March 30, 2022

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

Regarding: Notice of Exempt Modification – AT&T Site CT1080 / FA# 10035244
Address: 60 Adams St, Manchester, CT 06040

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains a wireless telecommunications facility on an existing +/- 141' monopole tower at the above-referenced address, latitude 41.7940481, longitude -72.5553600. Said monopole tower is operated by SBA Towers VIII, LLC.

AT&T desires to modify its existing telecommunications facility by swapping out nine (9) antennae with twelve (12) new antennae, swapping six (6) remote radio units, swapping one (1) surge arrestor 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 March 29, 2022. The centerline height of the existing antennas is and will remain at +/- 125 feet. This modification/proposal includes B2, B5, and B12 hardware that is both 4G(LTE) and 5GNR capable through remote software configuration and either or both services may be turned on or off at various times.

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 Jay Moran, Mayor of the Town of Manchester; Gary Anderson, Zoning Enforcement Officer and Town Planner of the Town of Manchester; SBA Towers VIII, LLC, as tower operator and Manchester Sand & Gravel as property owner.

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 February 15, 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
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 – Original Tower Approval
Exhibit 7 – Notice Delivery Confirmations

cc:
The Honorable Jay Moran, Mayor, Town of Manchester, as elected official
Gary Anderson, Zoning Enforcement Officer/Town Planner
SBA Towers VIII, LLC, as tower operator
Manchester Sand & Gravel as property owner.

EXHIBIT 1

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE:
- INSTALL AT&T LOW PROFILE PLATFORM, SITEPRO-1 PART # RMQLP-4210-H10.
- INSTALL AT&T LTE ANTENNAS (QD6616-7) @ POSITION 2 (TYP. 1 PER SECTOR, TOTAL OF 3).
- INSTALL AT&T LTE ANTENNAS (AIR6449 N77D) @ POSITION 3 (TYP. 1 PER SECTOR, TOTAL OF 3)(STACKED).
- INSTALL AT&T LTE ANTENNAS (AIR6419 N77G) @ POSITION 3 (TYP. 1 PER SECTOR, TOTAL OF 3)(STACKED).
- INSTALL AT&T LTE ANTENNAS (DMP65R-BU6DA) @ POSITION 4 (TYP. 1 PER SECTOR, TOTAL OF 3).
- INSTALL AT&T RRUS 4449 B5/12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (ADD Y-CABLE)
- INSTALL AT&T RRUS 4415 B25 (1900) (TYP. OF 1 PER SECTOR, TOTAL OF 3) .
- INSTALL PROPOSED AT&T SURGE ARRESTOR (DC9-48-60-24-8C-EV) (TOTAL OF 1).
- INSTALL (1) 24PAIR FIBER AND (1) 6AWG DC TRUNK
- RELOCATE EXISTING AT&T RRUS 32 B30 (WCS) @ POS. 2 ON NEW PLATFORM (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- RELOCATE EXISTING AT&T RRUS 32 B66A (AWS) @ POS. 3 ON NEW PLATFORM (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- RELOCATE EXISTING AT&T RRUS 4478 B14 MOUNTED BELOW @ POS 3 ON NEW PLATFORM (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- RELOCATE EXISTING DC SURGE ARRESTOR (DC6-48-60-18-8F) (TOTAL OF 2).

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- INSTALL FIBER TRAY, 6630 AND ADD 6648 + XCEDE CABLE
- INSTALL (1) DC12 IN EXISTING LTE RACK.
- ADD (3) -48V RECTIFIERS TO EXISTING -48V POWER PLANT.
- PROPOSED FIBER MANAGEMENT BOX MOUNTED ON ICE BRIDGE POST (BELOW EXISTING).

ITEMS TO BE REMOVED:
- EXISTING GROUND RRUS 11 B2 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING GROUND RRUS 12 B5 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING LTE AT&T ANTENNA OPA-65R-LCUU-H6 @ POS. 1 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING LTE AT&T ANTENNA 80010121 @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- EXISTING LTE AT&T ANTENNA HPA-65R-BUU-H6 @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- EXISTING LTE AT&T ANTENNA (QS66512-2) @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- EXISTING AT&T RRUS 32 B2 (1900) @ POS. 2(TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS 11 B12 (1900) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING DC SURGE ARRESTOR (DC6-48-60-0-8C-EC) (TOTAL OF 1).
- EXISTING LOWBAND COMBINED DIPLEXERS (TYP. OF 4 PER SECTOR, TOTAL OF 12).
- EXISTING TMA DTMABP7819VG12A (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING (6) 1-1/4"ø COAX.

ITEMS TO REMAIN:
- (2) SURGE ARRESTOR, (6) COAX CABLES, (6) #8 AWG DC POWER TRUNKS & (2) FIBER.

SITE ADDRESS:	60 ADAMS STREET MANCHESTER, CT 06042
LATITUDE:	41.794055° N 41° 47' 38.60" N
LONGITUDE:	72.555360° W 72° 33' 19.3" W
TYPE OF SITE:	MONOPOLE / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	143'-0"±
RAD CENTER:	125'-0"±, 123'-2"±, 126'-9"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
GN-1	GENERAL NOTES	0
A-1	COMPOUND & EQUIPMENT PLAN	0
A-2	ANTENNA PLANS & ELEVATION	0
A-3	DETAILS	0
A-4	DETAILS	0
G-1	GROUNDING DETAILS	0
RF-1	RF PLUMBING DIAGRAM	0

SITE NUMBER: CT1080
SITE NAME: MANCHESTER SAND & GRAVEL
FA CODE: 10035244

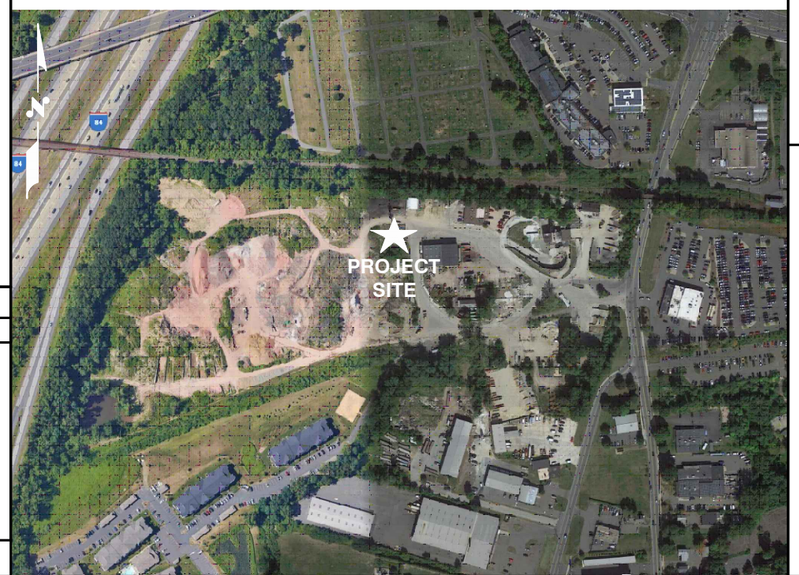
PACE ID: MRCTB052627, MRCTB050825, MRCTB050903, MRCTB051536, MRCTB051229, MRCTB050976

PROJECT: 5G NR RADIO, 5G NR 1SR CBAND, CELL SITE RF MODIFICATIONS, 5G NR UPGRADE/SOFTWARE, BBU ADD, ANTENNA MODIFICATIONS, 4TXRX ANTENNA RETROFIT UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

TURN LEFT ONTO CAPITOL BLVD. TURN LEFT ONTO WEST STREET. TAKE RAMP LEFT FOR I-91 N. AT EXIT 29, TAKE RAMP RIGHT FOR CT-15 NORTH TOWARD I-84 EAST HARTFORD/BOSTON. CT-15 NORTH BECOMES I-84. TAKE EXIT 62 FOR BUCKLAND STREET. TURN RIGHT ON BUCKLAND STREET. STAY STRAIGHT TO GO ONTO ADAMS STREET. END AT 60 ADAMS STREET, MANCHESTER, CT 06042



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

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: CT1080
SITE NAME: MANCHESTER SAND & GRAVEL

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MANCHESTER, CT 06042
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
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A	10/04/21	ISSUED FOR REVIEW	SG	HC	DPH

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

AT&T
TITLE SHEET
5G NR RADIO, 5G NR 1SR CBAND, CELL SITE RF MODIFICATIONS, 5G NR UPGRADE/SOFTWARE, BBU ADD, ANTENNA MODIFICATIONS, 4TXRX ANTENNA RETROFIT

SITE NUMBER	DRAWING NUMBER	REV
CT1080	T-1	0

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

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

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

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

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

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

ABBREVIATIONS

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

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: CT1080
SITE NAME: MANCHESTER SAND & GRAVEL

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500 ENTERPRISE DRIVE, SUITE 3A
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SG

AT&T

GENERAL NOTES
5G NR RADIO, 5G NR 1SR CBAND, CELL SITE RF MODIFICATIONS, 5G NR UPGRADE/SOFTWARE, BBU ADD, ANTENNA MODIFICATIONS, 4TXRX ANTENNA RETROFIT

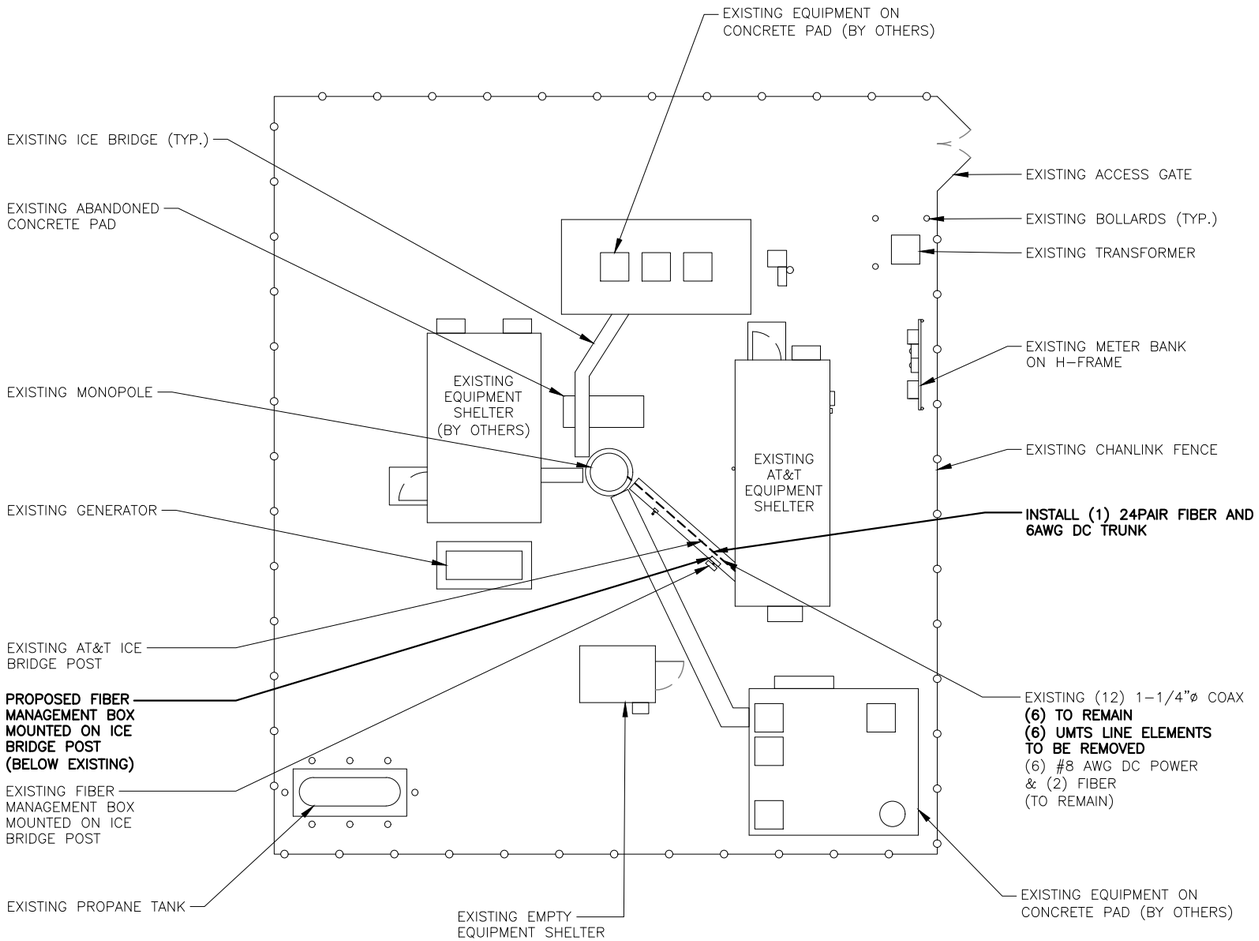
SITE NUMBER	DRAWING NUMBER	REV
CT1080	GN-1	0

NOTE:

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

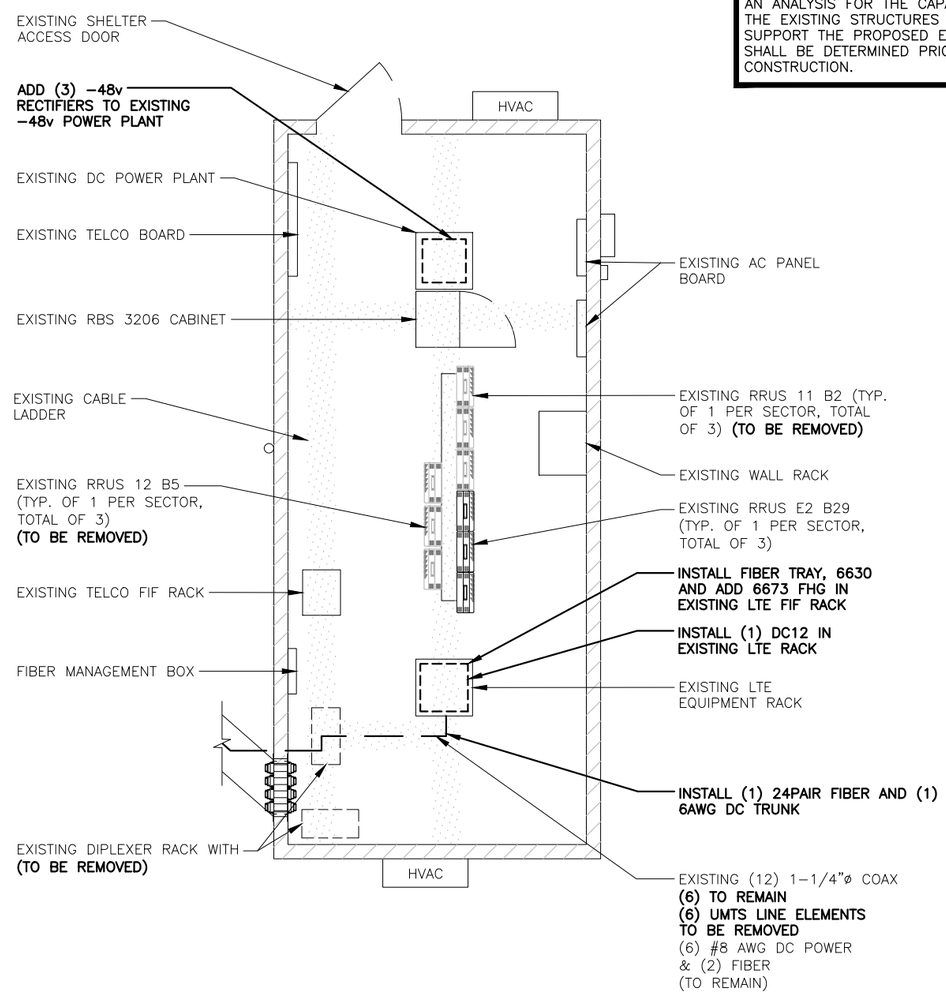
NOTE:

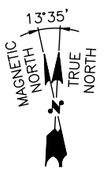
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.



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

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





EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"

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

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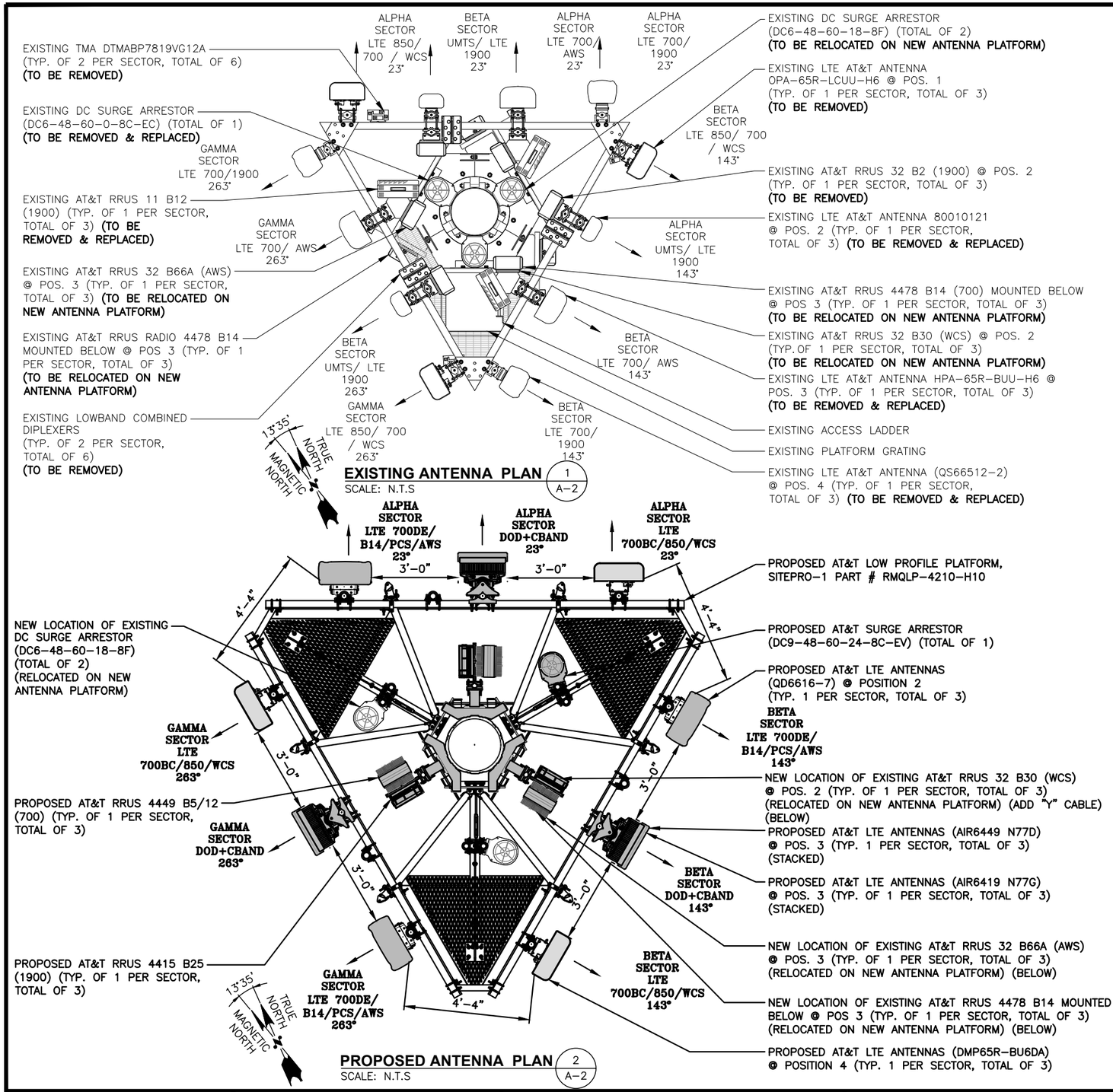

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EXISTING AT&T RRUS 11 B12 (1900) (TYP. OF 1 PER SECTOR, TOTAL OF 3) **(TO BE REMOVED & REPLACED)**

EXISTING AT&T RRUS 32 B66A (AWS) @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3) **(TO BE RELOCATED ON NEW ANTENNA PLATFORM)**

EXISTING AT&T RRUS RADIO 4478 B14 MOUNTED BELOW @ POS 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3) **(TO BE RELOCATED ON NEW ANTENNA PLATFORM)**

EXISTING LOWBAND COMBINED DIPLEXERS (TYP. OF 2 PER SECTOR, TOTAL OF 6) **(TO BE REMOVED)**

EXISTING DC SURGE ARRESTOR (DC6-48-60-18-8F) (TOTAL OF 2) **(TO BE RELOCATED ON NEW ANTENNA PLATFORM)**

EXISTING LTE AT&T ANTENNA OPA-65R-LCUU-H6 @ POS. 1 (TYP. OF 1 PER SECTOR, TOTAL OF 3) **(TO BE REMOVED)**

EXISTING AT&T RRUS 32 B2 (1900) @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3) **(TO BE REMOVED)**

EXISTING LTE AT&T ANTENNA 80010121 @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3) **(TO BE REMOVED & REPLACED)**

EXISTING AT&T RRUS 4478 B14 (700) MOUNTED BELOW @ POS 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3) **(TO BE RELOCATED ON NEW ANTENNA PLATFORM)**

EXISTING AT&T RRUS 32 B30 (WCS) @ POS. 2 (TYP.OF 1 PER SECTOR, TOTAL OF 3) **(TO BE RELOCATED ON NEW ANTENNA PLATFORM)**

EXISTING LTE AT&T ANTENNA HPA-65R-BUU-H6 @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3) **(TO BE REMOVED & REPLACED)**

