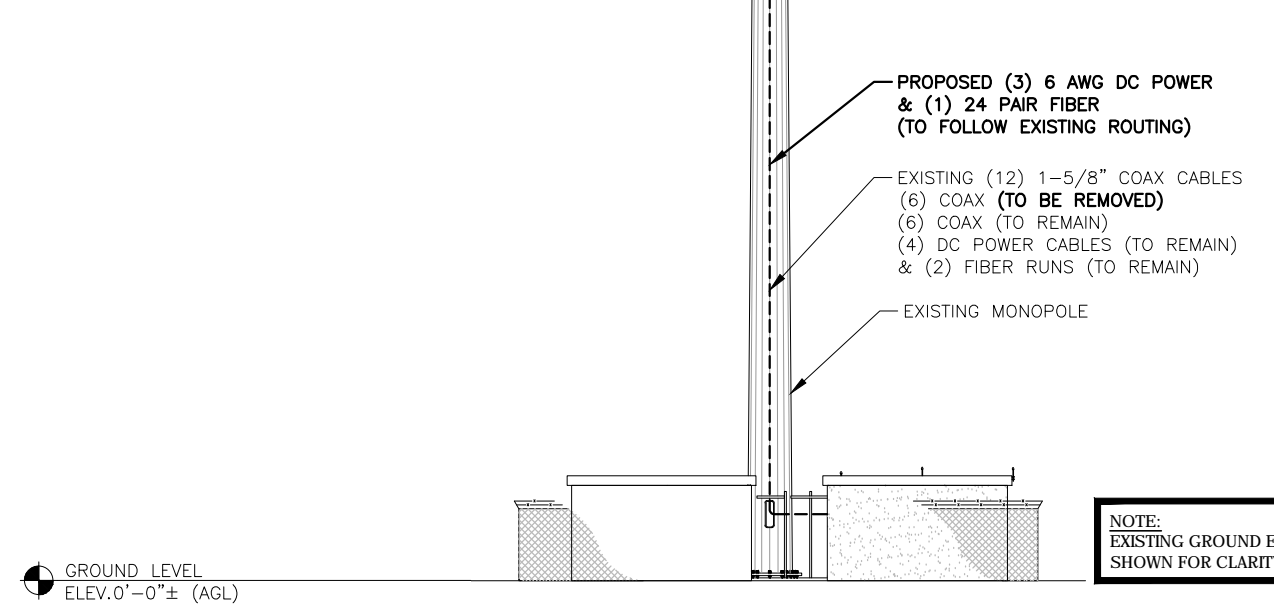
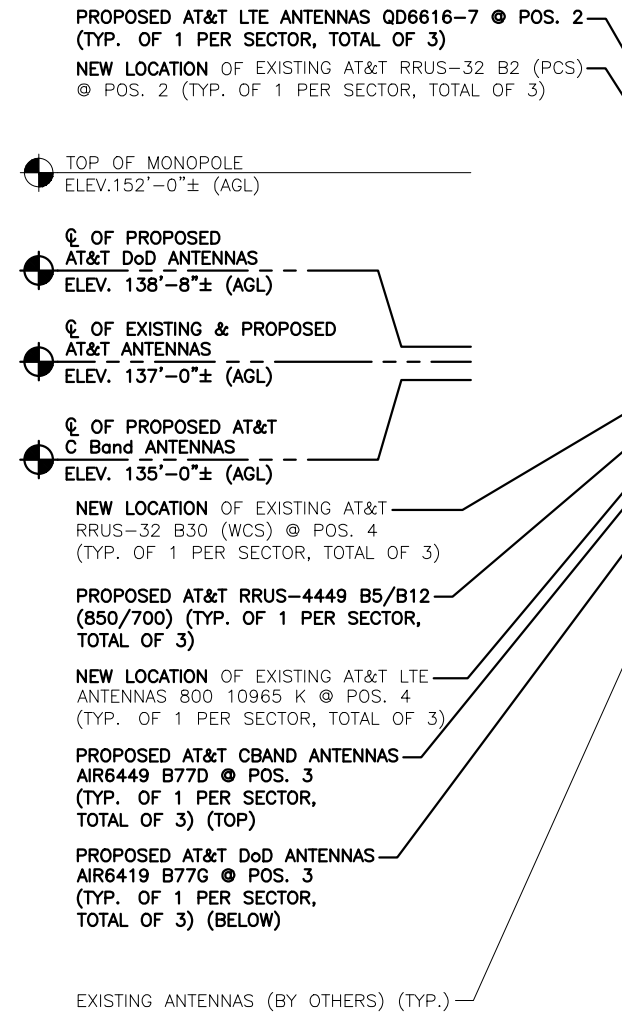




**EXISTING ANTENNA PLAN** 1  
SCALE: N.T.S. A-2



**PROPOSED ANTENNA PLAN** 2  
SCALE: N.T.S. A-2



**ELEVATION**  
22x34 SCALE: 3/32"=1'-0"  
11x17 SCALE: 3/64"=1'-0"  
3 A-2

**NOTE:**  
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

**NOTE:**  
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN ENGINEERING, PLLC. DATED: MAY 06, 2022

**NOTE:**  
ANTENNAS AND MOUNTS TO BE ADJUSTED AS REQUIRED TO ACHIEVE A 3'-0" MINIMUM SEPARATION BETWEEN ANTENNAS

**HGD HUDSON Design Group LLC**  
45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845  
TEL: (978) 557-5553 FAX: (978) 336-5586

**CENTERLINE COMMUNICATIONS**  
750 WEST CENTER STREET, SUITE #301 WEST BRIDGEWATER, MA 02379

SITE NUMBER: CTL01125  
SITE NAME: NORTH WATERBURY  
299 SHEFFIELD STREET WATERBURY, CT 06704 NEW HAVEN COUNTY

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

2	08/03/22	ISSUED FOR CONSTRUCTION	SE	AT	DPH
1	07/28/22	ISSUED FOR CONSTRUCTION	KW	AT	DPH
A	03/29/22	ISSUED FOR REVIEW	VPP	AT	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: VPP		

STATE OF CONNECTICUT  
**DANIEL P. HAMM**  
LICENSED PROFESSIONAL ENGINEER  
No. 72178

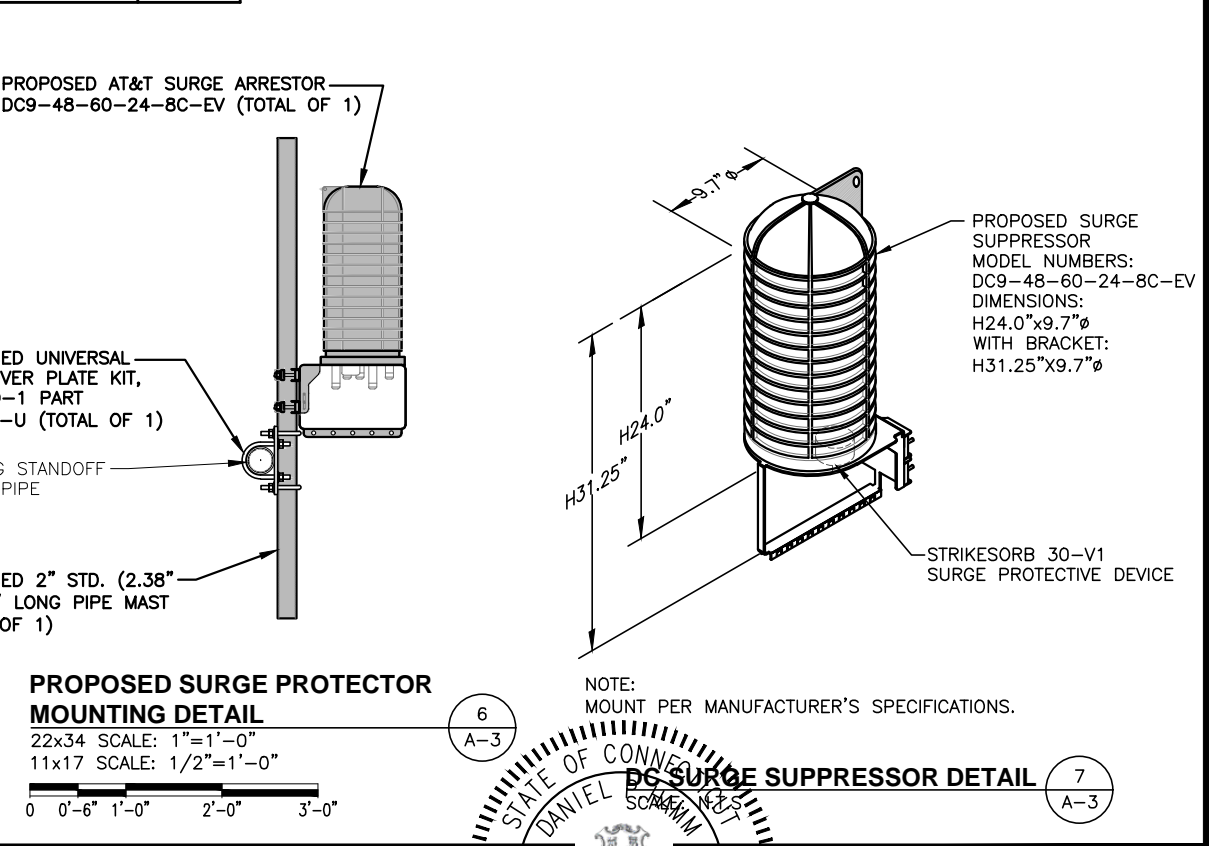
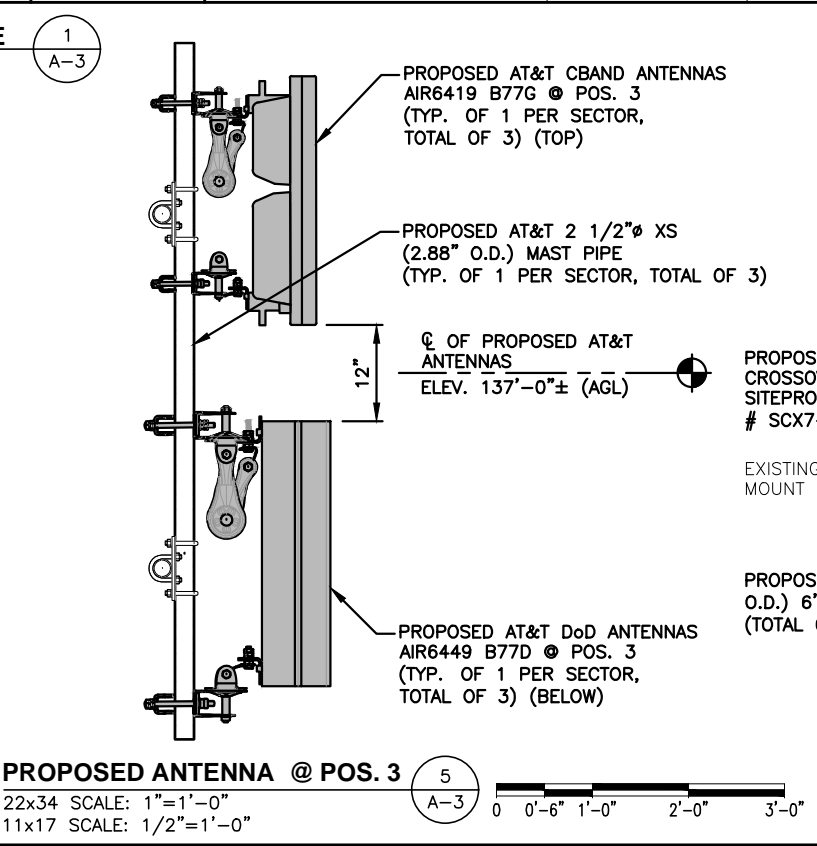
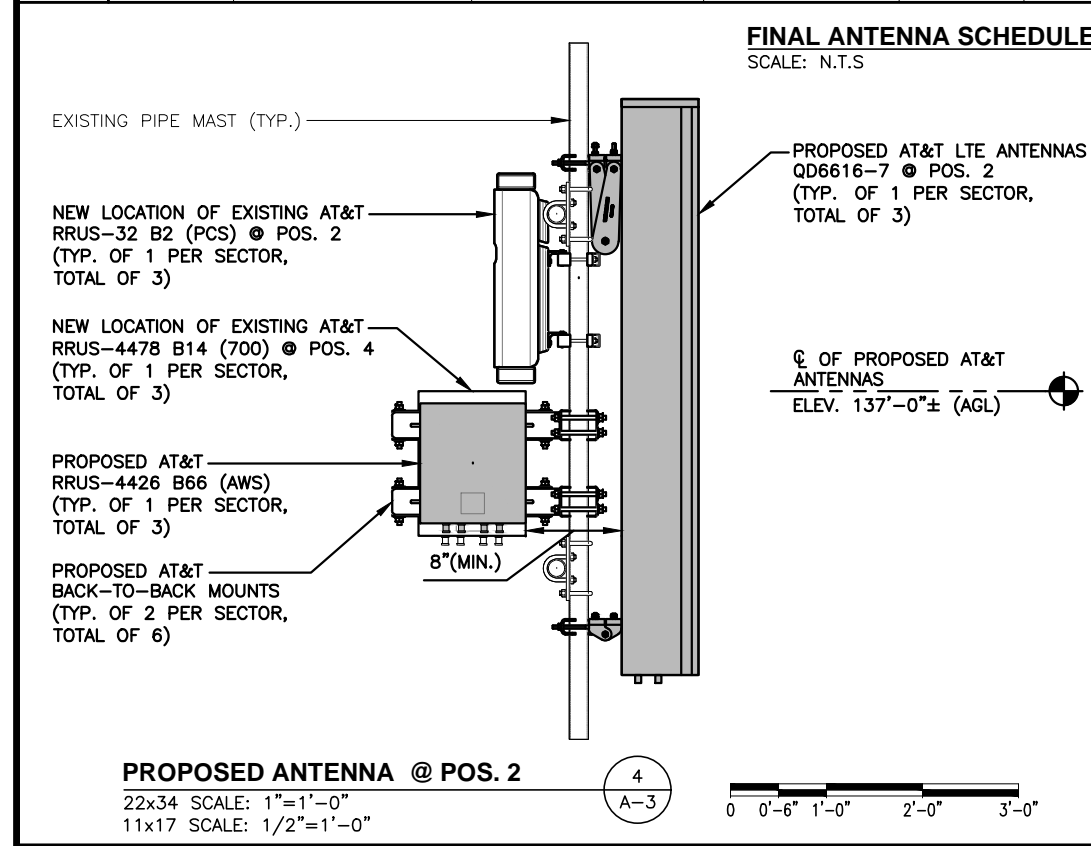
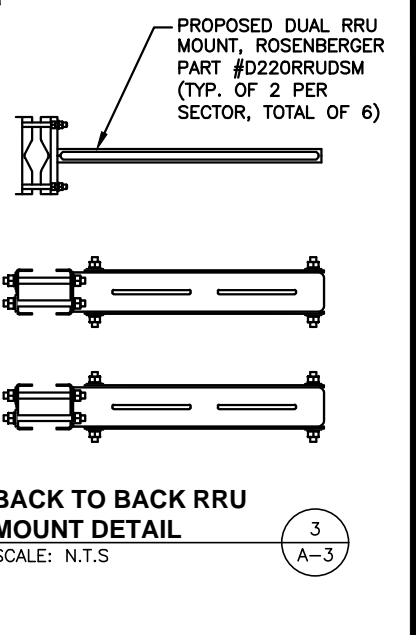
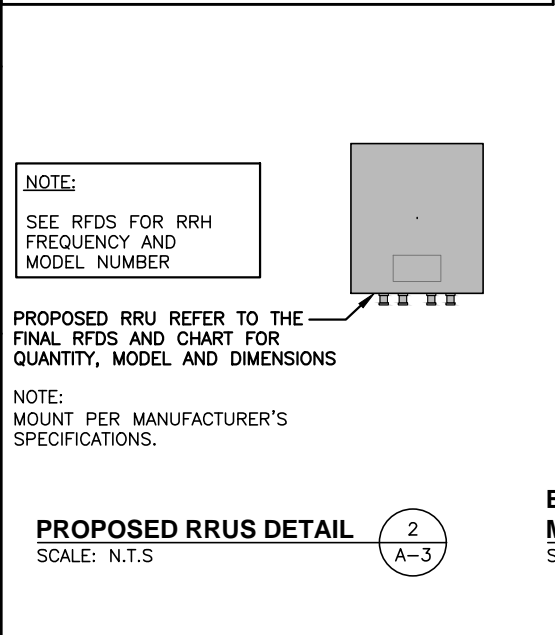
**AT&T**  
ANTENNA LAYOUT PLANS & ELEVATION FOR NR 15R CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TX4RX SOFTWARE RETROFIT, 2022 UPGRADE  
SITE NUMBER: CTL01125  
DRAWING NUMBER: A-2  
REV: 2

ANTENNA SCHEDULE											
SECTOR	EXISTING/PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA CL HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	-	-	-	-	-	-	-	-	-	-	-
A2	PROPOSED	LTE 700(DE)/ 700(B14) /PCS/AWS	QD6616-7	72"x22"x9.6"	137'-0"±	23°	-	(P)(1)RRUS-4426 B66 (AWS) (E)(1)RRUS-4478 B14 (700) (E)(1)RRUS-32 B2 (1900) (E)(1)RRUS-E2 B29 (700)	14.9"x13.2"x5.8"	(P)(3) 6 AWG DC POWER & (P)(1) 24 PAIR FIBER (E)(2) 1-5/8" COAX	(P)(1) RAYCAP DC9-48-60-24-8C-EV
A3	PROPOSED	DoD C-BAND	AIR6419 B77G AIR6449 B77D	31.1"x16.1"x7.3" 30.4"x15.9"x8.1"	138'-8"± 135'-0"±	23°	-	-	-	-	-
A4	EXISTING	LTE 700(B14) /PCS/AWS	800 10965 K	71.2"x20.7"x7.7"	137'-0"±	23°	-	(P)(1)RRUS-4449 B5/B12 (850/700) (E)(1)RRUS-32 B30 (WCS)	17.9"x13.2"x10.4"	(P)(1)(Y-CABLE)	-
B1	-	-	-	-	-	-	-	-	-	-	-
B2	PROPOSED	LTE 700(DE)/ 700(B14) /PCS/AWS	QD6616-7	72"x22"x9.6"	137'-0"±	143°	-	(P)(1)RRUS-4426 B66 (AWS) (E)(1)RRUS-4478 B14 (700) (E)(1)RRUS-32 B2 (1900) (E)(1)RRUS-E2 B29 (700)	14.9"x13.2"x5.8"	(E)(2) DC POWER & (E)(1) FIBER (E)(2) 1-5/8" COAX	(E)(1) RAYCAP DC6-48-60-18-8F
B3	PROPOSED	DoD C-BAND	AIR6419 B77G AIR6449 B77D	31.1"x16.1"x7.3" 30.4"x15.9"x8.1"	138'-8"± 135'-0"±	143°	-	-	-	-	-
B4	EXISTING	LTE 700(B14) /PCS/AWS	800 10965 K	71.2"x20.7"x7.7"	137'-0"±	143°	-	(P)(1)RRUS-4449 B5/B12 (850/700) (E)(1)RRUS-32 B30 (WCS)	17.9"x13.2"x10.4"	(P)(1)(Y-CABLE)	-
C1	-	-	-	-	-	-	-	-	-	-	-
C2	PROPOSED	LTE 700(DE)/ 700(B14) /PCS/AWS	QD6616-7	72"x22"x9.6"	137'-0"±	263°	-	(P)(1)RRUS-4426 B66 (AWS) (E)(1)RRUS-4478 B14 (700) (E)(1)RRUS-32 B2 (1900) (E)(1)RRUS-E2 B29 (700)	14.9"x13.2"x5.8"	(E)(2) DC POWER & (E)(1) FIBER (E)(2) 1-5/8" COAX	(E)(1) RAYCAP DC6-48-60-18-8F
C3	PROPOSED	DoD C-BAND	AIR6419 B77G AIR6449 B77D	31.1"x16.1"x7.3" 30.4"x15.9"x8.1"	138'-8"± 135'-0"±	263°	-	-	-	-	-
C4	EXISTING	LTE 700(B14) /PCS/AWS	800 10965 K	71.2"x20.7"x7.7"	137'-0"±	263°	-	(P)(1)RRUS-4449 B5/B12 (850/700) (E)(1)RRUS-32 B30 (WCS)	17.9"x13.2"x10.4"	(P)(1)(Y-CABLE)	-

RRU CHART		
QUANTITY	MODEL	SIZE (L x W x D)
P(3)	4426 B66 (AWS)	14.9"x13.2"x5.8"
E(3)	4478 B14 (700)	18.1"x13.4"x8.3"
E(3)	RRUS-32 B2 (1900)	27.2"x12.1"x7.0"
E(3)	RRUS-E2 B29 (700)	20.4"x18.5"x7.5"
P(3)	4449 B5/B12 (850/700)	17.9"x13.2"x10.4"
E(3)	RRUS-32 B30 (WCS)	27.2"x12.1"x7.0"

NOTE:  
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:  
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:  
HUDSON DESIGN ENGINEERING, PLLC.  
DATED: MAY 06, 2022



**HGD HUDSON Design Group LLC**  
45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845  
TEL: (978) 557-5553 FAX: (978) 336-5586

**CENTERLINE COMMUNICATIONS**  
750 WEST CENTER STREET, SUITE #301 WEST BRIDGEWATER, MA 02379

SITE NUMBER: CTL01125  
SITE NAME: NORTH WATERBURY  
299 SHEFFIELD STREET WATERBURY, CT 06704 NEW HAVEN COUNTY

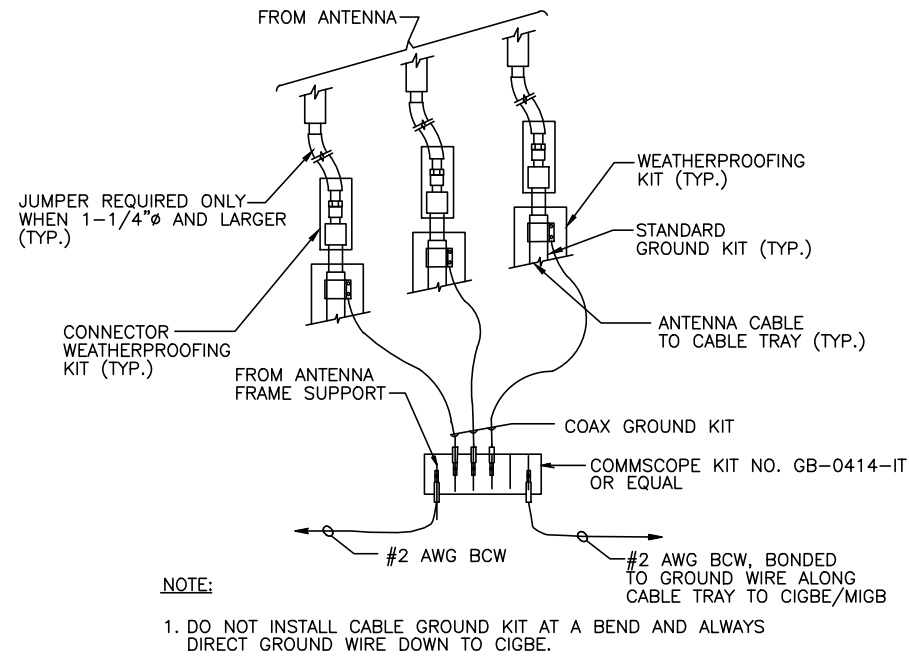
**at&t**  
500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067

2	08/03/22	ISSUED FOR CONSTRUCTION	SE	AT	DPH
1	07/28/22	ISSUED FOR CONSTRUCTION	KW	AT	DPH
A	03/29/22	ISSUED FOR REVIEW	VPP	AT	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: VPP		

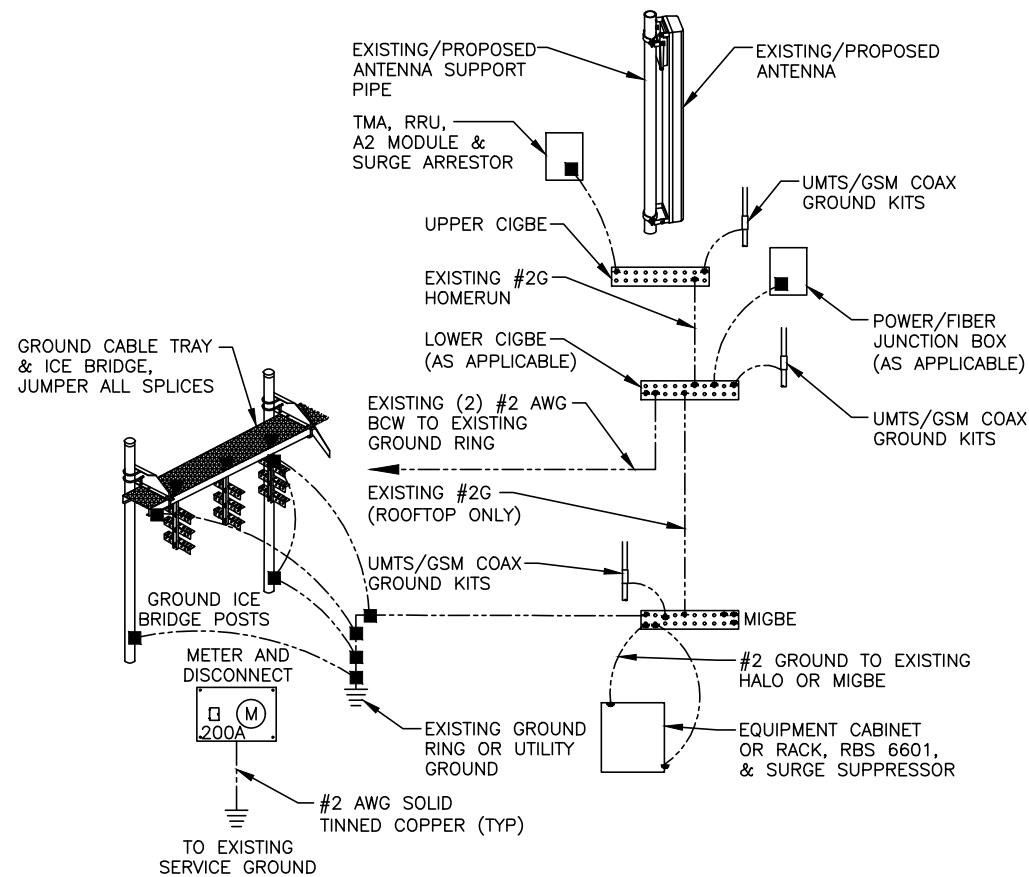
STATE OF CONNECTICUT  
**DANIEL P. KAY**  
REGISTERED PROFESSIONAL ENGINEER  
No. 72178

**AT&T**  
DETAILS  
NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TX4RX SOFTWARE RETROFIT, 2022 UPGRADE  
SITE NUMBER: CTL01125  
DRAWING NUMBER: A-3  
REV: 2

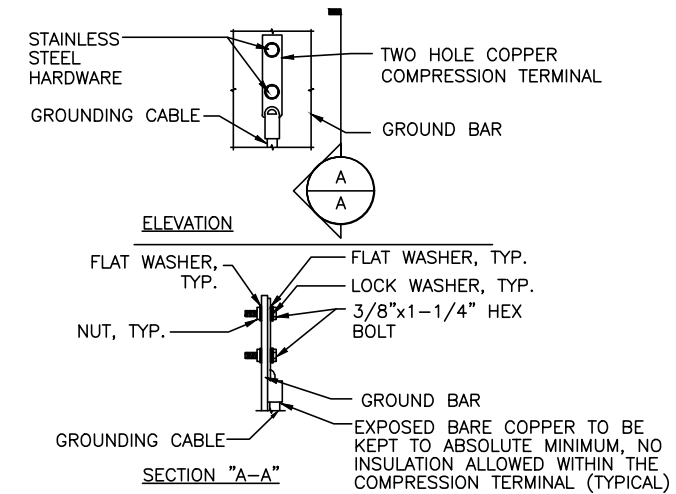




**GROUND WIRE TO GROUND BAR CONNECTION DETAIL** 1  
SCALE: N.T.S. G-1



**GROUNDING RISER DIAGRAM** 2  
SCALE: N.T.S. G-1



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

**TYPICAL GROUND BAR CONNECTION DETAIL** 3  
SCALE: N.T.S. G-1

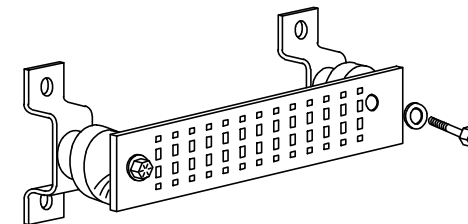
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

**SECTION "P" - SURGE PRODUCERS**

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

**SECTION "A" - SURGE ABSORBERS**

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



**GROUND BAR - DETAIL (AS REQUIRED)**  
SCALE: N.T.S.

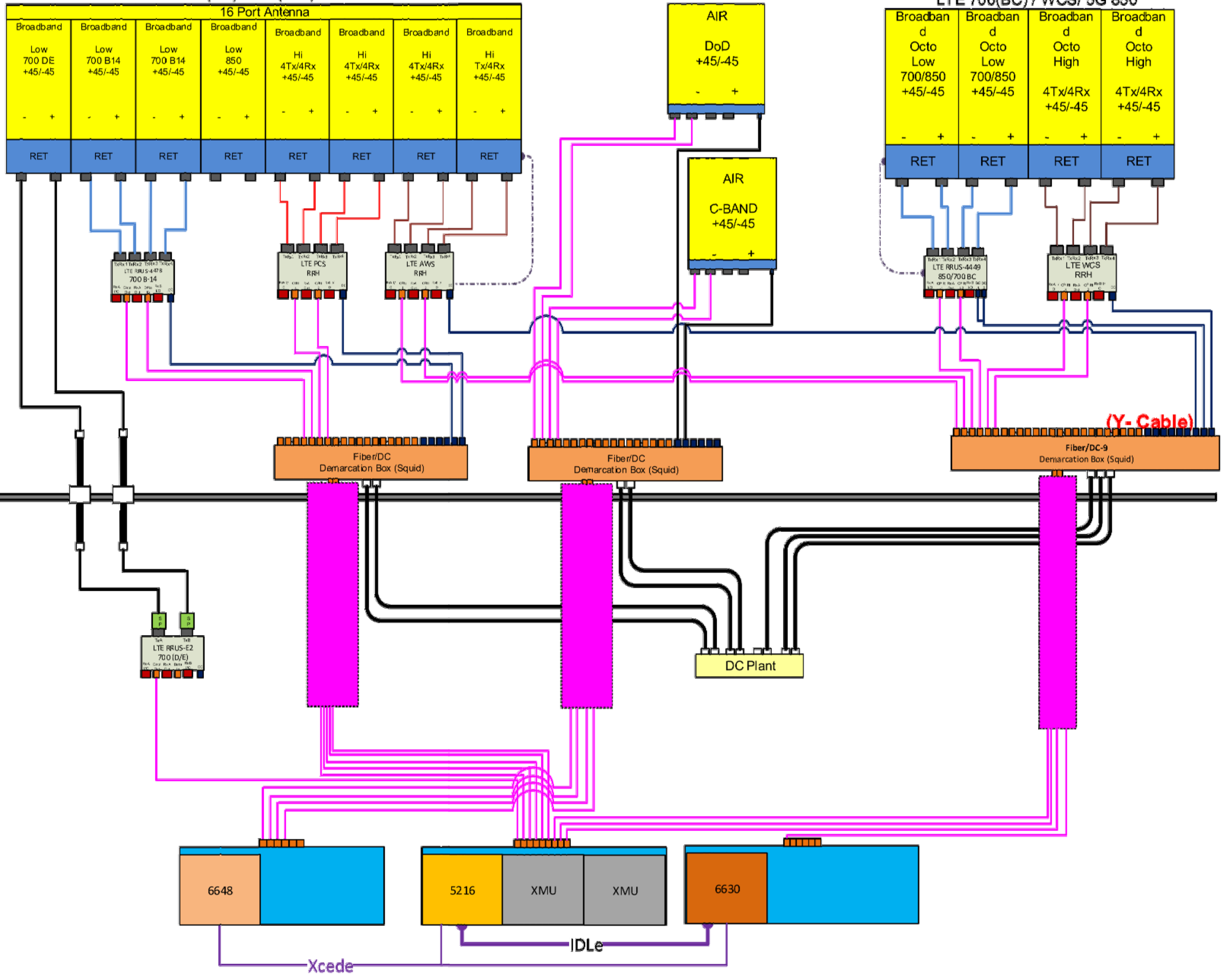
						AT&T	
2	08/03/22	ISSUED FOR CONSTRUCTION	SC	AT	DPA	GROUNDING DETAILS	
1	07/28/22	ISSUED FOR CONSTRUCTION	KW	AT	DPA	NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TX4RX SOFTWARE RETROFIT, 2022 UPGRADE	
A	03/29/22	ISSUED FOR REVIEW	VPP	AT	DPA	SITE NUMBER	DRAWING NUMBER
NO.	DATE	REVISIONS	BY	CHK	APP'D	CTL01125	G-1
SCALE: AS SHOWN		DESIGNED BY: AT		DRAWN BY: VPP		2	

Antenna 1  
Empty

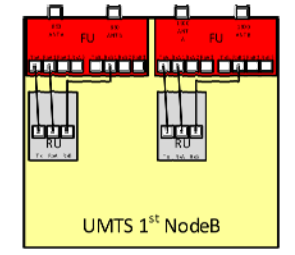
Antenna 2  
LTE 700(DE) / 700(B14) / PCS / AWS

Antenna 3  
DoD + C band

Antenna 4  
LTE 700(BC) / WCS / 5G 850



- 3 Feet Minimum Separation between ALL Antennas
- 6 Feet Minimum Separation between 700BC & 700 DE
- 12" Vertical Separation between DoD and C Band Antenna.
- Use "Y Cable" for Dual band RRHs



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

**NOTE:**  
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

**RF PLUMBING DIAGRAM** 1  
SCALE: N.T.S. RF-1

2	08/03/22	ISSUED FOR CONSTRUCTION	SG	AT	DPH
1	07/28/22	ISSUED FOR CONSTRUCTION	KW	AT	DPH
A	03/29/22	ISSUED FOR REVIEW	VPP	AT	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: VPP		

# EXHIBIT 2

**Location:** SHEFFIELD ST **Owner:** LEVEL DEVELOPMENT CORPORATION



### Property Information:

<b>Map Block Lot:</b>	0047-0983-0006	<b>Acres:</b>	25
<b>Primary Use:</b>	Com Vac Land (5-2)	<b>Zone:</b>	RL
<b>Neighborhood:</b>	41000-Bucks Hill	<b>Vol/Page:</b>	5739
<b>Mailing Address:</b>	LEVEL DEVELOPMENT CORPORATION 293 SHEFFIELD ST WATERBURY, CT 06704		

### Property Values:

	Appraised Value	Assessed Value (70%)
<b>Building</b>	0	0
<b>Land</b>	459607	321730
<b>OutBuilding</b>	3060	2140
<b>Total</b>	462667	323870

### Sales Information:

Sale Date	Sale Price	Sale Type	Valid sale
2006-04-25 00:00:00.000	0	Quit Claim	No

### Outbuilding Information:

Type	Area (sq.ft)	Year Built	Condition
Frame Shed	240sq.ft	2002	Average

### Special Features:

### Permit Information:

Permit Date	Permit Number	Permit Type	Click for Details
08/09/2013	PR20130002197	BD - Electrical	<a href="#">Details</a>
06/29/2012	PR20120001784	BD - Building	<a href="#">Details</a>
05/13/2019	PR20190001129	BD - Electrical	<a href="#">Details</a>
02/13/2013	PR20130000309	BD - Building	<a href="#">Details</a>

### Planning Application:

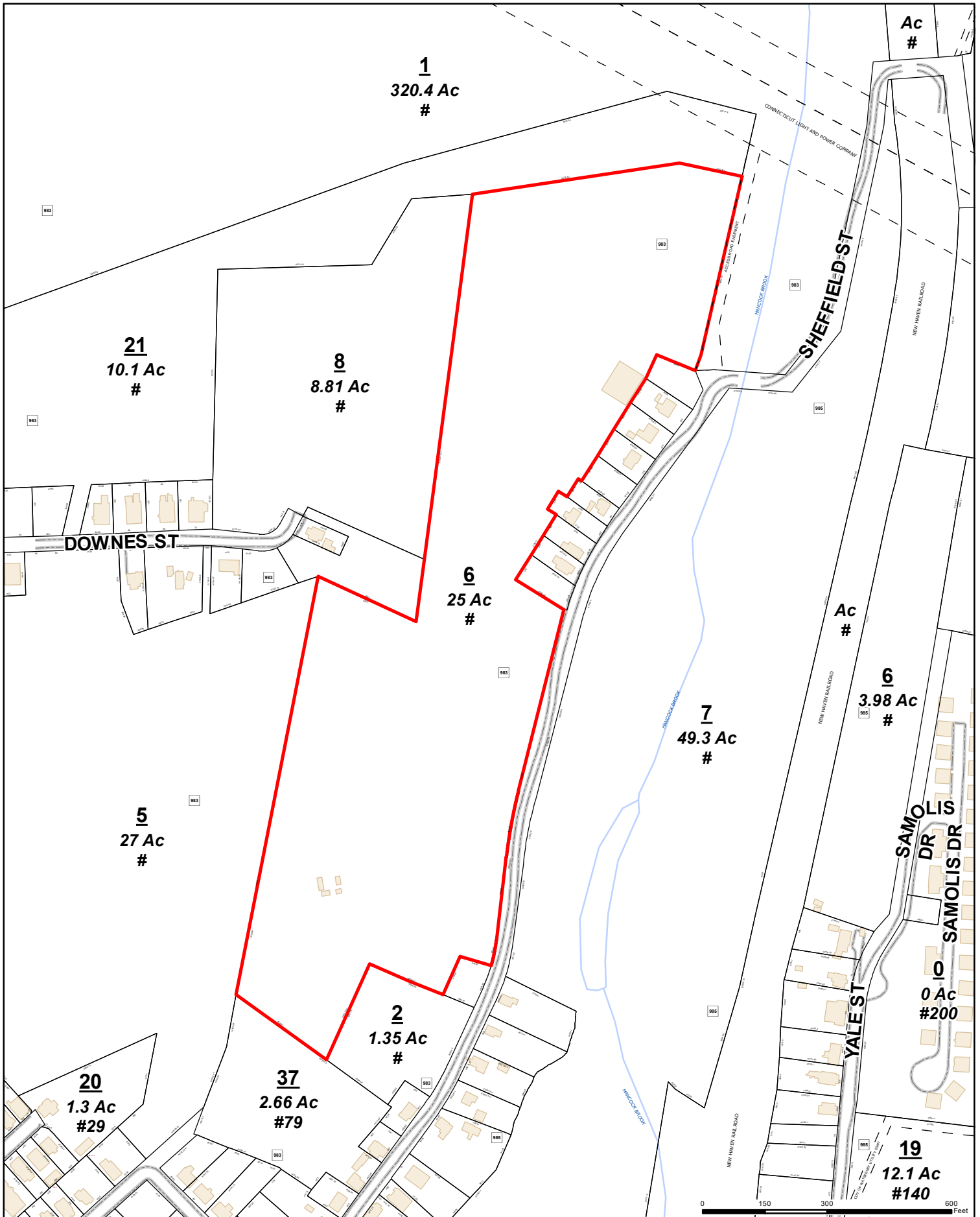
Application Date	Application Number	Application Type	Click for Details
------------------	--------------------	------------------	-------------------

### Code Enforcement:

Case Date	Case Number	Case Type	Click for Details
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[Close](#)





**City of Waterbury**  
Public Works Department

MBL: **0047-0983-0006**  
ADDRESS: **SHEFFIELD ST**

*This map is for informational purposes only and has not been prepared for, or suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to verify the usability of the information. The City of Waterbury makes no warranties, express or implied, as to the use of the information obtained herein.*



# EXHIBIT 3



**Tower Engineering Solutions**

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

---

## **Structural Analysis Report**

**Existing 158 ft SUMMIT Monopole**  
**Customer Name: SBA Communications Corp**  
**Customer Site Number: CT02722-S**  
**Customer Site Name: Waterbury**  
**Carrier Name: AT&T (App#: 200376, V1)**  
**Carrier Site ID / Name: CT1125 / Waterbury-299 Sheffield St.**  
**Site Location: 299 Sheffield Street**  
**Waterbury, Connecticut**  
**New Haven County**  
**Latitude: 41.594089**  
**Longitude: -73.050567**

**Analysis Result:**

**Max Structural Usage: 76.4% [Pass]**  
**Max Foundation Usage: 61% [Pass]**  
**Additional Usage Caused by Mount Modification: N/A**



