

May 5, 2022

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

**Regarding: Notice of Exempt Modification – AT&T Site CT1208 / FA# 10042329**  
**Address: 1825 South Main Street, Middletown, CT 06457**

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC (“AT&T”) currently maintains a wireless telecommunications facility on an existing +/- 160’ monopole at the above-referenced address, latitude 41.5112231, longitude -72.6707431. Said monopole is operated by SBA Properties, Inc.

AT&T desires to modify its existing telecommunications facility by swapping nine (9) antennae, adding three (3) antennae, adding three (3) remote radio units (RRUS), swapping six (6) RRUS, adding two (2) surge arrestors and accompanying feedlines and swapping mounts as more particularly detailed and described on the enclosed Construction Drawings prepared by Hudson Design Group, LLC, last revised May 3, 2022. The centerline height of the existing antennas is and will remain at 107 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 Benjamin Florsheim, Mayor of the City of Middletown, as elected official. Marek Kozikowski, City Planner of the City of Middletown, and SBA Properties, Inc., as tower operator and property owner. Please note, we reached out to both the Planning and Land Use Departments for the City of Middletown 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 April 14, 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 Benjamin Florsheim, Mayor, City of Middletown, as elected official  
Marek Kozikowski, City Planner, City of Middletown  
SBA Properties, INC, as tower operator and property owner

# EXHIBIT 1

**PROJECT INFORMATION**

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

- NEW AT&T ANTENNAS: TPA65R-BU6DA-K (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3)(TOP).
- NEW AT&T ANTENNAS: AIR6449 B77D (TYP. OF 1 PER SECTOR, TOTAL OF 3)(BOTTOM).
- NEW AT&T ANTENNAS: DMP65R-BU6DA (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4449 B5/B12 (700) (ADD "Y" CABLE) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 8843 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4478 B14 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T SURGE ARRESTOR: DC6-48-60-18-8F (TOTAL OF 2).
- NEW AT&T (4) 6AWG DC POWER & (2) 18 PAIRS OF FIBER TRUNKS.
- INSTALL (6) Y-CABLES

ITEMS TO BE MOUNTED IN EQUIPMENT LOCATION:

- INSTALL (2) FIBER BOXES ON ICE BRIDGE POST.
- INSTALL (1) BATTERY RACK WITH (3) STRINGS OF 180AH BATTERIES.
- INSTALL (1) DC12 & (2) FIBER TRAYS IN EXISTING RACK.
- INSTALL (4) -48V RECTIFIERS FOR A TOTAL OF (10) -48V RECTIFIERS
- ADD 6648 FHG + XCEDE CABLE
- ADD (1) NEW 6630 + IDLE CABLE
- FINAL 1X6601/1X5216/1XXMU03 || XXXXX/2X6630 MIXED-MODE/XXXXX+IDLe/6648+XCEDE

ITEMS TO BE REMOVED:

- EXISTING AT&T ANTENNA: 7770 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNA: AM-X-CD-16-65-00T-RET (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNA: HPA-65R-BUU-H6 (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 RRUS: RRUS-32 B2 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- EXISTING AT&T TMAS: LGP 21901 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T (12) 1-5/8" COAX CABLES.

ITEMS TO REMAIN:

- (1) SURGE ARRESTOR, (2) DC POWER & (1) FIBER.

SITE ADDRESS: 1825 SOUTH MAIN STREET  
MIDDLETOWN, CT 06457

LATITUDE: 41.5112231° N, 41° 30' 40.40" N  
LONGITUDE: -72.6707431° W, 72° 40' 14.67" W  
TYPE OF SITE: MONOPOLE TOWER / INDOOR EQUIPMENT  
STRUCTURE HEIGHT: 160'-0"±  
RAD CENTER: 105'-2"±, 107'-0"± & 108'-9"±  
CURRENT USE: TELECOMMUNICATIONS FACILITY  
PROPOSED USE: TELECOMMUNICATIONS FACILITY

**DRAWING INDEX**

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	B
GN-1	GENERAL NOTES	B
A-1	COMPOUND & EQUIPMENT PLANS	B
A-2	ANTENNA LAYOUT PLANS & ELEVATION	B
A-3	DETAILS	B
A-4	DETAILS	B
G-1	GROUNDING DETAILS	B
RF-1	RF PLUMBING DIAGRAM	B



**SITE NUMBER: CTL01208**

**SITE NAME: MIDDLETOWN SO MAIN**

**FA CODE: 10042329**

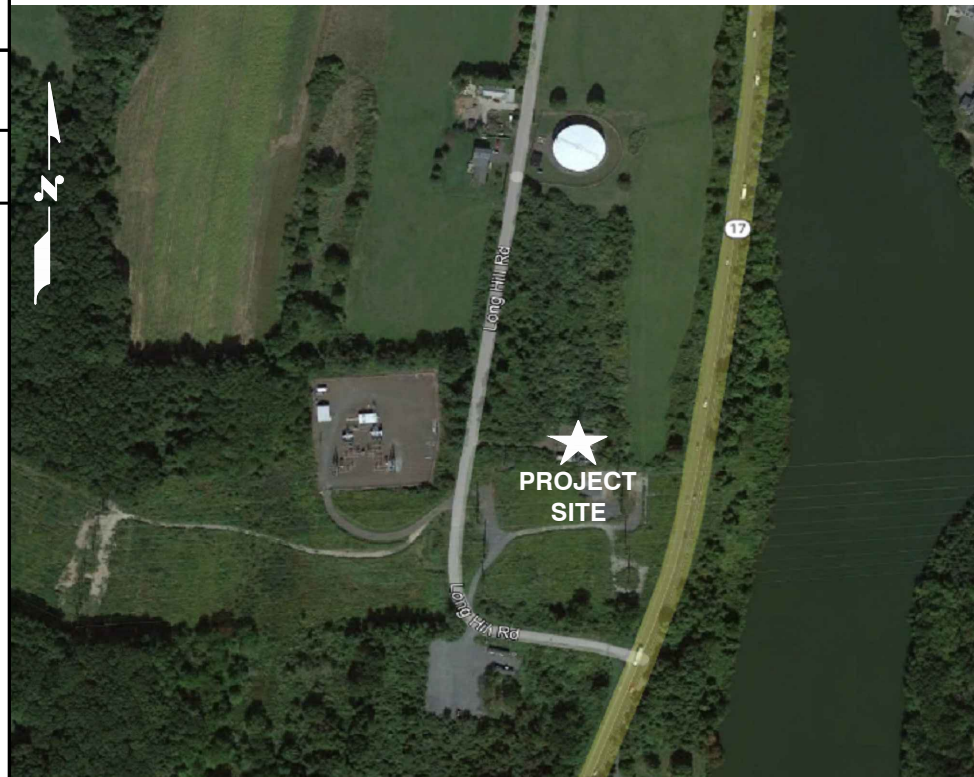
**PACE ID: MRCTB054418, MRCTB055351, MRCTB055862, MRCTB056196, MRCTB055375, MRCTB054381, MRCTB055726, MRCTB053318**

**PROJECT: 5G NR 1DR-1 LTE 3C 5G NR RADIO, 5G NR 1SR CBAND, 4TX4RX SOFTWARE RETRO, 2022 UPGRADE**

**VICINITY MAP**

**DIRECTIONS TO SITE:**

HEAD SOUTHEAST TOWARD CAPITAL BLVD, TURN LEFT ONTO CAPITAL BLVD, USE THE LEFT 2 LANES TO TURN LEFT ONTO STATE HWY 411, TURN LEFT TO MERGE WITH I-91 S, MERGE WITH I-91 S, TAKE EXIT 22S ON THE LEFT TO MERGE WITH CT-9 S, TOWARD MIDDLETOWN/OLD SAYBROOK, TAKE EXIT 13 FOR CT-17 S TOWARD NEW HAVEN, CONTINUE ONTO CT-17 S, PASS BY KFC (ON THE LEFT IN 0.8 MI), TURN RIGHT ONTO LONG HILL RD, DESTINATION WILL BE ON THE RIGHT.



**GENERAL NOTES**

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

**72 HOURS**



**CALL BEFORE YOU DIG**

CALL TOLL FREE 1-800-922-4455

OR CALL 811

**UNDERGROUND SERVICE ALERT**

**HDG 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: CTL01208  
SITE NAME: MIDDLETOWN SO MAIN**

1825 SOUTH MAIN STREET  
MIDDLETOWN, CT 06457  
MIDDLESEX COUNTY

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

NO.	DATE	REVISIONS	BY	CHK'D	APP'D	SCALE	DESIGNED BY	DRAWN BY	VS	SHEET NUMBER	DRAWING NUMBER	REV
B	05/03/22	ISSUED FOR PERMITTING	SA	AT	SPH							
A	04/04/22	ISSUED FOR REVIEW	SA	MKL	DPH							
<p>AT&amp;T TITLE SHEET 5G NR 1DR-1 LTE 3C 5G NR RADIO, 5G NR 1SR CBAND, 4TX4RX SOFTWARE RETRO</p>												
<p>SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: VS</p>												
<p>STATE OF CONNECTICUT DANIEL P. RAMM LICENSED PROFESSIONAL ENGINEER No. 24778</p>												
<p>CTL01208 T-1 B</p>												

**ISSUED FOR PERMITTING**

**GROUNDING NOTES**

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

**GENERAL NOTES**

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
 CONTRACTOR – 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 & MA STATE BUILDING CODE 780 CMR 9TH EDITION  
 ELECTRICAL CODE: 2020 NATIONAL ELECTRICAL CODE (NFPA 70, 2020)**

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

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

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

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

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

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

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

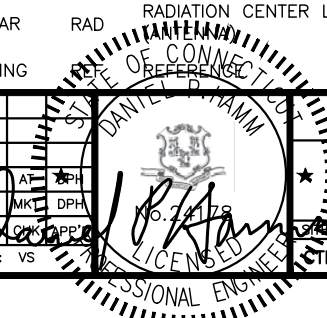
750 WEST CENTER STREET, SUITE #301  
WEST BRIDGEWATER, MA 02379

**SITE NUMBER: CTL01208  
 SITE NAME: MIDDLETOWN SO MAIN**

1825 SOUTH MAIN STREET  
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MIDDLESEX COUNTY

500 ENTERPRISE DRIVE, SUITE 3A  
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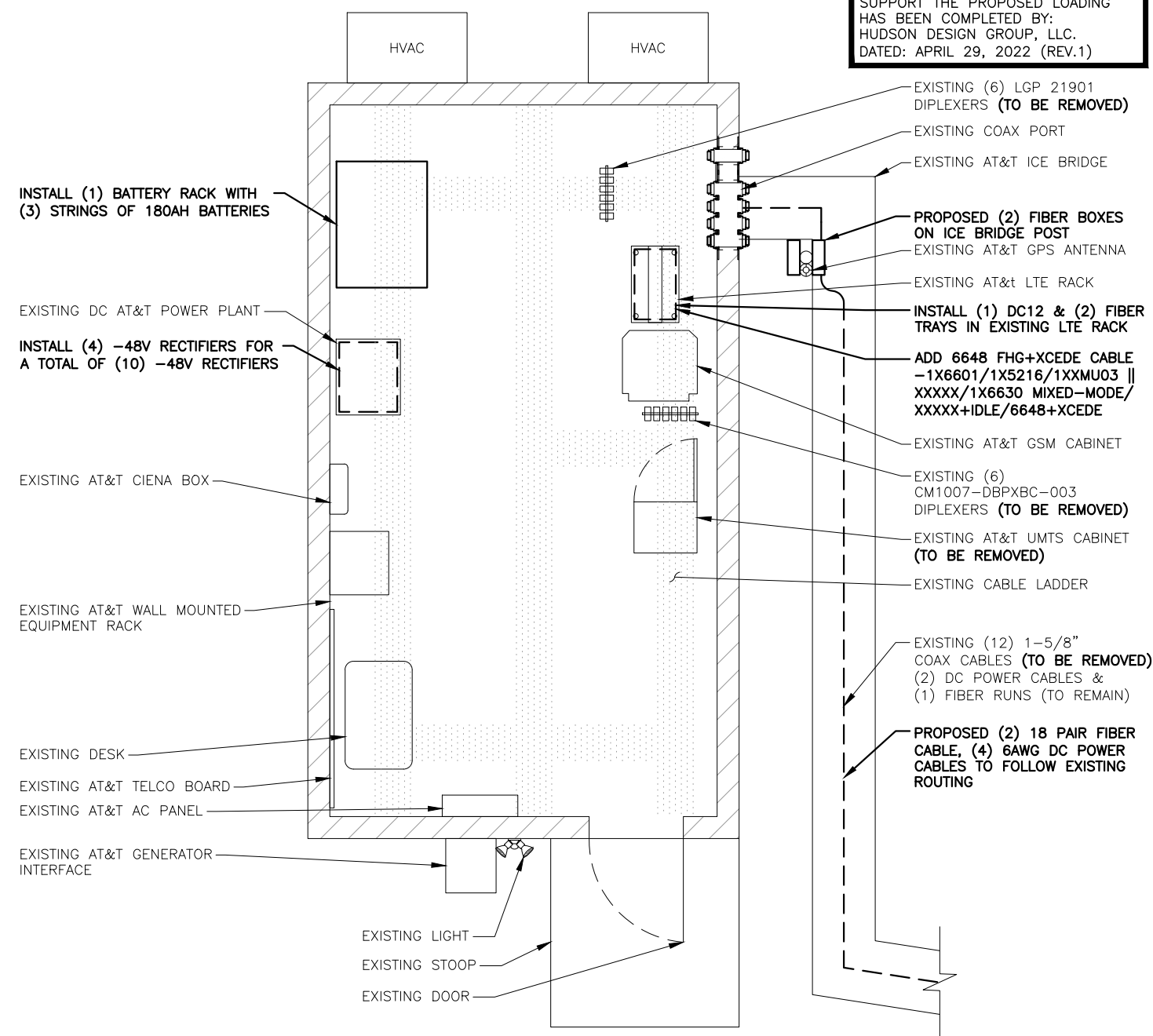
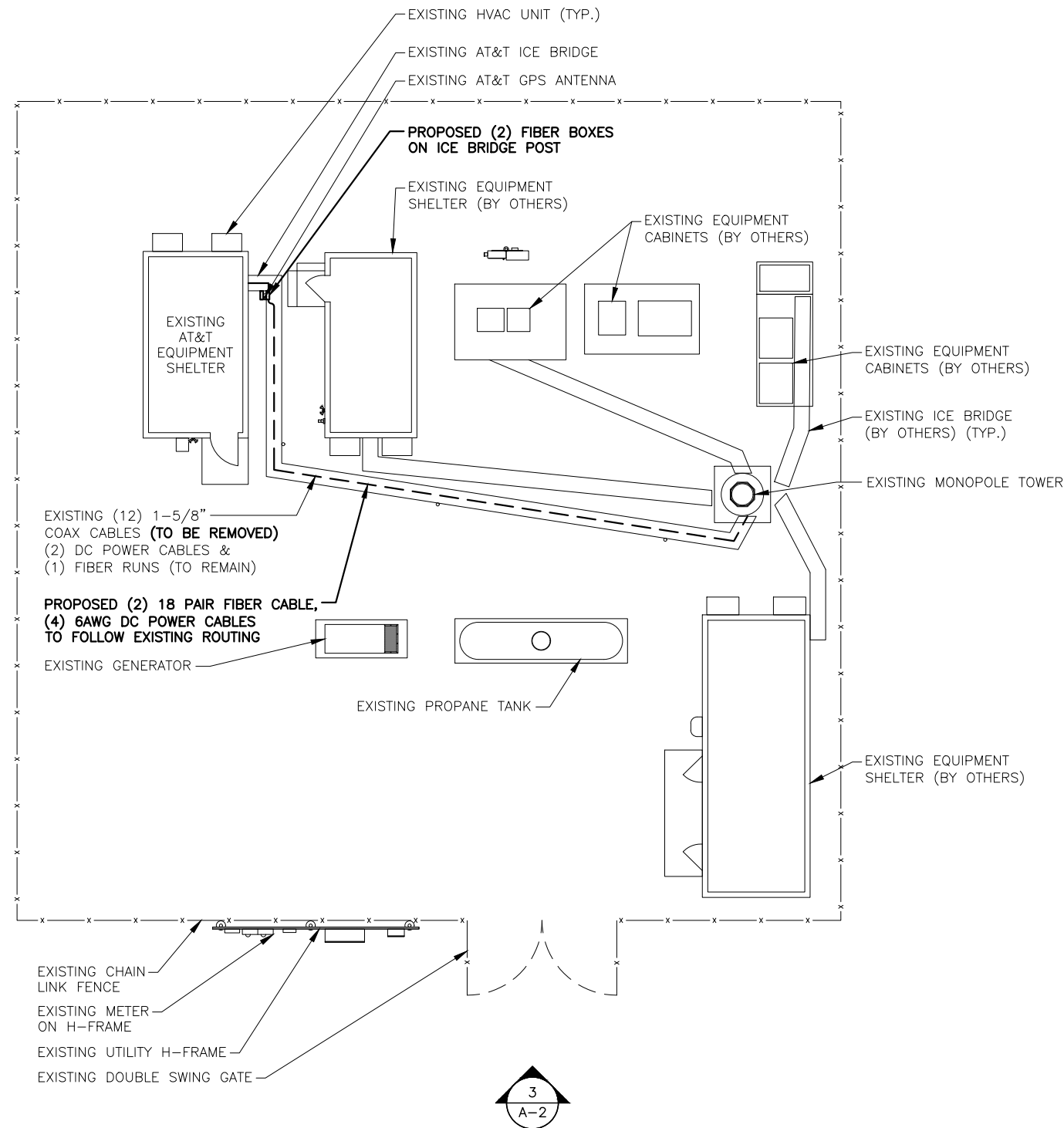
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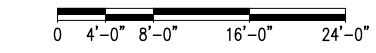
**NOTE:**  
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

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

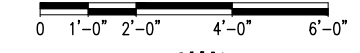
**NOTE:**  
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:  
HUDSON DESIGN GROUP, LLC.  
DATED: APRIL 29, 2022 (REV.1)



**COMPOUND PLAN**  
22x34 SCALE: 1/8"=1'-0"  
11x17 SCALE: 1/16"=1'-0"  
1 A-1



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



**HUDSON Design Group LLC**  
45 BEECHWOOD DRIVE  
NORTH ANDOVER, MA 01845  
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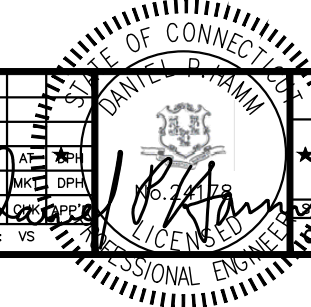
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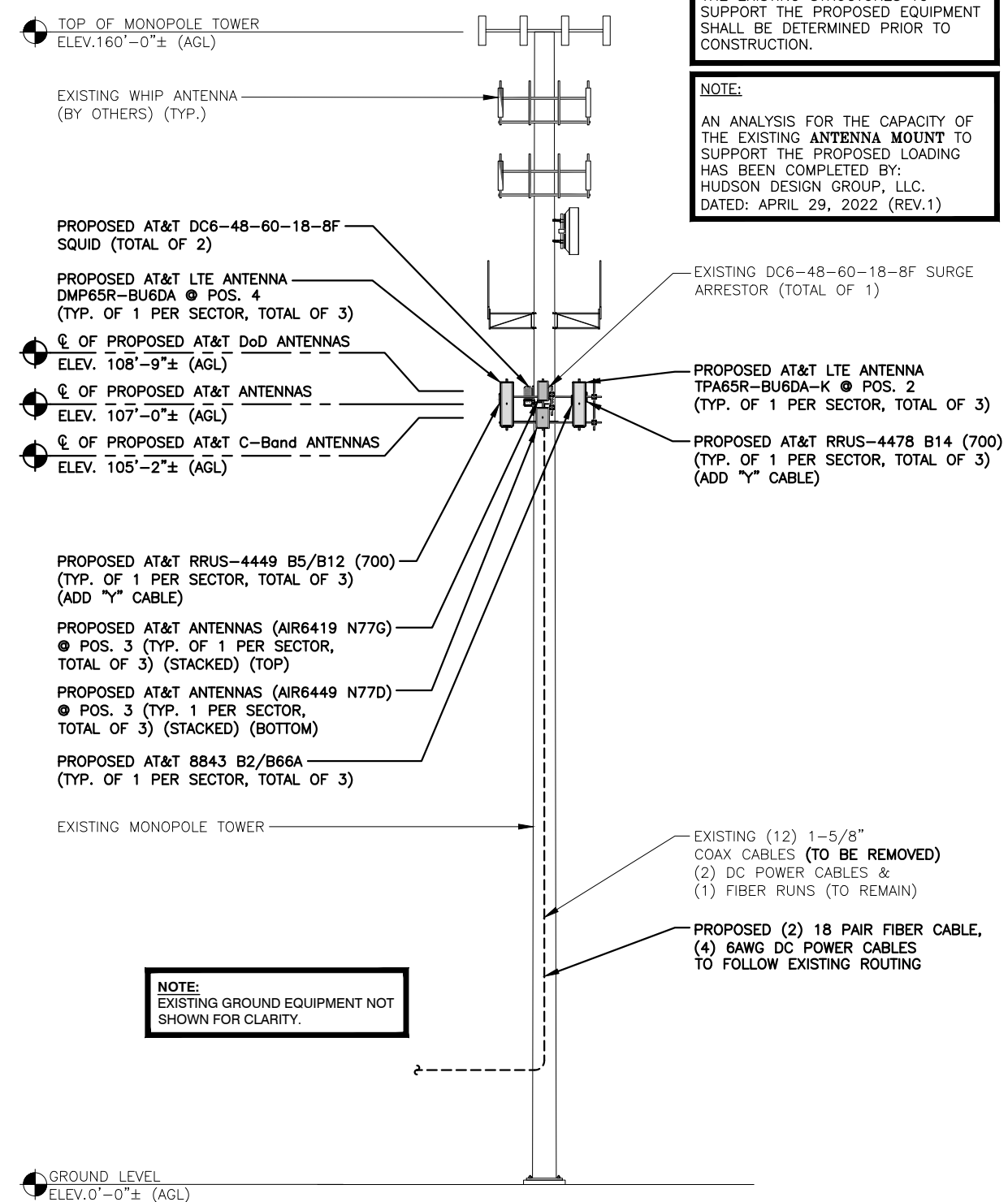
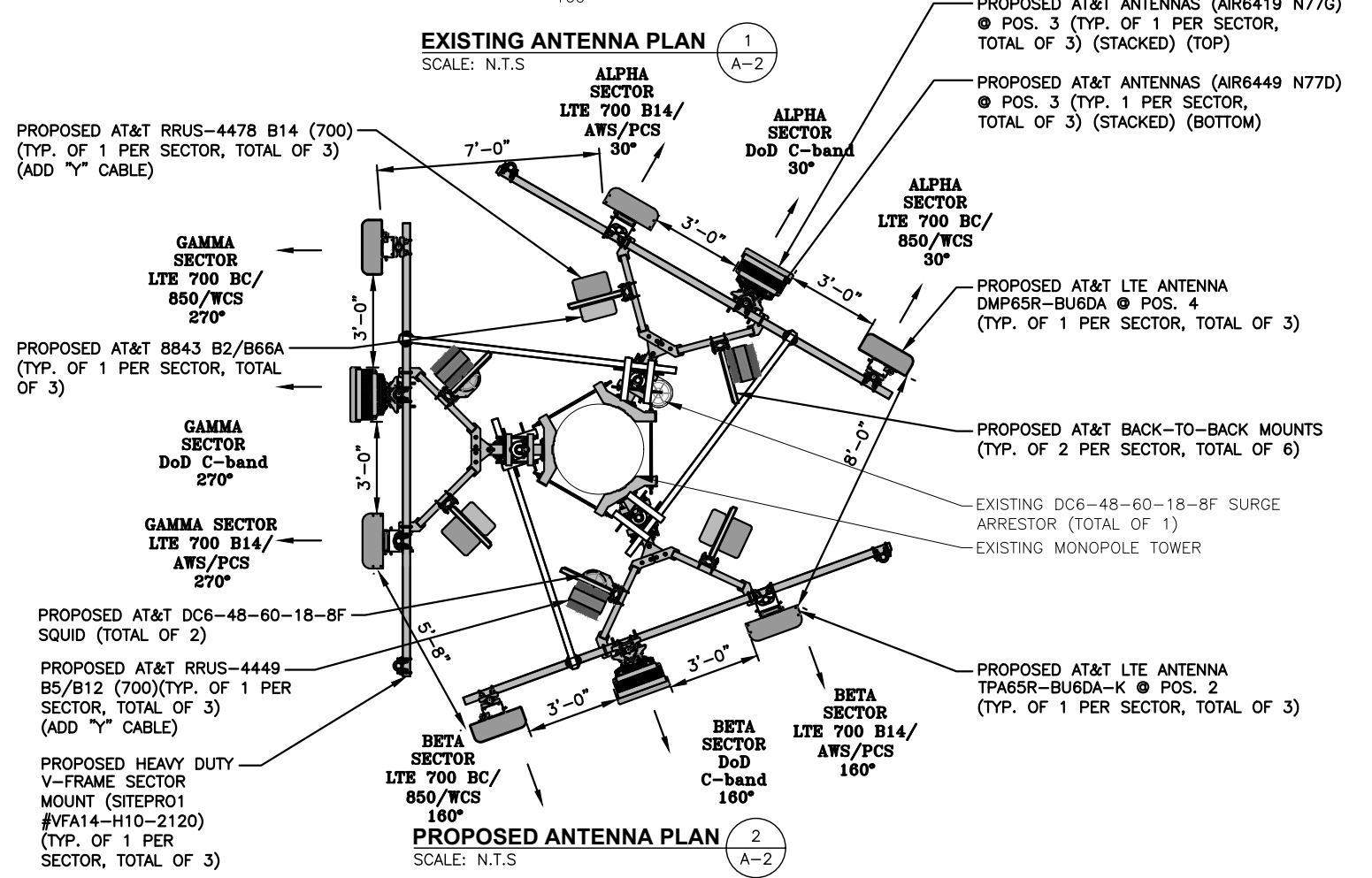
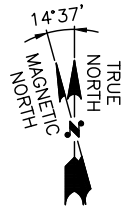
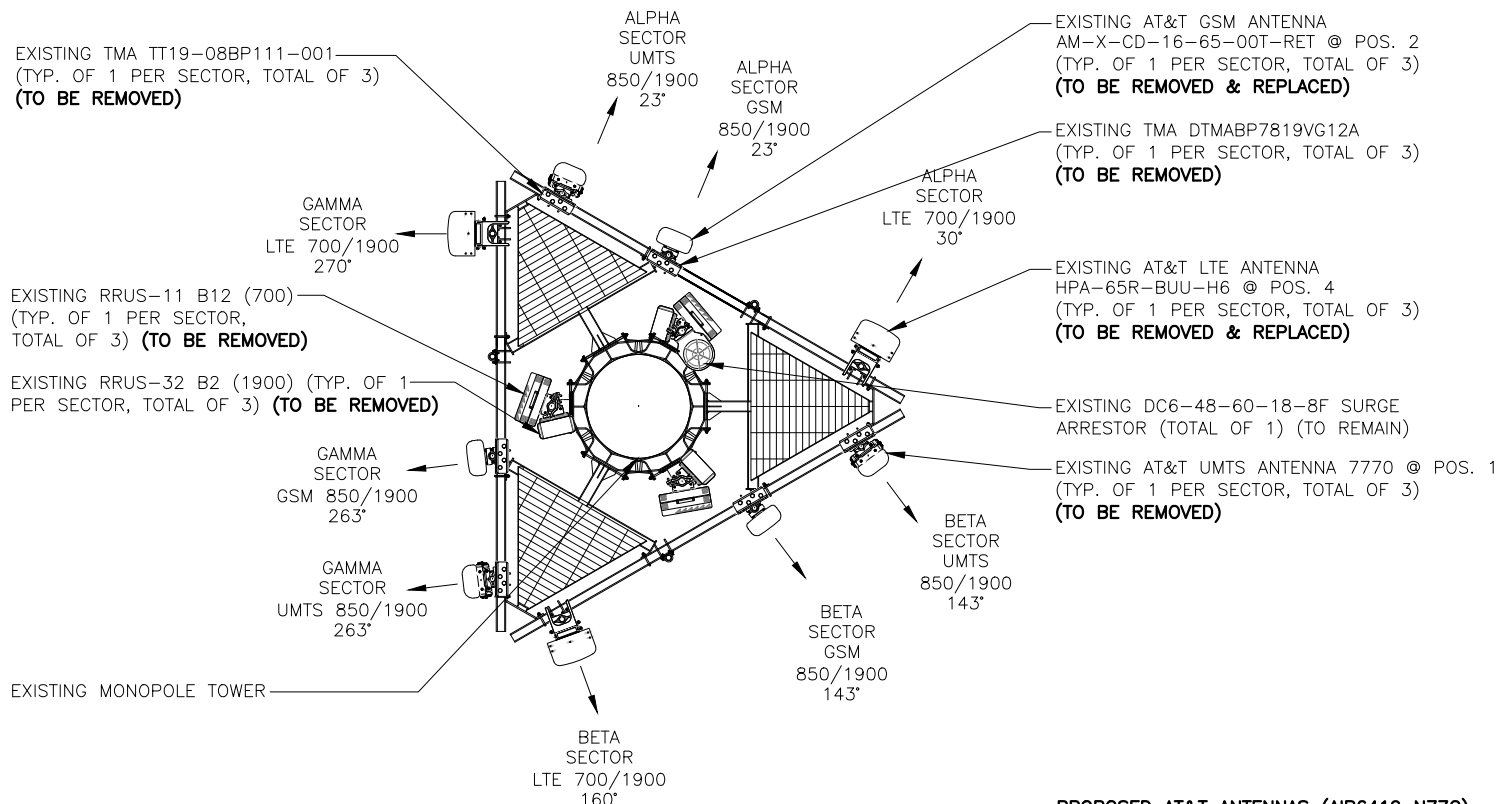
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NO.	DATE	REVISIONS	BY	CHK	APP
B	05/03/22	ISSUED FOR PERMITTING	VS	AT	PH
A	04/04/22	ISSUED FOR REVIEW	VS	MKL	DPH

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



**AT&T**  
COMPOUND & EQUIPMENT PLANS  
5G NR 1DR-1 LTE 3C 5G NR RADIO, 5G NR 1SR CBAND, 4TX4RX SOFTWARE RETRO  
DRAWING NUMBER: A-1  
REV: B



**NOTE:**  
EXISTING GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

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

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

**NOTE:**  
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:  
HUDSON DESIGN GROUP, LLC.  
DATED: APRIL 29, 2022 (REV.1)

**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: CTL01208**  
**SITE NAME: MIDDLETOWN SO MAIN**  
1825 SOUTH MAIN STREET  
MIDDLETOWN, CT 06457  
MIDDLESEX COUNTY

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

NO.	DATE	REVISIONS	BY	CHKD	APPD
B	05/03/22	ISSUED FOR PERMITTING	SA	AT	PH
A	04/04/22	ISSUED FOR REVIEW	MS	MKL	DPH

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

**AT&T**  
ANTENNA LAYOUT PLANS & ELEVATION  
5G NR 1DR-1 LTE 3C 5G NR RADIO, 5G NR 1SR CBAND, 4TX4RX SOFTWARE RETRO

PROFESSIONAL ENGINEER  
DAVID P. RAMM  
No. 24778  
LICENSED

DRAWING NUMBER	REV
A-2	B

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 B14/AWS/PCS	TPA65R-BU6DA-K	71.2"x20.7"x7.7"	107'-0"±	30°	-	(P)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A	18.1"x13.4"x8.3" 15.1"x13.2"x6.0"	(E)(2) DC POWER (1) FIBER (P)(1)(Y-CABLE)	(E)(1) RAYCAP DC6-48-60-18-8F
A3	PROPOSED	DoD C-BAND	AIR6419 B77G AIR6449 B77D	31.1"x16.1"x7.3" 30.4"x15.9"x8.1"	108'-9"± 105'-2"±	30°	-	-	-	-	-
A4	PROPOSED	LTE 700 BC/850/WCS	DMP65R-BU6DA	71.2"x20.7"x7.7"	107'-0"±	30°	-	(P)(1) 4449 B5/B12 (700)	17.9"x13.2"x10.4"	(P)(1)(Y-CABLE)	-
B1	-	-	-	-	-	-	-	-	-	-	-
B2	PROPOSED	LTE 700 B14/AWS/PCS	TPA65R-BU6DA-K	71.2"x20.7"x7.7"	107'-0"±	160°	-	(P)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A	18.1"x13.4"x8.3" 15.1"x13.2"x6.0"	(P)(2) DC POWER & (1) FIBER (P)(1)(Y-CABLE)	(P)(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"	108'-9"± 105'-2"±	160°	-	-	-	-	-
B4	PROPOSED	LTE 700 BC/850/WCS	DMP65R-BU6DA	71.2"x20.7"x7.7"	107'-0"±	160°	-	(P)(1) 4449 B5/B12 (700)	17.9"x13.2"x10.4"	(P)(1)(Y-CABLE)	-
C1	-	-	-	-	-	-	-	-	-	-	-
C2	PROPOSED	LTE 700 B14/AWS/PCS	TPA65R-BU6DA-K	71.2"x20.7"x7.7"	107'-0"±	270°	-	(P)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A	18.1"x13.4"x8.3" 15.1"x13.2"x6.0"	(P)(2) DC POWER & (1) FIBER (P)(1)(Y-CABLE)	(P)(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"	108'-9"± 105'-2"±	270°	-	-	-	-	-
C4	PROPOSED	LTE 700 BC/850/WCS	DMP65R-BU6DA	71.2"x20.7"x7.7"	107'-0"±	270°	-	(P)(1) 4449 B5/B12 (700)	17.9"x13.2"x10.4"	(P)(1)(Y-CABLE)	-

RRU CHART

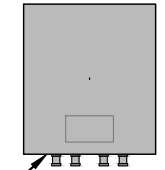
QUANTITY	MODEL	SIZE (L x W x D)
P(3)	4449 B5/B12 (700)	17.9"x13.2"x10.4"
P(3)	8843 B2/B66A	15.1"x13.2"x6.0"
P(3)	4478 B14 (700)	18.1"x13.4"x8.3"

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

NOTE:  
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DATED: APRIL 29, 2022 (REV.1)

NOTE:  
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

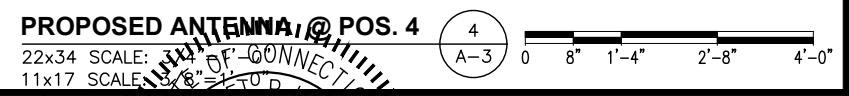
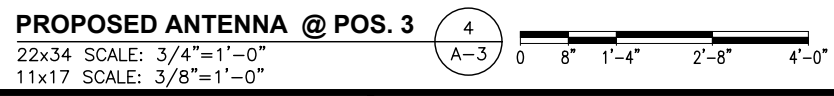
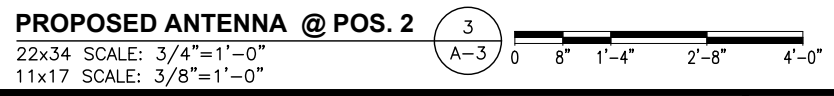
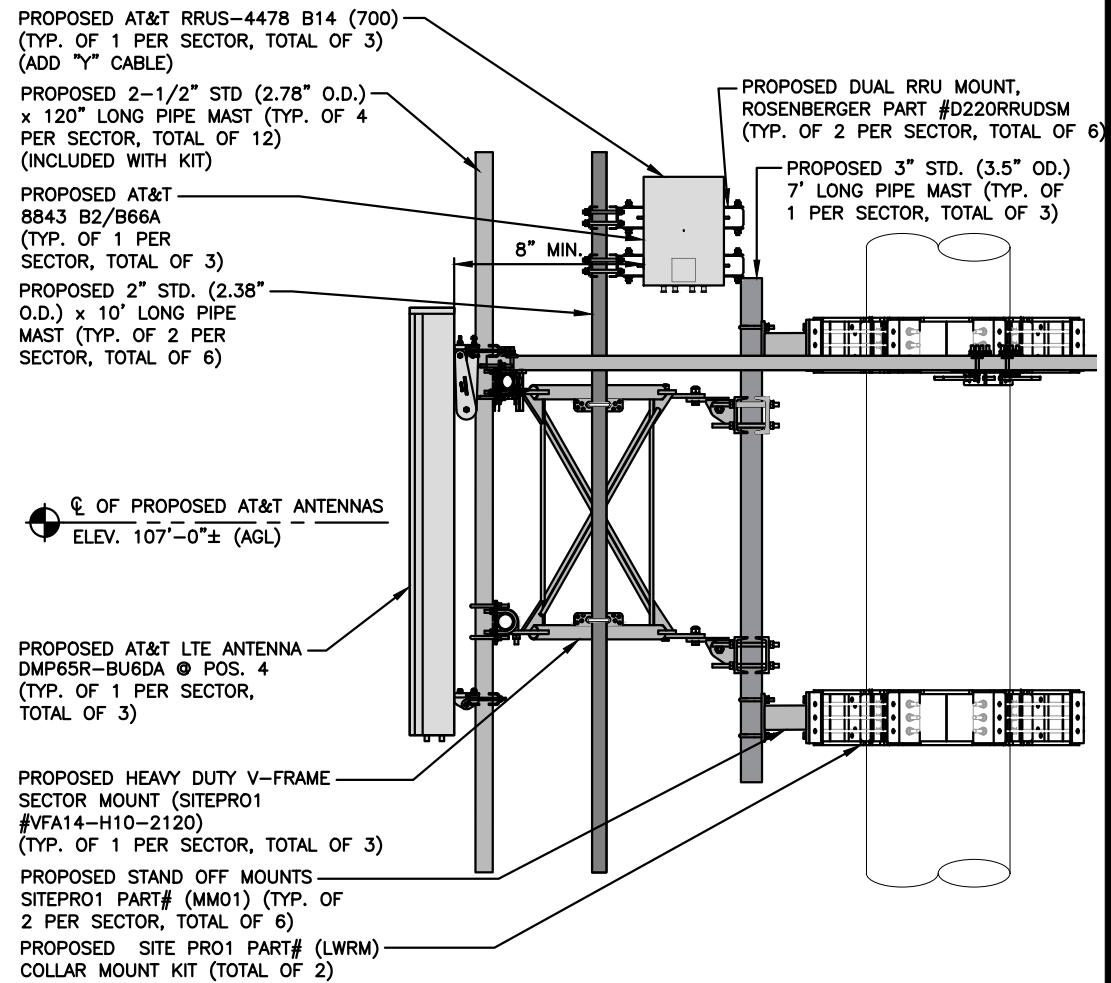
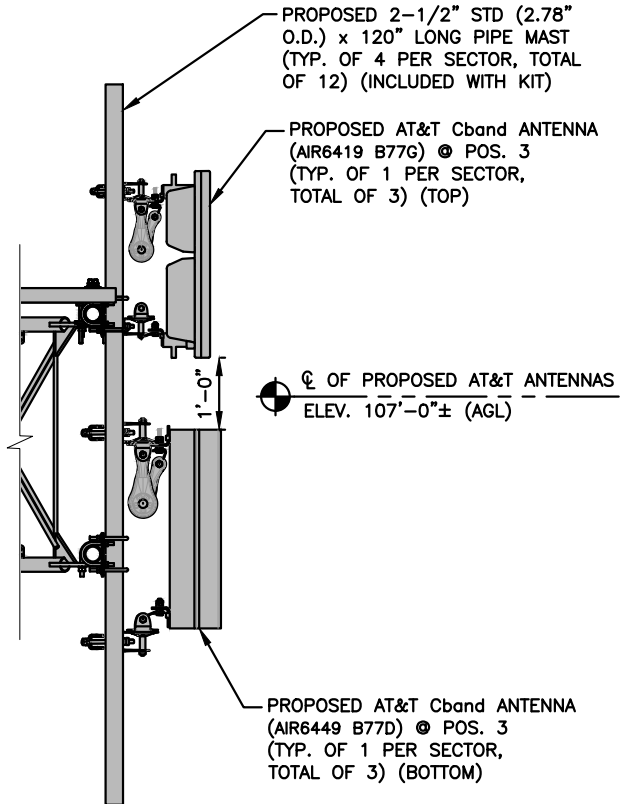
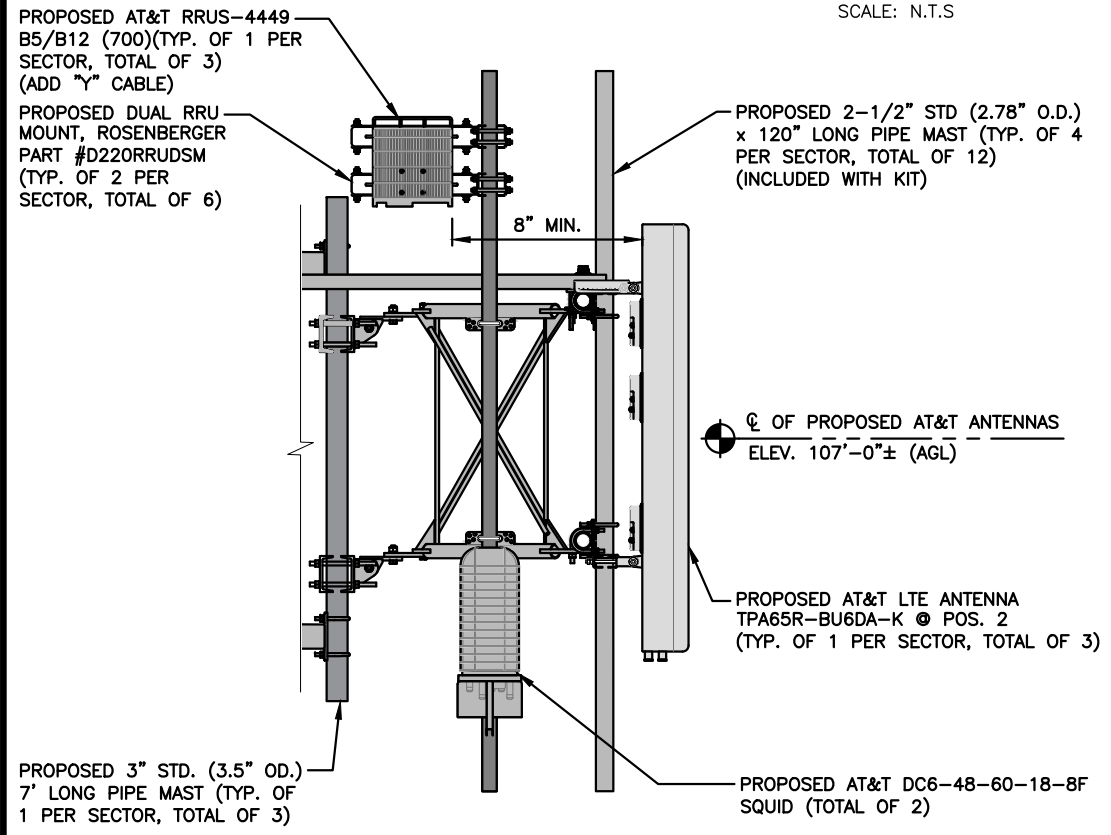


PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:  
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL 2 A-3  
SCALE: N.T.S

FINAL ANTENNA SCHEDULE 1 A-3  
SCALE: N.T.S



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

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

SITE NUMBER: CTL01208  
SITE NAME: MIDDLETOWN SO MAIN  
1825 SOUTH MAIN STREET  
MIDDLETOWN, CT 06457  
MIDDLESEX COUNTY

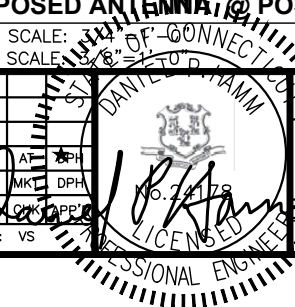
**at&t**  
500 ENTERPRISE DRIVE, SUITE 3A  
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHKD	APPD
B	05/03/22	ISSUED FOR PERMITTING	VS	AT	PH
A	04/04/22	ISSUED FOR REVIEW	VS	MKL	DPH