EXISTING ACCESS LADDER

EXISTING PLATFORM GRATING

EXISTING LTE AT&T ANTENNA (QS66512-2) @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3) **(TO BE REMOVED & REPLACED)**

PROPOSED AT&T LOW PROFILE PLATFORM, SITEPRO-1 PART # RMQLP-4210-H10

NEW LOCATION OF EXISTING DC SURGE ARRESTOR (DC6-48-60-18-8F) (TOTAL OF 2) (RELOCATED ON NEW ANTENNA PLATFORM)

PROPOSED AT&T SURGE ARRESTOR (DC9-48-60-24-8C-EV) (TOTAL OF 1)

PROPOSED AT&T LTE ANTENNAS (QD6616-7) @ POSITION 2 (TYP. 1 PER SECTOR, TOTAL OF 3)

PROPOSED AT&T RRUS 4449 B5/12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3)

NEW LOCATION OF EXISTING AT&T RRUS 32 B30 (WCS) @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED ON NEW ANTENNA PLATFORM) (ADD "Y" CABLE) (BELOW)

PROPOSED AT&T LTE ANTENNAS (AIR6449 N77D) @ POS. 3 (TYP. 1 PER SECTOR, TOTAL OF 3) (STACKED)

PROPOSED AT&T LTE ANTENNAS (AIR6419 N77G) @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (STACKED)

PROPOSED AT&T RRUS 4415 B25 (1900) (TYP. OF 1 PER SECTOR, TOTAL OF 3)

NEW LOCATION OF EXISTING AT&T RRUS 32 B66A (AWS) @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED ON NEW ANTENNA PLATFORM) (BELOW)

NEW LOCATION OF EXISTING AT&T RRUS 4478 B14 MOUNTED BELOW @ POS 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED ON NEW ANTENNA PLATFORM) (BELOW)

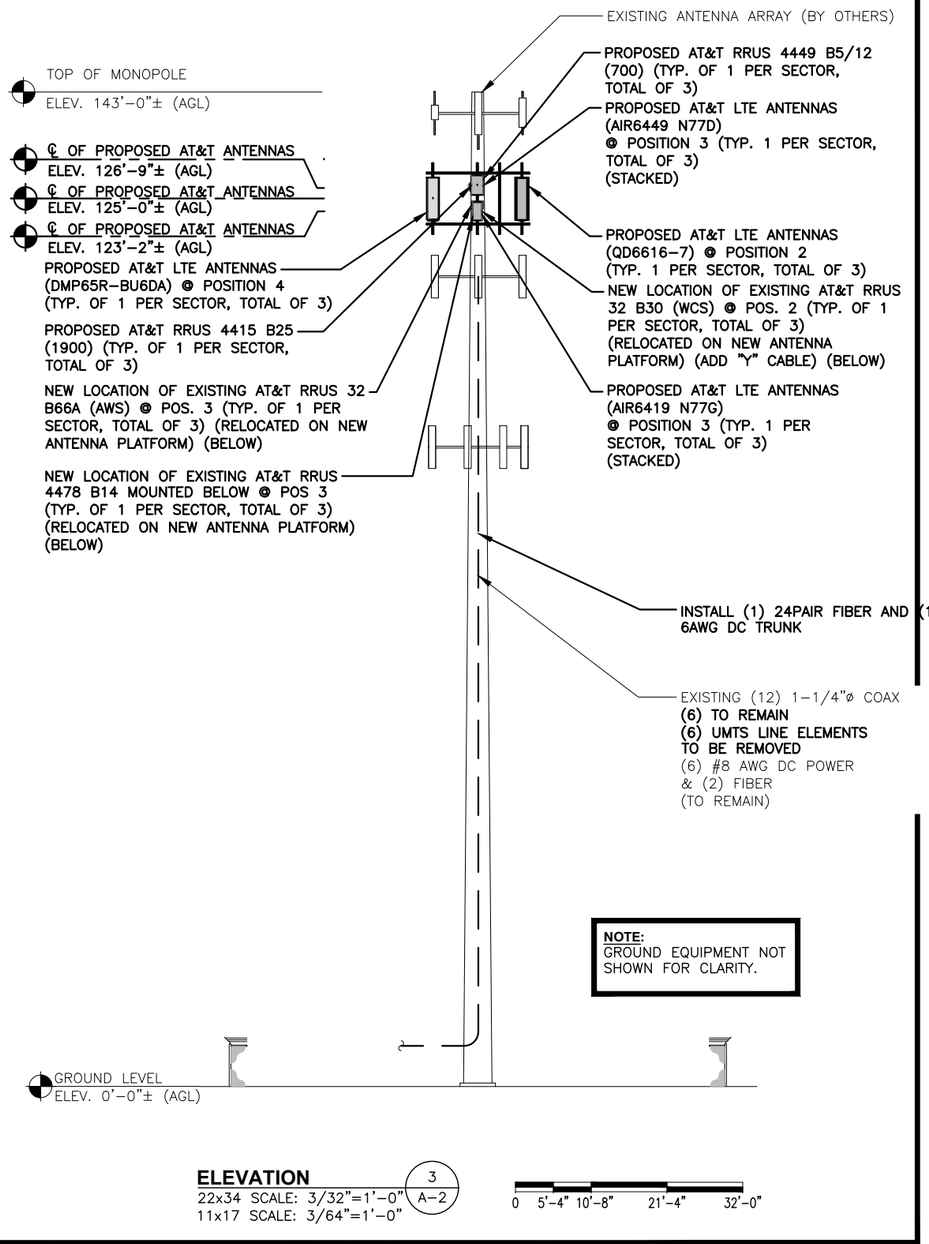
PROPOSED AT&T LTE ANTENNAS (DMP65R-BU6DA) @ POSITION 4 (TYP. 1 PER SECTOR, TOTAL OF 3)

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:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

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

0 5'-4" 10'-8" 21'-4" 32'-0"

HUDSON Design Group LLC
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WEST BRIDGEWATER, MA 02379

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

SITE NUMBER: CT1080
SITE NAME: MANCHESTER SAND & GRAVEL

60 ADAMS STREET
MANCHESTER, CT 06042
HARTFORD COUNTY

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	03/17/22	ISSUED FOR REVIEW	MB	HC	DPH
A	10/04/21	ISSUED FOR REVIEW	SG	HC	DPH

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

AT&T

ANTENNA PLAN & ELEVATION
5G NR RADIO, 5G NR 1SR CBAND, CELL SITE RF MODIFICATIONS, 5G NR UPGRADE/SOFTWARE, BBU ADD, ANTENNA MODIFICATIONS, 4TXRX ANTENNA RETROFIT

SITE NUMBER	DRAWING NUMBER	REV
CT1080	A-2	0

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	–	–	–	–	–	–	–	–	–	–	(P) (1) RAYCAP DC9-48-60-8C-EV
A2	PROPOSED	LTE 700DE/B14/PCS/AWS	QD6616-7	72"X22"X9.6"	125'-0"±	23°	–	(E)(1) 4478 B14 (700) (E)(1) RRUS-32 B66A (AWS) (E)(G)(1) RRUS-E2 B29 (700) **(P)(1) 4415 B25 (1900)**	– – – 16.5"X13.4"X5.9"	(2)(E)1-1/4 COAX	
A3	PROPOSED PROPOSED	CBAND DoD	AIR6449 N77D AIR6419 N77G	30.4"X15.9"X8.1" 31.1"X16.1"X7.3"	126'-9"± 123'-2"±	23°	–	–	–	**(P)(1) #6 AWG DC TRUNK & (P)(1) 24 PAIR FIBER TRUNK** (2)(E) #8 AWG DC POWER TRUNK	
A4	PROPOSED	LTE 700 BC/850/WCS	DMP65R-BU6DA	71.2"X20.7"X7.7"	125'-0"±	23°	–	**(P)(1) 4449 B5/B12 (850/700)** (E)(1) RRUS-32 B30 (WCS)	17.9"X13.9"X9.44" –	**(1)(P) Y-CABLE** –	
B1	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8F
B2	PROPOSED	LTE 700DE/B14/PCS/AWS	QD6616-7	72"X22"X9.6"	125'-0"±	143°	–	(E)(1) 4478 B14 (700) (E)(1) RRUS-32 B66A (AWS) (E)(G)(1) RRUS-E2 B29 (700) **(P)(1) 4415 B25 (1900)**	– – – 16.5"X13.4"X5.9"	(2)(E)1-1/4 COAX	
B3	PROPOSED PROPOSED	CBAND DoD	AIR6449 N77D AIR6419 N77G	30.4"X15.9"X8.1" 31.1"X16.1"X7.3"	126'-9"± 123'-2"±	143°	–	–	–	(2)(E) #8 AWG DC POWER TRUNK & (E)(1) FIBER TRUNK	
B4	PROPOSED	LTE 700 BC/850/WCS	DMP65R-BU6DA	71.2"X20.7"X7.7"	125'-0"±	143°	–	**(P)(1) 4449 B5/B12 (850/700)** (E)(1) RRUS-32 B30 (WCS)	17.9"X13.9"X9.44" –	**(1)(P) Y-CABLE** –	
C1	–	–	–	–	–	263°	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8F
C2	PROPOSED	LTE 700DE/B14/PCS/AWS	QD6616-7	72"X22"X9.6"	125'-0"±	263°	–	(E)(1) 4478 B14 (700) (E)(1) RRUS-32 B66A (AWS) (E)(G)(1) RRUS-E2 B29 (700) **(P)(1) 4415 B25 (1900)**	– – – 16.5"X13.4"X5.9"	(2)(E)1-1/4 COAX	
C3	PROPOSED PROPOSED	CBAND DoD	AIR6449 N77D AIR6419 N77G	30.4"X15.9"X8.1" 31.1"X16.1"X7.3"	126'-9"± 123'-2"±	263°	–	–	–	(2)(E) #8 AWG DC POWER TRUNK & (E)(1) FIBER TRUNK	
C4	PROPOSED	LTE 700 BC/850/WCS	DMP65R-BU6DA	71.2"X20.7"X7.7"	125'-0"±	263°	–	**(P)(1) 4449 B5/B12 (850/700)** (E)(1) RRUS-32 B30 (WCS)	17.9"X13.9"X9.44" –	**(1)(P) Y-CABLE** –	

NOTE:

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

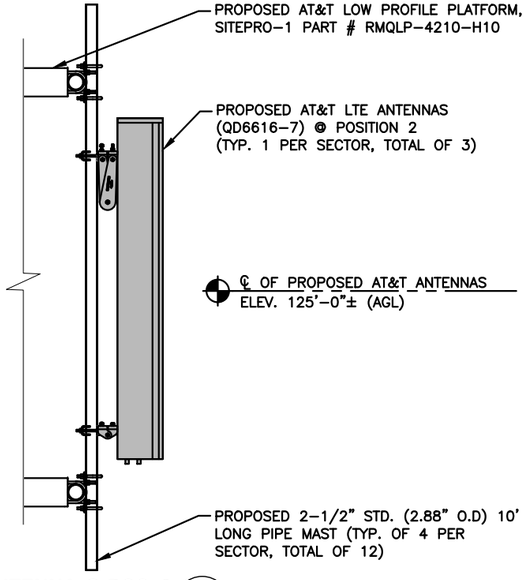
NOTE:

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

FINAL ANTENNA SCHEDULE

SCALE: N.T.S

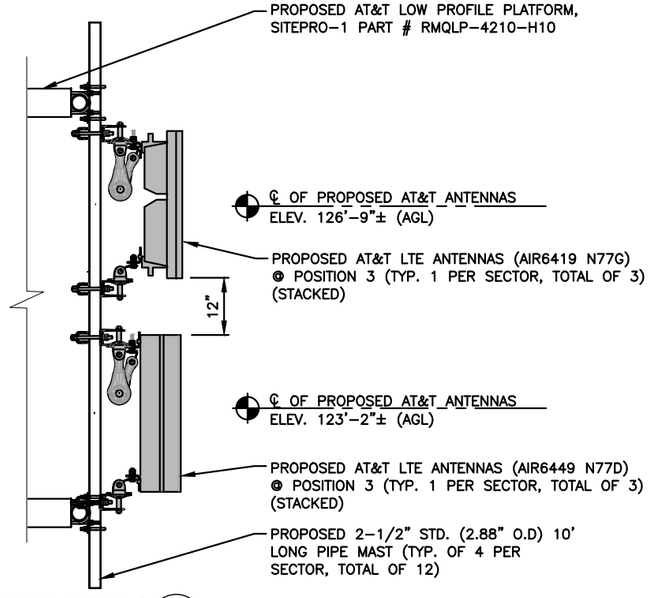
(1 / A-3)



PROPOSED ANTENNA @ POS. 2 (2 / A-3)

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

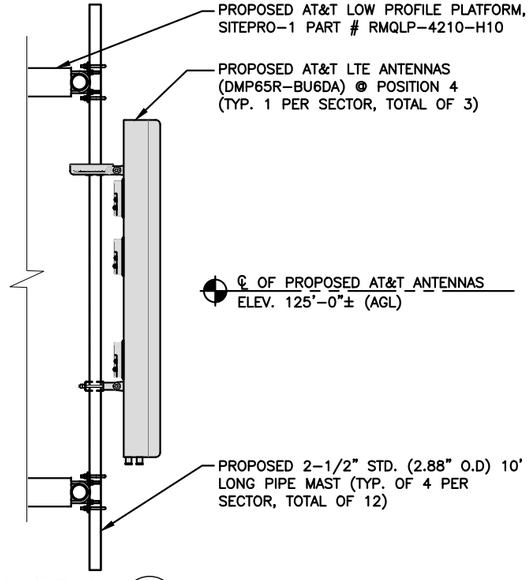
0 8" 1'-4" 2'-8" 4'-0"



PROPOSED ANTENNAS @ POS. 3 (3 / A-3)

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

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



PROPOSED ANTENNA @ POS. 4 (4 / A-3)

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

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

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SITE NUMBER: CT1080
SITE NAME: MANCHESTER SAND & GRAVEL

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MANCHESTER, CT 06042
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
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A	10/04/21	ISSUED FOR REVIEW	SG	HC	DPH

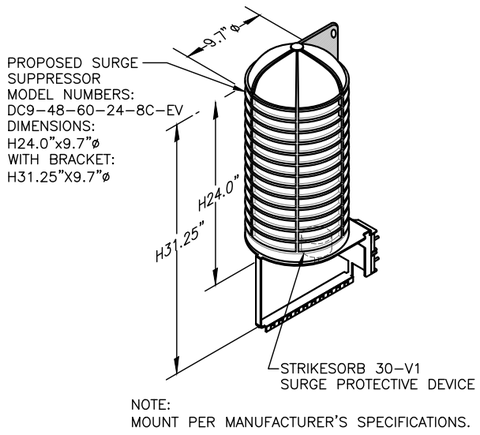
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SG

AT&T

DETAILS

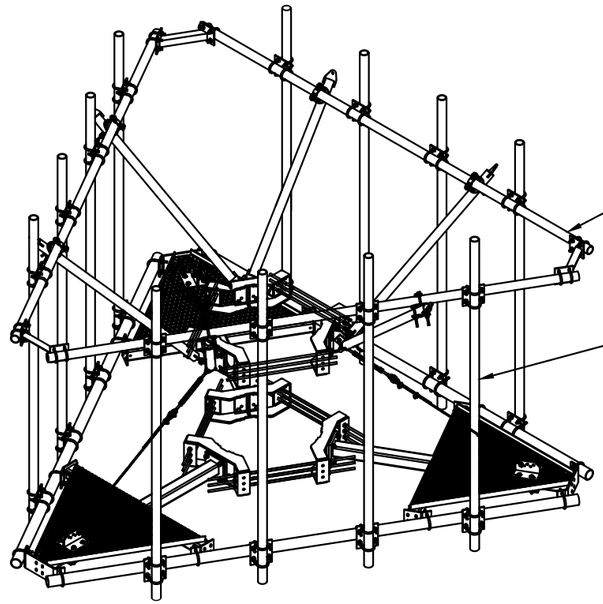
5G NR RADIO, 5G NR 1SR CBAND, CELL SITE RF MODIFICATIONS, 5G NR UPGRADE/SOFTWARE, BBU ADD, ANTENNA MODIFICATIONS, 4TXRX ANTENNA RETROFIT

SITE NUMBER	DRAWING NUMBER	REV
CT1080	A-3	0



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL 1/A-4
SCALE: N.T.S



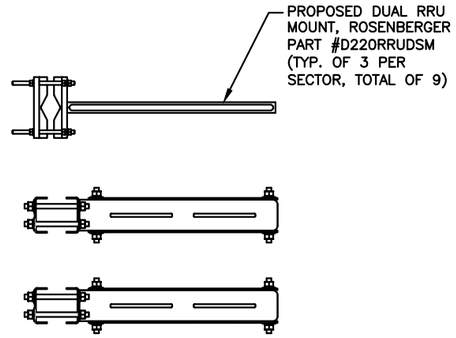
14'-6" LOW PROFILE PLATFORM (RMQLP-4120-H10) 2/A-4
SCALE: N.T.S

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.



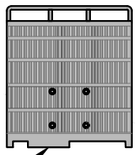
BACK TO BACK RRU MOUNT DETAIL 6/A-4
SCALE: N.T.S

RRU CHART		
QUANTITY	**MODEL**	**SIZE (L x W x D)**
3(P)	**4449 B5/B12 (850/700)**	**17.9"x13.2"x10.4"**
3(P)	**4415 B25 (PCS)**	**16.5"X13.4"X5.9"**
3(E)	4478 B14 (700)	18.1"X13.4"X8.3"
3(E)	RRUS-32 B66A (AWS)	27.2"X12.1X7.0"
3(E)	RRUS-32 B30 (WCS)	27.2"X12.1X7.0"
3(E)(G)	RRS-E2 B29 (700)	20.4"X18.5"X7.5"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

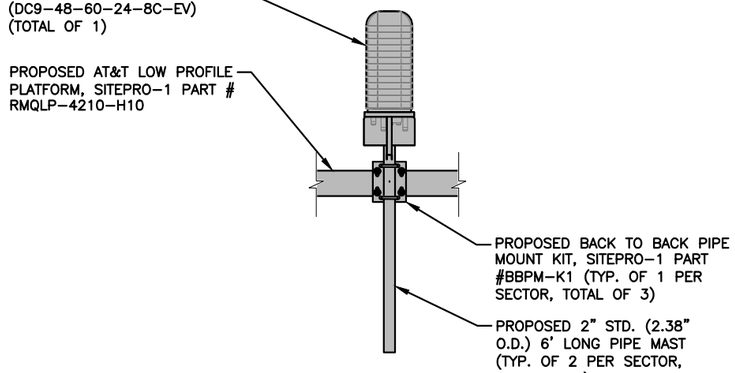
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



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

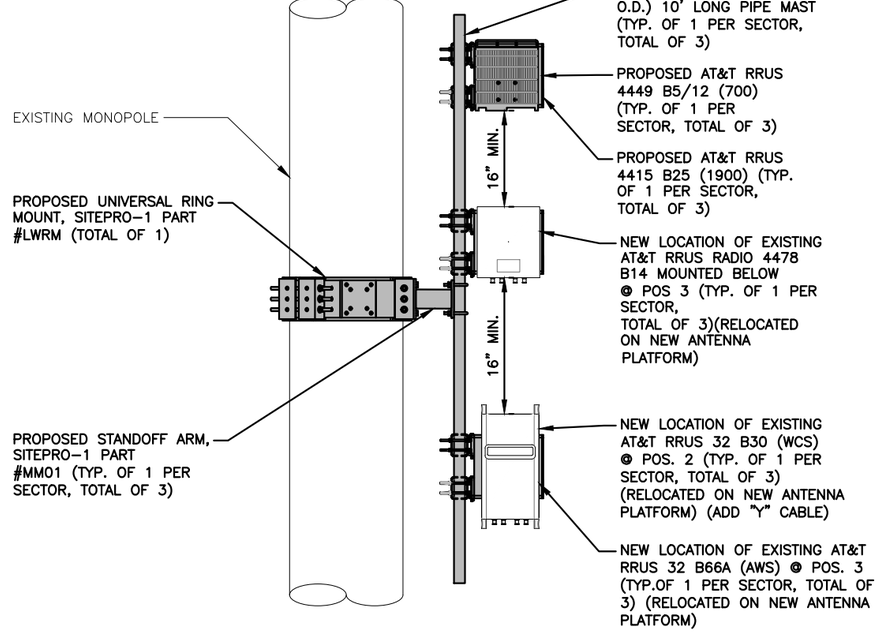
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL 3/A-4
SCALE: N.T.S



PROPOSED SURGE ARRESTOR MOUNTING DETAIL 4/A-4
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

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



PROPOSED RRH MOUNTING DETAIL 5/A-4
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

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

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at&t
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ROCKY HILL, CT 06067