**Report Prepared By: Praveen Shrestha**



**Tower Engineering Solutions**

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

---

## **Structural Analysis Report**

**Existing 158 ft SUMMIT Monopole**

**Customer Name: SBA Communications Corp**

**Customer Site Number: CT02722-S**

**Customer Site Name: Waterbury**

**Carrier Name: AT&T (App#: 200376, V1)**

**Carrier Site ID / Name: CT1125 / Waterbury-299 Sheffield St.**

**Site Location: 299 Sheffield Street**

**Waterbury, Connecticut**

**New Haven County**

**Latitude: 41.594089**

**Longitude: -73.050567**

### **Analysis Result:**

**Max Structural Usage: 76.4% [Pass]**

**Max Foundation Usage: 61% [Pass]**

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

**Report Prepared By: Praveen Shrestha**



## Introduction

The purpose of this report is to summarize the analysis results on the 158 ft SUMMIT 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>	Summit Manufacturing, LLC. DWG.No. 9302-01, dated 08/23/2000.
<b>Foundation Drawing</b>	Summit Manufacturing, LLC. Job No. 9302-A530, dated 08/23/2000.
<b>Geotechnical Report</b>	JGI, Site# 10125-046, dated 04/28/2000
<b>Modification Drawings</b>	N/A
<b>Mount Analysis</b>	N/A

## Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the TIA-222-G-2. In accordance with this standard, the structure was analyzed using **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>	Ultimate Design Wind Speed $V_{ult} = 125$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 97.0$ mph (3-Sec. Gust)
<b>Wind Speed with Ice:</b>	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
<b>Operational Wind Speed:</b>	60 mph + 0" Radial ice
<b>Standard/Codes:</b>	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
<b>Exposure Category:</b>	C
<b>Structure Class:</b>	II
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Seismic Parameters:</b>	$S_5 = 0.189, S_1 = 0.064$

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

## Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	158.0	3	JMA Wireless MX08FRO665-21 - Panel	Platform w/HRK Commscope MC-PK8-DSH	(1) 1.75" Hybrid	Dish Wireless
2		3	Fujitsu TA08025-B605 RRU			
3		3	Fujitsu TA08025-B604 RRU			
4		1	Raycap RDIDC-9181-PF-48-OVP			
5	148.0	6	Andrew DB844G65ZAXY - Panel	Modified Low Profile Platform W/ (3) VZWSMART-PLK3, (15) VZWSMART-MSK1, (3) VZWSMART-PLK6, (1) VZWSMART-PLK7, (1) VZWSMART-MSK6, (1) VZWSMART-P40-238X048, (3) VZWSMART-P40- 278X048 & (3) 36" Long, LL3X3x1/4	(11) 1-5/8" (2) 1-5/8" Hybrid	Verizon
6		3	Samsung MT6407-77A			
7		6	JMA Wireless MX06FRO660-03 - Panel			
8		6	RFS FD9R6004/2C-3L Diplexer			
9		3	Samsung RF4439D-25A RRU			
10		3	Samsung RF4440D-13a RRU			
11		1	Raycap RCMDC-6627-PF-48-OVP			
-	137.0	3	Quintel – QS66512-2 - Panel	(1) Platform w/ Hand Rails [MTC3607]	(12) 1-5/8" (2) 1/2" Fiber (4) 3/4" DC	AT&T
-		3	CCI - OPA-65R-LCUU-H6 - Panel			
-		3	KMW - AM-X-CD-16-65-00T-RET - Panel			
-		3	Kathrein Scala - 800 10965 - Panel			
-		6	CCI - DTMABP7819VG12A - TMA			
-		6	Kaelus - DBC0037F1V2-1 - Diplexer			
-		6	Ericsson - RRUS-11 – RRU			
-		6	Ericsson - RRUS-12 – RRU			
-		3	Ericsson - RRUS 32 B2 – RRU			
-		3	Ericsson - RRUS-32 – RRU			
-		3	Ericsson - B14 4478 – RRU			
-		3	Ericsson - RRU A2 – RRU			
-		6	Kaelus - DBC0061F1V51-2 - Combiners			
-		3	Raycap - DC6-48-60-18-8F - COVP			
29	127.0	3	Nokia - AAHC – Panel	(1) Low Profile Platform (1) Reinforcement kit [PRK- 1245L] (1) Vertical brace kit [PRK-SFS-L]	(1) 1-5/8" Fiber (3) 1-1/4" Fiber (2) 1/2"	Sprint Nextel
30		3	Commscope - NNVV-65B-R4 - Panel			
31		2	DragonWave - A-ANT-23G-2-C - Dish			
32		3	ALU - 1900MHz – RRU			
33		6	ALU - 800 MHz – RRU			
-	122.0	1	Nokia CS72188.01 – Omni	Direct Mount	(1) 1/2" Coax	AT&T

## 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
12	138.75	3	Ericsson AIR6419 B77G Panel	(1) Platform w/ Hand Rails [MTC3607] (3) 12.5' - 2.5" Horizontal Pipe	(12) 1-5/8" Coax (3) 1/2" Fiber (4) 3/4" DC Power (3) .92" DC Power	AT&T
13	137.0	3	Kathrein 800-10965 Panel			
14		3	Quintel QD6616-7 Panel			
15		6	Cci DTMABP7819VG12A TMA			
16		6	Kaelus DBC0037F1V2-1 Diplexer			
17		3	Ericsson RRUS-12 RRU			
18		3	Ericsson RRUS-32 B2 RRU			
19		3	Ericsson RRUS-32 RRU			
20		3	Ericsson B14 4478 RRU			
21		3	Ericsson RRUS E2 B29 RRU			
22		3	Ericsson RRUS 4449 B5/B12			
23		3	Ericsson RRUS 4426 B66 RRU			
24		3	Ericsson RRU-A2 Module			
25		6	Kaelus DBC0061F1V51-2 Combiners			
26		2	Raycap DC6-48-60-18-8F OVP			
27		1	Raycap DC9-48-60-24-8C-EV OVP			
28		135.75	3			
34	122.0	1	Nokia CS72188.01 LMU- Omni			

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

## **Analysis Results**

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	<b>76.4%</b>	<b>70.7%</b>	<b>57.4%</b>
Pass/Fail	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>

## **Foundations**

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	4892.81	41.1	59.31

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

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

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.3451 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 76.37% at 83.5ft

**Structure:** CT02722-S-SBA  
**Site Name:** Waterbury  
**Height:** 158.00 (ft)  
**Base Elev:** 0.000 (ft)

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

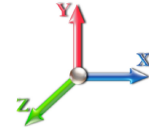
6/9/2022



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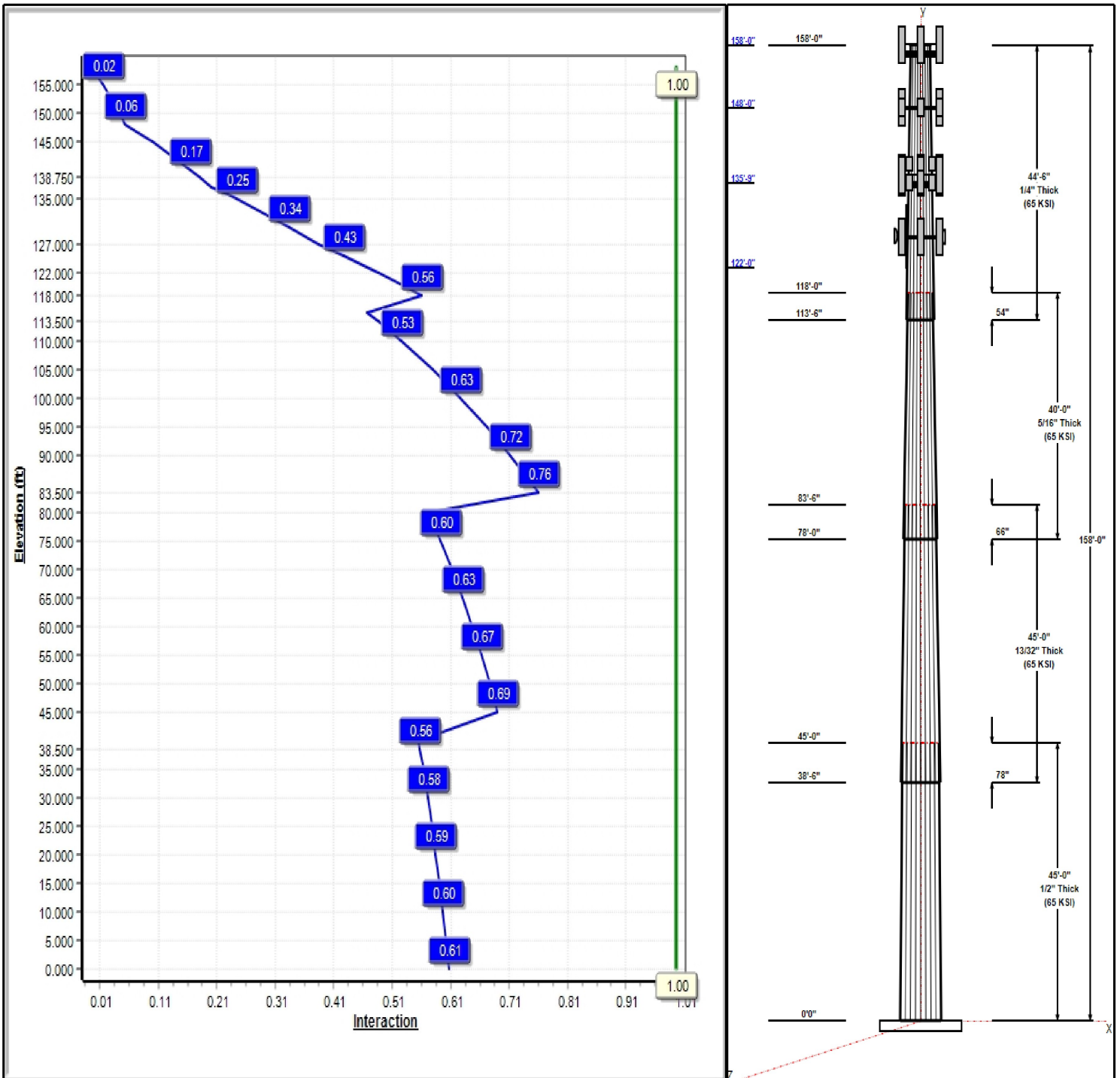
**Dead Load Factor:** 1.20  
**Wind Load Factor:** 1.60

**Load Case : 1.2D + 1.6W 97 mph Wind**



**Iterations:** 24

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## Structure: CT02722-S-SBA

**Type:** Tapered  
**Site Name:** Waterbury  
**Height:** 158.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 18 Sided  
**Taper:** 0.23998

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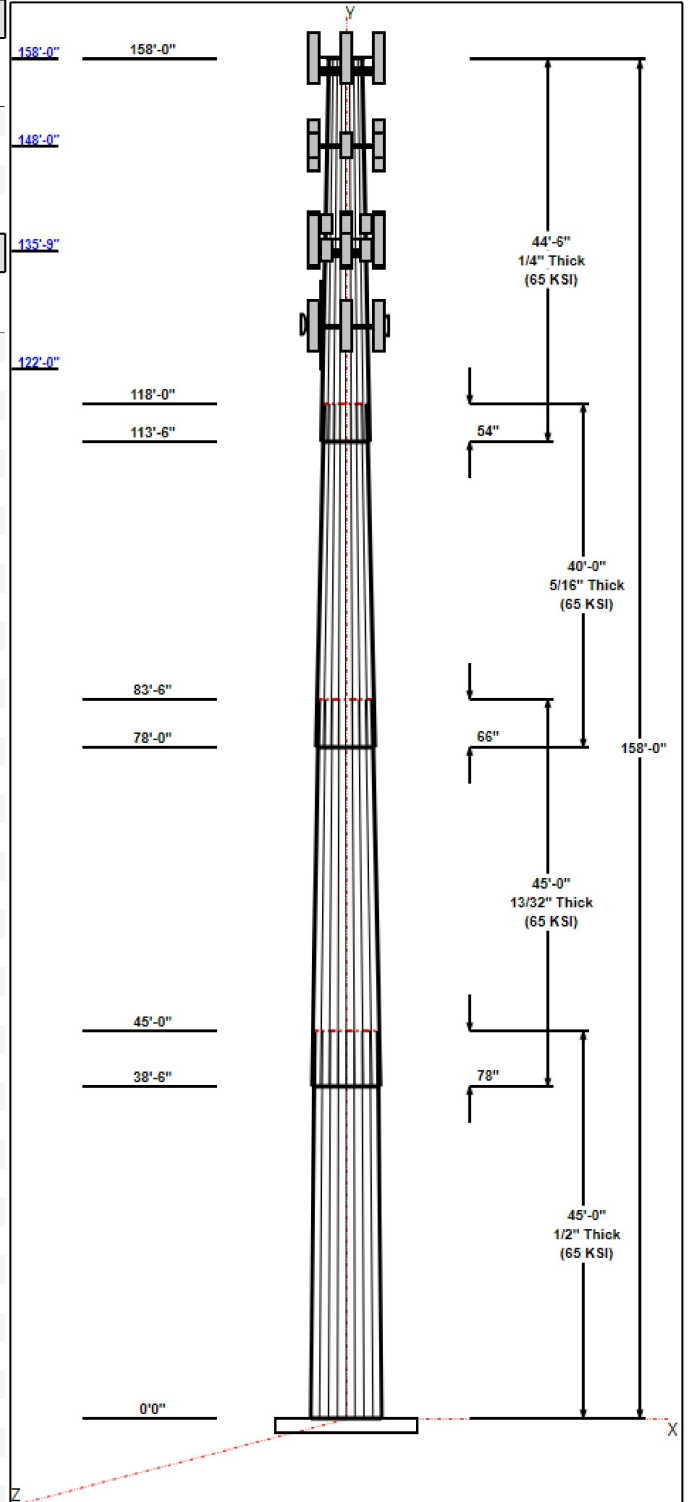


### Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	45.00	49.18	59.98	0.500		0.23998	65
2	45.00	40.75	51.55	0.406	Slip	0.23998	65
3	40.00	33.10	42.70	0.313	Slip	0.23998	65
4	44.50	24.00	34.68	0.250	Slip	0.23998	65

### Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
158.00	158.00	3	JMA Wireless	Dish Wireless
158.00	158.00	1	Commscope MC-PK8-DSH	Dish Wireless
158.00	158.00	3	Fujitsu TA08025-B605	Dish Wireless
158.00	158.00	3	Fujitsu TA08025-B604	Dish Wireless
158.00	158.00	1	Raycap	Dish Wireless
148.00	148.00	6	DB844G65ZAXY	Verizon
148.00	148.00	1	Low Profile Platform	Verizon
148.00	148.00	3	MT6407-77A	Verizon
148.00	148.00	6	JMA Wireless	Verizon
148.00	148.00	3	RF4439D-25A	Verizon
148.00	148.00	3	RF4440D-13a	Verizon
148.00	148.00	1	Raycap	Verizon
148.00	148.00	6	RFS FD9R6004/2C-3L	Verizon
148.00	148.00	1	VZWSMART-PLK6	Verizon
148.00	148.00	1	VZWSMART-PLK7	Verizon
148.00	148.00	1	VZWSMART-PLK3	Verizon
138.75	138.75	3	AIR 6419 B77G	AT&T
137.00	137.00	3	2 1/2" XS Pipe Mast	AT&T
137.00	137.00	3	RRUS E2 B29	AT&T
137.00	137.00	3	4449 B5/B12	AT&T
137.00	137.00	3	4426 B66	AT&T
137.00	137.00	1	DC9-48-60-24-8C-EV	AT&T
137.00	137.00	3	Ericsson - RRUS 32 B2 -	AT&T
137.00	137.00	3	QD6616-7	AT&T
137.00	137.00	3	800 10965	AT&T
137.00	137.00	6	Kaelus - DBC0037F1V2-1	AT&T
137.00	137.00	3	Ericsson - B14 4478 - RRU	AT&T
137.00	137.00	6	Kaelus - DBC0061F1V51-2	AT&T
137.00	137.00	6	CCI -	AT&T
137.00	137.00	3	Ericsson - RRUS-12 - RRU	AT&T
137.00	137.00	3	Ericsson - RRU A2 - RRU	AT&T
137.00	137.00	3	Ericsson - RRUS-32 - RRU	AT&T
137.00	137.00	2	Raycap - DC6-48-60-18-8F	AT&T
137.00	137.00	1	Platform w/ Hand Rails	AT&T
135.75	135.75	3	AIR 6449 B77D	AT&T
127.00	127.00	3	ALU - 1900MHz - RRU	Sprint Nextel
127.00	127.00	6	ALU - 800 MHz - RRU	Sprint Nextel
127.00	127.00	3	AAHC	Sprint Nextel
127.00	127.00	3	NNVV-65B-R4	Sprint Nextel
127.00	127.00	1	PRK-1245 Reinforcement	Sprint Nextel
127.00	127.00	1	PRK-SFS-L Brace Kit	Sprint Nextel
127.00	127.00	1	Low Profile Platform	Sprint Nextel
127.00	127.00	2	A-ANT-23G-2-C	Sprint Nextel
122.00	127.00	1	CS72188.01 Omni	AT&T



### Linear Appurtenances

**Structure: CT02722-S-SBA**

**Type:** Tapered  
**Site Name:** Waterbury  
**Height:** 158.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 18 Sided  
**Taper:** 0.23998

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Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	158.00	Inside	1.75" Hybrid	Dish Wireless
0.00	148.00	Inside	1-5/8"	Verizon
0.00	148.00	Inside	1-5/8" Hybrid	Verizon
0.00	137.00	Inside	0.92" DC	AT&T
0.00	137.00	Inside	1-5/8" Coax	AT&T
0.00	137.00	Inside	1/2" Fiber	AT&T
0.00	137.00	Inside	3/4" DC	AT&T
0.00	127.00	Inside	1-1/4" Fiber	Sprint Nextel
0.00	127.00	Inside	1-5/8" Fiber	Sprint Nextel
0.00	127.00	Inside	1/2"	Sprint Nextel
0.00	122.00	Inside	1/2" Coax	AT&T

**Anchor Bolts**

Qty	Specifications	Grade (ksi)	Arrangement
20	2.25" 18J	75.0	Cluster

**Base Plate**

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
3.2500	66.0	50.0	Clipped

**Reactions**

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 97 mph Wind	4892.8	41.1	59.3
0.9D + 1.6W 97 mph Wind	4843.2	41.0	44.5
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1412.6	11.8	88.9
1.2D + 1.0E	309.2	2.5	59.4
0.9D + 1.0E	305.9	2.5	44.5
1.0D + 1.0W 60 mph Wind	1163.6	9.8	49.5

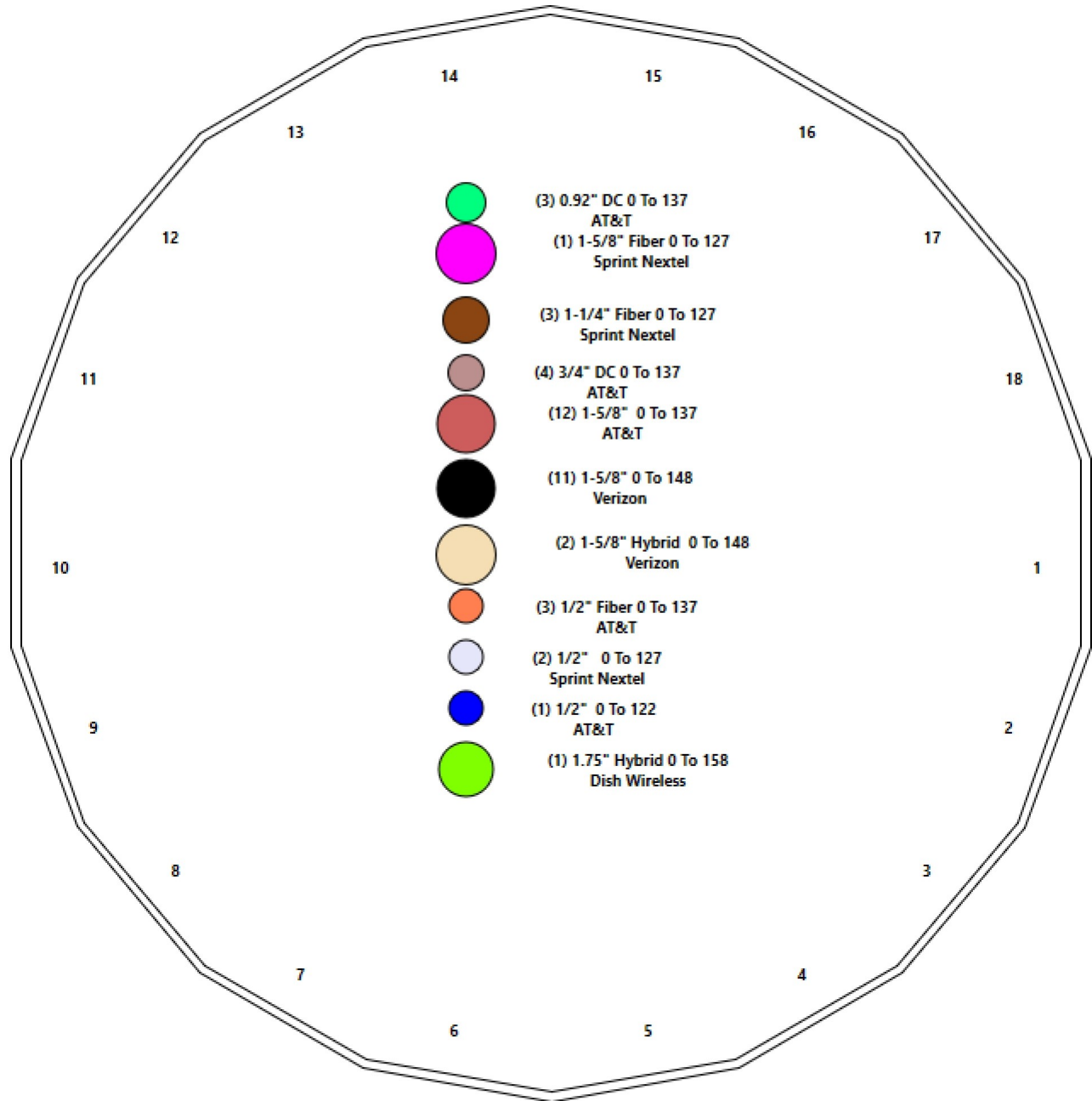
# Structure: CT02722-S-SBA - Coax Line Placement

Type: Monopole  
Site Name: Waterbury  
Height: 158.00 (ft)

6/9/2022



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## Shaft Properties

<b>Structure:</b> CT02722-S-SBA	<b>Code:</b> TIA-222-G	6/9/2022
<b>Site Name:</b> Waterbury	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (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	18	45.000	0.5000	65		0.00	13,142
2	18	45.000	0.4063	65	Slip	78.00	9,033
3	18	40.000	0.3125	65	Slip	66.00	5,074
4	18	44.500	0.2500	65	Slip	54.00	3,495
<b>Total Shaft Weight:</b>							<b>30,744</b>

Bottom

Top

Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper
1	59.98	0.00	94.39	42191.72	19.74	119.96	49.18	45.00	77.25	23130.4	15.93	98.36	0.239985
2	51.55	38.50	65.96	21799.61	20.96	126.88	40.75	83.50	52.03	10701.4	16.28	100.3	0.239985
3	42.70	78.00	42.04	9542.68	22.68	136.64	33.10	118.00	32.52	4416.67	17.27	105.9	0.239985
4	34.68	113.5	27.32	4091.38	23.05	138.72	24.00	158.00	18.84	1343.00	15.52	96.00	0.239985

## Load Summary

<b>Structure:</b> CT02722-S-SBA	<b>Code:</b> TIA-222-G	6/9/2022
<b>Site Name:</b> Waterbury	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (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
		<b>Page:</b> 6



### 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	158.00	JMA Wireless MX08FRO665-21	3	64.50	12.49	0.74	356.89	13.962	0.74	0.00	0.00
2	158.00	Commscope MC-PK8-DSH	1	1727.00	37.59	1.00	3423.63	85.070	1.00	0.00	0.00
3	158.00	Fujitsu TA08025-B605 RRU	3	75.00	1.96	0.67	127.58	2.524	0.67	0.00	0.00
4	158.00	Fujitsu TA08025-B604 RRU	3	63.90	1.96	0.67	114.79	2.524	0.67	0.00	0.00
5	158.00	Raycap RDIDC-9181-PF-48-OVP	1	21.90	2.01	1.00	75.43	2.581	1.00	0.00	0.00
6	148.00	DB844G65ZAXY	6	12.00	4.33	0.93	167.80	6.312	0.93	0.00	0.00
7	148.00	Low Profile Platform	1	1200.00	35.00	1.00	2245.72	64.280	1.00	0.00	0.00
8	148.00	MT6407-77A	3	79.40	4.69	0.70	198.75	5.636	0.70	0.00	0.00
9	148.00	JMA Wireless MX06FRO660-03	6	60.00	9.87	0.87	328.56	11.244	0.87	0.00	0.00
10	148.00	RF4439D-25A	3	84.40	1.88	0.67	135.59	2.430	0.67	0.00	0.00
11	148.00	RF4440D-13a	3	70.30	1.88	0.67	118.87	2.430	0.67	0.00	0.00
12	148.00	Raycap RCMD-6627-PF-48-OVP	1	32.00	4.06	1.00	145.77	4.881	1.00	0.00	0.00
13	148.00	RFS FD9R6004/2C-3L Diplexer	6	3.10	0.37	0.50	11.12	0.825	0.50	0.00	0.00
14	148.00	VZWSMART-PLK6	1	329.00	10.00	1.00	787.72	20.457	1.00	0.00	0.00
15	148.00	VZWSMART-PLK7	1	136.70	2.25	1.00	327.30	4.603	1.00	0.00	0.00
16	148.00	VZWSMART-PLK3	1	514.00	12.25	1.00	1123.17	24.206	1.00	0.00	0.00
17	138.75	AIR 6419 B77G	3	66.10	3.80	0.76	161.56	4.590	0.76	0.00	0.00
18	137.00	2 1/2" XS Pipe Mast	3	87.00	4.31	1.00	219.41	9.647	1.00	0.00	0.00
19	137.00	RRUS E2 B29	3	59.40	3.15	0.67	123.50	3.847	0.67	0.00	0.00
20	137.00	4449 B5/B12	3	71.00	1.97	0.67	123.90	2.512	0.67	0.00	0.00
21	137.00	4426 B66	3	48.50	1.15	0.67	87.16	1.620	0.67	0.00	0.00
22	137.00	DC9-48-60-24-8C-EV	1	26.20	1.14	1.00	131.23	2.712	1.00	0.00	0.00
23	137.00	Ericsson - RRUS 32 B2 - RRU	3	53.00	2.74	0.67	140.02	3.462	0.67	0.00	0.00
24	137.00	QD6616-7	3	65.00	8.13	0.93	289.88	9.417	0.93	0.00	0.00
25	137.00	800 10965	3	97.40	10.22	0.77	392.46	15.376	0.77	0.00	0.00
26	137.00	Kaelus - DBC0037F1V2-1 - Diplexer	6	6.60	0.38	0.67	16.58	0.832	0.67	0.00	0.00
27	137.00	Ericsson - B14 4478 - RRU	3	60.00	1.65	0.67	101.51	2.164	0.67	0.00	0.00
28	137.00	Kaelus - DBC0061F1V51-2 -	6	18.30	0.33	0.67	35.14	0.622	0.67	0.00	0.00
29	137.00	CCI - DTMAP7819VVG12A	6	19.00	1.14	0.67	44.03	1.903	0.67	0.00	0.00
30	137.00	Ericsson - RRUS-12 - RRU	3	58.00	3.15	0.67	152.34	3.857	0.67	0.00	0.00
31	137.00	Ericsson - RRU A2 - RRU	3	22.00	1.86	0.67	59.14	2.825	0.67	0.00	0.00
32	137.00	Ericsson - RRUS-32 - RRU	3	77.00	3.87	0.67	189.35	4.098	0.67	0.00	0.00
33	137.00	Raycap - DC6-48-60-18-8F - COVP	2	32.80	1.47	0.80	95.99	2.163	0.80	0.00	0.00
34	137.00	Platform w/ Hand Rails [MTC3607]	1	2000.00	40.00	1.00	4075.36	60.754	1.00	0.00	0.00
35	135.75	AIR 6449 B77D	3	88.00	4.13	0.85	223.93	4.978	0.85	0.00	0.00
36	127.00	ALU - 1900MHz - RRU	3	60.00	2.77	0.67	142.06	4.018	0.68	0.00	0.00
37	127.00	ALU - 800 MHz - RRU	6	53.00	2.49	0.67	125.74	3.615	0.67	0.00	0.00
38	127.00	AAHC	3	103.70	4.21	0.75	207.58	5.008	0.75	0.00	0.00
39	127.00	NNVV-65B-R4	3	84.70	12.27	0.74	392.03	13.702	0.75	0.00	0.00
40	127.00	PRK-1245 Reinforcement Kit	1	464.91	9.50	1.00	784.10	19.284	1.00	0.00	0.00
41	127.00	PRK-SFS-L Brace Kit	1	261.72	6.75	1.00	567.19	13.238	1.00	0.00	0.00
42	127.00	Low Profile Platform	1	1200.00	25.00	1.00	2229.84	45.597	1.00	0.00	0.00
43	127.00	A-ANT-23G-2-C	2	12.30	8.43	1.00	56.17	10.108	1.00	0.00	0.00
44	122.00	CS72188.01 Omni	1	25.00	3.00	1.00	99.50	6.533	1.00	0.00	5.00
<b>Totals:</b>			<b>125</b>	<b>13,675.53</b>			<b>32,868.85</b>				

### Linear Appurtenances

## 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		
Bottom Elev. (ft)	Top Elev. (ft)	Description		Exposed Width	Exposed						
0.00	158.00	(1) 1.75" Hybrid		0.00	Inside						
0.00	148.00	(11) 1-5/8"		0.00	Inside						
0.00	148.00	(2) 1-5/8" Hybrid		0.00	Inside						
0.00	137.00	(3) 0.92" DC		0.00	Inside						
0.00	137.00	(12) 1-5/8" Coax		0.00	Inside						
0.00	137.00	(3) 1/2" Fiber		0.00	Inside						
0.00	137.00	(4) 3/4" DC		0.00	Inside						
0.00	127.00	(3) 1-1/4" Fiber		0.00	Inside						
0.00	127.00	(1) 1-5/8" Fiber		0.00	Inside						
0.00	127.00	(2) 1/2"		0.00	Inside						
0.00	122.00	(1) 1/2" Coax		0.00	Inside						



## Shaft Section Properties

<b>Structure:</b> CT02722-S-SBA	<b>Code:</b> TIA-222-G	6/9/2022
<b>Site Name:</b> Waterbury	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (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^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.5000	59.980	94.391	42191.7	19.74	119.96	78.2	1385.	0.0
5.00		0.5000	58.780	92.487	39689.4	19.32	117.56	78.7	1329.	1589.8
10.00		0.5000	57.580	90.583	37288.1	18.90	115.16	79.2	1275.	1557.4
15.00		0.5000	56.380	88.679	34985.6	18.47	112.76	79.7	1222.	1525.0
20.00		0.5000	55.180	86.775	32779.9	18.05	110.36	80.2	1170.	1492.6
25.00		0.5000	53.980	84.870	30668.9	17.63	107.96	80.7	1119.	1460.2
30.00		0.5000	52.780	82.966	28650.5	17.20	105.56	81.2	1069.	1427.8
35.00		0.5000	51.581	81.062	26722.7	16.78	103.16	81.7	1020.	1395.4
38.50	Bot - Section 2	0.5000	50.741	79.729	25426.0	16.48	101.48	82.0	987.0	957.5
40.00		0.5000	50.381	79.158	24883.4	16.36	100.76	82.2	972.8	741.0
45.00	Top - Section 1	0.4063	49.993	63.945	19865.3	20.29	123.05	0.0	0.0	2431.7
50.00		0.4063	48.793	62.398	18457.8	19.76	120.09	78.2	745.1	1074.8
55.00		0.4063	47.593	60.850	17118.4	19.24	117.14	78.8	708.4	1048.5
60.00		0.4063	46.394	59.303	15845.4	18.72	114.19	79.4	672.7	1022.1
65.00		0.4063	45.194	57.755	14637.1	18.20	111.23	80.0	637.9	995.8
70.00		0.4063	43.994	56.208	13491.9	17.68	108.28	80.6	604.0	969.5
75.00		0.4063	42.794	54.661	12408.0	17.16	105.33	81.2	571.1	943.2
78.00	Bot - Section 3	0.4063	42.074	53.732	11786.5	16.85	103.55	81.6	551.8	553.3
80.00		0.4063	41.594	53.113	11383.8	16.64	102.37	81.8	539.1	648.1
83.50	Top - Section 2	0.3125	41.379	40.731	8678.7	21.94	132.41	0.0	0.0	1116.2
85.00		0.3125	41.019	40.374	8452.4	21.73	131.26	75.8	405.9	207.0
90.00		0.3125	39.819	39.184	7726.8	21.06	127.42	76.6	382.2	676.8
95.00		0.3125	38.619	37.994	7043.9	20.38	123.58	77.4	359.2	656.5
100.00		0.3125	37.419	36.804	6402.5	19.70	119.74	78.2	337.0	636.3
105.00		0.3125	36.219	35.614	5801.2	19.03	115.90	79.0	315.5	616.1
110.00		0.3125	35.019	34.424	5238.9	18.35	112.06	79.8	294.7	595.8
113.50	Bot - Section 4	0.3125	34.179	33.590	4867.6	17.87	109.37	80.4	280.5	405.0
115.00		0.3125	33.819	33.233	4714.1	17.67	108.22	80.6	274.5	309.3
118.00	Top - Section 3	0.2500	33.599	26.462	3718.3	22.29	134.40	0.0	0.0	608.7
120.00		0.2500	33.119	26.081	3560.1	21.95	132.48	75.6	211.7	178.8
122.00		0.2500	32.639	25.700	3406.4	21.61	130.56	76.0	205.6	176.2
125.00		0.2500	31.919	25.129	3184.3	21.10	127.68	76.6	196.5	259.4
127.00		0.2500	31.440	24.748	3041.7	20.76	125.76	77.0	190.6	169.7
130.00		0.2500	30.720	24.177	2835.9	20.26	122.88	77.6	181.8	249.7
135.00		0.2500	29.520	23.225	2513.8	19.41	118.08	78.6	167.7	403.2
135.75		0.2500	29.340	23.082	2467.7	19.28	117.36	78.7	165.7	59.1
137.00		0.2500	29.040	22.844	2392.2	19.07	116.16	79.0	162.2	97.7
138.75		0.2500	28.620	22.511	2289.0	18.78	114.48	79.3	157.5	135.0
140.00		0.2500	28.320	22.273	2217.2	18.56	113.28	79.6	154.2	95.2
145.00		0.2500	27.120	21.320	1944.8	17.72	108.48	80.6	141.2	370.8
148.00		0.2500	26.400	20.749	1792.6	17.21	105.60	81.2	133.7	214.7
150.00		0.2500	25.920	20.368	1695.7	16.87	103.68	81.6	128.9	139.9
155.00		0.2500	24.720	19.416	1468.9	16.02	98.88	82.5	117.0	338.4
158.00		0.2500	24.000	18.845	1343.0	15.52	96.00	82.5	110.2	195.3

**30744.2**

## Wind Loading - Shaft

**Structure:** CT02722-S-SBA

**Code:** TIA-222-G

6/9/2022

**Site Name:** Waterbury

**Exposure:** C

**Height:** 158.00 (ft)

**Crest Height:** 0.00

**Base Elev:** 0.000 (ft)

**Site Class:** D - Stiff Soil

**Gh:** 1.1

**Topography:** 1

**Struct Class:** II

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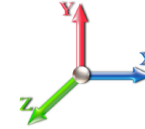


**Load Case:** 1.2D + 1.6W 97 mph Wind

**Iterations** 24

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60



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	19.450	21.40	453.89	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	444.81	0.650	0.000	5.00	25.123	16.33	559.0	0.0	1907.7
10.00		1.00	0.85	19.450	21.40	435.73	0.650	0.000	5.00	24.616	16.00	547.7	0.0	1868.8
15.00		1.00	0.85	19.450	21.40	426.65	0.650	0.000	5.00	24.108	15.67	536.4	0.0	1830.0
20.00		1.00	0.90	20.638	22.70	430.13	0.650	0.000	5.00	23.600	15.34	557.2	0.0	1791.1
25.00		1.00	0.95	21.630	23.79	430.78	0.650	0.000	5.00	23.093	15.01	571.4	0.0	1752.2
30.00		1.00	0.98	22.477	24.72	429.36	0.650	0.000	5.00	22.585	14.68	580.7	0.0	1713.3
35.00		1.00	1.01	23.218	25.54	426.47	0.650	0.000	5.00	22.077	14.35	586.4	0.0	1674.5
38.50	Bot - Section 2	1.00	1.04	23.689	26.06	423.75	0.650	0.000	3.50	15.152	9.85	410.6	0.0	1149.0
40.00		1.00	1.04	23.880	26.27	422.44	0.650	0.000	1.50	6.521	4.24	178.1	0.0	889.2
45.00	Top - Section 1	1.00	1.07	24.479	26.93	417.52	0.650	0.000	5.00	21.406	13.91	599.5	0.0	2918.0
50.00		1.00	1.09	25.029	27.53	418.86	0.650	0.000	5.00	20.898	13.58	598.4	0.0	1289.7
55.00		1.00	1.12	25.536	28.09	412.67	0.650	0.000	5.00	20.390	13.25	595.7	0.0	1258.2
60.00		1.00	1.14	26.008	28.61	405.97	0.650	0.000	5.00	19.883	12.92	591.6	0.0	1226.6
65.00		1.00	1.16	26.450	29.09	398.82	0.650	0.000	5.00	19.375	12.59	586.3	0.0	1195.0
70.00		1.00	1.17	26.866	29.55	391.27	0.650	0.000	5.00	18.867	12.26	579.9	0.0	1163.4
75.00		1.00	1.19	27.259	29.98	383.37	0.650	0.000	5.00	18.360	11.93	572.5	0.0	1131.8
78.00	Bot - Section 3	1.00	1.20	27.485	30.23	378.48	0.650	0.000	3.00	10.772	7.00	338.7	0.0	663.9
80.00		1.00	1.21	27.632	30.39	375.16	0.650	0.000	2.00	7.186	4.67	227.1	0.0	777.7
83.50	Top - Section 2	1.00	1.22	27.882	30.67	369.25	0.650	0.000	3.50	12.379	8.05	394.9	0.0	1339.4
85.00		1.00	1.22	27.987	30.79	372.34	0.650	0.000	1.50	5.229	3.40	167.4	0.0	248.4
90.00		1.00	1.24	28.325	31.16	363.63	0.650	0.000	5.00	17.101	11.12	554.1	0.0	812.2
95.00		1.00	1.25	28.650	31.51	354.69	0.650	0.000	5.00	16.593	10.79	543.9	0.0	787.9
100.00		1.00	1.27	28.961	31.86	345.53	0.650	0.000	5.00	16.086	10.46	532.9	0.0	763.6
105.00		1.00	1.28	29.260	32.19	336.17	0.650	0.000	5.00	15.578	10.13	521.4	0.0	739.3
110.00		1.00	1.29	29.548	32.50	326.63	0.650	0.000	5.00	15.070	9.80	509.4	0.0	715.0
113.50	Bot - Section 4	1.00	1.30	29.743	32.72	319.85	0.650	0.000	3.50	10.247	6.66	348.7	0.0	486.0
115.00		1.00	1.30	29.826	32.81	316.92	0.650	0.000	1.50	4.379	2.85	149.4	0.0	371.1
118.00	Top - Section 3	1.00	1.31	29.988	32.99	311.01	0.650	0.000	3.00	8.621	5.60	295.7	0.0	730.4
120.00		1.00	1.32	30.094	33.10	311.75	0.650	0.000	2.00	5.646	3.67	194.4	0.0	214.5
122.00	Appurtenance(s)	1.00	1.32	30.199	33.22	307.77	0.650	0.000	2.00	5.564	3.62	192.2	0.0	211.4
125.00		1.00	1.33	30.354	33.39	301.75	0.650	0.000	3.00	8.194	5.33	284.5	0.0	311.3
127.00	Appurtenance(s)	1.00	1.33	30.455	33.50	297.71	0.650	0.000	2.00	5.361	3.48	186.8	0.0	203.7
130.00		1.00	1.34	30.605	33.67	291.61	0.650	0.000	3.00	7.890	5.13	276.2	0.0	299.7
135.00		1.00	1.35	30.850	33.93	281.33	0.650	0.000	5.00	12.743	8.28	449.7	0.0	483.9
135.75	Appurtenance(s)	1.00	1.35	30.886	33.97	279.78	0.650	0.000	0.75	1.868	1.21	66.0	0.0	70.9
137.00	Appurtenance(s)	1.00	1.35	30.945	34.04	277.19	0.650	0.000	1.25	3.087	2.01	109.3	0.0	117.2
138.75	Appurtenance(s)	1.00	1.36	31.028	34.13	273.54	0.650	0.000	1.75	4.269	2.77	151.5	0.0	162.0
140.00		1.00	1.36	31.087	34.20	270.93	0.650	0.000	1.25	3.011	1.96	107.1	0.0	114.3
145.00		1.00	1.37	31.317	34.45	260.41	0.650	0.000	5.00	11.728	7.62	420.2	0.0	445.0
148.00	Appurtenance(s)	1.00	1.37	31.452	34.60	254.05	0.650	0.000	3.00	6.793	4.42	244.4	0.0	257.7
150.00		1.00	1.38	31.541	34.70	249.78	0.650	0.000	2.00	4.427	2.88	159.7	0.0	167.9
155.00		1.00	1.39	31.760	34.94	239.04	0.650	0.000	5.00	10.713	6.96	389.2	0.0	406.1
158.00	Appurtenance(s)	1.00	1.39	31.888	35.08	232.55	0.650	0.000	3.00	6.184	4.02	225.6	0.0	234.3
<b>Totals:</b>									<b>158.00</b>			<b>16,692.2</b>		<b>36,893.1</b>