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

**AT&T DETAILS**  
5G NR 1DR-1 LTE 3C 5G NR RADIO, 5G NR 1SR CBAND, 4TX4RX SOFTWARE RETRO

CTL01208    A-3    B

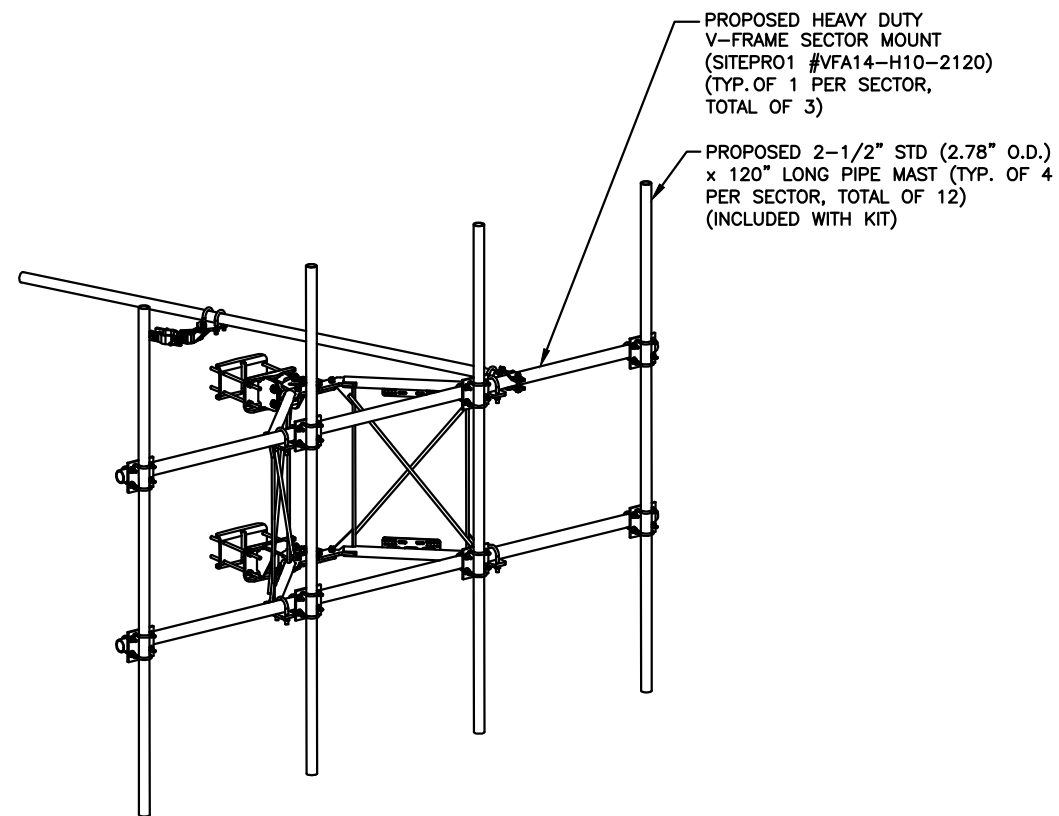




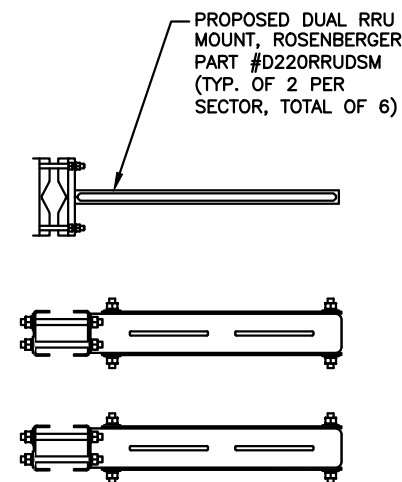
NOTE:  
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:  
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NOTE:  
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HUDSON DESIGN GROUP, LLC.  
DATED: APRIL 29, 2022 (REV.1)



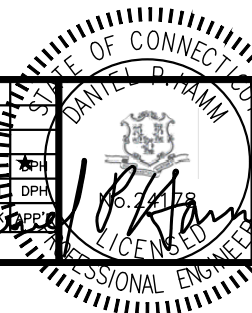
PROPOSED MOUNT (SITEPRO1 #VFA14-H10-2120) DETAIL 1  
A-4  
SCALE: N.T.S



BACK TO BACK RRU MOUNT DETAIL 2  
A-4  
SCALE: N.T.S

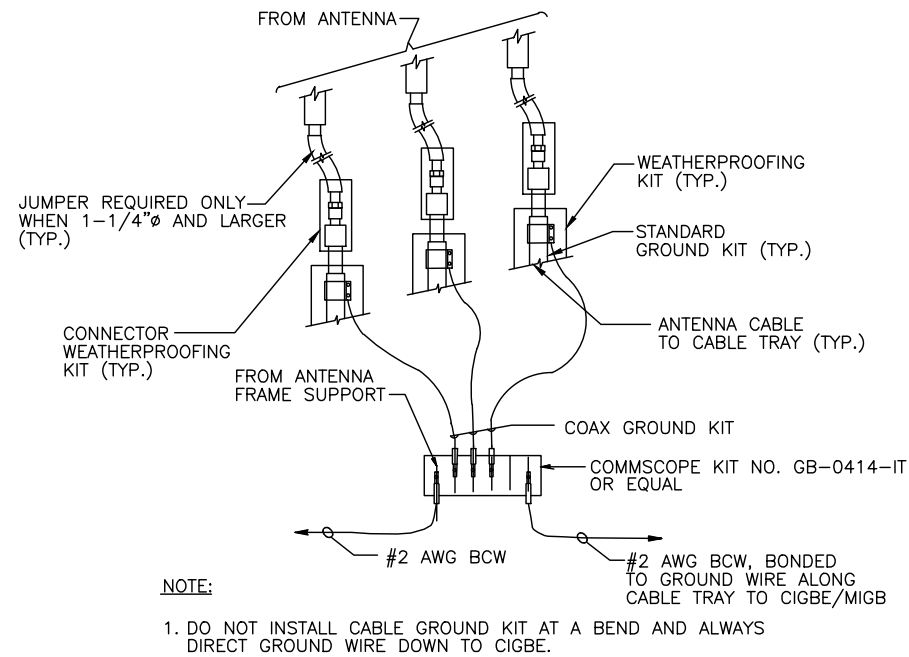
NO.	DATE	REVISIONS	BY	CHK'D	APP'D
B	05/03/22	ISSUED FOR PERMITTING	AT	PH	
A	04/04/22	ISSUED FOR REVIEW	AT	PH	

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

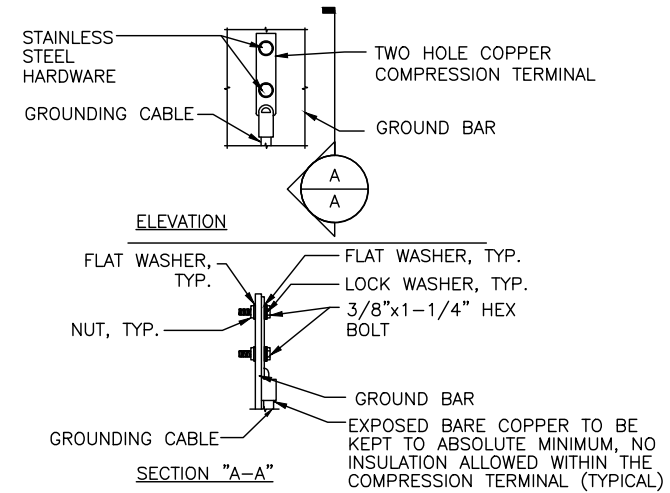


PROJECT NUMBER	DRAWING NUMBER	REV
CTL01208	A-4	B

AT&T  
DETAILS  
★ 5G NR 1DR-1 LTE 3C 5G NR RADIO, 5G NR 1SR CBAND, 4TX4RX SOFTWARE RETRO

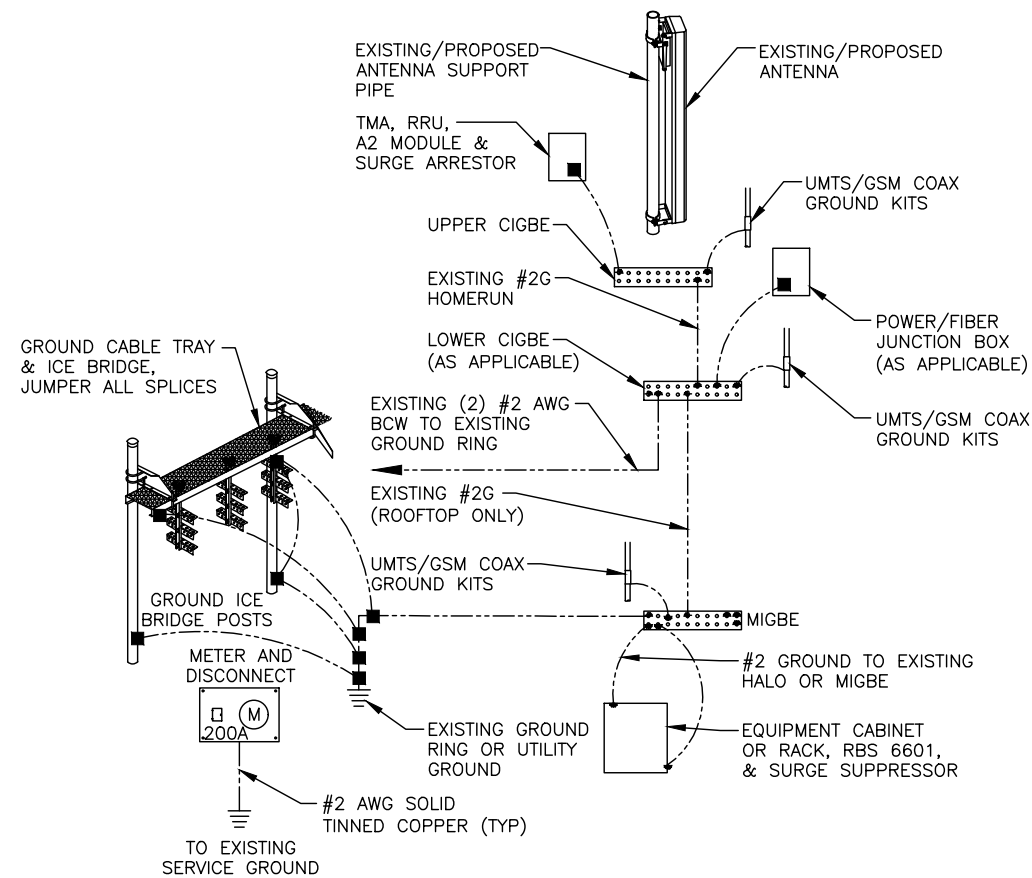


**GROUND WIRE TO GROUND BAR CONNECTION DETAIL** (1)  
SCALE: N.T.S. G-1



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

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



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

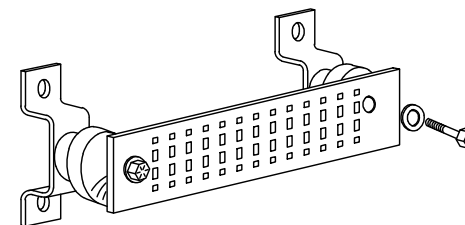
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

**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)

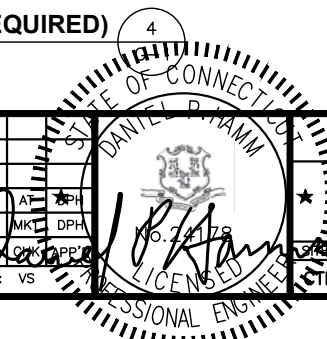


**GROUND BAR - DETAIL (AS REQUIRED)** (4)  
SCALE: N.T.S.

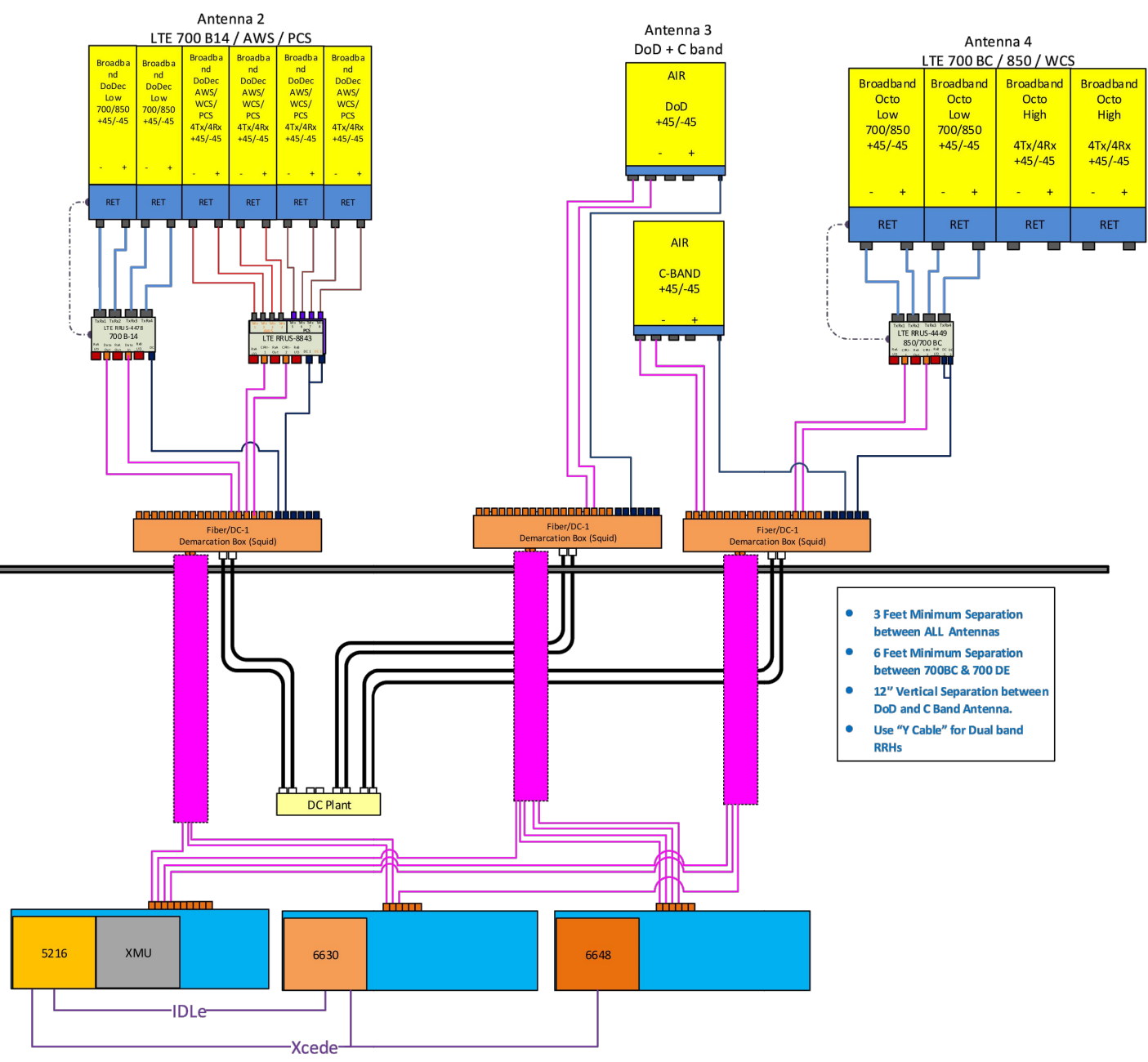
NO.	DATE	REVISIONS	DESIGNED BY:	AT	DRAWN BY:	VS	SCALE:	AS SHOWN
B	05/03/22	ISSUED FOR PERMITTING	AT	VS				
A	04/04/22	ISSUED FOR REVIEW	AT	VS				

AT&T		GROUNDING DETAILS	
5G NR 1DR-1 LTE 3C 5G NR RADIO, 5G		NR 1SR CBAND, 4TX4RX SOFTWARE RETRO	
PROJECT NUMBER	CTL01208	DRAWING NUMBER	G-1
REV			B



Antenna 1  
Empty



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

**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.

NO.	DATE	REVISIONS	BY	CHK	APP'D
B	05/03/22	ISSUED FOR PERMITTING	SG	AT	DPH
A	04/04/22	ISSUED FOR REVIEW	VS	MKT	DPH
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: VS		

<b>AT&amp;T</b>		
RF PLUMBING DIAGRAM		
5G NR 1DR-1 LTE 3C 5G NR RADIO, 5G NR 1SR CBAND, 4TX4RX SOFTWARE RETRO		
SITE NUMBER	DRAWING NUMBER	REV
CTL01208	RF-1	B

# EXHIBIT 2

# 1825 SOUTH MAIN ST

**Location** 1825 SOUTH MAIN ST

**Map-Lot** 17 / / 0003 / /

**Acct#** R02249

**Owner** SBA PROPERTIES INC

**Municipality**

**Assessment** \$276,470

**Appraisal** \$394,960

**PID** 3758

**Building Count** 1

**Assessing District**

## Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2018	\$49,460	\$345,500	\$394,960

Assessment			
Valuation Year	Improvements	Land	Total
2018	\$34,620	\$241,850	\$276,470

## Parcel Addresses

Additional Addresses
No Additional Addresses available for this parcel

## Owner of Record

**Owner** SBA PROPERTIES INC  
**Co-Owner**  
**Address** 8051 CONGRESS AVE  
BOCA RATON, FL 33487

**Sale Price** \$0  
**Certificate**  
**Book & Page** 1289/0876  
**Sale Date** 12/21/2001  
**Instrument** 29

## Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
SBA PROPERTIES INC	\$0		1289/0876	29	12/21/2001
SBA TOWERS INC	\$275,000		1289/0872	25	12/21/2001
CONN LIGHT & POWER CO	\$0		0624/0211	29	07/02/1982

## Building Information

### Building 1 : Section 1

Year Built:

Living Area: 0

Replacement Cost: \$0

Building Percent Good:

Replacement Cost

Less Depreciation: \$0

#### Building Attributes

Field	Description
Style	Outbuildings
Model	
Grade	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Floor 1	
Interior Floor 2	
Heat Fuel	
Heat Type	
Ac Type	
Bedrooms	
Full Baths	
Half Baths	
Extra Fixtures	
Total Rooms	
Bath Remodel	
Kitchen Remodel	
Extra Kitchens	
Fireplaces	
Extra Openings	
Gas Fireplace	
Int vs Ext	
A/C Type	
A/C %	

### Building Photo



(<http://images.vgsi.com/photos/MiddletownCTPhotos/A00\01\86\78.jpg>)

### Building Layout

 Building Layout (ParcelSketch.ashx?pid=3758&bid=3758)

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Fireplaces 1	
Fin Bsmt Area	
FBM grade	
Bsmt Garage	

### Extra Features

Extra Features	<u>Legend</u>
No Data for Extra Features	

### Land

#### Land Use

**Use Code** 100  
**Description** Resid Vacant  
**Zone** I-4  
**Neighborhood**  
**Alt Land Appr** No  
**Category**

#### Land Line Valuation

**Size (Acres)** 9.40  
**Assessed Value** \$241,850  
**Appraised Value** \$345,500

### Outbuildings

Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
FN3	Fence-6' Chain			360.00 UNITS	\$3,560	1
CSHD	Cell Shed			336.00 UNITS	\$18,900	1
CSHD	Cell Shed			240.00 UNITS	\$13,500	1
CSHD	Cell Shed			240.00 UNITS	\$13,500	1

### Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2020	\$49,460	\$345,500	\$394,960
2019	\$49,460	\$345,500	\$394,960
2018	\$49,460	\$345,500	\$394,960

Assessment			
Valuation Year	Improvements	Land	Total
2020	\$34,620	\$241,850	\$276,470
2019	\$34,620	\$241,850	\$276,470
2018	\$34,620	\$241,850	\$276,470





1825 SOUTH MAIN ST

Show search results for 182...

17/0008  
R12922  
#1133  
0.5 AC

17/0007  
R10305  
#1149  
0.53 AC

17/0002  
E30198  
#1100  
1.98 AC

17/0006  
R10059  
#  
14.2 AC

Long Hill Road

South Main Street  
17

31/0010  
R10056  
#1760  
3.45 AC

31/0011  
E30555  
#  
30.18 AC

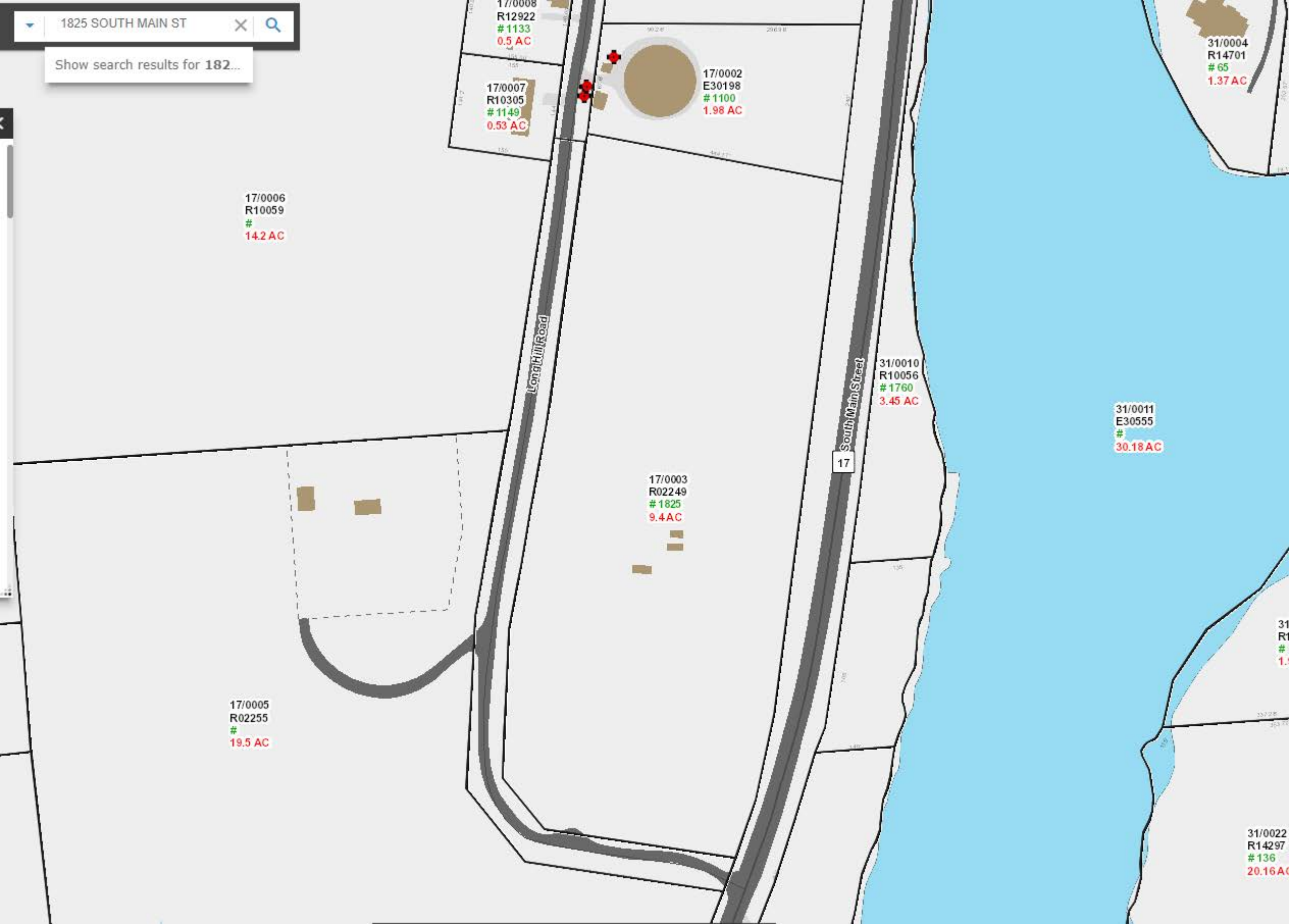
17/0003  
R02249  
#1625  
9.4 AC

17/0005  
R02255  
#  
19.5 AC

31/0004  
R14701  
#65  
1.37 AC

31/0001  
R14701  
#  
1.37 AC

31/0022  
R14297  
#136  
20.16 AC



# EXHIBIT 3



**Tower Engineering Solutions**

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

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## Structural Analysis Report

Existing 158 ft SUMMIT Monopole  
Customer Name: SBA Communications Corp  
Customer Site Number: CT01080-S  
Customer Site Name: Long Hill #1  
Carrier Name: AT&T (App#: 193877, V1)  
Carrier Site ID / Name: CT1208 / Middletown South Main  
Site Location: 1279 Long Hill Road  
Middletown, Connecticut  
Middlesex County  
Latitude: 41.511231  
Longitude: -72.670744

**Analysis Result:**

Max Structural Usage: 99.9% [Pass]  
Max Foundation Usage: 68.0% [Pass]  
Additional Usage Caused by Mount Modification: +1.5%



Report Prepared By: Karzan Habeeb



**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: CT01080-S**

**Customer Site Name: Long Hill #1**

**Carrier Name: AT&T (App#: 193877, V1)**

**Carrier Site ID / Name: CT1208 / Middletown South Main**

**Site Location: 1279 Long Hill Road**

**Middletown, Connecticut**

**Middlesex County**

**Latitude: 41.511231**

**Longitude: -72.670744**

### **Analysis Result:**

**Max Structural Usage: 99.9% [Pass]**

**Max Foundation Usage: 68.0% [Pass]**

**Additional Usage Caused by Mount Modification: +1.5%**

**Report Prepared By: Karzan Habeeb**

## 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>	Tower drawings prepared by Summit Manufacturing, Inc., Job No. 5173 dated 11/08/1999
<b>Foundation Drawing</b>	Foundation drawings prepared by Paul J. Ford & Company, Job No. 29299-641 dated 10/22/1999
<b>Geotechnical Report</b>	Geotechnical report prepared by Jawarski Geotech, Inc., Project No. C98590G dated 02/04/1999
<b>Modification Drawings</b>	N/A
<b>Mount Analysis</b>	Hudson Design Group LLC (HDG), Project# 2051A11NMW, dated 03/18/2022

## Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the TIA-222-G-2. In accordance with this standard, the structure was analyzed using **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 $V_{ult} = 130.0$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 101.0$ 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>	$S_5 = 0.18$ , $S_1 = 0.062$

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	6	Commscope SBNHH-1D65B	Low Profile Platform w/ mount modifications*	(11) 1 5/8" (1) 1/2"	Verizon
2		2	Antel LPA-80063-6CF-EDIN-5			
3		4	RFS APL866513-42T0 w/ Mount Pipe			
4		3	Samsung MT6407-77A			
5		6	RFS FD9R6004/2CL-3CL Diplexer			
6		3	Alcatel Lucent RRH2x60-700			
7		3	Alcatel Lucent RRH2X60-PCS			
8		3	Samsung RF4439d-25A			
9		3	Samsung RF4440d-13A			
10		3	Alcatel Lucent RRH2x60-AWS			
11		2	RFS DB-T1-6Z-8AB-OZ			
12		1	Raycap OVP-12			
13	151.0	1	Andrew VHLP2.5 - Dish	(1) Pipe Mount	(1) 1/2"	Clearwire
14		1	ODU			
15	146.0	3	RFS APXVSP18-C-A20 w/ Mount Pipe - Panel	(1) Low Profile Platform	(3) 1 1/4" (1) 1-1/4" Power / Fiber	Sprint
16		3	RFS APXVTM14-C-120 w/ Mount Pipe - Panel			
17		3	Alcatel TD-RRH8x20-25			
18		3	Alcatel 1900MHz RRH			
19		3	Alcatel 800 MHz RRH			
20		3	Alcatel 800MHz Filters			
21		4	RFS ACU-A20-N RET			
22		1	GPS			
23		3	Kathrein Scala 840 10054 - Panel			
24		3	RRUs			
25	137.0	3	RFS APXVAARR24_43-U-NA20	Low Profile Platform w/ Support rail w/ end connection MS-HRECP-35	(9) 1 5/8" (3) 1 5/8" Fiber	T-Mobile
26		3	Ericsson Air32 KRD901146-1_B66A_B2A			
27		9	Allen Telecom FE15501P77/75			
28		3	Ericsson KRY 112 489/2			
29		3	Ericsson Radio 4449 B71+B12			
30		3	Kathrein 782 11056			
31	124.583	1	SC229-DFLN - Omni	(1) Pipe Mount	(1) 1/2" (3) 7/8"	City of Middletown
32	120.225	2	SC479-HF1LDF(D00-E5749) - Omni			
33	113.0	1	DS428E83I01T - TTA			
34	120.0	1	Cambium Network HP3-11- Dish	(1) Ring Mount (DCH8)	(1) EW90	

Continued...

-	107.0	3	CCI HPA-65R-BUU-H6 - Panel	(1) Low Profile Platform	(12) 1 5/8" (1) 1/2" Fiber (2) 3/4" DC	AT&T
-		3	Powerwave 7770.00 - Panel			
-		3	KMW AM-X-CD-16-65-00T-RET - Panel			
-		3	Powerwave TT19-08BP111-0011 TMA's			
-		3	CCI DTMAP7819VG12A TMA's			
-		6	Powerwave 7020.00 RET's			
-		3	Ericsson RRUS 11			
-		3	Ericsson RRUS-32 B2			
-		6	Powerwave LGP21903 Diplexer			
-		1	Raycap DC6-48-60-18-8F			
46		97.0	3			
47	3		Fujitsu TA08025-B605			
48	3		Fujitsu TA08025-B604			
49	1		Raycap RDIDC-9181-PF-48			
50	50.0	1	Lucent L112 GPS Receiver			Verizon

### **Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines**

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
35	108.8	3	Ericsson AIR 6419 B77G - Panel	(3) SitePro1 VFA14-H10-2120 (Sector Frame) (2) SitePro1 LWRM (Ring Mount) (6) SitePro1 MM01 (Stand-Off)	(12) 1 5/8" (6) 0.92" DC Power (3) 3/8" Fiber (3) 2" Conduit*	AT&T
36	107.0	3	Cci TPA65R-BU6DA-K - Panel			
37		3	Cci DMP65R-BU6DA - Panel			
38		3	Powerwave TT19-08BP111-001 TMA			
39		3	Cci DTMAP7819VG12A TMA			
40		6	Powerwave LGP21903 Diplexer			
41		6	Powerwave 7020.00 RET			
42		3	Ericsson RRUS 4478 B14			
43		3	Ericsson RRUS 8843 B2 B66A			
44		3	Ericsson RRUS 4449 B5/B12			
45		3	Raycap DC6-48-60-18-8F			
46	105.2	3	Ericsson Air 6449 B77D - Panel			

\*Each conduit housing (2) DC and (1) Fiber listed above

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>95.6%</b>	<b>68.1%</b>	<b>99.9%</b>
Pass/Fail	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>

## **Foundations**

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Original Design Reactions	4350.0	37.5	51.0
Analysis Reactions	5576.8	47.8	61.0
Factored Reactions*	5872.5	50.6	68.9
% Of Design Reactions	95.0%	94.5%	88.5%

\* Per section 15.5.1 of the TIA-222-G standard, factored reactions were obtained by multiplying a 1.35 factor to the original design reactions.

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

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

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

Elevation (ft)	Antenna / Dish	Carrier	Twist (deg)	Sway (deg)
151.0	Andrew VHLP2.5 - Dish	Clearwire	0.002	1.690
120.0	Cambium Network HP3-11- Dish - Dish	City of middle town	0.001	1.448

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

## **Conclusions**

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



## Standard Conditions

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

# Usage Diagram - Max Ratio 95.56% at 96.5ft

**Structure:** CT01080-S-SBA  
**Site Name:** Long Hill #1  
**Height:** 158.00 (ft)  
**Base Elev:** 0.000 (ft)

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

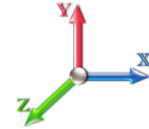
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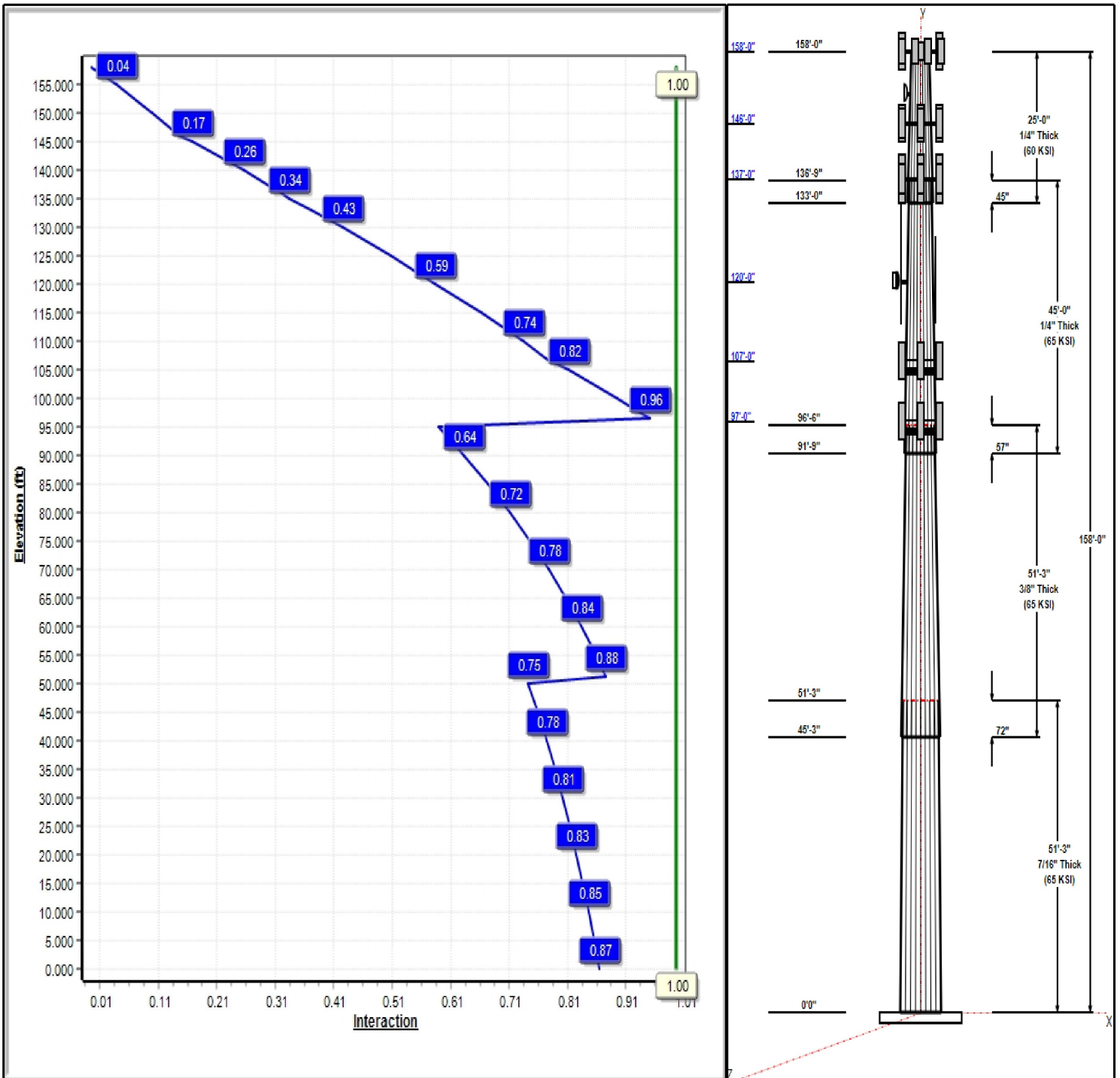
**Dead Load Factor:** 1.20  
**Wind Load Factor:** 1.60

**Load Case : 1.2D + 1.6W 101 mph Wind**



**Iterations:** 25

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# Structure: CT01080-S-SBA

**Type:** Tapered  
**Site Name:** Long Hill #1  
**Height:** 158.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 18 Sided  
**Taper:** 0.23500

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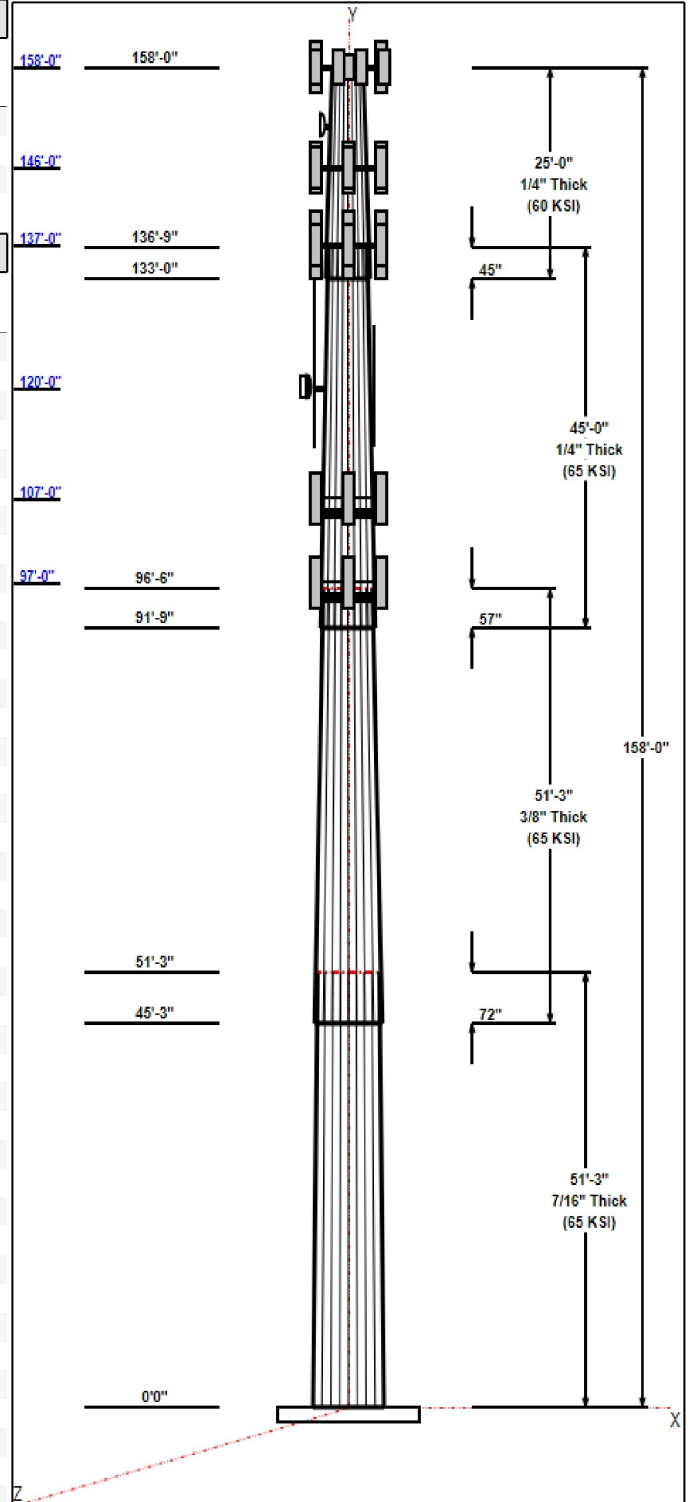


### Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	51.25	46.34	58.38	0.438		0.23500	65
2	51.25	36.45	48.50	0.375	Slip	0.23500	65
3	45.00	27.49	38.07	0.250	Slip	0.23500	65
4	25.00	23.00	28.88	0.250	Slip	0.23500	60

### Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
158.00	158.00	1	6' Lightning rod	
158.00	158.00	6	Commscope	Verizon
158.00	158.00	2	Amphenol	Verizon
158.00	158.00	4	RFS APL866513-42T0 w/	Verizon
158.00	158.00	3	Alcatel RRH2X60-AWS	Verizon
158.00	158.00	3	Alcatel RRH2X60-700	Verizon
158.00	158.00	3	Alcatel RRH2X60-PCS	Verizon
158.00	158.00	6	RFS FD9R6004/2CL-3CL	Verizon
158.00	158.00	2	RFS DB-T1-6C-8AB-0Z	Verizon
158.00	158.00	1	Low Profile Platform	Verizon
158.00	158.00	3	MT6407-77A	Verizon
158.00	158.00	3	RF4439d-25A	Verizon
158.00	158.00	3	RF4440d-13A	Verizon
158.00	158.00	1	OVP-12	Verizon
151.00	151.00	1	Andrew VHLP2.5	Clearwire
151.00	151.00	1	Pipe Mount	Clearwire
151.00	151.00	1	ODU	Clearwire
146.00	146.00	3	RFS APXVTM14-C-120 w/	Sprint
146.00	146.00	3	Alcatel TD-RRH8x20-25	Sprint
146.00	146.00	3	Alcatel 1900MHz RRH	Sprint
146.00	146.00	3	Alcatel 800 MHz RRH	Sprint
146.00	146.00	3	Alcatel 800MHz Filters	Sprint
146.00	146.00	4	RFS ACU-A20-N RET	Sprint
146.00	146.00	1	GPS	Sprint
146.00	146.00	3	Kathrein Scala 840 10054	Clearwire
146.00	146.00	3	RRUs	Clearwire
146.00	146.00	1	Low Profile Platform	Sprint
146.00	146.00	3	RFS APXVSP18-C-A20	Sprint
137.00	137.00	3	KRD 9011461-B66A-B2A	T-Mobile
137.00	137.00	3	APXVAARR24_43-U-NA20	T-Mobile
137.00	137.00	3	Kathrein 782 11056	T-Mobile
137.00	137.00	12	Allen Telecom	T-Mobile
137.00	137.00	1	Low Profile Platform w/	T-Mobile
137.00	137.00	3	KRY 112 489/2	T-Mobile
137.00	137.00	3	4449	T-Mobile
137.00	137.00	1	HRK12 (Handrail Kit)	T-Mobile
120.00	120.22	2	SC479-HF1LDF(D00-E574	city of middletown
120.00	124.58	1	SC229-DFLN	city of middletown
120.00	120.00	1	Cambium Network	city of middletown
120.00	120.00	1	Flush Mount	City of Middletown
120.00	120.00	1	Pipe Mount	City Of Middletown
120.00	120.00	1	DS428E83I01T - TTA	City of Middletown
107.00	107.00	3	Raycap DC6-48-60-18-8F	AT&T
107.00	107.00	3	TPA65R-BU6DA-K	AT&T
107.00	107.00	3	DMP65R-BU6DA	AT&T



**Structure: CT01080-S-SBA**

**Type:** Tapered  
**Site Name:** Long Hill #1  
**Height:** 158.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 18 Sided  
**Taper:** 0.23500

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107.00	108.80	3	AIR 6419 B77G	AT&T
107.00	105.20	3	AIR 6449 B77D	AT&T
107.00	107.00	1	(3) VFA14-H10-2120	AT&T
107.00	107.00	2	Collar Mount (3-Sided)	AT&T
107.00	107.00	6	SitePro1 MM01	AT&T
107.00	107.00	3	RRUS 4478 B14	AT&T
107.00	107.00	3	B2 B66A 8843	AT&T
107.00	107.00	3	4449 B5/B12	AT&T
107.00	107.00	3	Powerwave	AT&T
107.00	107.00	6	Powerwave LGP21903	AT&T
107.00	107.00	6	Powerwave 7020.00 RET's	AT&T
107.00	107.00	3	CCI DTMAP7819VG12A	AT&T
97.00	97.00	3	MX08FRO665-21	Dish Wireless
97.00	97.00	3	TA08025-B605	Dish Wireless
97.00	97.00	3	TA08025-B604	Dish Wireless
97.00	97.00	1	RDIDC-9181-OF-48	Dish Wireless
97.00	97.00	1	MC-PK8-DSH	Dish Wireless

**Linear Appurtenances**

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
3.00	158.00	Inside	1 5/8" Coax	Verizon
3.00	158.00	Outside	1/2" Coax	Verizon
3.00	151.00	Inside	1/2" Coax	Clearwire
3.00	146.00	Inside	1 1/4" Coax	Sprint
3.00	146.00	Inside	1-1/4" Power / Fiber	Sprint
3.00	146.00	Inside	1/2" Coax	Clearwire
3.00	146.00	Inside	5/16" Coax	Clearwire
3.00	137.00	Inside	1 5/8" Coax	T-Mobile
3.00	120.00	Inside	1/2" Coax	City Of Middletown
3.00	120.00	Inside	7/8" Coax	City Of Middletown
3.00	120.00	Inside	EW90	City Of Middletown
3.00	107.00	Inside	0.92" DC	AT&T
3.00	107.00	Inside	1 5/8" Coax	AT&T
3.00	107.00	Inside	2" Conduit	AT&T
3.00	107.00	Inside	3/8" Fiber	
3.00	97.00	Inside	1.6" Hybrid	Dish Wireless