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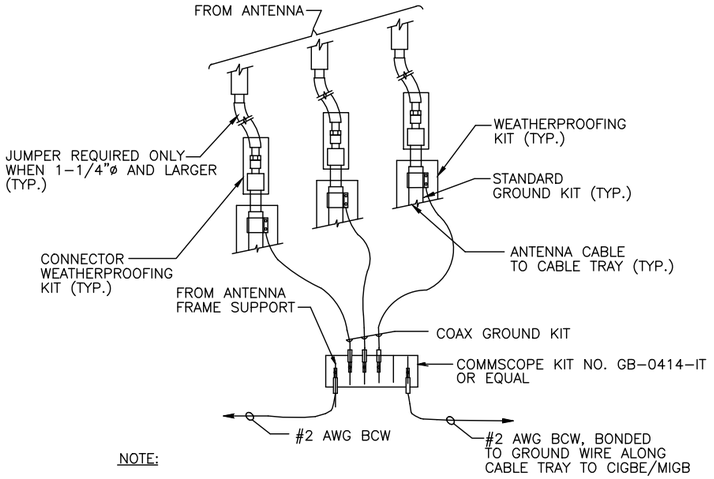
A	10/04/21	ISSUED FOR REVIEW	SG	HC	DPH

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

AT&T
DETAILS
5G NR RADIO, 5G NR 1SR CBAND, CELL SITE RF MODIFICATIONS, 5G NR UPGRADE/SOFTWARE, BBU ADD, ANTENNA MODIFICATIONS, 4TXRX ANTENNA RETROFIT

SITE NUMBER	DRAWING NUMBER	REV
CT1080	A-4	0



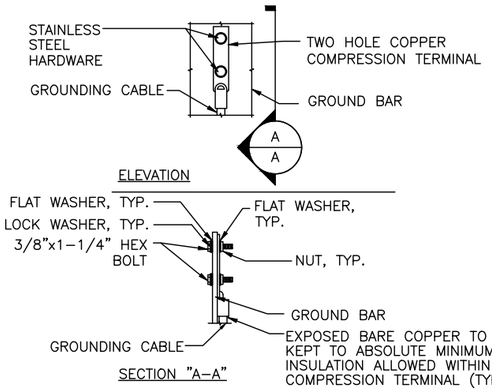
NOTE:

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

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

1 / G–1



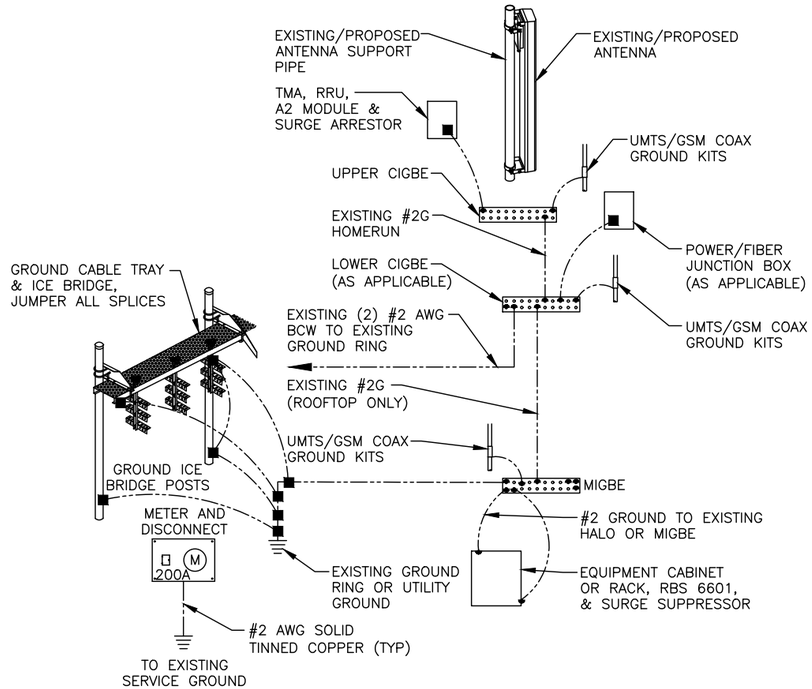
NOTES:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G–1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G–1

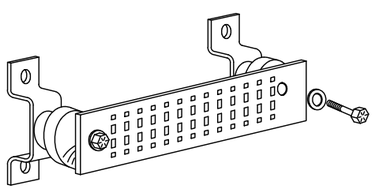
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL (AS REQUIRED)

SCALE: N.T.S

4 / G–1

HUDSON Design Group LLC
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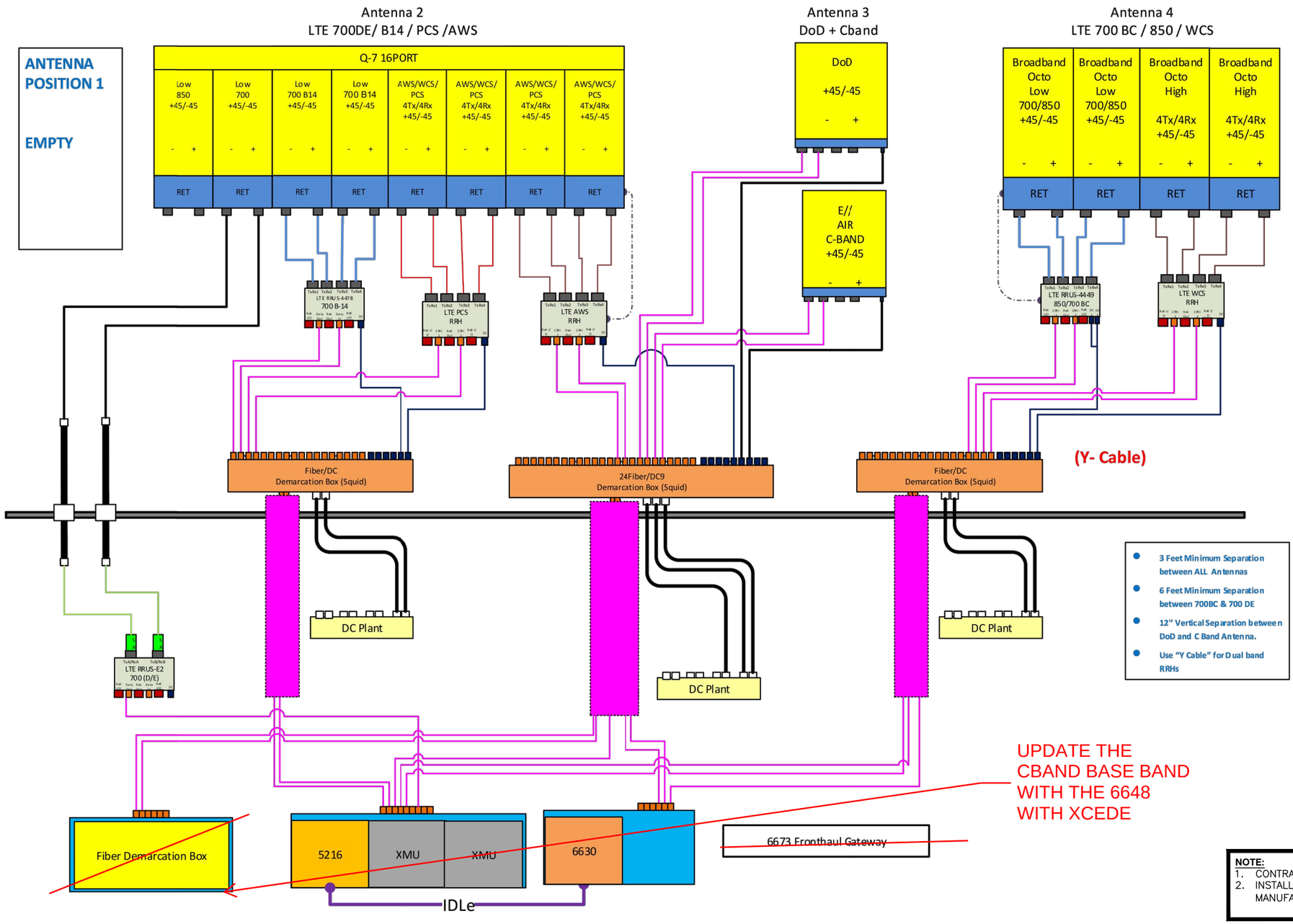
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SG

AT&T

GROUNDING DETAILS
5G NR RADIO, 5G NR 1SR CBAND, CELL SITE RF MODIFICATIONS, 5G NR UPGRADE/SOFTWARE, BBU ADD, ANTENNA MODIFICATIONS, 4TXRX ANTENNA RETROFIT

SITE NUMBER	DRAWING NUMBER	REV
CT1080	G–1	0

PENDING UPDATED PD



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

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

NOTE:

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

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

AT&T
RF PLUMBING DIAGRAM
5G NR RADIO, 5G NR 1SR CBAND, CELL SITE RF MODIFICATIONS, 5G NR UPGRADE/SOFTWARE, BBU ADD, ANTENNA MODIFICATIONS, 4TXRX ANTENNA RETROFIT

SITE NUMBER	DRAWING NUMBER	REV
CT1080	RF–1	0

EXHIBIT 2

60 ADAMS STREET

Location	60 ADAMS STREET	**Mblu**	28/ 20/ 60/ /
Acct#	002000060	**Owner**	POM-POM GALI LLC
Assessment	$1,145,400	**Appraisal**	$1,636,300
PID	26	**Building Count**	3
DISTRICT	E	**CONCRETE**	

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$522,100	$1,114,200	$1,636,300

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$365,500	$779,900	$1,145,400

Owner of Record

Owner POM-POM GALI LLC
Address PO BOX 133
WILLIMANTIC, CT 06226

Sale Price $1,551,222
Certificate C
Book & Page 3204/0184
Sale Date 12/23/2005
Instrument 36

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
POM-POM GALI LLC	$1,551,222	C	3204/0184	36	12/23/2005
THORNTON WILLIAM B EST	$0		3130/0054	35	08/25/2005
THORNTON WILLIAM B	$0		0492/0089		

Building Information

Building 1 : Section 1

Year Built: 1965

Building Photo

Living Area: 1,863
Replacement Cost: $210,551
Replacement Cost Less Depreciation: $80,000

Building Attributes	
Field	**Description**
Style:	Light Indust
Model	Ind/Comm
Grade	Average
Stories:	1
Occupancy	1.00
Exterior Wall 1	Pre-finsh Metl
Exterior Wall 2	Concr/Cinder
Roof Structure	Flat
Roof Cover	Tar + Gravel
Interior Wall 1	Minim/Masonry
Interior Wall 2	Drywall/Sheetr
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Electric
Heating Type	Electr Basebrd
AC Type	None
Struct Class	
Bldg Use	Industrial 96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	300
Heat/AC	None
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Ceiling & Wall
Rooms/Prtns	Average
Wall Height	9.00
% Comn Wall	0.00


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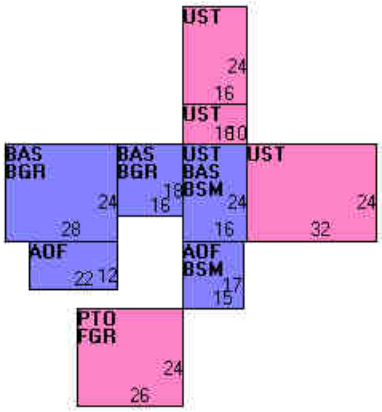
Building Layout



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Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,344	1,344
AOF	Office, (Average)	519	519
BGR	Basement Garage	960	0
BSM	Basement	639	0
FGR	Garage	624	0
PTO	Patio	624	0
UST	Utility, Storage, Unfinished	1,696	0
		6,406	1,863

Building 2 : Section 1

Year Built: 1965
Living Area: 8,658
Replacement Cost: $387,411
Replacement Cost Less Depreciation: $147,200

Building Attributes : Bldg 2 of 3

Field	Description
Style:	Service Shop
Model	Serv Station
Grade	Minimum
Stories:	1
Occupancy	1.00
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Metal/Tin
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Forced Air-Duc
AC Type	None
Struct Class	
Bldg Use	Industrial 96
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	300
Heat/AC	None
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Ceiling & Wall
Rooms/Prtns	Average
Wall Height	18.00
% Comn Wall	0.00

Building Photo

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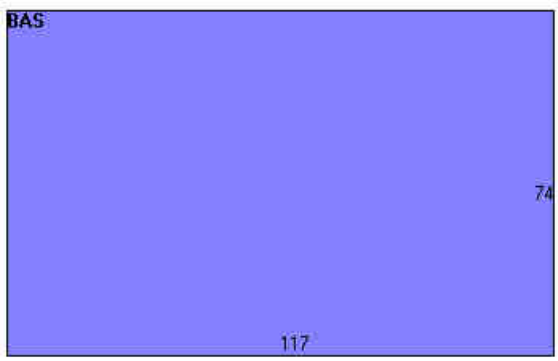
Building Layout



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Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	8,658	8,658
		8,658	8,658

Building 3 : Section 1

Year Built: 1965
Living Area: 6,398
Replacement Cost: $428,970
Replacement Cost Less Depreciation: $163,000

Building Attributes : Bldg 3 of 3	
Field	Description
Style:	Office Bldg
Model	Comm/Ind
Grade	Below Average

Stories:	1
Occupancy	1.00
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Metal/Tin
Interior Wall 1	Drywall/Sheetr
Interior Wall 2	
Interior Floor 1	Tile/Vinyl Cmp
Interior Floor 2	Carpet
Heating Fuel	Electric
Heating Type	Electr Basebrd
AC Type	Central
Struct Class	
Bldg Use	Industrial 94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	300C
Heat/AC	Heat AC Split
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Susp Ceil & Wl
Rooms/Prtns	Average
Wall Height	10.00
% Comn Wall	0.00

Building Photo

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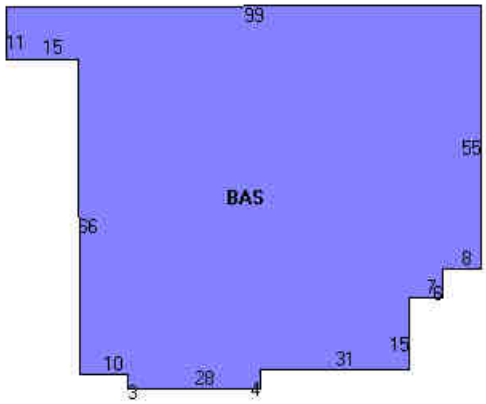
Building Layout



(http://images.vgsi.com/photos2/ManchesterCTPhotos//Sketches/26_1797

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	6,398	6,398
		6,398	6,398

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	300
Description	Industrial 96
Zone	IND

Land Line Valuation

Size (Acres)	26.45
Frontage	0
Depth	0

Neighborhood	4000	**Assessed Value**	$779,900
Alt Land Appr	No	**Appraised Value**	$1,114,200
Category			

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FGR1	Garage Average			1440.00 S.F.	$14,700	2
PAV2	Paving Concrete			40000.00 S.F.	$54,000	1
PAV2	Paving Concrete			11498.00 S.F.	$25,900	3
SHD1	Shed			1680.00 S.F.	$15,100	1
PAV1	Paving Asphalt			8000.00 S.F.	$10,000	3
TNK5	Tank Elevated			240.00 GALS	$400	1
FN4	Fence 8' Chain			290.00 L.F.	$4,400	1
FN3	Fence 6' Chain			640.00 L.F.	$7,400	3
MSC16	SCL2			1.00 UNIT	$0	3

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$520,100	$1,114,200	$1,634,300
2015	$440,800	$1,114,200	$1,555,000
2010	$527,000	$1,156,400	$1,683,400

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$364,200	$779,900	$1,144,100
2015	$308,600	$779,900	$1,088,500
2010	$369,000	$809,400	$1,178,400

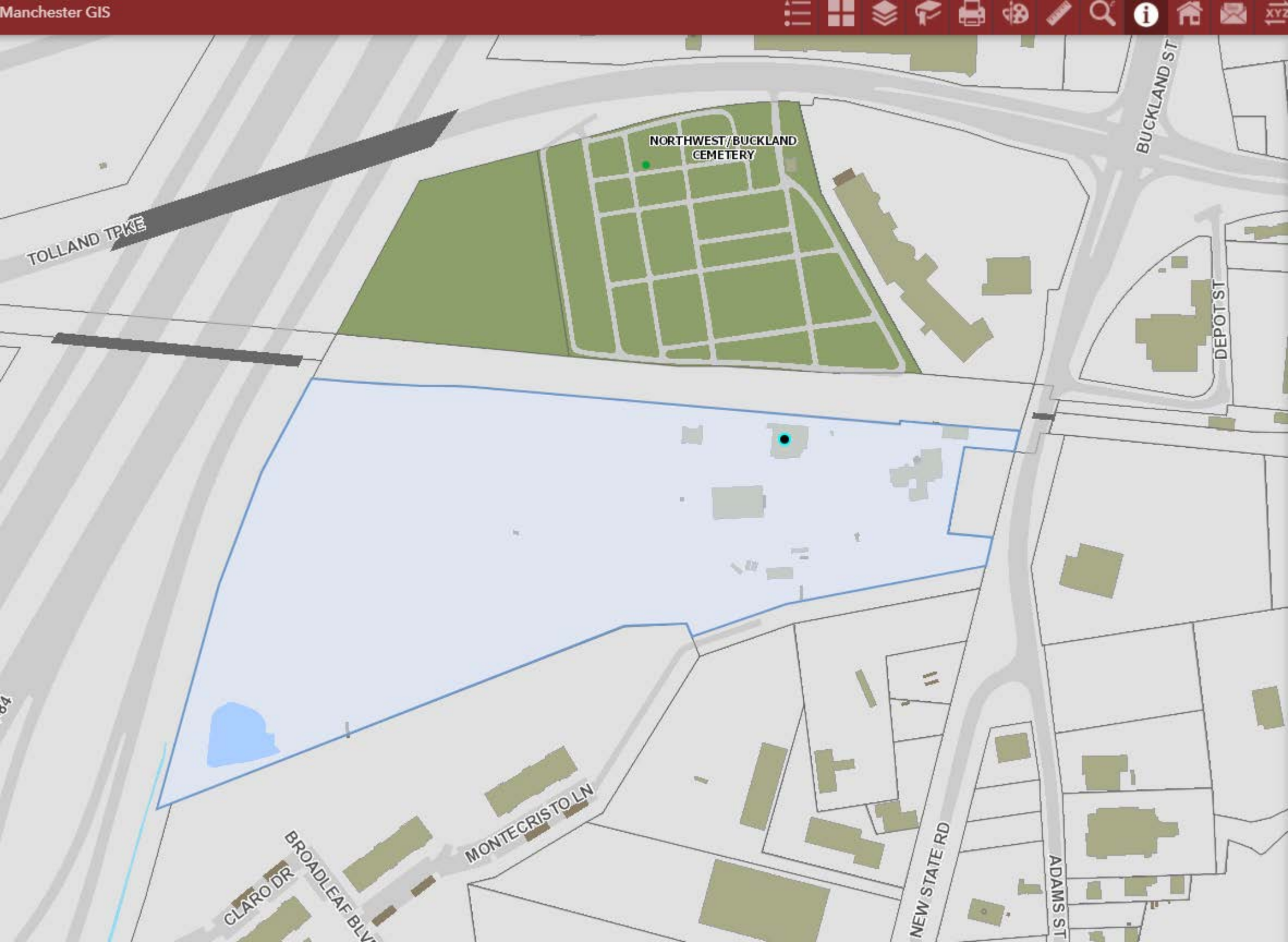

Manchester GIS
NORTHWEST / BUCKLAND CEMETERY
TOLLAND TPKE
BUCKLAND ST
DEPOT ST
MONTECRISTO LN
BROADLEAF BLVD
CLARO DR
NEW STATE RD
ADAMS ST

EXHIBIT 3

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

Structural Analysis Report

Existing 141 ft EEI Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT16504-A

Customer Site Name: Manchester 12, CT

Carrier Name: AT&T (App#: 182017-3)

Carrier Site ID / Name: CT1080 / MANCHESTER SAND AND GRAVEL

Site Location: 60 Adams Street

Manchester, Connecticut

Hartford County

Latitude: 41.794100

Longitude: -72.555300

Analysis Result:

Max Structural Usage: 99.4% [Pass]

Max Foundation Usage: 94.0% [Pass]

Additional Usage Caused by New Mount: +3.0%

Report Prepared By : Changzhi Zang

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Report Prepared By : Changzhi Zang

Introduction

The purpose of this report is to summarize the analysis results on the 141 ft EEI 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

Tower Drawings	FDH, Mapping Report #15BRLA1500, dated June 15, 2015
Foundation Drawing	FDH, Mapping Report # 15BRLC1500, dated June 16, 2015
Geotechnical Report	FDH, Project # 15BRNG1600, dated June 17, 2015
Modification Drawings	TES, Job # 36710, dated December 14, 2017
Mount Analysis	AT&T MA by Hudson Design Group, Project # CT1080, dated 10/18/2021

Analysis Criteria

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

Wind Speed Used in the Analysis:	118.0 mph (3-Sec. Gust) (Ultimate wind speed)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1 1/2” radial ice concurrent
Service Load Wind Speed:	60 mph + 0” Radial ice
Standard/Codes:	TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Risk Category:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.188, S_1 = 0.055

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	135.0	3	Ericsson - Air 32 KRD901146-1_B66A_B2A - Panel	(3) Sector frames w/ (1) low profile platform sitepro RMQP-396	(2) 1 1/4" Fiber (2) 1 5/8" Fiber	T-Mobile
2		3	Ericsson - AIR6449 B41 - Panel			
3		3	RFS - APXVAARR24_43-U-NA20 - Panel			
4		3	CommScope CBC192-3Q-43 Diplexers			
5		3	Ericsson RRUS11 B4			
6		3	Ericsson 4415 B25			
7		3	Ericsson Radio 4449 B71+B85			
-	125.0	3	Quintel QS66512-2 - Panel	Platform w/ Handrails	(12) 1 1/4" (4) 0.625" DC (2) 0.40" Fiber (2) 2" Conduit	AT&T
-		3	Kathrein 800-10121 - Panel			
-		3	CCI OPA-65R-LCUU-H6 - Panel			
-		3	CCI HPA-65R-BUU-H6 - Panel			
-		6	CCI DTMABP7819VG12A			
-		6	Kathrein 782 10250			
-		6	Ericsson RRUS-32			
-		3	Ericsson RRUS-11			
-		3	Ericsson B14 4478			
-		3	Ericsson RRUS 32 B66			
-		6	Kaelus DBC0061F1V51-2			
-		3	Raycap DC6-48-60-18-8F			
22	118.5	1	Andrew VHLP1-23-DW1 - Dish	Low Profile Platform*	(3) 1-1/4" (2) 2 1/8" F.C. (1) 3/4" Fiber (2) 5/8"	Sprint-Clearwire
23		1	Andrew VHLP2-23-DW1 - Dish			
24	117.0	3	RFS APXVTM14 - Panel			
25		3	RFS APXVSPP18 - Panel			
26		3	Alcatel Lucent RRH8x20-25-FEU			
27		3	Alcatel Lucent RRH1900-4X45			
28	114.5	3	Argus LLPX310R-V1 - Panel			
29	114.0	1	20" x 18" x 9" Junction Box			
30	113.0	3	Samsung SPI-22132825WB			
31	112.5	3	Alcatel Lucent RRH2X50-800			
32	100.0	3	JMA Wireless MX08FRO665-21 - Panel	Platform w/HRK Commscope MC-PK8-DSH	(1) 1.6" Hybrid	Dish Wireless
33		3	Fujitsu TA08025-B605 - RRU			
34		3	Fujitsu TA08025-B604 - RRU			
35		1	Raycap RDIDC-9181-PF-48 - OVP			
36	90.0	6	Andrew - SBNHH-1D65B w/ Mount Pipe - Panel	Platform w/ Handrails	(12) 1 5/8" (2) 1 5/8" Fiber	Verizon
37		3	Swedcom - SLCP 2x6014 - Panel			
38		3	L-Sub6 Antenna - Panel			
39		3	Samsung - XXDWMM-12.5-65-8T - Panel			
40		3	Samsung B5/B13 RRH-BR04C			
41		3	Alcatel Lucent B2/B66A RRH-BR049			
42		2	RFS DB-T1-6Z-8AB-0Z			

*Mount is at 114'.