## Discrete Appurtenance Forces

**Structure:** CT02722-S-SBA  
**Site Name:** Waterbury  
**Height:** 158.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Topography:** 1

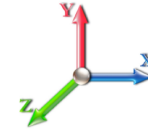
**Code:** TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

6/9/2022  
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**Load Case:** 1.2D + 1.6W 97 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**Iterations** 24

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	158.00	Raycap	1	31.888	35.077	1.00	1.00	2.01	26.28	0.000	0.000	112.81	0.00	0.00
2	158.00	Fujitsu TA08025-B604	3	31.888	35.077	0.50	0.75	2.95	230.04	0.000	0.000	165.83	0.00	0.00
3	158.00	Fujitsu TA08025-B605	3	31.888	35.077	0.50	0.75	2.95	270.00	0.000	0.000	165.83	0.00	0.00
4	158.00	Commscope	1	31.888	35.077	1.00	1.00	37.59	2072.40	0.000	0.000	2109.68	0.00	0.00
5	158.00	JMA Wireless	3	31.888	35.077	0.55	0.75	20.80	232.20	0.000	0.000	1167.14	0.00	0.00
6	148.00	DB844G65ZAXY	6	31.452	34.598	0.70	0.75	18.12	86.40	0.000	0.000	1003.11	0.00	0.00
7	148.00	Low Profile Platform	1	31.452	34.598	1.00	1.00	35.00	1440.00	0.000	0.000	1937.47	0.00	0.00
8	148.00	MT6407-77A	3	31.452	34.598	0.52	0.75	7.39	285.84	0.000	0.000	408.90	0.00	0.00
9	148.00	JMA Wireless	6	31.452	34.598	0.65	0.75	38.64	432.00	0.000	0.000	2139.03	0.00	0.00
10	148.00	RF4439D-25A	3	31.452	34.598	0.50	0.75	2.83	303.84	0.000	0.000	156.89	0.00	0.00
11	148.00	RF4440D-13a	3	31.452	34.598	0.50	0.75	2.83	253.08	0.000	0.000	156.89	0.00	0.00
12	148.00	Raycap	1	31.452	34.598	1.00	1.00	4.06	38.40	0.000	0.000	224.75	0.00	0.00
13	148.00	RFS FD9R6004/2C-3L	6	31.452	34.598	0.38	0.75	0.83	22.32	0.000	0.000	46.08	0.00	0.00
14	148.00	VZWSMART-PLK6	1	31.452	34.598	1.00	1.00	10.00	394.80	0.000	0.000	553.56	0.00	0.00
15	148.00	VZWSMART-PLK7	1	31.452	34.598	1.00	1.00	2.25	164.04	0.000	0.000	124.55	0.00	0.00
16	148.00	VZWSMART-PLK3	1	31.452	34.598	1.00	1.00	12.25	616.80	0.000	0.000	678.11	0.00	0.00
17	138.75	AIR 6419 B77G	3	31.028	34.131	0.57	0.75	6.50	237.96	0.000	0.000	354.85	0.00	0.00
18	137.00	Platform w/ Hand Rails	1	30.945	34.040	1.00	1.00	40.00	2400.00	0.000	0.000	2178.54	0.00	0.00
19	137.00	Raycap -	2	30.945	34.040	0.60	0.75	1.76	78.72	0.000	0.000	96.07	0.00	0.00
20	137.00	Ericsson - RRUS-32 -	3	30.945	34.040	0.50	0.75	5.83	277.20	0.000	0.000	317.74	0.00	0.00
21	137.00	Ericsson - RRU A2 - RRU	3	30.945	34.040	0.50	0.75	2.80	79.20	0.000	0.000	152.71	0.00	0.00
22	137.00	Ericsson - RRUS-12 -	3	30.945	34.040	0.50	0.75	4.75	208.80	0.000	0.000	258.63	0.00	0.00
23	137.00	CCI -	6	30.945	34.040	0.50	0.75	3.44	136.80	0.000	0.000	187.20	0.00	0.00
24	137.00	DC9-48-60-24-8C-EV	1	30.945	34.040	0.75	0.75	0.85	31.44	0.000	0.000	46.57	0.00	0.00
25	137.00	2 1/2" XS Pipe Mast	3	30.945	34.040	1.00	1.00	12.93	313.20	0.000	0.000	704.21	0.00	0.00
26	137.00	RRUS E2 B29	3	30.945	34.040	0.50	0.75	4.75	213.84	0.000	0.000	258.63	0.00	0.00
27	137.00	4449 B5/B12	3	30.945	34.040	0.50	0.75	2.97	255.60	0.000	0.000	161.74	0.00	0.00
28	137.00	4426 B66	3	30.945	34.040	0.50	0.75	1.73	174.60	0.000	0.000	94.42	0.00	0.00
29	137.00	Kaelus -	6	30.945	34.040	0.50	0.75	0.99	131.76	0.000	0.000	54.19	0.00	0.00
30	137.00	QD6616-7	3	30.945	34.040	0.70	0.75	17.01	234.00	0.000	0.000	926.54	0.00	0.00
31	137.00	800 10965	3	30.945	34.040	0.58	0.75	17.71	350.64	0.000	0.000	964.34	0.00	0.00
32	137.00	Kaelus - DBC0037F1V2-1	6	30.945	34.040	0.50	0.75	1.15	47.52	0.000	0.000	62.40	0.00	0.00
33	137.00	Ericsson - B14 4478 -	3	30.945	34.040	0.50	0.75	2.49	216.00	0.000	0.000	135.47	0.00	0.00
34	137.00	Ericsson - RRU3 32 B2 -	3	30.945	34.040	0.50	0.75	4.13	190.80	0.000	0.000	224.96	0.00	0.00
35	135.75	AIR 6449 B77D	3	30.886	33.974	0.64	0.75	7.90	316.80	0.000	0.000	429.36	0.00	0.00
36	127.00	NNVV-65B-R4	3	30.455	33.501	0.59	0.80	21.79	304.92	0.000	0.000	1168.06	0.00	0.00
37	127.00	ALU - 1900MHz - RRU	3	30.455	33.501	0.54	0.80	4.45	216.00	0.000	0.000	238.75	0.00	0.00
38	127.00	ALU - 800 MHz - RRU	6	30.455	33.501	0.54	0.80	8.01	381.60	0.000	0.000	429.23	0.00	0.00
39	127.00	AAHC	3	30.455	33.501	0.60	0.80	7.58	373.32	0.000	0.000	406.19	0.00	0.00
40	127.00	Low Profile Platform	1	30.455	33.501	1.00	1.00	25.00	1440.00	0.000	0.000	1340.03	0.00	0.00
41	127.00	PRK-1245 Reinforcement	1	30.455	33.501	1.00	1.00	9.50	557.89	0.000	0.000	509.21	0.00	0.00
42	127.00	PRK-SFS-L Brace Kit	1	30.455	33.501	1.00	1.00	6.75	314.06	0.000	0.000	361.81	0.00	0.00
43	127.00	A-ANT-23G-2-C	2	30.455	33.501	1.00	1.00	16.86	29.52	0.000	0.000	903.72	0.00	0.00
44	122.00	CS72188.01 Omni	1	30.455	33.501	1.00	1.00	3.00	30.00	0.000	5.000	160.80	0.00	804.02
<b>Totals:</b>									<b>16,410.64</b>			<b>24,277.01</b>		

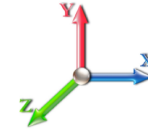
## Total Applied Force Summary

<b>Structure:</b> CT02722-S-SBA	<b>Code:</b> TIA-222-G	6/9/2022
<b>Site Name:</b> Waterbury	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (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
		<b>Page:</b> 11



**Load Case:** 1.2D + 1.6W 97 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**Iterations** 24

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		559.02	2122.72	0.00	0.00
10.00		547.73	2083.84	0.00	0.00
15.00		536.43	2044.96	0.00	0.00
20.00		557.19	2006.08	0.00	0.00
25.00		571.43	1967.21	0.00	0.00
30.00		580.73	1928.33	0.00	0.00
35.00		586.40	1889.45	0.00	0.00
38.50		410.62	1299.48	0.00	0.00
40.00		178.14	953.65	0.00	0.00
45.00		599.46	3133.03	0.00	0.00
50.00		598.37	1504.74	0.00	0.00
55.00		595.66	1473.15	0.00	0.00
60.00		591.57	1441.56	0.00	0.00
65.00		586.26	1409.97	0.00	0.00
70.00		579.88	1378.38	0.00	0.00
75.00		572.53	1346.78	0.00	0.00
78.00		338.70	792.91	0.00	0.00
80.00		227.14	863.67	0.00	0.00
83.50		394.86	1489.91	0.00	0.00
85.00		167.43	312.88	0.00	0.00
90.00		554.15	1027.16	0.00	0.00
95.00		543.85	1002.86	0.00	0.00
100.00		532.94	978.56	0.00	0.00
105.00		521.44	954.26	0.00	0.00
110.00		509.42	929.96	0.00	0.00
113.50		348.67	636.52	0.00	0.00
115.00		149.41	435.60	0.00	0.00
118.00		295.74	859.39	0.00	0.00
120.00		194.37	300.55	0.00	0.00
122.00	(1) attachments	353.04	327.44	0.00	804.02
125.00		284.55	439.75	0.00	0.00
127.00	(20) attachments	5543.80	3906.59	0.00	0.00
130.00		276.24	412.67	0.00	0.00
135.00		449.74	672.23	0.00	0.00
135.75	(3) attachments	495.35	415.96	0.00	0.00
137.00	(55) attachments	6933.66	5504.41	0.00	0.00
138.75	(3) attachments	506.39	432.83	0.00	0.00
140.00		107.09	137.74	0.00	0.00
145.00		420.18	538.80	0.00	0.00
148.00	(32) attachments	7673.77	4351.47	0.00	0.00
150.00		159.75	172.67	0.00	0.00
155.00		389.23	418.08	0.00	0.00
158.00	(11) attachments	3946.88	3072.44	0.00	0.00
	<b>Totals:</b>	<b>40,969.20</b>	<b>59,370.63</b>	<b>0.00</b>	<b>804.02</b>

## Calculated Forces

**Structure:** CT02722-S-SBA

**Code:** TIA-222-G

6/9/2022

**Site Name:** Waterbury

**Exposure:** C

**Height:** 158.00 (ft)

**Crest Height:** 0.00

**Base Elev:** 0.000 (ft)

**Site Class:** D - Stiff Soil

**Gh:** 1.1

**Topography:** 1

**Struct Class:** II

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**Load Case:** 1.2D + 1.6W 97 mph Wind

**Iterations** 24

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60



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	-59.31	-41.05	0.00	-4892.8	0.00	4892.81	6641.65	3320.83	16223.6	8123.90	0.00	0.000	0.000	0.611
5.00	-57.07	-40.66	0.00	-4687.5	0.00	4687.54	6549.09	3274.55	15672.1	7847.74	0.09	-0.162	0.000	0.606
10.00	-54.88	-40.26	0.00	-4484.2	0.00	4484.27	6454.83	3227.41	15125.8	7574.18	0.34	-0.326	0.000	0.601
15.00	-52.72	-39.86	0.00	-4282.9	0.00	4282.98	6358.86	3179.43	14585.0	7303.35	0.78	-0.493	0.000	0.595
20.00	-50.60	-39.44	0.00	-4083.6	0.00	4083.68	6261.18	3130.59	14049.8	7035.38	1.38	-0.663	0.000	0.589
25.00	-48.52	-38.99	0.00	-3886.5	0.00	3886.50	6161.80	3080.90	13520.6	6770.39	2.17	-0.836	0.000	0.582
30.00	-46.48	-38.52	0.00	-3691.5	0.00	3691.57	6060.71	3030.36	12997.7	6508.52	3.14	-1.012	0.000	0.575
35.00	-44.51	-38.02	0.00	-3498.9	0.00	3498.98	5957.92	2978.96	12481.2	6249.90	4.30	-1.190	0.000	0.567
38.50	-43.15	-37.65	0.00	-3365.9	0.00	3365.93	5884.95	2942.47	12123.6	6070.85	5.22	-1.318	0.000	0.562
40.00	-42.13	-37.53	0.00	-3309.4	0.00	3309.47	5853.42	2926.71	11971.4	5994.64	5.64	-1.374	0.000	0.559
45.00	-38.89	-36.98	0.00	-3121.8	0.00	3121.80	4462.52	2231.26	9089.55	4551.53	7.18	-1.558	0.000	0.695
50.00	-37.27	-36.47	0.00	-2936.9	0.00	2936.91	4388.93	2194.47	8721.58	4367.27	8.91	-1.744	0.000	0.681
55.00	-35.68	-35.97	0.00	-2754.5	0.00	2754.56	4313.64	2156.82	8357.61	4185.02	10.86	-1.964	0.000	0.667
60.00	-34.13	-35.45	0.00	-2574.7	0.00	2574.74	4236.64	2118.32	7997.90	4004.90	13.03	-2.185	0.000	0.651
65.00	-32.61	-34.94	0.00	-2397.4	0.00	2397.47	4157.93	2078.96	7642.72	3827.04	15.44	-2.408	0.000	0.635
70.00	-31.12	-34.42	0.00	-2222.7	0.00	2222.77	4077.51	2038.76	7292.30	3651.57	18.08	-2.633	0.000	0.617
75.00	-29.69	-33.88	0.00	-2050.6	0.00	2050.66	3995.39	1997.70	6946.91	3478.62	20.96	-2.858	0.000	0.597
78.00	-28.85	-33.56	0.00	-1949.0	0.00	1949.03	3945.30	1972.65	6742.20	3376.11	22.80	-2.996	0.000	0.585
80.00	-27.93	-33.35	0.00	-1881.9	0.00	1881.91	3911.57	1955.78	6606.80	3308.31	24.08	-3.088	0.000	0.576
83.50	-26.40	-32.92	0.00	-1765.2	0.00	1765.20	2771.30	1385.65	4677.52	2342.24	26.40	-3.248	0.000	0.764
85.00	-25.99	-32.82	0.00	-1715.8	0.00	1715.81	2755.69	1377.84	4610.09	2308.47	27.43	-3.317	0.000	0.753
90.00	-24.85	-32.32	0.00	-1551.7	0.00	1551.72	2702.54	1351.27	4386.89	2196.71	31.05	-3.592	0.000	0.716
95.00	-23.74	-31.83	0.00	-1390.1	0.00	1390.12	2647.69	1323.84	4166.29	2086.24	34.96	-3.863	0.000	0.676
100.00	-22.65	-31.33	0.00	-1231.0	0.00	1231.00	2591.13	1295.56	3948.53	1977.20	39.15	-4.128	0.000	0.632
105.00	-21.61	-30.83	0.00	-1074.3	0.00	1074.36	2532.86	1266.43	3733.89	1869.72	43.60	-4.384	0.000	0.584
110.00	-20.61	-30.32	0.00	-920.20	0.00	920.20	2472.89	1236.44	3522.60	1763.92	48.33	-4.628	0.000	0.531
113.50	-19.95	-29.97	0.00	-814.07	0.00	814.07	2429.89	1214.95	3376.84	1690.93	51.78	-4.793	0.000	0.490
115.00	-19.47	-29.81	0.00	-769.12	0.00	769.12	2411.21	1205.60	3314.94	1659.93	53.29	-4.862	0.000	0.472
118.00	-18.59	-29.48	0.00	-679.68	0.00	679.68	1790.62	895.31	2454.63	1229.14	56.39	-4.994	0.000	0.564
120.00	-18.26	-29.29	0.00	-620.72	0.00	620.72	1774.20	887.10	2396.85	1200.21	58.50	-5.077	0.000	0.529
122.00	-17.91	-28.94	0.00	-561.34	0.00	561.34	1757.50	878.75	2339.36	1171.42	60.64	-5.172	0.000	0.490
125.00	-17.44	-28.65	0.00	-474.51	0.00	474.51	1731.94	865.97	2253.71	1128.53	63.93	-5.302	0.000	0.432
127.00	-14.03	-22.79	0.00	-417.21	0.00	417.21	1714.56	857.28	2197.01	1100.14	66.17	-5.381	0.000	0.388
130.00	-13.60	-22.51	0.00	-348.83	0.00	348.83	1687.98	843.99	2112.62	1057.88	69.58	-5.489	0.000	0.339
135.00	-12.94	-22.01	0.00	-236.30	0.00	236.30	1642.31	821.15	1973.86	988.40	75.41	-5.636	0.000	0.248
135.75	-12.57	-21.48	0.00	-219.79	0.00	219.79	1635.31	817.66	1953.26	978.08	76.29	-5.655	0.000	0.233
137.00	-7.77	-14.04	0.00	-192.93	0.00	192.93	1623.56	811.78	1919.06	960.96	77.78	-5.685	0.000	0.206
138.75	-7.38	-13.50	0.00	-168.35	0.00	168.35	1606.94	803.47	1871.46	937.12	79.86	-5.722	0.000	0.185
140.00	-7.24	-13.39	0.00	-151.48	0.00	151.48	1594.93	797.47	1837.67	920.20	81.36	-5.747	0.000	0.169
145.00	-6.73	-12.92	0.00	-84.53	0.00	84.53	1545.85	772.93	1704.31	853.42	87.42	-5.823	0.000	0.104
148.00	-3.19	-4.85	0.00	-45.77	0.00	45.77	1515.59	757.79	1625.76	814.09	91.08	-5.851	0.000	0.058
150.00	-3.03	-4.67	0.00	-36.08	0.00	36.08	1495.07	747.53	1574.03	788.19	93.53	-5.864	0.000	0.048
155.00	-2.65	-4.24	0.00	-12.72	0.00	12.72	1442.53	721.26	1447.04	724.60	99.67	-5.885	0.000	0.019
158.00	0.00	-3.95	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	103.37	-5.889	0.000	0.000

## Wind Loading - Shaft

**Structure:** CT02722-S-SBA

**Code:** TIA-222-G

6/9/2022

**Site Name:** Waterbury

**Exposure:** C



**Height:** 158.00 (ft)

**Crest Height:** 0.00

**Base Elev:** 0.000 (ft)

**Site Class:** D - Stiff Soil

**Gh:** 1.1

**Topography:** 1

**Struct Class:** II

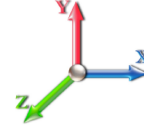
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**Load Case:** 0.9D + 1.6W 97 mph Wind

**Iterations** 23

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



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	19.450	21.40	453.89	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	444.81	0.650	0.000	5.00	25.123	16.33	559.0	0.0	1430.8
10.00		1.00	0.85	19.450	21.40	435.73	0.650	0.000	5.00	24.616	16.00	547.7	0.0	1401.6
15.00		1.00	0.85	19.450	21.40	426.65	0.650	0.000	5.00	24.108	15.67	536.4	0.0	1372.5
20.00		1.00	0.90	20.638	22.70	430.13	0.650	0.000	5.00	23.600	15.34	557.2	0.0	1343.3
25.00		1.00	0.95	21.630	23.79	430.78	0.650	0.000	5.00	23.093	15.01	571.4	0.0	1314.2
30.00		1.00	0.98	22.477	24.72	429.36	0.650	0.000	5.00	22.585	14.68	580.7	0.0	1285.0
35.00		1.00	1.01	23.218	25.54	426.47	0.650	0.000	5.00	22.077	14.35	586.4	0.0	1255.8
38.50	Bot - Section 2	1.00	1.04	23.689	26.06	423.75	0.650	0.000	3.50	15.152	9.85	410.6	0.0	861.7
40.00		1.00	1.04	23.880	26.27	422.44	0.650	0.000	1.50	6.521	4.24	178.1	0.0	666.9
45.00	Top - Section 1	1.00	1.07	24.479	26.93	417.52	0.650	0.000	5.00	21.406	13.91	599.5	0.0	2188.5
50.00		1.00	1.09	25.029	27.53	418.86	0.650	0.000	5.00	20.898	13.58	598.4	0.0	967.3
55.00		1.00	1.12	25.536	28.09	412.67	0.650	0.000	5.00	20.390	13.25	595.7	0.0	943.6
60.00		1.00	1.14	26.008	28.61	405.97	0.650	0.000	5.00	19.883	12.92	591.6	0.0	919.9
65.00		1.00	1.16	26.450	29.09	398.82	0.650	0.000	5.00	19.375	12.59	586.3	0.0	896.2
70.00		1.00	1.17	26.866	29.55	391.27	0.650	0.000	5.00	18.867	12.26	579.9	0.0	872.5
75.00		1.00	1.19	27.259	29.98	383.37	0.650	0.000	5.00	18.360	11.93	572.5	0.0	848.8
78.00	Bot - Section 3	1.00	1.20	27.485	30.23	378.48	0.650	0.000	3.00	10.772	7.00	338.7	0.0	497.9
80.00		1.00	1.21	27.632	30.39	375.16	0.650	0.000	2.00	7.186	4.67	227.1	0.0	583.3
83.50	Top - Section 2	1.00	1.22	27.882	30.67	369.25	0.650	0.000	3.50	12.379	8.05	394.9	0.0	1004.6
85.00		1.00	1.22	27.987	30.79	372.34	0.650	0.000	1.50	5.229	3.40	167.4	0.0	186.3
90.00		1.00	1.24	28.325	31.16	363.63	0.650	0.000	5.00	17.101	11.12	554.1	0.0	609.1
95.00		1.00	1.25	28.650	31.51	354.69	0.650	0.000	5.00	16.593	10.79	543.9	0.0	590.9
100.00		1.00	1.27	28.961	31.86	345.53	0.650	0.000	5.00	16.086	10.46	532.9	0.0	572.7
105.00		1.00	1.28	29.260	32.19	336.17	0.650	0.000	5.00	15.578	10.13	521.4	0.0	554.4
110.00		1.00	1.29	29.548	32.50	326.63	0.650	0.000	5.00	15.070	9.80	509.4	0.0	536.2
113.50	Bot - Section 4	1.00	1.30	29.743	32.72	319.85	0.650	0.000	3.50	10.247	6.66	348.7	0.0	364.5
115.00		1.00	1.30	29.826	32.81	316.92	0.650	0.000	1.50	4.379	2.85	149.4	0.0	278.3
118.00	Top - Section 3	1.00	1.31	29.988	32.99	311.01	0.650	0.000	3.00	8.621	5.60	295.7	0.0	547.8
120.00		1.00	1.32	30.094	33.10	311.75	0.650	0.000	2.00	5.646	3.67	194.4	0.0	160.9
122.00	Appurtenance(s)	1.00	1.32	30.199	33.22	307.77	0.650	0.000	2.00	5.564	3.62	192.2	0.0	158.6
125.00		1.00	1.33	30.354	33.39	301.75	0.650	0.000	3.00	8.194	5.33	284.5	0.0	233.5
127.00	Appurtenance(s)	1.00	1.33	30.455	33.50	297.71	0.650	0.000	2.00	5.361	3.48	186.8	0.0	152.7
130.00		1.00	1.34	30.605	33.67	291.61	0.650	0.000	3.00	7.890	5.13	276.2	0.0	224.7
135.00		1.00	1.35	30.850	33.93	281.33	0.650	0.000	5.00	12.743	8.28	449.7	0.0	362.9
135.75	Appurtenance(s)	1.00	1.35	30.886	33.97	279.78	0.650	0.000	0.75	1.868	1.21	66.0	0.0	53.2
137.00	Appurtenance(s)	1.00	1.35	30.945	34.04	277.19	0.650	0.000	1.25	3.087	2.01	109.3	0.0	87.9
138.75	Appurtenance(s)	1.00	1.36	31.028	34.13	273.54	0.650	0.000	1.75	4.269	2.77	151.5	0.0	121.5
140.00		1.00	1.36	31.087	34.20	270.93	0.650	0.000	1.25	3.011	1.96	107.1	0.0	85.7
145.00		1.00	1.37	31.317	34.45	260.41	0.650	0.000	5.00	11.728	7.62	420.2	0.0	333.8
148.00	Appurtenance(s)	1.00	1.37	31.452	34.60	254.05	0.650	0.000	3.00	6.793	4.42	244.4	0.0	193.3
150.00		1.00	1.38	31.541	34.70	249.78	0.650	0.000	2.00	4.427	2.88	159.7	0.0	125.9
155.00		1.00	1.39	31.760	34.94	239.04	0.650	0.000	5.00	10.713	6.96	389.2	0.0	304.6
158.00	Appurtenance(s)	1.00	1.39	31.888	35.08	232.55	0.650	0.000	3.00	6.184	4.02	225.6	0.0	175.8
<b>Totals:</b>									<b>158.00</b>			<b>16,692.2</b>		<b>27,669.8</b>



## Discrete Appurtenance Forces

<b>Structure:</b> CT02722-S-SBA	<b>Code:</b> TIA-222-G	6/9/2022
<b>Site Name:</b> Waterbury	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (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 + 1.6W 97 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 23

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	158.00	Raycap	1	31.888	35.077	1.00	1.00	2.01	19.71	0.000	0.000	112.81	0.00	0.00	
2	158.00	Fujitsu TA08025-B604	3	31.888	35.077	0.50	0.75	2.95	172.53	0.000	0.000	165.83	0.00	0.00	
3	158.00	Fujitsu TA08025-B605	3	31.888	35.077	0.50	0.75	2.95	202.50	0.000	0.000	165.83	0.00	0.00	
4	158.00	Commscope	1	31.888	35.077	1.00	1.00	37.59	1554.30	0.000	0.000	2109.68	0.00	0.00	
5	158.00	JMA Wireless	3	31.888	35.077	0.55	0.75	20.80	174.15	0.000	0.000	1167.14	0.00	0.00	
6	148.00	DB844G65ZAXY	6	31.452	34.598	0.70	0.75	18.12	64.80	0.000	0.000	1003.11	0.00	0.00	
7	148.00	Low Profile Platform	1	31.452	34.598	1.00	1.00	35.00	1080.00	0.000	0.000	1937.47	0.00	0.00	
8	148.00	MT6407-77A	3	31.452	34.598	0.52	0.75	7.39	214.38	0.000	0.000	408.90	0.00	0.00	
9	148.00	JMA Wireless	6	31.452	34.598	0.65	0.75	38.64	324.00	0.000	0.000	2139.03	0.00	0.00	
10	148.00	RF4439D-25A	3	31.452	34.598	0.50	0.75	2.83	227.88	0.000	0.000	156.89	0.00	0.00	
11	148.00	RF4440D-13a	3	31.452	34.598	0.50	0.75	2.83	189.81	0.000	0.000	156.89	0.00	0.00	
12	148.00	Raycap	1	31.452	34.598	1.00	1.00	4.06	28.80	0.000	0.000	224.75	0.00	0.00	
13	148.00	RFS FD9R6004/2C-3L	6	31.452	34.598	0.38	0.75	0.83	16.74	0.000	0.000	46.08	0.00	0.00	
14	148.00	VZWSMART-PLK6	1	31.452	34.598	1.00	1.00	10.00	296.10	0.000	0.000	553.56	0.00	0.00	
15	148.00	VZWSMART-PLK7	1	31.452	34.598	1.00	1.00	2.25	123.03	0.000	0.000	124.55	0.00	0.00	
16	148.00	VZWSMART-PLK3	1	31.452	34.598	1.00	1.00	12.25	462.60	0.000	0.000	678.11	0.00	0.00	
17	138.75	AIR 6419 B77G	3	31.028	34.131	0.57	0.75	6.50	178.47	0.000	0.000	354.85	0.00	0.00	
18	137.00	Platform w/ Hand Rails	1	30.945	34.040	1.00	1.00	40.00	1800.00	0.000	0.000	2178.54	0.00	0.00	
19	137.00	Raycap -	2	30.945	34.040	0.60	0.75	1.76	59.04	0.000	0.000	96.07	0.00	0.00	
20	137.00	Ericsson - RRUS-32 -	3	30.945	34.040	0.50	0.75	5.83	207.90	0.000	0.000	317.74	0.00	0.00	
21	137.00	Ericsson - RRU A2 - RRU	3	30.945	34.040	0.50	0.75	2.80	59.40	0.000	0.000	152.71	0.00	0.00	
22	137.00	Ericsson - RRUS-12 -	3	30.945	34.040	0.50	0.75	4.75	156.60	0.000	0.000	258.63	0.00	0.00	
23	137.00	CCI -	6	30.945	34.040	0.50	0.75	3.44	102.60	0.000	0.000	187.20	0.00	0.00	
24	137.00	DC9-48-60-24-8C-EV	1	30.945	34.040	0.75	0.75	0.85	23.58	0.000	0.000	46.57	0.00	0.00	
25	137.00	2 1/2" XS Pipe Mast	3	30.945	34.040	1.00	1.00	12.93	234.90	0.000	0.000	704.21	0.00	0.00	
26	137.00	RRUS E2 B29	3	30.945	34.040	0.50	0.75	4.75	160.38	0.000	0.000	258.63	0.00	0.00	
27	137.00	4449 B5/B12	3	30.945	34.040	0.50	0.75	2.97	191.70	0.000	0.000	161.74	0.00	0.00	
28	137.00	4426 B66	3	30.945	34.040	0.50	0.75	1.73	130.95	0.000	0.000	94.42	0.00	0.00	
29	137.00	Kaelus -	6	30.945	34.040	0.50	0.75	0.99	98.82	0.000	0.000	54.19	0.00	0.00	
30	137.00	QD6616-7	3	30.945	34.040	0.70	0.75	17.01	175.50	0.000	0.000	926.54	0.00	0.00	
31	137.00	800 10965	3	30.945	34.040	0.58	0.75	17.71	262.98	0.000	0.000	964.34	0.00	0.00	
32	137.00	Kaelus - DBC0037F1V2-1	6	30.945	34.040	0.50	0.75	1.15	35.64	0.000	0.000	62.40	0.00	0.00	
33	137.00	Ericsson - B14 4478 -	3	30.945	34.040	0.50	0.75	2.49	162.00	0.000	0.000	135.47	0.00	0.00	
34	137.00	Ericsson - RRU 32 B2 -	3	30.945	34.040	0.50	0.75	4.13	143.10	0.000	0.000	224.96	0.00	0.00	
35	135.75	AIR 6449 B77D	3	30.886	33.974	0.64	0.75	7.90	237.60	0.000	0.000	429.36	0.00	0.00	
36	127.00	NNVV-65B-R4	3	30.455	33.501	0.59	0.80	21.79	228.69	0.000	0.000	1168.06	0.00	0.00	
37	127.00	ALU - 1900MHz - RRU	3	30.455	33.501	0.54	0.80	4.45	162.00	0.000	0.000	238.75	0.00	0.00	
38	127.00	ALU - 800 MHz - RRU	6	30.455	33.501	0.54	0.80	8.01	286.20	0.000	0.000	429.23	0.00	0.00	
39	127.00	AAHC	3	30.455	33.501	0.60	0.80	7.58	279.99	0.000	0.000	406.19	0.00	0.00	
40	127.00	Low Profile Platform	1	30.455	33.501	1.00	1.00	25.00	1080.00	0.000	0.000	1340.03	0.00	0.00	
41	127.00	PRK-1245 Reinforcement	1	30.455	33.501	1.00	1.00	9.50	418.42	0.000	0.000	509.21	0.00	0.00	
42	127.00	PRK-SFS-L Brace Kit	1	30.455	33.501	1.00	1.00	6.75	235.55	0.000	0.000	361.81	0.00	0.00	
43	127.00	A-ANT-23G-2-C	2	30.455	33.501	1.00	1.00	16.86	22.14	0.000	0.000	903.72	0.00	0.00	
44	122.00	CS72188.01 Omni	1	30.455	33.501	1.00	1.00	3.00	22.50	0.000	5.000	160.80	0.00	804.02	
<b>Totals:</b>									<b>12,307.98</b>						<b>24,277.01</b>



## Total Applied Force Summary

<b>Structure:</b> CT02722-S-SBA	<b>Code:</b> TIA-222-G	6/9/2022
<b>Site Name:</b> Waterbury	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (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 + 1.6W 97 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**Iterations** 23

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		559.02	1592.04	0.00	0.00
10.00		547.73	1562.88	0.00	0.00
15.00		536.43	1533.72	0.00	0.00
20.00		557.19	1504.56	0.00	0.00
25.00		571.43	1475.40	0.00	0.00
30.00		580.73	1446.25	0.00	0.00
35.00		586.40	1417.09	0.00	0.00
38.50		410.62	974.61	0.00	0.00
40.00		178.14	715.24	0.00	0.00
45.00		599.46	2349.77	0.00	0.00
50.00		598.37	1128.56	0.00	0.00
55.00		595.66	1104.86	0.00	0.00
60.00		591.57	1081.17	0.00	0.00
65.00		586.26	1057.48	0.00	0.00
70.00		579.88	1033.78	0.00	0.00
75.00		572.53	1010.09	0.00	0.00
78.00		338.70	594.68	0.00	0.00
80.00		227.14	647.75	0.00	0.00
83.50		394.86	1117.43	0.00	0.00
85.00		167.43	234.66	0.00	0.00
90.00		554.15	770.37	0.00	0.00
95.00		543.85	752.14	0.00	0.00
100.00		532.94	733.92	0.00	0.00
105.00		521.44	715.69	0.00	0.00
110.00		509.42	697.47	0.00	0.00
113.50		348.67	477.39	0.00	0.00
115.00		149.41	326.70	0.00	0.00
118.00		295.74	644.54	0.00	0.00
120.00		194.37	225.41	0.00	0.00
122.00	(1) attachments	353.04	245.58	0.00	804.02
125.00		284.55	329.81	0.00	0.00
127.00	(20) attachments	5543.80	2929.95	0.00	0.00
130.00		276.24	309.50	0.00	0.00
135.00		449.74	504.18	0.00	0.00
135.75	(3) attachments	495.35	311.97	0.00	0.00
137.00	(55) attachments	6933.66	4128.31	0.00	0.00
138.75	(3) attachments	506.39	324.62	0.00	0.00
140.00		107.09	103.30	0.00	0.00
145.00		420.18	404.10	0.00	0.00
148.00	(32) attachments	7673.77	3263.60	0.00	0.00
150.00		159.75	129.51	0.00	0.00
155.00		389.23	313.56	0.00	0.00
158.00	(11) attachments	3946.88	2304.33	0.00	0.00
<b>Totals:</b>		<b>40,969.20</b>	<b>44,527.97</b>	<b>0.00</b>	<b>804.02</b>

## Calculated Forces

**Structure:** CT02722-S-SBA  
**Site Name:** Waterbury  
**Height:** 158.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

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

6/9/2022  
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**Load Case:** 0.9D + 1.6W 97 mph Wind

**Iterations** 23

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



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	-44.47	-41.03	0.00	-4843.2	0.00	4843.21	6641.65	3320.83	16223.6	8123.90	0.00	0.000	0.000	0.603
5.00	-42.76	-40.59	0.00	-4638.0	0.00	4638.06	6549.09	3274.55	15672.1	7847.74	0.09	-0.160	0.000	0.598
10.00	-41.09	-40.15	0.00	-4435.1	0.00	4435.11	6454.83	3227.41	15125.8	7574.18	0.34	-0.322	0.000	0.592
15.00	-39.44	-39.72	0.00	-4234.3	0.00	4234.34	6358.86	3179.43	14585.0	7303.35	0.77	-0.488	0.000	0.586
20.00	-37.83	-39.26	0.00	-4035.7	0.00	4035.73	6261.18	3130.59	14049.8	7035.38	1.37	-0.656	0.000	0.580
25.00	-36.24	-38.78	0.00	-3839.4	0.00	3839.43	6161.80	3080.90	13520.6	6770.39	2.15	-0.827	0.000	0.573
30.00	-34.69	-38.28	0.00	-3645.5	0.00	3645.53	6060.71	3030.36	12997.7	6508.52	3.11	-1.000	0.000	0.566
35.00	-33.19	-37.76	0.00	-3454.1	0.00	3454.12	5957.92	2978.96	12481.2	6249.90	4.25	-1.177	0.000	0.558
38.50	-32.16	-37.38	0.00	-3321.9	0.00	3321.97	5884.95	2942.47	12123.6	6070.85	5.16	-1.303	0.000	0.553
40.00	-31.37	-37.25	0.00	-3265.9	0.00	3265.91	5853.42	2926.71	11971.4	5994.64	5.58	-1.358	0.000	0.550
45.00	-28.92	-36.68	0.00	-3079.6	0.00	3079.68	4462.52	2231.26	9089.55	4551.53	7.10	-1.540	0.000	0.683
50.00	-27.68	-36.15	0.00	-2896.2	0.00	2896.28	4388.93	2194.47	8721.58	4367.27	8.81	-1.723	0.000	0.670
55.00	-26.46	-35.62	0.00	-2715.5	0.00	2715.54	4313.64	2156.82	8357.61	4185.02	10.73	-1.940	0.000	0.655
60.00	-25.27	-35.08	0.00	-2537.4	0.00	2537.46	4236.64	2118.32	7997.90	4004.90	12.88	-2.158	0.000	0.640
65.00	-24.10	-34.55	0.00	-2362.0	0.00	2362.04	4157.93	2078.96	7642.72	3827.04	15.26	-2.378	0.000	0.623
70.00	-22.97	-34.01	0.00	-2189.3	0.00	2189.30	4077.51	2038.76	7292.30	3651.57	17.87	-2.599	0.000	0.605
75.00	-21.88	-33.46	0.00	-2019.2	0.00	2019.23	3995.39	1997.70	6946.91	3478.62	20.71	-2.821	0.000	0.586
78.00	-21.24	-33.14	0.00	-1918.8	0.00	1918.84	3945.30	1972.65	6742.20	3376.11	22.52	-2.956	0.000	0.574
80.00	-20.53	-32.92	0.00	-1852.5	0.00	1852.57	3911.57	1955.78	6606.80	3308.31	23.78	-3.047	0.000	0.566
83.50	-19.37	-32.50	0.00	-1737.3	0.00	1737.35	2771.30	1385.65	4677.52	2342.24	26.07	-3.204	0.000	0.749
85.00	-19.05	-32.38	0.00	-1688.6	0.00	1688.60	2755.69	1377.84	4610.09	2308.47	27.09	-3.273	0.000	0.739
90.00	-18.17	-31.87	0.00	-1526.7	0.00	1526.70	2702.54	1351.27	4386.89	2196.71	30.66	-3.543	0.000	0.702
95.00	-17.31	-31.36	0.00	-1367.3	0.00	1367.37	2647.69	1323.84	4166.29	2086.24	34.52	-3.810	0.000	0.663
100.00	-16.47	-30.85	0.00	-1210.5	0.00	1210.59	2591.13	1295.56	3948.53	1977.20	38.65	-4.070	0.000	0.619
105.00	-15.67	-30.34	0.00	-1056.3	0.00	1056.36	2532.86	1266.43	3733.89	1869.72	43.04	-4.322	0.000	0.572
110.00	-14.91	-29.83	0.00	-904.65	0.00	904.65	2472.89	1236.44	3522.60	1763.92	47.69	-4.562	0.000	0.519
113.50	-14.40	-29.48	0.00	-800.23	0.00	800.23	2429.89	1214.95	3376.84	1690.93	51.10	-4.724	0.000	0.480
115.00	-14.04	-29.32	0.00	-756.02	0.00	756.02	2411.21	1205.60	3314.94	1659.93	52.59	-4.792	0.000	0.462
118.00	-13.37	-29.00	0.00	-668.05	0.00	668.05	1790.62	895.31	2454.63	1229.14	55.64	-4.921	0.000	0.552
120.00	-13.12	-28.81	0.00	-610.05	0.00	610.05	1774.20	887.10	2396.85	1200.21	57.72	-5.004	0.000	0.517
122.00	-12.85	-28.46	0.00	-551.64	0.00	551.64	1757.50	878.75	2339.36	1171.42	59.84	-5.097	0.000	0.479
125.00	-12.49	-28.17	0.00	-466.26	0.00	466.26	1731.94	865.97	2253.71	1128.53	63.08	-5.224	0.000	0.421
127.00	-10.05	-22.39	0.00	-409.93	0.00	409.93	1714.56	857.28	2197.01	1100.14	65.28	-5.302	0.000	0.379
130.00	-9.72	-22.11	0.00	-342.75	0.00	342.75	1687.98	843.99	2112.62	1057.88	68.64	-5.408	0.000	0.330
135.00	-9.23	-21.63	0.00	-232.19	0.00	232.19	1642.31	821.15	1973.86	988.40	74.38	-5.552	0.000	0.241
135.75	-8.96	-21.11	0.00	-215.97	0.00	215.97	1635.31	817.66	1953.26	978.08	75.26	-5.571	0.000	0.227
137.00	-5.52	-13.81	0.00	-189.58	0.00	189.58	1623.56	811.78	1919.06	960.96	76.72	-5.600	0.000	0.201
138.75	-5.24	-13.28	0.00	-165.42	0.00	165.42	1606.94	803.47	1871.46	937.12	78.77	-5.637	0.000	0.180
140.00	-5.13	-13.16	0.00	-148.82	0.00	148.82	1594.93	797.47	1837.67	920.20	80.25	-5.662	0.000	0.165
145.00	-4.76	-12.71	0.00	-83.00	0.00	83.00	1545.85	772.93	1704.31	853.42	86.22	-5.736	0.000	0.101
148.00	-2.28	-4.75	0.00	-44.87	0.00	44.87	1515.59	757.79	1625.76	814.09	89.82	-5.764	0.000	0.057
150.00	-2.17	-4.58	0.00	-35.37	0.00	35.37	1495.07	747.53	1574.03	788.19	92.24	-5.777	0.000	0.046
155.00	-1.89	-4.16	0.00	-12.48	0.00	12.48	1442.53	721.26	1447.04	724.60	98.29	-5.797	0.000	0.019
158.00	0.00	-3.95	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	101.93	-5.801	0.000	0.000