**Anchor Bolts**

Qty	Specifications	Grade (ksi)	Arrangement
24	2.25" 18J	75.0	Cluster

**Base Plate**

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	67.0	50.0	Clipped

**Reactions**

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 101 mph Wind	5576.8	47.8	61.0
0.9D + 1.6W 101 mph Wind	5509.4	47.8	45.7
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1465.8	12.4	97.4
1.2D + 1.0E	287.6	2.3	61.1
0.9D + 1.0E	283.7	2.3	45.8
1.0D + 1.0W 60 mph Wind	1222.8	10.5	50.9

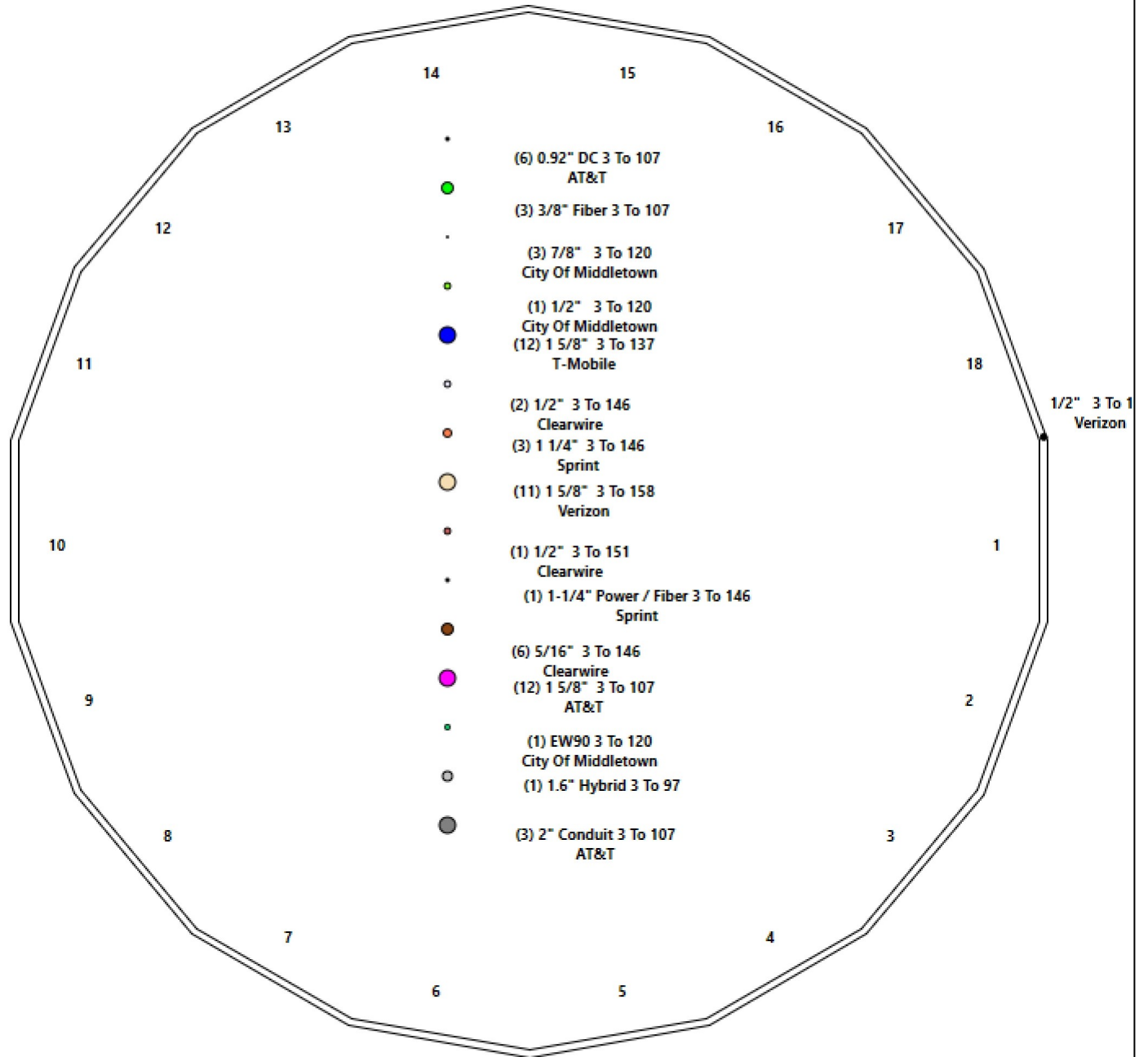
# Structure: CT01080-S-SBA - Coax Line Placement

**Type:** Monopole  
**Site Name:** Long Hill #1  
**Height:** 158.00 (ft)

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## Shaft Properties

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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	51.250	0.4375	65		0.00	12,573
2	18	51.250	0.3750	65	Slip	72.00	8,738
3	18	45.000	0.2500	65	Slip	57.00	3,953
4	18	25.000	0.2500	60	Slip	45.00	1,734
<b>Total Shaft Weight:</b>							<b>26,998</b>

Bottom

Top

Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper
1	58.38	0.00	80.46	34128.26	22.12	133.44	46.34	51.25	63.73	16963.8	17.26	105.9	0.235000
2	48.50	45.25	57.27	16756.62	21.39	129.32	36.45	96.50	42.94	7061.30	15.73	97.21	0.235000
3	38.07	91.75	30.01	5422.58	25.44	152.28	27.49	136.75	21.62	2027.15	17.98	109.9	0.235000
4	28.88	133.0	22.71	2351.37	18.96	115.50	23.00	158.00	18.05	1180.40	14.81	92.00	0.235000

## Load Summary

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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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### 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	6' Lightning rod	1	6.50	0.38	1.00	42.99	1.473	1.00	0.00	0.00
2	158.00	Commscope SBNHH-1D65B	6	50.71	8.05	0.83	253.10	9.351	0.83	0.00	0.00
3	158.00	Amphenol LPA-80063-6CF-EDIN-5	2	27.00	9.73	0.93	289.85	12.488	0.93	0.00	0.00
4	158.00	RFS APL866513-42T0 w/ Mount	4	48.70	5.65	0.93	389.21	8.263	0.93	0.00	0.00
5	158.00	Alcatel RRH2X60-AWS	3	60.00	3.50	0.50	147.74	4.293	0.50	0.00	0.00
6	158.00	Alcatel RRH2X60-700	3	60.00	3.50	0.50	147.74	4.293	0.50	0.00	0.00
7	158.00	Alcatel RRH2X60-PCS	3	55.00	2.20	0.50	135.43	2.699	0.50	0.00	0.00
8	158.00	RFS FD9R6004/2CL-3CL Diplexer	6	3.00	0.31	0.50	10.81	0.694	0.50	0.00	0.00
9	158.00	RFS DB-T1-6C-8AB-OZ Distribution	2	44.00	4.80	0.50	289.15	5.743	0.50	0.00	0.00
10	158.00	Low Profile Platform	1	1600.00	35.00	1.00	3003.45	64.472	1.00	0.00	0.00
11	158.00	MT6407-77A	3	79.40	4.69	0.70	199.70	5.642	0.70	0.00	0.00
12	158.00	RF4439d-25A	3	33.00	1.82	0.67	74.80	2.801	0.67	0.00	0.00
13	158.00	RF4440d-13A	3	70.40	1.88	0.67	122.86	2.434	0.67	0.00	0.00
14	158.00	OVP-12	1	32.00	4.06	0.67	146.52	4.886	0.67	0.00	0.00
15	151.00	Andrew VHLP2.5	1	47.60	8.43	1.00	220.41	10.138	1.00	1.00	0.00
16	151.00	Pipe Mount	1	40.00	2.63	1.00	120.33	8.603	1.00	0.00	0.00
17	151.00	ODU	1	13.20	1.24	0.50	42.82	2.041	0.50	0.00	0.00
18	146.00	RFS APXVTM14-C-120 w/ Mount	3	89.00	7.94	0.78	248.89	7.450	0.78	0.00	0.00
19	146.00	Alcatel TD-RRH8x20-25	3	70.00	4.05	0.50	180.10	4.861	0.50	0.00	0.00
20	146.00	Alcatel 1900MHz RRH	3	44.00	2.38	0.50	152.87	3.248	0.50	0.00	0.00
21	146.00	Alcatel 800 MHz RRH	3	53.00	2.13	0.50	126.76	3.106	0.50	0.00	0.00
22	146.00	Alcatel 800MHz Filters	3	8.80	0.67	0.50	26.40	1.224	0.50	0.00	0.00
23	146.00	RFS ACU-A20-N RET	4	1.00	0.12	0.50	5.28	0.374	0.50	0.00	0.00
24	146.00	GPS	1	10.00	1.00	1.00	39.24	1.710	1.00	0.00	0.00
25	146.00	Kathrein Scala 840 10054	3	35.00	4.59	0.61	119.04	6.258	0.61	0.00	0.00
26	146.00	RRUs	3	3.13	2.92	0.50	8.71	4.207	0.50	0.00	0.00
27	146.00	Low Profile Platform	1	1600.00	30.00	1.00	2992.40	55.063	1.00	0.00	0.00
28	146.00	RFS APXVSPP18-C-A20 w/ Mount	3	90.00	9.62	0.83	362.19	12.962	0.83	0.00	0.00
29	137.00	KRD 9011461-B66A-B2A	3	132.20	6.51	0.87	313.48	7.621	0.87	0.00	0.00
30	137.00	APXVAARR24_43-U-NA20	3	128.00	20.24	0.70	541.69	22.122	0.70	0.00	0.00
31	137.00	Kathrein 782 11056 Diplexer	3	11.00	0.15	0.50	28.48	0.312	0.50	0.00	0.00
32	137.00	Allen Telecom FE15S01P77/75	12	8.20	0.54	0.50	21.98	1.076	0.50	0.00	0.00
33	137.00	Low Profile Platform w/ Support Kit	1	1200.00	25.00	1.00	2237.68	45.754	1.00	0.00	0.00
34	137.00	KRY 112 489/2	3	10.00	0.42	0.50	32.68	0.742	0.50	0.00	0.00
35	137.00	4449	3	70.00	1.65	0.50	137.47	2.182	0.50	0.00	0.00
36	137.00	HRK12 (Handrail Kit)	1	261.72	6.75	1.00	569.51	13.287	1.00	0.00	0.00
37	120.00	SC479-HF1LDF(D00-E5749)	2	34.00	5.03	1.00	155.65	10.064	1.00	0.00	0.22
38	120.00	SC229-DFLN	1	32.00	6.72	1.00	197.57	14.739	1.00	0.00	4.58
39	120.00	Cambium Network HP3-11- Dish	1	50.00	8.92	1.00	228.42	10.637	1.00	0.00	0.00
40	120.00	Flush Mount	1	350.00	5.00	1.00	636.73	8.413	1.00	0.00	0.00
41	120.00	Pipe Mount	1	400.00	10.00	1.00	673.07	18.534	1.00	0.00	0.00
42	120.00	DS428E83101T - TTA	1	50.00	8.92	0.50	388.68	12.051	0.50	0.00	0.00
43	107.00	Raycap DC6-48-60-18-8F	3	32.80	2.20	0.67	94.45	3.213	0.67	0.00	0.00
44	107.00	TPA65R-BU6DA-K	3	69.00	12.71	0.72	364.05	14.117	0.72	0.00	0.00
45	107.00	DMP65R-BU6DA	3	79.40	12.71	0.72	364.16	14.125	0.72	0.00	0.00
46	107.00	AIR 6419 B77G	3	66.10	3.66	0.76	159.11	4.401	0.76	0.00	1.80
47	107.00	AIR 6449 B77D	3	106.00	4.02	0.85	220.86	4.833	0.85	0.00	-1.80
48	107.00	(3) VFA14-H10-2120	1	2736.00	50.70	0.75	5321.13	12.291	0.75	0.00	0.00
49	107.00	Collar Mount (3-Sided)	2	264.35	2.00	1.00	621.17	4.025	1.00	0.00	0.00
50	107.00	SitePro1 MM01	6	26.06	0.10	1.00	34.85	0.134	1.00	0.00	0.00

## 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		
51	107.00	RRUS 4478 B14	3	59.40	2.02	0.67	99.49	2.634	0.67	0.00	0.00
52	107.00	B2 B66A 8843	3	72.00	1.64	0.67	117.73	2.139	0.67	0.00	0.00
53	107.00	4449 B5/B12	3	73.00	1.64	0.67	126.06	2.080	0.67	0.00	0.00
54	107.00	Powerwave TT19-08BP111-001	3	16.00	0.55	0.60	35.57	1.043	0.60	0.00	0.00
55	107.00	Powerwave LGP21903 Diplexer	6	5.30	0.23	0.60	13.15	0.557	0.60	0.00	0.00
56	107.00	Powerwave 7020.00 RET's	6	2.20	0.34	0.60	12.10	0.738	0.60	0.00	0.00
57	107.00	CCI DTMAP7819VG12A TMA's	3	19.18	0.98	0.60	43.83	1.620	0.60	0.00	0.00
58	97.00	MX08FRO665-21	3	64.50	12.49	0.74	342.96	13.892	0.74	0.00	0.00
59	97.00	TA08025-B605	3	75.00	1.96	0.67	125.07	2.497	0.67	0.00	0.00
60	97.00	TA08025-B604	3	63.90	1.96	0.67	112.37	2.497	0.67	0.00	0.00
61	97.00	RDIDC-9181-OF-48	1	21.90	2.01	1.00	72.88	2.554	1.00	0.00	0.00
62	97.00	MC-PK8-DSH	1	1727.00	37.59	1.00	3342.84	82.809	1.00	0.00	0.00
<b>Totals:</b>			<b>172</b>	<b>17,432.07</b>			<b>42,712.33</b>				

## Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
3.00	158.00	(11) 1 5/8" Coax	0.00	Inside
3.00	158.00	(1) 1/2" Coax	0.00	Outside
3.00	151.00	(1) 1/2" Coax	0.00	Inside
3.00	146.00	(3) 1 1/4" Coax	0.00	Inside
3.00	146.00	(1) 1-1/4" Power / Fiber	0.00	Inside
3.00	146.00	(2) 1/2" Coax	0.00	Inside
3.00	146.00	(6) 5/16" Coax	0.00	Inside
3.00	137.00	(12) 1 5/8" Coax	0.00	Inside
3.00	120.00	(1) 1/2" Coax	0.00	Inside
3.00	120.00	(3) 7/8" Coax	0.00	Inside
3.00	120.00	(1) EW90	0.00	Inside
3.00	107.00	(6) 0.92" DC	0.00	Inside
3.00	107.00	(12) 1 5/8" Coax	0.00	Inside
3.00	107.00	(3) 2" Conduit	0.00	Inside
3.00	107.00	(3) 3/8" Fiber	0.00	Inside
3.00	97.00	(1) 1.6" Hybrid	0.00	Inside



## Shaft Section Properties

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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		0.4375	58.380	80.458	34128.3	22.12	133.44	75.4	1151.	0.0
5.00		0.4375	57.205	78.826	32093.8	21.64	130.75	75.9	1105.	1355.0
10.00		0.4375	56.030	77.194	30141.9	21.17	128.07	76.5	1059.	1327.3
15.00		0.4375	54.855	75.563	28270.8	20.70	125.38	77.1	1015.	1299.5
20.00		0.4375	53.680	73.931	26478.8	20.22	122.70	77.6	971.6	1271.7
25.00		0.4375	52.505	72.300	24764.1	19.75	120.01	78.2	929.0	1244.0
30.00		0.4375	51.330	70.668	23125.1	19.28	117.33	78.7	887.3	1216.2
35.00		0.4375	50.155	69.036	21560.1	18.80	114.64	79.3	846.7	1188.5
40.00		0.4375	48.980	67.405	20067.3	18.33	111.95	79.8	807.0	1160.7
45.00		0.4375	47.805	65.773	18645.1	17.86	109.27	80.4	768.2	1132.9
45.25	Bot - Section 2	0.4375	47.746	65.692	18575.8	17.83	109.13	80.4	766.3	55.9
50.00		0.4375	46.630	64.142	17291.7	17.38	106.58	81.0	730.4	1964.3
51.25	Top - Section 1	0.3750	47.086	55.596	15326.4	20.73	125.56	0.0	0.0	509.2
55.00		0.3750	46.205	54.547	14475.2	20.32	123.21	77.5	617.0	702.7
60.00		0.3750	45.030	53.149	13390.2	19.76	120.08	78.2	585.7	916.2
65.00		0.3750	43.855	51.750	12360.7	19.21	116.95	78.8	555.1	892.4
70.00		0.3750	42.680	50.352	11385.5	18.66	113.81	79.5	525.4	868.6
75.00		0.3750	41.505	48.953	10462.9	18.11	110.68	80.1	496.5	844.8
80.00		0.3750	40.330	47.555	9591.6	17.55	107.55	80.8	468.4	821.0
85.00		0.3750	39.155	46.156	8770.0	17.00	104.41	81.4	441.2	797.2
90.00		0.3750	37.980	44.758	7996.7	16.45	101.28	82.1	414.7	773.4
91.75	Bot - Section 3	0.3750	37.569	44.268	7737.2	16.25	100.18	82.3	405.6	265.1
95.00		0.3750	36.805	43.359	7270.3	15.90	98.15	82.5	389.1	813.0
96.50	Top - Section 2	0.2500	36.953	29.122	4956.5	24.65	147.81	0.0	0.0	369.6
97.00		0.2500	36.835	29.029	4909.0	24.57	147.34	72.5	262.5	49.5
100.00		0.2500	36.130	28.470	4630.6	24.07	144.52	73.1	252.4	293.5
105.00		0.2500	34.955	27.537	4190.4	23.24	139.82	74.1	236.1	476.4
107.00		0.2500	34.485	27.164	4022.5	22.91	137.94	74.5	229.7	186.1
110.00		0.2500	33.780	26.605	3779.1	22.41	135.12	75.0	220.3	274.4
115.00		0.2500	32.605	25.673	3395.5	21.59	130.42	76.0	205.1	444.7
120.00		0.2500	31.430	24.740	3038.9	20.76	125.72	77.0	190.4	428.9
125.00		0.2500	30.255	23.808	2708.1	19.93	121.02	78.0	176.3	413.0
130.00		0.2500	29.080	22.876	2402.3	19.10	116.32	78.9	162.7	397.1
133.00	Bot - Section 4	0.2500	28.375	22.316	2230.3	18.60	113.50	79.5	154.8	230.7
135.00		0.2500	27.905	21.943	2120.3	18.27	111.62	79.9	149.7	303.9
136.75	Top - Section 3	0.2500	27.994	22.014	2140.8	18.33	111.97	0.0	0.0	261.8
137.00		0.2500	27.935	21.967	2127.2	18.29	111.74	74.5	150.0	18.7
140.00		0.2500	27.230	21.408	1968.8	17.79	108.92	75.0	142.4	221.4
145.00		0.2500	26.055	20.476	1722.6	16.97	104.22	75.9	130.2	356.3
146.00		0.2500	25.820	20.289	1676.0	16.80	103.28	76.1	127.9	69.4
150.00		0.2500	24.880	19.543	1497.9	16.14	99.52	76.2	118.6	271.1
151.00		0.2500	24.645	19.357	1455.4	15.97	98.58	76.2	116.3	66.2
155.00		0.2500	23.705	18.611	1293.6	15.31	94.82	76.2	107.5	258.4
158.00		0.2500	23.000	18.051	1180.4	14.81	92.00	76.2	101.1	187.1

**26997.7**

## Wind Loading - Shaft

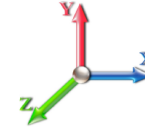
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



**Load Case:** 1.2D + 1.6W 101 mph Wind

**Iterations** 25

**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	21.088	23.20	460.00	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	21.088	23.20	450.75	0.650	0.000	5.00	24.452	15.89	589.9	0.0	1626.0
10.00		1.00	0.85	21.088	23.20	441.49	0.650	0.000	5.00	23.955	15.57	577.9	0.0	1592.7
15.00		1.00	0.85	21.088	23.20	432.23	0.650	0.000	5.00	23.457	15.25	565.9	0.0	1559.4
20.00		1.00	0.90	22.375	24.61	435.69	0.650	0.000	5.00	22.960	14.92	587.7	0.0	1526.1
25.00		1.00	0.95	23.451	25.80	436.28	0.650	0.000	5.00	22.463	14.60	602.6	0.0	1492.8
30.00		1.00	0.98	24.369	26.81	434.78	0.650	0.000	5.00	21.966	14.28	612.4	0.0	1459.5
35.00		1.00	1.01	25.172	27.69	431.78	0.650	0.000	5.00	21.469	13.95	618.2	0.0	1426.2
40.00		1.00	1.04	25.890	28.48	427.63	0.650	0.000	5.00	20.972	13.63	621.1	0.0	1392.8
45.00		1.00	1.07	26.540	29.19	422.58	0.650	0.000	5.00	20.475	13.31	621.6	0.0	1359.5
45.25	Bot - Section 2	1.00	1.07	26.571	29.23	422.31	0.650	0.000	0.25	1.011	0.66	30.7	0.0	67.1
50.00		1.00	1.09	27.135	29.85	416.79	0.650	0.000	4.75	19.268	12.52	598.1	0.0	2357.1
51.25	Top - Section 1	1.00	1.10	27.277	30.00	415.24	0.650	0.000	1.25	4.996	3.25	155.9	0.0	611.0
55.00		1.00	1.12	27.685	30.45	417.16	0.650	0.000	3.75	14.802	9.62	468.8	0.0	843.3
60.00		1.00	1.14	28.197	31.02	410.29	0.650	0.000	5.00	19.301	12.55	622.6	0.0	1099.4
65.00		1.00	1.16	28.676	31.54	402.96	0.650	0.000	5.00	18.803	12.22	616.9	0.0	1070.8
70.00		1.00	1.17	29.127	32.04	395.24	0.650	0.000	5.00	18.306	11.90	610.0	0.0	1042.3
75.00		1.00	1.19	29.553	32.51	387.16	0.650	0.000	5.00	17.809	11.58	602.1	0.0	1013.7
80.00		1.00	1.21	29.958	32.95	378.76	0.650	0.000	5.00	17.312	11.25	593.3	0.0	985.2
85.00		1.00	1.22	30.342	33.38	370.08	0.650	0.000	5.00	16.815	10.93	583.7	0.0	956.6
90.00		1.00	1.24	30.710	33.78	361.14	0.650	0.000	5.00	16.318	10.61	573.3	0.0	928.1
91.75	Bot - Section 3	1.00	1.24	30.834	33.92	357.96	0.650	0.000	1.75	5.594	3.64	197.3	0.0	318.1
95.00		1.00	1.25	31.061	34.17	351.97	0.650	0.000	3.25	10.364	6.74	368.3	0.0	975.7
96.50	Top - Section 2	1.00	1.26	31.164	34.28	349.17	0.650	0.000	1.50	4.713	3.06	168.0	0.0	443.5
97.00	Appurtenance(s)	1.00	1.26	31.198	34.32	353.03	0.650	0.000	0.50	1.561	1.01	55.7	0.0	59.4
100.00		1.00	1.27	31.399	34.54	347.38	0.650	0.000	3.00	9.261	6.02	332.7	0.0	352.2
105.00		1.00	1.28	31.723	34.89	337.82	0.650	0.000	5.00	15.038	9.77	545.7	0.0	571.7
107.00	Appurtenance(s)	1.00	1.28	31.849	35.03	333.94	0.650	0.000	2.00	5.876	3.82	214.1	0.0	223.4
110.00		1.00	1.29	32.035	35.24	328.06	0.650	0.000	3.00	8.665	5.63	317.5	0.0	329.3
115.00		1.00	1.30	32.336	35.57	318.14	0.650	0.000	5.00	14.044	9.13	519.5	0.0	533.7
120.00	Appurtenance(s)	1.00	1.32	32.627	35.89	308.05	0.650	0.000	5.00	13.546	8.81	505.6	0.0	514.6
125.00		1.00	1.33	32.909	36.20	297.81	0.650	0.000	5.00	13.049	8.48	491.3	0.0	495.6
130.00		1.00	1.34	33.182	36.50	287.43	0.650	0.000	5.00	12.552	8.16	476.5	0.0	476.6
133.00	Bot - Section 4	1.00	1.34	33.341	36.68	281.13	0.650	0.000	3.00	7.293	4.74	278.2	0.0	276.8
135.00		1.00	1.35	33.446	36.79	276.91	0.650	0.000	2.00	4.847	3.15	185.5	0.0	364.7
136.75	Top - Section 3	1.00	1.35	33.537	36.89	273.20	0.650	0.000	1.75	4.176	2.71	160.2	0.0	314.1
137.00	Appurtenance(s)	1.00	1.35	33.550	36.90	277.64	0.650	0.000	0.25	0.592	0.38	22.7	0.0	22.4
140.00		1.00	1.36	33.703	37.07	271.25	0.650	0.000	3.00	7.002	4.55	270.0	0.0	265.7
145.00		1.00	1.37	33.953	37.35	260.51	0.650	0.000	5.00	11.272	7.33	437.8	0.0	427.6
146.00	Appurtenance(s)	1.00	1.37	34.002	37.40	258.34	0.650	0.000	1.00	2.195	1.43	85.4	0.0	83.2
150.00		1.00	1.38	34.196	37.62	249.65	0.650	0.000	4.00	8.580	5.58	335.7	0.0	325.3
151.00	Appurtenance(s)	1.00	1.38	34.244	37.67	247.46	0.650	0.000	1.00	2.095	1.36	82.1	0.0	79.4
155.00		1.00	1.39	34.433	37.88	238.68	0.650	0.000	4.00	8.183	5.32	322.3	0.0	310.1
158.00	Appurtenance(s)	1.00	1.39	34.573	38.03	232.05	0.650	0.000	3.00	5.928	3.85	234.5	0.0	224.6
<b>Totals:</b>									<b>158.00</b>			<b>17,459.3</b>		<b>32,397.2</b>

## Discrete Appurtenance Forces

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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

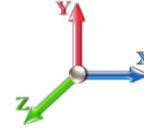


**Load Case:** 1.2D + 1.6W 101 mph Wind

**Iterations** 25

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60



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	Alcatel RRH2X60-PCS	3	34.573	38.030	0.38	0.75	2.48	198.00	0.000	0.000	150.60	0.00	0.00
2	158.00	6' Lightning rod	1	34.573	38.030	1.00	1.00	0.38	7.80	0.000	0.000	23.12	0.00	0.00
3	158.00	Commscope	6	34.573	38.030	0.62	0.75	30.07	365.11	0.000	0.000	1829.49	0.00	0.00
4	158.00	Amphenol	2	34.573	38.030	0.70	0.75	13.57	64.80	0.000	0.000	825.91	0.00	0.00
5	158.00	RFS APL866513-42T0 w/	4	34.573	38.030	0.70	0.75	15.76	233.76	0.000	0.000	959.17	0.00	0.00
6	158.00	Alcatel RRH2X60-AWS	3	34.573	38.030	0.38	0.75	3.94	216.00	0.000	0.000	239.59	0.00	0.00
7	158.00	Alcatel RRH2X60-700	3	34.573	38.030	0.38	0.75	3.94	216.00	0.000	0.000	239.59	0.00	0.00
8	158.00	OVP-12	1	34.573	38.030	0.50	0.75	2.04	38.40	0.000	0.000	124.14	0.00	0.00
9	158.00	RFS FD9R6004/2CL-3CL	6	34.573	38.030	0.38	0.75	0.70	21.60	0.000	0.000	42.44	0.00	0.00
10	158.00	RFS DB-T1-6C-8AB-0Z	2	34.573	38.030	0.38	0.75	3.60	105.60	0.000	0.000	219.05	0.00	0.00
11	158.00	Low Profile Platform	1	34.573	38.030	1.00	1.00	35.00	1920.00	0.000	0.000	2129.67	0.00	0.00
12	158.00	MT6407-77A	3	34.573	38.030	0.52	0.75	7.39	285.84	0.000	0.000	449.47	0.00	0.00
13	158.00	RF4439d-25A	3	34.573	38.030	0.50	0.75	2.74	118.80	0.000	0.000	166.94	0.00	0.00
14	158.00	RF4440d-13A	3	34.573	38.030	0.50	0.75	2.83	253.44	0.000	0.000	172.45	0.00	0.00
15	151.00	Andrew VHLP2.5	1	34.244	37.669	1.00	1.00	8.43	57.12	2.043	0.000	508.08	648.66	0.00
16	151.00	Pipe Mount	1	34.244	37.669	1.00	1.00	2.63	48.00	0.000	0.000	158.51	0.00	0.00
17	151.00	ODU	1	34.244	37.669	0.50	1.00	0.62	15.84	0.000	0.000	37.37	0.00	0.00
18	146.00	RFS ACU-A20-N RET	4	34.002	37.403	0.40	0.80	0.19	4.80	0.000	0.000	11.49	0.00	0.00
19	146.00	RFS APXVTM14-C-120 w/	3	34.002	37.403	0.62	0.80	14.86	320.40	0.000	0.000	889.51	0.00	0.00
20	146.00	Alcatel TD-RRH8x20-25	3	34.002	37.403	0.40	0.80	4.86	252.00	0.000	0.000	290.84	0.00	0.00
21	146.00	Alcatel 1900MHz RRH	3	34.002	37.403	0.40	0.80	2.86	158.40	0.000	0.000	170.92	0.00	0.00
22	146.00	Alcatel 800 MHz RRH	3	34.002	37.403	0.40	0.80	2.56	190.80	0.000	0.000	152.96	0.00	0.00
23	146.00	Alcatel 800MHz Filters	3	34.002	37.403	0.40	0.80	0.80	31.68	0.000	0.000	48.11	0.00	0.00
24	146.00	GPS	1	34.002	37.403	1.00	1.00	1.00	12.00	0.000	0.000	59.84	0.00	0.00
25	146.00	Kathrein Scala 840 10054	3	34.002	37.403	0.49	0.80	6.72	126.00	0.000	0.000	402.14	0.00	0.00
26	146.00	RRUs	3	34.002	37.403	0.40	0.80	3.50	11.27	0.000	0.000	209.69	0.00	0.00
27	146.00	Low Profile Platform	1	34.002	37.403	1.00	1.00	30.00	1920.00	0.000	0.000	1795.33	0.00	0.00
28	146.00	RFS APXVSP18-C-A20	3	34.002	37.403	0.66	0.80	19.16	324.00	0.000	0.000	1146.80	0.00	0.00
29	137.00	HRK12 (Handrail Kit)	1	33.550	36.905	1.00	1.00	6.75	314.06	0.000	0.000	398.57	0.00	0.00
30	137.00	4449	3	33.550	36.905	0.38	0.75	1.86	252.00	0.000	0.000	109.61	0.00	0.00
31	137.00	KRY 112 489/2	3	33.550	36.905	0.38	0.75	0.47	36.00	0.000	0.000	27.90	0.00	0.00
32	137.00	Low Profile Platform w/	1	33.550	36.905	1.00	1.00	25.00	1440.00	0.000	0.000	1476.20	0.00	0.00
33	137.00	Kathrein 782 11056	3	33.550	36.905	0.38	0.75	0.17	39.60	0.000	0.000	9.96	0.00	0.00
34	137.00	APXVAARR24_43-U-NA2	3	33.550	36.905	0.52	0.75	31.88	460.80	0.000	0.000	1882.33	0.00	0.00
35	137.00	KRD 9011461-B66A-B2A	3	33.550	36.905	0.65	0.75	12.74	475.92	0.000	0.000	752.47	0.00	0.00
36	137.00	Allen Telecom	12	33.550	36.905	0.38	0.75	2.43	118.08	0.000	0.000	143.49	0.00	0.00
37	120.00	Cambium Network	1	32.627	35.890	1.00	1.00	8.92	60.00	0.000	0.000	512.22	0.00	0.00
38	120.00	SC479-HF1LDF(D00-E574	2	32.640	35.904	0.80	0.80	8.05	81.60	0.000	0.220	462.32	0.00	101.71
39	120.00	SC229-DFLN	1	32.885	36.174	0.80	0.80	5.38	38.40	0.000	4.580	311.15	0.00	1425.09
40	120.00	Flush Mount	1	32.627	35.890	1.00	1.00	5.00	420.00	0.000	0.000	287.12	0.00	0.00
41	120.00	Pipe Mount	1	32.627	35.890	1.00	1.00	10.00	480.00	0.000	0.000	574.24	0.00	0.00
42	120.00	DS428E83I01T - TTA	1	32.627	35.890	0.40	0.80	3.57	60.00	0.000	0.000	204.89	0.00	0.00
43	107.00	AIR 6419 B77G	3	31.961	35.157	0.61	0.80	6.68	237.96	0.000	1.800	375.53	0.00	675.95
44	107.00	DMP65R-BU6DA	3	31.849	35.034	0.58	0.80	21.96	285.84	0.000	0.000	1231.11	0.00	0.00
45	107.00	TPA65R-BU6DA-K	3	31.849	35.034	0.58	0.80	21.96	248.40	0.000	0.000	1231.11	0.00	0.00
46	107.00	AIR 6449 B77D	3	31.735	34.909	0.68	0.80	8.20	381.60	0.000	-1.800	458.05	0.00	-824.49
47	107.00	Raycap DC6-48-60-18-8F	3	31.849	35.034	0.54	0.80	3.54	118.08	0.000	0.000	198.30	0.00	0.00

## Discrete Appurtenance Forces

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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> 11
	<b>Struct Class:</b> II	



48	107.00	Powerwave LGP21903	6	31.849	35.034	0.48	0.80	0.66	38.16	0.000	0.000	37.13	0.00	0.00
49	107.00	Powerwave	3	31.849	35.034	0.48	0.80	0.79	57.60	0.000	0.000	44.39	0.00	0.00
50	107.00	RRUS 4478 B14	3	31.849	35.034	0.54	0.80	3.25	213.84	0.000	0.000	182.07	0.00	0.00
51	107.00	4449 B5/B12	3	31.849	35.034	0.54	0.80	2.64	262.80	0.000	0.000	147.82	0.00	0.00
52	107.00	CCI DTMAP7819VG12A	3	31.849	35.034	0.48	0.80	1.41	69.05	0.000	0.000	79.10	0.00	0.00
53	107.00	Powerwave 7020.00	6	31.849	35.034	0.48	0.80	0.98	15.84	0.000	0.000	54.89	0.00	0.00
54	107.00	(3) VFA14-H10-2120	1	31.849	35.034	0.56	0.75	28.52	3283.20	0.000	0.000	1598.59	0.00	0.00
55	107.00	B2 B66A 8843	3	31.849	35.034	0.54	0.80	2.64	259.20	0.000	0.000	147.82	0.00	0.00
56	107.00	SitePro1 MM01	6	31.849	35.034	1.00	1.00	0.60	187.63	0.000	0.000	33.63	0.00	0.00
57	107.00	Collar Mount (3-Sided)	2	31.849	35.034	1.00	1.00	4.00	634.44	0.000	0.000	224.22	0.00	0.00
58	97.00	MC-PK8-DSH	1	31.198	34.318	1.00	1.00	37.59	2072.40	0.000	0.000	2064.00	0.00	0.00
59	97.00	RDIDC-9181-OF-48	1	31.198	34.318	0.75	0.75	1.51	26.28	0.000	0.000	82.77	0.00	0.00
60	97.00	TA08025-B604	3	31.198	34.318	0.50	0.75	2.95	230.04	0.000	0.000	162.24	0.00	0.00
61	97.00	TA08025-B605	3	31.198	34.318	0.50	0.75	2.95	270.00	0.000	0.000	162.24	0.00	0.00
62	97.00	MX08FRO665-21	3	31.198	34.318	0.55	0.75	20.80	232.20	0.000	0.000	1141.86	0.00	0.00

**Totals:            20,918.48                            30,262.58**

## Total Applied Force Summary

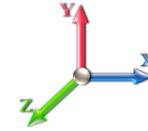
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 101 mph Wind

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



**Iterations** 25

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		589.88	1750.08	0.00	0.00
10.00		577.88	1902.87	0.00	0.00
15.00		565.89	1869.56	0.00	0.00
20.00		587.71	1836.25	0.00	0.00
25.00		602.64	1802.94	0.00	0.00
30.00		612.36	1769.63	0.00	0.00
35.00		618.24	1736.31	0.00	0.00
40.00		621.14	1703.00	0.00	0.00
45.00		621.65	1669.69	0.00	0.00
45.25		30.72	82.61	0.00	0.00
50.00		598.14	2651.77	0.00	0.00
51.25		155.90	688.55	0.00	0.00
55.00		468.80	1075.91	0.00	0.00
60.00		622.59	1409.56	0.00	0.00
65.00		616.86	1381.01	0.00	0.00
70.00		609.99	1352.45	0.00	0.00
75.00		602.11	1323.90	0.00	0.00
80.00		593.31	1295.35	0.00	0.00
85.00		583.67	1266.80	0.00	0.00
90.00		573.27	1238.24	0.00	0.00
91.75		197.32	426.64	0.00	0.00
95.00		368.29	1177.26	0.00	0.00
96.50		168.01	536.57	0.00	0.00
97.00	(11) attachments	3668.82	2921.30	0.00	0.00
100.00		332.67	531.73	0.00	0.00
105.00		545.73	870.98	0.00	0.00
107.00	(51) attachments	6257.86	6636.70	0.00	-148.54
110.00		317.55	437.39	0.00	0.00
115.00		519.51	713.75	0.00	0.00
120.00	(7) attachments	2857.57	1834.72	0.00	1526.80
125.00		491.27	663.44	0.00	0.00
130.00		476.48	644.41	0.00	0.00
133.00		278.16	377.51	0.00	0.00
135.00		185.46	431.83	0.00	0.00
136.75		160.21	372.86	0.00	0.00
137.00	(29) attachments	4823.24	3167.30	0.00	0.00
140.00		269.97	321.45	0.00	0.00
145.00		437.84	520.52	0.00	0.00
146.00	(30) attachments	5263.01	3453.17	0.00	0.00
150.00		335.67	381.74	0.00	0.00
151.00	(3) attachments	786.04	214.49	648.66	0.00
155.00		322.33	365.75	0.00	0.00
158.00	(41) attachments	7806.10	4311.47	0.00	0.00
<b>Totals:</b>		<b>47,721.84</b>	<b>61,119.49</b>	<b>648.66</b>	<b>1,378.25</b>

## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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



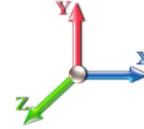
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**Load Case:** 1.2D + 1.6W 101 mph Wind

**Iterations** 25

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60



Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	0.38
10.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	0.96
15.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	0.96
20.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.375	0.00	0.96
25.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.451	0.00	0.96
30.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.369	0.00	0.96
35.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.172	0.00	0.96
40.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.890	0.00	0.96
45.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.540	0.00	0.96
45.25	1/2" Coax	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	26.571	0.00	0.05
50.00	1/2" Coax	Yes	4.75	0.000	0.00	0.00	0.00	0.000	0.000	27.135	0.00	0.91
51.25	1/2" Coax	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	27.277	0.00	0.24
55.00	1/2" Coax	Yes	3.75	0.000	0.00	0.00	0.00	0.000	0.000	27.685	0.00	0.72
60.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.197	0.00	0.96
65.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.676	0.00	0.96
70.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.127	0.00	0.96
75.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.553	0.00	0.96
80.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.958	0.00	0.96
85.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.342	0.00	0.96
90.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.710	0.00	0.96
91.75	1/2" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	30.834	0.00	0.34
95.00	1/2" Coax	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	31.061	0.00	0.62
96.50	1/2" Coax	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	31.164	0.00	0.29
97.00	1/2" Coax	Yes	0.50	0.000	0.00	0.00	0.00	0.000	0.000	31.198	0.00	0.10
100.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	31.399	0.00	0.58
105.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.723	0.00	0.96
107.00	1/2" Coax	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	31.849	0.00	0.38
110.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	32.035	0.00	0.58
115.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.336	0.00	0.96
120.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.627	0.00	0.96
125.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.909	0.00	0.96
130.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.182	0.00	0.96
133.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	33.341	0.00	0.58
135.00	1/2" Coax	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	33.446	0.00	0.38
136.75	1/2" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	33.537	0.00	0.34
137.00	1/2" Coax	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	33.550	0.00	0.05
140.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	33.703	0.00	0.58
145.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.953	0.00	0.96
146.00	1/2" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	34.002	0.00	0.19
150.00	1/2" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	34.196	0.00	0.77
151.00	1/2" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	34.244	0.00	0.19
155.00	1/2" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	34.433	0.00	0.77
158.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	34.573	0.00	0.58
<b>Totals:</b>											<b>0.0</b>	<b>29.8</b>

## Calculated Forces

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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 + 1.6W 101 mph Wind

**Iterations** 25

**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	-61.02	-47.85	-0.62	-5576.8	-0.02	5576.85	5458.79	2729.40	13000.6	6509.99	0.00	0.000	0.000	0.868
5.00	-59.08	-47.49	-0.62	-5337.6	-0.02	5337.62	5387.61	2693.80	12568.9	6293.83	0.12	-0.227	0.000	0.859
10.00	-56.99	-47.13	-0.62	-5100.1	-0.02	5100.18	5314.79	2657.39	12140.4	6079.27	0.49	-0.459	0.000	0.850
15.00	-54.94	-46.78	-0.62	-4864.5	-0.02	4864.52	5240.33	2620.17	11715.4	5866.42	1.09	-0.694	0.000	0.840
20.00	-52.91	-46.38	-0.62	-4630.6	-0.02	4630.65	5164.24	2582.12	11294.0	5655.41	1.95	-0.933	0.000	0.829
25.00	-50.93	-45.97	-0.62	-4398.7	-0.02	4398.73	5086.52	2543.26	10876.5	5446.36	3.05	-1.175	0.000	0.818
30.00	-48.97	-45.53	-0.62	-4168.9	-0.02	4168.91	5007.16	2503.58	10463.2	5239.39	4.42	-1.421	0.000	0.806
35.00	-47.06	-45.07	-0.62	-3941.2	-0.02	3941.28	4926.16	2463.08	10054.2	5034.61	6.04	-1.671	0.000	0.793
40.00	-45.18	-44.59	-0.62	-3715.9	-0.02	3715.95	4843.52	2421.76	9649.95	4832.15	7.93	-1.923	0.000	0.779
45.00	-43.43	-44.01	-0.62	-3492.9	-0.02	3492.98	4759.26	2379.63	9250.49	4632.12	10.08	-2.179	0.000	0.764
45.25	-43.25	-44.08	-0.62	-3481.9	-0.02	3481.98	4755.00	2377.50	9230.65	4622.19	10.19	-2.192	0.000	0.763
50.00	-40.51	-43.48	-0.63	-3272.6	-0.02	3272.60	4673.35	2336.67	8856.13	4434.65	12.50	-2.438	0.000	0.747
51.25	-39.72	-43.39	-0.63	-3218.2	-0.03	3218.25	3853.76	1926.88	7395.56	3703.28	13.15	-2.505	0.000	0.880
55.00	-38.49	-43.04	-0.63	-3055.5	-0.03	3055.54	3804.98	1902.49	7163.10	3586.87	15.19	-2.702	0.000	0.862
60.00	-36.89	-42.53	-0.63	-2840.3	-0.03	2840.35	3738.51	1869.25	6856.06	3433.13	18.18	-2.992	0.000	0.838
65.00	-35.34	-42.02	-0.63	-2627.6	-0.03	2627.68	3670.40	1835.20	6552.57	3281.16	21.47	-3.282	-0.001	0.811
70.00	-33.81	-41.50	-0.63	-2417.5	-0.03	2417.58	3600.66	1800.33	6252.87	3131.08	25.06	-3.572	-0.001	0.782
75.00	-32.33	-40.98	-0.63	-2210.0	-0.03	2210.06	3529.28	1764.64	5957.19	2983.02	28.95	-3.862	-0.001	0.751
80.00	-30.88	-40.45	-0.63	-2005.1	-0.04	2005.17	3456.27	1728.13	5665.78	2837.10	33.15	-4.148	-0.001	0.716
85.00	-29.46	-39.92	-0.63	-1802.9	-0.04	1802.91	3381.62	1690.81	5378.88	2693.44	37.64	-4.431	-0.001	0.679
90.00	-28.15	-39.34	-0.63	-1603.3	-0.04	1603.32	3305.34	1652.67	5096.71	2552.14	42.43	-4.707	-0.001	0.637
91.75	-27.64	-39.17	-0.63	-1534.4	-0.04	1534.48	3278.25	1639.13	4999.12	2503.28	44.17	-4.804	-0.001	0.622
95.00	-26.42	-38.77	-0.63	-1407.1	-0.04	1407.17	3221.38	1610.69	4810.51	2408.83	47.50	-4.980	-0.001	0.593
96.50	-25.86	-38.58	-0.63	-1349.0	-0.04	1349.02	1897.75	948.88	2865.01	1434.63	49.08	-5.061	-0.001	0.956
97.00	-23.20	-34.71	-0.63	-1329.7	-0.04	1329.73	1894.22	947.11	2850.46	1427.35	49.61	-5.088	-0.001	0.945
100.00	-22.52	-34.45	-0.63	-1225.5	-0.05	1225.59	1872.71	936.35	2763.41	1383.76	52.88	-5.310	-0.001	0.899
105.00	-21.57	-33.91	-0.63	-1053.3	-0.05	1053.35	1835.54	917.77	2619.24	1311.57	58.62	-5.660	-0.001	0.816
107.00	-15.51	-27.07	-0.64	-985.53	-0.05	985.53	1820.21	910.11	2561.95	1282.88	61.02	-5.799	-0.002	0.778
110.00	-14.99	-26.78	-0.64	-904.33	-0.05	904.33	1796.73	898.37	2476.44	1240.06	64.72	-5.999	-0.002	0.739
115.00	-14.19	-26.26	-0.64	-770.44	-0.06	770.44	1756.29	878.14	2335.25	1169.36	71.16	-6.314	-0.002	0.668
120.00	-12.58	-23.28	-0.64	-637.62	-0.06	637.62	1714.21	857.11	2195.89	1099.58	77.93	-6.610	-0.002	0.588
125.00	-11.87	-22.76	-0.64	-521.24	-0.06	521.24	1670.50	835.25	2058.61	1030.84	84.98	-6.881	-0.002	0.514
130.00	-11.22	-22.25	-0.64	-407.43	-0.07	407.43	1625.15	812.57	1923.65	963.25	92.31	-7.125	-0.003	0.431
133.00	-10.84	-21.95	-0.64	-340.68	-0.07	340.68	1597.15	798.58	1843.89	923.31	96.82	-7.258	-0.003	0.377
135.00	-10.41	-21.72	-0.64	-296.79	-0.07	296.79	1578.16	789.08	1791.25	896.95	99.87	-7.339	-0.003	0.338
136.75	-10.04	-21.52	-0.64	-258.78	-0.07	258.78	1475.57	737.78	1680.22	841.36	102.56	-7.404	-0.003	0.315
137.00	-7.51	-16.33	-0.64	-253.40	-0.07	253.40	1473.30	736.65	1674.05	838.27	102.95	-7.413	-0.003	0.308
140.00	-7.20	-16.04	-0.64	-204.40	-0.07	204.40	1445.77	722.89	1600.57	801.47	107.63	-7.505	-0.004	0.261
145.00	-6.72	-15.54	-0.64	-124.21	-0.08	124.21	1398.74	699.37	1480.44	741.32	115.53	-7.624	-0.004	0.173
146.00	-3.99	-9.87	-0.64	-108.66	-0.08	108.66	1389.16	694.58	1456.78	729.47	117.13	-7.643	-0.004	0.152
150.00	-3.65	-9.49	-0.64	-69.18	-0.08	69.18	1340.27	670.14	1353.35	677.68	123.54	-7.703	-0.005	0.105
151.00	-3.54	-8.68	0.00	-59.69	0.00	59.69	1327.48	663.74	1327.52	664.75	125.15	-7.716	-0.005	0.093
155.00	-3.22	-8.32	0.00	-24.95	0.00	24.95	1276.33	638.17	1226.69	614.25	131.61	-7.749	-0.005	0.043
158.00	0.00	-7.81	0.00	0.00	0.00	0.00	1237.97	618.99	1153.67	577.69	136.47	-7.757	-0.005	0.000