*According to Mapping and Mount Analysis.

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
8	126.75	3	Ericcson AIR6419 N77G - Panel	Platform w/ Handrails [(1) SITE PRO RMQLP-4120-H10 + (1) SITE PRO 1 LWRM + (1) SITE PRO 1 MM01	(1) 0.92" DC Power (6) 0.78" DC Power (12) 1 1/4" (3) 0.40" Fiber (2) 2" Conduit (4 DC & 1 Fiber cables housed within (2) 2" conduits)	AT&T
9	125.0	3	Quintel QD6616-7 - Panel			
10		3	Cci DMP65R-BU6DA - Panel			
11		3	Ericsson B14 4478 - RRU			
12		3	Ericcson 4415 - RRU			
13		3	Ericcson 4449 - RRU			
14		3	Ericsson RRUS-32 B66 - RRU			
15		3	Ericcson RRUS 32 B30 - RRU			
16		6	Cci DTMABP7819VG12A - TMA			
17		6	Kathrein 782-10250 - RET			
18		6	Kaelus DBC0061F1V51-2 - Combiners			
19		2	Raycap DC6-48-60-18-8F - OVP			
20		1	Raycap DC9-48-60-24-8C-EV - OVP			
21	123.17	3	Ericcson AIR6449 N77D - Panel			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**99.4%**	**74.3%**	**72.9%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	3606.8	34.1	46.0

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

Service Load Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by TIA-222 for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.8462 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC.** Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.

2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.

3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the ANSI/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

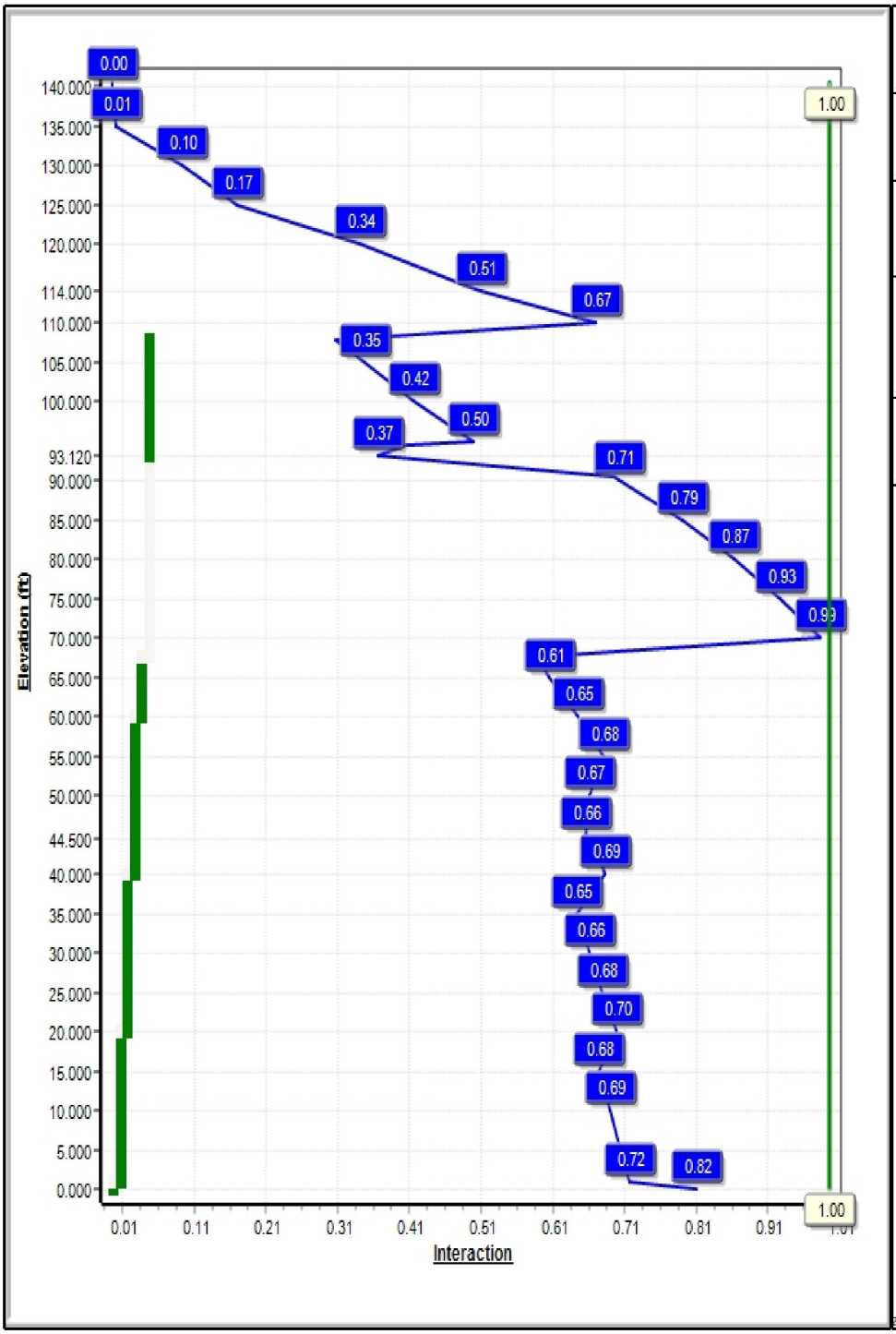
Usage Diagram - Max Ratio 98.68% at 70.0ft

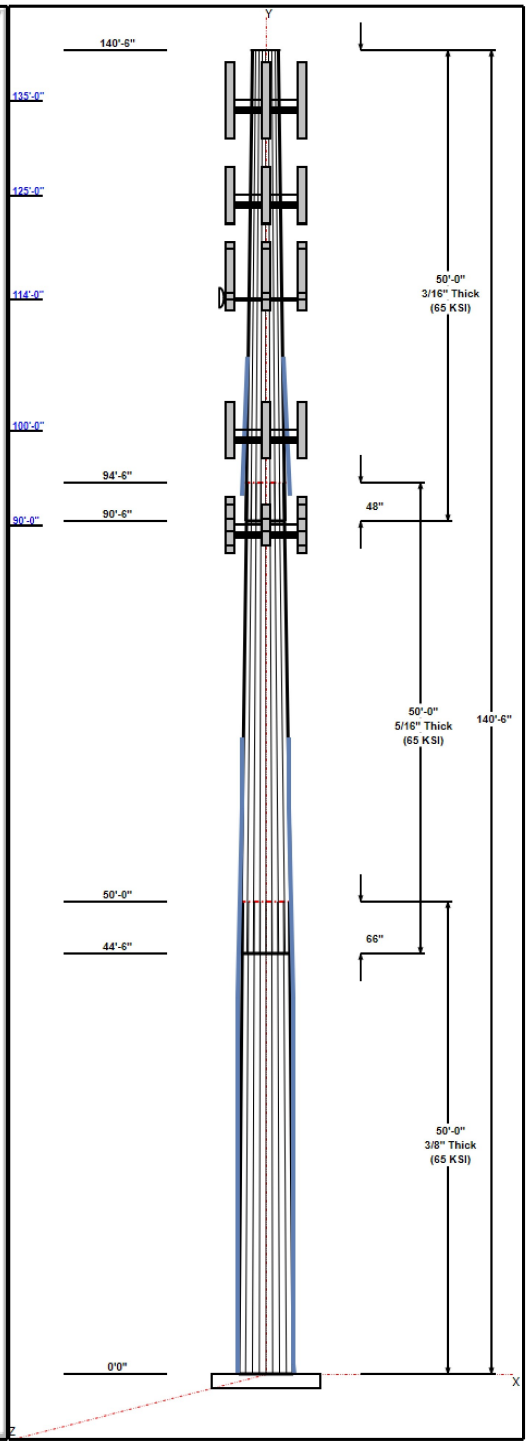
Structure:	CT16504-A-SBA	**Code:**	EIA/TIA-222-H	2/15/2022
Site Name:	Manchester 12, CT	**Exposure:**	C	
Height:	140.50 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

Tower Engineering Solutions

Dead Load Factor:	1.20	**Iterations:**	25
Wind Load Factor:	1.00		

Load Case : 1.2D + 1.0W 118 mph Wind





Structure: CT16504-A-SBA

Type: Tapered
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.18206

2/15/2022

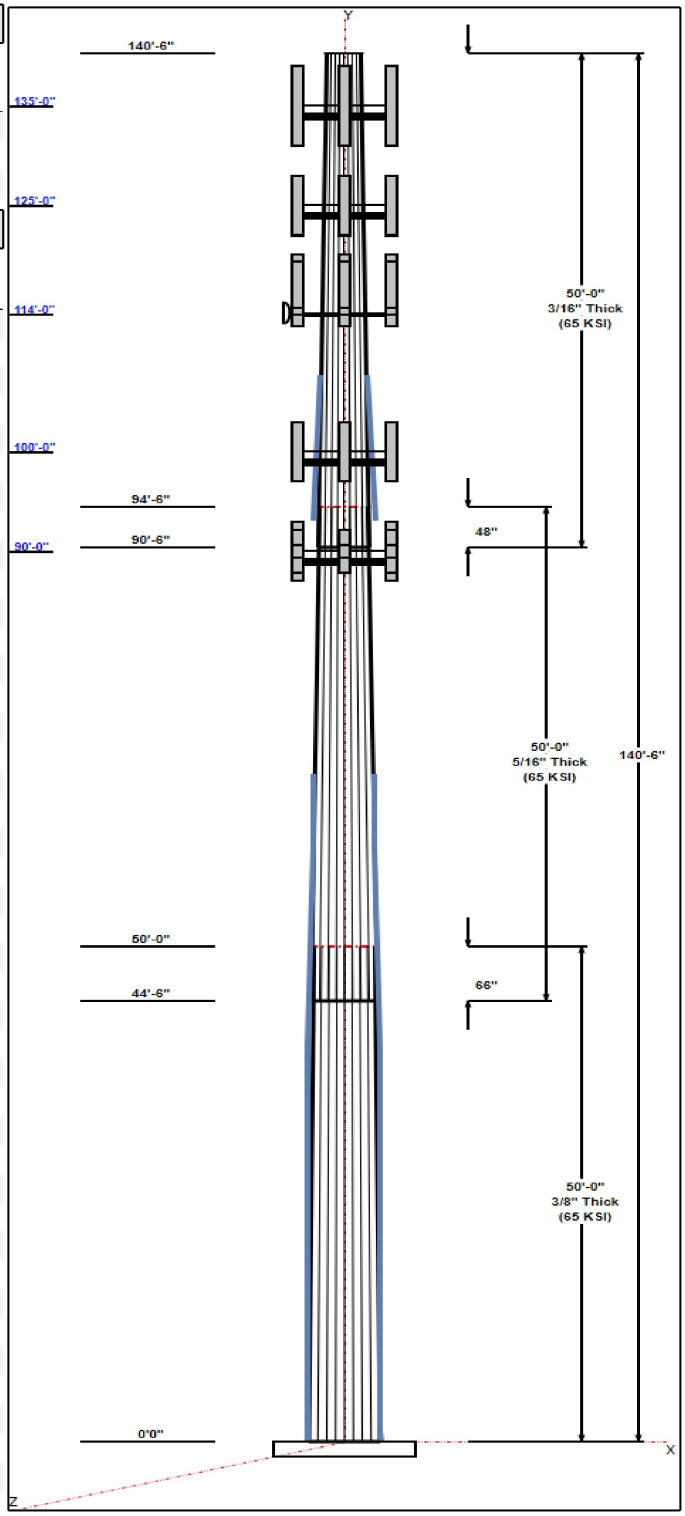
Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	50.00	33.44	42.54	0.375		0.18206	65
2	50.00	25.96	35.06	0.313	Slip	0.18206	65
3	50.00	17.96	27.06	0.188	Slip	0.18206	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
135.00	135.00	3	Air 32	T-Mobile
135.00	135.00	3	AIR6449 B41	T-Mobile
135.00	135.00	3	APXVAARR24_43-U-NA20	T-Mobile
135.00	135.00	3	Commscope	T-Mobile
135.00	135.00	3	Ericsson RRUS11 B4	T-Mobile
135.00	135.00	3	Ericsson 4415 B25	T-Mobile
135.00	135.00	3	Ericsson Radio 4449	T-Mobile
135.00	135.00	3	Sector Frame	T-Mobile
125.00	125.00	2	Raycap DC6-48-60-18-8F	AT&T
125.00	125.00	6	CCI DTMABP7819VG12A	AT&T
125.00	125.00	3	Quintel QD6616-7	AT&T
125.00	123.17	3	Ericcson AIR6449 N77D	AT&T
125.00	126.75	3	Ericcson AIR6419 N77G	AT&T
125.00	125.00	3	Cci DMP65R-BU6DA	AT&T
125.00	125.00	3	Ericcson 4415	AT&T
125.00	125.00	3	Ericcson 4449	AT&T
125.00	125.00	3	Ericcson RRUS 32 B30	AT&T
125.00	125.00	1	Raycap	AT&T
125.00	125.00	1	RMQLP-4120-H10 w/Collar	AT&T
125.00	125.00	3	B14 4478	AT&T
125.00	125.00	3	RRUS 32 B66	AT&T
125.00	125.00	6	DBC0061F1V51-2	AT&T
125.00	125.00	6	Kathrein 782 10250	AT&T
114.00	118.50	1	Andrew VHLP1-23-DW1	Sprint-Clearwire
114.00	118.50	1	Andrew VHLP2-23-DW1	Sprint-Clearwire
114.00	114.50	3	Argus LLPX310R-V1	Sprint-Clearwire
114.00	113.00	3	Samsung	Sprint-Clearwire
114.00	114.00	1	20" x 18" x 9" Junction Box	Sprint-Clearwire
114.00	117.00	3	RFS APXVTM14	Sprint-Clearwire
114.00	117.00	3	RFS APXVSPP18	Sprint-Clearwire
114.00	117.00	3	Alcatel Lucent	Sprint-Clearwire
114.00	112.50	3	Alcatel Lucent	Sprint-Clearwire
114.00	117.00	3	Alcatel Lucent	Sprint-Clearwire
114.00	114.00	1	Low Profile Platform	Sprint-Clearwire
100.00	100.00	3	JMA Wireless	Dish Wireless
100.00	100.00	3	Fujitsu TA08025-B605 -	Dish Wireless
100.00	100.00	3	Fujitsu TA08025-B604 -	Dish Wireless
100.00	100.00	1	Raycap	Dish Wireless
100.00	100.00	1	Platform w/HRK	Dish Wireless
90.00	90.00	1	Platform w/ Hand Rails	Verizon
90.00	90.00	6	SBNHH-1D65B w/ Mount	Verizon
90.00	90.00	3	SLCP 2x6014	Verizon
90.00	90.00	3	L-Sub6 Antenna	Verizon
90.00	90.00	3	XXDWMM-12.5-65-8T	Verizon
90.00	90.00	3	Samsung B5/B13	Verizon
90.00	90.00	3	Alcatel Lucent B2/B66A	Verizon



90.00	90.00	2	RFS DB-T1-6Z-8AB-0Z	Verizon

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	135.00	Outside	1 1/4" Fiber	T-Mobile
0.00	135.00	Outside	1 5/8" Fiber	T-Mobile
0.00	125.00	Inside	0.40" Fiber	AT&T
0.00	125.00	Inside	0.78" DC	AT&T
0.00	125.00	Inside	0.92" DC Power	AT&T
0.00	125.00	Inside	1 1/4" Coax	AT&T
0.00	125.00	Inside	2" Conduit	AT&T
0.00	114.00	Inside	1-1/4"	Sprint-Clearwire
0.00	114.00	Inside	2 1/8" F.C.	Sprint-Clearwire
0.00	114.00	Inside	3/4"	Sprint-Clearwire
0.00	114.00	Inside	5/8"	Sprint-Clearwire
90.50	110.50	Outside	1" Reinforcing plate	
90.50	110.50	Outside	1" Reinforcing plate	
0.00	100.00	Inside	1.6" Hybrid	Dish Wireless
0.00	90.00	Inside	1 5/8" Coax	Verizon
0.00	90.00	Inside	1 5/8" Hybrid	Verizon
40.00	70.00	Outside	1" Reinforcing plate	
40.00	70.00	Outside	1" Reinforcing plate	
0.00	40.00	Outside	1.25" Reinforcing plate	
0.00	40.00	Outside	1.25" Reinforcing plate	

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
12	2.25" 18J	75.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.7500	57.0	60.0	Round

Reactions

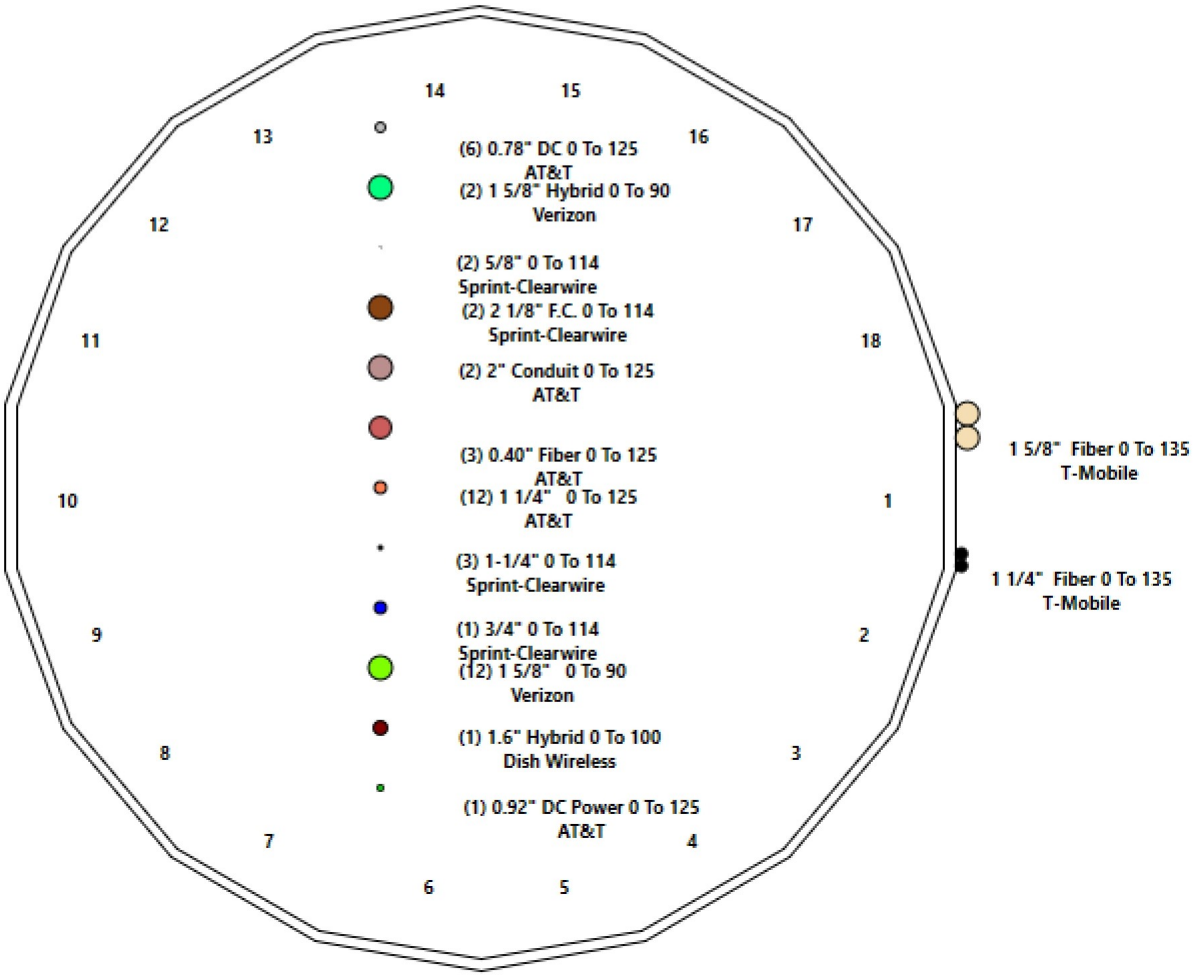
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.0W 118 mph Wind	3606.8	34.1	46.0
0.9D + 1.0W 118 mph Wind	3547.2	34.1	34.5
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1073.0	9.6	82.3
1.2D + 1.0Ev + 1.0Eh	58.4	0.5	47.6
0.9D + 1.0Ev + 1.0Eh	57.5	0.5	36.0
1.0D + 1.0W 60 mph Wind	827.2	7.9	38.3