## Wind Loading - Shaft

**Structure:** CT02722-S-SBA  
**Site Name:** Waterbury  
**Height:** 158.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Topography:** 1

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

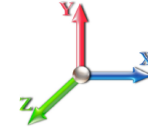
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**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph Wind

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



**Iterations** 23

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	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	26.158	31.39	178.4	467.0	2374.8
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	25.725	30.87	175.5	491.3	2360.1
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	25.263	30.32	172.3	501.7	2331.6
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	24.789	29.75	179.4	505.9	2297.0
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	24.308	29.17	184.4	506.7	2258.9
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	23.823	28.59	187.8	505.1	2218.4
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	23.335	28.00	190.0	501.8	2176.2
38.50	Bot - Section 2	1.00	1.04	6.294	6.92	0.00	1.200	1.523	3.50	16.041	19.25	133.3	349.1	1498.1
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	1.50	6.903	8.28	57.8	151.5	1040.6
45.00	Top - Section 1	1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	22.695	27.23	194.9	499.5	3417.5
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	5.00	22.201	26.64	194.9	493.2	1782.9
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	5.00	21.706	26.05	194.4	486.2	1744.4
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	21.210	25.45	193.5	478.6	1705.2
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	20.713	24.86	192.1	470.5	1665.5
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	20.215	24.26	190.5	462.0	1625.4
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	19.717	23.66	188.5	453.0	1584.8
78.00	Bot - Section 3	1.00	1.20	7.303	8.03	0.00	1.200	1.635	3.00	11.589	13.91	111.7	268.5	932.4
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	2.00	7.732	9.28	74.9	180.1	957.7
83.50	Top - Section 2	1.00	1.22	7.408	8.15	0.00	1.200	1.646	3.50	13.340	16.01	130.4	310.5	1649.9
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	1.50	5.642	6.77	55.4	132.2	380.6
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	18.483	22.18	183.6	430.8	1242.9
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	5.00	17.983	21.58	180.7	420.7	1208.5
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	5.00	17.482	20.98	177.6	410.3	1173.9
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	16.981	20.38	174.3	399.7	1139.0
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	5.00	16.480	19.78	170.8	389.0	1103.9
113.50	Bot - Section 4	1.00	1.30	7.903	8.69	0.00	1.200	1.697	3.50	11.237	13.48	117.2	266.9	752.9
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	1.50	4.804	5.76	50.3	115.0	486.1
118.00	Top - Section 3	1.00	1.31	7.968	8.76	0.00	1.200	1.704	3.00	9.473	11.37	99.6	226.0	956.4
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	2.00	6.215	7.46	65.6	148.9	363.4
122.00	Appurtenance(s)	1.00	1.32	8.024	8.83	0.00	1.200	1.710	2.00	6.134	7.36	65.0	147.1	358.5
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	3.00	9.051	10.86	96.4	216.5	527.9
127.00	Appurtenance(s)	1.00	1.33	8.092	8.90	0.00	1.200	1.716	2.00	5.934	7.12	63.4	142.5	346.2
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	3.00	8.750	10.50	93.9	209.7	509.3
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	5.00	14.183	17.02	153.5	337.9	821.8
135.75	Appurtenance(s)	1.00	1.35	8.206	9.03	0.00	1.200	1.728	0.75	2.084	2.50	22.6	50.4	121.3
137.00	Appurtenance(s)	1.00	1.35	8.222	9.04	0.00	1.200	1.729	1.25	3.448	4.14	37.4	83.3	200.5
138.75	Appurtenance(s)	1.00	1.36	8.244	9.07	0.00	1.200	1.732	1.75	4.774	5.73	52.0	115.2	277.2
140.00		1.00	1.36	8.260	9.09	0.00	1.200	1.733	1.25	3.372	4.05	36.8	81.5	195.8
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	5.00	13.178	15.81	144.7	314.3	759.3
148.00	Appurtenance(s)	1.00	1.37	8.357	9.19	0.00	1.200	1.743	3.00	7.665	9.20	84.6	184.3	441.9
150.00		1.00	1.38	8.381	9.22	0.00	1.200	1.745	2.00	5.009	6.01	55.4	120.9	288.8
155.00		1.00	1.39	8.439	9.28	0.00	1.200	1.751	5.00	12.172	14.61	135.6	290.2	696.3
158.00	Appurtenance(s)	1.00	1.39	8.473	9.32	0.00	1.200	1.754	3.00	7.061	8.47	79.0	169.7	404.1
<b>Totals:</b>									<b>158.00</b>			<b>5,519.9</b>	<b>50,378.0</b>	

## Discrete Appurtenance Forces

**Structure:** CT02722-S-SBA

**Code:** TIA-222-G

6/9/2022

**Site Name:** Waterbury

**Exposure:** C

**Height:** 158.00 (ft)

**Crest Height:** 0.00

**Base Elev:** 0.000 (ft)

**Site Class:** D - Stiff Soil

**Gh:** 1.1

**Topography:** 1

**Struct Class:** II

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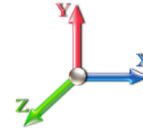


**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph Wind

**Iterations** 23

**Dead Load Factor** 1.20

**Wind Load Factor** 1.00



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	158.00	Raycap	1	8.473	9.320	1.00	1.00	2.58	67.11	0.000	0.000	24.06	0.00	0.00
2	158.00	Fujitsu TA08025-B604	3	8.473	9.320	0.50	0.75	3.80	346.42	0.000	0.000	35.46	0.00	0.00
3	158.00	Fujitsu TA08025-B605	3	8.473	9.320	0.50	0.75	3.80	389.93	0.000	0.000	35.46	0.00	0.00
4	158.00	Commscope	1	8.473	9.320	1.00	1.00	85.07	3396.03	0.000	0.000	792.86	0.00	0.00
5	158.00	JMA Wireless	3	8.473	9.320	0.55	0.75	23.25	907.76	0.000	0.000	216.67	0.00	0.00
6	148.00	DB844G65ZAXY	6	8.357	9.193	0.70	0.75	26.41	1021.17	0.000	0.000	242.82	0.00	0.00
7	148.00	Low Profile Platform	1	8.357	9.193	1.00	1.00	64.28	2185.72	0.000	0.000	590.91	0.00	0.00
8	148.00	MT6407-77A	3	8.357	9.193	0.52	0.75	8.88	643.88	0.000	0.000	81.60	0.00	0.00
9	148.00	JMA Wireless	6	8.357	9.193	0.65	0.75	44.02	2043.35	0.000	0.000	404.66	0.00	0.00
10	148.00	RF4439D-25A	3	8.357	9.193	0.50	0.75	3.66	351.81	0.000	0.000	33.68	0.00	0.00
11	148.00	RF4440D-13a	3	8.357	9.193	0.50	0.75	3.66	363.99	0.000	0.000	33.68	0.00	0.00
12	148.00	Raycap	1	8.357	9.193	1.00	1.00	4.88	126.97	0.000	0.000	44.87	0.00	0.00
13	148.00	RFS FD9R6004/2C-3L	6	8.357	9.193	0.38	0.75	1.86	56.61	0.000	0.000	17.06	0.00	0.00
14	148.00	VZWSMART-PLK6	1	8.357	9.193	1.00	1.00	20.46	708.52	0.000	0.000	188.06	0.00	0.00
15	148.00	VZWSMART-PLK7	1	8.357	9.193	1.00	1.00	4.60	294.54	0.000	0.000	42.31	0.00	0.00
16	148.00	VZWSMART-PLK3	1	8.357	9.193	1.00	1.00	24.21	1739.97	0.000	0.000	222.52	0.00	0.00
17	138.75	AIR 6419 B77G	3	8.244	9.069	0.57	0.75	7.85	456.25	0.000	0.000	71.17	0.00	0.00
18	137.00	Platform w/ Hand Rails	1	8.222	9.044	1.00	1.00	60.75	3875.36	0.000	0.000	549.48	0.00	0.00
19	137.00	Raycap -	2	8.222	9.044	0.60	0.75	2.60	171.71	0.000	0.000	23.48	0.00	0.00
20	137.00	Ericsson - RRUS-32 -	3	8.222	9.044	0.50	0.75	6.18	614.27	0.000	0.000	55.88	0.00	0.00
21	137.00	Ericsson - RRU A2 - RRU	3	8.222	9.044	0.50	0.75	4.26	162.41	0.000	0.000	38.52	0.00	0.00
22	137.00	Ericsson - RRUS-12 -	3	8.222	9.044	0.50	0.75	5.81	491.82	0.000	0.000	52.59	0.00	0.00
23	137.00	CCI -	6	8.222	9.044	0.50	0.75	5.74	241.96	0.000	0.000	51.88	0.00	0.00
24	137.00	DC9-48-60-24-8C-EV	1	8.222	9.044	0.75	0.75	2.03	119.37	0.000	0.000	18.40	0.00	0.00
25	137.00	2 1/2" XS Pipe Mast	3	8.222	9.044	1.00	1.00	28.94	617.42	0.000	0.000	261.76	0.00	0.00
26	137.00	RRUS E2 B29	3	8.222	9.044	0.50	0.75	5.80	353.05	0.000	0.000	52.46	0.00	0.00
27	137.00	4449 B5/B12	3	8.222	9.044	0.50	0.75	3.79	373.50	0.000	0.000	34.26	0.00	0.00
28	137.00	4426 B66	3	8.222	9.044	0.50	0.75	2.44	290.58	0.000	0.000	22.09	0.00	0.00
29	137.00	Kaelus -	6	8.222	9.044	0.50	0.75	1.88	247.78	0.000	0.000	16.97	0.00	0.00
30	137.00	QD6616-7	3	8.222	9.044	0.70	0.75	19.70	908.63	0.000	0.000	178.22	0.00	0.00
31	137.00	800 10965	3	8.222	9.044	0.58	0.75	26.64	1235.83	0.000	0.000	240.93	0.00	0.00
32	137.00	Kaelus - DBC0037F1V2-1	6	8.222	9.044	0.50	0.75	2.51	91.78	0.000	0.000	22.69	0.00	0.00
33	137.00	Ericsson - B14 4478 -	3	8.222	9.044	0.50	0.75	3.26	314.12	0.000	0.000	29.50	0.00	0.00
34	137.00	Ericsson - RRU S2 B2 -	3	8.222	9.044	0.50	0.75	5.22	451.87	0.000	0.000	47.20	0.00	0.00
35	135.75	AIR 6449 B77D	3	8.206	9.027	0.64	0.75	9.52	724.59	0.000	0.000	85.95	0.00	0.00
36	127.00	NNVV-65B-R4	3	8.092	8.901	0.60	0.80	24.66	1051.42	0.000	0.000	219.54	0.00	0.00
37	127.00	ALU - 1900MHz - RRU	3	8.092	8.901	0.54	0.80	6.56	390.47	0.000	0.000	58.36	0.00	0.00
38	127.00	ALU - 800 MHz - RRU	6	8.092	8.901	0.54	0.80	11.63	691.44	0.000	0.000	103.48	0.00	0.00
39	127.00	AAHC	3	8.092	8.901	0.60	0.80	9.01	609.95	0.000	0.000	80.24	0.00	0.00
40	127.00	Low Profile Platform	1	8.092	8.901	1.00	1.00	45.60	2169.84	0.000	0.000	405.87	0.00	0.00
41	127.00	PRK-1245 Reinforcement	1	8.092	8.901	1.00	1.00	19.28	781.99	0.000	0.000	171.65	0.00	0.00
42	127.00	PRK-SFS-L Brace Kit	1	8.092	8.901	1.00	1.00	13.24	315.29	0.000	0.000	117.84	0.00	0.00
43	127.00	A-ANT-23G-2-C	2	8.092	8.901	1.00	1.00	20.22	-52.34	0.000	0.000	179.96	0.00	0.00
44	122.00	CS72188.01 Omni	1	8.092	8.901	1.00	1.00	6.53	82.80	0.000	5.000	58.15	0.00	290.74
<b>Totals:</b>									<b>32,426.92</b>			<b>6,255.18</b>		

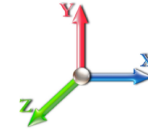
## Total Applied Force Summary

<b>Structure:</b> CT02722-S-SBA	<b>Code:</b> TIA-222-G	6/9/2022
<b>Site Name:</b> Waterbury	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (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> 19
	<b>Struct Class:</b> II	



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

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



**Iterations** 23

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		178.45	2589.75	0.00	0.00
10.00		175.49	2575.11	0.00	0.00
15.00		172.34	2546.61	0.00	0.00
20.00		179.43	2512.00	0.00	0.00
25.00		184.41	2473.86	0.00	0.00
30.00		187.80	2433.38	0.00	0.00
35.00		190.02	2391.22	0.00	0.00
38.50		133.27	1648.57	0.00	0.00
40.00		57.82	1105.15	0.00	0.00
45.00		194.85	3632.55	0.00	0.00
50.00		194.89	1997.95	0.00	0.00
55.00		194.40	1959.35	0.00	0.00
60.00		193.47	1920.17	0.00	0.00
65.00		192.15	1880.48	0.00	0.00
70.00		190.48	1840.35	0.00	0.00
75.00		188.50	1799.83	0.00	0.00
78.00		111.72	1061.41	0.00	0.00
80.00		74.93	1043.74	0.00	0.00
83.50		130.45	1800.37	0.00	0.00
85.00		55.38	445.07	0.00	0.00
90.00		183.62	1457.93	0.00	0.00
95.00		180.70	1423.52	0.00	0.00
100.00		177.57	1388.87	0.00	0.00
105.00		174.27	1354.00	0.00	0.00
110.00		170.79	1318.92	0.00	0.00
113.50		117.22	903.43	0.00	0.00
115.00		50.25	550.60	0.00	0.00
118.00		99.63	1085.39	0.00	0.00
120.00		65.59	449.43	0.00	0.00
122.00	(1) attachments	123.12	527.32	0.00	290.74
125.00		96.36	656.30	0.00	0.00
127.00	(20) attachments	1400.31	6389.88	0.00	0.00
130.00		93.92	622.35	0.00	0.00
135.00		153.45	1010.10	0.00	0.00
135.75	(3) attachments	108.52	874.16	0.00	0.00
137.00	(55) attachments	1733.72	10809.03	0.00	0.00
138.75	(3) attachments	123.13	766.30	0.00	0.00
140.00		36.77	219.27	0.00	0.00
145.00		144.74	853.06	0.00	0.00
148.00	(32) attachments	1986.72	10034.74	0.00	0.00
150.00		55.41	293.58	0.00	0.00
155.00		135.58	708.24	0.00	0.00
158.00	(11) attachments	1183.48	5518.46	0.00	0.00
	<b>Totals:</b>	<b>11,775.10</b>	<b>88,871.81</b>	<b>0.00</b>	<b>290.74</b>

## Calculated Forces

**Structure:** CT02722-S-SBA

**Code:** TIA-222-G

6/9/2022

**Site Name:** Waterbury

**Exposure:** C



**Height:** 158.00 (ft)

**Crest Height:** 0.00

**Base Elev:** 0.000 (ft)

**Site Class:** D - Stiff Soil

**Gh:** 1.1

**Topography:** 1

**Struct Class:** II

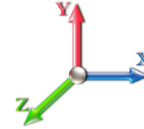
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**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph Wind

**Iterations** 23

**Dead Load Factor** 1.20

**Wind Load Factor** 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-88.87	-11.81	0.00	-1412.6	0.00	1412.64	6641.65	3320.83	16223.6	8123.90	0.00	0.000	0.000	0.187
5.00	-86.27	-11.70	0.00	-1353.5	0.00	1353.58	6549.09	3274.55	15672.1	7847.74	0.03	-0.047	0.000	0.186
10.00	-83.68	-11.59	0.00	-1295.0	0.00	1295.07	6454.83	3227.41	15125.8	7574.18	0.10	-0.094	0.000	0.184
15.00	-81.13	-11.49	0.00	-1237.1	0.00	1237.10	6358.86	3179.43	14585.0	7303.35	0.22	-0.142	0.000	0.182
20.00	-78.61	-11.37	0.00	-1179.6	0.00	1179.67	6261.18	3130.59	14049.8	7035.38	0.40	-0.192	0.000	0.180
25.00	-76.12	-11.24	0.00	-1122.8	0.00	1122.84	6161.80	3080.90	13520.6	6770.39	0.63	-0.241	0.000	0.178
30.00	-73.68	-11.11	0.00	-1066.6	0.00	1066.64	6060.71	3030.36	12997.7	6508.52	0.91	-0.292	0.000	0.176
35.00	-71.28	-10.96	0.00	-1011.1	0.00	1011.11	5957.92	2978.96	12481.2	6249.90	1.24	-0.344	0.000	0.174
38.50	-69.63	-10.85	0.00	-972.76	0.00	972.76	5884.95	2942.47	12123.6	6070.85	1.51	-0.381	0.000	0.172
40.00	-68.52	-10.82	0.00	-956.49	0.00	956.49	5853.42	2926.71	11971.4	5994.64	1.63	-0.397	0.000	0.171
45.00	-64.88	-10.66	0.00	-902.37	0.00	902.37	4462.52	2231.26	9089.55	4551.53	2.07	-0.450	0.000	0.213
50.00	-62.87	-10.52	0.00	-849.06	0.00	849.06	4388.93	2194.47	8721.58	4367.27	2.57	-0.504	0.000	0.209
55.00	-60.90	-10.37	0.00	-796.49	0.00	796.49	4313.64	2156.82	8357.61	4185.02	3.14	-0.567	0.000	0.204
60.00	-58.97	-10.22	0.00	-744.64	0.00	744.64	4236.64	2118.32	7997.90	4004.90	3.77	-0.631	0.000	0.200
65.00	-57.08	-10.07	0.00	-693.53	0.00	693.53	4157.93	2078.96	7642.72	3827.04	4.46	-0.696	0.000	0.195
70.00	-55.23	-9.92	0.00	-643.16	0.00	643.16	4077.51	2038.76	7292.30	3651.57	5.23	-0.761	0.000	0.190
75.00	-53.43	-9.76	0.00	-593.55	0.00	593.55	3995.39	1997.70	6946.91	3478.62	6.06	-0.826	0.000	0.184
78.00	-52.36	-9.66	0.00	-564.28	0.00	564.28	3945.30	1972.65	6742.20	3376.11	6.59	-0.866	0.000	0.180
80.00	-51.31	-9.60	0.00	-544.96	0.00	544.96	3911.57	1955.78	6606.80	3308.31	6.96	-0.893	0.000	0.178
83.50	-49.51	-9.47	0.00	-511.35	0.00	511.35	2771.30	1385.65	4677.52	2342.24	7.63	-0.939	0.000	0.236
85.00	-49.06	-9.45	0.00	-497.15	0.00	497.15	2755.69	1377.84	4610.09	2308.47	7.93	-0.959	0.000	0.233
90.00	-47.59	-9.31	0.00	-449.89	0.00	449.89	2702.54	1351.27	4386.89	2196.71	8.98	-1.039	0.000	0.222
95.00	-46.16	-9.16	0.00	-403.34	0.00	403.34	2647.69	1323.84	4166.29	2086.24	10.11	-1.117	0.000	0.211
100.00	-44.76	-9.02	0.00	-357.52	0.00	357.52	2591.13	1295.56	3948.53	1977.20	11.32	-1.194	0.000	0.198
105.00	-43.40	-8.87	0.00	-312.44	0.00	312.44	2532.86	1266.43	3733.89	1869.72	12.61	-1.269	0.000	0.184
110.00	-42.08	-8.71	0.00	-268.09	0.00	268.09	2472.89	1236.44	3522.60	1763.92	13.98	-1.340	0.000	0.169
113.50	-41.17	-8.60	0.00	-237.60	0.00	237.60	2429.89	1214.95	3376.84	1690.93	14.98	-1.388	0.000	0.158
115.00	-40.62	-8.56	0.00	-224.70	0.00	224.70	2411.21	1205.60	3314.94	1659.93	15.42	-1.408	0.000	0.152
118.00	-39.53	-8.45	0.00	-199.04	0.00	199.04	1790.62	895.31	2454.63	1229.14	16.31	-1.446	0.000	0.184
120.00	-39.08	-8.39	0.00	-182.14	0.00	182.14	1774.20	887.10	2396.85	1200.21	16.93	-1.471	0.000	0.174
122.00	-38.55	-8.28	0.00	-165.06	0.00	165.06	1757.50	878.75	2339.36	1171.42	17.55	-1.499	0.000	0.163
125.00	-37.89	-8.18	0.00	-140.24	0.00	140.24	1731.94	865.97	2253.71	1128.53	18.50	-1.537	0.000	0.146
127.00	-31.54	-6.63	0.00	-123.87	0.00	123.87	1714.56	857.28	2197.01	1100.14	19.15	-1.561	0.000	0.131
130.00	-30.91	-6.54	0.00	-103.99	0.00	103.99	1687.98	843.99	2112.62	1057.88	20.14	-1.593	0.000	0.117
135.00	-29.91	-6.37	0.00	-71.31	0.00	71.31	1642.31	821.15	1973.86	988.40	21.84	-1.636	0.000	0.090
135.75	-29.04	-6.24	0.00	-66.54	0.00	66.54	1635.31	817.66	1953.26	978.08	22.09	-1.642	0.000	0.086
137.00	-18.28	-4.20	0.00	-58.74	0.00	58.74	1623.56	811.78	1919.06	960.96	22.53	-1.651	0.000	0.072
138.75	-17.52	-4.05	0.00	-51.40	0.00	51.40	1606.94	803.47	1871.46	937.12	23.13	-1.663	0.000	0.066
140.00	-17.30	-4.02	0.00	-46.33	0.00	46.33	1594.93	797.47	1837.67	920.20	23.57	-1.670	0.000	0.061
145.00	-16.45	-3.85	0.00	-26.25	0.00	26.25	1545.85	772.93	1704.31	853.42	25.33	-1.694	0.000	0.041
148.00	-6.48	-1.57	0.00	-14.70	0.00	14.70	1515.59	757.79	1625.76	814.09	26.40	-1.703	0.000	0.022
150.00	-6.18	-1.50	0.00	-11.57	0.00	11.57	1495.07	747.53	1574.03	788.19	27.11	-1.707	0.000	0.019
155.00	-5.48	-1.35	0.00	-4.04	0.00	4.04	1442.53	721.26	1447.04	724.60	28.91	-1.713	0.000	0.009
158.00	0.00	-1.18	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	29.98	-1.715	0.000	0.000



## Seismic Segment Forces (Factored)

<b>Structure:</b> CT02722-S-SBA	<b>Code:</b> TIA-222-G	6/9/2022
<b>Site Name:</b> Waterbury	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (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 + 1.0E				<b>Iterations</b> 21
<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>	0.36	<b>SA</b> 0.04
				<b>Seismic Importance Factor</b> 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1589.7	0.00	0.03	0.02	29.78	
10.00		1557.3	0.01	0.05	0.03	42.75	
15.00		1524.9	0.02	0.06	0.04	48.62	
20.00		1492.5	0.03	0.07	0.04	51.08	
25.00		1460.1	0.05	0.07	0.04	51.93	
30.00		1427.7	0.07	0.07	0.04	52.15	
35.00		1395.3	0.09	0.07	0.04	52.16	
38.50	Bot - Section 2	957.49	0.11	0.07	0.04	36.36	
40.00		740.96	0.12	0.07	0.03	28.33	
45.00	Top - Section 1	2431.7	0.15	0.07	0.03	94.73	
50.00		1074.7	0.19	0.06	0.02	42.23	
55.00		1048.4	0.23	0.06	0.02	40.68	
60.00		1022.1	0.27	0.05	0.01	37.70	
65.00		995.81	0.32	0.04	0.01	32.72	
70.00		969.48	0.37	0.03	0.01	25.28	
75.00		943.15	0.43	0.01	0.01	15.30	
78.00	Bot - Section 3	553.26	0.46	0.00	0.01	4.98	
80.00		648.06	0.48	-0.01	0.01	2.44	
83.50	Top - Section 2	1116.1	0.53	-0.03	0.01	-6.44	
85.00		206.99	0.55	-0.03	0.01	-2.04	
90.00		676.80	0.61	-0.06	0.02	-15.26	
95.00		656.55	0.68	-0.08	0.03	-21.21	
100.00		636.30	0.76	-0.10	0.04	-24.07	
105.00		616.05	0.83	-0.12	0.06	-23.74	
110.00		595.80	0.92	-0.12	0.09	-20.44	
113.50	Bot - Section 4	405.01	0.98	-0.12	0.12	-11.52	
115.00		309.25	1.00	-0.11	0.13	-7.79	
118.00	Top - Section 3	608.66	1.05	-0.09	0.16	-10.61	
120.00		178.79	1.09	-0.08	0.18	-2.02	
122.00	Appurtenance(s)	201.20	1.13	-0.05	0.20	-0.89	
125.00		259.44	1.18	-0.01	0.24	1.90	
127.00	Appurtenance(s)	3184.1	1.22	0.03	0.27	51.38	
130.00		249.72	1.28	0.09	0.32	7.68	
135.00		403.24	1.38	0.25	0.41	23.79	
135.75	Appurtenance(s)	323.09	1.40	0.27	0.43	20.56	
137.00	Appurtenance(s)	4547.7	1.42	0.32	0.45	325.87	
138.75	Appurtenance(s)	333.34	1.46	0.40	0.49	27.79	
140.00		95.24	1.48	0.46	0.52	8.77	
145.00		370.84	1.59	0.75	0.66	48.30	
148.00	Appurtenance(s)	3579.3	1.66	0.97	0.75	556.78	
150.00		139.91	1.70	1.14	0.82	24.27	
155.00		338.44	1.82	1.63	1.01	75.10	
158.00	Appurtenance(s)	2554.3	1.89	1.98	1.14	647.50	
<b>Totals:</b>		<b>44,419.8</b>				<b>2,362.9</b>	<b>Total Wind: 40,969.2</b>

## Calculated Forces

<b>Structure:</b> CT02722-S-SBA	<b>Code:</b> TIA-222-G	6/9/2022
<b>Site Name:</b> Waterbury	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (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

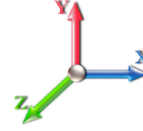


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**Load Case:** 1.2D + 1.0E

**Iterations** 21

<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>Sd1</b> 0.10
<b>Wind Load Factor</b> 0.00	<b>Structure Frequency (f1)</b> 0.36	<b>SA</b> 0.04
		<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	-59.37	-2.51	0.00	-309.23	0.00	309.23	6641.65	3320.83	16223.6	8123.90	0.00	0.00	0.00	0.047
5.00	-57.25	-2.49	0.00	-296.67	0.00	296.67	6549.09	3274.55	15672.1	7847.74	0.01	-0.01	0.047	
10.00	-55.16	-2.46	0.00	-284.20	0.00	284.20	6454.83	3227.41	15125.8	7574.18	0.02	-0.02	0.046	
15.00	-53.12	-2.42	0.00	-271.90	0.00	271.90	6358.86	3179.43	14585.0	7303.35	0.05	-0.03	0.046	
20.00	-51.11	-2.38	0.00	-259.80	0.00	259.80	6261.18	3130.59	14049.8	7035.38	0.09	-0.04	0.045	
25.00	-49.14	-2.33	0.00	-247.91	0.00	247.91	6161.80	3080.90	13520.6	6770.39	0.14	-0.05	0.045	
30.00	-47.21	-2.29	0.00	-236.24	0.00	236.24	6060.71	3030.36	12997.7	6508.52	0.20	-0.06	0.044	
35.00	-45.32	-2.24	0.00	-224.79	0.00	224.79	5957.92	2978.96	12481.2	6249.90	0.27	-0.08	0.044	
38.50	-44.03	-2.21	0.00	-216.94	0.00	216.94	5884.95	2942.47	12123.6	6070.85	0.33	-0.08	0.043	
40.00	-43.07	-2.18	0.00	-213.63	0.00	213.63	5853.42	2926.71	11971.4	5994.64	0.36	-0.09	0.043	
45.00	-39.94	-2.09	0.00	-202.71	0.00	202.71	4462.52	2231.26	9089.55	4551.53	0.46	-0.10	0.053	
50.00	-38.43	-2.06	0.00	-192.24	0.00	192.24	4388.93	2194.47	8721.58	4367.27	0.57	-0.11	0.053	
55.00	-36.96	-2.02	0.00	-181.95	0.00	181.95	4313.64	2156.82	8357.61	4185.02	0.69	-0.13	0.052	
60.00	-35.52	-1.99	0.00	-171.84	0.00	171.84	4236.64	2118.32	7997.90	4004.90	0.83	-0.14	0.051	
65.00	-34.11	-1.96	0.00	-161.88	0.00	161.88	4157.93	2078.96	7642.72	3827.04	0.99	-0.16	0.051	
70.00	-32.73	-1.94	0.00	-152.06	0.00	152.06	4077.51	2038.76	7292.30	3651.57	1.16	-0.17	0.050	
75.00	-31.38	-1.93	0.00	-142.35	0.00	142.35	3995.39	1997.70	6946.91	3478.62	1.35	-0.19	0.049	
78.00	-30.59	-1.93	0.00	-136.56	0.00	136.56	3945.30	1972.65	6742.20	3376.11	1.47	-0.20	0.048	
80.00	-29.72	-1.93	0.00	-132.70	0.00	132.70	3911.57	1955.78	6606.80	3308.31	1.55	-0.20	0.048	
83.50	-28.23	-1.93	0.00	-125.96	0.00	125.96	2771.30	1385.65	4677.52	2342.24	1.70	-0.21	0.064	
85.00	-27.92	-1.93	0.00	-123.07	0.00	123.07	2755.69	1377.84	4610.09	2308.47	1.77	-0.22	0.063	
90.00	-26.89	-1.94	0.00	-113.42	0.00	113.42	2702.54	1351.27	4386.89	2196.71	2.01	-0.24	0.062	
95.00	-25.89	-1.94	0.00	-103.74	0.00	103.74	2647.69	1323.84	4166.29	2086.24	2.27	-0.26	0.060	
100.00	-24.91	-1.94	0.00	-94.04	0.00	94.04	2591.13	1295.56	3948.53	1977.20	2.55	-0.28	0.057	
105.00	-23.95	-1.95	0.00	-84.32	0.00	84.32	2532.86	1266.43	3733.89	1869.72	2.86	-0.30	0.055	
110.00	-23.02	-1.95	0.00	-74.58	0.00	74.58	2472.89	1236.44	3522.60	1763.92	3.18	-0.32	0.052	
113.50	-22.39	-1.95	0.00	-67.76	0.00	67.76	2429.89	1214.95	3376.84	1690.93	3.42	-0.33	0.049	
115.00	-21.95	-1.95	0.00	-64.83	0.00	64.83	2411.21	1205.60	3314.94	1659.93	3.52	-0.34	0.048	
118.00	-21.09	-1.95	0.00	-58.98	0.00	58.98	1790.62	895.31	2454.63	1229.14	3.74	-0.35	0.060	
120.00	-20.79	-1.95	0.00	-55.09	0.00	55.09	1774.20	887.10	2396.85	1200.21	3.89	-0.36	0.058	
122.00	-20.46	-1.95	0.00	-51.19	0.00	51.19	1757.50	878.75	2339.36	1171.42	4.04	-0.36	0.055	
125.00	-20.02	-1.95	0.00	-45.33	0.00	45.33	1731.94	865.97	2253.71	1128.53	4.27	-0.38	0.052	
127.00	-16.12	-1.88	0.00	-41.43	0.00	41.43	1714.56	857.28	2197.01	1100.14	4.43	-0.38	0.047	
130.00	-15.70	-1.87	0.00	-35.81	0.00	35.81	1687.98	843.99	2112.62	1057.88	4.67	-0.40	0.043	
135.00	-15.03	-1.84	0.00	-26.46	0.00	26.46	1642.31	821.15	1973.86	988.40	5.10	-0.41	0.036	
135.75	-14.62	-1.82	0.00	-25.08	0.00	25.08	1635.31	817.66	1953.26	978.08	5.16	-0.41	0.035	
137.00	-9.11	-1.45	0.00	-22.81	0.00	22.81	1623.56	811.78	1919.06	960.96	5.27	-0.42	0.029	
138.75	-8.68	-1.42	0.00	-20.26	0.00	20.26	1606.94	803.47	1871.46	937.12	5.42	-0.42	0.027	
140.00	-8.54	-1.42	0.00	-18.48	0.00	18.48	1594.93	797.47	1837.67	920.20	5.53	-0.42	0.025	
145.00	-8.00	-1.36	0.00	-11.40	0.00	11.40	1545.85	772.93	1704.31	853.42	5.98	-0.43	0.019	
148.00	-3.66	-0.77	0.00	-7.31	0.00	7.31	1515.59	757.79	1625.76	814.09	6.26	-0.44	0.011	
150.00	-3.48	-0.75	0.00	-5.76	0.00	5.76	1495.07	747.53	1574.03	788.19	6.44	-0.44	0.010	
155.00	-3.07	-0.67	0.00	-2.01	0.00	2.01	1442.53	721.26	1447.04	724.60	6.90	-0.44	0.005	
158.00	0.00	-0.65	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	7.18	-0.44	0.000	



## Seismic Segment Forces (Factored)

<b>Structure:</b> CT02722-S-SBA	<b>Code:</b> TIA-222-G	6/9/2022
<b>Site Name:</b> Waterbury	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (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> 0.9D + 1.0E		<b>Iterations</b> 21
<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> 0.36	<b>SA</b> 0.04
		<b>Seismic Importance Factor</b> 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1589.7	0.00	0.03	0.02	29.78	
10.00		1557.3	0.01	0.05	0.03	42.75	
15.00		1524.9	0.02	0.06	0.04	48.62	
20.00		1492.5	0.03	0.07	0.04	51.08	
25.00		1460.1	0.05	0.07	0.04	51.93	
30.00		1427.7	0.07	0.07	0.04	52.15	
35.00		1395.3	0.09	0.07	0.04	52.16	
38.50	Bot - Section 2	957.49	0.11	0.07	0.04	36.36	
40.00		740.96	0.12	0.07	0.03	28.33	
45.00	Top - Section 1	2431.7	0.15	0.07	0.03	94.73	
50.00		1074.7	0.19	0.06	0.02	42.23	
55.00		1048.4	0.23	0.06	0.02	40.68	
60.00		1022.1	0.27	0.05	0.01	37.70	
65.00		995.81	0.32	0.04	0.01	32.72	
70.00		969.48	0.37	0.03	0.01	25.28	
75.00		943.15	0.43	0.01	0.01	15.30	
78.00	Bot - Section 3	553.26	0.46	0.00	0.01	4.98	
80.00		648.06	0.48	-0.01	0.01	2.44	
83.50	Top - Section 2	1116.1	0.53	-0.03	0.01	-6.44	
85.00		206.99	0.55	-0.03	0.01	-2.04	
90.00		676.80	0.61	-0.06	0.02	-15.26	
95.00		656.55	0.68	-0.08	0.03	-21.21	
100.00		636.30	0.76	-0.10	0.04	-24.07	
105.00		616.05	0.83	-0.12	0.06	-23.74	
110.00		595.80	0.92	-0.12	0.09	-20.44	
113.50	Bot - Section 4	405.01	0.98	-0.12	0.12	-11.52	
115.00		309.25	1.00	-0.11	0.13	-7.79	
118.00	Top - Section 3	608.66	1.05	-0.09	0.16	-10.61	
120.00		178.79	1.09	-0.08	0.18	-2.02	
122.00	Appurtenance(s)	201.20	1.13	-0.05	0.20	-0.89	
125.00		259.44	1.18	-0.01	0.24	1.90	
127.00	Appurtenance(s)	3184.1	1.22	0.03	0.27	51.38	
130.00		249.72	1.28	0.09	0.32	7.68	
135.00		403.24	1.38	0.25	0.41	23.79	
135.75	Appurtenance(s)	323.09	1.40	0.27	0.43	20.56	
137.00	Appurtenance(s)	4547.7	1.42	0.32	0.45	325.87	
138.75	Appurtenance(s)	333.34	1.46	0.40	0.49	27.79	
140.00		95.24	1.48	0.46	0.52	8.77	
145.00		370.84	1.59	0.75	0.66	48.30	
148.00	Appurtenance(s)	3579.3	1.66	0.97	0.75	556.78	
150.00		139.91	1.70	1.14	0.82	24.27	
155.00		338.44	1.82	1.63	1.01	75.10	
158.00	Appurtenance(s)	2554.3	1.89	1.98	1.14	647.50	
<b>Totals:</b>		<b>44,419.8</b>				<b>2,362.9</b>	<b>Total Wind: 40,969.2</b>