## Wind Loading - Shaft

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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

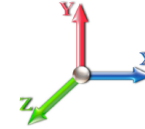


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**Load Case:** 0.9D + 1.6W 101 mph Wind

**Iterations** 25

**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	21.088	23.20	460.00	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	21.088	23.20	450.75	0.650	0.000	5.00	24.452	15.89	589.9	0.0	1219.5
10.00		1.00	0.85	21.088	23.20	441.49	0.650	0.000	5.00	23.955	15.57	577.9	0.0	1194.5
15.00		1.00	0.85	21.088	23.20	432.23	0.650	0.000	5.00	23.457	15.25	565.9	0.0	1169.5
20.00		1.00	0.90	22.375	24.61	435.69	0.650	0.000	5.00	22.960	14.92	587.7	0.0	1144.6
25.00		1.00	0.95	23.451	25.80	436.28	0.650	0.000	5.00	22.463	14.60	602.6	0.0	1119.6
30.00		1.00	0.98	24.369	26.81	434.78	0.650	0.000	5.00	21.966	14.28	612.4	0.0	1094.6
35.00		1.00	1.01	25.172	27.69	431.78	0.650	0.000	5.00	21.469	13.95	618.2	0.0	1069.6
40.00		1.00	1.04	25.890	28.48	427.63	0.650	0.000	5.00	20.972	13.63	621.1	0.0	1044.6
45.00		1.00	1.07	26.540	29.19	422.58	0.650	0.000	5.00	20.475	13.31	621.6	0.0	1019.6
45.25	Bot - Section 2	1.00	1.07	26.571	29.23	422.31	0.650	0.000	0.25	1.011	0.66	30.7	0.0	50.3
50.00		1.00	1.09	27.135	29.85	416.79	0.650	0.000	4.75	19.268	12.52	598.1	0.0	1767.8
51.25	Top - Section 1	1.00	1.10	27.277	30.00	415.24	0.650	0.000	1.25	4.996	3.25	155.9	0.0	458.3
55.00		1.00	1.12	27.685	30.45	417.16	0.650	0.000	3.75	14.802	9.62	468.8	0.0	632.5
60.00		1.00	1.14	28.197	31.02	410.29	0.650	0.000	5.00	19.301	12.55	622.6	0.0	824.5
65.00		1.00	1.16	28.676	31.54	402.96	0.650	0.000	5.00	18.803	12.22	616.9	0.0	803.1
70.00		1.00	1.17	29.127	32.04	395.24	0.650	0.000	5.00	18.306	11.90	610.0	0.0	781.7
75.00		1.00	1.19	29.553	32.51	387.16	0.650	0.000	5.00	17.809	11.58	602.1	0.0	760.3
80.00		1.00	1.21	29.958	32.95	378.76	0.650	0.000	5.00	17.312	11.25	593.3	0.0	738.9
85.00		1.00	1.22	30.342	33.38	370.08	0.650	0.000	5.00	16.815	10.93	583.7	0.0	717.5
90.00		1.00	1.24	30.710	33.78	361.14	0.650	0.000	5.00	16.318	10.61	573.3	0.0	696.1
91.75	Bot - Section 3	1.00	1.24	30.834	33.92	357.96	0.650	0.000	1.75	5.594	3.64	197.3	0.0	238.6
95.00		1.00	1.25	31.061	34.17	351.97	0.650	0.000	3.25	10.364	6.74	368.3	0.0	731.7
96.50	Top - Section 2	1.00	1.26	31.164	34.28	349.17	0.650	0.000	1.50	4.713	3.06	168.0	0.0	332.6
97.00	Appurtenance(s)	1.00	1.26	31.198	34.32	353.03	0.650	0.000	0.50	1.561	1.01	55.7	0.0	44.5
100.00		1.00	1.27	31.399	34.54	347.38	0.650	0.000	3.00	9.261	6.02	332.7	0.0	264.1
105.00		1.00	1.28	31.723	34.89	337.82	0.650	0.000	5.00	15.038	9.77	545.7	0.0	428.8
107.00	Appurtenance(s)	1.00	1.28	31.849	35.03	333.94	0.650	0.000	2.00	5.876	3.82	214.1	0.0	167.5
110.00		1.00	1.29	32.035	35.24	328.06	0.650	0.000	3.00	8.665	5.63	317.5	0.0	247.0
115.00		1.00	1.30	32.336	35.57	318.14	0.650	0.000	5.00	14.044	9.13	519.5	0.0	400.3
120.00	Appurtenance(s)	1.00	1.32	32.627	35.89	308.05	0.650	0.000	5.00	13.546	8.81	505.6	0.0	386.0
125.00		1.00	1.33	32.909	36.20	297.81	0.650	0.000	5.00	13.049	8.48	491.3	0.0	371.7
130.00		1.00	1.34	33.182	36.50	287.43	0.650	0.000	5.00	12.552	8.16	476.5	0.0	357.4
133.00	Bot - Section 4	1.00	1.34	33.341	36.68	281.13	0.650	0.000	3.00	7.293	4.74	278.2	0.0	207.6
135.00		1.00	1.35	33.446	36.79	276.91	0.650	0.000	2.00	4.847	3.15	185.5	0.0	273.5
136.75	Top - Section 3	1.00	1.35	33.537	36.89	273.20	0.650	0.000	1.75	4.176	2.71	160.2	0.0	235.6
137.00	Appurtenance(s)	1.00	1.35	33.550	36.90	277.64	0.650	0.000	0.25	0.592	0.38	22.7	0.0	16.8
140.00		1.00	1.36	33.703	37.07	271.25	0.650	0.000	3.00	7.002	4.55	270.0	0.0	199.3
145.00		1.00	1.37	33.953	37.35	260.51	0.650	0.000	5.00	11.272	7.33	437.8	0.0	320.7
146.00	Appurtenance(s)	1.00	1.37	34.002	37.40	258.34	0.650	0.000	1.00	2.195	1.43	85.4	0.0	62.4
150.00		1.00	1.38	34.196	37.62	249.65	0.650	0.000	4.00	8.580	5.58	335.7	0.0	244.0
151.00	Appurtenance(s)	1.00	1.38	34.244	37.67	247.46	0.650	0.000	1.00	2.095	1.36	82.1	0.0	59.6
155.00		1.00	1.39	34.433	37.88	238.68	0.650	0.000	4.00	8.183	5.32	322.3	0.0	232.6
158.00	Appurtenance(s)	1.00	1.39	34.573	38.03	232.05	0.650	0.000	3.00	5.928	3.85	234.5	0.0	168.4
<b>Totals:</b>									<b>158.00</b>			<b>17,459.3</b>		<b>24,297.9</b>



## Discrete Appurtenance Forces

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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



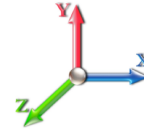
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**Load Case:** 0.9D + 1.6W 101 mph Wind

**Iterations** 25

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



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	Alcatel RRH2X60-PCS	3	34.573	38.030	0.38	0.75	2.48	148.50	0.000	0.000	150.60	0.00	0.00
2	158.00	6' Lightning rod	1	34.573	38.030	1.00	1.00	0.38	5.85	0.000	0.000	23.12	0.00	0.00
3	158.00	Commscope	6	34.573	38.030	0.62	0.75	30.07	273.83	0.000	0.000	1829.49	0.00	0.00
4	158.00	Amphenol	2	34.573	38.030	0.70	0.75	13.57	48.60	0.000	0.000	825.91	0.00	0.00
5	158.00	RFS APL866513-42T0 w/	4	34.573	38.030	0.70	0.75	15.76	175.32	0.000	0.000	959.17	0.00	0.00
6	158.00	Alcatel RRH2X60-AWS	3	34.573	38.030	0.38	0.75	3.94	162.00	0.000	0.000	239.59	0.00	0.00
7	158.00	Alcatel RRH2X60-700	3	34.573	38.030	0.38	0.75	3.94	162.00	0.000	0.000	239.59	0.00	0.00
8	158.00	OVP-12	1	34.573	38.030	0.50	0.75	2.04	28.80	0.000	0.000	124.14	0.00	0.00
9	158.00	RFS FD9R6004/2CL-3CL	6	34.573	38.030	0.38	0.75	0.70	16.20	0.000	0.000	42.44	0.00	0.00
10	158.00	RFS DB-T1-6C-8AB-0Z	2	34.573	38.030	0.38	0.75	3.60	79.20	0.000	0.000	219.05	0.00	0.00
11	158.00	Low Profile Platform	1	34.573	38.030	1.00	1.00	35.00	1440.00	0.000	0.000	2129.67	0.00	0.00
12	158.00	MT6407-77A	3	34.573	38.030	0.52	0.75	7.39	214.38	0.000	0.000	449.47	0.00	0.00
13	158.00	RF4439d-25A	3	34.573	38.030	0.50	0.75	2.74	89.10	0.000	0.000	166.94	0.00	0.00
14	158.00	RF4440d-13A	3	34.573	38.030	0.50	0.75	2.83	190.08	0.000	0.000	172.45	0.00	0.00
15	151.00	Andrew VHLP2.5	1	34.244	37.669	1.00	1.00	8.43	42.84	2.043	0.000	508.08	648.66	0.00
16	151.00	Pipe Mount	1	34.244	37.669	1.00	1.00	2.63	36.00	0.000	0.000	158.51	0.00	0.00
17	151.00	ODU	1	34.244	37.669	0.50	1.00	0.62	11.88	0.000	0.000	37.37	0.00	0.00
18	146.00	RFS ACU-A20-N RET	4	34.002	37.403	0.40	0.80	0.19	3.60	0.000	0.000	11.49	0.00	0.00
19	146.00	RFS APXVTM14-C-120 w/	3	34.002	37.403	0.62	0.80	14.86	240.30	0.000	0.000	889.51	0.00	0.00
20	146.00	Alcatel TD-RRH8x20-25	3	34.002	37.403	0.40	0.80	4.86	189.00	0.000	0.000	290.84	0.00	0.00
21	146.00	Alcatel 1900MHz RRH	3	34.002	37.403	0.40	0.80	2.86	118.80	0.000	0.000	170.92	0.00	0.00
22	146.00	Alcatel 800 MHz RRH	3	34.002	37.403	0.40	0.80	2.56	143.10	0.000	0.000	152.96	0.00	0.00
23	146.00	Alcatel 800MHz Filters	3	34.002	37.403	0.40	0.80	0.80	23.76	0.000	0.000	48.11	0.00	0.00
24	146.00	GPS	1	34.002	37.403	1.00	1.00	1.00	9.00	0.000	0.000	59.84	0.00	0.00
25	146.00	Kathrein Scala 840 10054	3	34.002	37.403	0.49	0.80	6.72	94.50	0.000	0.000	402.14	0.00	0.00
26	146.00	RRUs	3	34.002	37.403	0.40	0.80	3.50	8.45	0.000	0.000	209.69	0.00	0.00
27	146.00	Low Profile Platform	1	34.002	37.403	1.00	1.00	30.00	1440.00	0.000	0.000	1795.33	0.00	0.00
28	146.00	RFS APXVSP18-C-A20	3	34.002	37.403	0.66	0.80	19.16	243.00	0.000	0.000	1146.80	0.00	0.00
29	137.00	HRK12 (Handrail Kit)	1	33.550	36.905	1.00	1.00	6.75	235.55	0.000	0.000	398.57	0.00	0.00
30	137.00	4449	3	33.550	36.905	0.38	0.75	1.86	189.00	0.000	0.000	109.61	0.00	0.00
31	137.00	KRY 112 489/2	3	33.550	36.905	0.38	0.75	0.47	27.00	0.000	0.000	27.90	0.00	0.00
32	137.00	Low Profile Platform w/	1	33.550	36.905	1.00	1.00	25.00	1080.00	0.000	0.000	1476.20	0.00	0.00
33	137.00	Kathrein 782 11056	3	33.550	36.905	0.38	0.75	0.17	29.70	0.000	0.000	9.96	0.00	0.00
34	137.00	APXVAARR24_43-U-NA2	3	33.550	36.905	0.52	0.75	31.88	345.60	0.000	0.000	1882.33	0.00	0.00
35	137.00	KRD 9011461-B66A-B2A	3	33.550	36.905	0.65	0.75	12.74	356.94	0.000	0.000	752.47	0.00	0.00
36	137.00	Allen Telecom	12	33.550	36.905	0.38	0.75	2.43	88.56	0.000	0.000	143.49	0.00	0.00
37	120.00	Cambium Network	1	32.627	35.890	1.00	1.00	8.92	45.00	0.000	0.000	512.22	0.00	0.00
38	120.00	SC479-HF1LDF(D00-E574	2	32.640	35.904	0.80	0.80	8.05	61.20	0.000	0.220	462.32	0.00	101.71
39	120.00	SC229-DFLN	1	32.885	36.174	0.80	0.80	5.38	28.80	0.000	4.580	311.15	0.00	1425.09
40	120.00	Flush Mount	1	32.627	35.890	1.00	1.00	5.00	315.00	0.000	0.000	287.12	0.00	0.00
41	120.00	Pipe Mount	1	32.627	35.890	1.00	1.00	10.00	360.00	0.000	0.000	574.24	0.00	0.00
42	120.00	DS428E83I01T - TTA	1	32.627	35.890	0.40	0.80	3.57	45.00	0.000	0.000	204.89	0.00	0.00
43	107.00	AIR 6419 B77G	3	31.961	35.157	0.61	0.80	6.68	178.47	0.000	1.800	375.53	0.00	675.95
44	107.00	DMP65R-BU6DA	3	31.849	35.034	0.58	0.80	21.96	214.38	0.000	0.000	1231.11	0.00	0.00
45	107.00	TPA65R-BU6DA-K	3	31.849	35.034	0.58	0.80	21.96	186.30	0.000	0.000	1231.11	0.00	0.00
46	107.00	AIR 6449 B77D	3	31.735	34.909	0.68	0.80	8.20	286.20	0.000	-1.800	458.05	0.00	-824.49
47	107.00	Raycap DC6-48-60-18-8F	3	31.849	35.034	0.54	0.80	3.54	88.56	0.000	0.000	198.30	0.00	0.00

## Discrete Appurtenance Forces

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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> 17
	<b>Struct Class:</b> II	



48	107.00	Powerwave LGP21903	6	31.849	35.034	0.48	0.80	0.66	28.62	0.000	0.000	37.13	0.00	0.00
49	107.00	Powerwave	3	31.849	35.034	0.48	0.80	0.79	43.20	0.000	0.000	44.39	0.00	0.00
50	107.00	RRUS 4478 B14	3	31.849	35.034	0.54	0.80	3.25	160.38	0.000	0.000	182.07	0.00	0.00
51	107.00	4449 B5/B12	3	31.849	35.034	0.54	0.80	2.64	197.10	0.000	0.000	147.82	0.00	0.00
52	107.00	CCI DTMAP7819VG12A	3	31.849	35.034	0.48	0.80	1.41	51.79	0.000	0.000	79.10	0.00	0.00
53	107.00	Powerwave 7020.00	6	31.849	35.034	0.48	0.80	0.98	11.88	0.000	0.000	54.89	0.00	0.00
54	107.00	(3) VFA14-H10-2120	1	31.849	35.034	0.56	0.75	28.52	2462.40	0.000	0.000	1598.59	0.00	0.00
55	107.00	B2 B66A 8843	3	31.849	35.034	0.54	0.80	2.64	194.40	0.000	0.000	147.82	0.00	0.00
56	107.00	SitePro1 MM01	6	31.849	35.034	1.00	1.00	0.60	140.72	0.000	0.000	33.63	0.00	0.00
57	107.00	Collar Mount (3-Sided)	2	31.849	35.034	1.00	1.00	4.00	475.83	0.000	0.000	224.22	0.00	0.00
58	97.00	MC-PK8-DSH	1	31.198	34.318	1.00	1.00	37.59	1554.30	0.000	0.000	2064.00	0.00	0.00
59	97.00	RDIDC-9181-OF-48	1	31.198	34.318	0.75	0.75	1.51	19.71	0.000	0.000	82.77	0.00	0.00
60	97.00	TA08025-B604	3	31.198	34.318	0.50	0.75	2.95	172.53	0.000	0.000	162.24	0.00	0.00
61	97.00	TA08025-B605	3	31.198	34.318	0.50	0.75	2.95	202.50	0.000	0.000	162.24	0.00	0.00
62	97.00	MX08FRO665-21	3	31.198	34.318	0.55	0.75	20.80	174.15	0.000	0.000	1141.86	0.00	0.00

**Totals:            15,688.86                            30,262.58**

## Total Applied Force Summary

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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

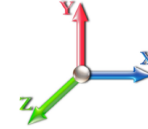


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**Load Case:** 0.9D + 1.6W 101 mph Wind

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



**Iterations** 25

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		589.88	1312.56	0.00	0.00
10.00		577.88	1427.15	0.00	0.00
15.00		565.89	1402.17	0.00	0.00
20.00		587.71	1377.19	0.00	0.00
25.00		602.64	1352.20	0.00	0.00
30.00		612.36	1327.22	0.00	0.00
35.00		618.24	1302.24	0.00	0.00
40.00		621.14	1277.25	0.00	0.00
45.00		621.65	1252.27	0.00	0.00
45.25		30.72	61.96	0.00	0.00
50.00		598.14	1988.83	0.00	0.00
51.25		155.90	516.42	0.00	0.00
55.00		468.80	806.93	0.00	0.00
60.00		622.59	1057.17	0.00	0.00
65.00		616.86	1035.76	0.00	0.00
70.00		609.99	1014.34	0.00	0.00
75.00		602.11	992.93	0.00	0.00
80.00		593.31	971.51	0.00	0.00
85.00		583.67	950.10	0.00	0.00
90.00		573.27	928.68	0.00	0.00
91.75		197.32	319.98	0.00	0.00
95.00		368.29	882.95	0.00	0.00
96.50		168.01	402.43	0.00	0.00
97.00	(11) attachments	3668.82	2190.97	0.00	0.00
100.00		332.67	398.80	0.00	0.00
105.00		545.73	653.24	0.00	0.00
107.00	(51) attachments	6257.86	4977.53	0.00	-148.54
110.00		317.55	328.04	0.00	0.00
115.00		519.51	535.32	0.00	0.00
120.00	(7) attachments	2857.57	1376.04	0.00	1526.80
125.00		491.27	497.58	0.00	0.00
130.00		476.48	483.31	0.00	0.00
133.00		278.16	283.13	0.00	0.00
135.00		185.46	323.87	0.00	0.00
136.75		160.21	279.64	0.00	0.00
137.00	(29) attachments	4823.24	2375.48	0.00	0.00
140.00		269.97	241.09	0.00	0.00
145.00		437.84	390.39	0.00	0.00
146.00	(30) attachments	5263.01	2589.88	0.00	0.00
150.00		335.67	286.31	0.00	0.00
151.00	(3) attachments	786.04	160.87	648.66	0.00
155.00		322.33	274.31	0.00	0.00
158.00	(41) attachments	7806.10	3233.60	0.00	0.00
<b>Totals:</b>		<b>47,721.84</b>	<b>45,839.62</b>	<b>648.66</b>	<b>1,378.25</b>

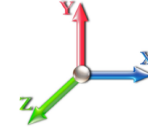
## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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



**Load Case:** 0.9D + 1.6W 101 mph Wind

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



**Iterations** 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	0.29
10.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	0.72
15.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	0.72
20.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.375	0.00	0.72
25.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.451	0.00	0.72
30.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.369	0.00	0.72
35.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.172	0.00	0.72
40.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.890	0.00	0.72
45.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.540	0.00	0.72
45.25	1/2" Coax	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	26.571	0.00	0.04
50.00	1/2" Coax	Yes	4.75	0.000	0.00	0.00	0.00	0.000	0.000	27.135	0.00	0.68
51.25	1/2" Coax	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	27.277	0.00	0.18
55.00	1/2" Coax	Yes	3.75	0.000	0.00	0.00	0.00	0.000	0.000	27.685	0.00	0.54
60.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.197	0.00	0.72
65.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.676	0.00	0.72
70.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.127	0.00	0.72
75.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.553	0.00	0.72
80.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.958	0.00	0.72
85.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.342	0.00	0.72
90.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.710	0.00	0.72
91.75	1/2" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	30.834	0.00	0.25
95.00	1/2" Coax	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	31.061	0.00	0.47
96.50	1/2" Coax	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	31.164	0.00	0.22
97.00	1/2" Coax	Yes	0.50	0.000	0.00	0.00	0.00	0.000	0.000	31.198	0.00	0.07
100.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	31.399	0.00	0.43
105.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.723	0.00	0.72
107.00	1/2" Coax	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	31.849	0.00	0.29
110.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	32.035	0.00	0.43
115.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.336	0.00	0.72
120.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.627	0.00	0.72
125.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.909	0.00	0.72
130.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.182	0.00	0.72
133.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	33.341	0.00	0.43
135.00	1/2" Coax	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	33.446	0.00	0.29
136.75	1/2" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	33.537	0.00	0.25
137.00	1/2" Coax	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	33.550	0.00	0.04
140.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	33.703	0.00	0.43
145.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.953	0.00	0.72
146.00	1/2" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	34.002	0.00	0.14
150.00	1/2" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	34.196	0.00	0.58
151.00	1/2" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	34.244	0.00	0.14
155.00	1/2" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	34.433	0.00	0.58
158.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	34.573	0.00	0.43
<b>Totals:</b>											<b>0.0</b>	<b>22.3</b>

## Calculated Forces

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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

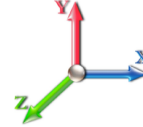


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**Load Case:** 0.9D + 1.6W 101 mph Wind

**Iterations** 25

**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	-45.74	-47.81	-0.62	-5509.4	-0.01	5509.42	5458.79	2729.40	13000.6	6509.99	0.00	0.000	0.000	0.855
5.00	-44.24	-47.40	-0.62	-5270.3	-0.01	5270.35	5387.61	2693.80	12568.9	6293.83	0.12	-0.225	0.000	0.846
10.00	-42.63	-46.98	-0.62	-5033.3	-0.01	5033.37	5314.79	2657.39	12140.4	6079.27	0.48	-0.453	0.000	0.836
15.00	-41.05	-46.57	-0.62	-4798.4	-0.01	4798.47	5240.33	2620.17	11715.4	5866.42	1.08	-0.685	0.000	0.826
20.00	-39.49	-46.13	-0.62	-4565.6	-0.02	4565.62	5164.24	2582.12	11294.0	5655.41	1.92	-0.921	0.000	0.815
25.00	-37.95	-45.66	-0.62	-4334.9	-0.02	4334.99	5086.52	2543.26	10876.5	5446.36	3.02	-1.160	0.000	0.804
30.00	-36.45	-45.17	-0.62	-4106.7	-0.02	4106.70	5007.16	2503.58	10463.2	5239.39	4.36	-1.402	0.000	0.791
35.00	-34.97	-44.67	-0.62	-3880.8	-0.02	3880.83	4926.16	2463.08	10054.2	5034.61	5.96	-1.648	0.000	0.778
40.00	-33.52	-44.16	-0.63	-3657.4	-0.02	3657.48	4843.52	2421.76	9649.95	4832.15	7.82	-1.896	0.000	0.764
45.00	-32.19	-43.57	-0.63	-3436.6	-0.02	3436.69	4759.26	2379.63	9250.49	4632.12	9.94	-2.148	0.000	0.749
45.25	-32.03	-43.61	-0.63	-3425.8	-0.02	3425.80	4755.00	2377.50	9230.65	4622.19	10.05	-2.161	0.000	0.748
50.00	-29.96	-43.01	-0.63	-3218.6	-0.02	3218.67	4673.35	2336.67	8856.13	4434.65	12.33	-2.403	0.000	0.733
51.25	-29.35	-42.90	-0.63	-3164.9	-0.02	3164.91	3853.76	1926.88	7395.56	3703.28	12.97	-2.468	0.000	0.863
55.00	-28.39	-42.51	-0.63	-3004.0	-0.02	3004.05	3804.98	1902.49	7163.10	3586.87	14.98	-2.662	0.000	0.845
60.00	-27.15	-41.98	-0.63	-2791.4	-0.02	2791.49	3738.51	1869.25	6856.06	3433.13	17.92	-2.947	0.000	0.821
65.00	-25.94	-41.43	-0.63	-2581.6	-0.02	2581.62	3670.40	1835.20	6552.57	3281.16	21.16	-3.233	-0.001	0.794
70.00	-24.77	-40.89	-0.63	-2374.4	-0.03	2374.46	3600.66	1800.33	6252.87	3131.08	24.70	-3.518	-0.001	0.766
75.00	-23.61	-40.34	-0.63	-2170.0	-0.03	2170.02	3529.28	1764.64	5957.19	2983.02	28.54	-3.802	-0.001	0.735
80.00	-22.49	-39.79	-0.63	-1968.3	-0.03	1968.32	3456.27	1728.13	5665.78	2837.10	32.67	-4.083	-0.001	0.701
85.00	-21.40	-39.24	-0.63	-1769.3	-0.03	1769.37	3381.62	1690.81	5378.88	2693.44	37.09	-4.360	-0.001	0.664
90.00	-20.40	-38.66	-0.63	-1573.1	-0.03	1573.16	3305.34	1652.67	5096.71	2552.14	41.80	-4.631	-0.001	0.623
91.75	-20.00	-38.49	-0.63	-1505.5	-0.04	1505.50	3278.25	1639.13	4999.12	2503.28	43.51	-4.727	-0.001	0.608
95.00	-19.07	-38.09	-0.63	-1380.4	-0.04	1380.41	3221.38	1610.69	4810.51	2408.83	46.79	-4.899	-0.001	0.580
96.50	-18.65	-37.90	-0.63	-1323.2	-0.04	1323.28	1897.75	948.88	2865.01	1434.63	48.34	-4.979	-0.001	0.934
97.00	-16.71	-34.09	-0.63	-1304.3	-0.04	1304.33	1894.22	947.11	2850.46	1427.35	48.86	-5.005	-0.001	0.924
100.00	-16.18	-33.81	-0.63	-1202.0	-0.04	1202.05	1872.71	936.35	2763.41	1383.76	52.08	-5.223	-0.001	0.879
105.00	-15.44	-33.27	-0.64	-1033.0	-0.04	1033.02	1835.54	917.77	2619.24	1311.57	57.73	-5.566	-0.001	0.797
107.00	-11.03	-26.58	-0.64	-966.49	-0.05	966.49	1820.21	910.11	2561.95	1282.88	60.08	-5.702	-0.002	0.760
110.00	-10.62	-26.28	-0.64	-886.74	-0.05	886.74	1796.73	898.37	2476.44	1240.06	63.73	-5.899	-0.002	0.722
115.00	-10.00	-25.76	-0.64	-755.34	-0.05	755.34	1756.29	878.14	2335.25	1169.36	70.06	-6.208	-0.002	0.653
120.00	-8.84	-22.81	-0.64	-625.02	-0.06	625.02	1714.21	857.11	2195.89	1099.58	76.71	-6.497	-0.002	0.574
125.00	-8.31	-22.30	-0.64	-510.97	-0.06	510.97	1670.50	835.25	2058.61	1030.84	83.64	-6.763	-0.002	0.501
130.00	-7.81	-21.80	-0.64	-399.46	-0.06	399.46	1625.15	812.57	1923.65	963.25	90.84	-7.002	-0.003	0.420
133.00	-7.53	-21.50	-0.64	-334.07	-0.07	334.07	1597.15	798.58	1843.89	923.31	95.28	-7.133	-0.003	0.367
135.00	-7.20	-21.28	-0.64	-291.07	-0.07	291.07	1578.16	789.08	1791.25	896.95	98.28	-7.212	-0.003	0.330
136.75	-6.93	-21.09	-0.64	-253.83	-0.07	253.83	1475.57	737.78	1680.22	841.36	100.93	-7.276	-0.003	0.307
137.00	-5.17	-16.01	-0.64	-248.55	-0.07	248.55	1473.30	736.65	1674.05	838.27	101.31	-7.285	-0.003	0.301
140.00	-4.94	-15.72	-0.64	-200.52	-0.07	200.52	1445.77	722.89	1600.57	801.47	105.90	-7.375	-0.004	0.254
145.00	-4.59	-15.24	-0.64	-121.90	-0.08	121.90	1398.74	699.37	1480.44	741.32	113.67	-7.492	-0.004	0.168
146.00	-2.71	-9.69	-0.64	-106.66	-0.08	106.66	1389.16	694.58	1456.78	729.47	115.24	-7.511	-0.004	0.148
150.00	-2.46	-9.32	-0.64	-67.90	-0.08	67.90	1340.27	670.14	1353.35	677.68	121.54	-7.570	-0.005	0.102
151.00	-2.40	-8.52	0.00	-58.58	0.00	58.58	1327.48	663.74	1327.52	664.75	123.12	-7.582	-0.005	0.090
155.00	-2.17	-8.17	0.00	-24.50	0.00	24.50	1276.33	638.17	1226.69	614.25	129.47	-7.614	-0.005	0.042
158.00	0.00	-7.81	0.00	0.00	0.00	0.00	1237.97	618.99	1153.67	577.69	134.25	-7.622	-0.005	0.000

## Wind Loading - Shaft

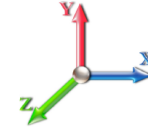
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 24

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	25.487	30.58	173.9	454.8	2080.8
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	25.064	30.08	171.0	478.3	2071.1
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	24.613	29.54	167.9	488.4	2047.8
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	24.149	28.98	174.8	492.5	2018.6
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	23.679	28.41	179.6	493.2	1985.9
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	23.204	27.84	182.9	491.5	1951.0
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	22.726	27.27	185.1	488.3	1914.4
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	22.246	26.70	186.3	483.8	1876.6
45.00		1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	21.764	26.12	186.9	478.3	1837.8
45.25	Bot - Section 2	1.00	1.07	6.512	7.16	0.00	1.200	1.548	0.25	1.075	1.29	9.2	23.9	91.0
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	4.75	20.506	24.61	180.0	455.4	2812.5
51.25	Top - Section 1	1.00	1.10	6.685	7.35	0.00	1.200	1.568	1.25	5.323	6.39	47.0	119.4	730.4
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	3.75	15.788	18.95	141.4	354.4	1197.6
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	20.628	24.75	188.2	465.0	1564.4
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	20.141	24.17	186.8	457.1	1527.9
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	19.654	23.58	185.2	448.7	1491.0
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	19.166	23.00	183.2	439.9	1453.6
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	5.00	18.678	22.41	181.0	430.8	1416.0
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	5.00	18.189	21.83	178.5	421.4	1378.0
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	17.700	21.24	175.8	411.7	1339.7
91.75	Bot - Section 3	1.00	1.24	7.557	8.31	0.00	1.200	1.662	1.75	6.078	7.29	60.6	142.9	461.0
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	3.25	11.267	13.52	113.2	264.5	1240.2
96.50	Top - Section 2	1.00	1.26	7.637	8.40	0.00	1.200	1.670	1.50	5.130	6.16	51.7	121.2	564.7
97.00	Appurtenance(s)	1.00	1.26	7.646	8.41	0.00	1.200	1.671	0.50	1.700	2.04	17.2	40.3	99.7
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	3.00	10.099	12.12	102.6	238.1	590.2
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	16.441	19.73	168.7	386.4	958.1
107.00	Appurtenance(s)	1.00	1.28	7.805	8.59	0.00	1.200	1.687	2.00	6.438	7.73	66.3	152.9	376.2
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	3.00	9.511	11.41	98.6	225.5	554.8
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	15.460	18.55	161.7	365.1	898.7
120.00	Appurtenance(s)	1.00	1.32	7.996	8.80	0.00	1.200	1.707	5.00	14.969	17.96	158.0	354.1	868.8
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	5.00	14.477	17.37	154.1	343.0	838.6
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	5.00	13.986	16.78	150.1	331.8	808.4
133.00	Bot - Section 4	1.00	1.34	8.171	8.99	0.00	1.200	1.724	3.00	8.155	9.79	88.0	195.0	471.8
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	2.00	5.423	6.51	58.7	130.3	495.0
136.75	Top - Section 3	1.00	1.35	8.219	9.04	0.00	1.200	1.729	1.75	4.680	5.62	50.8	112.6	426.7
137.00	Appurtenance(s)	1.00	1.35	8.222	9.04	0.00	1.200	1.729	0.25	0.664	0.80	7.2	16.1	38.5
140.00		1.00	1.36	8.260	9.09	0.00	1.200	1.733	3.00	7.869	9.44	85.8	188.6	454.3
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	5.00	12.722	15.27	139.7	302.7	730.2
146.00	Appurtenance(s)	1.00	1.37	8.333	9.17	0.00	1.200	1.741	1.00	2.485	2.98	27.3	60.1	143.3
150.00		1.00	1.38	8.381	9.22	0.00	1.200	1.745	4.00	9.744	11.69	107.8	232.7	558.0
151.00	Appurtenance(s)	1.00	1.38	8.392	9.23	0.00	1.200	1.746	1.00	2.386	2.86	26.4	57.7	137.1
155.00		1.00	1.39	8.439	9.28	0.00	1.200	1.751	4.00	9.350	11.22	104.1	223.2	533.3
158.00	Appurtenance(s)	1.00	1.39	8.473	9.32	0.00	1.200	1.754	3.00	6.805	8.17	76.1	163.1	387.7
<b>Totals:</b>									<b>158.00</b>			<b>5,339.6</b>	<b>45,421.5</b>	

## Discrete Appurtenance Forces

**Structure:** CT01080-S-SBA  
**Site Name:** Long Hill #1  
**Height:** 158.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Topography:** 1

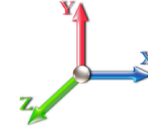
**Code:** TIA-222-G  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** D - Stiff Soil  
**Struct Class:** II

4/8/2022  
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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** 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	Alcatel RRH2X60-PCS	3	8.473	9.320	0.38	0.75	3.04	363.99	0.000	0.000	28.30	0.00	0.00
2	158.00	6' Lightning rod	1	8.473	9.320	1.00	1.00	1.47	38.99	0.000	0.000	13.73	0.00	0.00
3	158.00	Commscope	6	8.473	9.320	0.62	0.75	34.92	1579.45	0.000	0.000	325.50	0.00	0.00
4	158.00	Amphenol	2	8.473	9.320	0.70	0.75	17.42	440.69	0.000	0.000	162.37	0.00	0.00
5	158.00	RFS APL866513-42T0 w/	4	8.473	9.320	0.70	0.75	23.05	1602.59	0.000	0.000	214.86	0.00	0.00
6	158.00	Alcatel RRH2X60-AWS	3	8.473	9.320	0.38	0.75	4.83	418.93	0.000	0.000	45.02	0.00	0.00
7	158.00	Alcatel RRH2X60-700	3	8.473	9.320	0.38	0.75	4.83	418.93	0.000	0.000	45.02	0.00	0.00
8	158.00	OVP-12	1	8.473	9.320	0.50	0.75	2.46	127.72	0.000	0.000	22.88	0.00	0.00
9	158.00	RFS FD9R6004/2CL-3CL	6	8.473	9.320	0.38	0.75	1.56	54.05	0.000	0.000	14.55	0.00	0.00
10	158.00	RFS DB-T1-6C-8AB-0Z	2	8.473	9.320	0.38	0.75	4.31	581.71	0.000	0.000	40.14	0.00	0.00
11	158.00	Low Profile Platform	1	8.473	9.320	1.00	1.00	64.47	3423.45	0.000	0.000	600.89	0.00	0.00
12	158.00	MT6407-77A	3	8.473	9.320	0.52	0.75	8.89	646.73	0.000	0.000	82.83	0.00	0.00
13	158.00	RF4439d-25A	3	8.473	9.320	0.50	0.75	4.22	208.49	0.000	0.000	39.35	0.00	0.00
14	158.00	RF4440d-13A	3	8.473	9.320	0.50	0.75	3.67	371.53	0.000	0.000	34.20	0.00	0.00
15	151.00	Andrew VHLP2.5	1	8.392	9.232	1.00	1.00	10.14	180.53	2.043	0.000	93.59	191.17	0.00
16	151.00	Pipe Mount	1	8.392	9.232	1.00	1.00	8.60	105.33	0.000	0.000	79.42	0.00	0.00
17	151.00	ODU	1	8.392	9.232	0.50	1.00	1.02	36.96	0.000	0.000	9.42	0.00	0.00
18	146.00	RFS ACU-A20-N RET	4	8.333	9.166	0.40	0.80	0.60	16.74	0.000	0.000	5.48	0.00	0.00
19	146.00	RFS APXVTM14-C-120 w/	3	8.333	9.166	0.62	0.80	13.95	800.07	0.000	0.000	127.84	0.00	0.00
20	146.00	Alcatel TD-RRH8x20-25	3	8.333	9.166	0.40	0.80	5.83	582.31	0.000	0.000	53.47	0.00	0.00
21	146.00	Alcatel 1900MHz RRH	3	8.333	9.166	0.40	0.80	3.90	391.41	0.000	0.000	35.73	0.00	0.00
22	146.00	Alcatel 800 MHz RRH	3	8.333	9.166	0.40	0.80	3.73	348.78	0.000	0.000	34.16	0.00	0.00
23	146.00	Alcatel 800MHz Filters	3	8.333	9.166	0.40	0.80	1.47	69.47	0.000	0.000	13.47	0.00	0.00
24	146.00	GPS	1	8.333	9.166	1.00	1.00	1.71	33.24	0.000	0.000	15.68	0.00	0.00
25	146.00	Kathrein Scala 840 10054	3	8.333	9.166	0.49	0.80	9.16	305.83	0.000	0.000	83.98	0.00	0.00
26	146.00	RRUs	3	8.333	9.166	0.40	0.80	5.05	-157.59	0.000	0.000	46.27	0.00	0.00
27	146.00	Low Profile Platform	1	8.333	9.166	1.00	1.00	55.06	3412.40	0.000	0.000	504.73	0.00	0.00
28	146.00	RFS APXVSP18-C-A20	3	8.333	9.166	0.66	0.80	25.82	1091.06	0.000	0.000	236.68	0.00	0.00
29	137.00	HRK12 (Handrail Kit)	1	8.222	9.044	1.00	1.00	13.29	883.58	0.000	0.000	120.18	0.00	0.00
30	137.00	4449	3	8.222	9.044	0.38	0.75	2.46	454.42	0.000	0.000	22.21	0.00	0.00
31	137.00	KRY 112 489/2	3	8.222	9.044	0.38	0.75	0.83	104.03	0.000	0.000	7.55	0.00	0.00
32	137.00	Low Profile Platform w/	1	8.222	9.044	1.00	1.00	45.75	2177.68	0.000	0.000	413.82	0.00	0.00
33	137.00	Kathrein 782 11056	3	8.222	9.044	0.38	0.75	0.35	77.04	0.000	0.000	3.17	0.00	0.00
34	137.00	APXVAARR24_43-U-NA2	3	8.222	9.044	0.52	0.75	34.84	1701.86	0.000	0.000	315.13	0.00	0.00
35	137.00	KRD 9011461-B66A-B2A	3	8.222	9.044	0.65	0.75	14.92	1019.77	0.000	0.000	134.92	0.00	0.00
36	137.00	Allen Telecom	12	8.222	9.044	0.38	0.75	4.84	236.63	0.000	0.000	43.80	0.00	0.00
37	120.00	Cambium Network	1	7.996	8.796	1.00	1.00	10.64	186.22	0.000	0.000	93.56	0.00	0.00
38	120.00	SC479-HF1LDF(D00-E574	2	7.999	8.799	0.80	0.80	16.10	253.70	0.000	0.220	141.69	0.00	31.17
39	120.00	SC229-DFLN	1	8.059	8.865	0.80	0.80	11.79	155.47	0.000	4.580	104.53	0.00	478.76
40	120.00	Flush Mount	1	7.996	8.796	1.00	1.00	8.41	606.73	0.000	0.000	74.00	0.00	0.00
41	120.00	Pipe Mount	1	7.996	8.796	1.00	1.00	18.53	673.07	0.000	0.000	163.01	0.00	0.00
42	120.00	DS428E83I01T - TTA	1	7.996	8.796	0.40	0.80	4.82	398.68	0.000	0.000	42.40	0.00	0.00
43	107.00	AIR 6419 B77G	3	7.833	8.616	0.61	0.80	8.03	448.90	0.000	1.800	69.17	0.00	124.50
44	107.00	DMP65R-BU6DA	3	7.805	8.586	0.58	0.80	24.41	938.22	0.000	0.000	209.57	0.00	0.00
45	107.00	TPA65R-BU6DA-K	3	7.805	8.586	0.58	0.80	24.39	933.16	0.000	0.000	209.44	0.00	0.00
46	107.00	AIR 6449 B77D	3	7.778	8.555	0.68	0.80	9.86	726.19	0.000	-1.800	84.35	0.00	-151.84
47	107.00	Raycap DC6-48-60-18-8F	3	7.805	8.586	0.54	0.80	5.17	252.93	0.000	0.000	44.35	0.00	0.00

## Discrete Appurtenance Forces

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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> 23
	<b>Struct Class:</b> II	