Structure: CT16504-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Manchester 12, CT
Height: 140.50 (ft)

2/15/2022

Tower Engineering Solutions



Shaft Properties

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 5	

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	50.000	0.3750	65		0.00	7,617
2	18	50.000	0.3125	65	Slip	66.00	5,096
3	18	50.000	0.1875	65	Slip	48.00	2,260
					Total Shaft Weight:		**14,973**

	Bottom						Top						
Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper
1	42.54	0.00	50.19	11272.80	18.59	113.44	33.44	50.00	39.35	5434.44	14.31	89.16	0.182064
2	35.06	44.50	34.47	5258.76	18.37	112.20	25.96	94.50	25.44	2114.11	13.24	83.07	0.182064
3	27.06	90.50	15.99	1459.57	24.04	144.34	17.96	140.50	10.58	422.08	15.48	95.79	0.182064

Additional Steel

							Intermediate Connectors		Termination Connectors			
Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Fu (ksi)	Offset (in)	Description	Spacing (in)	Description	Spacing (in)	Lower Qty	Upper Qty
0.00	1.00	4	SOL 2 1/4" William R71	105	125	4.75	5/8" Hollo Bolt	18.00	5/8" Hollo Bolt	3.00		
1.00	20.00	4	LNP LP7X125-B-20A	65	80	0.00	5/8" Hollo Bolt	24.00	5/8" Hollo Bolt	3.00		
20.00	40.00	4	LNP LP6X125-G-20AB	65	80	0.00	5/8" Hollo Bolt	24.00	5/8" Hollo Bolt	3.00		
40.00	60.00	4	LNP LP6X100-G-20BC	65	80	0.00	5/8" Hollo Bolt	24.00	5/8" Hollo Bolt	3.00		
60.00	67.50	4	LNP LP6X100-G-10CT	65	80	0.00	5/8" Hollo Bolt	24.00	5/8" Hollo Bolt	3.00		
93.12	107.8	3	LNP LP6X100-G-20TT	65	80	0.00	5/8" Hollo Bolt	24.00	5/8" Hollo Bolt	3.00	8	8

Load Summary

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	135.00	Air 32 KRD901146-1_B66A_B2A	3	132.20	6.51	0.87	314.29	7.677	0.87	0.00	0.00
2	135.00	AIR6449 B41	3	103.00	5.65	0.80	254.01	6.612	0.81	0.00	0.00
3	135.00	APXVAARR24_43-U-NA20	3	128.00	20.24	0.70	541.00	22.119	0.70	0.00	0.00
4	135.00	Commscope CBC192-3Q-43	3	11.00	0.32	0.91	21.40	0.579	0.91	0.00	0.00
5	135.00	Ericsson RRUS11 B4	3	44.00	2.57	0.50	106.61	3.209	0.50	0.00	0.00
6	135.00	Ericsson 4415 B25	3	44.10	1.86	0.50	91.04	2.427	0.50	0.00	0.00
7	135.00	Ericsson Radio 4449 B71+B85	3	70.00	1.65	0.50	137.35	2.182	0.50	0.00	0.00
8	135.00	Sector Frame	3	817.00	15.00	0.75	1449.08	22.460	0.75	0.00	0.00
9	125.00	Raycap DC6-48-60-18-8F	2	32.80	1.47	0.50	93.51	2.157	0.50	0.00	0.00
10	125.00	CCI DTMABP7819VG12A	6	19.00	1.14	0.50	43.80	1.896	0.50	0.00	0.00
11	125.00	Quintel QD6616-7	3	51.90	13.58	0.75	941.30	22.889	0.78	0.00	0.00
12	125.00	Ericcson AIR6449 N77D	3	88.00	4.13	0.85	222.61	4.971	0.85	0.00	-1.83
13	125.00	Ericcson AIR6419 N77G	3	66.10	3.80	0.76	160.57	4.581	0.76	0.00	1.75
14	125.00	Cci DMP65R-BU6DA	3	79.40	12.71	0.72	368.62	14.148	0.72	0.00	0.00
15	125.00	Ericcson 4415	3	46.30	1.64	0.50	99.30	2.177	0.50	0.00	0.00
16	125.00	Ericcson 4449	3	70.00	1.65	0.50	136.70	2.177	0.50	0.00	0.00
17	125.00	Ericcson RRUS 32 B30	3	60.00	2.74	0.50	146.04	3.454	0.50	0.00	0.00
18	125.00	Raycap DC9-48-60-24-8C-EV	1	26.20	1.14	1.00	130.27	2.698	1.00	0.00	0.00
19	125.00	RMQLP-4120-H10 w/Collar Mount	1	3470.00	55.40	1.00	7037.89	95.654	1.00	0.00	0.00
20	125.00	B14 4478	3	59.40	1.65	0.50	119.08	2.177	0.50	0.00	0.00
21	125.00	RRUS 32 B66	3	53.00	2.74	0.50	139.04	3.454	0.50	0.00	0.00
22	125.00	DBC0061F1V51-2	6	25.40	0.43	0.50	39.68	0.710	0.50	0.00	0.00
23	125.00	Kathrein 782 10250	6	6.40	0.52	0.50	18.96	1.079	0.50	0.00	0.00
24	114.00	Andrew VHLP1-23-DW1	1	14.00	1.61	1.00	48.45	2.348	1.00	0.00	4.50
25	114.00	Andrew VHLP2-23-DW1	1	31.00	4.69	1.00	126.21	5.932	1.00	0.00	4.50
26	114.00	Argus LLPX310R-V1	3	50.70	4.31	0.69	156.26	5.244	0.69	0.00	0.50
27	114.00	Samsung SPI-22132825WB	3	33.10	1.82	0.50	75.84	2.769	0.50	0.00	-1.00
28	114.00	20" x 18" x 9" Junction Box	1	20.00	3.15	0.50	114.45	4.372	0.50	0.00	0.00
29	114.00	RFS APXVTM14	3	116.70	6.34	0.79	271.92	7.421	0.79	0.00	3.00
30	114.00	RFS APXVSPP18	3	125.30	8.02	0.83	318.56	9.277	0.83	0.00	3.00
31	114.00	Alcatel Lucent RRH8x20-25-FEU	3	70.00	4.05	0.50	176.87	4.840	0.50	0.00	3.00
32	114.00	Alcatel Lucent RRH2X50-800	3	64.00	2.40	0.50	139.11	3.489	0.50	0.00	-1.50
33	114.00	Alcatel Lucent RRH1900-4X45	3	60.00	2.71	0.50	138.57	3.939	0.50	0.00	3.00
34	114.00	Low Profile Platform	1	1800.00	25.00	1.00	3328.17	45.376	1.00	0.00	0.00
35	100.00	JMA Wireless MX08FRO665-21	3	64.50	12.49	0.74	343.81	13.897	0.74	0.00	0.00
36	100.00	Fujitsu TA08025-B605 - RRU	3	75.00	1.96	0.50	125.23	2.499	0.50	0.00	0.00
37	100.00	Fujitsu TA08025-B604 - RRU	3	63.90	1.96	0.50	112.52	2.499	0.50	0.00	0.00
38	100.00	Raycap RDIDC-9181-PF-48 - OVP	1	21.90	2.01	0.50	73.03	2.556	0.50	0.00	0.00
39	100.00	Platform w/HRK Commscope	1	1727.00	37.59	1.00	3347.77	82.947	1.00	0.00	0.00
40	90.00	Platform w/ Hand Rails	1	2200.00	40.00	1.00	4388.96	59.900	1.00	0.00	0.00
41	90.00	SBNHH-1D65B w/ Mount Pipe	6	40.00	8.16	0.83	231.18	9.391	0.83	0.00	0.00
42	90.00	SLCP 2x6014	3	20.00	6.49	0.89	187.46	8.462	0.89	0.00	0.00
43	90.00	L-Sub6 Antenna	3	81.60	4.03	0.84	185.85	4.816	0.84	0.00	0.00
44	90.00	XXDWMM-12.5-65-8T	3	87.30	1.53	0.74	136.17	2.031	0.75	0.00	0.00
45	90.00	Samsung B5/B13 RRH-BR04C	3	70.30	1.88	0.50	116.51	2.404	0.50	0.00	0.00
46	90.00	Alcatel Lucent B2/B66A RRH-BR049	3	84.40	1.88	0.50	133.11	2.404	0.50	0.00	0.00
47	90.00	RFS DB-T1-6Z-8AB-0Z	2	18.90	4.80	0.71	133.95	5.755	0.71	0.00	0.00
		Totals:	**133**	**18,928.90**			**44,649.30**				

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	135.00	(2) 1 1/4" Fiber	0.00	Outside
0.00	135.00	(2) 1 5/8" Fiber	1.98	Outside
0.00	125.00	(3) 0.40" Fiber	0.00	Inside
0.00	125.00	(6) 0.78" DC	0.00	Inside
0.00	125.00	(1) 0.92" DC Power	0.00	Inside
0.00	125.00	(12) 1 1/4" Coax	0.00	Inside
0.00	125.00	(2) 2" Conduit	0.00	Inside
0.00	114.00	(3) 1-1/4"	0.00	Inside
0.00	114.00	(2) 2 1/8" F.C.	0.00	Inside
0.00	114.00	(1) 3/4"	0.00	Inside
0.00	114.00	(2) 5/8"	0.00	Inside
90.50	110.50	(1) 1" Reinforcing plate	1.00	Outside
90.50	110.50	(2) 1" Reinforcing plate	1.00	Outside
0.00	100.00	(1) 1.6" Hybrid	0.00	Inside
0.00	90.00	(12) 1 5/8" Coax	0.00	Inside
0.00	90.00	(2) 1 5/8" Hybrid	0.00	Inside
40.00	70.00	(2) 1" Reinforcing plate	1.00	Outside
40.00	70.00	(2) 1" Reinforcing plate	1.00	Outside
0.00	40.00	(2) 1.25" Reinforcing plate	1.25	Outside
0.00	40.00	(2) 1.25" Reinforcing plate	1.25	Outside

Shaft Section Properties

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Increment Length: **5 (ft)**

Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)	Additional Reinforcing Area (in^2)	Ixp (in^4)	Iyp (in^4)	Weight (lb)
0.00	RB1	0.3750	42.540	50.185	11272.8	18.59	113.44	65	80	0.0	16.32	7061.8	4973.6	
1.00	RT1 RB2	0.3750	42.358	49.968	11127.4	18.51	112.95	65	80	170.4	35.00	9835.2	6951.8	119.1
5.00		0.3750	41.630	49.102	10558.3	18.16	111.01	65	80	674.2	35.00	9511.8	6724.0	476.4
10.00		0.3750	40.719	48.018	9874.7	17.74	108.58	65	81	826.2	35.00	9115.2	6444.8	595.5
15.00		0.3750	39.809	46.935	9221.2	17.31	106.16	65	81	807.8	35.00	8727.1	6171.5	595.5
20.00	RT2 RB3	0.3750	38.899	45.851	8597.3	16.88	103.73	65	82	789.3	30.00	7139.4	5043.9	510.4
25.00		0.3750	37.988	44.768	8002.1	16.45	101.30	65	82	770.9	30.00	6821.4	4819.9	510.4
30.00		0.3750	37.078	43.684	7435.0	16.02	98.87	65	83	752.5	30.00	6510.6	4601.1	510.4
35.00		0.3750	36.168	42.601	6895.4	15.60	96.45	65	83	734.0	30.00	6207.1	4387.4	510.4
40.00	RT3 RB4	0.3750	35.257	41.517	6382.6	15.17	94.02	65	83	715.6	24.00	4664.1	3297.5	408.3
44.50	Bot - Section 2	0.3750	34.438	40.542	5943.3	14.78	91.84	65	83	628.3	24.00	4457.3	3151.9	367.5
45.00		0.3750	34.347	40.434	5895.8	14.74	91.59	65	83	127.5	24.00	4591.6	3246.4	40.8
50.00	Top - Section 1	0.3125	34.062	33.474	4817.1	17.81	109.00	65	80	1255.9	24.00	4363.9	3086.1	408.3
55.00		0.3125	33.151	32.571	4437.8	17.29	106.08	65	81	561.8	24.00	4142.0	2929.9	408.3
60.00	RT4 RB5	0.3125	32.241	31.668	4078.8	16.78	103.17	65	82	546.5	24.00	3926.0	2777.8	408.3
65.00		0.3125	31.331	30.765	3739.8	16.27	100.26	65	82	531.1	24.00	3715.9	2629.8	408.3
67.50	RT5	0.3125	30.876	30.314	3577.6	16.01	98.80	65	83	259.8	24.00	3613.0	2557.4	204.2
70.00		0.3125	30.421	29.862	3420.1	15.75	97.35	65	83	256.0				
75.00		0.3125	29.510	28.959	3119.2	15.24	94.43	65	83	500.4				
80.00		0.3125	28.600	28.057	2836.4	14.73	91.52	65	83	485.0				
85.00		0.3125	27.690	27.154	2571.3	14.21	88.61	65	83	469.7				
90.00		0.3125	26.779	26.251	2323.2	13.70	85.69	65	83	454.3				
90.50	Bot - Section 3	0.3125	26.688	26.160	2299.4	13.65	85.40	65	83	44.6				
93.12	RB6	0.3125	26.211	25.687	2176.8	13.38	83.88	65	83	372.4	18.00	1740.0	1740.0	160.5
94.50	Top - Section 2	0.1875	26.335	15.560	1344.1	23.36	140.45	65	74	193.5	18.00	1708.9	1708.9	84.5
95.00		0.1875	26.244	15.506	1330.1	23.27	139.97	65	74	26.4	18.00	1697.8	1697.8	30.6
100.00		0.1875	25.334	14.965	1195.5	22.41	135.11	65	75	259.2	18.00	1588.0	1588.0	306.2
105.00		0.1875	24.423	14.423	1070.3	21.56	130.26	65	76	250.0	18.00	1482.0	1482.0	306.2
107.87	RT6	0.1875	23.901	14.112	1002.6	21.07	127.47	65	77	139.3	18.00	1422.9	1422.9	175.8
110.00		0.1875	23.513	13.881	954.2	20.70	125.40	65	77	101.4				
114.00		0.1875	22.785	13.448	867.6	20.02	121.52	65	78	186.0				
115.00		0.1875	22.603	13.339	846.8	19.85	120.55	65	78	45.6				
120.00		0.1875	21.692	12.798	747.7	18.99	115.69	65	79	222.3				
125.00		0.1875	20.782	12.256	656.7	18.13	110.84	65	80	213.1				
130.00		0.1875	19.872	11.714	573.5	17.28	105.98	65	81	203.9				
135.00		0.1875	18.961	11.172	497.5	16.42	101.13	65	82	194.7				
140.00		0.1875	18.051	10.631	428.6	15.56	96.27	65	83	185.5				
140.50		0.1875	17.960	10.576	422.1	15.48	95.79	65	83	18.0				
									Total Weight	**14973.2**				**7546.2**

Wind Loading - Shaft

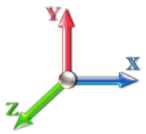
Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 118 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

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	RB1	1.00	0.85	28.680	31.55	390.90	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
1.00	RT1 RB2	1.00	0.85	28.680	31.55	389.23	0.739 *	0.000	1.00	3.592	2.65	83.7	0.0	204.5
5.00		1.00	0.85	28.680	31.55	382.54	0.741 *	0.000	4.00	14.214	10.53	332.3	0.0	809.1
10.00		1.00	0.85	28.680	31.55	374.17	0.746 *	0.000	5.00	17.421	12.99	409.8	0.0	991.4
15.00		1.00	0.85	28.680	31.55	365.81	0.751 *	0.000	5.00	17.036	12.79	403.6	0.0	969.3
20.00	RT2 RB3	1.00	0.90	30.430	33.47	368.19	0.757 *	0.000	5.00	16.650	12.60	421.6	0.0	947.2
25.00		1.00	0.95	31.894	35.08	368.12	0.762 *	0.000	5.00	16.265	12.40	435.0	0.0	925.1
30.00		1.00	0.98	33.142	36.46	366.26	0.768 *	0.000	5.00	15.880	12.20	444.9	0.0	902.9
35.00		1.00	1.01	34.235	37.66	363.12	0.775 *	0.000	5.00	15.495	12.01	452.1	0.0	880.8
40.00	RT3 RB4	1.00	1.04	35.211	38.73	358.99	0.782 *	0.000	5.00	15.110	11.81	457.4	0.0	858.7
44.50	Bot - Section 2	1.00	1.07	36.011	39.61	354.60	0.757 *	0.000	4.50	13.270	10.05	398.1	0.0	753.9
45.00		1.00	1.07	36.095	39.70	354.08	0.761 *	0.000	0.50	1.482	1.13	44.7	0.0	152.9
50.00	Top - Section 1	1.00	1.09	36.905	40.60	348.54	0.764 *	0.000	5.00	14.604	11.16	453.1	0.0	1507.1
55.00		1.00	1.12	37.653	41.42	349.05	0.766 *	0.000	5.00	14.219	10.90	451.4	0.0	674.2
60.00	RT4 RB5	1.00	1.14	38.349	42.18	342.59	0.774 *	0.000	5.00	13.834	10.70	451.4	0.0	655.8
65.00		1.00	1.16	39.001	42.90	335.73	0.781 *	0.000	5.00	13.448	10.50	450.6	0.0	637.3
67.50	RT5	1.00	1.17	39.312	43.24	332.17	0.787 *	0.000	2.50	6.580	5.18	223.9	0.0	311.8
70.00		1.00	1.17	39.614	43.58	328.53	0.791 *	0.000	2.50	6.484	5.13	223.5	0.0	307.1
75.00		1.00	1.19	40.194	44.21	321.02	0.730	0.000	5.00	12.678	9.26	409.2	0.0	600.5
80.00		1.00	1.21	40.743	44.82	313.24	0.730	0.000	5.00	12.293	8.97	402.2	0.0	582.0
85.00		1.00	1.22	41.267	45.39	305.21	0.730	0.000	5.00	11.908	8.69	394.6	0.0	563.6
90.00	Appurtenance(s)	1.00	1.24	41.766	45.94	296.96	0.730	0.000	5.00	11.523	8.41	386.5	0.0	545.2
90.50	Bot - Section 3	1.00	1.24	41.815	46.00	296.12	0.730	0.000	0.50	1.131	0.83	38.0	0.0	53.5
93.12	RB6	1.00	1.25	42.067	46.27	291.70	0.836 *	0.000	2.62	5.947	4.97	229.9	0.0	446.9
94.50	Top - Section 2	1.00	1.25	42.198	46.42	289.36	0.840 *	0.000	1.38	3.090	2.60	120.5	0.0	232.2
95.00		1.00	1.25	42.244	46.47	292.68	0.838 *	0.000	0.50	1.112	0.93	43.3	0.0	31.7
100.00	Appurtenance(s)	1.00	1.27	42.703	46.97	284.06	0.844 *	0.000	5.00	10.911	9.21	432.5	0.0	311.1
105.00		1.00	1.28	43.144	47.46	275.26	0.856 *	0.000	5.00	10.526	9.01	427.6	0.0	300.0
107.87	RT6	1.00	1.29	43.390	47.73	270.14	0.866 *	0.000	2.87	5.868	5.08	242.6	0.0	167.2
110.00		1.00	1.29	43.569	47.93	266.31	0.873 *	0.000	2.13	4.273	3.73	178.8	0.0	121.7
114.00	Appurtenance(s)	1.00	1.30	43.898	48.29	259.03	0.730	0.000	4.00	7.835	5.72	276.2	0.0	223.2
115.00		1.00	1.30	43.978	48.38	257.20	0.730	0.000	1.00	1.920	1.40	67.8	0.0	54.7
120.00		1.00	1.32	44.374	48.81	247.95	0.730	0.000	5.00	9.370	6.84	333.9	0.0	266.8
125.00	Appurtenance(s)	1.00	1.33	44.757	49.23	238.56	0.730	0.000	5.00	8.985	6.56	322.9	0.0	255.8
130.00		1.00	1.34	45.128	49.64	229.06	0.730	0.000	5.00	8.600	6.28	311.7	0.0	244.7
135.00	Appurtenance(s)	1.00	1.35	45.488	50.04	219.43	0.731 *	0.000	5.00	8.215	6.00	300.5	0.0	233.6
140.00		1.00	1.36	45.838	50.42	209.70	0.730	0.000	5.00	7.830	5.72	288.2	0.0	222.6
140.50		1.00	1.36	45.872	50.46	208.72	0.730	0.000	0.50	0.762	0.56	28.1	0.0	21.6
								Totals:	**140.50**			**11,372.0**		**17,967.8**