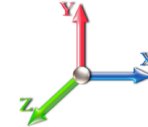
## Calculated Forces

<b>Structure:</b> CT02722-S-SBA	<b>Code:</b> TIA-222-G	6/9/2022
<b>Site Name:</b> Waterbury	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (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> 0.9D + 1.0E		<b>Iterations</b> 21
<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> 0.36	<b>SA</b> 0.04
	<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	-44.53	-2.51	0.00	-305.89	0.00	305.89	6641.65	3320.83	16223.6	8123.90	0.00	0.00	0.00	0.044
5.00	-42.94	-2.49	0.00	-293.34	0.00	293.34	6549.09	3274.55	15672.1	7847.74	0.01	-0.01	0.044	
10.00	-41.37	-2.45	0.00	-280.89	0.00	280.89	6454.83	3227.41	15125.8	7574.18	0.02	-0.02	0.043	
15.00	-39.84	-2.41	0.00	-268.62	0.00	268.62	6358.86	3179.43	14585.0	7303.35	0.05	-0.03	0.043	
20.00	-38.33	-2.37	0.00	-256.56	0.00	256.56	6261.18	3130.59	14049.8	7035.38	0.09	-0.04	0.043	
25.00	-36.86	-2.32	0.00	-244.73	0.00	244.73	6161.80	3080.90	13520.6	6770.39	0.14	-0.05	0.042	
30.00	-35.41	-2.27	0.00	-233.12	0.00	233.12	6060.71	3030.36	12997.7	6508.52	0.20	-0.06	0.042	
35.00	-33.99	-2.23	0.00	-221.75	0.00	221.75	5957.92	2978.96	12481.2	6249.90	0.27	-0.07	0.041	
38.50	-33.02	-2.19	0.00	-213.96	0.00	213.96	5884.95	2942.47	12123.6	6070.85	0.33	-0.08	0.041	
40.00	-32.30	-2.17	0.00	-210.67	0.00	210.67	5853.42	2926.71	11971.4	5994.64	0.35	-0.09	0.041	
45.00	-29.95	-2.07	0.00	-199.84	0.00	199.84	4462.52	2231.26	9089.55	4551.53	0.45	-0.10	0.051	
50.00	-28.82	-2.04	0.00	-189.47	0.00	189.47	4388.93	2194.47	8721.58	4367.27	0.56	-0.11	0.050	
55.00	-27.72	-2.00	0.00	-179.28	0.00	179.28	4313.64	2156.82	8357.61	4185.02	0.68	-0.12	0.049	
60.00	-26.64	-1.97	0.00	-169.28	0.00	169.28	4236.64	2118.32	7997.90	4004.90	0.82	-0.14	0.049	
65.00	-25.58	-1.94	0.00	-159.44	0.00	159.44	4157.93	2078.96	7642.72	3827.04	0.97	-0.15	0.048	
70.00	-24.54	-1.92	0.00	-149.75	0.00	149.75	4077.51	2038.76	7292.30	3651.57	1.14	-0.17	0.047	
75.00	-23.53	-1.90	0.00	-140.17	0.00	140.17	3995.39	1997.70	6946.91	3478.62	1.33	-0.18	0.046	
78.00	-22.94	-1.90	0.00	-134.46	0.00	134.46	3945.30	1972.65	6742.20	3376.11	1.45	-0.19	0.046	
80.00	-22.29	-1.90	0.00	-130.66	0.00	130.66	3911.57	1955.78	6606.80	3308.31	1.53	-0.20	0.045	
83.50	-21.17	-1.90	0.00	-124.01	0.00	124.01	2771.30	1385.65	4677.52	2342.24	1.68	-0.21	0.061	
85.00	-20.94	-1.90	0.00	-121.17	0.00	121.17	2755.69	1377.84	4610.09	2308.47	1.75	-0.22	0.060	
90.00	-20.17	-1.91	0.00	-111.66	0.00	111.66	2702.54	1351.27	4386.89	2196.71	1.98	-0.24	0.058	
95.00	-19.41	-1.91	0.00	-102.14	0.00	102.14	2647.69	1323.84	4166.29	2086.24	2.24	-0.26	0.056	
100.00	-18.68	-1.91	0.00	-92.59	0.00	92.59	2591.13	1295.56	3948.53	1977.20	2.52	-0.27	0.054	
105.00	-17.96	-1.91	0.00	-83.04	0.00	83.04	2532.86	1266.43	3733.89	1869.72	2.82	-0.29	0.052	
110.00	-17.27	-1.92	0.00	-73.46	0.00	73.46	2472.89	1236.44	3522.60	1763.92	3.14	-0.31	0.049	
113.50	-16.79	-1.92	0.00	-66.76	0.00	66.76	2429.89	1214.95	3376.84	1690.93	3.37	-0.33	0.046	
115.00	-16.46	-1.92	0.00	-63.89	0.00	63.89	2411.21	1205.60	3314.94	1659.93	3.47	-0.33	0.045	
118.00	-15.82	-1.91	0.00	-58.14	0.00	58.14	1790.62	895.31	2454.63	1229.14	3.69	-0.34	0.056	
120.00	-15.59	-1.92	0.00	-54.31	0.00	54.31	1774.20	887.10	2396.85	1200.21	3.83	-0.35	0.054	
122.00	-15.34	-1.92	0.00	-50.48	0.00	50.48	1757.50	878.75	2339.36	1171.42	3.98	-0.36	0.052	
125.00	-15.01	-1.92	0.00	-44.73	0.00	44.73	1731.94	865.97	2253.71	1128.53	4.21	-0.37	0.048	
127.00	-12.08	-1.85	0.00	-40.90	0.00	40.90	1714.56	857.28	2197.01	1100.14	4.37	-0.38	0.044	
130.00	-11.77	-1.84	0.00	-35.36	0.00	35.36	1687.98	843.99	2112.62	1057.88	4.61	-0.39	0.040	
135.00	-11.27	-1.81	0.00	-26.16	0.00	26.16	1642.31	821.15	1973.86	988.40	5.03	-0.40	0.033	
135.75	-10.96	-1.79	0.00	-24.80	0.00	24.80	1635.31	817.66	1953.26	978.08	5.09	-0.41	0.032	
137.00	-6.83	-1.44	0.00	-22.56	0.00	22.56	1623.56	811.78	1919.06	960.96	5.20	-0.41	0.028	
138.75	-6.51	-1.41	0.00	-20.04	0.00	20.04	1606.94	803.47	1871.46	937.12	5.35	-0.41	0.025	
140.00	-6.40	-1.40	0.00	-18.28	0.00	18.28	1594.93	797.47	1837.67	920.20	5.46	-0.42	0.024	
145.00	-6.00	-1.35	0.00	-11.29	0.00	11.29	1545.85	772.93	1704.31	853.42	5.90	-0.43	0.017	
148.00	-2.74	-0.77	0.00	-7.24	0.00	7.24	1515.59	757.79	1625.76	814.09	6.17	-0.43	0.011	
150.00	-2.61	-0.74	0.00	-5.71	0.00	5.71	1495.07	747.53	1574.03	788.19	6.35	-0.43	0.009	
155.00	-2.30	-0.66	0.00	-1.99	0.00	1.99	1442.53	721.26	1447.04	724.60	6.81	-0.44	0.004	
158.00	0.00	-0.65	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	7.08	-0.44	0.000	

## Wind Loading - Shaft

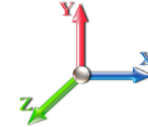
<b>Structure:</b> CT02722-S-SBA	<b>Code:</b> TIA-222-G	6/9/2022
<b>Site Name:</b> Waterbury	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 22

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	7.442	8.19	280.76	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	275.14	0.650	0.000	5.00	25.123	16.33	133.7	0.0	1589.8
10.00		1.00	0.85	7.442	8.19	269.53	0.650	0.000	5.00	24.616	16.00	131.0	0.0	1557.4
15.00		1.00	0.85	7.442	8.19	263.91	0.650	0.000	5.00	24.108	15.67	128.3	0.0	1525.0
20.00		1.00	0.90	7.896	8.69	266.06	0.650	0.000	5.00	23.600	15.34	133.2	0.0	1492.6
25.00		1.00	0.95	8.276	9.10	266.46	0.650	0.000	5.00	23.093	15.01	136.6	0.0	1460.2
30.00		1.00	0.98	8.600	9.46	265.58	0.650	0.000	5.00	22.585	14.68	138.9	0.0	1427.8
35.00		1.00	1.01	8.883	9.77	263.79	0.650	0.000	5.00	22.077	14.35	140.2	0.0	1395.4
38.50	Bot - Section 2	1.00	1.04	9.064	9.97	262.11	0.650	0.000	3.50	15.152	9.85	98.2	0.0	957.5
40.00		1.00	1.04	9.137	10.05	261.30	0.650	0.000	1.50	6.521	4.24	42.6	0.0	741.0
45.00	Top - Section 1	1.00	1.07	9.366	10.30	258.26	0.650	0.000	5.00	21.406	13.91	143.3	0.0	2431.7
50.00		1.00	1.09	9.576	10.53	259.09	0.650	0.000	5.00	20.898	13.58	143.1	0.0	1074.8
55.00		1.00	1.12	9.770	10.75	255.26	0.650	0.000	5.00	20.390	13.25	142.4	0.0	1048.5
60.00		1.00	1.14	9.951	10.95	251.12	0.650	0.000	5.00	19.883	12.92	141.5	0.0	1022.1
65.00		1.00	1.16	10.120	11.13	246.69	0.650	0.000	5.00	19.375	12.59	140.2	0.0	995.8
70.00		1.00	1.17	10.279	11.31	242.02	0.650	0.000	5.00	18.867	12.26	138.7	0.0	969.5
75.00		1.00	1.19	10.430	11.47	237.14	0.650	0.000	5.00	18.360	11.93	136.9	0.0	943.2
78.00	Bot - Section 3	1.00	1.20	10.516	11.57	234.11	0.650	0.000	3.00	10.772	7.00	81.0	0.0	553.3
80.00		1.00	1.21	10.572	11.63	232.06	0.650	0.000	2.00	7.186	4.67	54.3	0.0	648.1
83.50	Top - Section 2	1.00	1.22	10.668	11.73	228.40	0.650	0.000	3.50	12.379	8.05	94.4	0.0	1116.2
85.00		1.00	1.22	10.708	11.78	230.32	0.650	0.000	1.50	5.229	3.40	40.0	0.0	207.0
90.00		1.00	1.24	10.838	11.92	224.93	0.650	0.000	5.00	17.101	11.12	132.5	0.0	676.8
95.00		1.00	1.25	10.962	12.06	219.39	0.650	0.000	5.00	16.593	10.79	130.1	0.0	656.5
100.00		1.00	1.27	11.081	12.19	213.73	0.650	0.000	5.00	16.086	10.46	127.4	0.0	636.3
105.00		1.00	1.28	11.195	12.31	207.94	0.650	0.000	5.00	15.578	10.13	124.7	0.0	616.1
110.00		1.00	1.29	11.305	12.44	202.04	0.650	0.000	5.00	15.070	9.80	121.8	0.0	595.8
113.50	Bot - Section 4	1.00	1.30	11.380	12.52	197.84	0.650	0.000	3.50	10.247	6.66	83.4	0.0	405.0
115.00		1.00	1.30	11.412	12.55	196.03	0.650	0.000	1.50	4.379	2.85	35.7	0.0	309.3
118.00	Top - Section 3	1.00	1.31	11.474	12.62	192.38	0.650	0.000	3.00	8.621	5.60	70.7	0.0	608.7
120.00		1.00	1.32	11.514	12.67	192.84	0.650	0.000	2.00	5.646	3.67	46.5	0.0	178.8
122.00	Appurtenance(s)	1.00	1.32	11.554	12.71	190.37	0.650	0.000	2.00	5.564	3.62	46.0	0.0	176.2
125.00		1.00	1.33	11.614	12.78	186.65	0.650	0.000	3.00	8.194	5.33	68.0	0.0	259.4
127.00	Appurtenance(s)	1.00	1.33	11.653	12.82	184.15	0.650	0.000	2.00	5.361	3.48	44.7	0.0	169.7
130.00		1.00	1.34	11.710	12.88	180.38	0.650	0.000	3.00	7.890	5.13	66.1	0.0	249.7
135.00		1.00	1.35	11.803	12.98	174.02	0.650	0.000	5.00	12.743	8.28	107.5	0.0	403.2
135.75	Appurtenance(s)	1.00	1.35	11.817	13.00	173.06	0.650	0.000	0.75	1.868	1.21	15.8	0.0	59.1
137.00	Appurtenance(s)	1.00	1.35	11.840	13.02	171.46	0.650	0.000	1.25	3.087	2.01	26.1	0.0	97.7
138.75	Appurtenance(s)	1.00	1.36	11.872	13.06	169.20	0.650	0.000	1.75	4.269	2.77	36.2	0.0	135.0
140.00		1.00	1.36	11.894	13.08	167.59	0.650	0.000	1.25	3.011	1.96	25.6	0.0	95.2
145.00		1.00	1.37	11.982	13.18	161.08	0.650	0.000	5.00	11.728	7.62	100.5	0.0	370.8
148.00	Appurtenance(s)	1.00	1.37	12.034	13.24	157.14	0.650	0.000	3.00	6.793	4.42	58.5	0.0	214.7
150.00		1.00	1.38	12.068	13.27	154.50	0.650	0.000	2.00	4.427	2.88	38.2	0.0	139.9
155.00		1.00	1.39	12.152	13.37	147.86	0.650	0.000	5.00	10.713	6.96	93.1	0.0	338.4
158.00	Appurtenance(s)	1.00	1.39	12.201	13.42	143.84	0.650	0.000	3.00	6.184	4.02	53.9	0.0	195.3
<b>Totals:</b>									<b>158.00</b>			<b>3,991.6</b>		<b>30,744.2</b>

## Discrete Appurtenance Forces

**Structure:** CT02722-S-SBA

**Code:** TIA-222-G

6/9/2022

**Site Name:** Waterbury

**Exposure:** C

**Height:** 158.00 (ft)

**Crest Height:** 0.00

**Base Elev:** 0.000 (ft)

**Site Class:** D - Stiff Soil

**Gh:** 1.1

**Topography:** 1

**Struct Class:** II

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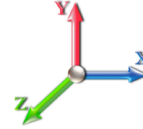


**Load Case:** 1.0D + 1.0W 60 mph Wind

**Iterations** 22

**Dead Load Factor** 1.00

**Wind Load Factor** 1.00



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	158.00	Raycap	1	12.201	13.421	1.00	1.00	2.01	21.90	0.000	0.000	26.98	0.00	0.00	
2	158.00	Fujitsu TA08025-B604	3	12.201	13.421	0.50	0.75	2.95	191.70	0.000	0.000	39.65	0.00	0.00	
3	158.00	Fujitsu TA08025-B605	3	12.201	13.421	0.50	0.75	2.95	225.00	0.000	0.000	39.65	0.00	0.00	
4	158.00	Commscope	1	12.201	13.421	1.00	1.00	37.59	1727.00	0.000	0.000	504.49	0.00	0.00	
5	158.00	JMA Wireless	3	12.201	13.421	0.55	0.75	20.80	193.50	0.000	0.000	279.10	0.00	0.00	
6	148.00	DB844G65ZAXY	6	12.034	13.238	0.70	0.75	18.12	72.00	0.000	0.000	239.88	0.00	0.00	
7	148.00	Low Profile Platform	1	12.034	13.238	1.00	1.00	35.00	1200.00	0.000	0.000	463.31	0.00	0.00	
8	148.00	MT6407-77A	3	12.034	13.238	0.52	0.75	7.39	238.20	0.000	0.000	97.78	0.00	0.00	
9	148.00	JMA Wireless	6	12.034	13.238	0.65	0.75	38.64	360.00	0.000	0.000	511.51	0.00	0.00	
10	148.00	RF4439D-25A	3	12.034	13.238	0.50	0.75	2.83	253.20	0.000	0.000	37.52	0.00	0.00	
11	148.00	RF4440D-13a	3	12.034	13.238	0.50	0.75	2.83	210.90	0.000	0.000	37.52	0.00	0.00	
12	148.00	Raycap	1	12.034	13.238	1.00	1.00	4.06	32.00	0.000	0.000	53.74	0.00	0.00	
13	148.00	RFS FD9R6004/2C-3L	6	12.034	13.238	0.38	0.75	0.83	18.60	0.000	0.000	11.02	0.00	0.00	
14	148.00	VZWSMART-PLK6	1	12.034	13.238	1.00	1.00	10.00	329.00	0.000	0.000	132.38	0.00	0.00	
15	148.00	VZWSMART-PLK7	1	12.034	13.238	1.00	1.00	2.25	136.70	0.000	0.000	29.78	0.00	0.00	
16	148.00	VZWSMART-PLK3	1	12.034	13.238	1.00	1.00	12.25	514.00	0.000	0.000	162.16	0.00	0.00	
17	138.75	AIR 6419 B77G	3	11.872	13.059	0.57	0.75	6.50	198.30	0.000	0.000	84.86	0.00	0.00	
18	137.00	Platform w/ Hand Rails	1	11.840	13.024	1.00	1.00	40.00	2000.00	0.000	0.000	520.96	0.00	0.00	
19	137.00	Raycap -	2	11.840	13.024	0.60	0.75	1.76	65.60	0.000	0.000	22.97	0.00	0.00	
20	137.00	Ericsson - RRUS-32 -	3	11.840	13.024	0.50	0.75	5.83	231.00	0.000	0.000	75.98	0.00	0.00	
21	137.00	Ericsson - RRU A2 - RRU	3	11.840	13.024	0.50	0.75	2.80	66.00	0.000	0.000	36.52	0.00	0.00	
22	137.00	Ericsson - RRUS-12 -	3	11.840	13.024	0.50	0.75	4.75	174.00	0.000	0.000	61.85	0.00	0.00	
23	137.00	CCI -	6	11.840	13.024	0.50	0.75	3.44	114.00	0.000	0.000	44.76	0.00	0.00	
24	137.00	DC9-48-60-24-8C-EV	1	11.840	13.024	0.75	0.75	0.85	26.20	0.000	0.000	11.14	0.00	0.00	
25	137.00	2 1/2" XS Pipe Mast	3	11.840	13.024	1.00	1.00	12.93	261.00	0.000	0.000	168.40	0.00	0.00	
26	137.00	RRUS E2 B29	3	11.840	13.024	0.50	0.75	4.75	178.20	0.000	0.000	61.85	0.00	0.00	
27	137.00	4449 B5/B12	3	11.840	13.024	0.50	0.75	2.97	213.00	0.000	0.000	38.68	0.00	0.00	
28	137.00	4426 B66	3	11.840	13.024	0.50	0.75	1.73	145.50	0.000	0.000	22.58	0.00	0.00	
29	137.00	Kaelus -	6	11.840	13.024	0.50	0.75	0.99	109.80	0.000	0.000	12.96	0.00	0.00	
30	137.00	QD6616-7	3	11.840	13.024	0.70	0.75	17.01	195.00	0.000	0.000	221.56	0.00	0.00	
31	137.00	800 10965	3	11.840	13.024	0.58	0.75	17.71	292.20	0.000	0.000	230.61	0.00	0.00	
32	137.00	Kaelus - DBC0037F1V2-1	6	11.840	13.024	0.50	0.75	1.15	39.60	0.000	0.000	14.92	0.00	0.00	
33	137.00	Ericsson - B14 4478 -	3	11.840	13.024	0.50	0.75	2.49	180.00	0.000	0.000	32.40	0.00	0.00	
34	137.00	Ericsson - RRU S2 B2 -	3	11.840	13.024	0.50	0.75	4.13	159.00	0.000	0.000	53.80	0.00	0.00	
35	135.75	AIR 6449 B77D	3	11.817	12.999	0.64	0.75	7.90	264.00	0.000	0.000	102.67	0.00	0.00	
36	127.00	NNVV-65B-R4	3	11.653	12.818	0.59	0.80	21.79	254.10	0.000	0.000	279.32	0.00	0.00	
37	127.00	ALU - 1900MHz - RRU	3	11.653	12.818	0.54	0.80	4.45	180.00	0.000	0.000	57.09	0.00	0.00	
38	127.00	ALU - 800 MHz - RRU	6	11.653	12.818	0.54	0.80	8.01	318.00	0.000	0.000	102.64	0.00	0.00	
39	127.00	AAHC	3	11.653	12.818	0.60	0.80	7.58	311.10	0.000	0.000	97.13	0.00	0.00	
40	127.00	Low Profile Platform	1	11.653	12.818	1.00	1.00	25.00	1200.00	0.000	0.000	320.45	0.00	0.00	
41	127.00	PRK-1245 Reinforcement	1	11.653	12.818	1.00	1.00	9.50	464.91	0.000	0.000	121.77	0.00	0.00	
42	127.00	PRK-SFS-L Brace Kit	1	11.653	12.818	1.00	1.00	6.75	261.72	0.000	0.000	86.52	0.00	0.00	
43	127.00	A-ANT-23G-2-C	2	11.653	12.818	1.00	1.00	16.86	24.60	0.000	0.000	216.11	0.00	0.00	
44	122.00	CS72188.01 Omni	1	11.653	12.818	1.00	1.00	3.00	25.00	0.000	5.000	38.45	0.00	192.27	

**Totals:** 13,675.53

5,805.43

## Total Applied Force Summary

<b>Structure:</b> CT02722-S-SBA	<b>Code:</b> TIA-222-G	6/9/2022
<b>Site Name:</b> Waterbury	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (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:** 1.0D + 1.0W 60 mph Wind

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



**Iterations** 22

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		133.68	1768.93	0.00	0.00
10.00		130.98	1736.53	0.00	0.00
15.00		128.28	1704.13	0.00	0.00
20.00		133.24	1671.74	0.00	0.00
25.00		136.65	1639.34	0.00	0.00
30.00		138.87	1606.94	0.00	0.00
35.00		140.23	1574.54	0.00	0.00
38.50		98.19	1082.90	0.00	0.00
40.00		42.60	794.71	0.00	0.00
45.00		143.35	2610.86	0.00	0.00
50.00		143.09	1253.95	0.00	0.00
55.00		142.44	1227.63	0.00	0.00
60.00		141.46	1201.30	0.00	0.00
65.00		140.19	1174.97	0.00	0.00
70.00		138.67	1148.65	0.00	0.00
75.00		136.91	1122.32	0.00	0.00
78.00		80.99	660.75	0.00	0.00
80.00		54.32	719.73	0.00	0.00
83.50		94.43	1241.59	0.00	0.00
85.00		40.04	260.74	0.00	0.00
90.00		132.51	855.96	0.00	0.00
95.00		130.05	835.71	0.00	0.00
100.00		127.44	815.47	0.00	0.00
105.00		124.69	795.22	0.00	0.00
110.00		121.82	774.97	0.00	0.00
113.50		83.38	530.43	0.00	0.00
115.00		35.73	363.00	0.00	0.00
118.00		70.72	716.16	0.00	0.00
120.00		46.48	250.46	0.00	0.00
122.00	(1) attachments	84.42	272.87	0.00	192.27
125.00		68.04	366.46	0.00	0.00
127.00	(20) attachments	1325.70	3255.50	0.00	0.00
130.00		66.06	343.89	0.00	0.00
135.00		107.55	560.20	0.00	0.00
135.75	(3) attachments	118.45	346.63	0.00	0.00
137.00	(55) attachments	1658.07	4587.01	0.00	0.00
138.75	(3) attachments	121.09	360.69	0.00	0.00
140.00		25.61	114.78	0.00	0.00
145.00		100.48	449.00	0.00	0.00
148.00	(32) attachments	1835.05	3626.22	0.00	0.00
150.00		38.20	143.90	0.00	0.00
155.00		93.08	348.40	0.00	0.00
158.00	(11) attachments	943.83	2560.36	0.00	0.00
	<b>Totals:</b>	<b>9,797.08</b>	<b>49,475.53</b>	<b>0.00</b>	<b>192.27</b>

## Calculated Forces

**Structure:** CT02722-S-SBA

**Code:** TIA-222-G

6/9/2022

**Site Name:** Waterbury

**Exposure:** C

**Height:** 158.00 (ft)

**Crest Height:** 0.00

**Base Elev:** 0.000 (ft)

**Site Class:** D - Stiff Soil

**Gh:** 1.1

**Topography:** 1

**Struct Class:** II

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

**Iterations** 22

**Dead Load Factor** 1.00

**Wind Load Factor** 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-49.47	-9.81	0.00	-1163.6	0.00	1163.61	6641.65	3320.83	16223.6	8123.90	0.00	0.000	0.000	0.151
5.00	-47.70	-9.71	0.00	-1114.5	0.00	1114.55	6549.09	3274.55	15672.1	7847.74	0.02	-0.038	0.000	0.149
10.00	-45.95	-9.61	0.00	-1066.0	0.00	1066.00	6454.83	3227.41	15125.8	7574.18	0.08	-0.077	0.000	0.148
15.00	-44.24	-9.51	0.00	-1017.9	0.00	1017.95	6358.86	3179.43	14585.0	7303.35	0.18	-0.117	0.000	0.146
20.00	-42.57	-9.40	0.00	-970.40	0.00	970.40	6261.18	3130.59	14049.8	7035.38	0.33	-0.158	0.000	0.145
25.00	-40.92	-9.29	0.00	-923.39	0.00	923.39	6161.80	3080.90	13520.6	6770.39	0.52	-0.199	0.000	0.143
30.00	-39.31	-9.17	0.00	-876.94	0.00	876.94	6060.71	3030.36	12997.7	6508.52	0.75	-0.240	0.000	0.141
35.00	-37.73	-9.05	0.00	-831.07	0.00	831.07	5957.92	2978.96	12481.2	6249.90	1.02	-0.283	0.000	0.139
38.50	-36.64	-8.96	0.00	-799.39	0.00	799.39	5884.95	2942.47	12123.6	6070.85	1.24	-0.313	0.000	0.138
40.00	-35.84	-8.93	0.00	-785.95	0.00	785.95	5853.42	2926.71	11971.4	5994.64	1.34	-0.327	0.000	0.137
45.00	-33.23	-8.80	0.00	-741.30	0.00	741.30	4462.52	2231.26	9089.55	4551.53	1.71	-0.370	0.000	0.170
50.00	-31.97	-8.67	0.00	-697.31	0.00	697.31	4388.93	2194.47	8721.58	4367.27	2.12	-0.414	0.000	0.167
55.00	-30.73	-8.55	0.00	-653.94	0.00	653.94	4313.64	2156.82	8357.61	4185.02	2.58	-0.467	0.000	0.163
60.00	-29.52	-8.42	0.00	-611.20	0.00	611.20	4236.64	2118.32	7997.90	4004.90	3.10	-0.519	0.000	0.160
65.00	-28.34	-8.30	0.00	-569.07	0.00	569.07	4157.93	2078.96	7642.72	3827.04	3.67	-0.572	0.000	0.156
70.00	-27.19	-8.17	0.00	-527.58	0.00	527.58	4077.51	2038.76	7292.30	3651.57	4.30	-0.625	0.000	0.151
75.00	-26.06	-8.04	0.00	-486.71	0.00	486.71	3995.39	1997.70	6946.91	3478.62	4.98	-0.679	0.000	0.146
78.00	-25.40	-7.97	0.00	-462.57	0.00	462.57	3945.30	1972.65	6742.20	3376.11	5.42	-0.711	0.000	0.143
80.00	-24.67	-7.92	0.00	-446.64	0.00	446.64	3911.57	1955.78	6606.80	3308.31	5.72	-0.733	0.000	0.141
83.50	-23.43	-7.82	0.00	-418.93	0.00	418.93	2771.30	1385.65	4677.52	2342.24	6.27	-0.771	0.000	0.187
85.00	-23.16	-7.79	0.00	-407.21	0.00	407.21	2755.69	1377.84	4610.09	2308.47	6.52	-0.788	0.000	0.185
90.00	-22.30	-7.67	0.00	-368.26	0.00	368.26	2702.54	1351.27	4386.89	2196.71	7.38	-0.853	0.000	0.176
95.00	-21.46	-7.55	0.00	-329.90	0.00	329.90	2647.69	1323.84	4166.29	2086.24	8.31	-0.917	0.000	0.166
100.00	-20.64	-7.43	0.00	-292.15	0.00	292.15	2591.13	1295.56	3948.53	1977.20	9.30	-0.980	0.000	0.156
105.00	-19.84	-7.31	0.00	-254.98	0.00	254.98	2532.86	1266.43	3733.89	1869.72	10.36	-1.041	0.000	0.144
110.00	-19.06	-7.19	0.00	-218.41	0.00	218.41	2472.89	1236.44	3522.60	1763.92	11.48	-1.099	0.000	0.132
113.50	-18.53	-7.11	0.00	-193.23	0.00	193.23	2429.89	1214.95	3376.84	1690.93	12.30	-1.138	0.000	0.122
115.00	-18.16	-7.07	0.00	-182.56	0.00	182.56	2411.21	1205.60	3314.94	1659.93	12.67	-1.155	0.000	0.118
118.00	-17.44	-7.00	0.00	-161.34	0.00	161.34	1790.62	895.31	2454.63	1229.14	13.40	-1.186	0.000	0.141
120.00	-17.19	-6.95	0.00	-147.34	0.00	147.34	1774.20	887.10	2396.85	1200.21	13.90	-1.206	0.000	0.133
122.00	-16.92	-6.87	0.00	-133.25	0.00	133.25	1757.50	878.75	2339.36	1171.42	14.41	-1.228	0.000	0.123
125.00	-16.55	-6.80	0.00	-112.64	0.00	112.64	1731.94	865.97	2253.71	1128.53	15.19	-1.259	0.000	0.109
127.00	-13.32	-5.41	0.00	-99.04	0.00	99.04	1714.56	857.28	2197.01	1100.14	15.73	-1.278	0.000	0.098
130.00	-12.98	-5.34	0.00	-82.81	0.00	82.81	1687.98	843.99	2112.62	1057.88	16.54	-1.303	0.000	0.086
135.00	-12.42	-5.23	0.00	-56.11	0.00	56.11	1642.31	821.15	1973.86	988.40	17.92	-1.338	0.000	0.064
135.75	-12.07	-5.10	0.00	-52.19	0.00	52.19	1635.31	817.66	1953.26	978.08	18.13	-1.343	0.000	0.061
137.00	-7.53	-3.34	0.00	-45.81	0.00	45.81	1623.56	811.78	1919.06	960.96	18.49	-1.350	0.000	0.052
138.75	-7.17	-3.21	0.00	-39.97	0.00	39.97	1606.94	803.47	1871.46	937.12	18.98	-1.359	0.000	0.047
140.00	-7.05	-3.18	0.00	-35.97	0.00	35.97	1594.93	797.47	1837.67	920.20	19.34	-1.365	0.000	0.044
145.00	-6.61	-3.07	0.00	-20.06	0.00	20.06	1545.85	772.93	1704.31	853.42	20.78	-1.383	0.000	0.028
148.00	-3.03	-1.15	0.00	-10.85	0.00	10.85	1515.59	757.79	1625.76	814.09	21.65	-1.389	0.000	0.015
150.00	-2.88	-1.11	0.00	-8.55	0.00	8.55	1495.07	747.53	1574.03	788.19	22.23	-1.392	0.000	0.013
155.00	-2.54	-1.01	0.00	-3.02	0.00	3.02	1442.53	721.26	1447.04	724.60	23.69	-1.397	0.000	0.006
158.00	0.00	-0.94	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	24.57	-1.398	0.000	0.000



## Final Analysis Summary

<b>Structure:</b> CT02722-S-SBA	<b>Code:</b> TIA-222-G	6/9/2022
<b>Site Name:</b> Waterbury	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (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
		<b>Page:</b> 29



### 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 + 1.6W 97 mph Wind	41.1	0.00	59.31	0.00	0.00	4892.81
0.9D + 1.6W 97 mph Wind	41.0	0.00	44.47	0.00	0.00	4843.21
1.2D + 1.0Di + 1.0Wi 50 mph Wind	11.8	0.00	88.87	0.00	0.00	1412.64
1.2D + 1.0E	2.5	0.00	59.37	0.00	0.00	309.23
0.9D + 1.0E	2.5	0.00	44.53	0.00	0.00	305.89
1.0D + 1.0W 60 mph Wind	9.8	0.00	49.47	0.00	0.00	1163.61

### 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 + 1.6W 97 mph Wind	-26.40	-32.92	0.00	-1765.2	0.00	-1765.2	2771.30	1385.6	4677.52	2342.24	83.50	0.764
0.9D + 1.6W 97 mph Wind	-19.37	-32.50	0.00	-1737.3	0.00	-1737.3	2771.30	1385.6	4677.52	2342.24	83.50	0.749
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-49.51	-9.47	0.00	-511.35	0.00	-511.35	2771.30	1385.6	4677.52	2342.24	83.50	0.236
1.2D + 1.0E	-28.23	-1.93	0.00	-125.96	0.00	-125.96	2771.30	1385.6	4677.52	2342.24	83.50	0.064
0.9D + 1.0E	-21.17	-1.90	0.00	-124.01	0.00	-124.01	2771.30	1385.6	4677.52	2342.24	83.50	0.061
1.0D + 1.0W 60 mph Wind	-23.43	-7.82	0.00	-418.93	0.00	-418.93	2771.30	1385.6	4677.52	2342.24	83.50	0.187

## Base Plate Summary

<b>Structure:</b> CT02722-S-SB	<b>Code:</b> TIA-222-G	6/9/2022
<b>Site Name:</b> Waterbury	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (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
		<b>Page:</b> 30



Reactions	Base Plate	Anchor Bolts
Original Design	<b>Yield (ksi):</b> 50.00	<b>Bolt Circle:</b> 67.00
<b>Moment (kip-ft):</b> 5150.00	<b>Width (in):</b> 66.00	<b>Number Bolts:</b> 20.00
<b>Axial (kip):</b> 41.00	<b>Style:</b> Clipped	<b>Bolt Type:</b> 2.25" 18J
<b>Shear (kip):</b> 44.00	<b>Polygon Sides:</b> 4.00	<b>Bolt Diameter (in):</b> 2.25
Analysis (1.2D + 1.6W)	<b>Clip Length (in):</b> 12.00	<b>Yield (ksi):</b> 75.00
<b>Moment (kip-ft):</b> 4892.81	<b>Effective Len (in):</b> 9.25	<b>Ultimate (ksi):</b> 100.00
<b>Axial (kip):</b> 59.31	<b>Moment (kip-in):</b> 630.78	<b>Arrangement:</b> Clustered
<b>Shear (kip):</b> 41.05	<b>Allow Stress (ksi):</b> 67.50	<b>Cluster Dist (in):</b> 5.00
	<b>Applied Stress (ksi):</b> 38.48	<b>Start Angle (deg):</b> 45.00
	<b>Stress Ratio:</b> 0.57	Compression
		<b>Force (kip):</b> 179.71
		<b>Allowable (kip):</b> 260.00
		<b>Ratio:</b> 0.71
		Tension
		<b>Force (kip):</b> 170.82
		<b>Allowable (kip):</b> 260.00
		<b>Ratio:</b> 0.67



# Monopole Mat Foundation Design

Date

6/9/2022

<b>Customer Name:</b>		<b>TIA Standard:</b>	EIA-222-G
<b>Site Name:</b>		<b>Structure Height (Ft.):</b>	300
<b>Site Number:</b>	CT02722-S-SBA	<b>Engineer Name:</b>	S. Hesselbeir
<b>Engr. Number:</b>	130247	<b>Engineer Login ID:</b>	

**Foundation Info Obtained from:**

Mapping Operation  
Monopole  
Analysis

**Structure Type:**

**Analysis or Design?**

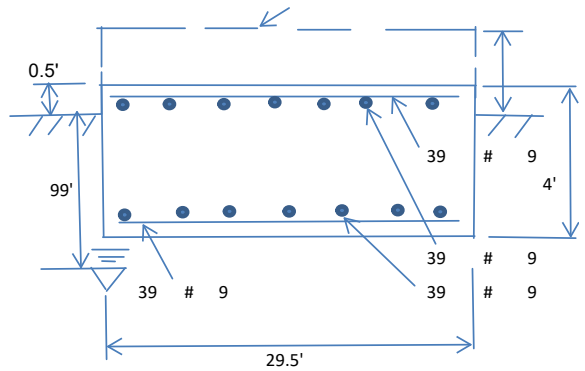
**Base Reactions (Factored):**

Axial Load (Kips):	86.0	Shear Force (Kips):	40.9
Uplift Force (Kips):	0.0	Moment (Kips-ft):	4875.8

Allowable overstress %: 5.0%

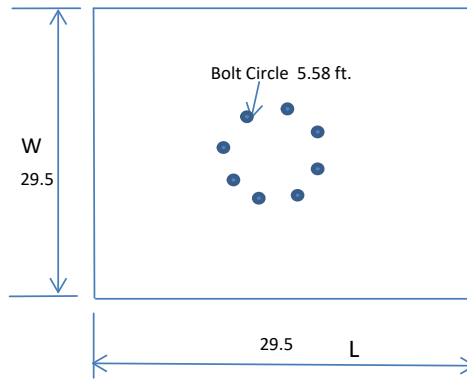
**Foundation Geometries:**

Anchor Bolt Circle (ft.):	5.58	Depth of Base BG (ft.):	3.50
Thickness of Pad (ft.):	4.00	Width of Pad (ft.):	29.5
Length of Pad (ft.):	29.5	Final Length of pad (ft)	29.5
		Final width of pad (ft):	29.5



**Material Properties and Rebar Info:**

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Pad Rebar Yield (Ksi):	60	Tie Spacing (in):	12.0	
Pad Steel Rebar Size (#):	9	Unit Weight of Concrete:	150.0	pcf
Concrete Cover (in.):	3			
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	39	Qty. of Rebar in Pad (W):	39	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	39	Qty. of Rebar in Pad (W):	39	



Apply 1.35 factor for e/w Per G: 1.35

**Soil Design Parameters:**

Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	40000	Ultimate Skin Friction:	425	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	Yes		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	Yes	Reduction factor on the maximum soil bearing pressure:	1.00			

**Foundation Analysis and Design:**

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	0.00	Total Dry Soil Weight (Kips):	0.00
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	0.00	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	3481.00	Total Dry Concrete Weight (Kips):	522.15
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	522.15	Total Vertical Load on Base (Kips):	608.10

**Check Soil Capacities:**

Calculated Maxium Net Soil Pressure under the base (psf):	2007	<	Allowable Factored Soil Bearing (psf):	30000	0.07	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	8199.3	>	Design Factored Momnt (kips-ft):	4983	0.61	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.65					OK!

Load/  
Capacity  
Ratio

**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

**Concrete Pad:**

One-Way Design Shear Capacity (L-Direction, Kips):	1292.4	>	One-Way Factored Shear (L-D. Kips):	352.4	0.27	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1292.4	>	One-Way Factored Shear (W-D., Kips)	352.4	0.27	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1561.4	>	One-Way Factored Shear (C-C, Kips):	592.4	0.38	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct. ):	0.0025	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0025		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	7571.3	>	Moment at Bottom ( L-Direct. K-Ft):	1410.7	0.19	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	7571.3	>	Moment at Bottom ( W-Direct. K-Ft):	1410.7	0.19	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	10652.6	>	Moment at Bottom ( C-C Dir. K-Ft):	1995.0	0.19	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct. ):	0.0025	OK!	Upper Steel Reinf. Ratio (W-Direct. ):	0.0025		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	7571.3	>	Moment at the top (L-Dir Kips-Ft):	81.2	0.01	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	7571.3	>	Moment at the top (W-Dir Kips-Ft):	81.2	0.01	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	10652.6	>	Moment at the top (C-C Direc. K-Ft):	688.0	0.06	OK!

# EXHIBIT 4

May 6, 2022



Centerline Communications  
750 West Center Street, Suite #301  
West Bridgewater, MA, 02379

RE:      Site Number:            CT1125  
          FA Number:            10035415  
          PACE Number:        MRCTB056108  
          PT Number:            2051A11LF2  
          Site Name:            NORTH WATERBURY  
          Site Address:        299 Sheffield street  
   Waterbury, CT 06704

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by Centerline Communications to perform a mount analysis on the existing AT&T antenna/RRH mount to determine its capability of supporting the following additional loading:

- (3) 800-10965 K Antennas (78.7"x20"x6.9" – Wt. = 109 lbs. /each)
- (3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) RRUS-32 B2 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (3) RRUS-E2 B29 RRH's (20.4"x18.5"x7.5" – Wt. = 53 lbs. /each)
- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (2) DC6-48-60-18-8F Surge Arrestor (24"x9.7"Φ – Wt. = 33 lbs. /each)
- **(3) QD6616-7 Antennas (72.0"x22.0"x9.6" – Wt. = 130 lbs. /each)**
- **(3) AIR6419 Antennas (31.1"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) AIR6449 Antennas (30.6"x15.9"x10.6" – Wt. = 82 lbs. /each)**
- **(3) 4426 B66 RRH's (14.9"x13.2"x5.8" – Wt. = 49 lbs. /each)**
- **(3) 4449 B5/12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)**
- **(1) DC9-48-60-24-8C-EV Surge Arrestor (24"x9.7"Φ – Wt. = 33 lbs. /each)**

*\*Proposed equipment shown in bold.*

Mount fabrication drawings prepared by Commscope P/N MTC3607, dated September 24, 2013 were used to perform this analysis. HDG conducted a ground audit of the existing antenna mounts on November 8, 2021.



Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R16.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 125 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.24 in was used for this analysis.
- HDG considers this site to be exposure category C; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 3; tower is located on flat terrain or the bottom of a hill or ridge.
- HDG considers this site to have a spectral response acceleration parameter at short periods,  $S_s$ , of 0.189 and a spectral response acceleration parameter at a period of 1 second,  $S_1$ , of 0.064.
- The mount has been analyzed using a service wind speed of 50 mph wind on the worstcase antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 2.
- The existing mount is secured to the existing monopole with ring mounts and threaded rods. HDG considers the threaded rods to be the governing connection member.

Based on our evaluation, we have determined that the existing mount **IS NOT CAPABLE** of supporting the proposed installation. HDG recommends the following modifications:

- **Install new 2-1/2" XS (2.88" O.D.) pipe mast behind proposed AIR6419 and AIR6449 antennas secured to the existing mount and handrail (typ. of 1 per sector, total of 3)**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
<b>Existing Mount Rating</b>	44	LC9	101%	<b>FAIL</b>
<b>Modified Mount Rating</b>	44	LC9	86%	<b>PASS</b>

Reference Documents:

- Fabrication drawings prepared by Commscope P/N MTC3607, dated September 24, 2013.