48	107.00	Powerwave LGP21903	6	7.805	8.586	0.48	0.80	1.61	69.67	0.000	0.000	13.79	0.00	0.00
49	107.00	Powerwave	3	7.805	8.586	0.48	0.80	1.50	98.90	0.000	0.000	12.89	0.00	0.00
50	107.00	RRUS 4478 B14	3	7.805	8.586	0.54	0.80	4.23	305.91	0.000	0.000	36.36	0.00	0.00
51	107.00	4449 B5/B12	3	7.805	8.586	0.54	0.80	3.35	387.18	0.000	0.000	28.72	0.00	0.00
52	107.00	CCI DTMAP7819VG12A	3	7.805	8.586	0.48	0.80	2.33	121.03	0.000	0.000	20.02	0.00	0.00
53	107.00	Powerwave 7020.00	6	7.805	8.586	0.48	0.80	2.12	57.82	0.000	0.000	18.24	0.00	0.00
54	107.00	(3) VFA14-H10-2120	1	7.805	8.586	0.56	0.75	63.16	5784.33	0.000	0.000	542.32	0.00	0.00
55	107.00	B2 B66A 8843	3	7.805	8.586	0.54	0.80	3.44	368.48	0.000	0.000	29.53	0.00	0.00
56	107.00	SitePro1 MM01	6	7.805	8.586	1.00	1.00	0.80	396.76	0.000	0.000	6.89	0.00	0.00
57	107.00	Collar Mount (3-Sided)	2	7.805	8.586	1.00	1.00	8.05	1242.78	0.000	0.000	69.11	0.00	0.00
58	97.00	MC-PK8-DSH	1	7.646	8.410	1.00	1.00	82.81	3315.24	0.000	0.000	696.45	0.00	0.00
59	97.00	RDIDC-9181-OF-48	1	7.646	8.410	0.75	0.75	1.92	64.56	0.000	0.000	16.11	0.00	0.00
60	97.00	TA08025-B604	3	7.646	8.410	0.50	0.75	3.76	339.15	0.000	0.000	31.66	0.00	0.00
61	97.00	TA08025-B605	3	7.646	8.410	0.50	0.75	3.76	382.42	0.000	0.000	31.66	0.00	0.00
62	97.00	MX08FRO665-21	3	7.646	8.410	0.55	0.75	23.13	865.99	0.000	0.000	194.54	0.00	0.00

**Totals:            43,522.25                            7,054.70**



## Total Applied Force Summary

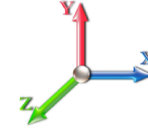
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**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		173.86	2209.95	0.00	0.00
10.00		170.98	2395.58	0.00	0.00
15.00		167.90	2373.38	0.00	0.00
20.00		174.80	2344.97	0.00	0.00
25.00		179.64	2312.97	0.00	0.00
30.00		182.92	2278.59	0.00	0.00
35.00		185.06	2242.50	0.00	0.00
40.00		186.32	2205.11	0.00	0.00
45.00		186.86	2166.70	0.00	0.00
45.25		9.24	107.45	0.00	0.00
50.00		180.01	3125.27	0.00	0.00
51.25		46.97	812.76	0.00	0.00
55.00		141.40	1444.80	0.00	0.00
60.00		188.16	1894.26	0.00	0.00
65.00		186.84	1858.03	0.00	0.00
70.00		185.19	1821.36	0.00	0.00
75.00		183.24	1784.28	0.00	0.00
80.00		181.01	1746.85	0.00	0.00
85.00		178.54	1709.11	0.00	0.00
90.00		175.84	1671.07	0.00	0.00
91.75		60.63	576.95	0.00	0.00
95.00		113.22	1455.66	0.00	0.00
96.50		51.72	664.17	0.00	0.00
97.00	(11) attachments	987.58	5100.17	0.00	0.00
100.00		102.58	782.73	0.00	0.00
105.00		168.72	1279.14	0.00	0.00
107.00	(51) attachments	1461.10	12636.92	0.00	-27.34
110.00		98.56	676.05	0.00	0.00
115.00		161.72	1100.93	0.00	0.00
120.00	(7) attachments	777.19	3345.00	0.00	509.94
125.00		154.12	1028.93	0.00	0.00
130.00		150.13	998.80	0.00	0.00
133.00		87.96	586.11	0.00	0.00
135.00		58.67	571.26	0.00	0.00
136.75		50.78	493.47	0.00	0.00
137.00	(29) attachments	1067.98	6703.04	0.00	0.00
140.00		85.79	523.77	0.00	0.00
145.00		139.73	846.24	0.00	0.00
146.00	(30) attachments	1184.82	7060.21	0.00	0.00
150.00		107.79	633.02	0.00	0.00
151.00	(3) attachments	208.86	478.70	191.17	0.00
155.00		104.15	607.63	0.00	0.00
158.00	(41) attachments	1745.74	10720.73	0.00	0.00
	<b>Totals:</b>	<b>12,394.31</b>	<b>97,374.62</b>	<b>191.17</b>	<b>482.60</b>

## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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 + 1.0Di + 1.0Wi 50 mph Wind

**Iterations** 24

**Dead Load Factor** 1.20

**Wind Load Factor** 1.00



Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	5.48
10.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	15.33
15.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	16.38
20.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.483	0.00	17.18
25.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.747	0.00	17.83
30.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.972	0.00	18.38
35.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.169	0.00	18.86
40.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.345	0.00	19.29
45.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.504	0.00	19.67
45.25	1/2" Coax	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	6.512	0.00	0.98
50.00	1/2" Coax	Yes	4.75	0.000	0.00	0.00	0.00	0.000	0.000	6.650	0.00	19.02
51.25	1/2" Coax	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	6.685	0.00	5.03
55.00	1/2" Coax	Yes	3.75	0.000	0.00	0.00	0.00	0.000	0.000	6.785	0.00	15.26
60.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.910	0.00	20.65
65.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.028	0.00	20.93
70.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.138	0.00	21.20
75.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.243	0.00	21.45
80.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.342	0.00	21.69
85.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.436	0.00	21.91
90.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.526	0.00	22.13
91.75	1/2" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	7.557	0.00	7.77
95.00	1/2" Coax	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	7.612	0.00	14.52
96.50	1/2" Coax	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	7.637	0.00	6.72
97.00	1/2" Coax	Yes	0.50	0.000	0.00	0.00	0.00	0.000	0.000	7.646	0.00	2.24
100.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	7.695	0.00	13.52
105.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.774	0.00	22.72
107.00	1/2" Coax	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.805	0.00	9.12
110.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	7.851	0.00	13.74
115.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.925	0.00	23.07
120.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.996	0.00	23.24
125.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.065	0.00	23.41
130.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.132	0.00	23.57
133.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.171	0.00	14.20
135.00	1/2" Coax	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.197	0.00	9.49
136.75	1/2" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	8.219	0.00	8.32
137.00	1/2" Coax	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	8.222	0.00	1.19
140.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.260	0.00	14.32
145.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.321	0.00	24.01
146.00	1/2" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	8.333	0.00	4.81
150.00	1/2" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	8.381	0.00	19.32
151.00	1/2" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	8.392	0.00	4.84
155.00	1/2" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	8.439	0.00	19.43
158.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.473	0.00	14.62
<b>Totals:</b>											<b>0.0</b>	<b>656.8</b>

## Calculated Forces

**Structure:** CT01080-S-SBA  
**Site Name:** Long Hill #1  
**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

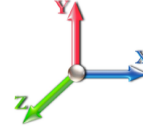
4/8/2022  
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**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph Wind

**Iterations** 24

**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	-97.37	-12.45	-0.19	-1465.7	0.00	1465.79	5458.79	2729.40	13000.6	6509.99	0.00	0.000	0.000	0.243
5.00	-95.15	-12.37	-0.19	-1403.5	0.00	1403.56	5387.61	2693.80	12568.9	6293.83	0.03	-0.060	0.000	0.241
10.00	-92.74	-12.30	-0.19	-1341.7	0.00	1341.71	5314.79	2657.39	12140.4	6079.27	0.13	-0.121	0.000	0.238
15.00	-90.35	-12.22	-0.19	-1280.2	0.00	1280.23	5240.33	2620.17	11715.4	5866.42	0.29	-0.183	0.000	0.235
20.00	-87.99	-12.13	-0.19	-1219.1	0.00	1219.14	5164.24	2582.12	11294.0	5655.41	0.51	-0.245	0.000	0.233
25.00	-85.67	-12.04	-0.19	-1158.4	0.00	1158.47	5086.52	2543.26	10876.5	5446.36	0.80	-0.309	0.000	0.230
30.00	-83.38	-11.94	-0.19	-1098.2	0.00	1098.28	5007.16	2503.58	10463.2	5239.39	1.16	-0.374	0.000	0.226
35.00	-81.12	-11.83	-0.19	-1038.5	0.00	1038.59	4926.16	2463.08	10054.2	5034.61	1.59	-0.440	0.000	0.223
40.00	-78.90	-11.72	-0.19	-979.44	0.00	979.44	4843.52	2421.76	9649.95	4832.15	2.09	-0.506	0.000	0.219
45.00	-76.73	-11.56	-0.19	-920.86	0.00	920.86	4759.26	2379.63	9250.49	4632.12	2.65	-0.574	0.000	0.215
45.25	-76.62	-11.59	-0.19	-917.97	0.00	917.97	4755.00	2377.50	9230.65	4622.19	2.68	-0.577	0.000	0.215
50.00	-73.49	-11.43	-0.19	-862.90	0.00	862.90	4673.35	2336.67	8856.13	4434.65	3.29	-0.642	0.000	0.210
51.25	-72.67	-11.42	-0.19	-848.61	0.00	848.61	3853.76	1926.88	7395.56	3703.28	3.46	-0.660	0.000	0.248
55.00	-71.21	-11.34	-0.19	-805.79	0.00	805.79	3804.98	1902.49	7163.10	3586.87	4.00	-0.712	0.000	0.243
60.00	-69.31	-11.22	-0.19	-749.08	0.00	749.08	3738.51	1869.25	6856.06	3433.13	4.79	-0.788	0.000	0.237
65.00	-67.44	-11.10	-0.19	-692.97	0.00	692.97	3670.40	1835.20	6552.57	3281.16	5.65	-0.865	0.000	0.230
70.00	-65.60	-10.97	-0.19	-637.48	0.00	637.48	3600.66	1800.33	6252.87	3131.08	6.60	-0.941	0.000	0.222
75.00	-63.81	-10.84	-0.19	-582.62	0.00	582.62	3529.28	1764.64	5957.19	2983.02	7.63	-1.017	0.000	0.213
80.00	-62.05	-10.71	-0.19	-528.41	0.00	528.41	3456.27	1728.13	5665.78	2837.10	8.73	-1.093	0.000	0.204
85.00	-60.33	-10.58	-0.19	-474.86	0.00	474.86	3381.62	1690.81	5378.88	2693.44	9.92	-1.167	0.000	0.194
90.00	-58.66	-10.42	-0.19	-421.98	0.00	421.98	3305.34	1652.67	5096.71	2552.14	11.18	-1.240	0.000	0.183
91.75	-58.07	-10.38	-0.19	-403.75	0.00	403.75	3278.25	1639.13	4999.12	2503.28	11.64	-1.266	0.000	0.179
95.00	-56.61	-10.27	-0.19	-370.02	0.00	370.02	3221.38	1610.69	4810.51	2408.83	12.52	-1.312	0.000	0.171
96.50	-55.95	-10.21	-0.19	-354.63	0.00	354.63	1897.75	948.88	2865.01	1434.63	12.93	-1.333	0.000	0.277
97.00	-50.87	-9.14	-0.19	-349.52	0.00	349.52	1894.22	947.11	2850.46	1427.35	13.07	-1.340	0.000	0.272
100.00	-50.08	-9.08	-0.19	-322.12	-0.01	322.12	1872.71	936.35	2763.41	1383.76	13.94	-1.399	0.000	0.260
105.00	-48.79	-8.93	-0.19	-276.71	-0.01	276.71	1835.54	917.77	2619.24	1311.57	15.45	-1.491	0.000	0.238
107.00	-36.19	-7.17	-0.19	-258.85	-0.01	258.85	1820.21	910.11	2561.95	1282.88	16.08	-1.527	0.000	0.222
110.00	-35.51	-7.09	-0.19	-237.34	-0.01	237.34	1796.73	898.37	2476.44	1240.06	17.06	-1.580	-0.001	0.211
115.00	-34.41	-6.95	-0.19	-201.88	-0.01	201.88	1756.29	878.14	2335.25	1169.36	18.76	-1.662	-0.001	0.192
120.00	-31.08	-6.11	-0.19	-166.62	-0.01	166.62	1714.21	857.11	2195.89	1099.58	20.54	-1.740	-0.001	0.170
125.00	-30.05	-5.96	-0.19	-136.06	-0.01	136.06	1670.50	835.25	2058.61	1030.84	22.40	-1.811	-0.001	0.150
130.00	-29.05	-5.80	-0.19	-106.25	-0.01	106.25	1625.15	812.57	1923.65	963.25	24.33	-1.874	-0.001	0.128
133.00	-28.46	-5.71	-0.19	-88.84	-0.01	88.84	1597.15	798.58	1843.89	923.31	25.52	-1.909	-0.001	0.114
135.00	-27.89	-5.64	-0.19	-77.41	-0.01	77.41	1578.16	789.08	1791.25	896.95	26.33	-1.930	-0.001	0.104
136.75	-27.40	-5.58	-0.19	-67.54	-0.01	67.54	1475.57	737.78	1680.22	841.36	27.04	-1.947	-0.001	0.099
137.00	-20.74	-4.29	-0.19	-66.14	-0.01	66.14	1473.30	736.65	1674.05	838.27	27.14	-1.949	-0.001	0.093
140.00	-20.21	-4.20	-0.19	-53.28	-0.01	53.28	1445.77	722.89	1600.57	801.47	28.37	-1.973	-0.001	0.080
145.00	-19.37	-4.03	-0.19	-32.30	-0.01	32.30	1398.74	699.37	1480.44	741.32	30.46	-2.004	-0.001	0.057
146.00	-12.36	-2.60	-0.19	-28.27	-0.01	28.27	1389.16	694.58	1456.78	729.47	30.88	-2.009	-0.001	0.048
150.00	-11.73	-2.48	-0.19	-17.85	-0.01	17.85	1340.27	670.14	1353.35	677.68	32.57	-2.025	-0.001	0.035
151.00	-11.26	-2.25	0.00	-15.38	0.00	15.38	1327.48	663.74	1327.52	664.75	32.99	-2.028	-0.001	0.032
155.00	-10.65	-2.13	0.00	-6.38	0.00	6.38	1276.33	638.17	1226.69	614.25	34.70	-2.037	-0.001	0.019
158.00	0.00	-1.75	0.00	0.00	0.00	0.00	1237.97	618.99	1153.67	577.69	35.98	-2.039	-0.001	0.000

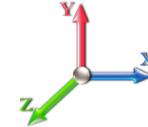
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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> 22
<b>Gust Response Factor</b>	1.10	<b>Sds</b>	0.19	<b>Ss</b> 0.18
<b>Dead Load Factor</b>	1.20	<b>Seismic Load Factor</b>	1.00	<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency (f1)</b>	0.32	<b>SA</b> 0.03
				<b>Seismic Importance Factor</b> 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1355.0	0.00	0.03	0.02	25.95	
10.00		1327.2	0.01	0.05	0.03	36.70	
15.00		1299.5	0.02	0.06	0.04	41.43	
20.00		1271.7	0.03	0.07	0.04	43.34	
25.00		1243.9	0.05	0.07	0.04	43.97	
30.00		1216.2	0.07	0.07	0.04	44.09	
35.00		1188.4	0.09	0.07	0.04	44.08	
40.00		1160.7	0.12	0.07	0.03	44.04	
45.00		1132.9	0.15	0.07	0.03	43.84	
45.25	Bot - Section 2	55.92	0.16	0.07	0.03	2.17	
50.00		1964.2	0.19	0.06	0.02	76.77	
51.25	Top - Section 1	509.18	0.20	0.06	0.02	19.89	
55.00		702.74	0.23	0.06	0.02	27.15	
60.00		916.16	0.27	0.05	0.01	33.65	
65.00		892.37	0.32	0.04	0.01	29.07	
70.00		868.58	0.37	0.03	0.01	22.09	
75.00		844.78	0.43	0.01	0.01	12.62	
80.00		820.99	0.48	-0.01	0.01	1.35	
85.00		797.19	0.55	-0.03	0.01	-10.12	
90.00		773.40	0.61	-0.06	0.02	-19.85	
91.75	Bot - Section 3	265.07	0.64	-0.07	0.02	-7.81	
95.00		813.05	0.68	-0.08	0.03	-28.62	
96.50	Top - Section 2	369.60	0.71	-0.09	0.03	-13.75	
97.00	Appurtenance(s)	2408.5	0.71	-0.09	0.03	-90.99	
100.00		293.48	0.76	-0.10	0.04	-11.80	
105.00		476.45	0.83	-0.12	0.06	-19.25	
107.00	Appurtenance(s)	5430.8	0.87	-0.12	0.08	-212.57	
110.00		274.45	0.92	-0.12	0.09	-9.84	
115.00		444.72	1.00	-0.11	0.13	-11.86	
120.00	Appurtenance(s)	1378.8	1.09	-0.08	0.18	-17.93	
125.00		413.00	1.18	-0.01	0.24	2.11	
130.00		397.14	1.28	0.09	0.32	11.00	
133.00	Bot - Section 4	230.67	1.34	0.18	0.37	10.02	
135.00		303.91	1.38	0.25	0.41	16.66	
136.75	Top - Section 3	261.76	1.42	0.31	0.45	17.12	
137.00	Appurtenance(s)	2632.4	1.42	0.32	0.45	176.26	
140.00		221.39	1.48	0.46	0.52	19.16	
145.00		356.30	1.59	0.75	0.66	43.82	
146.00	Appurtenance(s)	2862.1	1.61	0.82	0.69	374.54	
150.00		271.08	1.70	1.14	0.82	44.53	
151.00	Appurtenance(s)	166.98	1.73	1.22	0.86	28.91	
155.00		258.39	1.82	1.63	1.01	54.38	
158.00	Appurtenance(s)	3558.0	1.89	1.98	1.14	856.09	
<b>Totals:</b>		<b>44,429.7</b>				<b>1,792.4</b>	<b>Total Wind: 47,721.8</b>

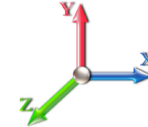
## Calculated Forces

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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> 22
<b>Gust Response Factor</b> 1.10					<b>Sds</b> 0.19					<b>Ss</b> 0.18
<b>Dead Load Factor</b> 1.20			<b>Seismic Load Factor</b> 1.00			<b>Sd1</b> 0.10			<b>S1</b> 0.06	
<b>Wind Load Factor</b> 0.00		<b>Structure Frequency (f1)</b> 0.32		<b>SA</b> 0.03		<b>Seismic Importance Factor</b> 1.00				



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	-61.12	-2.25	0.00	-287.60	0.00	287.60	5458.79	2729.40	13000.6	6509.99	0.00	0.00	0.00	0.055
5.00	-59.37	-2.24	0.00	-276.34	0.00	276.34	5387.61	2693.80	12568.9	6293.83	0.01	-0.01	0.055	
10.00	-57.47	-2.21	0.00	-265.15	0.00	265.15	5314.79	2657.39	12140.4	6079.27	0.03	-0.02	0.054	
15.00	-55.60	-2.18	0.00	-254.08	0.00	254.08	5240.33	2620.17	11715.4	5866.42	0.06	-0.04	0.054	
20.00	-53.76	-2.15	0.00	-243.17	0.00	243.17	5164.24	2582.12	11294.0	5655.41	0.10	-0.05	0.053	
25.00	-51.96	-2.12	0.00	-232.42	0.00	232.42	5086.52	2543.26	10876.5	5446.36	0.16	-0.06	0.053	
30.00	-50.19	-2.08	0.00	-221.84	0.00	221.84	5007.16	2503.58	10463.2	5239.39	0.23	-0.07	0.052	
35.00	-48.45	-2.05	0.00	-211.43	0.00	211.43	4926.16	2463.08	10054.2	5034.61	0.31	-0.09	0.052	
40.00	-46.75	-2.01	0.00	-201.20	0.00	201.20	4843.52	2421.76	9649.95	4832.15	0.41	-0.10	0.051	
45.00	-45.08	-1.97	0.00	-191.15	0.00	191.15	4759.26	2379.63	9250.49	4632.12	0.53	-0.12	0.051	
45.25	-44.99	-1.97	0.00	-190.66	0.00	190.66	4755.00	2377.50	9230.65	4622.19	0.53	-0.12	0.051	
50.00	-42.34	-1.90	0.00	-181.29	0.00	181.29	4673.35	2336.67	8856.13	4434.65	0.66	-0.13	0.050	
51.25	-41.65	-1.88	0.00	-178.92	0.00	178.92	3853.76	1926.88	7395.56	3703.28	0.69	-0.13	0.059	
55.00	-40.58	-1.86	0.00	-171.86	0.00	171.86	3804.98	1902.49	7163.10	3586.87	0.80	-0.14	0.059	
60.00	-39.17	-1.83	0.00	-162.56	0.00	162.56	3738.51	1869.25	6856.06	3433.13	0.96	-0.16	0.058	
65.00	-37.78	-1.81	0.00	-153.39	0.00	153.39	3670.40	1835.20	6552.57	3281.16	1.14	-0.18	0.057	
70.00	-36.43	-1.80	0.00	-144.33	0.00	144.33	3600.66	1800.33	6252.87	3131.08	1.33	-0.19	0.056	
75.00	-35.11	-1.79	0.00	-135.34	0.00	135.34	3529.28	1764.64	5957.19	2983.02	1.54	-0.21	0.055	
80.00	-33.81	-1.79	0.00	-126.39	0.00	126.39	3456.27	1728.13	5665.78	2837.10	1.78	-0.23	0.054	
85.00	-32.54	-1.80	0.00	-117.42	0.00	117.42	3381.62	1690.81	5378.88	2693.44	2.03	-0.25	0.053	
90.00	-31.30	-1.80	0.00	-108.42	0.00	108.42	3305.34	1652.67	5096.71	2552.14	2.30	-0.27	0.052	
91.75	-30.88	-1.80	0.00	-105.27	0.00	105.27	3278.25	1639.13	4999.12	2503.28	2.39	-0.27	0.051	
95.00	-29.70	-1.80	0.00	-99.40	0.00	99.40	3221.38	1610.69	4810.51	2408.83	2.58	-0.29	0.050	
96.50	-29.16	-1.80	0.00	-96.70	0.00	96.70	1897.75	948.88	2865.01	1434.63	2.67	-0.29	0.083	
97.00	-26.24	-1.79	0.00	-95.80	0.00	95.80	1894.22	947.11	2850.46	1427.35	2.71	-0.29	0.081	
100.00	-25.71	-1.80	0.00	-90.42	0.00	90.42	1872.71	936.35	2763.41	1383.76	2.89	-0.31	0.079	
105.00	-24.84	-1.80	0.00	-81.43	0.00	81.43	1835.54	917.77	2619.24	1311.57	3.23	-0.34	0.076	
107.00	-18.20	-1.77	0.00	-77.83	0.00	77.83	1820.21	910.11	2561.95	1282.88	3.38	-0.35	0.071	
110.00	-17.76	-1.77	0.00	-72.53	0.00	72.53	1796.73	898.37	2476.44	1240.06	3.60	-0.36	0.068	
115.00	-17.05	-1.77	0.00	-63.68	0.00	63.68	1756.29	878.14	2335.25	1169.36	3.99	-0.39	0.064	
120.00	-15.21	-1.77	0.00	-54.81	0.00	54.81	1714.21	857.11	2195.89	1099.58	4.41	-0.41	0.059	
125.00	-14.55	-1.77	0.00	-45.98	0.00	45.98	1670.50	835.25	2058.61	1030.84	4.86	-0.44	0.053	
130.00	-13.90	-1.75	0.00	-37.15	0.00	37.15	1625.15	812.57	1923.65	963.25	5.32	-0.46	0.047	
133.00	-13.53	-1.74	0.00	-31.89	0.00	31.89	1597.15	798.58	1843.89	923.31	5.62	-0.47	0.043	
135.00	-13.09	-1.72	0.00	-28.40	0.00	28.40	1578.16	789.08	1791.25	896.95	5.82	-0.48	0.040	
136.75	-12.72	-1.71	0.00	-25.39	0.00	25.39	1475.57	737.78	1680.22	841.36	5.99	-0.48	0.039	
137.00	-9.56	-1.50	0.00	-24.96	0.00	24.96	1473.30	736.65	1674.05	838.27	6.02	-0.49	0.036	
140.00	-9.23	-1.48	0.00	-20.45	0.00	20.45	1445.77	722.89	1600.57	801.47	6.33	-0.49	0.032	
145.00	-8.71	-1.44	0.00	-13.04	0.00	13.04	1398.74	699.37	1480.44	741.32	6.85	-0.51	0.024	
146.00	-5.26	-1.03	0.00	-11.60	0.00	11.60	1389.16	694.58	1456.78	729.47	6.96	-0.51	0.020	
150.00	-4.88	-0.98	0.00	-7.48	0.00	7.48	1340.27	670.14	1353.35	677.68	7.39	-0.51	0.015	
151.00	-4.67	-0.95	0.00	-6.50	0.00	6.50	1327.48	663.74	1327.52	664.75	7.49	-0.52	0.013	
155.00	-4.30	-0.90	0.00	-2.69	0.00	2.69	1276.33	638.17	1226.69	614.25	7.93	-0.52	0.008	
158.00	0.00	-0.86	0.00	0.00	0.00	0.00	1237.97	618.99	1153.67	577.69	8.25	-0.52	0.000	

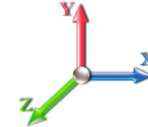
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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> 22
<b>Gust Response Factor</b> 1.10	<b>Sds</b> 0.19	<b>Ss</b> 0.18
<b>Dead Load Factor</b> 0.90	<b>Seismic Load Factor</b> 1.00	<b>S1</b> 0.06
<b>Wind Load Factor</b> 0.00	<b>Structure Frequency (f1)</b> 0.32	<b>SA</b> 0.03
		<b>Seismic Importance Factor</b> 1.00



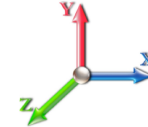
Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1355.0	0.00	0.03	0.02	25.95	
10.00		1327.2	0.01	0.05	0.03	36.70	
15.00		1299.5	0.02	0.06	0.04	41.43	
20.00		1271.7	0.03	0.07	0.04	43.34	
25.00		1243.9	0.05	0.07	0.04	43.97	
30.00		1216.2	0.07	0.07	0.04	44.09	
35.00		1188.4	0.09	0.07	0.04	44.08	
40.00		1160.7	0.12	0.07	0.03	44.04	
45.00		1132.9	0.15	0.07	0.03	43.84	
45.25	Bot - Section 2	55.92	0.16	0.07	0.03	2.17	
50.00		1964.2	0.19	0.06	0.02	76.77	
51.25	Top - Section 1	509.18	0.20	0.06	0.02	19.89	
55.00		702.74	0.23	0.06	0.02	27.15	
60.00		916.16	0.27	0.05	0.01	33.65	
65.00		892.37	0.32	0.04	0.01	29.07	
70.00		868.58	0.37	0.03	0.01	22.09	
75.00		844.78	0.43	0.01	0.01	12.62	
80.00		820.99	0.48	-0.01	0.01	1.35	
85.00		797.19	0.55	-0.03	0.01	-10.12	
90.00		773.40	0.61	-0.06	0.02	-19.85	
91.75	Bot - Section 3	265.07	0.64	-0.07	0.02	-7.81	
95.00		813.05	0.68	-0.08	0.03	-28.62	
96.50	Top - Section 2	369.60	0.71	-0.09	0.03	-13.75	
97.00	Appurtenance(s)	2408.5	0.71	-0.09	0.03	-90.99	
100.00		293.48	0.76	-0.10	0.04	-11.80	
105.00		476.45	0.83	-0.12	0.06	-19.25	
107.00	Appurtenance(s)	5430.8	0.87	-0.12	0.08	-212.57	
110.00		274.45	0.92	-0.12	0.09	-9.84	
115.00		444.72	1.00	-0.11	0.13	-11.86	
120.00	Appurtenance(s)	1378.8	1.09	-0.08	0.18	-17.93	
125.00		413.00	1.18	-0.01	0.24	2.11	
130.00		397.14	1.28	0.09	0.32	11.00	
133.00	Bot - Section 4	230.67	1.34	0.18	0.37	10.02	
135.00		303.91	1.38	0.25	0.41	16.66	
136.75	Top - Section 3	261.76	1.42	0.31	0.45	17.12	
137.00	Appurtenance(s)	2632.4	1.42	0.32	0.45	176.26	
140.00		221.39	1.48	0.46	0.52	19.16	
145.00		356.30	1.59	0.75	0.66	43.82	
146.00	Appurtenance(s)	2862.1	1.61	0.82	0.69	374.54	
150.00		271.08	1.70	1.14	0.82	44.53	
151.00	Appurtenance(s)	166.98	1.73	1.22	0.86	28.91	
155.00		258.39	1.82	1.63	1.01	54.38	
158.00	Appurtenance(s)	3558.0	1.89	1.98	1.14	856.09	
<b>Totals:</b>		<b>44,429.7</b>				<b>1,792.4</b>	<b>Total Wind: 47,721.8</b>

## Calculated Forces

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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>Load Case:</b> 0.9D + 1.0E										<b>Iterations</b> 22
<b>Gust Response Factor</b>	1.10						<b>Sds</b>	0.19		<b>Ss</b> 0.18
<b>Dead Load Factor</b>	0.90	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.10					<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency (f1)</b>	0.32	<b>SA</b>	0.03	<b>Seismic Importance Factor</b>	1.00			



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	-45.84	-2.25	0.00	-283.71	0.00	283.71	5458.79	2729.40	13000.6	6509.99	0.00	0.00	0.00	0.052
5.00	-44.53	-2.23	0.00	-272.46	0.00	272.46	5387.61	2693.80	12568.9	6293.83	0.01	-0.01	0.052	
10.00	-43.10	-2.21	0.00	-261.29	0.00	261.29	5314.79	2657.39	12140.4	6079.27	0.02	-0.02	0.051	
15.00	-41.70	-2.17	0.00	-250.26	0.00	250.26	5240.33	2620.17	11715.4	5866.42	0.06	-0.04	0.051	
20.00	-40.32	-2.14	0.00	-239.40	0.00	239.40	5164.24	2582.12	11294.0	5655.41	0.10	-0.05	0.050	
25.00	-38.97	-2.10	0.00	-228.72	0.00	228.72	5086.52	2543.26	10876.5	5446.36	0.16	-0.06	0.050	
30.00	-37.64	-2.06	0.00	-218.22	0.00	218.22	5007.16	2503.58	10463.2	5239.39	0.23	-0.07	0.049	
35.00	-36.34	-2.03	0.00	-207.91	0.00	207.91	4926.16	2463.08	10054.2	5034.61	0.31	-0.09	0.049	
40.00	-35.06	-1.99	0.00	-197.78	0.00	197.78	4843.52	2421.76	9649.95	4832.15	0.41	-0.10	0.048	
45.00	-33.81	-1.95	0.00	-187.84	0.00	187.84	4759.26	2379.63	9250.49	4632.12	0.52	-0.11	0.048	
45.25	-33.74	-1.95	0.00	-187.36	0.00	187.36	4755.00	2377.50	9230.65	4622.19	0.53	-0.11	0.048	
50.00	-31.75	-1.87	0.00	-178.11	0.00	178.11	4673.35	2336.67	8856.13	4434.65	0.65	-0.13	0.047	
51.25	-31.24	-1.85	0.00	-175.77	0.00	175.77	3853.76	1926.88	7395.56	3703.28	0.68	-0.13	0.056	
55.00	-30.43	-1.83	0.00	-168.81	0.00	168.81	3804.98	1902.49	7163.10	3586.87	0.79	-0.14	0.055	
60.00	-29.37	-1.80	0.00	-159.65	0.00	159.65	3738.51	1869.25	6856.06	3433.13	0.94	-0.16	0.054	
65.00	-28.34	-1.78	0.00	-150.63	0.00	150.63	3670.40	1835.20	6552.57	3281.16	1.12	-0.17	0.054	
70.00	-27.32	-1.76	0.00	-141.73	0.00	141.73	3600.66	1800.33	6252.87	3131.08	1.31	-0.19	0.053	
75.00	-26.33	-1.75	0.00	-132.92	0.00	132.92	3529.28	1764.64	5957.19	2983.02	1.52	-0.21	0.052	
80.00	-25.36	-1.76	0.00	-124.14	0.00	124.14	3456.27	1728.13	5665.78	2837.10	1.75	-0.23	0.051	
85.00	-24.41	-1.76	0.00	-115.35	0.00	115.35	3381.62	1690.81	5378.88	2693.44	1.99	-0.24	0.050	
90.00	-23.48	-1.76	0.00	-106.55	0.00	106.55	3305.34	1652.67	5096.71	2552.14	2.26	-0.26	0.049	
91.75	-23.16	-1.76	0.00	-103.46	0.00	103.46	3278.25	1639.13	4999.12	2503.28	2.36	-0.27	0.048	
95.00	-22.27	-1.76	0.00	-97.73	0.00	97.73	3221.38	1610.69	4810.51	2408.83	2.54	-0.28	0.047	
96.50	-21.87	-1.76	0.00	-95.08	0.00	95.08	1897.75	948.88	2865.01	1434.63	2.63	-0.29	0.078	
97.00	-19.68	-1.76	0.00	-94.20	0.00	94.20	1894.22	947.11	2850.46	1427.35	2.66	-0.29	0.076	
100.00	-19.28	-1.76	0.00	-88.93	0.00	88.93	1872.71	936.35	2763.41	1383.76	2.85	-0.30	0.075	
105.00	-18.63	-1.76	0.00	-80.13	0.00	80.13	1835.54	917.77	2619.24	1311.57	3.18	-0.33	0.071	
107.00	-13.65	-1.74	0.00	-76.60	0.00	76.60	1820.21	910.11	2561.95	1282.88	3.32	-0.34	0.067	
110.00	-13.32	-1.74	0.00	-71.39	0.00	71.39	1796.73	898.37	2476.44	1240.06	3.54	-0.36	0.065	
115.00	-12.78	-1.74	0.00	-62.69	0.00	62.69	1756.29	878.14	2335.25	1169.36	3.93	-0.38	0.061	
120.00	-11.41	-1.74	0.00	-53.98	0.00	53.98	1714.21	857.11	2195.89	1099.58	4.34	-0.41	0.056	
125.00	-10.91	-1.74	0.00	-45.30	0.00	45.30	1670.50	835.25	2058.61	1030.84	4.78	-0.43	0.050	
130.00	-10.43	-1.72	0.00	-36.62	0.00	36.62	1625.15	812.57	1923.65	963.25	5.24	-0.45	0.044	
133.00	-10.14	-1.71	0.00	-31.45	0.00	31.45	1597.15	798.58	1843.89	923.31	5.52	-0.46	0.040	
135.00	-9.82	-1.70	0.00	-28.02	0.00	28.02	1578.16	789.08	1791.25	896.95	5.72	-0.47	0.037	
136.75	-9.54	-1.68	0.00	-25.05	0.00	25.05	1475.57	737.78	1680.22	841.36	5.89	-0.48	0.036	
137.00	-7.16	-1.48	0.00	-24.63	0.00	24.63	1473.30	736.65	1674.05	838.27	5.92	-0.48	0.034	
140.00	-6.92	-1.46	0.00	-20.19	0.00	20.19	1445.77	722.89	1600.57	801.47	6.22	-0.49	0.030	
145.00	-6.53	-1.42	0.00	-12.88	0.00	12.88	1398.74	699.37	1480.44	741.32	6.74	-0.50	0.022	
146.00	-3.95	-1.02	0.00	-11.47	0.00	11.47	1389.16	694.58	1456.78	729.47	6.84	-0.50	0.019	
150.00	-3.66	-0.97	0.00	-7.39	0.00	7.39	1340.27	670.14	1353.35	677.68	7.26	-0.51	0.014	
151.00	-3.50	-0.94	0.00	-6.42	0.00	6.42	1327.48	663.74	1327.52	664.75	7.37	-0.51	0.012	
155.00	-3.23	-0.88	0.00	-2.65	0.00	2.65	1276.33	638.17	1226.69	614.25	7.80	-0.51	0.007	
158.00	0.00	-0.86	0.00	0.00	0.00	0.00	1237.97	618.99	1153.67	577.69	8.12	-0.51	0.000	

## Wind Loading - Shaft

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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

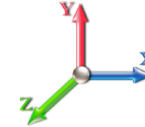


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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Iterations** 23

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



Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	273.27	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	267.77	0.650	0.000	5.00	24.452	15.89	130.1	0.0	1355.0
10.00		1.00	0.85	7.442	8.19	262.27	0.650	0.000	5.00	23.955	15.57	127.5	0.0	1327.3
15.00		1.00	0.85	7.442	8.19	256.77	0.650	0.000	5.00	23.457	15.25	124.8	0.0	1299.5
20.00		1.00	0.90	7.896	8.69	258.83	0.650	0.000	5.00	22.960	14.92	129.6	0.0	1271.7
25.00		1.00	0.95	8.276	9.10	259.18	0.650	0.000	5.00	22.463	14.60	132.9	0.0	1244.0
30.00		1.00	0.98	8.600	9.46	258.29	0.650	0.000	5.00	21.966	14.28	135.1	0.0	1216.2
35.00		1.00	1.01	8.883	9.77	256.50	0.650	0.000	5.00	21.469	13.95	136.4	0.0	1188.5
40.00		1.00	1.04	9.137	10.05	254.04	0.650	0.000	5.00	20.972	13.63	137.0	0.0	1160.7
45.00		1.00	1.07	9.366	10.30	251.04	0.650	0.000	5.00	20.475	13.31	137.1	0.0	1132.9
45.25	Bot - Section 2	1.00	1.07	9.377	10.31	250.88	0.650	0.000	0.25	1.011	0.66	6.8	0.0	55.9
50.00		1.00	1.09	9.576	10.53	247.60	0.650	0.000	4.75	19.268	12.52	131.9	0.0	1964.3
51.25	Top - Section 1	1.00	1.10	9.626	10.59	246.68	0.650	0.000	1.25	4.996	3.25	34.4	0.0	509.2
55.00		1.00	1.12	9.770	10.75	247.82	0.650	0.000	3.75	14.802	9.62	103.4	0.0	702.7
60.00		1.00	1.14	9.951	10.95	243.74	0.650	0.000	5.00	19.301	12.55	137.3	0.0	916.2
65.00		1.00	1.16	10.120	11.13	239.38	0.650	0.000	5.00	18.803	12.22	136.1	0.0	892.4
70.00		1.00	1.17	10.279	11.31	234.80	0.650	0.000	5.00	18.306	11.90	134.5	0.0	868.6
75.00		1.00	1.19	10.430	11.47	230.00	0.650	0.000	5.00	17.809	11.58	132.8	0.0	844.8
80.00		1.00	1.21	10.572	11.63	225.01	0.650	0.000	5.00	17.312	11.25	130.9	0.0	821.0
85.00		1.00	1.22	10.708	11.78	219.85	0.650	0.000	5.00	16.815	10.93	128.7	0.0	797.2
90.00		1.00	1.24	10.838	11.92	214.54	0.650	0.000	5.00	16.318	10.61	126.4	0.0	773.4
91.75	Bot - Section 3	1.00	1.24	10.882	11.97	212.65	0.650	0.000	1.75	5.594	3.64	43.5	0.0	265.1
95.00		1.00	1.25	10.962	12.06	209.09	0.650	0.000	3.25	10.364	6.74	81.2	0.0	813.0
96.50	Top - Section 2	1.00	1.26	10.998	12.10	207.43	0.650	0.000	1.50	4.713	3.06	37.1	0.0	369.6
97.00	Appurtenance(s)	1.00	1.26	11.010	12.11	209.72	0.650	0.000	0.50	1.561	1.01	12.3	0.0	49.5
100.00		1.00	1.27	11.081	12.19	206.37	0.650	0.000	3.00	9.261	6.02	73.4	0.0	293.5
105.00		1.00	1.28	11.195	12.31	200.68	0.650	0.000	5.00	15.038	9.77	120.4	0.0	476.4
107.00	Appurtenance(s)	1.00	1.28	11.240	12.36	198.38	0.650	0.000	2.00	5.876	3.82	47.2	0.0	186.1
110.00		1.00	1.29	11.305	12.44	194.89	0.650	0.000	3.00	8.665	5.63	70.0	0.0	274.4
115.00		1.00	1.30	11.412	12.55	188.99	0.650	0.000	5.00	14.044	9.13	114.6	0.0	444.7
120.00	Appurtenance(s)	1.00	1.32	11.514	12.67	183.00	0.650	0.000	5.00	13.546	8.81	111.5	0.0	428.9
125.00		1.00	1.33	11.614	12.78	176.92	0.650	0.000	5.00	13.049	8.48	108.4	0.0	413.0
130.00		1.00	1.34	11.710	12.88	170.75	0.650	0.000	5.00	12.552	8.16	105.1	0.0	397.1
133.00	Bot - Section 4	1.00	1.34	11.766	12.94	167.01	0.650	0.000	3.00	7.293	4.74	61.4	0.0	230.7
135.00		1.00	1.35	11.803	12.98	164.50	0.650	0.000	2.00	4.847	3.15	40.9	0.0	303.9
136.75	Top - Section 3	1.00	1.35	11.835	13.02	162.30	0.650	0.000	1.75	4.176	2.71	35.3	0.0	261.8
137.00	Appurtenance(s)	1.00	1.35	11.840	13.02	164.93	0.650	0.000	0.25	0.592	0.38	5.0	0.0	18.7
140.00		1.00	1.36	11.894	13.08	161.14	0.650	0.000	3.00	7.002	4.55	59.5	0.0	221.4
145.00		1.00	1.37	11.982	13.18	154.76	0.650	0.000	5.00	11.272	7.33	96.6	0.0	356.3
146.00	Appurtenance(s)	1.00	1.37	12.000	13.20	153.47	0.650	0.000	1.00	2.195	1.43	18.8	0.0	69.4
150.00		1.00	1.38	12.068	13.27	148.31	0.650	0.000	4.00	8.580	5.58	74.0	0.0	271.1
151.00	Appurtenance(s)	1.00	1.38	12.085	13.29	147.01	0.650	0.000	1.00	2.095	1.36	18.1	0.0	66.2
155.00		1.00	1.39	12.152	13.37	141.79	0.650	0.000	4.00	8.183	5.32	71.1	0.0	258.4
158.00	Appurtenance(s)	1.00	1.39	12.201	13.42	137.85	0.650	0.000	3.00	5.928	3.85	51.7	0.0	187.1
<b>Totals:</b>									<b>158.00</b>			<b>3,850.9</b>		<b>26,997.7</b>