* Cf Adjusted by Linear Load Ra Effect

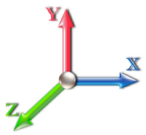
Discrete Appurtenance Forces

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Load Case: 1.2D + 1.0W 118 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

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	135.00	Commscope	3	45.488	50.037	0.73	0.80	0.70	39.60	0.000	0.000	34.97	0.00	0.00
2	135.00	Air 32	3	45.488	50.037	0.70	0.80	13.59	475.92	0.000	0.000	680.15	0.00	0.00
3	135.00	AIR6449 B41	3	45.488	50.037	0.64	0.80	10.85	370.80	0.000	0.000	542.80	0.00	0.00
4	135.00	APXVAARR24_43-U-NA2	3	45.488	50.037	0.56	0.80	34.00	460.80	0.000	0.000	1701.42	0.00	0.00
5	135.00	Sector Frame	3	45.488	50.037	0.56	0.75	25.31	2941.20	0.000	0.000	1266.56	0.00	0.00
6	135.00	Ericsson RRUS11 B4	3	45.488	50.037	0.40	0.80	3.08	158.40	0.000	0.000	154.31	0.00	0.00
7	135.00	Ericsson 4415 B25	3	45.488	50.037	0.40	0.80	2.23	158.76	0.000	0.000	111.68	0.00	0.00
8	135.00	Ericsson Radio 4449	3	45.488	50.037	0.40	0.80	1.98	252.00	0.000	0.000	99.07	0.00	0.00
9	125.00	Cci DMP65R-BU6DA	3	44.757	49.233	0.54	0.75	20.59	285.84	0.000	0.000	1013.71	0.00	0.00
10	125.00	Ericcson AIR6419 N77G	3	44.888	49.377	0.57	0.75	6.50	237.96	0.000	1.750	320.85	0.00	561.49
11	125.00	Ericcson AIR6449 N77D	3	44.618	49.080	0.64	0.75	7.90	316.80	0.000	-1.830	387.67	0.00	-709.43
12	125.00	Ericcson 4415	3	44.757	49.233	0.38	0.75	1.84	166.68	0.000	0.000	90.83	0.00	0.00
13	125.00	Quintel QD6616-7	3	44.757	49.233	0.56	0.75	22.92	186.84	0.000	0.000	1128.23	0.00	0.00
14	125.00	CCI DTMABP7819VG12A	6	44.757	49.233	0.38	0.75	2.56	136.80	0.000	0.000	126.28	0.00	0.00
15	125.00	Raycap DC6-48-60-18-8F	2	44.757	49.233	0.38	0.75	1.10	78.72	0.000	0.000	54.28	0.00	0.00
16	125.00	B14 4478	3	44.757	49.233	0.38	0.75	1.86	213.84	0.000	0.000	91.39	0.00	0.00
17	125.00	Ericcson 4449	3	44.757	49.233	0.38	0.75	1.86	252.00	0.000	0.000	91.39	0.00	0.00
18	125.00	Ericcson RRUS 32 B30	3	44.757	49.233	0.38	0.75	3.08	216.00	0.000	0.000	151.76	0.00	0.00
19	125.00	Raycap	1	44.757	49.233	0.75	0.75	0.85	31.44	0.000	0.000	42.09	0.00	0.00
20	125.00	RMQLP-4120-H10	1	44.757	49.233	1.00	1.00	55.40	4164.00	0.000	0.000	2727.50	0.00	0.00
21	125.00	RRUS 32 B66	3	44.757	49.233	0.38	0.75	3.08	190.80	0.000	0.000	151.76	0.00	0.00
22	125.00	DBC0061F1V51-2	6	44.757	49.233	0.38	0.75	0.97	182.88	0.000	0.000	47.63	0.00	0.00
23	125.00	Kathrein 782 10250	6	44.757	49.233	0.38	0.75	1.17	46.08	0.000	0.000	57.60	0.00	0.00
24	114.00	Low Profile Platform	1	43.898	48.287	1.00	1.00	25.00	2160.00	0.000	0.000	1207.18	0.00	0.00
25	114.00	20" x 18" x 9" Junction Box	1	43.898	48.287	0.40	0.80	1.26	24.00	0.000	0.000	60.84	0.00	0.00
26	114.00	Andrew VHLP1-23-DW1	1	44.257	48.682	1.00	1.00	1.61	16.80	0.000	4.500	78.38	0.00	352.70
27	114.00	Andrew VHLP2-23-DW1	1	44.257	48.682	1.00	1.00	4.69	37.20	0.000	4.500	228.32	0.00	1027.44
28	114.00	Argus LLPX310R-V1	3	43.938	48.332	0.55	0.80	7.14	182.52	0.000	0.500	344.96	0.00	172.48
29	114.00	Samsung	3	43.816	48.198	0.40	0.80	2.18	119.16	0.000	-1.000	105.26	0.00	-105.26
30	114.00	Alcatel Lucent	3	44.138	48.552	0.40	0.80	3.25	216.00	0.000	3.000	157.89	0.00	473.67
31	114.00	RFS APXVTM14	3	44.138	48.552	0.63	0.80	12.02	420.12	0.000	3.000	583.63	0.00	1750.88
32	114.00	RFS APXVSPP18	3	44.138	48.552	0.66	0.80	15.98	451.08	0.000	3.000	775.66	0.00	2326.98
33	114.00	Alcatel Lucent	3	44.138	48.552	0.40	0.80	4.86	252.00	0.000	3.000	235.96	0.00	707.89
34	114.00	Alcatel Lucent	3	43.775	48.153	0.40	0.80	2.88	230.40	0.000	-1.500	138.68	0.00	-208.02
35	100.00	JMA Wireless	3	42.703	46.973	0.55	0.75	20.80	232.20	0.000	0.000	976.85	0.00	0.00
36	100.00	Fujitsu TA08025-B605 -	3	42.703	46.973	0.38	0.75	2.21	270.00	0.000	0.000	103.58	0.00	0.00
37	100.00	Raycap	1	42.703	46.973	0.38	0.75	0.75	26.28	0.000	0.000	35.41	0.00	0.00
38	100.00	Fujitsu TA08025-B604 -	3	42.703	46.973	0.38	0.75	2.21	230.04	0.000	0.000	103.58	0.00	0.00
39	100.00	Platform w/HRK	1	42.703	46.973	1.00	1.00	37.59	2072.40	0.000	0.000	1765.73	0.00	0.00
40	90.00	RFS DB-T1-6Z-8AB-0Z	2	41.766	45.943	0.53	0.75	5.11	45.36	0.000	0.000	234.86	0.00	0.00
41	90.00	Alcatel Lucent B2/B66A	3	41.766	45.943	0.38	0.75	2.11	303.84	0.000	0.000	97.17	0.00	0.00
42	90.00	Samsung B5/B13	3	41.766	45.943	0.38	0.75	2.11	253.08	0.000	0.000	97.17	0.00	0.00
43	90.00	XXDWMM-12.5-65-8T	3	41.766	45.943	0.55	0.75	2.55	314.28	0.000	0.000	117.04	0.00	0.00
44	90.00	L-Sub6 Antenna	3	41.766	45.943	0.63	0.75	7.62	293.76	0.000	0.000	349.93	0.00	0.00
45	90.00	SLCP 2x6014	3	41.766	45.943	0.67	0.75	13.00	72.00	0.000	0.000	597.09	0.00	0.00
46	90.00	SBNHH-1D65B w/ Mount	6	41.766	45.943	0.62	0.75	30.48	288.00	0.000	0.000	1400.23	0.00	0.00
47	90.00	Platform w/ Hand Rails	1	41.766	45.943	1.00	1.00	40.00	2640.00	0.000	0.000	1837.72	0.00	0.00

Discrete Appurtenance Forces

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Totals:	**22,714.68**	**22,707.08**

Total Applied Force Summary

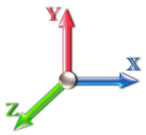
Structure:	CT16504-A-SBA		**Code:**	TIA-222-H	2/15/2022
Site Name:	Manchester 12, CT		**Exposure:**	C	
Height:	140.50 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 12

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 118 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



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
1.00		83.70	252.63	0.00	0.00
5.00		332.31	1001.66	0.00	0.00
10.00		409.80	1232.16	0.00	0.00
15.00		403.60	1210.04	0.00	0.00
20.00		421.64	1187.92	0.00	0.00
25.00		435.02	1165.80	0.00	0.00
30.00		444.87	1143.68	0.00	0.00
35.00		452.13	1121.56	0.00	0.00
40.00		457.40	1099.44	0.00	0.00
44.50		398.07	970.58	0.00	0.00
45.00		44.74	177.01	0.00	0.00
50.00		453.10	1747.84	0.00	0.00
55.00		451.36	914.94	0.00	0.00
60.00		451.40	896.51	0.00	0.00
65.00		450.63	878.07	0.00	0.00
67.50		223.92	432.12	0.00	0.00
70.00		223.50	427.51	0.00	0.00
75.00		409.19	841.20	0.00	0.00
80.00		402.19	822.77	0.00	0.00
85.00		394.59	804.34	0.00	0.00
90.00	(24) attachments	5117.66	4996.22	0.00	0.00
90.50		37.98	68.77	0.00	0.00
93.12		229.93	526.92	0.00	0.00
94.50		120.49	274.28	0.00	0.00
95.00		43.29	46.98	0.00	0.00
100.00	(11) attachments	3417.64	3294.63	0.00	0.00
105.00		427.62	446.65	0.00	0.00
107.87		242.61	251.38	0.00	0.00
110.00		178.79	184.21	0.00	0.00
114.00	(25) attachments	4192.96	4449.79	0.00	6498.77
115.00		67.82	74.99	0.00	0.00
120.00		333.89	368.33	0.00	0.00
125.00	(49) attachments	6805.92	7063.95	0.00	-147.94
130.00		311.65	265.09	0.00	0.00
135.00	(24) attachments	4891.42	5111.51	0.00	0.00
140.00		288.20	222.57	0.00	0.00
140.50		28.06	21.65	0.00	0.00
	Totals:	**34,079.10**	**45,995.72**	**0.00**	**6,350.83**

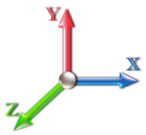
Linear Appurtenance Segment Forces (Factored)

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Load Case: 1.2D + 1.0W 118 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



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)
1.00	1 1/4" Fiber	Yes	1.00	0.000	0.00	0.00	0.00	0.104	1.012	28.680	0.00	1.58
1.00	1 5/8" Fiber	Yes	1.00	0.000	1.98	0.17	0.00	0.104	1.012	28.680	0.00	2.50
1.00	1.25" Reinforcing	Yes	1.00	0.000	1.25	0.10	0.00	0.104	1.012	28.680	0.00	0.00
1.00	1.25" Reinforcing	Yes	1.00	0.000	1.25	0.10	0.00	0.104	1.012	28.680	0.00	0.00
5.00	1 1/4" Fiber	Yes	4.00	0.000	0.00	0.00	0.00	0.105	1.015	28.680	0.00	6.34
5.00	1 5/8" Fiber	Yes	4.00	0.000	1.98	0.66	0.00	0.105	1.015	28.680	0.00	9.98
5.00	1.25" Reinforcing	Yes	4.00	0.000	1.25	0.42	0.00	0.105	1.015	28.680	0.00	0.00
5.00	1.25" Reinforcing	Yes	4.00	0.000	1.25	0.42	0.00	0.105	1.015	28.680	0.00	0.00
10.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.107	1.021	28.680	0.00	7.92
10.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.107	1.021	28.680	0.00	12.48
10.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.107	1.021	28.680	0.00	0.00
10.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.107	1.021	28.680	0.00	0.00
15.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.110	1.029	28.680	0.00	7.92
15.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.110	1.029	28.680	0.00	12.48
15.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.110	1.029	28.680	0.00	0.00
15.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.110	1.029	28.680	0.00	0.00
20.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.112	1.036	30.430	0.00	7.92
20.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.112	1.036	30.430	0.00	12.48
20.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.112	1.036	30.430	0.00	0.00
20.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.112	1.036	30.430	0.00	0.00
25.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.115	1.044	31.894	0.00	7.92
25.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.115	1.044	31.894	0.00	12.48
25.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.115	1.044	31.894	0.00	0.00
25.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.115	1.044	31.894	0.00	0.00
30.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.118	1.053	33.142	0.00	7.92
30.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.118	1.053	33.142	0.00	12.48
30.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.118	1.053	33.142	0.00	0.00
30.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.118	1.053	33.142	0.00	0.00
35.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.120	1.061	34.235	0.00	7.92
35.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.120	1.061	34.235	0.00	12.48
35.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.120	1.061	34.235	0.00	0.00
35.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.120	1.061	34.235	0.00	0.00
40.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.124	1.071	35.211	0.00	7.92
40.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.124	1.071	35.211	0.00	12.48
40.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.124	1.071	35.211	0.00	0.00
40.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.124	1.071	35.211	0.00	0.00
44.50	1 1/4" Fiber	Yes	4.50	0.000	0.00	0.00	0.00	0.112	1.037	36.011	0.00	7.13
44.50	1 5/8" Fiber	Yes	4.50	0.000	1.98	0.74	0.00	0.112	1.037	36.011	0.00	11.23
44.50	1" Reinforcing plate	Yes	4.50	0.000	1.00	0.38	0.00	0.112	1.037	36.011	0.00	0.00
44.50	1" Reinforcing plate	Yes	4.50	0.000	1.00	0.38	0.00	0.112	1.037	36.011	0.00	0.00
45.00	1 1/4" Fiber	Yes	0.50	0.000	0.00	0.00	0.00	0.114	1.042	36.095	0.00	0.79
45.00	1 5/8" Fiber	Yes	0.50	0.000	1.98	0.08	0.00	0.114	1.042	36.095	0.00	1.25
45.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.114	1.042	36.095	0.00	0.00
45.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.114	1.042	36.095	0.00	0.00
50.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.116	1.047	36.905	0.00	7.92
50.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.116	1.047	36.905	0.00	12.48
50.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.116	1.047	36.905	0.00	0.00

Linear Appurtenance Segment Forces (Factored)

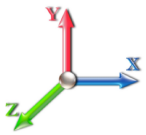
Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 118 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



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)
50.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.116	1.047	36.905	0.00	0.00
55.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.117	1.050	37.653	0.00	7.92
55.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.117	1.050	37.653	0.00	12.48
55.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.117	1.050	37.653	0.00	0.00
55.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.117	1.050	37.653	0.00	0.00
60.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.120	1.060	38.349	0.00	7.92
60.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.120	1.060	38.349	0.00	12.48
60.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.120	1.060	38.349	0.00	0.00
60.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.120	1.060	38.349	0.00	0.00
65.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.123	1.070	39.001	0.00	7.92
65.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.123	1.070	39.001	0.00	12.48
65.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.123	1.070	39.001	0.00	0.00
65.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.123	1.070	39.001	0.00	0.00
67.50	1 1/4" Fiber	Yes	2.50	0.000	0.00	0.00	0.00	0.126	1.078	39.312	0.00	3.96
67.50	1 5/8" Fiber	Yes	2.50	0.000	1.98	0.41	0.00	0.126	1.078	39.312	0.00	6.24
67.50	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.126	1.078	39.312	0.00	0.00
67.50	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.126	1.078	39.312	0.00	0.00
70.00	1 1/4" Fiber	Yes	2.50	0.000	0.00	0.00	0.00	0.128	1.084	39.614	0.00	3.96
70.00	1 5/8" Fiber	Yes	2.50	0.000	1.98	0.41	0.00	0.128	1.084	39.614	0.00	6.24
70.00	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.128	1.084	39.614	0.00	0.00
70.00	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.128	1.084	39.614	0.00	0.00
75.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.065	0.000	40.194	0.00	7.92
75.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.065	0.000	40.194	0.00	12.48
80.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.067	0.000	40.743	0.00	7.92
80.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.067	0.000	40.743	0.00	12.48
85.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.069	0.000	41.267	0.00	7.92
85.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.069	0.000	41.267	0.00	12.48
90.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.072	0.000	41.766	0.00	7.92
90.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.072	0.000	41.766	0.00	12.48
90.50	1 1/4" Fiber	Yes	0.50	0.000	0.00	0.00	0.00	0.073	0.000	41.815	0.00	0.79
90.50	1 5/8" Fiber	Yes	0.50	0.000	1.98	0.08	0.00	0.073	0.000	41.815	0.00	1.25
93.12	1 1/4" Fiber	Yes	2.62	0.000	0.00	0.00	0.00	0.148	1.145	42.067	0.00	4.15
93.12	1 5/8" Fiber	Yes	2.62	0.000	1.98	0.43	0.00	0.148	1.145	42.067	0.00	6.54
93.12	1" Reinforcing plate	Yes	2.62	0.000	1.00	0.22	0.00	0.148	1.145	42.067	0.00	0.00
93.12	1" Reinforcing plate	Yes	2.62	0.000	1.00	0.22	0.00	0.148	1.145	42.067	0.00	0.00
94.50	1 1/4" Fiber	Yes	1.38	0.000	0.00	0.00	0.00	0.150	1.151	42.198	0.00	2.19
94.50	1 5/8" Fiber	Yes	1.38	0.000	1.98	0.23	0.00	0.150	1.151	42.198	0.00	3.44
94.50	1" Reinforcing plate	Yes	1.38	0.000	1.00	0.11	0.00	0.150	1.151	42.198	0.00	0.00
94.50	1" Reinforcing plate	Yes	1.38	0.000	1.00	0.11	0.00	0.150	1.151	42.198	0.00	0.00
95.00	1 1/4" Fiber	Yes	0.50	0.000	0.00	0.00	0.00	0.149	1.147	42.244	0.00	0.79
95.00	1 5/8" Fiber	Yes	0.50	0.000	1.98	0.08	0.00	0.149	1.147	42.244	0.00	1.25
95.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.149	1.147	42.244	0.00	0.00
95.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.149	1.147	42.244	0.00	0.00
100.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.152	1.156	42.703	0.00	7.92
100.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.152	1.156	42.703	0.00	12.48
100.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.152	1.156	42.703	0.00	0.00
100.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.152	1.156	42.703	0.00	0.00

Linear Appurtenance Segment Forces (Factored)

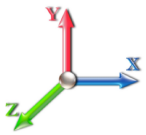
Structure:	CT16504-A-SBA	**Code:**	TIA-222-H		2/15/2022
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 15

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 118 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



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)
105.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.158	1.173	43.144	0.00	7.92
105.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.158	1.173	43.144	0.00	12.48
105.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.158	1.173	43.144	0.00	0.00
105.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.158	1.173	43.144	0.00	0.00
107.87	1 1/4" Fiber	Yes	2.87	0.000	0.00	0.00	0.00	0.162	1.187	43.390	0.00	4.55
107.87	1 5/8" Fiber	Yes	2.87	0.000	1.98	0.47	0.00	0.162	1.187	43.390	0.00	7.16
107.87	1" Reinforcing plate	Yes	2.87	0.000	1.00	0.24	0.00	0.162	1.187	43.390	0.00	0.00
107.87	1" Reinforcing plate	Yes	2.87	0.000	1.00	0.24	0.00	0.162	1.187	43.390	0.00	0.00
110.00	1 1/4" Fiber	Yes	2.13	0.000	0.00	0.00	0.00	0.165	1.196	43.569	0.00	3.37
110.00	1 5/8" Fiber	Yes	2.13	0.000	1.98	0.35	0.00	0.165	1.196	43.569	0.00	5.32
110.00	1" Reinforcing plate	Yes	2.13	0.000	1.00	0.18	0.00	0.165	1.196	43.569	0.00	0.00
110.00	1" Reinforcing plate	Yes	2.13	0.000	1.00	0.18	0.00	0.165	1.196	43.569	0.00	0.00
114.00	1 1/4" Fiber	Yes	4.00	0.000	0.00	0.00	0.00	0.095	0.000	43.898	0.00	6.34
114.00	1 5/8" Fiber	Yes	4.00	0.000	1.98	0.66	0.00	0.095	0.000	43.898	0.00	9.98
114.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.095	0.000	43.898	0.00	0.00
114.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.095	0.000	43.898	0.00	0.00
115.00	1 1/4" Fiber	Yes	1.00	0.000	0.00	0.00	0.00	0.086	0.000	43.978	0.00	1.58
115.00	1 5/8" Fiber	Yes	1.00	0.000	1.98	0.17	0.00	0.086	0.000	43.978	0.00	2.50
120.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.088	0.000	44.374	0.00	7.92
120.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.088	0.000	44.374	0.00	12.48
125.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.092	0.000	44.757	0.00	7.92
125.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.092	0.000	44.757	0.00	12.48
130.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.096	0.000	45.128	0.00	7.92
130.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.096	0.000	45.128	0.00	12.48
135.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.100	1.001	45.488	0.00	7.92
135.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.100	1.001	45.488	0.00	12.48
										Totals:	**0.0**	**550.8**

Calculated Forces

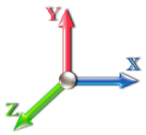
Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 1.2D + 1.0W 118 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