This determination was based on the following limitations and assumptions:

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

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

Respectfully Submitted,  
Hudson Design Group LLC

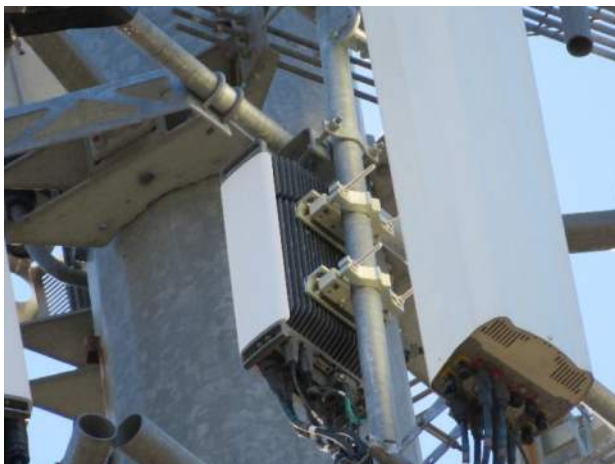
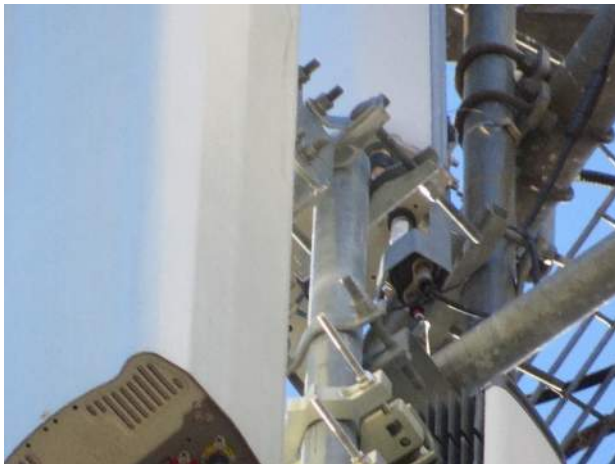


Michael Cabral  
Vice President



Daniel P. Hamm, PE  
Principal

FIELD PHOTOS:









**HUDSON**  
Design Group LLC

**Wind & Ice  
Calculations**

## ANSI/TIA-222H - WIND, ICE & SEISMIC LOAD CALCULATIONS

Site Code/Name
State
County
Structure Class
Exposure Category
Topographic Category
Mean Elevation of base of structure
Height Above Ground

CT1125 - NORTH WATERBURY	
Connecticut	
New Haven	<i>Reference</i>
II	<i>Table 2-1</i>
C	<i>Section 2.6.5.1.2</i>
3 - Kzt = 1.221	<i>Section 2.6.6.2.1</i>
z <sub>s</sub> 501.03	ft <i>ASCE7-16 Hazards</i>
z 137	ft

<b>Wind Parameters</b>
Basic wind speed
Wind direction probability factor
Gust effect factor
Velocity Pressure (K <sub>a</sub> = 0.9)

V	125	mph	<i>Appendix N of Connecticut Building Code</i>
K <sub>d</sub>	0.95		<i>Section 16.6</i>
G <sub>H</sub>	1		<i>Section 16.6</i>
	55.46	psf	<i>Section 2.6.11.6</i>

<b>Wind &amp; Ice Parameters</b>
Base windspeed in conjunction with ice, V
Base Ice thickness
Ice Velocity Pressure (K <sub>a</sub> = 0.9)
Design Ice Thickness

	50	mph	<i>ASCE7-16 Hazards Tool</i>
t <sub>i</sub>	1.00	in	<i>ASCE7-16 Hazards Tool</i>
q <sub>ice</sub>	8.87	psf	<i>Section 2.6.11.6</i>
t <sub>iz</sub>	1.24	in	<i>Section 2.6.10</i>

<b>Seismic Parameters</b>
Site Soil Class
Seismic Design Category
Spectral Response at Short Periods
Spectral Response at 1sec
Long Period Transition Period
Seismic Importance Factor
Response modification coefficient
Short-Period Site Coefficient
Design Spectral Response at Short Periods
Seismic Response Coefficient

	D - Default	<i>Table 2-10</i>
	B	<i>ASCE7-16 Hazards Tool</i>
S <sub>s</sub>	0.189	<i>Appendix N of Connecticut Building Code</i>
S <sub>1</sub>	0.064	<i>Appendix N of Connecticut Building Code</i>
T <sub>L</sub>	6	<i>ASCE7-16 Hazards Tool</i>
I <sub>s</sub>	1	<i>Table 2-3</i>
R	2	<i>Section 16.7</i>
F <sub>a</sub>	1.6	<i>Table 2-11</i>
S <sub>DS</sub>	0.202	<i>Section 2.7.5</i>
C <sub>s</sub>	0.101	<i>Section 2.7.7.1</i>



## ALPHA SECTOR

Appurtenance properties						Wind		Ice	Seismic
Manufacturer	Model	L [in]	W [in]	D [in]	Weight [lbs]	0° [lbs]	90° [lbs]	IceWeight [lbs]	E <sub>H</sub> [lbs]
Quintel	QD6616-7	72.0	22.0	9.6	130.0	753.0	377.1	232.7	13.1
Ericsson	AIR6449 +AIR6419 STACKED	61.7	16.1	10.6	148.0	481.7	339.4	162.5	14.9
Kathrien	800-10965 K	78.7	20.0	6.9	109.0	766.1	323.5	225.3	11.0
Ericsson	4478 B14	18.1	13.4	8.3	60.0	69.4	112.1	41.4	6.0
Ericsson	RRUS-32 B2	27.2	12.1	7.0	52.9	151.5	92.5	54.3	5.3
Ericsson	4426 B66	14.9	13.2	5.8	49.0	40.0	90.9	31.8	4.9
Ericsson	4449 B5/B12	17.9	13.2	9.4	73.0	77.8	109.2	42.0	7.4
Ericsson	RRUS-32 B30	26.7	12.1	6.7	60.0	87.2	149.3	53.0	6.0
Raycap	DC9-48-60-24-8C-EV	24.0	9.7	9.7	33.0	107.6	107.6	47.5	3.3

## BETA SECTOR

Appurtenance properties						Wind		Ice	Seismic
Manufacturer	Model	L [in]	W [in]	D [in]	Weight [lbs]	0° [lbs]	90° [lbs]	IceWeight [lbs]	E <sub>H</sub> [lbs]
Quintel	QD6616-7	72.0	22.0	9.6	130.0	471.1	659.0	232.7	13.1
Ericsson	AIR6449 +AIR6419 STACKED	61.7	16.1	10.6	148.0	375.0	446.1	162.5	14.9
Kathrien	800-10965 K	78.7	20.0	6.9	109.0	434.1	655.4	225.3	11.0
Ericsson	4478 B14	18.1	13.4	8.3	60.0	101.4	80.1	41.4	6.0
Ericsson	RRUS-32 B2	27.2	12.1	7.0	52.9	107.2	136.7	54.3	5.3
Ericsson	4426 B66	14.9	13.2	5.8	49.0	78.2	52.8	31.8	4.9
Ericsson	4449 B5/B12	17.9	13.2	9.4	73.0	101.3	85.6	42.0	7.4
Ericsson	RRUS-32 B30	26.7	12.1	6.7	60.0	133.8	102.7	53.0	6.0
Raycap	DC6-48-60-18-8F	24.0	9.7	9.7	33.0	107.6	107.6	47.5	3.3

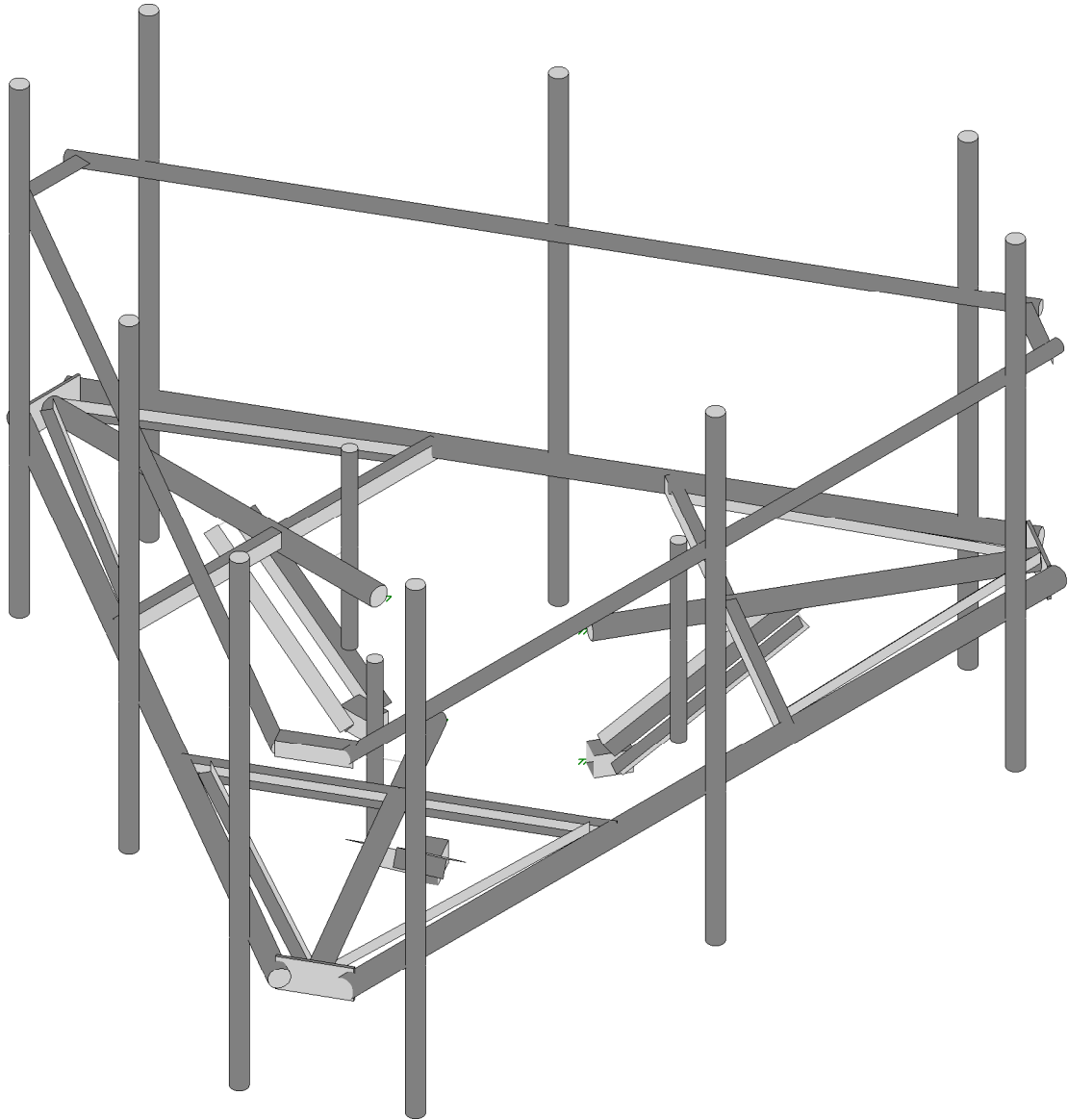
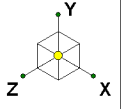
## GAMMA SECTOR

Appurtenance properties						Wind		Ice	Seismic
Manufacturer	Model	L [in]	W [in]	D [in]	Weight [lbs]	0° [lbs]	90° [lbs]	IceWeight [lbs]	E <sub>H</sub> [lbs]
Quintel	QD6616-7	72.0	22.0	9.6	130.0	471.1	659.0	232.7	13.1
Ericsson	AIR6449 +AIR6419 STACKED	61.7	16.1	10.6	148.0	375.0	446.1	162.5	14.9
Kathrien	800-10965 K	78.7	20.0	6.9	109.0	434.1	655.4	225.3	11.0
Ericsson	4478 B14	18.1	13.4	8.3	60.0	101.4	80.1	41.4	6.0
Ericsson	RRUS-32 B2	27.2	12.1	7.0	52.9	107.2	136.7	54.3	5.3
Ericsson	4426 B66	14.9	13.2	5.8	49.0	78.2	52.8	31.8	4.9
Ericsson	4449 B5/B12	17.9	13.2	9.4	73.0	101.3	85.6	42.0	7.4
Ericsson	RRUS-32 B30	26.7	12.1	6.7	60.0	133.8	102.7	53.0	6.0
Raycap	DC6-48-60-18-8F	24.0	9.7	9.7	33.0	107.6	107.6	47.5	3.3



**HUDSON**  
Design Group LLC

**Mount Calculations  
(Existing Conditions)**



Envelope Only Solution

Hudson Design Group, LLC

RD

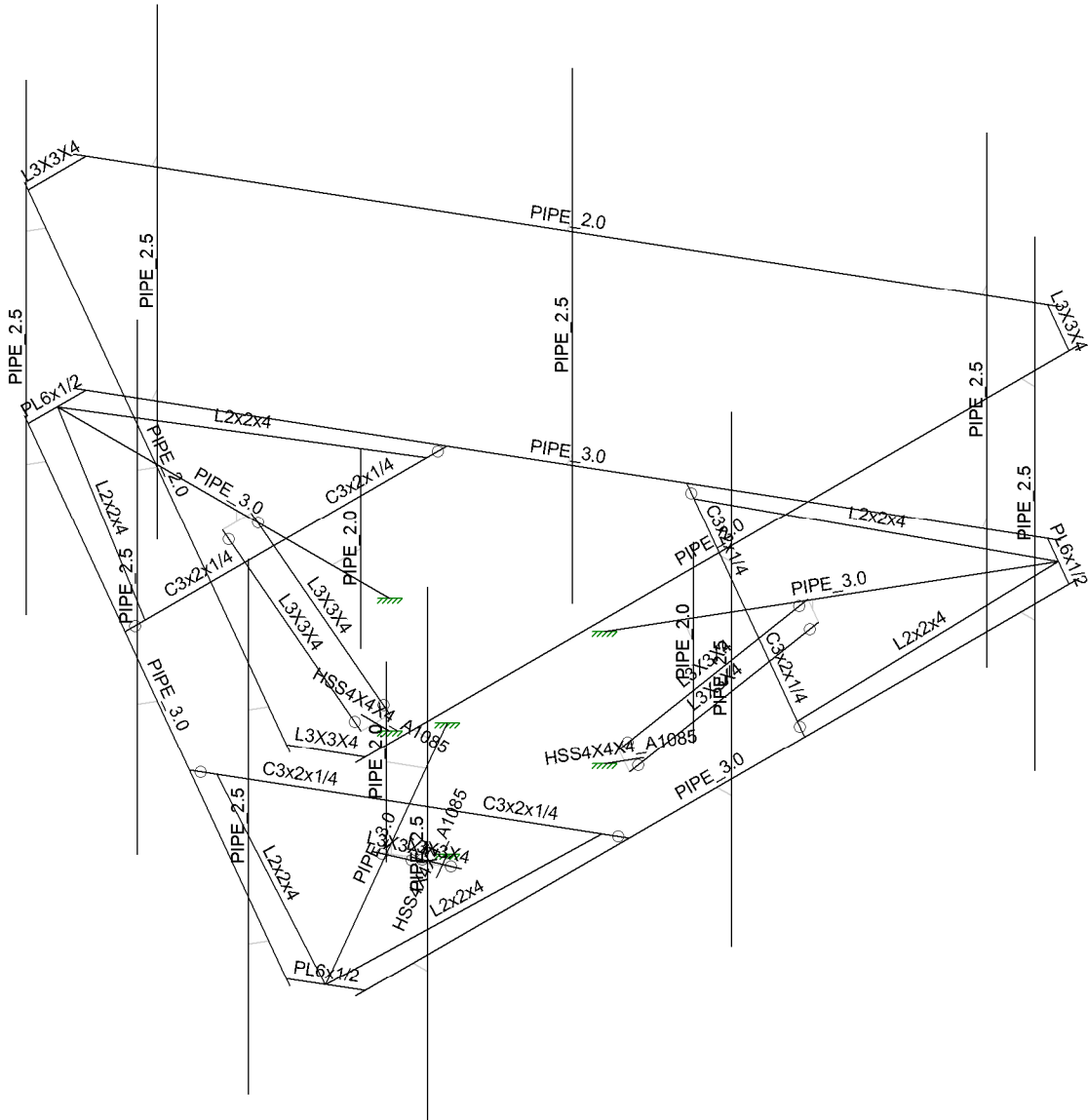
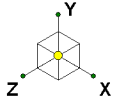
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NORTH WATERBURY

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Hudson Design Group, LLC

RD

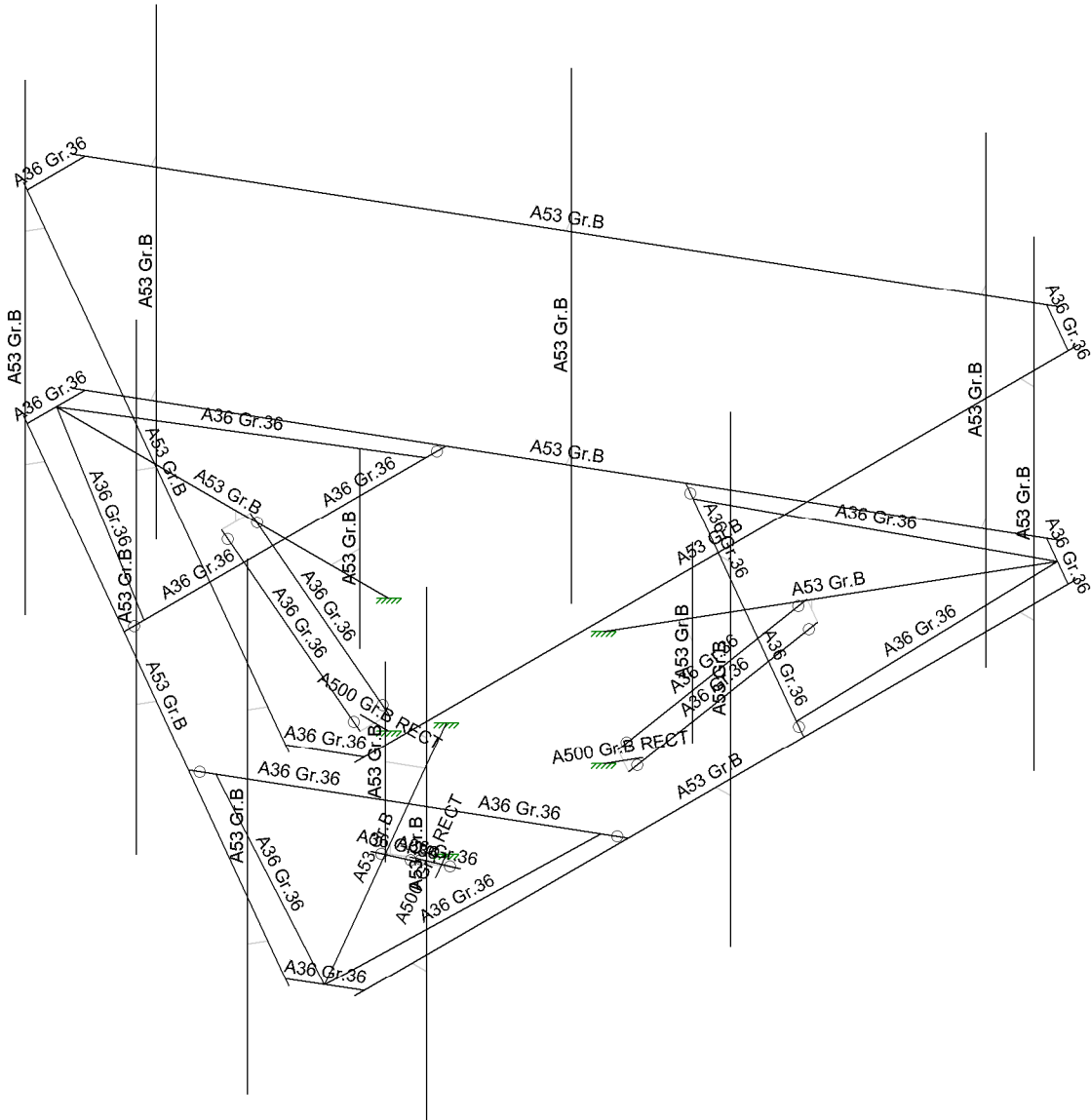
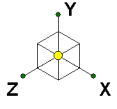
CT1125

NORTH WATERBURY

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Hudson Design Group, LLC

RD

CT1125

NORTH WATERBURY

SK - 3

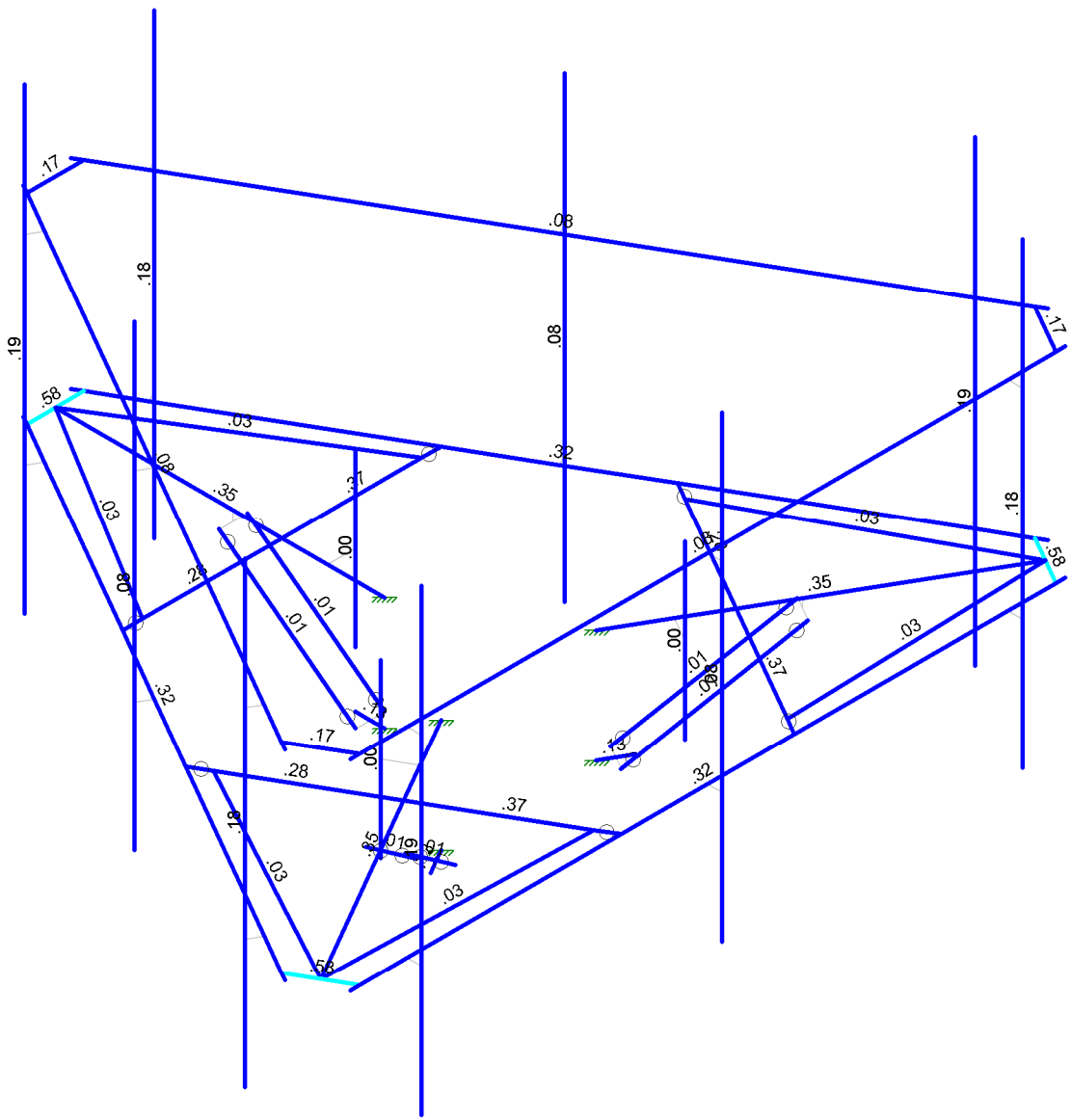
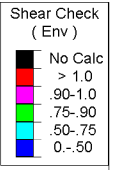
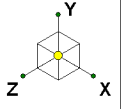
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Member Shear Checks Displayed (Enveloped)  
Envelope Only Solution

Hudson Design Group, LLC	NORTH WATERBURY	SK - 6
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CT1125		CT1125.r3d



Company : Hudson Design Group, LLC  
 Designer : RD  
 Job Number : CT1125  
 Model Name : NORTH WATERBURY

May 5, 2022  
 6:45 PM  
 Checked By: SC

**(Global) Model Settings**

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	AA ADM1-15: LRFD - Building
Stainless Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR SET ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8



**(Global) Model Settings, Continued**

Seismic Code	ASCE 7-16
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

**Hot Rolled Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (/1...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B RECT	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A500 Gr.C RND	29000	11154	.3	.65	.527	46	1.4	62	1.3
7	A500 Gr.C RECT	29000	11154	.3	.65	.527	50	1.4	62	1.3
8	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
9	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
10	A913 Gr.65	29000	11154	.3	.65	.49	65	1.1	80	1.1

**Hot Rolled Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	PIPE 2.0	PIPE 2.0	None	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
2	PIPE 2.5X	PIPE 2.5X	None	None	A53 Gr.B	Typical	2.1	1.83	1.83	3.66
3	PIPE 2.5	PIPE 2.5	None	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
4	L3X3X4	L3X3X4	None	None	A36 Gr.36	Typical	1.44	1.23	1.23	.031
5	L2x2x4	L2x2x4	None	None	A36 Gr.36	Typical	.944	.346	.346	.021
6	PL 6x1/2	PL6x1/2	None	None	A36 Gr.36	Typical	3	.063	9	.237
7	PIPE 3.0	PIPE 3.0	None	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
8	C3x2x1/4	C3x2x1/4	None	None	A36 Gr.36	Typical	1.625	.631	2.221	.031
9	HSS4X4X4_A1085	HSS4X4X4_A...	None	None	A500 Gr.B...	Typical	3.758	8.843	8.843	13.206

**Joint Boundary Conditions**

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N41						
2	N5	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction



**Joint Boundary Conditions (Continued)**

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
3	N12	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N108						
6	N109						
7	N110	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
8	N111						
9	N112						
10	N116						
11	N117						
12	N118	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
13	N119						
14	N120						
15	N124						
16	N125						
17	N126	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
18	N127						
19	N128						
20	N129						
21	N130						
22	N131						
23	N132						
24	N133						
25	N134						
26	N135						
27	N136						
28	N137						
29	N138						
30	N139						

**Member Primary Data**

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N3	N1			PIPE 3.0	None	None	A53 Gr.B	Typical
2	M2	N3	N2			L2x2x4	None	None	A36 Gr.36	Typical
3	M3	N3	N4			L2x2x4	None	None	A36 Gr.36	Typical
4	M4	N37	N5			PIPE 3.0	None	None	A53 Gr.B	Typical
5	M5	N6	N7			PIPE 3.0	None	None	A53 Gr.B	Typical
6	M6	N8	N9			PIPE 3.0	None	None	A53 Gr.B	Typical
7	M7	N10	N11			PIPE 3.0	None	None	A53 Gr.B	Typical
8	M8	N15	N12			PIPE 3.0	None	None	A53 Gr.B	Typical
9	M9	N13	N15			L2x2x4	None	None	A36 Gr.36	Typical
10	M10	N14	N15			L2x2x4	None	None	A36 Gr.36	Typical
11	M11	N16	N17			PL 6x1/2	None	None	A36 Gr.36	Typical
12	M12	N18	N19			PL 6x1/2	None	None	A36 Gr.36	Typical
13	M13	N20	N21			PL 6x1/2	None	None	A36 Gr.36	Typical
14	M14	N22	N23			PIPE 2.0	None	None	A53 Gr.B	Typical
15	M15	N24	N25		180	L3X3X4	None	None	A36 Gr.36	Typical
16	M16	N26	N27			PIPE 2.0	None	None	A53 Gr.B	Typical
17	M17	N28	N29		180	L3X3X4	None	None	A36 Gr.36	Typical
18	M18	N30	N31			PIPE 2.0	None	None	A53 Gr.B	Typical
19	M19	N32	N33		180	L3X3X4	None	None	A36 Gr.36	Typical
20	M20	N37	N34			L2x2x4	None	None	A36 Gr.36	Typical
21	M21	N35	N48		180	C3x2x1/4	None	None	A36 Gr.36	Typical
22	M22	N37	N38			L2x2x4	None	None	A36 Gr.36	Typical
23	M23	N43	N47			C3x2x1/4	None	None	A36 Gr.36	Typical
24	M24	N45	N49			C3x2x1/4	None	None	A36 Gr.36	Typical



Company : Hudson Design Group, LLC  
 Designer : RD  
 Job Number : CT1125  
 Model Name : NORTH WATERBURY

May 5, 2022  
 6:45 PM  
 Checked By: SC

**Member Primary Data (Continued)**

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
25	M25	N47	N44			C3x2x1/4	None	None	A36 Gr.36	Typical
26	M26	N48	N36		180	C3x2x1/4	None	None	A36 Gr.36	Typical
27	M27	N49	N46			C3x2x1/4	None	None	A36 Gr.36	Typical
28	M28	N57	N65			RIGID	None	None	RIGID	Typical
29	M29	N56	N64			RIGID	None	None	RIGID	Typical
30	M30	N50	N61			RIGID	None	None	RIGID	Typical
31	M31	N60	N66			RIGID	None	None	RIGID	Typical
32	M32	N55	N63			RIGID	None	None	RIGID	Typical
33	M33	N54	N62			RIGID	None	None	RIGID	Typical
34	M34	N68	N72			PIPE 2.5	None	None	A53 Gr.B	Typical
35	M35	N69	N70			PIPE 2.5	None	None	A53 Gr.B	Typical
36	M36	N67	N71			PIPE 2.5	None	None	A53 Gr.B	Typical
37	M37	N76	N81			RIGID	None	None	RIGID	Typical
38	M38	N75	N80			RIGID	None	None	RIGID	Typical
39	M39	N51	N77			RIGID	None	None	RIGID	Typical
40	M40	N58	N82			RIGID	None	None	RIGID	Typical
41	M41	N74	N79			RIGID	None	None	RIGID	Typical
42	M42	N73	N78			RIGID	None	None	RIGID	Typical
43	M43	N84	N88			PIPE 2.5	None	None	A53 Gr.B	Typical
44	M44	N85	N86			PIPE 2.5	None	None	A53 Gr.B	Typical
45	M45	N83	N87			PIPE 2.5	None	None	A53 Gr.B	Typical
46	M46	N92	N97			RIGID	None	None	RIGID	Typical
47	M47	N91	N96			RIGID	None	None	RIGID	Typical
48	M48	N52	N93			RIGID	None	None	RIGID	Typical
49	M49	N59	N98			RIGID	None	None	RIGID	Typical
50	M50	N90	N95			RIGID	None	None	RIGID	Typical
51	M51	N89	N94			RIGID	None	None	RIGID	Typical
52	M52	N100	N104			PIPE 2.5	None	None	A53 Gr.B	Typical
53	M53	N101	N102			PIPE 2.5	None	None	A53 Gr.B	Typical
54	M54	N99	N103			PIPE 2.5	None	None	A53 Gr.B	Typical
55	M55	N40	N105			RIGID	None	None	RIGID	Typical
56	M56	N106	N107			RIGID	None	None	RIGID	Typical
57	M57	N109	N108			RIGID	None	None	RIGID	Typical
58	M58	N111	N110			HSS4X4X4 A...	None	None	A500 Gr.B...	Typical
59	M59	N106	N109		90	L3X3X4	None	None	A36 Gr.36	Typical
60	M60	N107	N108		180	L3X3X4	None	None	A36 Gr.36	Typical
61	M61	N42	N113			RIGID	None	None	RIGID	Typical
62	M62	N114	N115			RIGID	None	None	RIGID	Typical
63	M63	N117	N116			RIGID	None	None	RIGID	Typical
64	M64	N119	N118			HSS4X4X4 A...	None	None	A500 Gr.B...	Typical
65	M65	N114	N117		90	L3X3X4	None	None	A36 Gr.36	Typical
66	M66	N115	N116		180	L3X3X4	None	None	A36 Gr.36	Typical
67	M67	N39	N121			RIGID	None	None	RIGID	Typical
68	M68	N122	N123			RIGID	None	None	RIGID	Typical
69	M69	N125	N124			RIGID	None	None	RIGID	Typical
70	M70	N127	N126			HSS4X4X4 A...	None	None	A500 Gr.B...	Typical
71	M71	N122	N125		90	L3X3X4	None	None	A36 Gr.36	Typical
72	M72	N123	N124		180	L3X3X4	None	None	A36 Gr.36	Typical
73	M73	N128	N129			RIGID	None	None	RIGID	Typical
74	M74	N131	N130			PIPE 2.0	None	None	A53 Gr.B	Typical
75	M75	N132	N133			RIGID	None	None	RIGID	Typical
76	M76	N135	N134			PIPE 2.0	None	None	A53 Gr.B	Typical
77	M77	N136	N137			RIGID	None	None	RIGID	Typical
78	M78	N139	N138			PIPE 2.0	None	None	A53 Gr.B	Typical





**Member Advanced Data**

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes	** NA **			None
2	M2						Yes	** NA **			None
3	M3						Yes	** NA **			None
4	M4						Yes	** NA **			None
5	M5						Yes	** NA **			None
6	M6						Yes	** NA **			None
7	M7						Yes	** NA **			None
8	M8						Yes	** NA **			None
9	M9						Yes	** NA **			None
10	M10						Yes	** NA **			None
11	M11						Yes	** NA **			None
12	M12						Yes	** NA **			None
13	M13						Yes	** NA **			None
14	M14						Yes	** NA **			None
15	M15						Yes	** NA **			None
16	M16						Yes	** NA **			None
17	M17						Yes	** NA **			None
18	M18						Yes	** NA **			None
19	M19						Yes	** NA **			None
20	M20						Yes	** NA **			None
21	M21	BenPIN					Yes	** NA **			None
22	M22						Yes	** NA **			None
23	M23	BenPIN					Yes	** NA **			None
24	M24	BenPIN					Yes	** NA **			None
25	M25		BenPIN				Yes	** NA **			None
26	M26		BenPIN				Yes	** NA **			None
27	M27		BenPIN				Yes	** NA **			None
28	M28		OOOXOO				Yes	** NA **			None
29	M29						Yes	** NA **			None
30	M30						Yes	** NA **			None
31	M31		OOOXOO				Yes	** NA **			None
32	M32		OOOXOO				Yes	** NA **			None
33	M33						Yes	** NA **			None
34	M34						Yes	** NA **			None
35	M35						Yes	** NA **			None
36	M36						Yes	** NA **			None
37	M37		OOOXOO				Yes	** NA **			None
38	M38						Yes	** NA **			None
39	M39						Yes	** NA **			None
40	M40		OOOXOO				Yes	** NA **			None
41	M41		OOOXOO				Yes	** NA **			None
42	M42						Yes	** NA **			None
43	M43						Yes	** NA **			None
44	M44						Yes	** NA **			None
45	M45						Yes	** NA **			None
46	M46		OOOXOO				Yes	** NA **			None
47	M47						Yes	** NA **			None
48	M48						Yes	** NA **			None
49	M49		OOOXOO				Yes	** NA **			None
50	M50		OOOXOO				Yes	** NA **			None
51	M51						Yes	** NA **			None
52	M52						Yes	** NA **			None
53	M53						Yes	** NA **			None
54	M54						Yes	** NA **			None
55	M55						Yes	** NA **			None
56	M56						Yes	** NA **			None



**Member Advanced Data (Continued)**

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
57	M57						Yes	** NA **			None
58	M58						Yes	** NA **			None
59	M59	BenPIN	BenPIN				Yes	** NA **			None
60	M60	BenPIN	BenPIN				Yes	** NA **			None
61	M61						Yes	** NA **			None
62	M62						Yes	** NA **			None
63	M63						Yes	** NA **			None
64	M64						Yes	** NA **			None
65	M65	BenPIN	BenPIN				Yes	** NA **			None
66	M66	BenPIN	BenPIN				Yes	** NA **			None
67	M67						Yes	** NA **			None
68	M68						Yes	** NA **			None
69	M69						Yes	** NA **			None
70	M70						Yes	** NA **			None
71	M71	BenPIN	BenPIN				Yes	** NA **			None
72	M72	BenPIN	BenPIN				Yes	** NA **			None
73	M73						Yes	** NA **			None
74	M74						Yes	** NA **			None
75	M75						Yes	** NA **			None
76	M76						Yes	** NA **			None
77	M77						Yes	** NA **			None
78	M78						Yes	** NA **			None

**Hot Rolled Steel Design Parameters**

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	PIPE 3.0	68.949			Lbyy						Lateral
2	M2	L2x2x4	55.759			Lbyy						Lateral
3	M3	L2x2x4	55.759			Lbyy						Lateral
4	M4	PIPE 3.0	68.949			Lbyy						Lateral
5	M5	PIPE 3.0	150			Lbyy						Lateral
6	M6	PIPE 3.0	150			Lbyy						Lateral
7	M7	PIPE 3.0	150			Lbyy						Lateral
8	M8	PIPE 3.0	68.95			Lbyy						Lateral
9	M9	L2x2x4	55.76			Lbyy						Lateral
10	M10	L2x2x4	55.76			Lbyy						Lateral
11	M11	PL 6x1/2	12.001			Lbyy						Lateral
12	M12	PL 6x1/2	12.001			Lbyy						Lateral
13	M13	PL 6x1/2	12			Lbyy						Lateral
14	M14	PIPE 2.0	150			Lbyy						Lateral
15	M15	L3X3X4	12.001			Lbyy						Lateral
16	M16	PIPE 2.0	150			Lbyy						Lateral
17	M17	L3X3X4	12			Lbyy						Lateral
18	M18	PIPE 2.0	150			Lbyy						Lateral
19	M19	L3X3X4	12.001			Lbyy						Lateral
20	M20	L2x2x4	55.759			Lbyy						Lateral
21	M21	C3x2x1/4	33.414			Lbyy						Lateral
22	M22	L2x2x4	55.759			Lbyy						Lateral
23	M23	C3x2x1/4	33.413			Lbyy						Lateral
24	M24	C3x2x1/4	33.413			Lbyy						Lateral
25	M25	C3x2x1/4	33.413									Lateral
26	M26	C3x2x1/4	33.412									Lateral
27	M27	C3x2x1/4	33.413									Lateral
28	M34	PIPE 2.5	96									Lateral
29	M35	PIPE 2.5	96									Lateral
30	M36	PIPE 2.5	96									Lateral



**Hot Rolled Steel Design Parameters (Continued)**

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
31	M43	PIPE 2.5	96									Lateral
32	M44	PIPE 2.5	96									Lateral
33	M45	PIPE 2.5	96									Lateral
34	M52	PIPE 2.5	96									Lateral
35	M53	PIPE 2.5	96									Lateral
36	M54	PIPE 2.5	96									Lateral
37	M58	HSS4X4X4...	6									Lateral
38	M59	L3X3X4	35.98									Lateral
39	M60	L3X3X4	35.98									Lateral
40	M64	HSS4X4X4...	6									Lateral
41	M65	L3X3X4	35.98									Lateral
42	M66	L3X3X4	35.98									Lateral
43	M70	HSS4X4X4...	6									Lateral
44	M71	L3X3X4	35.98									Lateral
45	M72	L3X3X4	35.98									Lateral
46	M74	PIPE 2.0	36									Lateral
47	M76	PIPE 2.0	36									Lateral
48	M78	PIPE 2.0	36									Lateral

**Basic Load Cases**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
1	Self We	DL		-1.1					
2	We	DL					38	45	3
3	Ice We	DL					38	45	3
4	W0	WL					38	45	
5	W30	WL					76	90	
6	W60	WL					76	90	
7	W90	WL					38	45	
8	W120	WL					76	90	
9	W150	WL					76	90	
10	W0 + Ice	WL					38	45	
11	W30 + Ice	WL					76	90	
12	W60 + Ice	WL					76	90	
13	W90 + Ice	WL					38	45	
14	W120 + Ice	WL					76	90	
15	W150 + Ice	WL					76	90	
16	500lbs LM 1	LL				1			
17	500lbs LM 2	LL				1			
18	500lbs LM 3	LL				1			
19	500lbs LM 4	LL							
20	250lbs LV 5	LL				1			
21	250lbs LV 6	LL				1			
22	E0	EL	-1				38		
23	E90	EL			.1		38		
24	BLC 2 Transient Area ...	None						19	
25	BLC 3 Transient Area ...	None						19	

**Load Combinations**

	Description	S...	P...	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	Dead	Yes	Y		1	1.4	2	1.4	0	0										
2	Dead + Wind 0	Yes	Y		1	1.2	2	1.2	4	1	0									
3	Dead + Wind 30	Yes	Y		1	1.2	2	1.2	5	1	0									
4	Dead + Wind 60	Yes	Y		1	1.2	2	1.2	6	1	0									
5	Dead + Wind 90	Yes	Y		1	1.2	2	1.2	7	1	0									



**Load Combinations (Continued)**

Description	S...	P...	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
6 Dead + Wind 120	Yes	Y		1	1.2	2	1.2	8	1	0													
7 Dead + Wind 150	Yes	Y		1	1.2	2	1.2	9	1	0													
8 Dead + Wind 180	Yes	Y		1	1.2	2	1.2	4	-1	0													
9 Dead + Wind 210	Yes	Y		1	1.2	2	1.2	5	-1	0													
10 Dead + Wind 240	Yes	Y		1	1.2	2	1.2	6	-1	0													
11 Dead + Wind 270	Yes	Y		1	1.2	2	1.2	7	-1	0													
12 Dead + Wind 300	Yes	Y		1	1.2	2	1.2	8	-1	0													
13 Dead + Wind 330	Yes	Y		1	1.2	2	1.2	9	-1	0													
14 Dead + Ice + Wind Ice 0	Yes	Y		1	1.2	2	1.2	10	1	3	1												
15 Dead + Ice + Wind Ice 30	Yes	Y		1	1.2	2	1.2	11	1	3	1												
16 Dead + Ice + Wind Ice 60	Yes	Y		1	1.2	2	1.2	12	1	3	1												
17 Dead + Ice + Wind Ice 90	Yes	Y		1	1.2	2	1.2	13	1	3	1												
18 Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	14	1	3	1												
19 Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	15	1	3	1												
20 Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	10	-1	3	1												
21 Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	11	-1	3	1												
22 Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	12	-1	3	1												
23 Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	13	-1	3	1												
24 Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	14	-1	3	1												
25 Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	15	-1	3	1												
26 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	4	.058												
27 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	5	.058												
28 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	6	.058												
29 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	7	.058												
30 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	8	.058												
31 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	9	.058												
32 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	4	-0...												
33 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	5	-0...												
34 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	6	-0...												
35 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	7	-0...												
36 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	8	-0...												
37 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	9	-0...												
38 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	4	.058												
39 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	5	.058												
40 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	6	.058												
41 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	7	.058												
42 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	8	.058												
43 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	9	.058												
44 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	4	-0...												
45 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	5	-0...												
46 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	6	-0...												
47 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	7	-0...												
48 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	8	-0...												
49 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	9	-0...												
50 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	4	.058												
51 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	5	.058												
52 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	6	.058												
53 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	7	.058												
54 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	8	.058												
55 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	9	.058												
56 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	4	-0...												
57 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	5	-0...												
58 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	6	-0...												
59 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	7	-0...												
60 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	8	-0...												
61 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	9	-0...												
62 Dead + LM5004 + Wred...	Yes	Y		1	1.2	2	1.2	19	1.5	4	.058												