## Discrete Appurtenance Forces

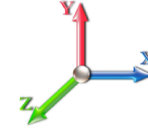
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 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	Alcatel RRH2X60-PCS	3	12.201	13.421	0.38	0.75	2.48	165.00	0.000	0.000	33.22	0.00	0.00
2	158.00	6' Lightning rod	1	12.201	13.421	1.00	1.00	0.38	6.50	0.000	0.000	5.10	0.00	0.00
3	158.00	Commscope	6	12.201	13.421	0.62	0.75	30.07	304.26	0.000	0.000	403.53	0.00	0.00
4	158.00	Amphenol	2	12.201	13.421	0.70	0.75	13.57	54.00	0.000	0.000	182.17	0.00	0.00
5	158.00	RFS APL866513-42T0 w/	4	12.201	13.421	0.70	0.75	15.76	194.80	0.000	0.000	211.56	0.00	0.00
6	158.00	Alcatel RRH2X60-AWS	3	12.201	13.421	0.38	0.75	3.94	180.00	0.000	0.000	52.85	0.00	0.00
7	158.00	Alcatel RRH2X60-700	3	12.201	13.421	0.38	0.75	3.94	180.00	0.000	0.000	52.85	0.00	0.00
8	158.00	OVP-12	1	12.201	13.421	0.50	0.75	2.04	32.00	0.000	0.000	27.38	0.00	0.00
9	158.00	RFS FD9R6004/2CL-3CL	6	12.201	13.421	0.38	0.75	0.70	18.00	0.000	0.000	9.36	0.00	0.00
10	158.00	RFS DB-T1-6C-8AB-0Z	2	12.201	13.421	0.38	0.75	3.60	88.00	0.000	0.000	48.32	0.00	0.00
11	158.00	Low Profile Platform	1	12.201	13.421	1.00	1.00	35.00	1600.00	0.000	0.000	469.73	0.00	0.00
12	158.00	MT6407-77A	3	12.201	13.421	0.52	0.75	7.39	238.20	0.000	0.000	99.14	0.00	0.00
13	158.00	RF4439d-25A	3	12.201	13.421	0.50	0.75	2.74	99.00	0.000	0.000	36.82	0.00	0.00
14	158.00	RF4440d-13A	3	12.201	13.421	0.50	0.75	2.83	211.20	0.000	0.000	38.04	0.00	0.00
15	151.00	Andrew VHLP2.5	1	12.085	13.294	1.00	1.00	8.43	47.60	2.043	0.000	112.06	228.92	0.00
16	151.00	Pipe Mount	1	12.085	13.294	1.00	1.00	2.63	40.00	0.000	0.000	34.96	0.00	0.00
17	151.00	ODU	1	12.085	13.294	0.50	1.00	0.62	13.20	0.000	0.000	8.24	0.00	0.00
18	146.00	RFS ACU-A20-N RET	4	12.000	13.200	0.40	0.80	0.19	4.00	0.000	0.000	2.53	0.00	0.00
19	146.00	RFS APXVTM14-C-120 w/	3	12.000	13.200	0.62	0.80	14.86	267.00	0.000	0.000	196.20	0.00	0.00
20	146.00	Alcatel TD-RRH8x20-25	3	12.000	13.200	0.40	0.80	4.86	210.00	0.000	0.000	64.15	0.00	0.00
21	146.00	Alcatel 1900MHz RRH	3	12.000	13.200	0.40	0.80	2.86	132.00	0.000	0.000	37.70	0.00	0.00
22	146.00	Alcatel 800 MHz RRH	3	12.000	13.200	0.40	0.80	2.56	159.00	0.000	0.000	33.74	0.00	0.00
23	146.00	Alcatel 800MHz Filters	3	12.000	13.200	0.40	0.80	0.80	26.40	0.000	0.000	10.61	0.00	0.00
24	146.00	GPS	1	12.000	13.200	1.00	1.00	1.00	10.00	0.000	0.000	13.20	0.00	0.00
25	146.00	Kathrein Scala 840 10054	3	12.000	13.200	0.49	0.80	6.72	105.00	0.000	0.000	88.70	0.00	0.00
26	146.00	RRUs	3	12.000	13.200	0.40	0.80	3.50	9.39	0.000	0.000	46.25	0.00	0.00
27	146.00	Low Profile Platform	1	12.000	13.200	1.00	1.00	30.00	1600.00	0.000	0.000	395.99	0.00	0.00
28	146.00	RFS APXVSP18-C-A20	3	12.000	13.200	0.66	0.80	19.16	270.00	0.000	0.000	252.95	0.00	0.00
29	137.00	HRK12 (Handrail Kit)	1	11.840	13.024	1.00	1.00	6.75	261.72	0.000	0.000	87.91	0.00	0.00
30	137.00	4449	3	11.840	13.024	0.38	0.75	1.86	210.00	0.000	0.000	24.18	0.00	0.00
31	137.00	KRY 112 489/2	3	11.840	13.024	0.38	0.75	0.47	30.00	0.000	0.000	6.15	0.00	0.00
32	137.00	Low Profile Platform w/	1	11.840	13.024	1.00	1.00	25.00	1200.00	0.000	0.000	325.60	0.00	0.00
33	137.00	Kathrein 782 11056	3	11.840	13.024	0.38	0.75	0.17	33.00	0.000	0.000	2.20	0.00	0.00
34	137.00	APXVAARR24_43-U-NA2	3	11.840	13.024	0.52	0.75	31.88	384.00	0.000	0.000	415.18	0.00	0.00
35	137.00	KRD 9011461-B66A-B2A	3	11.840	13.024	0.65	0.75	12.74	396.60	0.000	0.000	165.97	0.00	0.00
36	137.00	Allen Telecom	12	11.840	13.024	0.38	0.75	2.43	98.40	0.000	0.000	31.65	0.00	0.00
37	120.00	Cambium Network	1	11.514	12.666	1.00	1.00	8.92	50.00	0.000	0.000	112.98	0.00	0.00
38	120.00	SC479-HF1LDF(D00-E574	2	11.519	12.671	0.80	0.80	8.05	68.00	0.000	0.220	101.97	0.00	22.43
39	120.00	SC229-DFLN	1	11.605	12.766	0.80	0.80	5.38	32.00	0.000	4.580	68.63	0.00	314.33
40	120.00	Flush Mount	1	11.514	12.666	1.00	1.00	5.00	350.00	0.000	0.000	63.33	0.00	0.00
41	120.00	Pipe Mount	1	11.514	12.666	1.00	1.00	10.00	400.00	0.000	0.000	126.66	0.00	0.00
42	120.00	DS428E83I01T - TTA	1	11.514	12.666	0.40	0.80	3.57	50.00	0.000	0.000	45.19	0.00	0.00
43	107.00	AIR 6419 B77G	3	11.279	12.407	0.61	0.80	6.68	198.30	0.000	1.800	82.83	0.00	149.09
44	107.00	DMP65R-BU6DA	3	11.240	12.364	0.58	0.80	21.96	238.20	0.000	0.000	271.54	0.00	0.00
45	107.00	TPA65R-BU6DA-K	3	11.240	12.364	0.58	0.80	21.96	207.00	0.000	0.000	271.54	0.00	0.00
46	107.00	AIR 6449 B77D	3	11.200	12.320	0.68	0.80	8.20	318.00	0.000	-1.800	101.03	0.00	-181.86
47	107.00	Raycap DC6-48-60-18-8F	3	11.240	12.364	0.54	0.80	3.54	98.40	0.000	0.000	43.74	0.00	0.00

## Discrete Appurtenance Forces

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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> 33
	<b>Struct Class:</b> II	



48	107.00	Powerwave LGP21903	6	11.240	12.364	0.48	0.80	0.66	31.80	0.000	0.000	8.19	0.00	0.00
49	107.00	Powerwave	3	11.240	12.364	0.48	0.80	0.79	48.00	0.000	0.000	9.79	0.00	0.00
50	107.00	RRUS 4478 B14	3	11.240	12.364	0.54	0.80	3.25	178.20	0.000	0.000	40.16	0.00	0.00
51	107.00	4449 B5/B12	3	11.240	12.364	0.54	0.80	2.64	219.00	0.000	0.000	32.60	0.00	0.00
52	107.00	CCI DTMAP7819VG12A	3	11.240	12.364	0.48	0.80	1.41	57.54	0.000	0.000	17.45	0.00	0.00
53	107.00	Powerwave 7020.00	6	11.240	12.364	0.48	0.80	0.98	13.20	0.000	0.000	12.11	0.00	0.00
54	107.00	(3) VFA14-H10-2120	1	11.240	12.364	0.56	0.75	28.52	2736.00	0.000	0.000	352.60	0.00	0.00
55	107.00	B2 B66A 8843	3	11.240	12.364	0.54	0.80	2.64	216.00	0.000	0.000	32.60	0.00	0.00
56	107.00	SitePro1 MM01	6	11.240	12.364	1.00	1.00	0.60	156.36	0.000	0.000	7.42	0.00	0.00
57	107.00	Collar Mount (3-Sided)	2	11.240	12.364	1.00	1.00	4.00	528.70	0.000	0.000	49.45	0.00	0.00
58	97.00	MC-PK8-DSH	1	11.010	12.111	1.00	1.00	37.59	1727.00	0.000	0.000	455.25	0.00	0.00
59	97.00	RDIDC-9181-OF-48	1	11.010	12.111	0.75	0.75	1.51	21.90	0.000	0.000	18.26	0.00	0.00
60	97.00	TA08025-B604	3	11.010	12.111	0.50	0.75	2.95	191.70	0.000	0.000	35.78	0.00	0.00
61	97.00	TA08025-B605	3	11.010	12.111	0.50	0.75	2.95	225.00	0.000	0.000	35.78	0.00	0.00
62	97.00	MX08FRO665-21	3	11.010	12.111	0.55	0.75	20.80	193.50	0.000	0.000	251.86	0.00	0.00

**Totals:            17,432.07                            6,674.91**

## Total Applied Force Summary

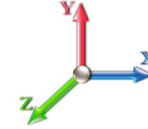
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 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		130.11	1458.40	0.00	0.00
10.00		127.46	1585.73	0.00	0.00
15.00		124.82	1557.97	0.00	0.00
20.00		129.63	1530.21	0.00	0.00
25.00		132.92	1502.45	0.00	0.00
30.00		135.07	1474.69	0.00	0.00
35.00		136.36	1446.93	0.00	0.00
40.00		137.00	1419.17	0.00	0.00
45.00		137.11	1391.41	0.00	0.00
45.25		6.78	68.84	0.00	0.00
50.00		131.93	2209.81	0.00	0.00
51.25		34.39	573.80	0.00	0.00
55.00		103.40	896.59	0.00	0.00
60.00		137.32	1174.63	0.00	0.00
65.00		136.06	1150.84	0.00	0.00
70.00		134.54	1127.05	0.00	0.00
75.00		132.80	1103.25	0.00	0.00
80.00		130.86	1079.46	0.00	0.00
85.00		128.74	1055.66	0.00	0.00
90.00		126.44	1031.87	0.00	0.00
91.75		43.52	355.53	0.00	0.00
95.00		81.23	981.05	0.00	0.00
96.50		37.06	447.14	0.00	0.00
97.00	(11) attachments	809.22	2434.42	0.00	0.00
100.00		73.38	443.11	0.00	0.00
105.00		120.37	725.82	0.00	0.00
107.00	(51) attachments	1380.28	5530.59	0.00	-32.76
110.00		70.04	364.49	0.00	0.00
115.00		114.59	594.79	0.00	0.00
120.00	(7) attachments	630.28	1528.93	0.00	336.76
125.00		108.36	552.87	0.00	0.00
130.00		105.09	537.01	0.00	0.00
133.00		61.35	314.59	0.00	0.00
135.00		40.91	359.86	0.00	0.00
136.75		35.34	310.71	0.00	0.00
137.00	(29) attachments	1063.85	2639.42	0.00	0.00
140.00		59.55	267.88	0.00	0.00
145.00		96.57	433.77	0.00	0.00
146.00	(30) attachments	1160.84	2877.64	0.00	0.00
150.00		74.04	318.12	0.00	0.00
151.00	(3) attachments	173.37	178.74	228.92	0.00
155.00		71.09	304.79	0.00	0.00
158.00	(41) attachments	1721.76	3592.89	0.00	0.00
<b>Totals:</b>		<b>10,525.84</b>	<b>50,932.91</b>	<b>228.92</b>	<b>304.00</b>

## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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



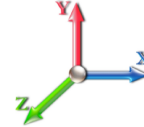
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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Iterations** 23

**Dead Load Factor** 1.00

**Wind Load Factor** 1.00



Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	0.32
10.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	0.80
15.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	0.80
20.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.896	0.00	0.80
25.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.276	0.00	0.80
30.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.600	0.00	0.80
35.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.883	0.00	0.80
40.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.137	0.00	0.80
45.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.366	0.00	0.80
45.25	1/2" Coax	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	9.377	0.00	0.04
50.00	1/2" Coax	Yes	4.75	0.000	0.00	0.00	0.00	0.000	0.000	9.576	0.00	0.76
51.25	1/2" Coax	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	9.626	0.00	0.20
55.00	1/2" Coax	Yes	3.75	0.000	0.00	0.00	0.00	0.000	0.000	9.770	0.00	0.60
60.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.951	0.00	0.80
65.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.120	0.00	0.80
70.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.279	0.00	0.80
75.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.430	0.00	0.80
80.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.572	0.00	0.80
85.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.708	0.00	0.80
90.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.838	0.00	0.80
91.75	1/2" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	10.882	0.00	0.28
95.00	1/2" Coax	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	10.962	0.00	0.52
96.50	1/2" Coax	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	10.998	0.00	0.24
97.00	1/2" Coax	Yes	0.50	0.000	0.00	0.00	0.00	0.000	0.000	11.010	0.00	0.08
100.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.081	0.00	0.48
105.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.195	0.00	0.80
107.00	1/2" Coax	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.240	0.00	0.32
110.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.305	0.00	0.48
115.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.412	0.00	0.80
120.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.514	0.00	0.80
125.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.614	0.00	0.80
130.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.710	0.00	0.80
133.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.766	0.00	0.48
135.00	1/2" Coax	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.803	0.00	0.32
136.75	1/2" Coax	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	11.835	0.00	0.28
137.00	1/2" Coax	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	11.840	0.00	0.04
140.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.894	0.00	0.48
145.00	1/2" Coax	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.982	0.00	0.80
146.00	1/2" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	12.000	0.00	0.16
150.00	1/2" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	12.068	0.00	0.64
151.00	1/2" Coax	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	12.085	0.00	0.16
155.00	1/2" Coax	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	12.152	0.00	0.64
158.00	1/2" Coax	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	12.201	0.00	0.48
<b>Totals:</b>											<b>0.0</b>	<b>24.8</b>

## Calculated Forces

**Structure:** CT01080-S-SBA  
**Site Name:** Long Hill #1  
**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

4/8/2022  
 Page: 36



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

**Iterations** 23

**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	-50.93	-10.55	-0.23	-1222.8	0.00	1222.82	5458.79	2729.40	13000.6	6509.99	0.00	0.000	0.000	0.197
5.00	-49.46	-10.46	-0.23	-1170.0	0.00	1170.09	5387.61	2693.80	12568.9	6293.83	0.03	-0.050	0.000	0.195
10.00	-47.87	-10.37	-0.23	-1117.7	0.00	1117.79	5314.79	2657.39	12140.4	6079.27	0.11	-0.101	0.000	0.193
15.00	-46.30	-10.29	-0.23	-1065.9	0.00	1065.92	5240.33	2620.17	11715.4	5866.42	0.24	-0.152	0.000	0.191
20.00	-44.76	-10.19	-0.23	-1014.4	0.00	1014.49	5164.24	2582.12	11294.0	5655.41	0.43	-0.204	0.000	0.188
25.00	-43.25	-10.10	-0.23	-963.52	0.00	963.52	5086.52	2543.26	10876.5	5446.36	0.67	-0.258	0.000	0.185
30.00	-41.76	-9.99	-0.23	-913.05	0.00	913.05	5007.16	2503.58	10463.2	5239.39	0.97	-0.311	0.000	0.183
35.00	-40.31	-9.89	-0.23	-863.09	0.00	863.09	4926.16	2463.08	10054.2	5034.61	1.32	-0.366	0.000	0.180
40.00	-38.88	-9.78	-0.23	-813.66	0.00	813.66	4843.52	2421.76	9649.95	4832.15	1.74	-0.421	0.000	0.176
45.00	-37.49	-9.65	-0.23	-764.77	0.00	764.77	4759.26	2379.63	9250.49	4632.12	2.21	-0.477	0.000	0.173
45.25	-37.41	-9.66	-0.23	-762.36	0.00	762.36	4755.00	2377.50	9230.65	4622.19	2.23	-0.480	0.000	0.173
50.00	-35.20	-9.53	-0.23	-716.48	0.00	716.48	4673.35	2336.67	8856.13	4434.65	2.74	-0.534	0.000	0.169
51.25	-34.62	-9.51	-0.23	-704.57	0.00	704.57	3853.76	1926.88	7395.56	3703.28	2.88	-0.549	0.000	0.199
55.00	-33.72	-9.43	-0.23	-668.92	0.00	668.92	3804.98	1902.49	7163.10	3586.87	3.33	-0.592	0.000	0.195
60.00	-32.53	-9.31	-0.23	-621.79	0.00	621.79	3738.51	1869.25	6856.06	3433.13	3.98	-0.655	0.000	0.190
65.00	-31.37	-9.20	-0.23	-575.23	0.00	575.23	3670.40	1835.20	6552.57	3281.16	4.70	-0.719	0.000	0.184
70.00	-30.24	-9.08	-0.23	-529.25	0.00	529.25	3600.66	1800.33	6252.87	3131.08	5.49	-0.782	0.000	0.177
75.00	-29.13	-8.96	-0.23	-483.84	0.00	483.84	3529.28	1764.64	5957.19	2983.02	6.35	-0.846	0.000	0.170
80.00	-28.04	-8.85	-0.23	-439.02	0.00	439.02	3456.27	1728.13	5665.78	2837.10	7.26	-0.908	0.000	0.163
85.00	-26.98	-8.73	-0.23	-394.78	0.00	394.78	3381.62	1690.81	5378.88	2693.44	8.25	-0.970	0.000	0.155
90.00	-25.94	-8.60	-0.23	-351.13	0.00	351.13	3305.34	1652.67	5096.71	2552.14	9.30	-1.031	0.000	0.145
91.75	-25.58	-8.57	-0.23	-336.07	0.00	336.07	3278.25	1639.13	4999.12	2503.28	9.68	-1.052	0.000	0.142
95.00	-24.60	-8.48	-0.23	-308.23	0.00	308.23	3221.38	1610.69	4810.51	2408.83	10.41	-1.091	0.000	0.136
96.50	-24.15	-8.44	-0.23	-295.51	0.00	295.51	1897.75	948.88	2865.01	1434.63	10.76	-1.108	0.000	0.219
97.00	-21.73	-7.59	-0.23	-291.29	0.00	291.29	1894.22	947.11	2850.46	1427.35	10.87	-1.114	0.000	0.216
100.00	-21.28	-7.54	-0.23	-268.51	0.00	268.51	1872.71	936.35	2763.41	1383.76	11.59	-1.163	0.000	0.205
105.00	-20.55	-7.42	-0.23	-230.83	0.00	230.83	1835.54	917.77	2619.24	1311.57	12.85	-1.240	-0.001	0.187
107.00	-15.05	-5.93	-0.23	-216.00	0.00	216.00	1820.21	910.11	2561.95	1282.88	13.38	-1.270	-0.001	0.177
110.00	-14.68	-5.86	-0.23	-198.21	0.00	198.21	1796.73	898.37	2476.44	1240.06	14.19	-1.314	-0.001	0.168
115.00	-14.08	-5.75	-0.23	-168.90	0.00	168.90	1756.29	878.14	2335.25	1169.36	15.60	-1.383	-0.001	0.152
120.00	-12.56	-5.10	-0.23	-139.80	0.00	139.80	1714.21	857.11	2195.89	1099.58	17.09	-1.448	-0.001	0.135
125.00	-12.01	-4.99	-0.23	-114.32	0.00	114.32	1670.50	835.25	2058.61	1030.84	18.63	-1.507	-0.001	0.118
130.00	-11.47	-4.88	-0.23	-89.38	-0.01	89.38	1625.15	812.57	1923.65	963.25	20.24	-1.561	-0.001	0.100
133.00	-11.15	-4.81	-0.23	-74.76	-0.01	74.76	1597.15	798.58	1843.89	923.31	21.23	-1.590	-0.001	0.088
135.00	-10.79	-4.76	-0.23	-65.14	-0.01	65.14	1578.16	789.08	1791.25	896.95	21.90	-1.608	-0.001	0.079
136.75	-10.48	-4.72	-0.23	-56.80	-0.01	56.80	1475.57	737.78	1680.22	841.36	22.50	-1.622	-0.001	0.075
137.00	-7.87	-3.58	-0.23	-55.62	-0.01	55.62	1473.30	736.65	1674.05	838.27	22.58	-1.624	-0.001	0.072
140.00	-7.61	-3.52	-0.23	-44.88	-0.01	44.88	1445.77	722.89	1600.57	801.47	23.61	-1.644	-0.001	0.061
145.00	-7.18	-3.41	-0.23	-27.28	-0.01	27.28	1398.74	699.37	1480.44	741.32	25.34	-1.670	-0.001	0.042
146.00	-4.33	-2.17	-0.23	-23.87	-0.01	23.87	1389.16	694.58	1456.78	729.47	25.70	-1.674	-0.002	0.036
150.00	-4.02	-2.09	-0.23	-15.20	-0.01	15.20	1340.27	670.14	1353.35	677.68	27.10	-1.688	-0.002	0.025
151.00	-3.84	-1.91	0.00	-13.11	0.00	13.11	1327.48	663.74	1327.52	664.75	27.46	-1.690	-0.002	0.023
155.00	-3.54	-1.83	0.00	-5.48	0.00	5.48	1276.33	638.17	1226.69	614.25	28.88	-1.698	-0.002	0.012
158.00	0.00	-1.72	0.00	0.00	0.00	0.00	1237.97	618.99	1153.67	577.69	29.95	-1.700	-0.002	0.000

## Final Analysis Summary

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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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### 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 101 mph Wind	47.8	0.00	61.02	0.02	0.62	5576.85
0.9D + 1.6W 101 mph Wind	47.8	0.00	45.74	0.01	0.62	5509.42
1.2D + 1.0Di + 1.0Wi 50 mph Wind	12.4	0.00	97.37	0.00	0.19	1465.79
1.2D + 1.0E	2.3	0.00	61.12	0.00	0.00	287.60
0.9D + 1.0E	2.3	0.00	45.84	0.00	0.00	283.71
1.0D + 1.0W 60 mph Wind	10.5	0.00	50.93	0.00	0.23	1222.82

### 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 101 mph Wind	-25.86	-38.58	-0.63	-1349.0	-0.04	-1349.0	1897.75	948.88	2865.01	1434.63	96.50	0.956
0.9D + 1.6W 101 mph Wind	-18.65	-37.90	-0.63	-1323.2	-0.04	-1323.2	1897.75	948.88	2865.01	1434.63	96.50	0.934
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-55.95	-10.21	-0.19	-354.63	0.00	-354.63	1897.75	948.88	2865.01	1434.63	96.50	0.277
1.2D + 1.0E	-29.16	-1.80	0.00	-96.70	0.00	-96.70	1897.75	948.88	2865.01	1434.63	96.50	0.083
0.9D + 1.0E	-21.87	-1.76	0.00	-95.08	0.00	-95.08	1897.75	948.88	2865.01	1434.63	96.50	0.078
1.0D + 1.0W 60 mph Wind	-24.15	-8.44	-0.23	-295.51	0.00	-295.51	1897.75	948.88	2865.01	1434.63	96.50	0.219

## Base Plate Summary

<b>Structure:</b> CT01080-S-SB	<b>Code:</b> TIA-222-G	4/8/2022
<b>Site Name:</b> Long Hill #1	<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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Reactions	Base Plate	Anchor Bolts
Original Design	<b>Yield (ksi):</b> 50.00	<b>Bolt Circle:</b> 66.00
<b>Moment (kip-ft):</b> 4350.00	<b>Width (in):</b> 67.00	<b>Number Bolts:</b> 24.00
<b>Axial (kip):</b> 51.00	<b>Style:</b> Clipped	<b>Bolt Type:</b> 2.25" 18J
<b>Shear (kip):</b> 37.50	<b>Polygon Sides:</b> 0.00	<b>Bolt Diameter (in):</b> 2.25
Analysis (1.2D + 1.6W)	<b>Clip Length (in):</b> 13.00	<b>Yield (ksi):</b> 75.00
<b>Moment (kip-ft):</b> 5576.85	<b>Effective Len (in):</b> 7.75	<b>Ultimate (ksi):</b> 100.00
<b>Axial (kip):</b> 61.02	<b>Moment (kip-in):</b> 659.33	<b>Arrangement:</b> Clustered
<b>Shear (kip):</b> 47.85	<b>Allow Stress (ksi):</b> 67.50	<b>Cluster Dist (in):</b> 6.00
	<b>Applied Stress (ksi):</b> 67.50	<b>Start Angle (deg):</b> 45.00
	<b>Stress Ratio:</b> 1.00	Compression
		<b>Force (kip):</b> 173.05
		<b>Allowable (kip):</b> 260.00
		<b>Ratio:</b> 0.68
		Tension
		<b>Force (kip):</b> 164.94
		<b>Allowable (kip):</b> 260.00
		<b>Ratio:</b> 0.65



# Monopole Mat Foundation Design

Date

4/8/2022

<b>Customer Name:</b>	AT&T	<b>TIA Standard:</b>	TIA-222-G
<b>Site Name:</b>		<b>Structure Height (Ft.):</b>	158
<b>Site Number:</b>	CT01080-S-SBA	<b>Engineer Name:</b>	J. Tibbetts
<b>Engr. Number:</b>	127338	<b>Engineer Login ID:</b>	

**Foundation Info Obtained from:**

Drawings/Calculations
Monopole
Analysis

**Structure Type:**

**Analysis or Design?**

**Base Reactions (Factored):**

Axial Load (Kips):	61.0	Shear Force (Kips):	47.8
Uplift Force (Kips):	0.0	Moment (Kips-ft):	5576.8

Allowable overstress %: 5.0%

**Foundation Geometries:**

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	8.0	Depth of Base BG (ft.):	10.0
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft.):	3.50
Length of Pad (ft.):	23	Width of Pad (ft.):	23

Final Length of pad (ft)	23.0	Final width of pad (ft):	23.0
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**Material Properties and Rebar Info:**

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	40	
Vertical Rebar Size #:	11	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	36	Tie Spacing (in):	6.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:

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

Qty. of Rebar in Pad (L):	39	Qty. of Rebar in Pad (W):	39
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Apply 1.35 factor for e/w Per G: 1.35

**Soil Design Parameters:**

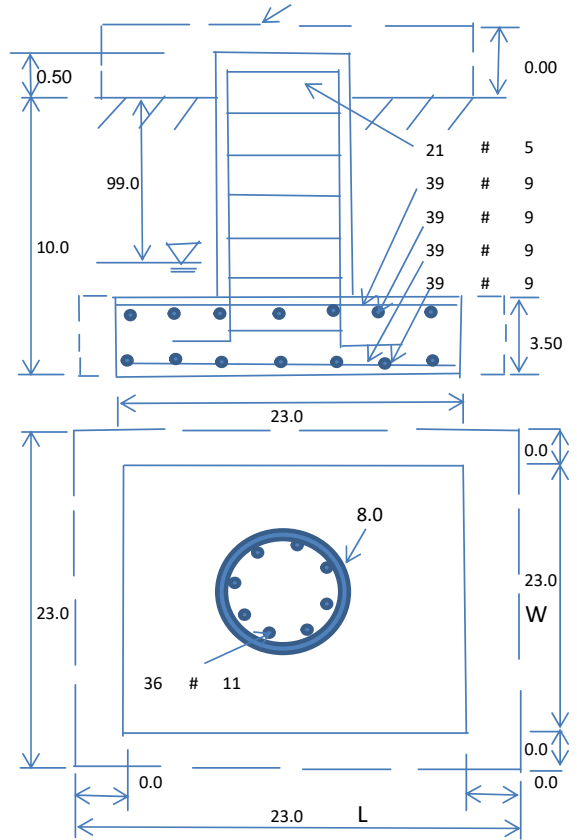
Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	16000	Ultimate Skin Friction:	425	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction 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.):	3111.77	Total Dry Soil Weight (Kips):	388.97
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	388.97	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	2203.36	Total Dry Concrete Weight (Kips):	330.50
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	330.50	Total Vertical Load on Base (Kips):	780.48

**Check Soil Capacities:**

Calculated Maxium Net Soil Pressure under the base (psf):	4327	<	Allowable Factored Soil Bearing (psf):	12000	0.36	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	8148.1	>	Design Factored Momont (kips-ft):	5514	0.68	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.48					OK!





**Check the capacities of Reinforcing Concrete:**

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compression):	0.65	Wind Load Factor on Concrete Design:	1.00		
				Load/ Capacity Ratio	
<b>(1) Concrete Pier:</b>					
Vertical Steel Rebar Area (sq. in./each):	1.56	Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	10388.7	> Design Factored Moment (Mu, Kips-F	5911.4	0.57	OK!
Calculated Shear Capacity (Kips):	912.1	> Design Factored Shear (Kips):	47.8	0.05	OK!
Calculated Tension Capacity (Tn, Kips):	3032.6	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9523.4	> Design Factored Axial Load (Pu Kips):	61.0	0.01	OK!
Moment & Axial Strength Combination:	0.57	OK! Check Tie Spacing (Design/Required):	0.5		OK!
Pier Reinforcement Ratio:	0.008	Reinforcement Ratio is satisfied per ACI			
<b>(2).Concrete Pad:</b>					
One-Way Design Shear Capacity (L-Direction, Kips):	871.6	> One-Way Factored Shear (L-D. Kips):	280.7	0.32	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	871.6	> One-Way Factored Shear (W-D., Kips)	280.7	0.32	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	686.7	> One-Way Factored Shear (C-C, Kips):	278.3	0.41	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct. ):	0.0037	OK! Lower Steel Pad Reinf. Ratio (W-Direc	0.0037		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	6454.0	> Moment at Bottom ( L-Dir. K-Ft):	1481.4	0.23	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	6454.0	> Moment at Bottom ( W-Dir. K-Ft):	1481.4	0.23	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	8992.8	> Moment at Bottom ( C-C Dir. K-Ft):	2095.0	0.23	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct. ):	0.0037	OK! Upper Steel Reinf. Ratio (W-Dir. ):	0.0037		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	6454.0	> Moment at the top (L-Dir K-Ft):	702.6	0.11	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	6454.0	> Moment at the top (W-Dir K-Ft):	702.6	0.11	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	8992.8	> Moment at the top (C-C Dir. K-Ft):	667.7	0.07	OK!
<b>(3).Check Punching Shear Capacity due to Moment in the Pier:</b>					
Moment transferred by punching shear:	2230.7	k-ft. Max. factored shear stress $v_{u,CD}$ :	4.1	Psi	
Max. factored shear stress $v_{u,AB}$ :	9.9	Psi Factored shear Strength $\phi v_n$ :	164.3	Psi	
Max. factored shear stress $v_u$ :	9.9	Psi Check Usage of Punching Shear Capacity:	0.06		OK!

# EXHIBIT 4

March 18, 2022  
**April 29, 2022 (Rev.1)**



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

RE:      Site Number:            CT1208  
         FA Number:            10042329  
         PACE Number:          MRCTB055351  
         PT Number:            2051A11NMW  
         Site Name:            MIDDLETOWN SO MAIN  
         Site Address:        1825 South Main Street  
                                    Middletown, CT 06457

To Whom It May Concern:

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

- (1) DC6-48-60-18-8F (24.0"x9.7"Φ – Wt. = 33 lbs. /each)
- **(3) TPA65R-BU6DA-K Antennas (71.2"x20.7"x7.7" – Wt. =69 lbs. /each)**
- **(3) AIR 6449 Antennas (30.6"x15.9"x10.6" – Wt. =82 lbs. /each)**
- **(3) AIR 6419 Antennas (31.1"x16.1"x7.3" – Wt. =66 lbs. /each)**
- **(3) DMP65R-BU6DA Antennas (71.2"x20.7"x7.7" – Wt. =80 lbs. /each)**
- **(3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60.lbs. /each)**
- **(3) 8843 B2/B66A RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)**
- **(2) DC6-48-60-18-8F (24.0"x9.7"Φ – Wt. = 33 lbs. /each)**

*\*Proposed equipment shown in bold.*

Mount fabrication drawings prepared by SitePro1 P/N VFA14-H10-2120, dated December 7, 2020, P/N LWRM, dated August 24, 2012, P/N MM01, dated May 10, 2010 were used to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 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 130 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 1.12 in was used for this analysis.
- HDG considers this site to be exposure category C; tower is located near large, flat, open, terrain/grasslands.
- HDG considers this site to be topographic category 1; 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 0.180 and a spectral response acceleration parameter at a period of 1 second,  $S_1$ , of 0.063.
- The mount has been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The proposed mounts will be 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 (3) Proposed SitePro1 VFA14-H10-2120 mounts, (2) Proposed SitePro1 LWRM ring mounts, (6) Proposed SitePro1 MM01 standoffs **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
<b>Proposed Mount Rating</b>	35	LC60	75%	<b>PASS</b>

Reference Documents:

- Fabrication drawings prepared by SitePro1 P/N VFA14-H10-2120, dated December 7, 2020.
- Fabrication drawings prepared by SitePro1 P/N LWRM, dated August 24, 2012.
- Fabrication drawings prepared by SitePro1 P/N MM01, dated May 10, 2010.

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 proposed 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:**

*\*Existing mount to be removed and replaced.*







**HUDSON**  
Design Group LLC

## Wind & Ice Calculations

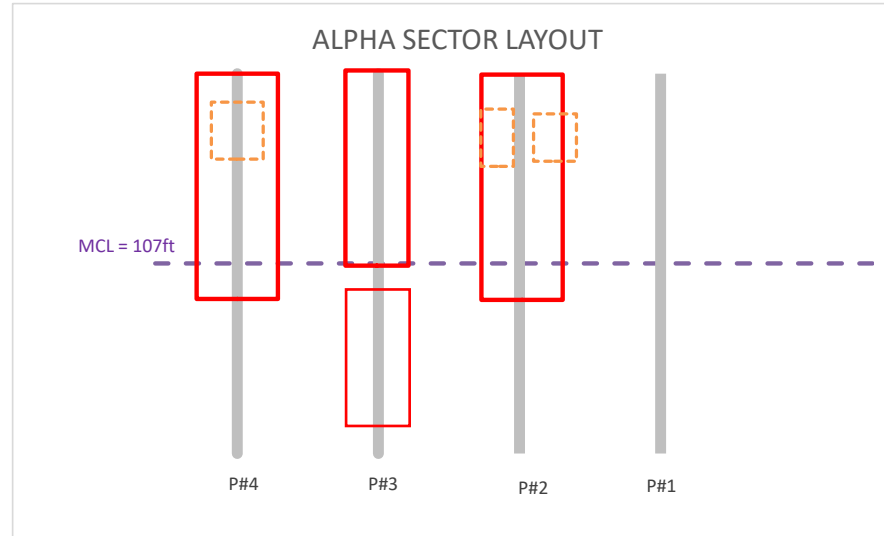


## ANSI/TIA-222H - WIND, ICE & SEISMIC LOAD CALCULATIONS

Site Code/Name	CT1208 - Middletown SO Main		
State	Connecticut		
County	Middlesex		<i>Reference</i>
Structure Class	II		<i>Table 2-1</i>
Exposure Category	C		<i>Section 2.6.5.1.2</i>
Topographic Category	1 - Kzt = 1		<i>Section 2.6.6.2.1</i>
Mean Elevation of base of structure	z <sub>s</sub> 318.4	ft	<i>ASCE7-16 Hazards</i>
Height Above Ground	z 107	ft	
<b>Wind Parameters</b>			
Basic wind speed	V 130	mph	<i>Appendix N of the Connecticut State Building Code</i>
Wind direction probability factor	K <sub>d</sub> 0.95		<i>Section 16.6</i>
Gust effect factor	G <sub>h</sub> 1		<i>Section 16.6</i>
Velocity Pressure (K <sub>a</sub> = 0.9)	46.94	psf	<i>Section 2.6.11.6</i>
<b>Wind &amp; Ice Parameters</b>			
Base windspeed in conjunction with ice, V	50	mph	<i>ASCE7-16 Hazards Tool</i>
Base Ice thickness	t <sub>i</sub> 1.00	in	<i>ASCE7-16 Hazards Tool</i>
Ice Velocity Pressure (K <sub>a</sub> = 0.9)	q <sub>ice</sub> 6.94	psf	<i>Section 2.6.11.6</i>
Design Ice Thickness	t <sub>iz</sub> 1.12	in	<i>Section 2.6.10</i>
<b>Seismic Parameters</b>			
Site Soil Class	D - Default		<i>Table 2-10</i>
Seismic Design Category	B		<i>ASCE7-16 Hazards Tool</i>
Spectral Response at Short Periods	S <sub>s</sub> 0.18		<i>Appendix N of the Connecticut State Building Code</i>
Spectral Response at 1sec	S <sub>1</sub> 0.063		<i>Appendix N of the Connecticut State Building Code</i>
Long Period Transition Period	T <sub>L</sub> 6		<i>ASCE7-16 Hazards Tool</i>
Seismic Importance Factor	I <sub>s</sub> 1		<i>Table 2-3</i>
Response modification coefficient	R 2		<i>Section 16.7</i>
Short-Period Site Coefficient	F <sub>a</sub> 1.6		<i>Table 2-11</i>
Design Spectral Response at Short Periods	S <sub>DS</sub> 0.192		<i>Section 2.7.5</i>
Seismic Response Coefficient	C <sub>s</sub> 0.096		<i>Section 2.7.7.1</i>

# ALPHA SECTOR

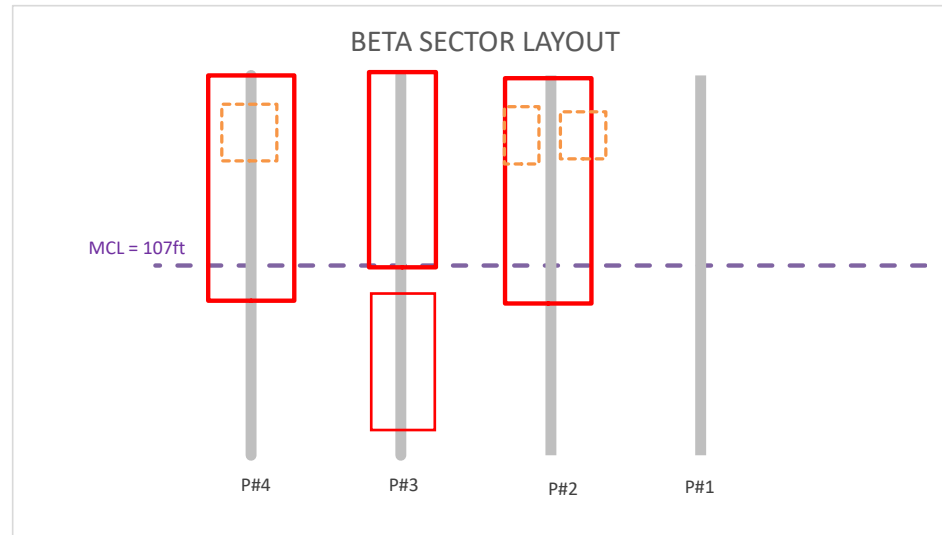
Position	Appurtenance properties						Wind		Ice	Seismic
	Manufacturer	Model	L [in]	W [in]	D [in]	Weight [lbs]	0° [lbs]	90° [lbs]	IceWeight [lbs]	E <sub>H</sub> [lbs]
2	CCI	TPA65R-BU6DA-K	71.2	20.7	7.7	69.0	596.6	263.6	192.2	6.6
3	Ericsson	AIR 6449 B77D + AIR 6419 B77G Stacked	61.7	16.1	10.6	148.0	407.8	287.3	146.8	14.2
4	CCI	DMP65R-BU6DA	71.2	20.7	7.7	80.0	596.6	263.6	192.2	7.7
2	Ericsson	RRUS 4478 B14	18.1	13.4	8.3	60.0	58.8	94.9	37.2	5.8
2	Ericsson	RRUS 8843 B2/B66A	14.9	13.2	10.9	72.0	63.5	76.9	33.5	6.9
4	Ericsson	RRUS 4449 B5/B12	17.9	13.2	9.4	73.0	92.4	65.8	37.8	7.0
-	Raycap	DC6-48-60-18-8F	24.0	9.7	9.7	33.0	91.1	91.1	42.7	3.2



LEGEND:	
<span style="color: blue;">—</span>	Existing Antennas
<span style="color: red;">—</span>	Proposed Antennas
<span style="color: blue;">- - -</span>	Existing Equipment
<span style="color: orange;">- - -</span>	Proposed Equipment

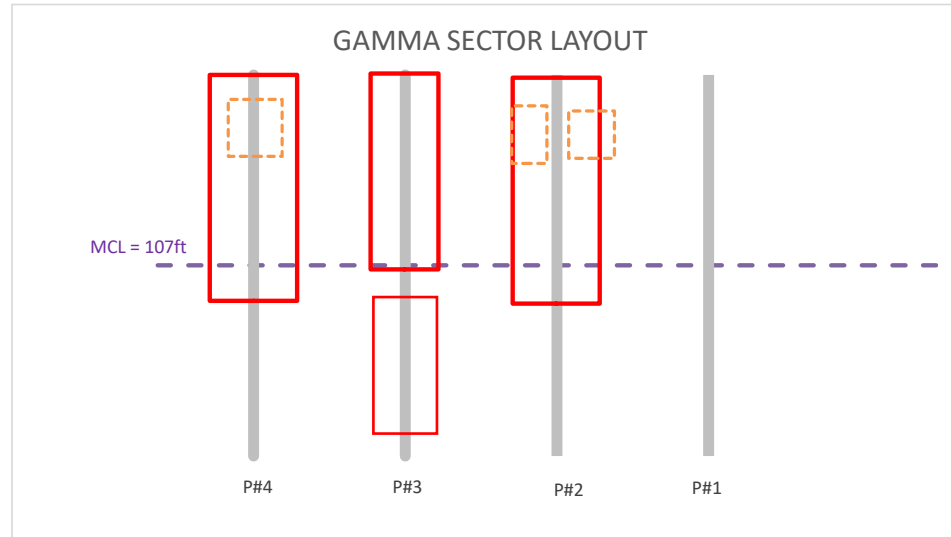
## BETA SECTOR

Position	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]
2	CCI	TPA65R-BU6DA-K	71.2	20.7	7.7	69.0	346.9	513.4	192.2	6.6
3	Ericsson	AIR 6449 B77D + AIR 6419 B77G Stacked	61.7	16.1	10.6	148.0	317.4	377.7	146.8	14.2
4	CCI	DMP65R-BU6DA	71.2	20.7	7.7	80.0	346.9	513.4	192.2	7.7
2	Ericsson	RRUS 4478 B14	18.1	13.4	8.3	60.0	85.9	67.8	37.2	5.8
2	Ericsson	RRUS 8843 B2/B66A	14.9	13.2	10.9	72.0	73.6	66.9	33.5	6.9
4	Ericsson	RRUS 4449 B5/B12	17.9	13.2	9.4	73.0	72.5	85.8	37.8	7.0
-	Raycap	DC6-48-60-18-8F	24.0	9.7	9.7	33.0	91.1	91.1	42.7	3.2



# GAMMA SECTOR

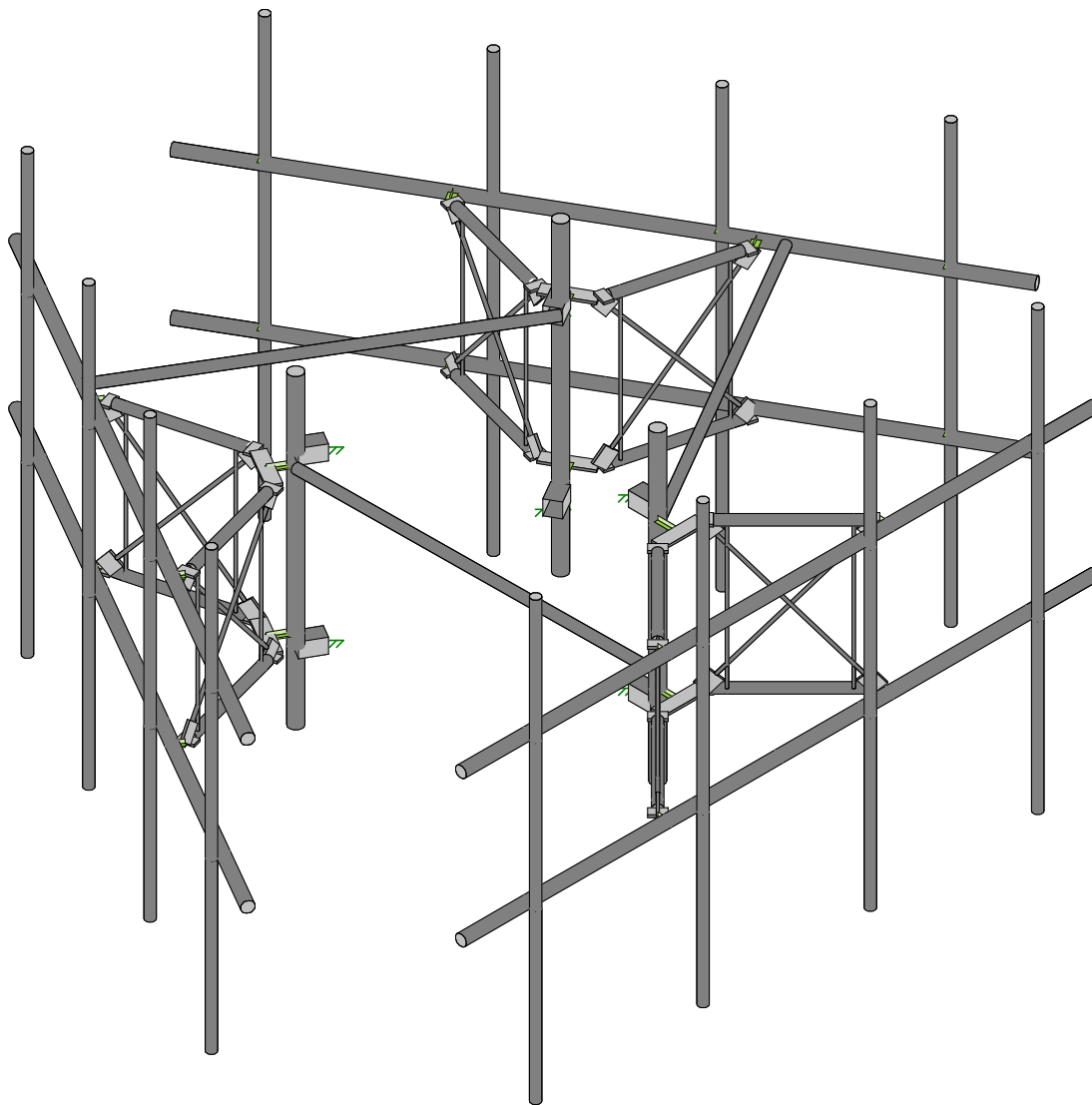
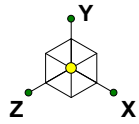
Position	Appurtenance properties						Wind		Ice	Seismic
	Manufacturer	Model	L [in]	W [in]	D [in]	Weight [lbs]	0° [lbs]	90° [lbs]	IceWeight [lbs]	E <sub>H</sub> [lbs]
2	CCI	TPA65R-BU6DA-K	71.2	20.7	7.7	69.0	346.9	513.4	192.2	6.6
3	Ericsson	AIR 6449 B77D + AIR 6419 B77G Stacked	61.7	16.1	10.6	148.0	317.4	377.7	146.8	14.2
4	CCI	DMP65R-BU6DA	71.2	20.7	7.7	80.0	346.9	513.4	192.2	7.7
2	Ericsson	RRUS 4478 B14	18.1	13.4	8.3	60.0	85.9	67.8	37.2	5.8
2	Ericsson	RRUS 8843 B2/B66A	14.9	13.2	10.9	72.0	73.6	66.9	33.5	6.9
4	Ericsson	RRUS 4449 B5/B12	17.9	13.2	9.4	73.0	72.5	85.8	37.8	7.0
-	Raycap	DC6-48-60-18-8F	24.0	9.7	9.7	33.0	91.1	91.1	42.7	3.2