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	-45.98	-34.11	0.00	-3606.8	0.00	3606.83	3592.24	880.75	3081.19	3113.33	0.00	0.000	0.000	0.815
1.00	-45.64	-34.13	0.00	-3572.7	0.00	3572.73	3581.26	876.95	3054.64	3090.29	0.01	-0.063	0.000	0.721
5.00	-44.49	-33.99	0.00	-3436.1	0.00	3436.19	3536.93	861.73	2949.58	2998.63	0.15	-0.283	0.000	0.709
10.00	-43.10	-33.78	0.00	-3266.2	0.00	3266.23	3480.64	842.72	2820.85	2885.21	0.60	-0.559	0.000	0.694
15.00	-41.73	-33.57	0.00	-3097.3	0.00	3097.32	3423.37	823.70	2694.99	2773.12	1.33	-0.837	0.000	0.678
20.00	-40.38	-33.33	0.00	-2929.4	0.00	2929.49	3365.12	804.69	2572.00	2662.41	2.36	-1.115	0.000	0.702
25.00	-39.06	-33.07	0.00	-2762.8	0.00	2762.85	3305.89	785.67	2451.88	2553.15	3.68	-1.412	0.000	0.684
30.00	-37.76	-32.79	0.00	-2597.5	0.00	2597.50	3245.52	766.66	2334.64	2445.26	5.32	-1.709	0.000	0.665
35.00	-36.48	-32.49	0.00	-2433.5	0.00	2433.55	3165.03	747.64	2220.26	2324.87	7.27	-2.007	0.000	0.648
40.00	-35.24	-32.18	0.00	-2271.0	0.00	2271.09	3084.53	728.63	2108.76	2207.52	9.53	-2.303	0.000	0.688
44.50	-34.19	-31.83	0.00	-2126.3	0.00	2126.30	3012.08	711.52	2010.87	2104.51	11.84	-2.594	0.000	0.669
45.00	-33.92	-31.88	0.00	-2110.3	0.00	2110.39	3004.03	709.61	2000.14	2093.21	12.11	-2.627	0.000	0.659
50.00	-32.03	-31.52	0.00	-1950.9	0.00	1950.97	2423.81	587.47	1644.99	1680.79	15.03	-2.943	0.000	0.666
55.00	-30.96	-31.20	0.00	-1793.3	0.00	1793.36	2376.14	571.62	1557.44	1602.88	18.28	-3.256	0.000	0.684
60.00	-29.92	-30.86	0.00	-1637.3	0.00	1637.38	2327.49	555.78	1472.29	1526.13	21.87	-3.587	0.000	0.649
65.00	-28.94	-30.48	0.00	-1483.0	0.00	1483.06	2277.86	539.93	1389.54	1450.59	25.79	-3.910	0.000	0.611
67.50	-28.44	-30.31	0.00	-1406.8	0.00	1406.87	2252.16	532.01	1349.06	1412.97	27.88	-4.072	0.000	0.591
67.50	-28.44	-30.31	0.00	-1406.8	0.00	1406.87	2252.16	532.01	1349.06	1412.97	27.88	-4.072	0.000	0.591
70.00	-27.85	-30.22	0.00	-1331.1	0.00	1331.10	2218.62	524.08	1309.17	1370.99	30.06	-4.231	0.000	0.987
75.00	-26.78	-29.99	0.00	-1180.0	0.00	1180.01	2151.54	508.24	1231.20	1288.93	34.76	-4.753	0.000	0.931
80.00	-25.74	-29.74	0.00	-1030.0	0.00	1030.08	2084.46	492.39	1155.63	1209.39	40.01	-5.257	0.000	0.868
85.00	-24.74	-29.47	0.00	-881.39	0.00	881.39	2017.38	476.55	1082.45	1132.40	45.77	-5.736	0.000	0.794
90.00	-20.20	-23.94	0.00	-734.06	0.00	734.06	1950.30	460.70	1011.66	1057.93	52.01	-6.183	0.000	0.707
90.50	-20.08	-23.95	0.00	-722.09	0.00	722.09	1943.59	459.12	1004.71	1050.62	52.66	-6.227	0.000	0.700
93.12	-19.52	-23.71	0.00	-659.35	0.00	659.35	1908.44	450.81	968.70	1012.75	56.13	-6.451	0.000	0.371
94.50	-19.25	-23.57	0.00	-626.63	0.00	626.63	1035.36	273.09	592.44	557.40	58.00	-6.516	0.000	0.409
95.00	-19.14	-23.57	0.00	-614.85	0.00	614.85	1033.16	272.13	588.32	554.27	58.68	-6.539	0.000	0.503
100.00	-16.18	-19.86	0.00	-496.99	0.00	496.99	1010.63	262.63	547.93	523.10	65.66	-6.800	0.000	0.421
105.00	-15.73	-19.43	0.00	-397.68	0.00	397.68	987.11	253.12	508.98	492.30	72.89	-7.029	0.000	0.352
107.87	-15.48	-19.19	0.00	-341.91	0.00	341.91	973.17	247.66	487.27	474.80	77.14	-7.147	0.000	0.311
107.87	-15.48	-19.19	0.00	-341.91	0.00	341.91	973.17	247.66	487.27	474.80	77.14	-7.147	0.000	0.311
110.00	-15.25	-19.04	0.00	-301.04	0.00	301.04	962.61	243.61	471.46	461.91	80.34	-7.227	0.000	0.674
114.00	-11.33	-14.35	0.00	-218.37	0.00	218.37	942.31	236.01	442.48	437.94	86.52	-7.541	0.000	0.514
115.00	-11.22	-14.31	0.00	-204.03	0.00	204.03	937.13	234.11	435.38	431.99	88.10	-7.610	0.000	0.488
120.00	-10.85	-13.97	0.00	-132.50	0.00	132.50	910.67	224.60	400.73	402.61	96.21	-7.893	0.000	0.345
125.00	-4.78	-6.26	0.00	-62.64	0.00	62.64	883.23	215.09	367.52	373.80	104.56	-8.079	0.000	0.174
130.00	-4.56	-5.92	0.00	-31.35	0.00	31.35	854.80	205.58	335.75	345.64	113.05	-8.180	0.000	0.097
135.00	-0.20	-0.35	0.00	-1.75	0.00	1.75	825.39	196.08	305.42	318.16	121.62	-8.221	0.000	0.006
140.00	-0.02	-0.03	0.00	-0.02	0.00	0.02	789.80	186.57	276.52	289.54	130.20	-8.224	0.000	0.000
140.50	0.00	-0.03	0.00	0.00	0.00	0.00	785.78	185.62	273.70	286.58	131.06	-8.224	0.000	0.000

Wind Loading - Shaft

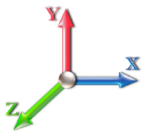
Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 118 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 25

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	RB1	1.00	0.85	28.680	31.55	390.90	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
1.00	RT1 RB2	1.00	0.85	28.680	31.55	389.23	0.739 *	0.000	1.00	3.592	2.65	83.7	0.0	153.4
5.00		1.00	0.85	28.680	31.55	382.54	0.741 *	0.000	4.00	14.214	10.53	332.3	0.0	606.8
10.00		1.00	0.85	28.680	31.55	374.17	0.746 *	0.000	5.00	17.421	12.99	409.8	0.0	743.6
15.00		1.00	0.85	28.680	31.55	365.81	0.751 *	0.000	5.00	17.036	12.79	403.6	0.0	727.0
20.00	RT2 RB3	1.00	0.90	30.430	33.47	368.19	0.757 *	0.000	5.00	16.650	12.60	421.6	0.0	710.4
25.00		1.00	0.95	31.894	35.08	368.12	0.762 *	0.000	5.00	16.265	12.40	435.0	0.0	693.8
30.00		1.00	0.98	33.142	36.46	366.26	0.768 *	0.000	5.00	15.880	12.20	444.9	0.0	677.2
35.00		1.00	1.01	34.235	37.66	363.12	0.775 *	0.000	5.00	15.495	12.01	452.1	0.0	660.6
40.00	RT3 RB4	1.00	1.04	35.211	38.73	358.99	0.782 *	0.000	5.00	15.110	11.81	457.4	0.0	644.0
44.50	Bot - Section 2	1.00	1.07	36.011	39.61	354.60	0.757 *	0.000	4.50	13.270	10.05	398.1	0.0	565.4
45.00		1.00	1.07	36.095	39.70	354.08	0.761 *	0.000	0.50	1.482	1.13	44.7	0.0	114.7
50.00	Top - Section 1	1.00	1.09	36.905	40.60	348.54	0.764 *	0.000	5.00	14.604	11.16	453.1	0.0	1130.3
55.00		1.00	1.12	37.653	41.42	349.05	0.766 *	0.000	5.00	14.219	10.90	451.4	0.0	505.7
60.00	RT4 RB5	1.00	1.14	38.349	42.18	342.59	0.774 *	0.000	5.00	13.834	10.70	451.4	0.0	491.8
65.00		1.00	1.16	39.001	42.90	335.73	0.781 *	0.000	5.00	13.448	10.50	450.6	0.0	478.0
67.50	RT5	1.00	1.17	39.312	43.24	332.17	0.787 *	0.000	2.50	6.580	5.18	223.9	0.0	233.8
70.00		1.00	1.17	39.614	43.58	328.53	0.791 *	0.000	2.50	6.484	5.13	223.5	0.0	230.4
75.00		1.00	1.19	40.194	44.21	321.02	0.730	0.000	5.00	12.678	9.26	409.2	0.0	450.4
80.00		1.00	1.21	40.743	44.82	313.24	0.730	0.000	5.00	12.293	8.97	402.2	0.0	436.5
85.00		1.00	1.22	41.267	45.39	305.21	0.730	0.000	5.00	11.908	8.69	394.6	0.0	422.7
90.00	Appurtenance(s)	1.00	1.24	41.766	45.94	296.96	0.730	0.000	5.00	11.523	8.41	386.5	0.0	408.9
90.50	Bot - Section 3	1.00	1.24	41.815	46.00	296.12	0.730	0.000	0.50	1.131	0.83	38.0	0.0	40.1
93.12	RB6	1.00	1.25	42.067	46.27	291.70	0.836 *	0.000	2.62	5.947	4.97	229.9	0.0	335.2
94.50	Top - Section 2	1.00	1.25	42.198	46.42	289.36	0.840 *	0.000	1.38	3.090	2.60	120.5	0.0	174.1
95.00		1.00	1.25	42.244	46.47	292.68	0.838 *	0.000	0.50	1.112	0.93	43.3	0.0	23.8
100.00	Appurtenance(s)	1.00	1.27	42.703	46.97	284.06	0.844 *	0.000	5.00	10.911	9.21	432.5	0.0	233.3
105.00		1.00	1.28	43.144	47.46	275.26	0.856 *	0.000	5.00	10.526	9.01	427.6	0.0	225.0
107.87	RT6	1.00	1.29	43.390	47.73	270.14	0.866 *	0.000	2.87	5.868	5.08	242.6	0.0	125.4
110.00		1.00	1.29	43.569	47.93	266.31	0.873 *	0.000	2.13	4.273	3.73	178.8	0.0	91.3
114.00	Appurtenance(s)	1.00	1.30	43.898	48.29	259.03	0.730	0.000	4.00	7.835	5.72	276.2	0.0	167.4
115.00		1.00	1.30	43.978	48.38	257.20	0.730	0.000	1.00	1.920	1.40	67.8	0.0	41.0
120.00		1.00	1.32	44.374	48.81	247.95	0.730	0.000	5.00	9.370	6.84	333.9	0.0	200.1
125.00	Appurtenance(s)	1.00	1.33	44.757	49.23	238.56	0.730	0.000	5.00	8.985	6.56	322.9	0.0	191.8
130.00		1.00	1.34	45.128	49.64	229.06	0.730	0.000	5.00	8.600	6.28	311.7	0.0	183.5
135.00	Appurtenance(s)	1.00	1.35	45.488	50.04	219.43	0.731 *	0.000	5.00	8.215	6.00	300.5	0.0	175.2
140.00		1.00	1.36	45.838	50.42	209.70	0.730	0.000	5.00	7.830	5.72	288.2	0.0	166.9
140.50		1.00	1.36	45.872	50.46	208.72	0.730	0.000	0.50	0.762	0.56	28.1	0.0	16.2
								Totals:	**140.50**			**11,372.0**		**13,475.8**

* Cf Adjusted by Linear Load Ra Effect

Discrete Appurtenance Forces

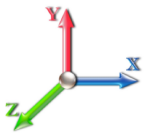
Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 118 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 25

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	135.00	Commscope	3	45.488	50.037	0.73	0.80	0.70	29.70	0.000	0.000	34.97	0.00	0.00
2	135.00	Air 32	3	45.488	50.037	0.70	0.80	13.59	356.94	0.000	0.000	680.15	0.00	0.00
3	135.00	AIR6449 B41	3	45.488	50.037	0.64	0.80	10.85	278.10	0.000	0.000	542.80	0.00	0.00
4	135.00	APXVAARR24_43-U-NA2	3	45.488	50.037	0.56	0.80	34.00	345.60	0.000	0.000	1701.42	0.00	0.00
5	135.00	Sector Frame	3	45.488	50.037	0.56	0.75	25.31	2205.90	0.000	0.000	1266.56	0.00	0.00
6	135.00	Ericsson RRUS11 B4	3	45.488	50.037	0.40	0.80	3.08	118.80	0.000	0.000	154.31	0.00	0.00
7	135.00	Ericsson 4415 B25	3	45.488	50.037	0.40	0.80	2.23	119.07	0.000	0.000	111.68	0.00	0.00
8	135.00	Ericsson Radio 4449	3	45.488	50.037	0.40	0.80	1.98	189.00	0.000	0.000	99.07	0.00	0.00
9	125.00	Cci DMP65R-BU6DA	3	44.757	49.233	0.54	0.75	20.59	214.38	0.000	0.000	1013.71	0.00	0.00
10	125.00	Ericcson AIR6419 N77G	3	44.888	49.377	0.57	0.75	6.50	178.47	0.000	1.750	320.85	0.00	561.49
11	125.00	Ericcson AIR6449 N77D	3	44.618	49.080	0.64	0.75	7.90	237.60	0.000	-1.830	387.67	0.00	-709.43
12	125.00	Ericcson 4415	3	44.757	49.233	0.38	0.75	1.84	125.01	0.000	0.000	90.83	0.00	0.00
13	125.00	Quintel QD6616-7	3	44.757	49.233	0.56	0.75	22.92	140.13	0.000	0.000	1128.23	0.00	0.00
14	125.00	CCI DTMABP7819VG12A	6	44.757	49.233	0.38	0.75	2.56	102.60	0.000	0.000	126.28	0.00	0.00
15	125.00	Raycap DC6-48-60-18-8F	2	44.757	49.233	0.38	0.75	1.10	59.04	0.000	0.000	54.28	0.00	0.00
16	125.00	B14 4478	3	44.757	49.233	0.38	0.75	1.86	160.38	0.000	0.000	91.39	0.00	0.00
17	125.00	Ericcson 4449	3	44.757	49.233	0.38	0.75	1.86	189.00	0.000	0.000	91.39	0.00	0.00
18	125.00	Ericcson RRUS 32 B30	3	44.757	49.233	0.38	0.75	3.08	162.00	0.000	0.000	151.76	0.00	0.00
19	125.00	Raycap	1	44.757	49.233	0.75	0.75	0.85	23.58	0.000	0.000	42.09	0.00	0.00
20	125.00	RMQLP-4120-H10	1	44.757	49.233	1.00	1.00	55.40	3123.00	0.000	0.000	2727.50	0.00	0.00
21	125.00	RRUS 32 B66	3	44.757	49.233	0.38	0.75	3.08	143.10	0.000	0.000	151.76	0.00	0.00
22	125.00	DBC0061F1V51-2	6	44.757	49.233	0.38	0.75	0.97	137.16	0.000	0.000	47.63	0.00	0.00
23	125.00	Kathrein 782 10250	6	44.757	49.233	0.38	0.75	1.17	34.56	0.000	0.000	57.60	0.00	0.00
24	114.00	Low Profile Platform	1	43.898	48.287	1.00	1.00	25.00	1620.00	0.000	0.000	1207.18	0.00	0.00
25	114.00	20" x 18" x 9" Junction Box	1	43.898	48.287	0.40	0.80	1.26	18.00	0.000	0.000	60.84	0.00	0.00
26	114.00	Andrew VHLP1-23-DW1	1	44.257	48.682	1.00	1.00	1.61	12.60	0.000	4.500	78.38	0.00	352.70
27	114.00	Andrew VHLP2-23-DW1	1	44.257	48.682	1.00	1.00	4.69	27.90	0.000	4.500	228.32	0.00	1027.44
28	114.00	Argus LLPX310R-V1	3	43.938	48.332	0.55	0.80	7.14	136.89	0.000	0.500	344.96	0.00	172.48
29	114.00	Samsung	3	43.816	48.198	0.40	0.80	2.18	89.37	0.000	-1.000	105.26	0.00	-105.26
30	114.00	Alcatel Lucent	3	44.138	48.552	0.40	0.80	3.25	162.00	0.000	3.000	157.89	0.00	473.67
31	114.00	RFS APXVTM14	3	44.138	48.552	0.63	0.80	12.02	315.09	0.000	3.000	583.63	0.00	1750.88
32	114.00	RFS APXVSPP18	3	44.138	48.552	0.66	0.80	15.98	338.31	0.000	3.000	775.66	0.00	2326.98
33	114.00	Alcatel Lucent	3	44.138	48.552	0.40	0.80	4.86	189.00	0.000	3.000	235.96	0.00	707.89
34	114.00	Alcatel Lucent	3	43.775	48.153	0.40	0.80	2.88	172.80	0.000	-1.500	138.68	0.00	-208.02
35	100.00	JMA Wireless	3	42.703	46.973	0.55	0.75	20.80	174.15	0.000	0.000	976.85	0.00	0.00
36	100.00	Fujitsu TA08025-B605 -	3	42.703	46.973	0.38	0.75	2.21	202.50	0.000	0.000	103.58	0.00	0.00
37	100.00	Raycap	1	42.703	46.973	0.38	0.75	0.75	19.71	0.000	0.000	35.41	0.00	0.00
38	100.00	Fujitsu TA08025-B604 -	3	42.703	46.973	0.38	0.75	2.21	172.53	0.000	0.000	103.58	0.00	0.00
39	100.00	Platform w/HRK	1	42.703	46.973	1.00	1.00	37.59	1554.30	0.000	0.000	1765.73	0.00	0.00
40	90.00	RFS DB-T1-6Z-8AB-0Z	2	41.766	45.943	0.53	0.75	5.11	34.02	0.000	0.000	234.86	0.00	0.00
41	90.00	Alcatel Lucent B2/B66A	3	41.766	45.943	0.38	0.75	2.11	227.88	0.000	0.000	97.17	0.00	0.00
42	90.00	Samsung B5/B13	3	41.766	45.943	0.38	0.75	2.11	189.81	0.000	0.000	97.17	0.00	0.00
43	90.00	XXDWMM-12.5-65-8T	3	41.766	45.943	0.55	0.75	2.55	235.71	0.000	0.000	117.04	0.00	0.00
44	90.00	L-Sub6 Antenna	3	41.766	45.943	0.63	0.75	7.62	220.32	0.000	0.000	349.93	0.00	0.00
45	90.00	SLCP 2x6014	3	41.766	45.943	0.67	0.75	13.00	54.00	0.000	0.000	597.09	0.00	0.00
46	90.00	SBNHH-1D65B w/ Mount	6	41.766	45.943	0.62	0.75	30.48	216.00	0.000	0.000	1400.23	0.00	0.00
47	90.00	Platform w/ Hand Rails	1	41.766	45.943	1.00	1.00	40.00	1980.00	0.000	0.000	1837.72	0.00	0.00

Discrete Appurtenance Forces

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Totals:	**17,036.01**	**22,707.08**

Total Applied Force Summary

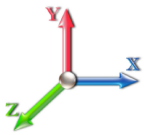
Structure:	CT16504-A-SBA		**Code:**	TIA-222-H	2/15/2022
Site Name:	Manchester 12, CT		**Exposure:**	C	
Height:	140.50 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 20

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 118 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



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
1.00		83.70	189.47	0.00	0.00
5.00		332.31	751.24	0.00	0.00
10.00		409.80	924.12	0.00	0.00
15.00		403.60	907.53	0.00	0.00
20.00		421.64	890.94	0.00	0.00
25.00		435.02	874.35	0.00	0.00
30.00		444.87	857.76	0.00	0.00
35.00		452.13	841.17	0.00	0.00
40.00		457.40	824.58	0.00	0.00
44.50		398.07	727.94	0.00	0.00
45.00		44.74	132.76	0.00	0.00
50.00		453.10	1310.88	0.00	0.00
55.00		451.36	686.20	0.00	0.00
60.00		451.40	672.38	0.00	0.00
65.00		450.63	658.55	0.00	0.00
67.50		223.92	324.09	0.00	0.00
70.00		223.50	320.64	0.00	0.00
75.00		409.19	630.90	0.00	0.00
80.00		402.19	617.08	0.00	0.00
85.00		394.59	603.25	0.00	0.00
90.00	(24) attachments	5117.66	3747.17	0.00	0.00
90.50		37.98	51.58	0.00	0.00
93.12		229.93	395.19	0.00	0.00
94.50		120.49	205.71	0.00	0.00
95.00		43.29	35.23	0.00	0.00
100.00	(11) attachments	3417.64	2470.97	0.00	0.00
105.00		427.62	334.99	0.00	0.00
107.87		242.61	188.53	0.00	0.00
110.00		178.79	138.16	0.00	0.00
114.00	(25) attachments	4192.96	3337.34	0.00	6498.77
115.00		67.82	56.25	0.00	0.00
120.00		333.89	276.25	0.00	0.00
125.00	(49) attachments	6805.92	5297.97	0.00	-147.94
130.00		311.65	198.82	0.00	0.00
135.00	(24) attachments	4891.42	3833.63	0.00	0.00
140.00		288.20	166.93	0.00	0.00
140.50		28.06	16.24	0.00	0.00
	Totals:	**34,079.10**	**34,496.79**	**0.00**	**6,350.83**