**Envelope AISC 15th(360-16): LRFD Steel Code Checks (Continued)**

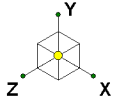
Member	Shape	Code ...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [...]	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Egn	
9	M43	PIPE 2.5	.797	69	2	.186	27	12	30038.461	50715	43.155	43.155	2...	H1-1b	
10	M8	PIPE 3.0	.772	36.629	6	.352	36.629	3	54642.259	65205	68.985	68.985	1...	H1-1b	
11	M4	PIPE 3.0	.772	36.629	2	.351	36.629	11	54642.545	65205	68.985	68.985	1...	H1-1b	
12	M1	PIPE 3.0	.772	36.629	10	.350	36.629	7	54642.531	65205	68.985	68.985	1...	H1-1b	
13	M2	L2x2x4	.514	0	9	.028	55.759	z	10273.106	30585.6	8.291	18.153	1...	H2-1	
14	M22	L2x2x4	.512	0	13	.029	0	y	10273.03	30585.6	8.291	18.164	1...	H2-1	
15	M9	L2x2x4	.502	55.76	7	.028	0	z	10272.926	30585.6	8.291	18.165	1...	H2-1	
16	M10	L2x2x4	.486	55.76	5	.029	55.76	y	10272.928	30585.6	8.291	18.426	1...	H2-1	
17	M3	L2x2x4	.476	0	11	.029	0	y	10272.995	30585.6	8.291	18.425	1...	H2-1	
18	M20	L2x2x4	.474	0	3	.029	0	y	10273.117	30585.6	8.291	18.427	1...	H2-1	
19	M27	C3x2x1/4	.466	0	5	.370	29.236	z	2	43746.896	52650	24.477	57.206	1...	H1-1b
20	M25	C3x2x1/4	.465	0	22	.279	29.236	y	7	43746.936	52650	24.477	57.206	1.7	H1-1b
21	M21	C3x2x1/4	.465	33.414	14	.281	4.177	y	11	43746.771	52650	24.477	57.206	1...	H1-1b
22	M23	C3x2x1/4	.464	33.413	11	.370	4.177	z	2	43746.865	52650	24.477	57.206	1...	H1-1b
23	M26	C3x2x1/4	.463	0	3	.371	29.236	z	6	43747.018	52650	24.477	57.206	1...	H1-1b
24	M24	C3x2x1/4	.458	33.413	18	.280	4.177	z	10	43746.886	52650	24.477	57.206	1...	H1-1b
25	M7	PIPE 3.0	.410	12.5	13	.324	3.125	10	28250.611	65205	68.985	68.985	1...	H1-1b	
26	M5	PIPE 3.0	.410	137.5	9	.324	146.8...	6	28250.554	65205	68.985	68.985	1...	H1-1b	
27	M6	PIPE 3.0	.410	12.5	5	.323	3.125	2	28250.611	65205	68.985	68.985	1...	H1-1b	
28	M11	PL6x1/2	.404	6	9	.578	6	y	13	67548.754	97200	12.15	145.8	1...	H1-1b
29	M13	PL6x1/2	.392	6	7	.578	6	y	9	67550.491	97200	12.15	145.8	1...	H1-1b
30	M12	PL6x1/2	.388	5.875	13	.579	5.875	y	5	67548.027	97200	12.15	145.8	1...	H1-1b
31	M18	PIPE 2.0	.353	139.062	10	.079	3.125	3	6295.438	32130	22.459	22.459	1...	H1-1b	
32	M16	PIPE 2.0	.352	139.062	6	.079	3.125	11	6295.438	32130	22.459	22.459	1...	H1-1b	
33	M14	PIPE 2.0	.352	10.937	2	.079	146.8...	7	6295.422	32130	22.459	22.459	1...	H1-1b	
34	M17	L3X3X4	.314	12	4	.171	0	z	3	45633.815	46656	20.258	45.069	1...	H2-1
35	M19	L3X3X4	.313	12.001	8	.171	0	z	7	45633.743	46656	20.258	45.069	1...	H2-1
36	M15	L3X3X4	.313	12.001	12	.171	.25	z	11	45633.713	46656	20.258	45.069	1...	H2-1
37	M66	L3X3X4	.155	17.99	4	.009	35.98	z	8	38231.506	46656	20.258	43.9	1...	H2-1
38	M59	L3X3X4	.154	17.99	4	.010	35.98	y	12	38231.506	46656	20.258	43.9	1...	H2-1
39	M71	L3X3X4	.153	17.99	12	.010	35.98	y	8	38231.506	46656	20.258	43.9	1...	H2-1
40	M60	L3X3X4	.151	17.99	12	.010	0	z	12	38231.506	46656	20.258	43.9	1...	H2-1
41	M72	L3X3X4	.151	17.99	8	.010	35.98	z	8	38231.506	46656	20.258	43.9	1...	H2-1
42	M65	L3X3X4	.150	17.99	8	.009	35.98	y	8	38231.506	46656	20.258	43.9	1...	H2-1
43	M64	HSS4X4X4 ...	.117	6	4	.134	6	y	4	155401.7...	155561.7...	219.053	219.053	1...	H1-1b
44	M58	HSS4X4X4 ...	.115	6	4	.133	6	y	4	155401.7...	155561.7...	219.053	219.053	1...	H1-1b
45	M70	HSS4X4X4 ...	.115	6	12	.132	6	y	12	155401.7...	155561.7...	219.053	219.053	1...	H1-1b
46	M78	PIPE 2.0	.007	18	7	.002	18	7	28843.414	32130	22.459	22.459	1...	H1-1b	
47	M76	PIPE 2.0	.007	18	3	.002	18	3	28843.414	32130	22.459	22.459	1...	H1-1b	
48	M74	PIPE 2.0	.007	18	11	.002	18	11	28843.414	32130	22.459	22.459	1...	H1-1b	



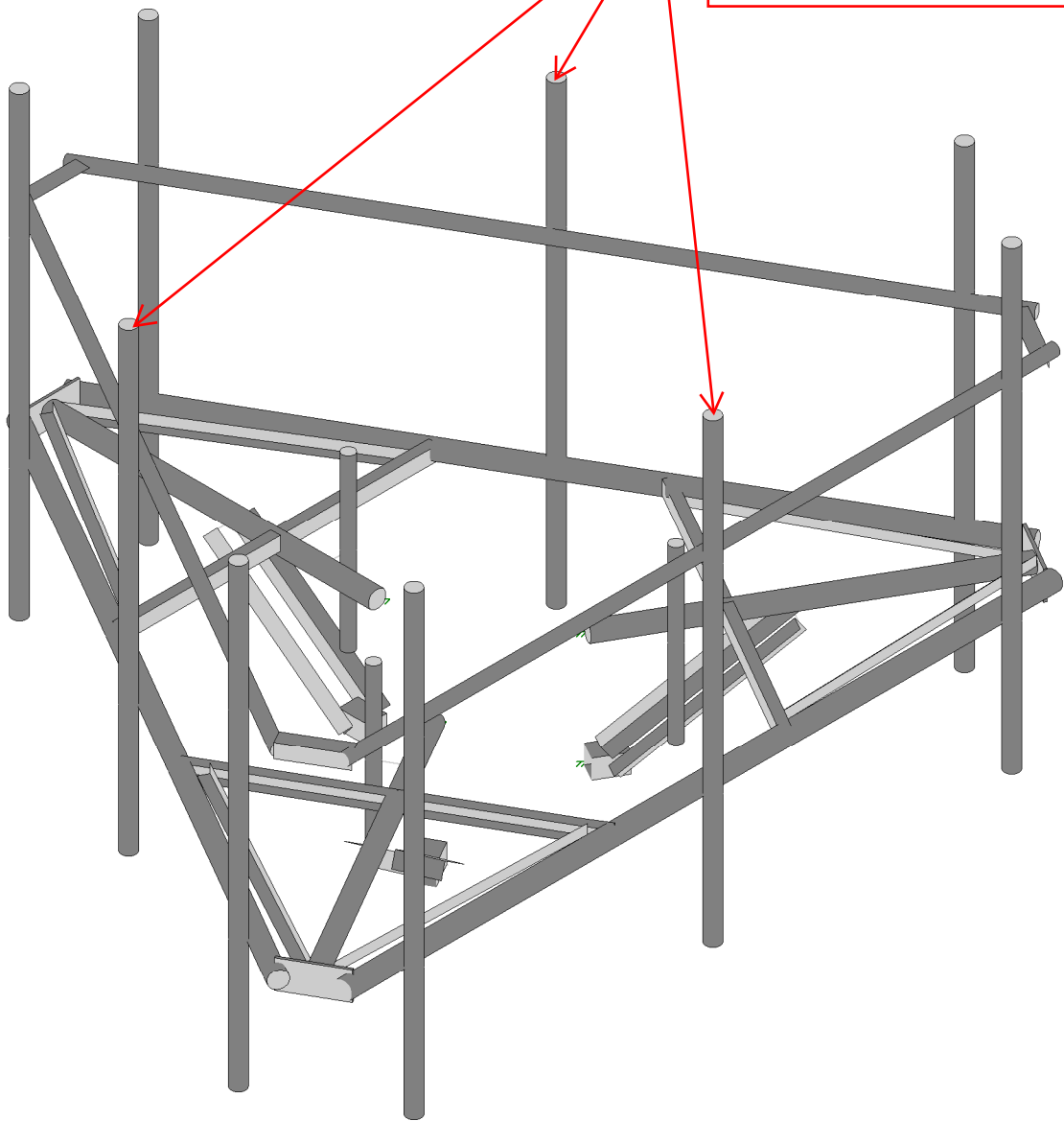


**HUDSON**  
Design Group LLC

**Mount Calculations  
(Modified Conditions)**



Install new 2-1/2" XS (2.88" O.D.) pipe mast behind proposed AIR6419 and AIR6449 antennas secured to the existing mount and handrail (typ. of 1 per sector, total of 3).



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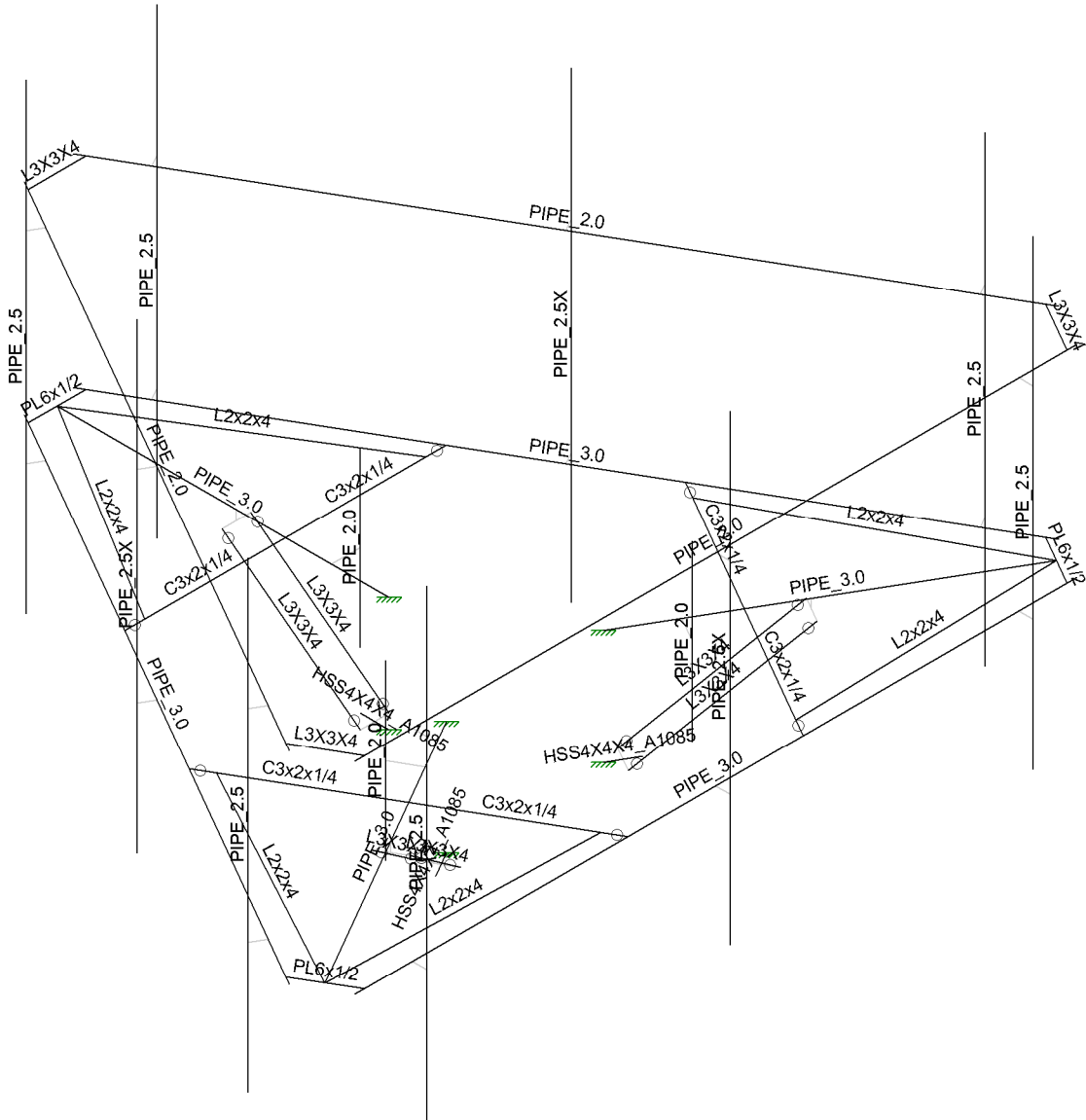
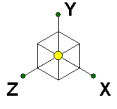
CT1125

NORTH WATERBURY

SK - 1

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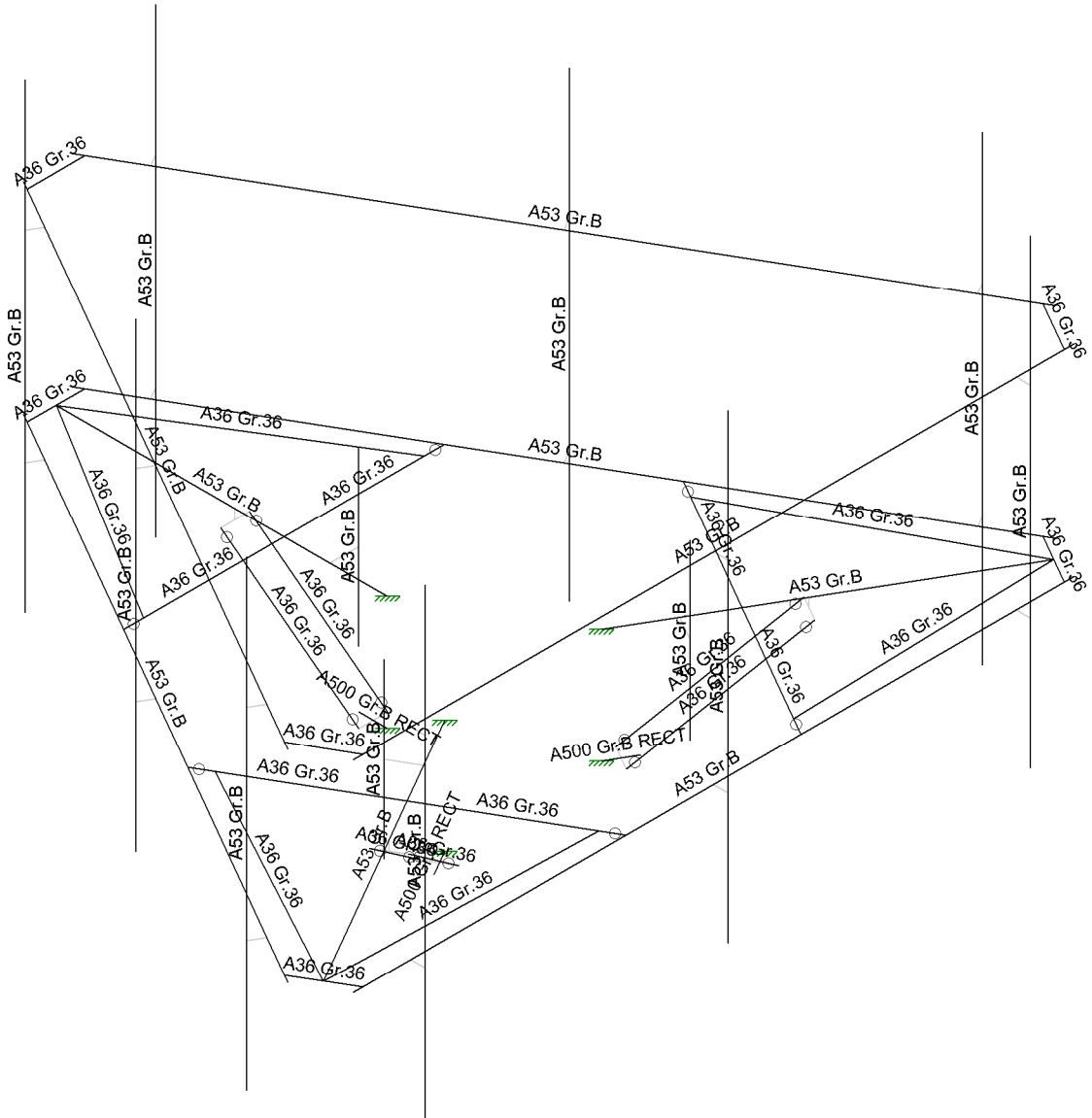
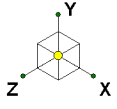


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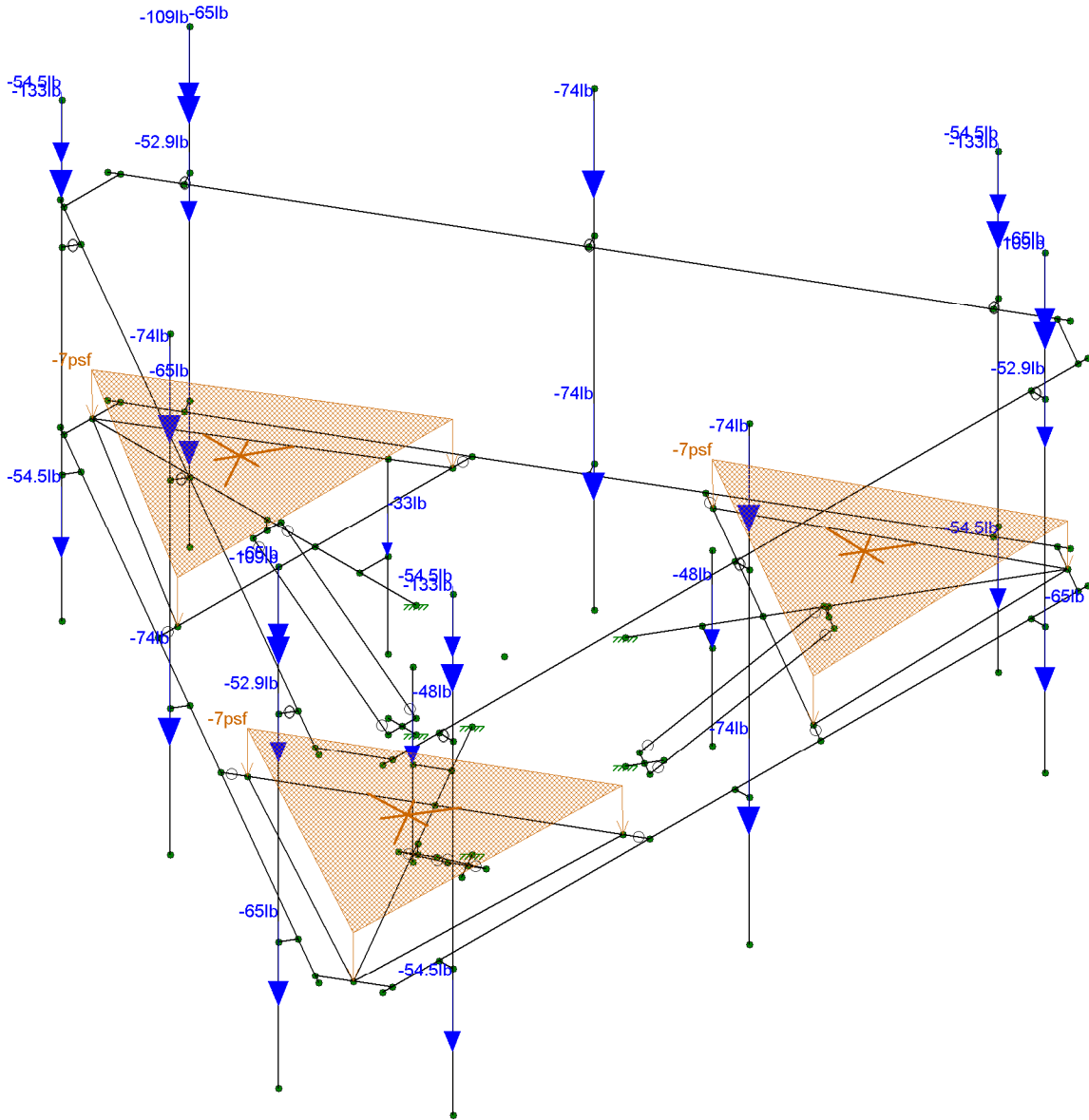
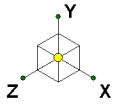
Hudson Design Group, LLC  
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NORTH WATERBURY

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RD

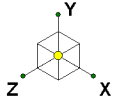
CT1125

NORTH WATERBURY

SK - 4

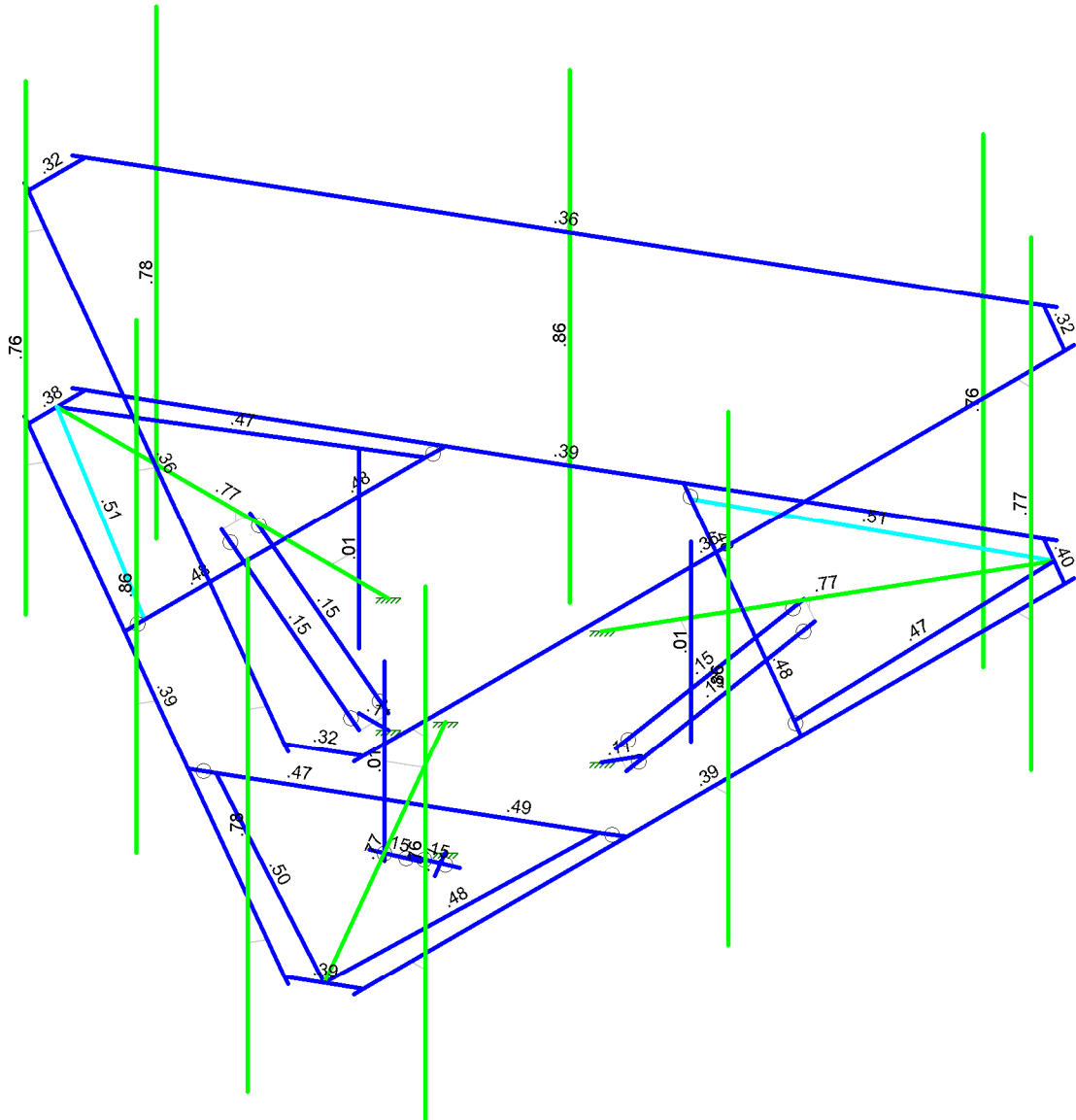
May 5, 2022 at 6:51 PM

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Code Check  
( Env )

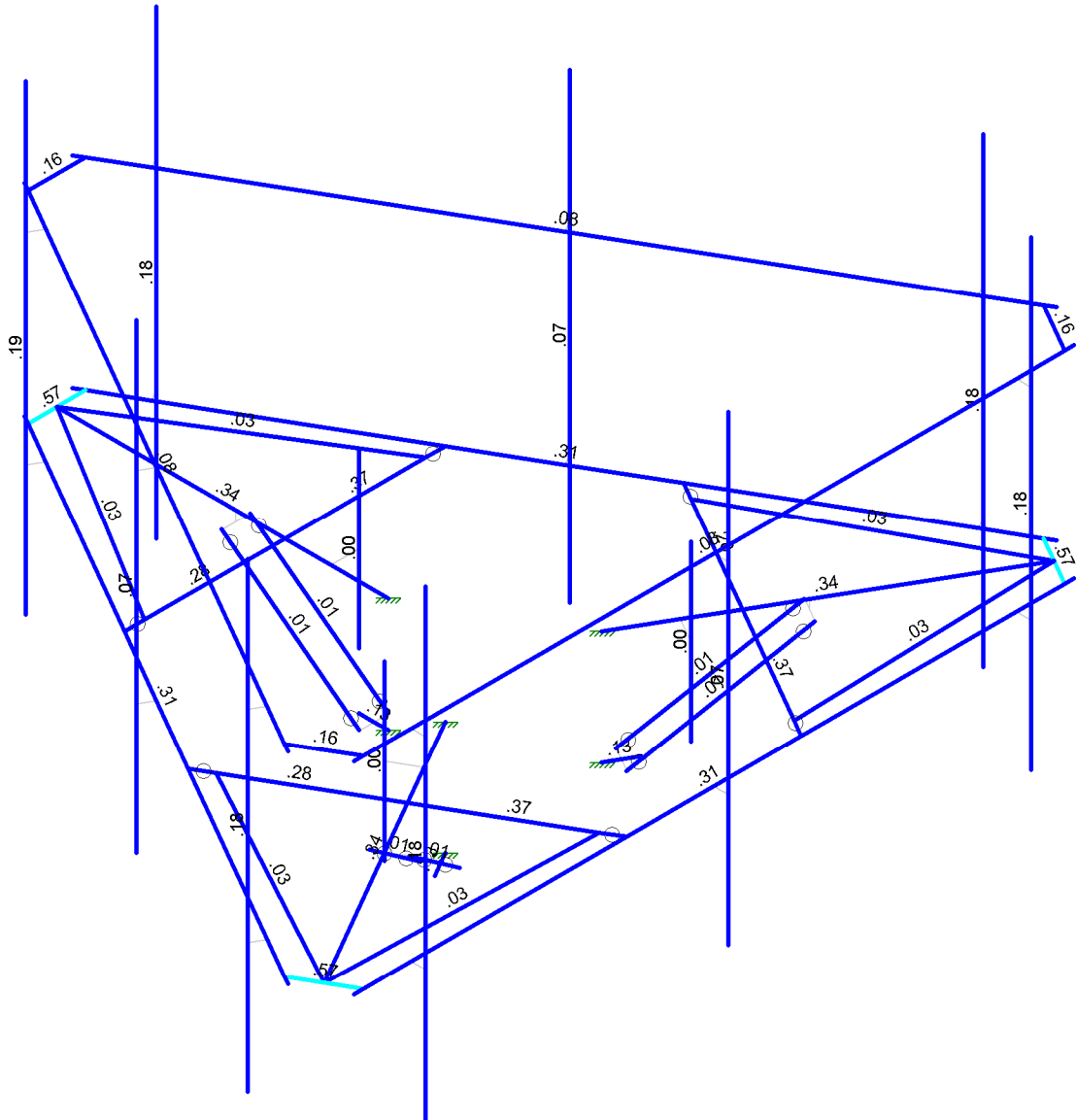
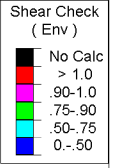
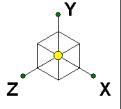
Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50



Member Code Checks Displayed (Enveloped)  
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Member Shear Checks Displayed (Enveloped)  
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CT1125

NORTH WATERBURY

SK - 6

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Company : Hudson Design Group, LLC  
 Designer : RD  
 Job Number : CT1125  
 Model Name : NORTH WATERBURY

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**(Global) Model Settings**

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISACONNECTION CODE	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	AA ADM1-15: LRFD - Building
Stainless Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parame Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR SET ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8



**(Global) Model Settings, Continued**

Seismic Code	ASCE 7-16
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

**Hot Rolled Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (/1...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B RECT	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A500 Gr.C RND	29000	11154	.3	.65	.527	46	1.4	62	1.3
7	A500 Gr.C RECT	29000	11154	.3	.65	.527	50	1.4	62	1.3
8	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
9	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
10	A913 Gr.65	29000	11154	.3	.65	.49	65	1.1	80	1.1

**Hot Rolled Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	PIPE 2.0	PIPE 2.0	None	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
2	PIPE 2.5X	PIPE 2.5X	None	None	A53 Gr.B	Typical	2.1	1.83	1.83	3.66
3	PIPE 2.5	PIPE 2.5	None	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
4	L3X3X4	L3X3X4	None	None	A36 Gr.36	Typical	1.44	1.23	1.23	.031
5	L2x2x4	L2x2x4	None	None	A36 Gr.36	Typical	.944	.346	.346	.021
6	PL 6x1/2	PL6x1/2	None	None	A36 Gr.36	Typical	3	.063	9	.237
7	PIPE 3.0	PIPE 3.0	None	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
8	C3x2x1/4	C3x2x1/4	None	None	A36 Gr.36	Typical	1.625	.631	2.221	.031
9	HSS4X4X4_A1085	HSS4X4X4_A...	None	None	A500 Gr.B...	Typical	3.758	8.843	8.843	13.206

**Joint Boundary Conditions**

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N41						
2	N5	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction



**Joint Boundary Conditions (Continued)**

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
3	N12	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N108						
6	N109						
7	N110	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
8	N111						
9	N112						
10	N116						
11	N117						
12	N118	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
13	N119						
14	N120						
15	N124						
16	N125						
17	N126	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
18	N127						
19	N128						
20	N129						
21	N130						
22	N131						
23	N132						
24	N133						
25	N134						
26	N135						
27	N136						
28	N137						
29	N138						
30	N139						

**Member Primary Data**

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N3	N1			PIPE 3.0	None	None	A53 Gr.B	Typical
2	M2	N3	N2			L2x2x4	None	None	A36 Gr.36	Typical
3	M3	N3	N4			L2x2x4	None	None	A36 Gr.36	Typical
4	M4	N37	N5			PIPE 3.0	None	None	A53 Gr.B	Typical
5	M5	N6	N7			PIPE 3.0	None	None	A53 Gr.B	Typical
6	M6	N8	N9			PIPE 3.0	None	None	A53 Gr.B	Typical
7	M7	N10	N11			PIPE 3.0	None	None	A53 Gr.B	Typical
8	M8	N15	N12			PIPE 3.0	None	None	A53 Gr.B	Typical
9	M9	N13	N15			L2x2x4	None	None	A36 Gr.36	Typical
10	M10	N14	N15			L2x2x4	None	None	A36 Gr.36	Typical
11	M11	N16	N17			PL 6x1/2	None	None	A36 Gr.36	Typical
12	M12	N18	N19			PL 6x1/2	None	None	A36 Gr.36	Typical
13	M13	N20	N21			PL 6x1/2	None	None	A36 Gr.36	Typical
14	M14	N22	N23			PIPE 2.0	None	None	A53 Gr.B	Typical
15	M15	N24	N25		180	L3X3X4	None	None	A36 Gr.36	Typical
16	M16	N26	N27			PIPE 2.0	None	None	A53 Gr.B	Typical
17	M17	N28	N29		180	L3X3X4	None	None	A36 Gr.36	Typical
18	M18	N30	N31			PIPE 2.0	None	None	A53 Gr.B	Typical
19	M19	N32	N33		180	L3X3X4	None	None	A36 Gr.36	Typical
20	M20	N37	N34			L2x2x4	None	None	A36 Gr.36	Typical
21	M21	N35	N48		180	C3x2x1/4	None	None	A36 Gr.36	Typical
22	M22	N37	N38			L2x2x4	None	None	A36 Gr.36	Typical
23	M23	N43	N47			C3x2x1/4	None	None	A36 Gr.36	Typical
24	M24	N45	N49			C3x2x1/4	None	None	A36 Gr.36	Typical



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 Designer : RD  
 Job Number : CT1125  
 Model Name : NORTH WATERBURY

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**Member Primary Data (Continued)**

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
25	M25	N47	N44			C3x2x1/4	None	None	A36 Gr.36	Typical
26	M26	N48	N36		180	C3x2x1/4	None	None	A36 Gr.36	Typical
27	M27	N49	N46			C3x2x1/4	None	None	A36 Gr.36	Typical
28	M28	N57	N65			RIGID	None	None	RIGID	Typical
29	M29	N56	N64			RIGID	None	None	RIGID	Typical
30	M30	N50	N61			RIGID	None	None	RIGID	Typical
31	M31	N60	N66			RIGID	None	None	RIGID	Typical
32	M32	N55	N63			RIGID	None	None	RIGID	Typical
33	M33	N54	N62			RIGID	None	None	RIGID	Typical
34	M34	N68	N72			PIPE 2.5	None	None	A53 Gr.B	Typical
35	M35	N69	N70			PIPE 2.5X	None	None	A53 Gr.B	Typical
36	M36	N67	N71			PIPE 2.5	None	None	A53 Gr.B	Typical
37	M37	N76	N81			RIGID	None	None	RIGID	Typical
38	M38	N75	N80			RIGID	None	None	RIGID	Typical
39	M39	N51	N77			RIGID	None	None	RIGID	Typical
40	M40	N58	N82			RIGID	None	None	RIGID	Typical
41	M41	N74	N79			RIGID	None	None	RIGID	Typical
42	M42	N73	N78			RIGID	None	None	RIGID	Typical
43	M43	N84	N88			PIPE 2.5	None	None	A53 Gr.B	Typical
44	M44	N85	N86			PIPE 2.5X	None	None	A53 Gr.B	Typical
45	M45	N83	N87			PIPE 2.5	None	None	A53 Gr.B	Typical
46	M46	N92	N97			RIGID	None	None	RIGID	Typical
47	M47	N91	N96			RIGID	None	None	RIGID	Typical
48	M48	N52	N93			RIGID	None	None	RIGID	Typical
49	M49	N59	N98			RIGID	None	None	RIGID	Typical
50	M50	N90	N95			RIGID	None	None	RIGID	Typical
51	M51	N89	N94			RIGID	None	None	RIGID	Typical
52	M52	N100	N104			PIPE 2.5	None	None	A53 Gr.B	Typical
53	M53	N101	N102			PIPE 2.5X	None	None	A53 Gr.B	Typical
54	M54	N99	N103			PIPE 2.5	None	None	A53 Gr.B	Typical
55	M55	N40	N105			RIGID	None	None	RIGID	Typical
56	M56	N106	N107			RIGID	None	None	RIGID	Typical
57	M57	N109	N108			RIGID	None	None	RIGID	Typical
58	M58	N111	N110			HSS4X4X4 A...	None	None	A500 Gr.B...	Typical
59	M59	N106	N109		90	L3X3X4	None	None	A36 Gr.36	Typical
60	M60	N107	N108		180	L3X3X4	None	None	A36 Gr.36	Typical
61	M61	N42	N113			RIGID	None	None	RIGID	Typical
62	M62	N114	N115			RIGID	None	None	RIGID	Typical
63	M63	N117	N116			RIGID	None	None	RIGID	Typical
64	M64	N119	N118			HSS4X4X4 A...	None	None	A500 Gr.B...	Typical
65	M65	N114	N117		90	L3X3X4	None	None	A36 Gr.36	Typical
66	M66	N115	N116		180	L3X3X4	None	None	A36 Gr.36	Typical
67	M67	N39	N121			RIGID	None	None	RIGID	Typical
68	M68	N122	N123			RIGID	None	None	RIGID	Typical
69	M69	N125	N124			RIGID	None	None	RIGID	Typical
70	M70	N127	N126			HSS4X4X4 A...	None	None	A500 Gr.B...	Typical
71	M71	N122	N125		90	L3X3X4	None	None	A36 Gr.36	Typical
72	M72	N123	N124		180	L3X3X4	None	None	A36 Gr.36	Typical
73	M73	N128	N129			RIGID	None	None	RIGID	Typical
74	M74	N131	N130			PIPE 2.0	None	None	A53 Gr.B	Typical
75	M75	N132	N133			RIGID	None	None	RIGID	Typical
76	M76	N135	N134			PIPE 2.0	None	None	A53 Gr.B	Typical
77	M77	N136	N137			RIGID	None	None	RIGID	Typical
78	M78	N139	N138			PIPE 2.0	None	None	A53 Gr.B	Typical



**Member Advanced Data**

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes	** NA **			None
2	M2						Yes	** NA **			None
3	M3						Yes	** NA **			None
4	M4						Yes	** NA **			None
5	M5						Yes	** NA **			None
6	M6						Yes	** NA **			None
7	M7						Yes	** NA **			None
8	M8						Yes	** NA **			None
9	M9						Yes	** NA **			None
10	M10						Yes	** NA **			None
11	M11						Yes	** NA **			None
12	M12						Yes	** NA **			None
13	M13						Yes	** NA **			None
14	M14						Yes	** NA **			None
15	M15						Yes	** NA **			None
16	M16						Yes	** NA **			None
17	M17						Yes	** NA **			None
18	M18						Yes	** NA **			None
19	M19						Yes	** NA **			None
20	M20						Yes	** NA **			None
21	M21	BenPIN					Yes	** NA **			None
22	M22						Yes	** NA **			None
23	M23	BenPIN					Yes	** NA **			None
24	M24	BenPIN					Yes	** NA **			None
25	M25		BenPIN				Yes	** NA **			None
26	M26		BenPIN				Yes	** NA **			None
27	M27		BenPIN				Yes	** NA **			None
28	M28		OOOXOO				Yes	** NA **			None
29	M29						Yes	** NA **			None
30	M30						Yes	** NA **			None
31	M31		OOOXOO				Yes	** NA **			None
32	M32		OOOXOO				Yes	** NA **			None
33	M33						Yes	** NA **			None
34	M34						Yes	** NA **			None
35	M35						Yes	** NA **			None
36	M36						Yes	** NA **			None
37	M37		OOOXOO				Yes	** NA **			None
38	M38						Yes	** NA **			None
39	M39						Yes	** NA **			None
40	M40		OOOXOO				Yes	** NA **			None
41	M41		OOOXOO				Yes	** NA **			None
42	M42						Yes	** NA **			None
43	M43						Yes	** NA **			None
44	M44						Yes	** NA **			None
45	M45						Yes	** NA **			None
46	M46		OOOXOO				Yes	** NA **			None
47	M47						Yes	** NA **			None
48	M48						Yes	** NA **			None
49	M49		OOOXOO				Yes	** NA **			None
50	M50		OOOXOO				Yes	** NA **			None
51	M51						Yes	** NA **			None
52	M52						Yes	** NA **			None
53	M53						Yes	** NA **			None
54	M54						Yes	** NA **			None
55	M55						Yes	** NA **			None
56	M56						Yes	** NA **			None