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Design Group LLC

**Mount Calculations  
(Proposed Conditions)**



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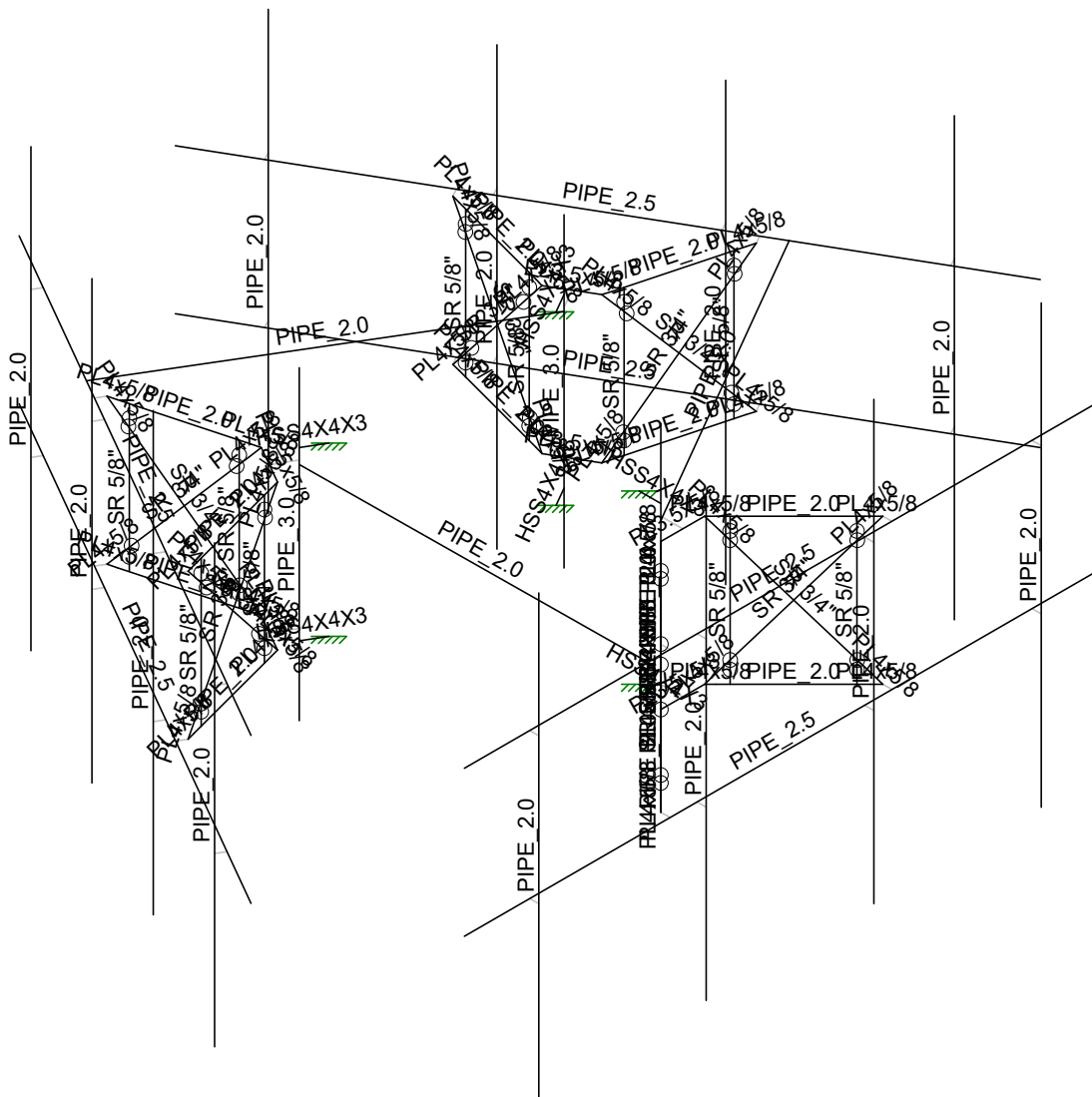
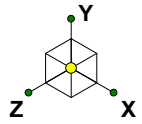
Hudson Design Group, LLC  
PS  
CT1208

Middletown SO Main

SK - 1

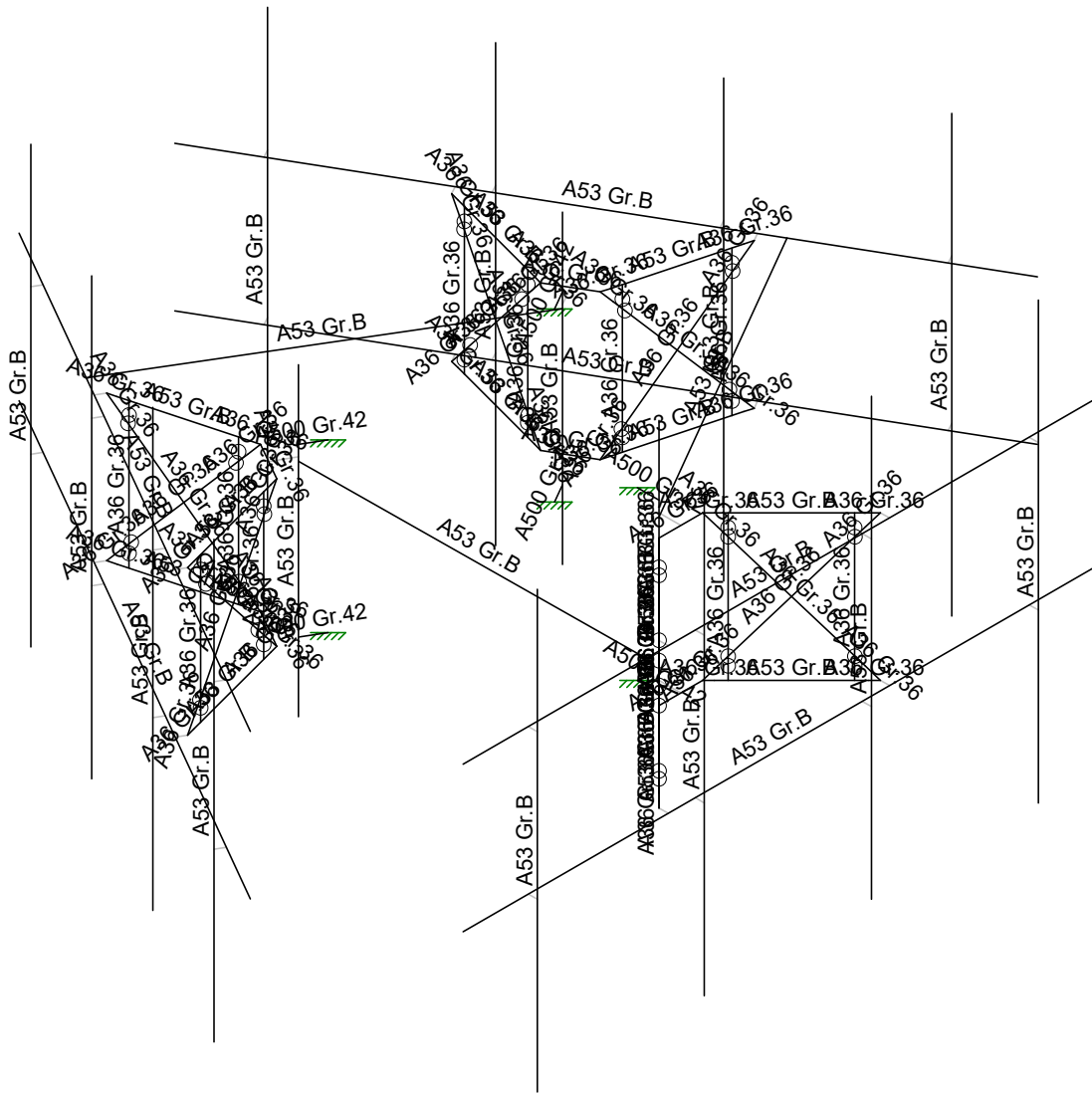
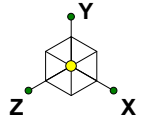
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CT1208		CT1208.r3d



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Hudson Design Group, LLC

PS

CT1208

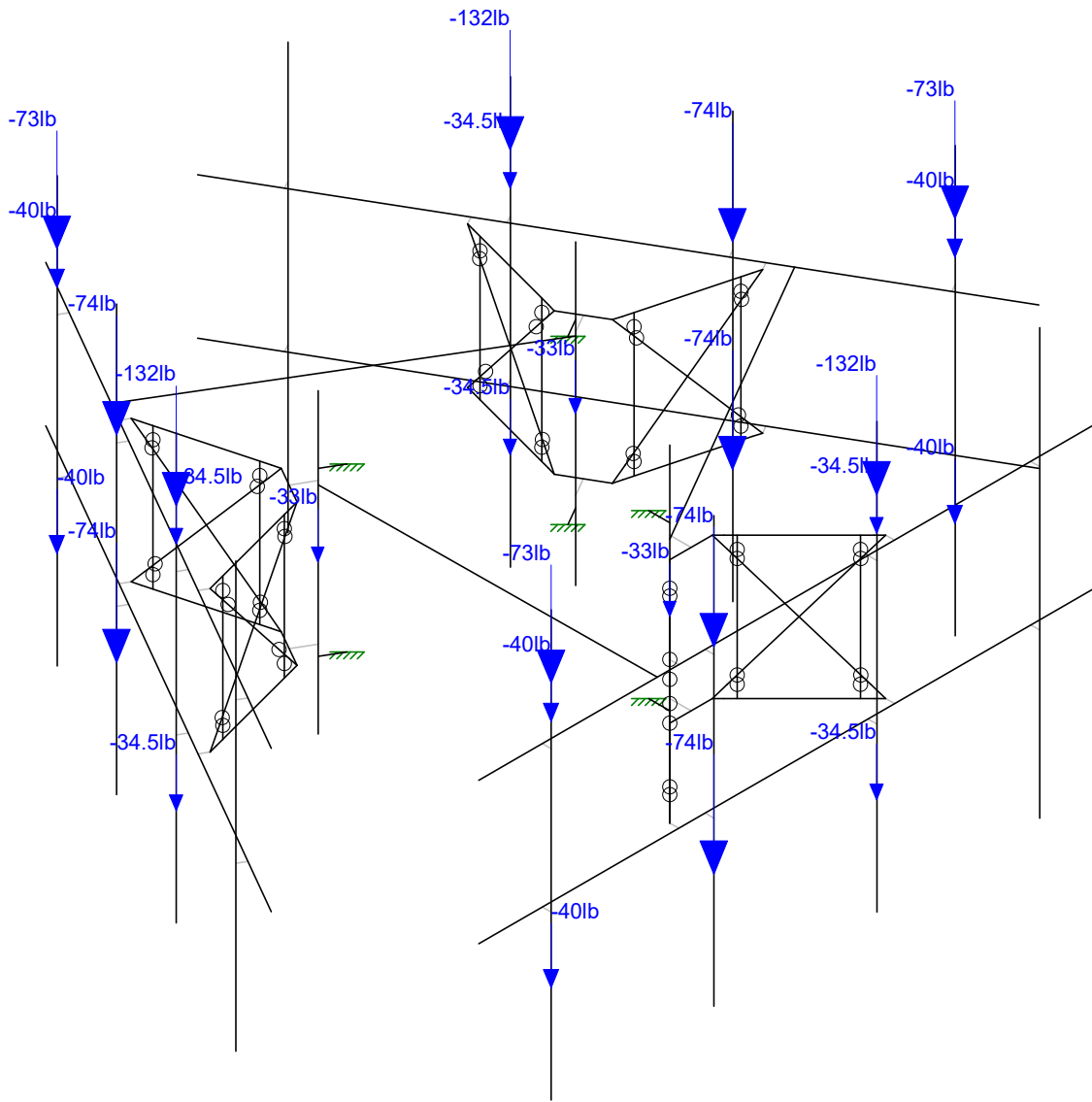
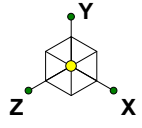
Middletown SO Main

SK - 3

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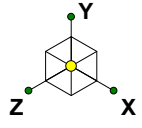
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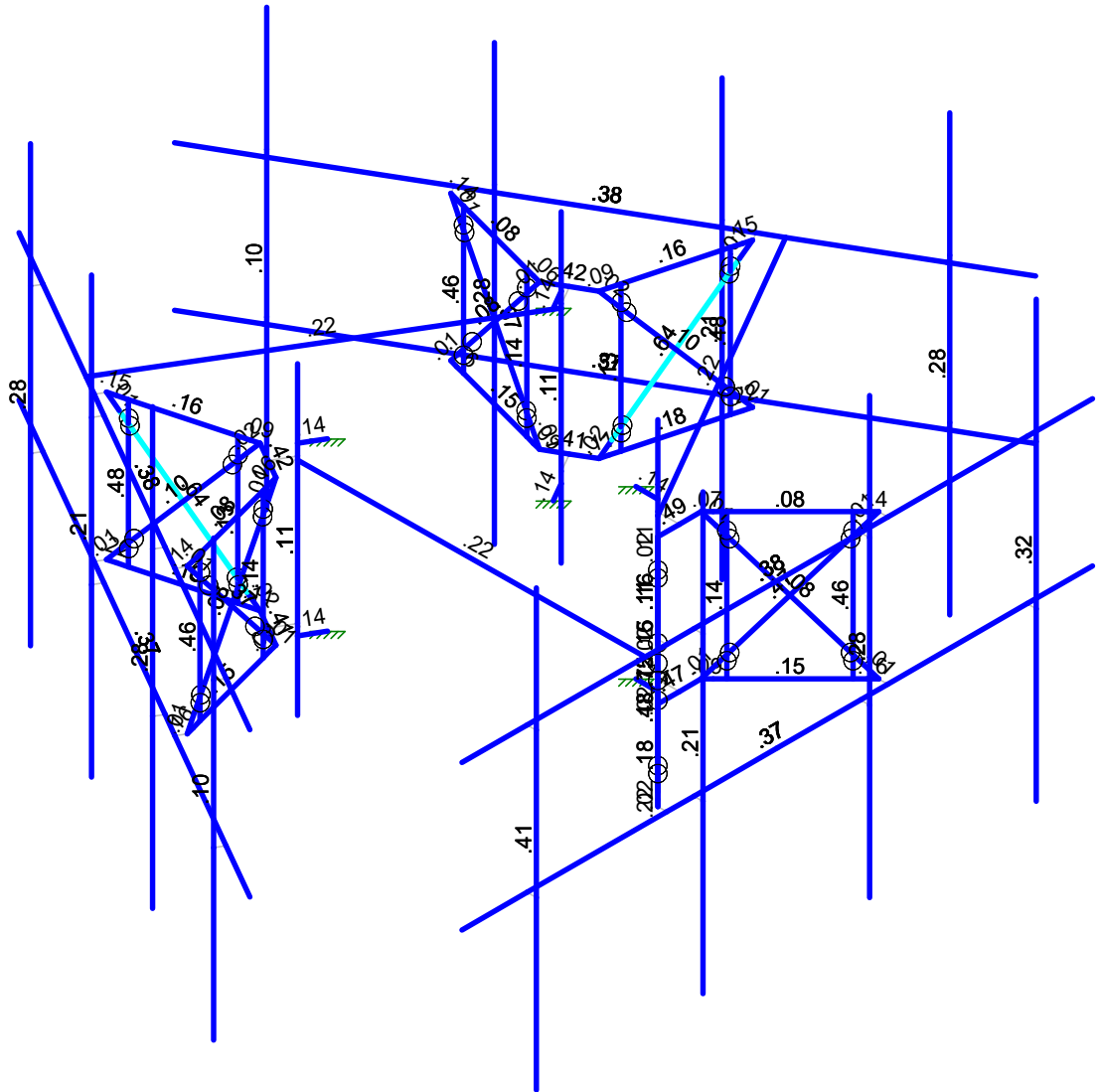


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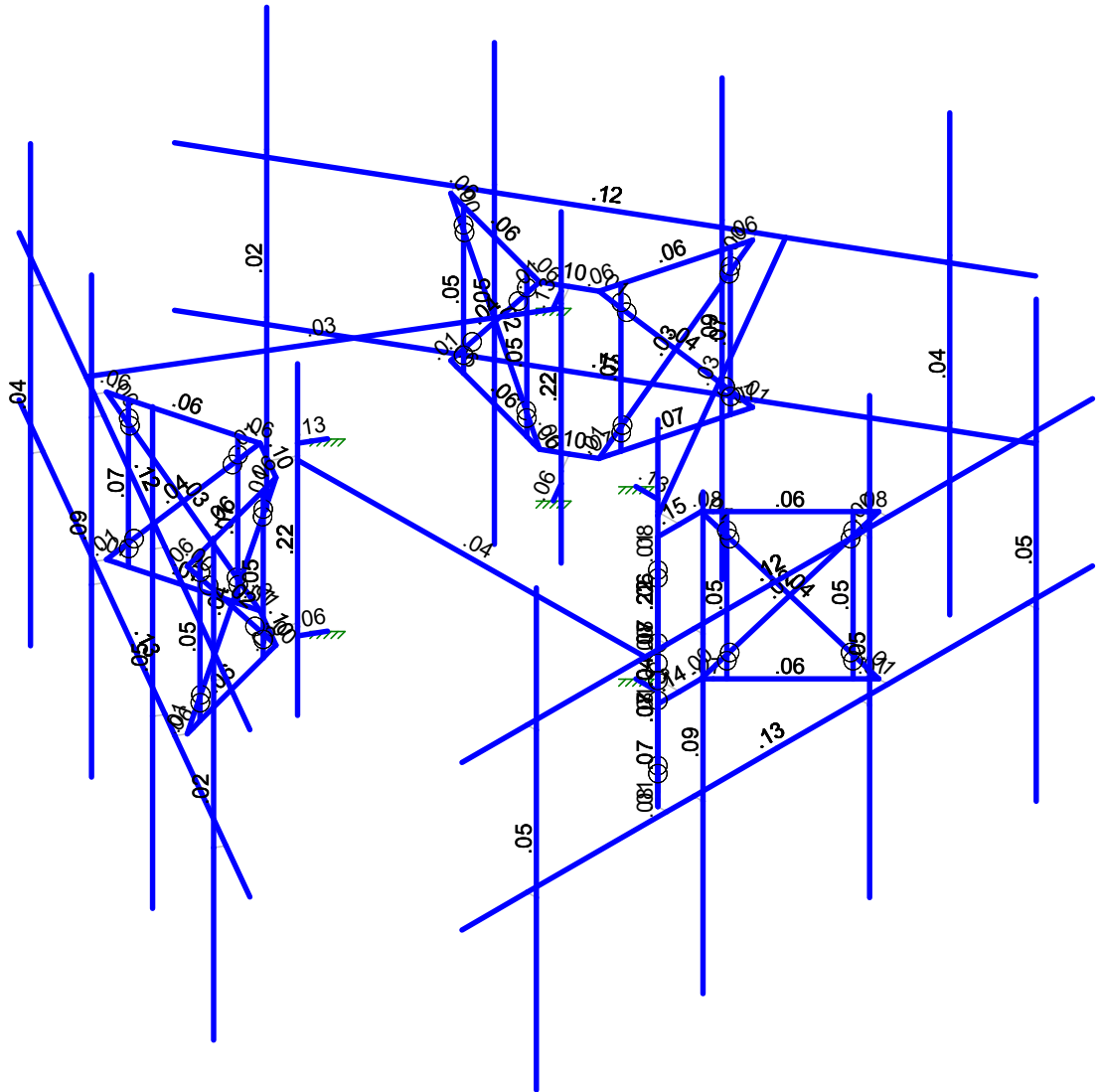
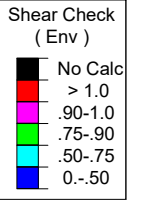
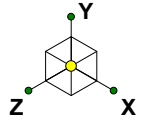


Code Check ( Env )	
	No Calc
	> 1.0
	.90-1.0
	.75-.90
	.50-.75
	0-.50



Member Code Checks Displayed (Enveloped)  
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PS		Apr 29, 2022 at 1:47 PM
CT1208		CT1208.r3d



Member Shear Checks Displayed (Enveloped)  
Envelope Only Solution

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PS		Apr 29, 2022 at 1:47 PM
CT1208		CT1208.r3d



**(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	1
Cd X	1
Rho Z	1
Rho X	1

**Hot Rolled Steel Properties**

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...Density[lb/f...	Yield[ksi]	Ry	Fu[ksi]	Rt	
1	A992	29000	11154	.3	.65	490	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	490	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	490	50	1.1	65	1.1
4	A500 Gr.42	29000	11154	.3	.65	490	42	1.4	58	1.3
5	A500 Gr.46	29000	11154	.3	.65	490	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	490	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	490	50	1.4	65	1.3

**Hot Rolled Steel Section Sets**

	Label	Shape	Type	Design List	Material	Design Ru...	A [in <sup>2</sup> ]	I <sub>yy</sub> [in <sup>4</sup> ]	I <sub>zz</sub> [in <sup>4</sup> ]	J [in <sup>4</sup> ]
1	PIPE 2.0	PIPE 2.0	None	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
2	PIPE 2.5	PIPE 2.5	None	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
3	SR 5/8	SR 5/8"	None	None	A36 Gr.36	Typical	.307	.007	.007	.015
4	SR 3/4	SR 3/4"	None	None	A36 Gr.36	Typical	.442	.016	.016	.031
5	PL4x5/8	PL4x5/8	None	None	A36 Gr.36	Typical	2.5	.081	3.333	.293
6	PL3.5x5/8	PL3.5x5/8	None	None	A36 Gr.36	Typical	2.188	.071	2.233	.253
7	PIPE 3.0	PIPE 3.0	None	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
8	HSS4X4X3	HSS4X4X3	None	None	A500 Gr.42	Typical	2.58	6.21	6.21	10

**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	N11						
2	N27						
3	N79						
4	N80						
5	N81						
6	N82						



**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]
7	N83	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
8	N84	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
9	N85						
10	N86						
11	N97						
12	N113						
13	N165						
14	N166						
15	N167						
16	N168						
17	N169	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
18	N170	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
19	N171						
20	N182						
21	N198						
22	N250						
23	N251						
24	N252						
25	N253						
26	N254	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
27	N255	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
28	N256						

**Member Primary Data**

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2		180	PIPE 2.5	None	None	A53 Gr.B	Typical
2	M2	N3	N4			RIGID	None	None	RIGID	Typical
3	M3	N5	N6		180	PIPE 2.5	None	None	A53 Gr.B	Typical
4	M4	N7	N8			RIGID	None	None	RIGID	Typical
5	M5	N9	N10			PIPE 2.0	None	None	A53 Gr.B	Typical
6	M6	N13	N15		90	PL3.5x5/8	None	None	A36 Gr.36	Typical
7	M7	N16	N18			PIPE 2.0	None	None	A53 Gr.B	Typical
8	M8	N17	N19			PIPE 2.0	None	None	A53 Gr.B	Typical
9	M9	N20	N12			RIGID	None	None	RIGID	Typical
10	M10	N21	N14			RIGID	None	None	RIGID	Typical
11	M11	N22	N11			RIGID	None	None	RIGID	Typical
12	M12	N16	N13		90	PL4x5/8	None	None	A36 Gr.36	Typical
13	M13	N12	N18		90	PL4x5/8	None	None	A36 Gr.36	Typical
14	M14	N15	N17		90	PL4x5/8	None	None	A36 Gr.36	Typical
15	M15	N19	N14		90	PL4x5/8	None	None	A36 Gr.36	Typical
16	M16	N29	N31		90	PL3.5x5/8	None	None	A36 Gr.36	Typical
17	M17	N32	N34			PIPE 2.0	None	None	A53 Gr.B	Typical
18	M18	N33	N35			PIPE 2.0	None	None	A53 Gr.B	Typical
19	M19	N36	N28			RIGID	None	None	RIGID	Typical
20	M20	N37	N30			RIGID	None	None	RIGID	Typical
21	M21	N38	N27			RIGID	None	None	RIGID	Typical
22	M22	N32	N29		90	PL4x5/8	None	None	A36 Gr.36	Typical
23	M23	N28	N34		90	PL4x5/8	None	None	A36 Gr.36	Typical
24	M24	N31	N33		90	PL4x5/8	None	None	A36 Gr.36	Typical
25	M25	N35	N30		90	PL4x5/8	None	None	A36 Gr.36	Typical
26	M26	N23	N39			SR 5/8	None	None	A36 Gr.36	Typical
27	M27	N25	N41			SR 5/8	None	None	A36 Gr.36	Typical
28	M28	N24	N40			SR 5/8	None	None	A36 Gr.36	Typical
29	M29	N26	N42			SR 5/8	None	None	A36 Gr.36	Typical
30	M30	N30	N45			PL4x5/8	None	None	A36 Gr.36	Typical



Company : Hudson Design Group, LLC  
 Designer : PS  
 Job Number : CT1208  
 Model Name : Middletown SO Main

Apr 29, 2022  
 1:47 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
31	M31	N31	N46			PL4x5/8	None	None	A36 Gr.36	Typical
32	M32	N13	N43			PL4x5/8	None	None	A36 Gr.36	Typical
33	M33	N12	N44			PL4x5/8	None	None	A36 Gr.36	Typical
34	M34	N43	N47			SR 3/4	None	None	A36 Gr.36	Typical
35	M35	N44	N48			SR 3/4	None	None	A36 Gr.36	Typical
36	M36	N45	N49			SR 3/4	None	None	A36 Gr.36	Typical
37	M37	N46	N50			SR 3/4	None	None	A36 Gr.36	Typical
38	M38	N47	N28			PL4x5/8	None	None	A36 Gr.36	Typical
39	M39	N48	N29			PL4x5/8	None	None	A36 Gr.36	Typical
40	M40	N49	N15			PL4x5/8	None	None	A36 Gr.36	Typical
41	M41	N50	N14			PL4x5/8	None	None	A36 Gr.36	Typical
42	M42	N51	N52			RIGID	None	None	RIGID	Typical
43	M43	N53	N54			RIGID	None	None	RIGID	Typical
44	M44	N55	N56			PIPE 2.0	None	None	A53 Gr.B	Typical
45	M45	N58	N59			RIGID	None	None	RIGID	Typical
46	M46	N60	N61			RIGID	None	None	RIGID	Typical
47	M47	N62	N63			PIPE 2.0	None	None	A53 Gr.B	Typical
48	M48	N64	N65			RIGID	None	None	RIGID	Typical
49	M49	N66	N67			RIGID	None	None	RIGID	Typical
50	M50	N68	N69			PIPE 2.0	None	None	A53 Gr.B	Typical
51	M51	N79	N80			PIPE 3.0	None	None	A53 Gr.B	Typical
52	M52	N81	N83			HSS4X4X3	None	None	A500 Gr.42	Typical
53	M53	N82	N84			HSS4X4X3	None	None	A500 Gr.42	Typical
54	M54	N87	N88		180	PIPE 2.5	None	None	A53 Gr.B	Typical
55	M55	N89	N90			RIGID	None	None	RIGID	Typical
56	M56	N91	N92		180	PIPE 2.5	None	None	A53 Gr.B	Typical
57	M57	N93	N94			RIGID	None	None	RIGID	Typical
58	M58	N95	N96			PIPE 2.0	None	None	A53 Gr.B	Typical
59	M59	N99	N101		90	PL3.5x5/8	None	None	A36 Gr.36	Typical
60	M60	N102	N104			PIPE 2.0	None	None	A53 Gr.B	Typical
61	M61	N103	N105			PIPE 2.0	None	None	A53 Gr.B	Typical
62	M62	N106	N98			RIGID	None	None	RIGID	Typical
63	M63	N107	N100			RIGID	None	None	RIGID	Typical
64	M64	N108	N97			RIGID	None	None	RIGID	Typical
65	M65	N102	N99		90	PL4x5/8	None	None	A36 Gr.36	Typical
66	M66	N98	N104		90	PL4x5/8	None	None	A36 Gr.36	Typical
67	M67	N101	N103		90	PL4x5/8	None	None	A36 Gr.36	Typical
68	M68	N105	N100		90	PL4x5/8	None	None	A36 Gr.36	Typical
69	M69	N115	N117		90	PL3.5x5/8	None	None	A36 Gr.36	Typical
70	M70	N118	N120			PIPE 2.0	None	None	A53 Gr.B	Typical
71	M71	N119	N121			PIPE 2.0	None	None	A53 Gr.B	Typical
72	M72	N122	N114			RIGID	None	None	RIGID	Typical
73	M73	N123	N116			RIGID	None	None	RIGID	Typical
74	M74	N124	N113			RIGID	None	None	RIGID	Typical
75	M75	N118	N115		90	PL4x5/8	None	None	A36 Gr.36	Typical
76	M76	N114	N120		90	PL4x5/8	None	None	A36 Gr.36	Typical
77	M77	N117	N119		90	PL4x5/8	None	None	A36 Gr.36	Typical
78	M78	N121	N116		90	PL4x5/8	None	None	A36 Gr.36	Typical
79	M79	N109	N125			SR 5/8	None	None	A36 Gr.36	Typical
80	M80	N111	N127			SR 5/8	None	None	A36 Gr.36	Typical
81	M81	N110	N126			SR 5/8	None	None	A36 Gr.36	Typical
82	M82	N112	N128			SR 5/8	None	None	A36 Gr.36	Typical
83	M83	N116	N131			PL4x5/8	None	None	A36 Gr.36	Typical
84	M84	N117	N132			PL4x5/8	None	None	A36 Gr.36	Typical
85	M85	N99	N129			PL4x5/8	None	None	A36 Gr.36	Typical
86	M86	N98	N130			PL4x5/8	None	None	A36 Gr.36	Typical
87	M87	N129	N133			SR 3/4	None	None	A36 Gr.36	Typical



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 Designer : PS  
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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
88	M88	N130	N134			SR 3/4	None	None	A36 Gr.36	Typical
89	M89	N131	N135			SR 3/4	None	None	A36 Gr.36	Typical
90	M90	N132	N136			SR 3/4	None	None	A36 Gr.36	Typical
91	M91	N133	N114			PL4x5/8	None	None	A36 Gr.36	Typical
92	M92	N134	N115			PL4x5/8	None	None	A36 Gr.36	Typical
93	M93	N135	N101			PL4x5/8	None	None	A36 Gr.36	Typical
94	M94	N136	N100			PL4x5/8	None	None	A36 Gr.36	Typical
95	M95	N137	N138			RIGID	None	None	RIGID	Typical
96	M96	N139	N140			RIGID	None	None	RIGID	Typical
97	M97	N141	N142			PIPE 2.0	None	None	A53 Gr.B	Typical
98	M98	N144	N145			RIGID	None	None	RIGID	Typical
99	M99	N146	N147			RIGID	None	None	RIGID	Typical
100	M100	N148	N149			PIPE 2.0	None	None	A53 Gr.B	Typical
101	M101	N150	N151			RIGID	None	None	RIGID	Typical
102	M102	N152	N153			RIGID	None	None	RIGID	Typical
103	M103	N154	N155			PIPE 2.0	None	None	A53 Gr.B	Typical
104	M104	N165	N166			PIPE 3.0	None	None	A53 Gr.B	Typical
105	M105	N167	N169			HSS4X4X3	None	None	A500 Gr.42	Typical
106	M106	N168	N170			HSS4X4X3	None	None	A500 Gr.42	Typical
107	M107	N172	N173		180	PIPE 2.5	None	None	A53 Gr.B	Typical
108	M108	N174	N175			RIGID	None	None	RIGID	Typical
109	M109	N176	N177		180	PIPE 2.5	None	None	A53 Gr.B	Typical
110	M110	N178	N179			RIGID	None	None	RIGID	Typical
111	M111	N180	N181			PIPE 2.0	None	None	A53 Gr.B	Typical
112	M112	N184	N186		90	PL3.5x5/8	None	None	A36 Gr.36	Typical
113	M113	N187	N189			PIPE 2.0	None	None	A53 Gr.B	Typical
114	M114	N188	N190			PIPE 2.0	None	None	A53 Gr.B	Typical
115	M115	N191	N183			RIGID	None	None	RIGID	Typical
116	M116	N192	N185			RIGID	None	None	RIGID	Typical
117	M117	N193	N182			RIGID	None	None	RIGID	Typical
118	M118	N187	N184		90	PL4x5/8	None	None	A36 Gr.36	Typical
119	M119	N183	N189		90	PL4x5/8	None	None	A36 Gr.36	Typical
120	M120	N186	N188		90	PL4x5/8	None	None	A36 Gr.36	Typical
121	M121	N190	N185		90	PL4x5/8	None	None	A36 Gr.36	Typical
122	M122	N200	N202		90	PL3.5x5/8	None	None	A36 Gr.36	Typical
123	M123	N203	N205			PIPE 2.0	None	None	A53 Gr.B	Typical
124	M124	N204	N206			PIPE 2.0	None	None	A53 Gr.B	Typical
125	M125	N207	N199			RIGID	None	None	RIGID	Typical
126	M126	N208	N201			RIGID	None	None	RIGID	Typical
127	M127	N209	N198			RIGID	None	None	RIGID	Typical
128	M128	N203	N200		90	PL4x5/8	None	None	A36 Gr.36	Typical
129	M129	N199	N205		90	PL4x5/8	None	None	A36 Gr.36	Typical
130	M130	N202	N204		90	PL4x5/8	None	None	A36 Gr.36	Typical
131	M131	N206	N201		90	PL4x5/8	None	None	A36 Gr.36	Typical
132	M132	N194	N210			SR 5/8	None	None	A36 Gr.36	Typical
133	M133	N196	N212			SR 5/8	None	None	A36 Gr.36	Typical
134	M134	N195	N211			SR 5/8	None	None	A36 Gr.36	Typical
135	M135	N197	N213			SR 5/8	None	None	A36 Gr.36	Typical
136	M136	N201	N216			PL4x5/8	None	None	A36 Gr.36	Typical
137	M137	N202	N217			PL4x5/8	None	None	A36 Gr.36	Typical
138	M138	N184	N214			PL4x5/8	None	None	A36 Gr.36	Typical
139	M139	N183	N215			PL4x5/8	None	None	A36 Gr.36	Typical
140	M140	N214	N218			SR 3/4	None	None	A36 Gr.36	Typical
141	M141	N215	N219			SR 3/4	None	None	A36 Gr.36	Typical
142	M142	N216	N220			SR 3/4	None	None	A36 Gr.36	Typical
143	M143	N217	N221			SR 3/4	None	None	A36 Gr.36	Typical
144	M144	N218	N199			PL4x5/8	None	None	A36 Gr.36	Typical





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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
145	M145	N219	N200			PL4x5/8	None	None	A36 Gr.36	Typical
146	M146	N220	N186			PL4x5/8	None	None	A36 Gr.36	Typical
147	M147	N221	N185			PL4x5/8	None	None	A36 Gr.36	Typical
148	M148	N222	N223			RIGID	None	None	RIGID	Typical
149	M149	N224	N225			RIGID	None	None	RIGID	Typical
150	M150	N226	N227			PIPE 2.0	None	None	A53 Gr.B	Typical
151	M151	N229	N230			RIGID	None	None	RIGID	Typical
152	M152	N231	N232			RIGID	None	None	RIGID	Typical
153	M153	N233	N234			PIPE 2.0	None	None	A53 Gr.B	Typical
154	M154	N235	N236			RIGID	None	None	RIGID	Typical
155	M155	N237	N238			RIGID	None	None	RIGID	Typical
156	M156	N239	N240			PIPE 2.0	None	None	A53 Gr.B	Typical
157	M157	N250	N251			PIPE 3.0	None	None	A53 Gr.B	Typical
158	M158	N252	N254			HSS4X4X3	None	None	A500 Gr.42	Typical
159	M159	N253	N255			HSS4X4X3	None	None	A500 Gr.42	Typical
160	M160	N57	N256			PIPE 2.0	None	None	A53 Gr.B	Typical
161	M161	N228	N171			PIPE 2.0	None	None	A53 Gr.B	Typical
162	M162	N143	N85			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	OOOOXO					Yes	** NA **			None
10	M10	OOOOXO					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	OOOOXO					Yes	** NA **			None
20	M20	OOOOXO					Yes	** NA **			None
21	M21						Yes	** NA **			None
22	M22						Yes	** NA **			None
23	M23						Yes	** NA **			None
24	M24						Yes	** NA **			None
25	M25						Yes	** NA **			None
26	M26	BenPIN	BenPIN				Yes	** NA **			None
27	M27	BenPIN	BenPIN				Yes	** NA **			None
28	M28	BenPIN	BenPIN				Yes	** NA **			None
29	M29	BenPIN	BenPIN				Yes	** NA **			None
30	M30						Yes	** NA **			None
31	M31						Yes	** NA **			None
32	M32						Yes	** NA **			None
33	M33						Yes	** NA **			None
34	M34	BenPIN	BenPIN				Yes	** NA **			None



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**Member Advanced Data (Continued)**

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
35	M35	BenPIN	BenPIN				Yes	** NA **			None
36	M36	BenPIN	BenPIN				Yes	** NA **			None
37	M37	BenPIN	BenPIN				Yes	** NA **			None
38	M38						Yes	** NA **			None
39	M39						Yes	** NA **			None
40	M40						Yes	** NA **			None
41	M41						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						Yes	** NA **			None
47	M47						Yes	** NA **			None
48	M48						Yes	** NA **			None
49	M49						Yes	** NA **			None
50	M50						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
57	M57						Yes	** NA **			None
58	M58						Yes	** NA **			None
59	M59						Yes	** NA **			None
60	M60						Yes	** NA **			None
61	M61						Yes	** NA **			None
62	M62	OOOOXO					Yes	** NA **			None
63	M63	OOOOXO					Yes	** NA **			None
64	M64						Yes	** NA **			None
65	M65						Yes	** NA **			None
66	M66						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						Yes	** NA **			None
72	M72	OOOOXO					Yes	** NA **			None
73	M73	OOOOXO					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
79	M79	BenPIN	BenPIN				Yes	** NA **			None
80	M80	BenPIN	BenPIN				Yes	** NA **			None
81	M81	BenPIN	BenPIN				Yes	** NA **			None
82	M82	BenPIN	BenPIN				Yes	** NA **			None
83	M83						Yes	** NA **			None
84	M84						Yes	** NA **			None
85	M85						Yes	** NA **			None
86	M86						Yes	** NA **			None
87	M87	BenPIN	BenPIN				Yes	** NA **			None
88	M88	BenPIN	BenPIN				Yes	** NA **			None
89	M89	BenPIN	BenPIN				Yes	** NA **			None
90	M90	BenPIN	BenPIN				Yes	** NA **			None
91	M91						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...
92	M92						Yes	** NA **			None
93	M93						Yes	** NA **			None
94	M94						Yes	** NA **			None
95	M95						Yes	** NA **			None
96	M96						Yes	** NA **			None
97	M97						Yes	** NA **			None
98	M98						Yes	** NA **			None
99	M99						Yes	** NA **			None
100	M100						Yes	** NA **			None
101	M101						Yes	** NA **			None
102	M102						Yes	** NA **			None
103	M103						Yes	** NA **			None
104	M104						Yes	** NA **			None
105	M105						Yes	** NA **			None
106	M106						Yes	** NA **			None
107	M107						Yes	** NA **			None
108	M108						Yes	** NA **			None
109	M109						Yes	** NA **			None
110	M110						Yes	** NA **			None
111	M111						Yes	** NA **			None
112	M112						Yes	** NA **			None
113	M113						Yes	** NA **			None
114	M114						Yes	** NA **			None
115	M115	OOOOXO					Yes	** NA **			None
116	M116	OOOOXO					Yes	** NA **			None
117	M117						Yes	** NA **			None
118	M118						Yes	** NA **			None
119	M119						Yes	** NA **			None
120	M120						Yes	** NA **			None
121	M121						Yes	** NA **			None
122	M122						Yes	** NA **			None
123	M123						Yes	** NA **			None
124	M124						Yes	** NA **			None
125	M125	OOOOXO					Yes	** NA **			None
126	M126	OOOOXO					Yes	** NA **			None
127	M127						Yes	** NA **			None
128	M128						Yes	** NA **			None
129	M129						Yes	** NA **			None
130	M130						Yes	** NA **			None
131	M131						Yes	** NA **			None
132	M132	BenPIN	BenPIN				Yes	** NA **			None
133	M133	BenPIN	BenPIN				Yes	** NA **			None
134	M134	BenPIN	BenPIN				Yes	** NA **			None
135	M135	BenPIN	BenPIN				Yes	** NA **			None
136	M136						Yes	** NA **			None
137	M137						Yes	** NA **			None
138	M138						Yes	** NA **			None
139	M139						Yes	** NA **			None
140	M140	BenPIN	BenPIN				Yes	** NA **			None
141	M141	BenPIN	BenPIN				Yes	** NA **			None
142	M142	BenPIN	BenPIN				Yes	** NA **			None
143	M143	BenPIN	BenPIN				Yes	** NA **			None
144	M144						Yes	** NA **			None
145	M145						Yes	** NA **			None
146	M146						Yes	** NA **			None
147	M147						Yes	** NA **			None
148	M148						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...
149	M149						Yes	** NA **			None
150	M150						Yes	** NA **			None
151	M151						Yes	** NA **			None
152	M152						Yes	** NA **			None
153	M153						Yes	** NA **			None
154	M154						Yes	** NA **			None
155	M155						Yes	** NA **			None
156	M156						Yes	** NA **			None
157	M157						Yes	** NA **			None
158	M158						Yes	** NA **			None
159	M159						Yes	** NA **			None
160	M160						Yes	** NA **			None
161	M161						Yes	** NA **			None
162	M162						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 2.5	174			Lbyy						Lateral
2	M3	PIPE 2.5	174			Lbyy						Lateral
3	M5	PIPE 2.0	120			Lbyy						Lateral
4	M6	PL3.5x5/8	12			Lbyy						Lateral
5	M7	PIPE 2.0	30			Lbyy						Lateral
6	M8	PIPE 2.0	30			Lbyy						Lateral
7	M12	PL4x5/8	2.324			Lbyy						Lateral
8	M13	PL4x5/8	2.324			Lbyy						Lateral
9	M14	PL4x5/8	2.324			Lbyy						Lateral
10	M15	PL4x5/8	2.324			Lbyy						Lateral
11	M16	PL3.5x5/8	12			Lbyy						Lateral
12	M17	PIPE 2.0	30			Lbyy						Lateral
13	M18	PIPE 2.0	30			Lbyy						Lateral
14	M22	PL4x5/8	2.324			Lbyy						Lateral
15	M23	PL4x5/8	2.324			Lbyy						Lateral
16	M24	PL4x5/8	2.324			Lbyy						Lateral
17	M25	PL4x5/8	2.324			Lbyy						Lateral
18	M26	SR 5/8	40			Lbyy						Lateral
19	M27	SR 5/8	40			Lbyy						Lateral
20	M28	SR 5/8	40			Lbyy						Lateral
21	M29	SR 5/8	40			Lbyy						Lateral
22	M30	PL4x5/8	4.46			Lbyy						Lateral
23	M31	PL4x5/8	4.46			Lbyy						Lateral
24	M32	PL4x5/8	4.46			Lbyy						Lateral
25	M33	PL4x5/8	4.46			Lbyy						Lateral
26	M34	SR 3/4	44			Lbyy						Lateral
27	M35	SR 3/4	44			Lbyy						Lateral
28	M36	SR 3/4	44			Lbyy						Lateral
29	M37	SR 3/4	44			Lbyy						Lateral
30	M38	PL4x5/8	4.46			Lbyy						Lateral
31	M39	PL4x5/8	4.46			Lbyy						Lateral
32	M40	PL4x5/8	4.46			Lbyy						Lateral
33	M41	PL4x5/8	4.46			Lbyy						Lateral
34	M44	PIPE 2.0	120			Lbyy						Lateral
35	M47	PIPE 2.0	120			Lbyy						Lateral
36	M50	PIPE 2.0	120			Lbyy						Lateral
37	M51	PIPE 3.0	84									Lateral
38	M52	HSS4X4X3	6									Lateral



Company : Hudson Design Group, LLC  
 Designer : PS  
 Job Number : CT1208  
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**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
39	M53	HSS4X4X3	6									Lateral
40	M54	PIPE 2.5	174			Lbyy						Lateral
41	M56	PIPE 2.5	174			Lbyy						Lateral
42	M58	PIPE 2.0	120			Lbyy						Lateral
43	M59	PL3.5x5/8	12			Lbyy						Lateral
44	M60	PIPE 2.0	30			Lbyy						Lateral
45	M61	PIPE 2.0	30			Lbyy						Lateral
46	M65	PL4x5/8	2.324			Lbyy						Lateral
47	M66	PL4x5/8	2.324			Lbyy						Lateral
48	M67	PL4x5/8	2.324			Lbyy						Lateral
49	M68	PL4x5/8	2.324			Lbyy						Lateral
50	M69	PL3.5x5/8	12			Lbyy						Lateral
51	M70	PIPE 2.0	30			Lbyy						Lateral
52	M71	PIPE 2.0	30			Lbyy						Lateral
53	M75	PL4x5/8	2.324			Lbyy						Lateral
54	M76	PL4x5/8	2.324			Lbyy						Lateral
55	M77	PL4x5/8	2.324			Lbyy						Lateral
56	M78	PL4x5/8	2.324			Lbyy						Lateral
57	M79	SR 5/8	40			Lbyy						Lateral
58	M80	SR 5/8	40			Lbyy						Lateral
59	M81	SR 5/8	40			Lbyy						Lateral
60	M82	SR 5/8	40			Lbyy						Lateral
61	M83	PL4x5/8	4.46			Lbyy						Lateral
62	M84	PL4x5/8	4.46			Lbyy						Lateral
63	M85	PL4x5/8	4.46			Lbyy						Lateral
64	M86	PL4x5/8	4.46			Lbyy						Lateral
65	M87	SR 3/4	44			Lbyy						Lateral
66	M88	SR 3/4	44			Lbyy						Lateral
67	M89	SR 3/4	44			Lbyy						Lateral
68	M90	SR 3/4	44			Lbyy						Lateral
69	M91	PL4x5/8	4.46			Lbyy						Lateral
70	M92	PL4x5/8	4.46			Lbyy						Lateral
71	M93	PL4x5/8	4.46			Lbyy						Lateral
72	M94	PL4x5/8	4.46			Lbyy						Lateral
73	M97	PIPE 2.0	120			Lbyy						Lateral
74	M100	PIPE 2.0	120			Lbyy						Lateral
75	M103	PIPE 2.0	120			Lbyy						Lateral
76	M104	PIPE 3.0	84									Lateral
77	M105	HSS4X4X3	6									Lateral
78	M106	HSS4X4X3	6									Lateral
79	M107	PIPE 2.5	174			Lbyy						Lateral
80	M109	PIPE 2.5	174			Lbyy						Lateral
81	M111	PIPE 2.0	120			Lbyy						Lateral
82	M112	PL3.5x5/8	12			Lbyy						Lateral
83	M113	PIPE 2.0	30			Lbyy						Lateral
84	M114	PIPE 2.0	30			Lbyy						Lateral
85	M118	PL4x5/8	2.324			Lbyy						Lateral
86	M119	PL4x5/8	2.324			Lbyy						Lateral
87	M120	PL4x5/8	2.324			Lbyy						Lateral
88	M121	PL4x5/8	2.324			Lbyy						Lateral
89	M122	PL3.5x5/8	12			Lbyy						Lateral
90	M123	PIPE 2.0	30			Lbyy						Lateral
91	M124	PIPE 2.0	30			Lbyy						Lateral
92	M128	PL4x5/8	2.324			Lbyy						Lateral
93	M129	PL4x5/8	2.324			Lbyy						Lateral
94	M130	PL4x5/8	2.324			Lbyy						Lateral
95	M131	PL4x5/8	2.324			Lbyy						Lateral



Company : Hudson Design Group, LLC  
 Designer : PS  
 Job Number : CT1208  
 Model Name : Middletown SO Main

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### 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
96	M132	SR 5/8	40			Lbyy						Lateral
97	M133	SR 5/8	40			Lbyy						Lateral
98	M134	SR 5/8	40			Lbyy						Lateral
99	M135	SR 5/8	40			Lbyy						Lateral
100	M136	PL4x5/8	4.46			Lbyy						Lateral
101	M137	PL4x5/8	4.46			Lbyy						Lateral
102	M138	PL4x5/8	4.46			Lbyy						Lateral
103	M139	PL4x5/8	4.46			Lbyy						Lateral
104	M140	SR 3/4	44			Lbyy						Lateral
105	M141	SR 3/4	44			Lbyy						Lateral
106	M142	SR 3/4	44			Lbyy						Lateral
107	M143	SR 3/4	44			Lbyy						Lateral
108	M144	PL4x5/8	4.46			Lbyy						Lateral
109	M145	PL4x5/8	4.46			Lbyy						Lateral
110	M146	PL4x5/8	4.46			Lbyy						Lateral
111	M147	PL4x5/8	4.46			Lbyy						Lateral
112	M150	PIPE 2.0	120			Lbyy						Lateral
113	M153	PIPE 2.0	120			Lbyy						Lateral
114	M156	PIPE 2.0	120			Lbyy						Lateral
115	M157	PIPE 3.0	84									Lateral
116	M158	HSS4X4X3	6									Lateral
117	M159	HSS4X4X3	6									Lateral
118	M160	PIPE 2.0	96.005									Lateral
119	M161	PIPE 2.0	96.005									Lateral
120	M162	PIPE 2.0	96.005									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					30		
3	Ice We	DL					30	60	
4	W0	WL					30	60	
5	W30	WL					60	120	
6	W60	WL					60	120	
7	W90	WL					30	60	
8	W120	WL					60	120	
9	W150	WL					60	120	
10	W0 + Ice	WL					30	60	
11	W30 + Ice	WL					60	120	
12	W60 + Ice	WL					60	120	
13	W90 + Ice	WL					30	60	
14	W120 + Ice	WL					60	120	
15	W150 + Ice	WL					60	120	
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				30		
23	E90	EL			.1		30		



### Load Combinations

	Description	Sol.	PD	SR	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.
1	Dead	Yes	Y		1	1.4	2	1.4	0	0					
2	Dead + Wi...	Yes	Y		1	1.2	2	1.2	4	1	0				
3	Dead + Wi...	Yes	Y		1	1.2	2	1.2	5	1	0				
4	Dead + Wi...	Yes	Y		1	1.2	2	1.2	6	1	0				
5	Dead + Wi...	Yes	Y		1	1.2	2	1.2	7	1	0				
6	Dead + Wi...	Yes	Y		1	1.2	2	1.2	8	1	0				
7	Dead + Wi...	Yes	Y		1	1.2	2	1.2	9	1	0				
8	Dead + Wi...	Yes	Y		1	1.2	2	1.2	4	-1	0				
9	Dead + Wi...	Yes	Y		1	1.2	2	1.2	5	-1	0				
10	Dead + Wi...	Yes	Y		1	1.2	2	1.2	6	-1	0				
11	Dead + Wi...	Yes	Y		1	1.2	2	1.2	7	-1	0				
12	Dead + Wi...	Yes	Y		1	1.2	2	1.2	8	-1	0				
13	Dead + Wi...	Yes	Y		1	1.2	2	1.2	9	-1	0				
14	Dead + Ic...	Yes	Y		1	1.2	2	1.2	10	1	3	1			
15	Dead + Ic...	Yes	Y		1	1.2	2	1.2	11	1	3	1			
16	Dead + Ic...	Yes	Y		1	1.2	2	1.2	12	1	3	1			
17	Dead + Ic...	Yes	Y		1	1.2	2	1.2	13	1	3	1			
18	Dead + Ic...	Yes	Y		1	1.2	2	1.2	14	1	3	1			
19	Dead + Ic...	Yes	Y		1	1.2	2	1.2	15	1	3	1			
20	Dead + Ic...	Yes	Y		1	1.2	2	1.2	10	-1	3	1			
21	Dead + Ic...	Yes	Y		1	1.2	2	1.2	11	-1	3	1			
22	Dead + Ic...	Yes	Y		1	1.2	2	1.2	12	-1	3	1			
23	Dead + Ic...	Yes	Y		1	1.2	2	1.2	13	-1	3	1			
24	Dead + Ic...	Yes	Y		1	1.2	2	1.2	14	-1	3	1			
25	Dead + Ic...	Yes	Y		1	1.2	2	1.2	15	-1	3	1			
26	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	4	.053			
27	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	5	.053			
28	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	6	.053			
29	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	7	.053			
30	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	8	.053			
31	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	9	.053			
32	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	4	-.053			
33	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	5	-.053			
34	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	6	-.053			
35	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	7	-.053			
36	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	8	-.053			
37	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	9	-.053			
38	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	4	.053			
39	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	5	.053			
40	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	6	.053			
41	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	7	.053			
42	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	8	.053			
43	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	9	.053			
44	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	4	-.053			
45	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	5	-.053			
46	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	6	-.053			
47	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	7	-.053			
48	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	8	-.053			
49	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	9	-.053			
50	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	4	.053			
51	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	5	.053			
52	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	6	.053			
53	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	7	.053			
54	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	8	.053			
55	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	9	.053			
56	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	4	-.053			



**Load Combinations (Continued)**

	Description	Sol.	PD	SR	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.
57	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	5	-.053		
58	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	6	-.053		
59	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	7	-.053		
60	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	8	-.053		
61	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	9	-.053		
62	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	4	.053		
63	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	5	.053		
64	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	6	.053		
65	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	7	.053		
66	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	8	.053		
67	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	9	.053		
68	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	4	-.053		
69	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	5	-.053		
70	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	6	-.053		
71	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	7	-.053		
72	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	8	-.053		
73	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	9	-.053		
74	Dead + LV...	Yes	Y		1	1.2	2	1.2	20	1.5	0			
75	Dead + LV...	Yes	Y		1	1.2	2	1.2	21	1.5	0			
76	Service 60...	Yes	Y		1	1	2	1	4	.213	0			
77	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	1	23			
78	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	.866	23	.5		
79	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	.5	23	.866		
80	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22		23	1		
81	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	-.5	23	.866		
82	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	-.866	23	.5		
83	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	-1	23			
84	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	-.866	23	-.5		
85	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	-.5	23	-.866		
86	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22		23	-1		
87	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	.5	23	-.866		
88	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	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	N83	max	1325.68	13	1380.764	19	1856.918	13	5.301	7	15.782	7	7.474	25
2		min	-3037.021	7	251.608	13	-2368.131	7	-4.621	13	-12.617	13	1.049	7
3	N84	max	2429.351	2	1347.185	25	1412.028	60	2.287	13	10.543	4	7.201	21
4		min	-757.55	8	240.286	7	-697.221	6	-2.333	7	-14.39	10	2.179	3
5	N169	max	945.241	5	1380.765	23	3814.273	11	7.595	5	15.782	11	.95	5
6		min	-532.294	11	251.598	5	-2076.606	5	-1.742	11	-12.617	5	-5.115	11
7	N170	max	925.863	13	1347.187	17	646.974	11	6.375	24	10.543	8	.192	10
8		min	-1335.207	7	240.277	11	-2340.391	5	1.297	6	-14.39	2	-3.819	16
9	N254	max	3569.505	3	1380.769	15	219.702	9	-2.767	76	15.782	3	4.067	3
10		min	-2271.109	9	251.592	9	-1446.16	3	-6.366	14	-12.618	9	-7.053	9
11	N255	max	676.42	3	1347.19	21	1939.49	11	-1.851	11	10.543	12	.455	9
12		min	-1938.236	9	240.27	3	-737.002	5	-6.227	17	-14.39	6	-4.079	3
13	Totals:	max	7373.71	2	7641.376	21	7373.652	11						
14		min	-7373.713	8	3280.078	76	-7373.653	5						





Company : Hudson Design Group, LLC  
 Designer : PS  
 Job Number : CT1208  
 Model Name : Middletown SO Main

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

Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	M35	SR 3/4"	.749	2.75	60	.039	41.25	56	1812.433	14313.866	2.147	2.147	3...	H1-1a
2	M141	SR 3/4"	.642	41.25	20	.033	41.25	16	1812.433	14313.866	2.147	2.147	3...	H1-1a
3	M88	SR 3/4"	.642	41.25	16	.033	41.25	24	1812.433	14313.866	2.147	2.147	3...	H1-1a
4	M6	PL3.5x5/8	.493	6	55	.145	0	y 55	56150.561	70875	11.074	62.016	1...	H1-1b
5	M27	SR 5/8"	.481	34.583	2	.073	34.583	9	1057.552	9940.19	1.243	1.243	3...	H1-1a
6	M80	SR 5/8"	.481	34.583	6	.073	34.583	13	1057.552	9940.19	1.243	1.243	2...	H1-1a
7	M133	SR 5/8"	.481	34.583	10	.073	34.583	5	1057.552	9940.19	1.243	1.243	3...	H1-1a
8	M37	SR 3/4"	.472	41.25	74	.022	44	9	1812.433	14313.866	2.147	2.147	3...	H1-1a
9	M16	PL3.5x5/8	.466	6	61	.144	0	y 60	56150.561	70875	11.074	62.016	1...	H1-1b
10	M29	SR 5/8"	.456	34.583	2	.053	34.583	13	1057.552	9940.19	1.243	1.243	3...	H1-1a
11	M135	SR 5/8"	.456	34.583	10	.053	34.583	9	1057.552	9940.19	1.243	1.243	1...	H1-1a
12	M82	SR 5/8"	.456	34.583	6	.053	34.583	5	1057.552	9940.19	1.243	1.243	3...	H1-1a
13	M112	PL3.5x5/8	.419	6	15	.100	0	y 15	56150.561	70875	11.074	62.016	1...	H1-1b
14	M59	PL3.5x5/8	.419	6	23	.100	0	y 23	56150.561	70875	11.074	62.016	1...	H1-1b
15	M5	PIPE 2.0	.407	73.75	61	.048	73.75	57	9836.597	32130	22.459	22.459	3...	H1-1b
16	M122	PL3.5x5/8	.407	6	21	.103	0	y 20	56150.561	70875	11.074	62.016	1...	H1-1b
17	M69	PL3.5x5/8	.407	6	17	.103	0	y 16	56150.561	70875	11.074	62.016	1...	H1-1b
18	M3	PIPE 2.5	.381	48.938	8	.120	116	2	10819.554	50715	43.155	43.155	2...	H1-1b
19	M109	PIPE 2.5	.381	48.937	4	.120	116	10	10819.554	50715	43.155	43.155	2...	H1-1b
20	M56	PIPE 2.5	.381	48.937	12	.120	116	6	10819.554	50715	43.155	43.155	2...	H1-1b
21	M90	SR 3/4"	.371	2.75	19	.022	44	13	1812.433	14313.866	2.147	2.147	3...	H1-1a
22	M143	SR 3/4"	.371	2.75	23	.022	44	5	1812.433	14313.866	2.147	2.147	3...	H1-1a
23	M1	PIPE 2.5	.366	58	8	.134	56.188	8	10819.554	50715	43.155	43.155	2...	H1-1b
24	M107	PIPE 2.5	.366	58	4	.134	56.187	4	10819.554	50715	43.155	43.155	2...	H1-1b
25	M54	PIPE 2.5	.366	58	12	.134	56.187	12	10819.554	50715	43.155	43.155	2...	H1-1b
26	M44	PIPE 2.0	.322	73.75	74	.046	35	74	9836.597	32130	22.459	22.459	3...	H1-1b
27	M156	PIPE 2.0	.276	75	4	.047	33.75	4	9836.597	32130	22.459	22.459	2...	H1-1b
28	M103	PIPE 2.0	.276	75	12	.047	33.75	12	9836.597	32130	22.459	22.459	2...	H1-1b
29	M50	PIPE 2.0	.276	75	8	.047	33.75	8	9836.597	32130	22.459	22.459	2...	H1-1b
30	M58	PIPE 2.0	.276	75	12	.044	33.75	12	9836.597	32130	22.459	22.459	1...	H1-1b
31	M111	PIPE 2.0	.276	75	4	.044	33.75	4	9836.597	32130	22.459	22.459	2...	H1-1b
32	M160	PIPE 2.0	.221	0	2	.044	96.005	57	14914.834	32130	22.459	22.459	2...	H1-1b
33	M161	PIPE 2.0	.221	0	10	.027	96.005	17	14914.834	32130	22.459	22.459	2...	H1-1b
34	M162	PIPE 2.0	.221	0	6	.027	96.005	25	14914.834	32130	22.459	22.459	2...	H1-1b
35	M23	PL4x5/8	.218	0	2	.078	0	y 38	80295.432	81000	12.656	81	1...	H1-1b
36	M129	PL4x5/8	.218	0	10	.073	0	y 10	80295.432	81000	12.656	81	1...	H1-1b
37	M76	PL4x5/8	.218	0	6	.073	0	y 6	80295.432	81000	12.656	81	1...	H1-1b
38	M47	PIPE 2.0	.208	73.75	3	.092	35	9	9836.597	32130	22.459	22.459	2...	H1-1b
39	M153	PIPE 2.0	.208	73.75	11	.092	35	5	9836.597	32130	22.459	22.459	3...	H1-1b
40	M100	PIPE 2.0	.208	73.75	7	.092	35	13	9836.597	32130	22.459	22.459	2...	H1-1b
41	M17	PIPE 2.0	.176	0	10	.075	30	2	29810.292	32130	22.459	22.459	2...	H1-1b
42	M123	PIPE 2.0	.176	0	6	.075	30	10	29810.292	32130	22.459	22.459	2...	H1-1b
43	M70	PIPE 2.0	.176	0	2	.075	30	6	29810.292	32130	22.459	22.459	2...	H1-1b
44	M78	PL4x5/8	.159	2.324	6	.057	0	y 17	80295.432	81000	12.656	81	1...	H1-1b
45	M131	PL4x5/8	.159	2.324	10	.057	0	y 21	80295.432	81000	12.656	81	1...	H1-1b
46	M25	PL4x5/8	.159	2.324	2	.075	0	y 26	80295.432	81000	12.656	81	1...	H1-1b
47	M113	PIPE 2.0	.159	30	2	.056	30	4	29810.292	32130	22.459	22.459	2...	H1-1b
48	M60	PIPE 2.0	.159	30	10	.056	30	12	29810.292	32130	22.459	22.459	2...	H1-1b
49	M7	PIPE 2.0	.159	30	6	.056	30	8	29810.292	32130	22.459	22.459	2...	H1-1b
50	M13	PL4x5/8	.157	0	55	.076	0	y 42	80295.432	81000	12.656	81	1...	H1-1b
51	M66	PL4x5/8	.154	0	13	.057	0	y 22	80295.432	81000	12.656	81	1...	H1-1b
52	M119	PL4x5/8	.154	0	5	.057	0	y 14	80295.432	81000	12.656	81	1...	H1-1b
53	M26	SR 5/8"	.146	34.583	57	.072	5.417	4	1057.552	9940.19	1.243	1.243	1...	H1-1b
54	M124	PIPE 2.0	.145	0	6	.063	30	10	29810.292	32130	22.459	22.459	2...	H1-1b
55	M18	PIPE 2.0	.145	0	10	.063	30	2	29810.292	32130	22.459	22.459	2...	H1-1b
56	M71	PIPE 2.0	.145	0	2	.063	30	6	29810.292	32130	22.459	22.459	2...	H1-1b
57	M158	HSS4X4X3	.142	6	9	.132	0	z 3	97434.455	97524	138.726	138.726	1...	H1-1b



Company : Hudson Design Group, LLC  
 Designer : PS  
 Job Number : CT1208  
 Model Name : Middletown SO Main

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

Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn	
58	M105	HSS4X4X3	.142	6	5	.132	0	z	11	97434.455	97524	138.726	138.726	1...	H1-1b
59	M52	HSS4X4X3	.142	6	13	.132	0	z	7	97434.455	97524	138.726	138.726	1...	H1-1b
60	M159	HSS4X4X3	.137	6	6	.062	0	z	8	97434.455	97524	138.726	138.726	1...	H1-1b
61	M53	HSS4X4X3	.137	6	10	.062	0	z	12	97434.455	97524	138.726	138.726	1...	H1-1b
62	M106	HSS4X4X3	.137	6	2	.062	0	z	4	97434.455	97524	138.726	138.726	1...	H1-1b
63	M121	PL4x5/8	.137	2.324	4	.056	0	y	16	80295.432	81000	12.656	81	1...	H1-1b
64	M68	PL4x5/8	.137	2.324	12	.056	0	y	24	80295.432	81000	12.656	81	1...	H1-1b
65	M15	PL4x5/8	.137	2.324	8	.075	0	y	32	80295.432	81000	12.656	81	1...	H1-1b
66	M81	SR 5/8"	.136	40	11	.053	34.583		10	1057.552	9940.19	1.243	1.243	3...	H1-1b*
67	M134	SR 5/8"	.136	40	3	.053	34.583		2	1057.552	9940.19	1.243	1.243	1...	H1-1b*
68	M28	SR 5/8"	.136	40	7	.053	34.583		6	1057.552	9940.19	1.243	1.243	1...	H1-1b*
69	M22	PL4x5/8	.130	2.324	58	.078	0	y	38	80295.572	81000	12.656	81	1...	H1-1b
70	M132	SR 5/8"	.128	34.583	17	.072	5.417		12	1057.552	9940.19	1.243	1.243	3...	H1-1b
71	M79	SR 5/8"	.128	34.583	25	.072	5.417		8	1057.552	9940.19	1.243	1.243	2...	H1-1b
72	M34	SR 3/4"	.122	41.25	50	.045	2.75		58	1812.433	14313.866	2.147	2.147	3...	H1-1b
73	M12	PL4x5/8	.114	2.324	56	.076	0	y	42	80295.572	81000	12.656	81	1...	H1-1b
74	M128	PL4x5/8	.114	2.324	6	.073	0	y	10	80295.572	81000	12.656	81	1...	H1-1b
75	M75	PL4x5/8	.114	2.324	2	.073	0	y	6	80295.572	81000	12.656	81	1...	H1-1b
76	M157	PIPE 3.0	.107	19.25	3	.221	19.25		3	50160.801	65205	68.985	68.985	2...	H1-1b
77	M104	PIPE 3.0	.107	19.25	11	.221	19.25		11	50160.801	65205	68.985	68.985	2...	H1-1b
78	M51	PIPE 3.0	.107	19.25	7	.221	19.25		7	50160.801	65205	68.985	68.985	2...	H1-1b
79	M150	PIPE 2.0	.101	73.75	5	.022	35		5	9836.597	32130	22.459	22.459	2...	H1-1b
80	M97	PIPE 2.0	.101	73.75	13	.022	35		13	9836.597	32130	22.459	22.459	2...	H1-1b
81	M140	SR 3/4"	.096	2.75	20	.036	2.75		20	1812.433	14313.866	2.147	2.147	3...	H1-1b
82	M87	SR 3/4"	.096	2.75	16	.036	2.75		16	1812.433	14313.866	2.147	2.147	3...	H1-1b
83	M118	PL4x5/8	.095	2.324	16	.057	0	y	14	80295.572	81000	12.656	81	1...	H1-1b
84	M65	PL4x5/8	.095	2.324	24	.057	0	y	22	80295.572	81000	12.656	81	1...	H1-1b
85	M24	PL4x5/8	.089	0	3	.075	0	y	26	80295.572	81000	12.656	81	1...	H1-1b
86	M77	PL4x5/8	.089	0	7	.057	0	y	17	80295.572	81000	12.656	81	1...	H1-1b
87	M130	PL4x5/8	.089	0	11	.057	0	y	21	80295.572	81000	12.656	81	1...	H1-1b
88	M114	PIPE 2.0	.076	0	3	.060	30		4	29810.292	32130	22.459	22.459	1...	H1-1b
89	M61	PIPE 2.0	.076	0	11	.060	30		12	29810.292	32130	22.459	22.459	1...	H1-1b
90	M8	PIPE 2.0	.076	0	7	.060	30		8	29810.292	32130	22.459	22.459	1...	H1-1b
91	M36	SR 3/4"	.076	2.75	2	.043	0		9	1812.433	14313.866	2.147	2.147	2...	H1-1b
92	M142	SR 3/4"	.076	2.75	10	.043	0		5	1812.433	14313.866	2.147	2.147	2...	H1-1b
93	M89	SR 3/4"	.076	2.75	6	.043	0		13	1812.433	14313.866	2.147	2.147	2...	H1-1b
94	M14	PL4x5/8	.066	2.324	74	.075	0	y	31	80295.572	81000	12.656	81	1...	H1-1b
95	M120	PL4x5/8	.062	0	3	.056	0	y	16	80295.572	81000	12.656	81	1...	H1-1b
96	M67	PL4x5/8	.062	0	11	.056	0	y	24	80295.572	81000	12.656	81	1...	H1-1b
97	M32	PL4x5/8	.019	0	53	.008	4.46	y	58	78435.736	81000	12.656	81	1...	H1-1b
98	M39	PL4x5/8	.017	4.46	57	.007	0	y	56	78436.018	81000	12.656	81	1...	H1-1b
99	M138	PL4x5/8	.017	0	24	.006	4.46	y	20	78435.736	81000	12.656	81	1...	H1-1b
100	M85	PL4x5/8	.017	0	20	.006	4.46	y	16	78435.736	81000	12.656	81	1...	H1-1b
101	M145	PL4x5/8	.017	4.46	18	.006	0	y	16	78436.018	81000	12.656	81	1...	H1-1b
102	M92	PL4x5/8	.017	4.46	14	.006	0	y	24	78436.018	81000	12.656	81	1...	H1-1b
103	M38	PL4x5/8	.016	4.46	57	.005	4.46	y	13	78436.018	81000	12.656	81	1...	H1-1b
104	M33	PL4x5/8	.016	4.46	60	.004	0	y	8	78435.736	81000	12.656	81	1...	H1-1b*
105	M139	PL4x5/8	.014	0	6	.004	0	y	4	78435.736	81000	12.656	81	1...	H1-1b
106	M86	PL4x5/8	.014	0	2	.004	0	y	12	78435.736	81000	12.656	81	1...	H1-1b
107	M144	PL4x5/8	.013	4.46	17	.005	4.46	y	9	78436.018	81000	12.656	81	1...	H1-1b
108	M91	PL4x5/8	.013	4.46	25	.005	4.46	y	5	78436.018	81000	12.656	81	1...	H1-1b
109	M31	PL4x5/8	.010	0	74	.004	4.46	y	74	78435.736	81000	12.656	81	1...	H1-1b
110	M136	PL4x5/8	.010	0	3	.008	0	y	11	78435.736	81000	12.656	81	1...	H1-1b
111	M30	PL4x5/8	.010	0	7	.008	0	y	3	78435.736	81000	12.656	81	1...	H1-1b
112	M83	PL4x5/8	.010	0	11	.008	0	y	7	78435.736	81000	12.656	81	1...	H1-1b
113	M137	PL4x5/8	.010	0	2	.003	4.46	y	17	78435.736	81000	12.656	81	1...	H1-1b
114	M84	PL4x5/8	.010	0	10	.003	4.46	y	25	78435.736	81000	12.656	81	1...	H1-1b



Company : Hudson Design Group, LLC  
 Designer : PS  
 Job Number : CT1208  
 Model Name : Middletown SO Main

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

Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn	
115	M40	PL4x5/8	.010	4.46	74	.005	0	y	3	78436.018	81000	12.656	81	1...	H1-1b
116	M41	PL4x5/8	.010	0	74	.004	4.46	y	9	78436.018	81000	12.656	81	1...	H1-1b*
117	M93	PL4x5/8	.009	4.46	17	.005	0	y	7	78436.018	81000	12.656	81	1...	H1-1b
118	M146	PL4x5/8	.009	4.46	21	.005	0	y	11	78436.018	81000	12.656	81	1...	H1-1b
119	M94	PL4x5/8	.009	4.46	5	.004	4.46	y	13	78436.018	81000	12.656	81	1...	H1-1b
120	M147	PL4x5/8	.009	4.46	9	.004	4.46	y	5	78436.018	81000	12.656	81	1...	H1-1b



**HUDSON**  
Design Group LLC

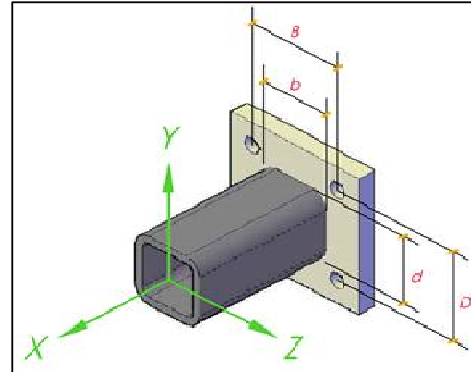
## Connection Check

### SITE DETAILS

Site Name/Code CT1208 - Middletown SO Main  
 Date 04-29-2022  
 Engineer PS

### CONNECTION PARAMETERS

Number of bolts **4**  
 b - width of member **4 in**  
 d - height of member **4 in**  
 B - horizontal bolt spacing **6 in**  
 D - vertical bolt spacing **6 in**  
 d **5/8 in**  
 Section Shape **HSS**  
 Weld Thickness **3/16 in**  
 Tensile Area  $A_b$  **0.31 in<sup>2</sup>**  
 Tensile Area  $A_n$  **0.23 in<sup>2</sup>**  
 Grade **A325**  
 Bolt Ultimate Strength  $F_{ub}$  **120 ksi**  
 Connection length reduction factor  $R_b$  **1**



Connection Sketch/Photo

### FLANGE LOADS

Loadcase # **3**  
 Bending Moment  $M_{zz}$  **1.05 kips-in**  
 Bending Moment  $M_{yy}$  **15.78 kips-in**  
 Torsional Moment  $M_{xx}$  **5.30 kips-in**  
 Shear Force  $V_y$  **1.08 kips**  
 Shear Force  $V_z$  **2.37 kips**  
 Axial Force  $P_x$  **3.04 kips**

### BOLT CHECK

#### Bolt Tension Capacity

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

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

#### Bolt Shear Capacity

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

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

#### Maximum Bolt Tension

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

$T_{ub} =$  **2.16 kips**

#### Maximum Bolt Shear

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

$V_{ub} =$  **0.96 kips**

#### Tension Ratio:

**10.6% %**

PASS

#### Shear Ratio:

**7.0% %**

PASS

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

**OK**

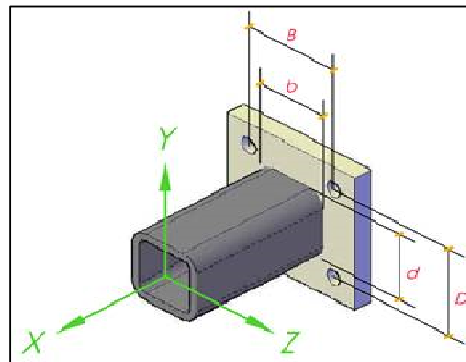
Ratio **1.6% PASS**

### WELD CHECK

Filler Metal  $F_{EXX}$  **70 ksi**  
 Weld Thk. **0.1875 in**  
 Base metal  $F_u$  **58 ksi**  
 Type of section **HSS**  
 Length of Section [b] **4.0 in**  
 Length of Section [d] **4.0 in**  
 $I_{total}$  **16.00 in**  
 $I_p$  **85.33 in<sup>3</sup>**  
 $S_z$  **21.33 in<sup>2</sup>**  
 $S_y$  **21.33 in<sup>2</sup>**  
 $R_{ux}$  **0.98 kips/in**  
 $R_{uy}$  **0.19 kips/in**  
 $R_{uz}$  **0.27 kips/in**  
 $R_u$  **1.03 kips/in**  
 Allowable Weld Stress **4.18 kips/in**

Are stiffeners present?

**No**



**24.8% PASS**

Connection Sketch

# EXHIBIT 5



# Radio Frequency Exposure Analysis Report

April 6, 2022

Centerline on behalf of AT&T  
Centerline Communications Project Number: 566609

AT&T Site Name: MIDDLETOWN SO MAIN  
Site Number: CT1208  
FA#: 10042329  
USID: 59438

Site Address: 1825 SOUTH MAIN STREET, MIDDLETOWN, CT 06457

## Site Compliance Summary

---

AT&T Compliance Status:	Compliant
Cumulative Calculated Power Density (Ground Level):	2.83322 $\mu\text{W}/\text{cm}^2$
Cumulative General Population % MPE (Ground Level):	0.35909999999999997%



April 6, 2022

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

RF Exposure Analysis for Site: **MIDDLETOWN SO MAIN**

Centerline Communications, LLC (“Centerline”) was contracted to analyze the proposed AT&T facility at **1825 SOUTH MAIN STREET, MIDDLETOWN, CT 06457** 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 10' northeast of site)**

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/Channel (watts)	ERP (watts)	Calculated Power Density ( $\mu\text{W}/\text{cm}^2$ )	General Population MPE Limit ( $\mu\text{W}/\text{cm}^2$ )	General Population % MPE
AT&T A 1	CCI TPA65R-BU6D	700	11.75	107.00	4.00	40.00	2393.98	0.00003	466.67	0.00001
AT&T A 1	CCI TPA65R-BU6D	1900	14.55	107.00	4.00	40.00	4561.63	0.00007	1000.00	0.00001
AT&T A 1	CCI TPA65R-BU6D	2100	15.55	107.00	4.00	60.00	8614.13	0.00005	1000.00	0.00001
AT&T A 2	ERICSSON AIR6449	3700	23.55	105.20	1.00	108.40	24548.74	0.00596	1000.00	0.00060
AT&T A 3	ERICSSON AIR6419	3450	22.85	108.75	1.00	0.00	0.00	0.00017	1000.00	0.00002
AT&T A 4	CCI DMP65R-BU6D	700	11.75	107.00	4.00	40.00	2393.98	0.00030	466.67	0.00007
AT&T A 4	CCI DMP65R-BU6D	850	11.45	107.00	4.00	40.00	2234.19	0.00006	566.67	0.00001
AT&T B 5	CCI TPA65R-BU6D	700	11.75	107.00	4.00	40.00	2393.98	0.14342	466.67	0.03073
AT&T B 5	CCI TPA65R-BU6D	1900	14.55	107.00	4.00	40.00	4561.63	0.15670	1000.00	0.01567
AT&T B 5	CCI TPA65R-BU6D	2100	15.55	107.00	4.00	60.00	8614.13	0.24327	1000.00	0.02433
AT&T B 6	ERICSSON AIR6449	3700	23.55	105.20	1.00	108.40	24548.74	1.33302	1000.00	0.13330
AT&T B 7	ERICSSON AIR6419	3450	22.85	108.75	1.00	0.00	0.00	0.01497	1000.00	0.00150
AT&T B 8	CCI DMP65R-BU6D	700	11.75	107.00	4.00	40.00	2393.98	0.15017	466.67	0.03218
AT&T B 8	CCI DMP65R-BU6D	850	11.45	107.00	4.00	40.00	2234.19	0.13268	566.67	0.02342
AT&T C 9	CCI TPA65R-BU6D	700	11.75	107.00	4.00	40.00	2393.98	0.00023	466.67	0.00005
AT&T C 9	CCI TPA65R-BU6D	1900	14.55	107.00	4.00	40.00	4561.63	0.00042	1000.00	0.00004
AT&T C 9	CCI TPA65R-BU6D	2100	15.55	107.00	4.00	60.00	8614.13	0.00074	1000.00	0.00007
AT&T C 10	ERICSSON AIR6449	3700	23.55	105.20	1.00	108.40	24548.74	0.01598	1000.00	0.00160
AT&T C 11	ERICSSON AIR6419	3450	22.85	108.75	1.00	0.00	0.00	0.00070	1000.00	0.00007
AT&T C 12	CCI DMP65R-BU6D	700	11.75	107.00	4.00	40.00	2393.98	0.00047	466.67	0.00010
AT&T C 12	CCI DMP65R-BU6D	850	11.45	107.00	4.00	40.00	2234.19	0.00036	566.67	0.00006
Verizon A 13	GENERIC PANEL 6FT	850	12.62	158.00	4.00	40.00	2924.96	0.00009	566.67	0.00002
Verizon A 14	GENERIC PANEL 6FT	1900	15.84	158.00	4.00	40.00	6139.32	0.00005	1000.00	0.00001
Verizon A 15	GENERIC PANEL 6FT	2100	16.39	158.00	4.00	40.00	6968.19	0.00004	1000.00	0.00000
Verizon A 16	GENERIC PANEL 6FT	700	12.33	158.00	4.00	40.00	2736.02	0.00005	466.67	0.00001
Verizon B 17	GENERIC PANEL 6FT	850	12.62	158.00	4.00	40.00	2924.96	0.06567	566.67	0.01159
Verizon B 18	GENERIC PANEL 6FT	1900	15.84	158.00	4.00	40.00	6139.32	0.06564	1000.00	0.00656
Verizon B 19	GENERIC PANEL 6FT	2100	16.39	158.00	4.00	40.00	6968.19	0.06909	1000.00	0.00691
Verizon B 20	GENERIC PANEL 6FT	700	12.33	158.00	4.00	40.00	2736.02	0.06374	466.67	0.01366
Verizon C 21	GENERIC PANEL 6FT	850	12.62	158.00	4.00	40.00	2924.96	0.00002	566.67	0.00000
Verizon C 22	GENERIC PANEL 6FT	1900	15.84	158.00	4.00	40.00	6139.32	0.00003	1000.00	0.00000
Verizon C 23	GENERIC PANEL 6FT	2100	16.39	158.00	4.00	40.00	6968.19	0.00008	1000.00	0.00001
Verizon C 24	GENERIC PANEL 6FT	700	12.33	158.00	4.00	40.00	2736.02	0.00035	466.67	0.00008
Sprint A 25	GENERIC PANEL 6FT	862	12.62	148.00	2.00	40.00	1462.48	0.00005	574.67	0.00001
Sprint A 25	GENERIC PANEL 6FT	1900	15.84	148.00	2.00	60.00	4604.49	0.00004	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 A 26	GENERIC PANEL 6FT	2500	14.49	148.00	1.00	34.70	975.73	0.00005	1000.00	0.00001
Sprint B 27	GENERIC PANEL 6FT	862	12.62	148.00	2.00	40.00	1462.48	0.03715	574.67	0.00646
Sprint B 27	GENERIC PANEL 6FT	1900	15.84	148.00	2.00	60.00	4604.49	0.05572	1000.00	0.00557
Sprint B 28	GENERIC PANEL 6FT	2500	14.49	148.00	1.00	34.70	975.73	0.01595	1000.00	0.00160
Sprint C 29	GENERIC PANEL 6FT	862	12.62	148.00	2.00	40.00	1462.48	0.00001	574.67	0.00000
Sprint C 29	GENERIC PANEL 6FT	1900	15.84	148.00	2.00	60.00	4604.49	0.00002	1000.00	0.00000
Sprint C 30	GENERIC PANEL 6FT	2500	14.49	148.00	1.00	34.70	975.73	0.00007	1000.00	0.00001
T-Mobile A 31	GENERIC PANEL 6FT	1900	15.84	140.00	2.00	60.00	4604.49	0.00005	1000.00	0.00001
T-Mobile A 31	GENERIC PANEL 6FT	2100	16.39	140.00	2.00	60.00	5226.14	0.00004	1000.00	0.00000
T-Mobile A 32	GENERIC PANEL 6FT	600	12.33	140.00	2.00	60.00	2052.02	0.00004	400.00	0.00001
T-Mobile A 32	GENERIC PANEL 6FT	700	12.33	140.00	2.00	60.00	2052.02	0.00004	466.67	0.00001
T-Mobile B 33	GENERIC PANEL 6FT	1900	15.84	140.00	2.00	60.00	4604.49	0.06262	1000.00	0.00626
T-Mobile B 33	GENERIC PANEL 6FT	2100	16.39	140.00	2.00	60.00	5226.14	0.06590	1000.00	0.00659
T-Mobile B 34	GENERIC PANEL 6FT	600	12.33	140.00	2.00	60.00	2052.02	0.06080	400.00	0.01520
T-Mobile B 34	GENERIC PANEL 6FT	700	12.33	140.00	2.00	60.00	2052.02	0.06080	466.67	0.01303
T-Mobile C 35	GENERIC PANEL 6FT	1900	15.84	140.00	2.00	60.00	4604.49	0.00003	1000.00	0.00000
T-Mobile C 35	GENERIC PANEL 6FT	2100	16.39	140.00	2.00	60.00	5226.14	0.00008	1000.00	0.00001
T-Mobile C 36	GENERIC PANEL 6FT	600	12.33	140.00	2.00	60.00	2052.02	0.00033	400.00	0.00008
T-Mobile C 36	GENERIC PANEL 6FT	700	12.33	140.00	2.00	60.00	2052.02	0.00033	466.67	0.00007
Unknown A 37	GENERIC MICROWAVE 3FT	18000	39.45	130.00	1.00	0.10	881.05	0.00000	1000.00	0.00000
Unknown A 38	GENERIC OMNI 6FT	850	5.96	130.00	1.00	25.00	98.61	0.00283	566.67	0.00050
Unknown A 39	GENERIC OMNI 6FT	850	5.96	130.00	1.00	25.00	98.61	0.00283	566.67	0.00050
Unknown A 40	GENERIC OMNI 6FT	850	5.96	130.00	1.00	25.00	98.61	0.00283	566.67	0.00050
							<b>Cumulative Power Density:</b>	<b>2.83322 <math>\mu\text{W}/\text{cm}^2</math></b>	<b>Cumulative % MPE:</b>	<b>0.35910%</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", with a long horizontal flourish extending to the right.

# EXHIBIT 6

# Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

**Tracking Number**

1Z9Y45030321439153

**Weight**

1.00 LBS

**Service**

UPS Ground

**Shipped / Billed On**

04/20/2022

**Delivered On**

05/09/2022 1:41 P.M.

**Delivered To**

PLANNING  
245 DEKOVEN DR  
MIDDLETOWN, CT, 06457, US

**Received By**

MAREK

**Left At**

Reception

**Reference Number(s)**

CT1208-CSC CITY PLANNER

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 05/16/2022 11:59 A.M. EST

# Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

**Tracking Number**

1Z9Y45030332988932

**Weight**

1.00 LBS

**Service**

UPS Ground

**Shipped / Billed On**

04/20/2022

**Delivered On**

05/09/2022 1:42 P.M.

**Delivered To**

MAYOR S OFFICE  
245 DEKOVEN DR  
MIDDLETOWN, CT, 06457, US

**Received By**

DIANA

**Left At**

Reception

**Reference Number(s)**

CT1208-CSC MAYOR

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 05/16/2022 12:07 P.M. EST



# Proof of Delivery

Dear Customer,

This notice serves as proof of delivery for the shipment listed below.

**Tracking Number**

1Z9Y45030332353760

**Weight**

1.00 LBS

**Service**

UPS Ground

**Shipped / Billed On**

04/20/2022

**Delivered On**

05/11/2022 2:08 P.M.

**Delivered To**

8051 CONGRESS AVE  
BOCA RATON, FL, 33487, US

**Received By**

HAMPTON

**Left At**

Mail Room

**Reference Number(s)**

CT1208-CSC SBA TOWERS

Thank you for giving us this opportunity to serve you. Details are only available for shipments delivered within the last 120 days. Please print for your records if you require this information after 120 days.

Sincerely,

UPS

Tracking results provided by UPS: 05/16/2022 1:07 P.M. EST