**Member Advanced Data (Continued)**

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
57	M57						Yes	** NA **			None
58	M58						Yes	** NA **			None
59	M59	BenPIN	BenPIN				Yes	** NA **			None
60	M60	BenPIN	BenPIN				Yes	** NA **			None
61	M61						Yes	** NA **			None
62	M62						Yes	** NA **			None
63	M63						Yes	** NA **			None
64	M64						Yes	** NA **			None
65	M65	BenPIN	BenPIN				Yes	** NA **			None
66	M66	BenPIN	BenPIN				Yes	** NA **			None
67	M67						Yes	** NA **			None
68	M68						Yes	** NA **			None
69	M69						Yes	** NA **			None
70	M70						Yes	** NA **			None
71	M71	BenPIN	BenPIN				Yes	** NA **			None
72	M72	BenPIN	BenPIN				Yes	** NA **			None
73	M73						Yes	** NA **			None
74	M74						Yes	** NA **			None
75	M75						Yes	** NA **			None
76	M76						Yes	** NA **			None
77	M77						Yes	** NA **			None
78	M78						Yes	** NA **			None

**Hot Rolled Steel Design Parameters**

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	PIPE 3.0	68.949			Lbyy						Lateral
2	M2	L2x2x4	55.759			Lbyy						Lateral
3	M3	L2x2x4	55.759			Lbyy						Lateral
4	M4	PIPE 3.0	68.949			Lbyy						Lateral
5	M5	PIPE 3.0	150			Lbyy						Lateral
6	M6	PIPE 3.0	150			Lbyy						Lateral
7	M7	PIPE 3.0	150			Lbyy						Lateral
8	M8	PIPE 3.0	68.95			Lbyy						Lateral
9	M9	L2x2x4	55.76			Lbyy						Lateral
10	M10	L2x2x4	55.76			Lbyy						Lateral
11	M11	PL 6x1/2	12.001			Lbyy						Lateral
12	M12	PL 6x1/2	12.001			Lbyy						Lateral
13	M13	PL 6x1/2	12			Lbyy						Lateral
14	M14	PIPE 2.0	150			Lbyy						Lateral
15	M15	L3X3X4	12.001			Lbyy						Lateral
16	M16	PIPE 2.0	150			Lbyy						Lateral
17	M17	L3X3X4	12			Lbyy						Lateral
18	M18	PIPE 2.0	150			Lbyy						Lateral
19	M19	L3X3X4	12.001			Lbyy						Lateral
20	M20	L2x2x4	55.759			Lbyy						Lateral
21	M21	C3x2x1/4	33.414			Lbyy						Lateral
22	M22	L2x2x4	55.759			Lbyy						Lateral
23	M23	C3x2x1/4	33.413			Lbyy						Lateral
24	M24	C3x2x1/4	33.413			Lbyy						Lateral
25	M25	C3x2x1/4	33.413									Lateral
26	M26	C3x2x1/4	33.412									Lateral
27	M27	C3x2x1/4	33.413									Lateral
28	M34	PIPE 2.5	96									Lateral
29	M35	PIPE 2.5X	96									Lateral
30	M36	PIPE 2.5	96									Lateral



**Hot Rolled Steel Design Parameters (Continued)**

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
31	M43	PIPE 2.5	96									Lateral
32	M44	PIPE 2.5X	96									Lateral
33	M45	PIPE 2.5	96									Lateral
34	M52	PIPE 2.5	96									Lateral
35	M53	PIPE 2.5X	96									Lateral
36	M54	PIPE 2.5	96									Lateral
37	M58	HSS4X4X4...	6									Lateral
38	M59	L3X3X4	35.98									Lateral
39	M60	L3X3X4	35.98									Lateral
40	M64	HSS4X4X4...	6									Lateral
41	M65	L3X3X4	35.98									Lateral
42	M66	L3X3X4	35.98									Lateral
43	M70	HSS4X4X4...	6									Lateral
44	M71	L3X3X4	35.98									Lateral
45	M72	L3X3X4	35.98									Lateral
46	M74	PIPE 2.0	36									Lateral
47	M76	PIPE 2.0	36									Lateral
48	M78	PIPE 2.0	36									Lateral

**Basic Load Cases**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
1	Self We	DL		-1.1					
2	We	DL					38	45	3
3	Ice We	DL					38	45	3
4	W0	WL					38	45	
5	W30	WL					76	90	
6	W60	WL					76	90	
7	W90	WL					38	45	
8	W120	WL					76	90	
9	W150	WL					76	90	
10	W0 + Ice	WL					38	45	
11	W30 + Ice	WL					76	90	
12	W60 + Ice	WL					76	90	
13	W90 + Ice	WL					38	45	
14	W120 + Ice	WL					76	90	
15	W150 + Ice	WL					76	90	
16	500lbs LM 1	LL				1			
17	500lbs LM 2	LL				1			
18	500lbs LM 3	LL				1			
19	500lbs LM 4	LL							
20	250lbs LV 5	LL				1			
21	250lbs LV 6	LL				1			
22	E0	EL	-1				38		
23	E90	EL			.1		38		
24	BLC 2 Transient Area ...	None						19	
25	BLC 3 Transient Area ...	None						19	

**Load Combinations**

	Description	S...	P...	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	Dead	Yes	Y		1	1.4	2	1.4	0	0										
2	Dead + Wind 0	Yes	Y		1	1.2	2	1.2	4	1	0									
3	Dead + Wind 30	Yes	Y		1	1.2	2	1.2	5	1	0									
4	Dead + Wind 60	Yes	Y		1	1.2	2	1.2	6	1	0									
5	Dead + Wind 90	Yes	Y		1	1.2	2	1.2	7	1	0									



**Load Combinations (Continued)**

Description	S...	P...	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
6 Dead + Wind 120	Yes	Y		1	1.2	2	1.2	8	1	0													
7 Dead + Wind 150	Yes	Y		1	1.2	2	1.2	9	1	0													
8 Dead + Wind 180	Yes	Y		1	1.2	2	1.2	4	-1	0													
9 Dead + Wind 210	Yes	Y		1	1.2	2	1.2	5	-1	0													
10 Dead + Wind 240	Yes	Y		1	1.2	2	1.2	6	-1	0													
11 Dead + Wind 270	Yes	Y		1	1.2	2	1.2	7	-1	0													
12 Dead + Wind 300	Yes	Y		1	1.2	2	1.2	8	-1	0													
13 Dead + Wind 330	Yes	Y		1	1.2	2	1.2	9	-1	0													
14 Dead + Ice + Wind Ice 0	Yes	Y		1	1.2	2	1.2	10	1	3	1												
15 Dead + Ice + Wind Ice 30	Yes	Y		1	1.2	2	1.2	11	1	3	1												
16 Dead + Ice + Wind Ice 60	Yes	Y		1	1.2	2	1.2	12	1	3	1												
17 Dead + Ice + Wind Ice 90	Yes	Y		1	1.2	2	1.2	13	1	3	1												
18 Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	14	1	3	1												
19 Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	15	1	3	1												
20 Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	10	-1	3	1												
21 Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	11	-1	3	1												
22 Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	12	-1	3	1												
23 Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	13	-1	3	1												
24 Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	14	-1	3	1												
25 Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	15	-1	3	1												
26 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	4	.058												
27 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	5	.058												
28 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	6	.058												
29 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	7	.058												
30 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	8	.058												
31 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	9	.058												
32 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	4	-0...												
33 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	5	-0...												
34 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	6	-0...												
35 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	7	-0...												
36 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	8	-0...												
37 Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	9	-0...												
38 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	4	.058												
39 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	5	.058												
40 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	6	.058												
41 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	7	.058												
42 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	8	.058												
43 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	9	.058												
44 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	4	-0...												
45 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	5	-0...												
46 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	6	-0...												
47 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	7	-0...												
48 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	8	-0...												
49 Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	9	-0...												
50 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	4	.058												
51 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	5	.058												
52 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	6	.058												
53 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	7	.058												
54 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	8	.058												
55 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	9	.058												
56 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	4	-0...												
57 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	5	-0...												
58 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	6	-0...												
59 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	7	-0...												
60 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	8	-0...												
61 Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	9	-0...												
62 Dead + LM5004 + Wred...	Yes	Y		1	1.2	2	1.2	19	1.5	4	.058												



**Load Combinations (Continued)**

Description	S...	P...	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
63	Dead + LM5004 + Wred...	Yes	Y		1	1.2	2	1.2	19	1.5	5	.058											
64	Dead + LM5004 + Wred...	Yes	Y		1	1.2	2	1.2	19	1.5	6	.058											
65	Dead + LM5004 + Wred...	Yes	Y		1	1.2	2	1.2	19	1.5	7	.058											
66	Dead + LM5004 + Wred...	Yes	Y		1	1.2	2	1.2	19	1.5	8	.058											
67	Dead + LM5004 + Wred...	Yes	Y		1	1.2	2	1.2	19	1.5	9	.058											
68	Dead + LM5004 + Wred...	Yes	Y		1	1.2	2	1.2	19	1.5	4	-0...											
69	Dead + LM5004 + Wred...	Yes	Y		1	1.2	2	1.2	19	1.5	5	-0...											
70	Dead + LM5004 + Wred...	Yes	Y		1	1.2	2	1.2	19	1.5	6	-0...											
71	Dead + LM5004 + Wred...	Yes	Y		1	1.2	2	1.2	19	1.5	7	-0...											
72	Dead + LM5004 + Wred...	Yes	Y		1	1.2	2	1.2	19	1.5	8	-0...											
73	Dead + LM5004 + Wred...	Yes	Y		1	1.2	2	1.2	19	1.5	9	-0...											
74	Dead + LV2505	Yes	Y		1	1.2	2	1.2	20	1.5	0												
75	Dead + LV2506	Yes	Y		1	1.2	2	1.2	21	1.5	0												
76	Service 60mph Wind 0	Yes	Y		1	1	2	1	4	.23	0												
77	(1.2 + 0.2SDS)Dead + 1...	Yes	Y		1	1.24	2	1.24	22	1	23												
78	(1.2 + 0.2SDS)Dead + 1...	Yes	Y		1	1.24	2	1.24	22	.866	23	.5											
79	(1.2 + 0.2SDS)Dead + 1...	Yes	Y		1	1.24	2	1.24	22	.5	23	.866											
80	(1.2 + 0.2SDS)Dead + 1...	Yes	Y		1	1.24	2	1.24	22		23	1											
81	(1.2 + 0.2SDS)Dead + 1...	Yes	Y		1	1.24	2	1.24	22	-.5	23	.866											
82	(1.2 + 0.2SDS)Dead + 1...	Yes	Y		1	1.24	2	1.24	22	-.8...	23	.5											
83	(1.2 + 0.2SDS)Dead + 1...	Yes	Y		1	1.24	2	1.24	22		23												
84	(1.2 + 0.2SDS)Dead + 1...	Yes	Y		1	1.24	2	1.24	22	-.8...	23	-.5											
85	(1.2 + 0.2SDS)Dead + 1...	Yes	Y		1	1.24	2	1.24	22	-.5	23	-.8...											
86	(1.2 + 0.2SDS)Dead + 1...	Yes	Y		1	1.24	2	1.24	22		23	-1											
87	(1.2 + 0.2SDS)Dead + 1...	Yes	Y		1	1.24	2	1.24	22	.5	23	-.8...											
88	(1.2 + 0.2SDS)Dead + 1...	Yes	Y		1	1.24	2	1.24	22	.866	23	-.5											

**Envelope Joint Reactions**

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-in]	LC	MY [k-in]	LC	MZ [k-in]	LC	
1	N5	max	9805.187	2	733.453	8	2158.09	11	4.306	11	29.372	11	10.956	2
2		min	-5927.728	8	-1085.275	2	-2159.482	5	-3.757	5	-29.671	5	-7.098	8
3	N12	max	2999.871	12	748.416	12	5262.283	12	9.627	7	29.23	3	5.001	11
4		min	-4942.379	6	-1070.459	6	-8635.529	6	-6.644	13	-29.019	9	-7.296	5
5	N1	max	3087.871	4	752.637	4	8625.103	10	6.396	3	28.701	7	5.618	5
6		min	-5032.38	10	-1067.036	10	-5253.887	4	-9.908	9	-28.987	13	-6.835	11
7	N110	max	1342.758	8	4432.425	2	60.474	11	12.547	11	16.723	11	3.108	8
8		min	-5760.005	2	-1036.115	8	-60.243	5	-12.659	5	-16.876	5	-13.302	2
9	N118	max	2881.926	6	4435.738	6	4992.299	6	3.639	10	17.095	3	13.313	9
10		min	-667.081	12	-1029.665	12	-1155.49	12	-12.727	4	-16.507	9	-8.557	3
11	N126	max	2879.738	10	4432.891	10	1155.835	4	12.593	12	16.677	7	13.394	7
12		min	-667.44	4	-1030.027	4	-4989.235	10	-3.698	6	-16.779	13	-8.321	13
13	Totals:	max	9267.965	2	9188.822	21	9403.27	11						
14		min	-9267.959	8	3826.343	76	-9403.263	5						

**Envelope AISC 15th(360-16): LRFD Steel Code Checks**

Member	Shape	Code ...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [...]	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	M44	PIPE 2.5X	.861	69	9	.066	69	10	38499.165	66150	55.755	55.755	2...	H1-1b
2	M53	PIPE 2.5X	.860	69	13	.066	69	2	38499.165	66150	55.755	55.755	2...	H1-1b
3	M35	PIPE 2.5X	.860	69	5	.065	69	6	38499.165	66150	55.755	55.755	2...	H1-1b
4	M45	PIPE 2.5	.776	69	10	.181	27	12	30038.461	50715	43.155	43.155	2...	H1-1b
5	M54	PIPE 2.5	.775	69	2	.181	27	4	30038.461	50715	43.155	43.155	2...	H1-1b
6	M36	PIPE 2.5	.775	69	6	.181	27	8	30038.461	50715	43.155	43.155	1...	H1-1b
7	M8	PIPE 3.0	.768	36.629	6	.337	36.629	3	54642.259	65205	68.985	68.985	1...	H1-1b
8	M1	PIPE 3.0	.768	36.629	10	.335	36.629	7	54642.531	65205	68.985	68.985	1...	H1-1b



**Envelope AISC 15th(360-16): LRFD Steel Code Checks (Continued)**

Member	Shape	Code ...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [...]	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn	
9	M4	PIPE 3.0	.768	36.629	2	.336	36.629	11	54642.545	65205	68.985	68.985	1...	H1-1b	
10	M52	PIPE 2.5	.762	69	6	.185	27	4	30038.461	50715	43.155	43.155	2...	H1-1b	
11	M34	PIPE 2.5	.761	69	10	.185	27	8	30038.461	50715	43.155	43.155	1...	H1-1b	
12	M43	PIPE 2.5	.761	69	2	.185	27	12	30038.461	50715	43.155	43.155	2...	H1-1b	
13	M2	L2x2x4	.510	0	9	.028	0	y	8	10273.106	30585.6	8.291	18.163	1...	H2-1
14	M22	L2x2x4	.509	0	13	.028	0	y	12	10273.03	30585.6	8.291	18.174	1...	H2-1
15	M9	L2x2x4	.499	55.76	7	.028	0	z	9	10272.926	30585.6	8.291	18.175	1...	H2-1
16	M27	C3x2x1/4	.487	0	5	.367	29.236	z	2	43746.896	52650	24.477	57.206	1...	H1-1b
17	M23	C3x2x1/4	.484	33.413	11	.367	4.177	z	2	43746.865	52650	24.477	57.206	1...	H1-1b
18	M26	C3x2x1/4	.484	0	3	.368	29.236	z	6	43747.018	52650	24.477	57.206	1...	H1-1b
19	M10	L2x2x4	.482	55.76	5	.029	55.76	y	3	10272.928	30585.6	8.291	18.435	1...	H2-1
20	M21	C3x2x1/4	.477	33.414	13	.277	4.177	z	10	43746.771	52650	24.477	57.206	1...	H1-1b
21	M25	C3x2x1/4	.476	0	9	.275	29.236	z	6	43746.936	52650	24.477	57.206	1...	H1-1b
22	M24	C3x2x1/4	.474	33.413	7	.277	4.177	z	10	43746.886	52650	24.477	57.206	1...	H1-1b
23	M3	L2x2x4	.472	0	11	.028	0	y	13	10272.995	30585.6	8.291	18.434	1...	H2-1
24	M20	L2x2x4	.471	0	3	.029	0	y	5	10273.117	30585.6	8.291	18.436	1...	H2-1
25	M11	PL6x1/2	.398	6	9	.573	6	y	13	67548.754	97200	12.15	145.8	1...	H1-1b
26	M5	PIPE 3.0	.387	137.5	9	.313	146.8...	6	28250.554	65205	68.985	68.985	1...	H1-1b	
27	M6	PIPE 3.0	.387	12.5	5	.312	3.125	z	2	28250.611	65205	68.985	68.985	1...	H1-1b
28	M13	PL6x1/2	.387	6	7	.573	6	y	9	67550.491	97200	12.15	145.8	1...	H1-1b
29	M7	PIPE 3.0	.386	12.5	13	.313	3.125	10	28250.611	65205	68.985	68.985	1...	H1-1b	
30	M12	PL6x1/2	.383	5.875	13	.574	5.875	y	5	67548.027	97200	12.15	145.8	1...	H1-1b
31	M18	PIPE 2.0	.360	139.062	10	.077	3.125	3	6295.438	32130	22.459	22.459	1...	H1-1b	
32	M16	PIPE 2.0	.359	139.062	6	.077	3.125	11	6295.438	32130	22.459	22.459	1...	H1-1b	
33	M14	PIPE 2.0	.359	139.062	10	.078	146.8...	7	6295.422	32130	22.459	22.459	1...	H1-1b	
34	M17	L3X3X4	.322	12	4	.164	0	z	3	45633.815	46656	20.258	45.069	1...	H2-1
35	M19	L3X3X4	.322	12.001	8	.165	0	z	7	45633.743	46656	20.258	45.069	1...	H2-1
36	M15	L3X3X4	.322	12.001	12	.165	0	z	11	45633.713	46656	20.258	45.069	1...	H2-1
37	M66	L3X3X4	.150	17.99	4	.009	35.98	z	8	38231.506	46656	20.258	43.9	1...	H2-1
38	M59	L3X3X4	.149	17.99	4	.009	35.98	y	12	38231.506	46656	20.258	43.9	1...	H2-1
39	M71	L3X3X4	.148	17.99	12	.009	35.98	y	8	38231.506	46656	20.258	43.9	1...	H2-1
40	M60	L3X3X4	.147	17.99	12	.009	0	z	12	38231.506	46656	20.258	43.9	1...	H2-1
41	M72	L3X3X4	.146	17.99	8	.009	35.98	z	8	38231.506	46656	20.258	43.9	1...	H2-1
42	M65	L3X3X4	.145	17.99	8	.009	0	y	8	38231.506	46656	20.258	43.9	1...	H2-1
43	M64	HSS4X4X4 ...	.113	6	4	.130	6	y	4	155401.7...	155561.7...	219.053	219.053	1...	H1-1b
44	M58	HSS4X4X4 ...	.111	6	4	.129	6	y	4	155401.7...	155561.7...	219.053	219.053	1...	H1-1b
45	M70	HSS4X4X4 ...	.111	6	12	.129	6	y	12	155401.7...	155561.7...	219.053	219.053	1...	H1-1b
46	M78	PIPE 2.0	.007	18	7	.002	18	7	28843.414	32130	22.459	22.459	1...	H1-1b	
47	M76	PIPE 2.0	.007	18	3	.002	18	3	28843.414	32130	22.459	22.459	1...	H1-1b	
48	M74	PIPE 2.0	.007	18	11	.002	18	11	28843.414	32130	22.459	22.459	1...	H1-1b	



**HUDSON**  
Design Group LLC

**Connection Check  
(Modified Conditions)**

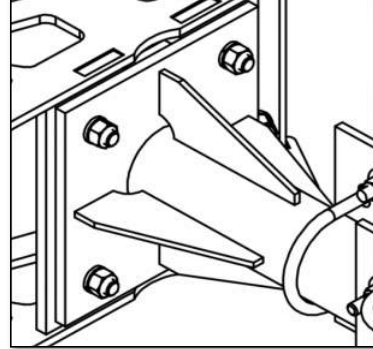


**SITE DETAILS**

Site Name/Code	CT1125 - NORTH WATERBURY
Date	05/05/2022
Engineer	RD

**CONNECTION PARAMETERS**

Number of bolts	4
b - width of member	3.5 in
d - height of member	3.5 in
B - horizontal bolt spacing	5 in
D - vertical bolt spacing	5 in
Bolt Diameter	5/8 in
Section Shape	Pipe
Weld Thickness	3/16 in
Tensile Area	$A_b = 0.31 \text{ in}^2$
Tensile Area	$A_n = 0.23 \text{ in}^2$
Grade	A325
Bolt Ultimate Strength	$F_{ub} = 120 \text{ ksi}$
Connection length reduction factor	$R_b = 1$



Connection Sketch/Photo

**FLANGE LOADS**

Loadcase #	5
Bending Moment	$M_{zz} = 2.28 \text{ kips-in}$
Bending Moment	$M_{yy} = 29.67 \text{ kips-in}$
Torsional Moment	$M_{xx} = 3.76 \text{ kips-in}$
Shear Force	$V_y = 0.20 \text{ kips}$
Shear Force	$V_z = 2.16 \text{ kips}$
Axial Force	$P_x = 1.90 \text{ kips}$

**BOLT CHECK****Bolt Tension Capacity**

$$\phi R_{nt} = 0.75 * F_{ub} * A_n$$

$$\phi R_{nt} = 20.3 \text{ kips}$$

**Bolt Shear Capacity**

$$\phi R_{nv} = 0.75 * 0.625 * 0.8 * F_{ub} * A_b * R_b$$

$$\phi R_{nv} = 13.8 \text{ kips}$$

**Maximum Bolt Tension**

$$T_{ub} = F_{Mxx} + F_{Mzz} + T_v/4$$

$$T_{ub} = 3.67 \text{ kips}$$

**Maximum Bolt Shear**

$$V_{ub} = \text{sqrt}((V_x/4)^2 + (V_y/4)^2) + F_{Myy}$$

$$V_{ub} = 0.81 \text{ kips}$$

Tension Ratio:

18.0% %

Shear Ratio:

5.8% %

PASS

PASS

$$(T_{ub} / \phi R_{nt})^2 + (V_{ub} / \phi R_{nv})^2 < 1.0$$

OK

Ratio

3.6%

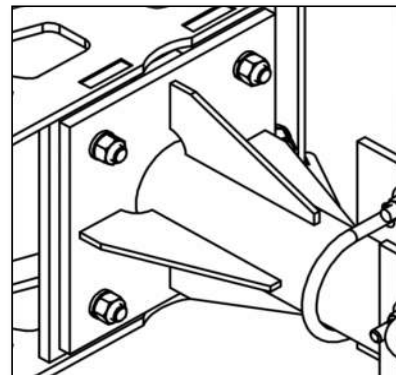
PASS

**WELD CHECK**

Filler Metal $F_{EXX}$	70 ksi
Weld Thk.	0.1875 in
Base metal $F_u$	58 ksi
Type of section	Pipe
Length of Section [b]	3.5 in
Length of Section [d]	3.5 in
$I_{total}$	11.00 in
$I_p$	33.67 in <sup>3</sup>
$S_z$	9.62 in <sup>2</sup>
$S_y$	9.62 in <sup>2</sup>
$R_{ux}$	3.49 kips/in
$R_{uy}$	0.21 kips/in
$R_{uz}$	0.39 kips/in
$R_u$	3.52 kips/in
Allowable Weld Stress	4.18 kips/in

Are stiffeners present?

No



84.3% PASS

Connection Sketch

# EXHIBIT 5



# Radio Frequency Exposure Analysis Report

August 3, 2022

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

AT&T Site Name: NORTH WATERBURY  
Site Number: CTL01125  
FA#: 10035415  
USID: 15071

Site Address: 299 SHEFFIELD STREET, WATERBURY, CT 06704

## Site Compliance Summary

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AT&T Compliance Status:	Compliant
Cumulative Calculated Power Density (Ground Level):	15.35366 $\mu\text{W}/\text{cm}^2$
Cumulative General Population % MPE (Ground Level):	1.53555%



August 3, 2022

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

RF Exposure Analysis for Site: **NORTH WATERBURY**

Centerline Communications, LLC (“Centerline”) was contracted to analyze the proposed AT&T facility at **299 SHEFFIELD STREET, WATERBURY, CT 06704** for the purpose of determining whether the predictive exposure from the proposed facility is within specified federal limits.

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

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

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

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



## **Calculation Methodology**

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

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



## **Data & Results**

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

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

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





**Maximum Calculated Cumulative Power Density (Location: approximately 305' southeast of site)**

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/Channel (watts)	ERP (watts)	Calculated Power Density ( $\mu\text{W}/\text{cm}^2$ )	General Population MPE Limit ( $\mu\text{W}/\text{cm}^2$ )	General Population % MPE
AT&T A 1	QUINTEL QD6616-7 V1	700	11.97	137.10	4.00	30.00	1889.26	0.00000	466.67	0.00000
AT&T A 1	QUINTEL QD6616-7 V1	1900	15.18	137.10	4.00	30.00	3951.86	0.00000	1000.00	0.00000
AT&T A 1	QUINTEL QD6616-7 V1	2100	15.36	137.10	4.00	45.00	6188.46	0.00000	1000.00	0.00000
AT&T A 1	QUINTEL QD6616-7 V1	700	11.93	137.10	2.00	30.00	935.93	0.00000	466.67	0.00000
AT&T A 2	Ericsson AIR6449	3700	23.45	136.10	1.00	108.40	23989.95	0.00001	1000.00	0.00000
AT&T A 3	Ericsson AIR6419	3450	23.45	139.10	1.00	108.40	23989.95	0.00001	1000.00	0.00000
AT&T A 4	KATHREIN 80010965	700	12.15	137.10	4.00	30.00	1968.71	0.00000	466.67	0.00000
AT&T A 4	KATHREIN 80010965	850	13.45	137.10	4.00	30.00	2655.71	0.00000	566.67	0.00000
AT&T A 4	KATHREIN 80010965	2300	15.85	137.10	4.00	18.00	2769.06	0.00000	1000.00	0.00000
AT&T B 5	QUINTEL QD6616-7 V1	700	11.97	137.10	4.00	30.00	1889.26	0.00017	466.67	0.00004
AT&T B 5	QUINTEL QD6616-7 V1	1900	14.89	137.10	4.00	30.00	3702.04	0.00037	1000.00	0.00004
AT&T B 5	QUINTEL QD6616-7 V1	2100	15.62	137.10	4.00	45.00	6563.15	0.00070	1000.00	0.00007
AT&T B 5	QUINTEL QD6616-7 V1	700	11.93	137.10	2.00	30.00	935.93	0.00010	466.67	0.00002
AT&T B 6	Ericsson AIR6449	3700	23.45	136.10	1.00	108.40	23989.95	0.00130	1000.00	0.00013
AT&T B 7	Ericsson AIR6419	3450	23.45	139.10	1.00	108.40	23989.95	0.00099	1000.00	0.00010
AT&T B 8	KATHREIN 80010965	700	11.85	137.10	4.00	30.00	1837.30	0.00037	466.67	0.00008
AT&T B 8	KATHREIN 80010965	850	13.35	137.10	4.00	30.00	2595.26	0.00039	566.67	0.00007
AT&T B 8	KATHREIN 80010965	2300	15.85	137.10	4.00	18.00	2769.06	0.00012	1000.00	0.00001
AT&T C 9	QUINTEL QD6616-7 V1	700	11.97	137.10	4.00	30.00	1889.26	0.00000	466.67	0.00000
AT&T C 9	QUINTEL QD6616-7 V1	1900	15.27	137.10	4.00	30.00	4036.47	0.00000	1000.00	0.00000
AT&T C 9	QUINTEL QD6616-7 V1	2100	15.40	137.10	4.00	45.00	6243.13	0.00000	1000.00	0.00000
AT&T C 9	QUINTEL QD6616-7 V1	700	11.93	137.10	2.00	30.00	935.93	0.00000	466.67	0.00000
AT&T C 10	Ericsson AIR6449	3700	23.45	136.10	1.00	108.40	23989.95	0.00001	1000.00	0.00000
AT&T C 11	Ericsson AIR6419	3450	23.45	139.10	1.00	108.40	23989.95	0.00001	1000.00	0.00000
AT&T C 12	KATHREIN 80010965	700	12.05	137.10	4.00	30.00	1923.89	0.00000	466.67	0.00000
AT&T C 12	KATHREIN 80010965	850	13.55	137.10	4.00	30.00	2717.57	0.00000	566.67	0.00000
AT&T C 12	KATHREIN 80010965	2300	15.85	137.10	4.00	18.00	2769.06	0.00000	1000.00	0.00000
Dish A 13	JMA MX08FRO665-21	1900	15.75	158.30	4.00	40.00	6013.40	0.00000	1000.00	0.00000
Dish A 13	JMA MX08FRO665-21	2000	15.75	158.30	4.00	40.00	6013.40	0.00000	1000.00	0.00000
Dish A 13	JMA MX08FRO665-21	2100	16.75	158.30	4.00	40.00	7570.42	0.00000	1000.00	0.00000
Dish B 14	JMA MX08FRO665-21	1900	15.75	158.30	4.00	40.00	6013.40	0.00018	1000.00	0.00002
Dish B 14	JMA MX08FRO665-21	2000	15.75	158.30	4.00	40.00	6013.40	0.00016	1000.00	0.00002
Dish B 14	JMA MX08FRO665-21	2100	16.75	158.30	4.00	40.00	7570.42	0.00015	1000.00	0.00002
Dish C 15	JMA MX08FRO665-21	1900	15.75	158.30	4.00	40.00	6013.40	0.00000	1000.00	0.00000
Dish C 15	JMA MX08FRO665-21	2000	15.75	158.30	4.00	40.00	6013.40	0.00000	1000.00	0.00000



Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density ( $\mu\text{W}/\text{cm}^2$ )	General Population MPE Limit ( $\mu\text{W}/\text{cm}^2$ )	General Population % MPE
Dish C 15	JMA MX08FRO665-21	2100	16.75	158.30	4.00	40.00	7570.42	0.00000	1000.00	0.00000
Verizon A 16	ANDREW DB844G65ZAXY	850	13.50	148.20	4.00	20.00	1790.98	0.00000	566.67	0.00000
Verizon A 17	JMA MX06FRO660-03	700	12.05	148.20	2.00	40.00	1282.60	0.00000	466.67	0.00000
Verizon A 17	JMA MX06FRO660-03	850	12.05	148.20	2.00	40.00	1282.60	0.00000	566.67	0.00000
Verizon A 17	JMA MX06FRO660-03	1900	15.75	148.20	4.00	40.00	6013.40	0.00000	1000.00	0.00000
Verizon A 18	JMA MX06FRO660-03	700	12.05	148.20	2.00	40.00	1282.60	0.00000	466.67	0.00000
Verizon A 18	JMA MX06FRO660-03	850	12.05	148.20	2.00	40.00	1282.60	0.00000	566.67	0.00000
Verizon A 18	JMA MX06FRO660-03	2100	15.95	148.20	4.00	40.00	6296.80	0.00000	1000.00	0.00000
Verizon A 19	SAMSUNG MT6407	3700	23.35	148.20	4.00	50.00	43254.37	0.00005	1000.00	0.00001
Verizon A 20	ANDREW DB844G65ZAXY	850	13.50	148.20	3.00	20.00	1343.23	0.00000	566.67	0.00000
Verizon B 21	ANDREW DB844G65ZAXY	850	13.50	148.20	4.00	20.00	1790.98	0.00008	566.67	0.00002
Verizon B 22	JMA MX06FRO660-03	700	12.05	148.20	2.00	40.00	1282.60	0.00012	466.67	0.00003
Verizon B 22	JMA MX06FRO660-03	850	12.05	148.20	2.00	40.00	1282.60	0.00016	566.67	0.00003
Verizon B 22	JMA MX06FRO660-03	1900	15.75	148.20	4.00	40.00	6013.40	0.00021	1000.00	0.00002
Verizon B 23	JMA MX06FRO660-03	700	12.05	148.20	2.00	40.00	1282.60	0.00012	466.67	0.00003
Verizon B 23	JMA MX06FRO660-03	850	12.05	148.20	2.00	40.00	1282.60	0.00016	566.67	0.00003
Verizon B 23	JMA MX06FRO660-03	2100	15.95	148.20	4.00	40.00	6296.80	0.00025	1000.00	0.00002
Verizon B 24	SAMSUNG MT6407	3700	23.35	148.20	4.00	50.00	43254.37	0.00185	1000.00	0.00019
Verizon B 25	ANDREW DB844G65ZAXY	850	13.50	148.20	3.00	20.00	1343.23	0.00006	566.67	0.00001
Verizon C 26	ANDREW DB844G65ZAXY	850	13.50	148.20	4.00	20.00	1790.98	0.00000	566.67	0.00000
Verizon C 27	JMA MX06FRO660-03	700	12.05	148.20	2.00	40.00	1282.60	0.00000	466.67	0.00000
Verizon C 27	JMA MX06FRO660-03	850	12.05	148.20	2.00	40.00	1282.60	0.00000	566.67	0.00000
Verizon C 27	JMA MX06FRO660-03	1900	15.75	148.20	4.00	40.00	6013.40	0.00000	1000.00	0.00000
Verizon C 28	JMA MX06FRO660-03	700	12.05	148.20	2.00	40.00	1282.60	0.00000	466.67	0.00000
Verizon C 28	JMA MX06FRO660-03	850	12.05	148.20	2.00	40.00	1282.60	0.00000	566.67	0.00000
Verizon C 28	JMA MX06FRO660-03	2100	15.95	148.20	4.00	40.00	6296.80	0.00000	1000.00	0.00000
Verizon C 29	SAMSUNG MT6407	3700	23.35	148.20	4.00	50.00	43254.37	0.00004	1000.00	0.00000
Verizon C 30	ANDREW DB844G65ZAXY	850	13.50	148.20	3.00	20.00	1343.23	0.00000	566.67	0.00000
Sprint A 31	NOKIA AAHC	2500	20.82	127.00	4.00	30.00	14493.77	0.00005	1000.00	0.00001
Sprint A 32	COMMSCOPE NNVV-65B-R4	850	12.54	127.00	2.00	40.00	1435.79	0.00000	566.67	0.00000
Sprint A 32	COMMSCOPE NNVV-65B-R4	1900	14.68	127.00	2.00	60.00	3525.18	0.00000	1000.00	0.00000
Sprint A 33	DRAGONWAVE A-ANT-23G-2-C 2	23000	38.05	127.00	1.00	0.10	638.26	0.00000	1000.00	0.00000
Sprint B 34	NOKIA AAHC	2500	20.82	127.00	4.00	30.00	14493.77	0.00255	1000.00	0.00026
Sprint B 35	COMMSCOPE NNVV-65B-R4	850	12.54	127.00	2.00	40.00	1435.79	0.00014	566.67	0.00003
Sprint B 35	COMMSCOPE NNVV-65B-R4	1900	14.68	127.00	2.00	60.00	3525.18	0.00026	1000.00	0.00003
Sprint B 36	DRAGONWAVE A-ANT-23G-2-C 2	23000	38.05	127.00	1.00	0.10	638.26	0.00000	1000.00	0.00000



Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density ( $\mu\text{W}/\text{cm}^2$ )	General Population MPE Limit ( $\mu\text{W}/\text{cm}^2$ )	General Population % MPE
Sprint C 37	NOKIA AAHC	2500	20.82	127.00	4.00	30.00	14493.77	0.00000	1000.00	0.00000
Sprint C 38	COMMSCOPE NNVV-65B-R4	850	12.54	127.00	2.00	40.00	1435.79	0.00000	566.67	0.00000
Sprint C 38	COMMSCOPE NNVV-65B-R4	1900	14.68	127.00	2.00	60.00	3525.18	0.00000	1000.00	0.00000
							<b>Cumulative Power Density:</b>	<b>15.35366 <math>\mu\text{W}/\text{cm}^2</math></b>	<b>Cumulative % MPE:</b>	<b>1.53555%</b>



## Summary

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

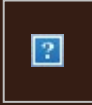
Katrina Styx  
RF EME Technical Writer  
Centerline Communications, LLC

A handwritten signature in black ink, appearing to read "Katrina Styx", is positioned below the typed name.

# EXHIBIT 6

**From:** [UPS](#)  
**To:** [Evan Renwick](#)  
**Subject:** UPS Delivery Notification, Tracking Number 1Z9Y45030321024707  
**Date:** Friday, August 5, 2022 10:56:27 AM

---



**Hello, your package has been delivered.**

**Delivery Date:** Friday, 08/05/2022

**Delivery Time:** 10:55 AM

**Signed by:** JAY

## CENTERLINE SITE ACQUISITION

<b>Tracking Number:</b>	<a href="#">1Z9Y45030321024707</a>
<b>Ship To:</b>	MAYOR'S OFFICE 235 GRAND STREET, 2ND FLOOR CITY HALL BUILDING WATERBURY, CT 067021915 US
<b>Number of Packages:</b>	1
<b>UPS Service:</b>	UPS Ground
<b>Package Weight:</b>	1.0 LBS
<b>Reference Number:</b>	CT1125-CSC_MAYOR

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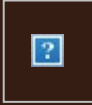


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**From:** [UPS](#)  
**To:** [Evan Renwick](#)  
**Subject:** UPS Delivery Notification, Tracking Number 1Z9Y45030321302246  
**Date:** Friday, August 5, 2022 12:10:35 PM

---



**Hello, your package has been delivered.**

**Delivery Date:** Friday, 08/05/2022

**Delivery Time:** 12:08 PM

**Signed by:** FARRELL

## CENTERLINE SITE ACQUISITION

<b>Tracking Number:</b>	<a href="#">1Z9Y45030321302246</a>
<b>Ship To:</b>	ZONING DEPARTMENT 185 SOUTH MAIN STREET, 5TH FLOOR 1 JEFFERSON SQUARE WATERBURY, CT 067061012 US
<b>Number of Packages:</b>	1
<b>UPS Service:</b>	UPS Ground
<b>Package Weight:</b>	1.0 LBS
<b>Reference Number:</b>	CT1125-CSC_ZEO

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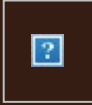
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**From:** [UPS](#)  
**To:** [Evan Renwick](#)  
**Subject:** UPS Delivery Notification, Tracking Number 1Z9Y45030323792535  
**Date:** Friday, August 5, 2022 12:10:32 PM

---



**Hello, your package has been delivered.**

**Delivery Date:** Friday, 08/05/2022

**Delivery Time:** 12:08 PM

**Signed by:** FARRELL

## CENTERLINE SITE ACQUISITION

<b>Tracking Number:</b>	<a href="#">1Z9Y45030323792535</a>
<b>Ship To:</b>	PLANNING DEPARTMENT 185 SOUTH MAIN STREET, 5TH FLOOR 1 JEFFERSON SQUARE WATERBURY, CT 067061012 US
<b>Number of Packages:</b>	1
<b>UPS Service:</b>	UPS Ground
<b>Package Weight:</b>	1.0 LBS
<b>Reference Number:</b>	CT1125-CSC_CITY PLANNER

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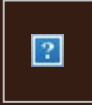
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**From:** [UPS](#)  
**To:** [Evan Renwick](#)  
**Subject:** UPS Delivery Notification, Tracking Number 1Z9Y45030333776927  
**Date:** Friday, August 5, 2022 12:03:21 PM

---



**Hello, your package has been delivered.**

**Delivery Date:** Friday, 08/05/2022

**Delivery Time:** 12:01 PM

**Signed by:** CHRIS

## CENTERLINE SITE ACQUISITION

<b>Tracking Number:</b>	<a href="#">1Z9Y45030333776927</a>
<b>Ship To:</b>	LEVEL DEVELOPMENT CORPORATION 293 SHEFFIELD STREET WATERBURY, CT 067041010 US
<b>Number of Packages:</b>	1
<b>UPS Service:</b>	UPS Ground
<b>Package Weight:</b>	1.0 LBS
<b>Reference Number:</b>	CT1125-CSC_LEVEL DEVELOP. CORP

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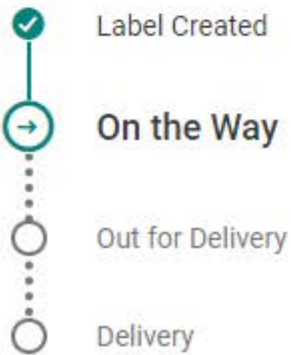
Your shipment from



## CENTERLINE SITE ACQUISITION

Estimated delivery

**Tuesday, August 09 between 11:30 A.M. - 3:30 P.M.** ⓘ



### Ship To

SBA TOWERS II, LLC  
PROPERTY MANAGEMENT  
8051 CONGRESS AVENUE  
BOCA RATON, FL 334871307 US

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