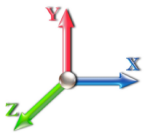
Linear Appurtenance Segment Forces (Factored)

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Load Case: 0.9D + 1.0W 118 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



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)
1.00	1 1/4" Fiber	Yes	1.00	0.000	0.00	0.00	0.00	0.104	1.012	28.680	0.00	1.19
1.00	1 5/8" Fiber	Yes	1.00	0.000	1.98	0.17	0.00	0.104	1.012	28.680	0.00	1.87
1.00	1.25" Reinforcing	Yes	1.00	0.000	1.25	0.10	0.00	0.104	1.012	28.680	0.00	0.00
1.00	1.25" Reinforcing	Yes	1.00	0.000	1.25	0.10	0.00	0.104	1.012	28.680	0.00	0.00
5.00	1 1/4" Fiber	Yes	4.00	0.000	0.00	0.00	0.00	0.105	1.015	28.680	0.00	4.75
5.00	1 5/8" Fiber	Yes	4.00	0.000	1.98	0.66	0.00	0.105	1.015	28.680	0.00	7.49
5.00	1.25" Reinforcing	Yes	4.00	0.000	1.25	0.42	0.00	0.105	1.015	28.680	0.00	0.00
5.00	1.25" Reinforcing	Yes	4.00	0.000	1.25	0.42	0.00	0.105	1.015	28.680	0.00	0.00
10.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.107	1.021	28.680	0.00	5.94
10.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.107	1.021	28.680	0.00	9.36
10.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.107	1.021	28.680	0.00	0.00
10.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.107	1.021	28.680	0.00	0.00
15.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.110	1.029	28.680	0.00	5.94
15.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.110	1.029	28.680	0.00	9.36
15.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.110	1.029	28.680	0.00	0.00
15.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.110	1.029	28.680	0.00	0.00
20.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.112	1.036	30.430	0.00	5.94
20.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.112	1.036	30.430	0.00	9.36
20.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.112	1.036	30.430	0.00	0.00
20.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.112	1.036	30.430	0.00	0.00
25.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.115	1.044	31.894	0.00	5.94
25.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.115	1.044	31.894	0.00	9.36
25.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.115	1.044	31.894	0.00	0.00
25.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.115	1.044	31.894	0.00	0.00
30.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.118	1.053	33.142	0.00	5.94
30.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.118	1.053	33.142	0.00	9.36
30.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.118	1.053	33.142	0.00	0.00
30.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.118	1.053	33.142	0.00	0.00
35.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.120	1.061	34.235	0.00	5.94
35.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.120	1.061	34.235	0.00	9.36
35.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.120	1.061	34.235	0.00	0.00
35.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.120	1.061	34.235	0.00	0.00
40.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.124	1.071	35.211	0.00	5.94
40.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.124	1.071	35.211	0.00	9.36
40.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.124	1.071	35.211	0.00	0.00
40.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.124	1.071	35.211	0.00	0.00
44.50	1 1/4" Fiber	Yes	4.50	0.000	0.00	0.00	0.00	0.112	1.037	36.011	0.00	5.35
44.50	1 5/8" Fiber	Yes	4.50	0.000	1.98	0.74	0.00	0.112	1.037	36.011	0.00	8.42
44.50	1" Reinforcing plate	Yes	4.50	0.000	1.00	0.38	0.00	0.112	1.037	36.011	0.00	0.00
44.50	1" Reinforcing plate	Yes	4.50	0.000	1.00	0.38	0.00	0.112	1.037	36.011	0.00	0.00
45.00	1 1/4" Fiber	Yes	0.50	0.000	0.00	0.00	0.00	0.114	1.042	36.095	0.00	0.59
45.00	1 5/8" Fiber	Yes	0.50	0.000	1.98	0.08	0.00	0.114	1.042	36.095	0.00	0.94
45.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.114	1.042	36.095	0.00	0.00
45.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.114	1.042	36.095	0.00	0.00
50.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.116	1.047	36.905	0.00	5.94
50.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.116	1.047	36.905	0.00	9.36
50.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.116	1.047	36.905	0.00	0.00

Linear Appurtenance Segment Forces (Factored)

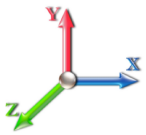
Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 118 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



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)
50.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.116	1.047	36.905	0.00	0.00
55.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.117	1.050	37.653	0.00	5.94
55.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.117	1.050	37.653	0.00	9.36
55.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.117	1.050	37.653	0.00	0.00
55.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.117	1.050	37.653	0.00	0.00
60.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.120	1.060	38.349	0.00	5.94
60.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.120	1.060	38.349	0.00	9.36
60.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.120	1.060	38.349	0.00	0.00
60.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.120	1.060	38.349	0.00	0.00
65.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.123	1.070	39.001	0.00	5.94
65.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.123	1.070	39.001	0.00	9.36
65.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.123	1.070	39.001	0.00	0.00
65.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.123	1.070	39.001	0.00	0.00
67.50	1 1/4" Fiber	Yes	2.50	0.000	0.00	0.00	0.00	0.126	1.078	39.312	0.00	2.97
67.50	1 5/8" Fiber	Yes	2.50	0.000	1.98	0.41	0.00	0.126	1.078	39.312	0.00	4.68
67.50	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.126	1.078	39.312	0.00	0.00
67.50	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.126	1.078	39.312	0.00	0.00
70.00	1 1/4" Fiber	Yes	2.50	0.000	0.00	0.00	0.00	0.128	1.084	39.614	0.00	2.97
70.00	1 5/8" Fiber	Yes	2.50	0.000	1.98	0.41	0.00	0.128	1.084	39.614	0.00	4.68
70.00	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.128	1.084	39.614	0.00	0.00
70.00	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.128	1.084	39.614	0.00	0.00
75.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.065	0.000	40.194	0.00	5.94
75.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.065	0.000	40.194	0.00	9.36
80.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.067	0.000	40.743	0.00	5.94
80.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.067	0.000	40.743	0.00	9.36
85.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.069	0.000	41.267	0.00	5.94
85.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.069	0.000	41.267	0.00	9.36
90.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.072	0.000	41.766	0.00	5.94
90.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.072	0.000	41.766	0.00	9.36
90.50	1 1/4" Fiber	Yes	0.50	0.000	0.00	0.00	0.00	0.073	0.000	41.815	0.00	0.59
90.50	1 5/8" Fiber	Yes	0.50	0.000	1.98	0.08	0.00	0.073	0.000	41.815	0.00	0.94
93.12	1 1/4" Fiber	Yes	2.62	0.000	0.00	0.00	0.00	0.148	1.145	42.067	0.00	3.11
93.12	1 5/8" Fiber	Yes	2.62	0.000	1.98	0.43	0.00	0.148	1.145	42.067	0.00	4.90
93.12	1" Reinforcing plate	Yes	2.62	0.000	1.00	0.22	0.00	0.148	1.145	42.067	0.00	0.00
93.12	1" Reinforcing plate	Yes	2.62	0.000	1.00	0.22	0.00	0.148	1.145	42.067	0.00	0.00
94.50	1 1/4" Fiber	Yes	1.38	0.000	0.00	0.00	0.00	0.150	1.151	42.198	0.00	1.64
94.50	1 5/8" Fiber	Yes	1.38	0.000	1.98	0.23	0.00	0.150	1.151	42.198	0.00	2.58
94.50	1" Reinforcing plate	Yes	1.38	0.000	1.00	0.11	0.00	0.150	1.151	42.198	0.00	0.00
94.50	1" Reinforcing plate	Yes	1.38	0.000	1.00	0.11	0.00	0.150	1.151	42.198	0.00	0.00
95.00	1 1/4" Fiber	Yes	0.50	0.000	0.00	0.00	0.00	0.149	1.147	42.244	0.00	0.59
95.00	1 5/8" Fiber	Yes	0.50	0.000	1.98	0.08	0.00	0.149	1.147	42.244	0.00	0.94
95.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.149	1.147	42.244	0.00	0.00
95.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.149	1.147	42.244	0.00	0.00
100.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.152	1.156	42.703	0.00	5.94
100.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.152	1.156	42.703	0.00	9.36
100.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.152	1.156	42.703	0.00	0.00
100.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.152	1.156	42.703	0.00	0.00

Linear Appurtenance Segment Forces (Factored)

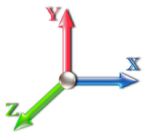
Structure:	CT16504-A-SBA	**Code:**	TIA-222-H		2/15/2022
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 23

Tower Engineering Solutions

Load Case: 0.9D + 1.0W 118 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



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)
105.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.158	1.173	43.144	0.00	5.94
105.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.158	1.173	43.144	0.00	9.36
105.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.158	1.173	43.144	0.00	0.00
105.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.158	1.173	43.144	0.00	0.00
107.87	1 1/4" Fiber	Yes	2.87	0.000	0.00	0.00	0.00	0.162	1.187	43.390	0.00	3.41
107.87	1 5/8" Fiber	Yes	2.87	0.000	1.98	0.47	0.00	0.162	1.187	43.390	0.00	5.37
107.87	1" Reinforcing plate	Yes	2.87	0.000	1.00	0.24	0.00	0.162	1.187	43.390	0.00	0.00
107.87	1" Reinforcing plate	Yes	2.87	0.000	1.00	0.24	0.00	0.162	1.187	43.390	0.00	0.00
110.00	1 1/4" Fiber	Yes	2.13	0.000	0.00	0.00	0.00	0.165	1.196	43.569	0.00	2.53
110.00	1 5/8" Fiber	Yes	2.13	0.000	1.98	0.35	0.00	0.165	1.196	43.569	0.00	3.99
110.00	1" Reinforcing plate	Yes	2.13	0.000	1.00	0.18	0.00	0.165	1.196	43.569	0.00	0.00
110.00	1" Reinforcing plate	Yes	2.13	0.000	1.00	0.18	0.00	0.165	1.196	43.569	0.00	0.00
114.00	1 1/4" Fiber	Yes	4.00	0.000	0.00	0.00	0.00	0.095	0.000	43.898	0.00	4.75
114.00	1 5/8" Fiber	Yes	4.00	0.000	1.98	0.66	0.00	0.095	0.000	43.898	0.00	7.49
114.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.095	0.000	43.898	0.00	0.00
114.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.095	0.000	43.898	0.00	0.00
115.00	1 1/4" Fiber	Yes	1.00	0.000	0.00	0.00	0.00	0.086	0.000	43.978	0.00	1.19
115.00	1 5/8" Fiber	Yes	1.00	0.000	1.98	0.17	0.00	0.086	0.000	43.978	0.00	1.87
120.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.088	0.000	44.374	0.00	5.94
120.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.088	0.000	44.374	0.00	9.36
125.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.092	0.000	44.757	0.00	5.94
125.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.092	0.000	44.757	0.00	9.36
130.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.096	0.000	45.128	0.00	5.94
130.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.096	0.000	45.128	0.00	9.36
135.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.100	1.001	45.488	0.00	5.94
135.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.100	1.001	45.488	0.00	9.36
										Totals:	**0.0**	**413.1**

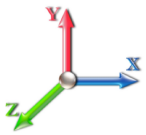
Calculated Forces

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Load Case: 0.9D + 1.0W 118 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.00



Iterations 25

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	-34.48	-34.10	0.00	-3547.2	0.00	3547.21	3592.24	880.75	3081.19	3113.33	0.00	0.000	0.000	0.799
1.00	-34.20	-34.10	0.00	-3513.1	0.00	3513.12	3581.26	876.95	3054.64	3090.29	0.01	-0.062	0.000	0.707
5.00	-33.31	-33.91	0.00	-3376.7	0.00	3376.72	3536.93	861.73	2949.58	2998.63	0.15	-0.279	0.000	0.695
10.00	-32.23	-33.64	0.00	-3207.2	0.00	3207.20	3480.64	842.72	2820.85	2885.21	0.59	-0.550	0.000	0.680
15.00	-31.17	-33.38	0.00	-3038.9	0.00	3038.99	3423.37	823.70	2694.99	2773.12	1.31	-0.822	0.000	0.663
20.00	-30.12	-33.09	0.00	-2872.1	0.00	2872.10	3365.12	804.69	2572.00	2662.41	2.32	-1.095	0.000	0.687
25.00	-29.09	-32.78	0.00	-2706.6	0.00	2706.66	3305.89	785.67	2451.88	2553.15	3.62	-1.386	0.000	0.669
30.00	-28.08	-32.46	0.00	-2542.7	0.00	2542.75	3245.52	766.66	2334.64	2445.26	5.22	-1.677	0.000	0.649
35.00	-27.09	-32.12	0.00	-2380.4	0.00	2380.45	3165.03	747.64	2220.26	2324.87	7.14	-1.968	0.000	0.633
40.00	-26.13	-31.76	0.00	-2219.8	0.00	2219.86	3084.53	728.63	2108.76	2207.52	9.35	-2.258	0.000	0.670
44.50	-25.33	-31.40	0.00	-2076.9	0.00	2076.94	3012.08	711.52	2010.87	2104.51	11.62	-2.542	0.000	0.652
45.00	-25.11	-31.43	0.00	-2061.2	0.00	2061.24	3004.03	709.61	2000.14	2093.21	11.88	-2.574	0.000	0.642
50.00	-23.65	-31.04	0.00	-1904.1	0.00	1904.10	2423.81	587.47	1644.99	1680.79	14.75	-2.883	0.000	0.648
55.00	-22.82	-30.68	0.00	-1748.9	0.00	1748.90	2376.14	571.62	1557.44	1602.88	17.93	-3.188	0.000	0.666
60.00	-22.01	-30.31	0.00	-1595.5	0.00	1595.51	2327.49	555.78	1472.29	1526.13	21.44	-3.511	0.000	0.630
65.00	-21.26	-29.91	0.00	-1443.9	0.00	1443.95	2277.86	539.93	1389.54	1450.59	25.28	-3.826	0.000	0.593
67.50	-20.87	-29.72	0.00	-1369.1	0.00	1369.18	2252.16	532.01	1349.06	1412.97	27.33	-3.983	0.000	0.573
67.50	-20.87	-29.72	0.00	-1369.1	0.00	1369.18	2252.16	532.01	1349.06	1412.97	27.33	-3.983	0.000	0.573
70.00	-20.39	-29.59	0.00	-1294.8	0.00	1294.89	2218.62	524.08	1309.17	1370.99	29.45	-4.138	0.000	0.957
75.00	-19.54	-29.31	0.00	-1146.9	0.00	1146.93	2151.54	508.24	1231.20	1288.93	34.05	-4.645	0.000	0.902
80.00	-18.72	-29.01	0.00	-1000.3	0.00	1000.39	2084.46	492.39	1155.63	1209.39	39.18	-5.135	0.000	0.840
85.00	-17.93	-28.70	0.00	-855.33	0.00	855.33	2017.38	476.55	1082.45	1132.40	44.80	-5.600	0.000	0.768
90.00	-14.63	-23.29	0.00	-711.81	0.00	711.81	1950.30	460.70	1011.66	1057.93	50.89	-6.034	0.000	0.683
90.50	-14.53	-23.28	0.00	-700.17	0.00	700.17	1943.59	459.12	1004.71	1050.62	51.53	-6.077	0.000	0.676
93.12	-14.10	-23.04	0.00	-639.17	0.00	639.17	1908.44	450.81	968.70	1012.75	54.92	-6.294	0.000	0.358
94.50	-13.90	-22.91	0.00	-607.37	0.00	607.37	1035.36	273.09	592.44	557.40	56.74	-6.357	0.000	0.395
95.00	-13.81	-22.90	0.00	-595.91	0.00	595.91	1033.16	272.13	588.32	554.27	57.41	-6.379	0.000	0.486
100.00	-11.66	-19.27	0.00	-481.41	0.00	481.41	1010.63	262.63	547.93	523.10	64.21	-6.632	0.000	0.406
105.00	-11.32	-18.84	0.00	-385.05	0.00	385.05	987.11	253.12	508.98	492.30	71.27	-6.854	0.000	0.339
107.87	-11.14	-18.60	0.00	-330.97	0.00	330.97	973.17	247.66	487.27	474.80	75.41	-6.968	0.000	0.299
107.87	-11.14	-18.60	0.00	-330.97	0.00	330.97	973.17	247.66	487.27	474.80	75.41	-6.968	0.000	0.299
110.00	-10.96	-18.44	0.00	-291.36	0.00	291.36	962.61	243.61	471.46	461.91	78.53	-7.046	0.000	0.648
114.00	-8.13	-13.89	0.00	-211.10	0.00	211.10	942.31	236.01	442.48	437.94	84.56	-7.349	0.000	0.494
115.00	-8.04	-13.84	0.00	-197.22	0.00	197.22	937.13	234.11	435.38	431.99	86.10	-7.416	0.000	0.469
120.00	-7.75	-13.50	0.00	-128.03	0.00	128.03	910.67	224.60	400.73	402.61	94.00	-7.689	0.000	0.330
125.00	-3.41	-6.05	0.00	-60.52	0.00	60.52	883.23	215.09	367.52	373.80	102.14	-7.869	0.000	0.167
130.00	-3.25	-5.72	0.00	-30.29	0.00	30.29	854.80	205.58	335.75	345.64	110.41	-7.967	0.000	0.092
135.00	-0.14	-0.34	0.00	-1.71	0.00	1.71	825.39	196.08	305.42	318.16	118.75	-8.007	0.000	0.006
140.00	-0.01	-0.03	0.00	-0.02	0.00	0.02	789.80	186.57	276.52	289.54	127.11	-8.009	0.000	0.000
140.50	0.00	-0.03	0.00	0.00	0.00	0.00	785.78	185.62	273.70	286.58	127.95	-8.009	0.000	0.000

Wind Loading - Shaft

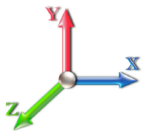
Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

IES Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

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	RB1	1.00	0.85	5.149	5.66	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
1.00	RT1 RB2	1.00	0.85	5.149	5.66	0.00	1.214 *	1.057	1.00	3.768	4.58	25.9	57.5	262.0
5.00		1.00	0.85	5.149	5.66	0.00	1.218 *	1.242	4.00	15.042	18.32	103.8	266.8	1075.9
10.00		1.00	0.85	5.149	5.66	0.00	1.226 *	1.331	5.00	18.530	22.71	128.7	350.6	1342.1
15.00		1.00	0.85	5.149	5.66	0.00	1.234 *	1.386	5.00	18.191	22.46	127.2	357.7	1327.0
20.00	RT2 RB3	1.00	0.90	5.464	6.01	0.00	1.244 *	1.427	5.00	17.839	22.18	133.3	360.3	1307.5
25.00		1.00	0.95	5.726	6.30	0.00	1.253 *	1.459	5.00	17.481	21.91	138.0	360.4	1285.5
30.00		1.00	0.98	5.951	6.55	0.00	1.263 *	1.486	5.00	17.118	21.62	141.5	358.9	1261.8
35.00		1.00	1.01	6.147	6.76	0.00	1.274 *	1.509	5.00	16.752	21.34	144.3	356.0	1236.9
40.00	RT3 RB4	1.00	1.04	6.322	6.95	0.00	1.285 *	1.529	5.00	16.384	21.05	146.4	352.3	1211.0
44.50	Bot - Section 2	1.00	1.07	6.466	7.11	0.00	1.245 *	1.546	4.50	14.429	17.96	127.8	313.5	1067.4
45.00		1.00	1.07	6.481	7.13	0.00	1.250 *	1.547	0.50	1.611	2.01	14.4	35.4	188.3
50.00	Top - Section 1	1.00	1.09	6.626	7.29	0.00	1.256 *	1.564	5.00	15.907	19.98	145.7	348.9	1856.0
55.00		1.00	1.12	6.760	7.44	0.00	1.260 *	1.579	5.00	15.534	19.57	145.5	343.3	1017.5
60.00	RT4 RB5	1.00	1.14	6.885	7.57	0.00	1.272 *	1.592	5.00	15.161	19.28	146.0	337.4	993.2
65.00		1.00	1.16	7.002	7.70	0.00	1.284 *	1.605	5.00	14.786	18.98	146.2	331.1	968.4
67.50	RT5	1.00	1.17	7.058	7.76	0.00	1.294 *	1.611	2.50	7.251	9.38	72.8	163.9	475.6
70.00		1.00	1.17	7.113	7.82	0.00	1.300 *	1.617	2.50	7.157	9.31	72.8	162.2	469.4
75.00		1.00	1.19	7.217	7.94	0.00	1.200	1.628	5.00	14.035	16.84	133.7	317.5	918.0
80.00		1.00	1.21	7.315	8.05	0.00	1.200	1.639	5.00	13.659	16.39	131.9	310.3	892.3
85.00		1.00	1.22	7.409	8.15	0.00	1.200	1.649	5.00	13.282	15.94	129.9	302.9	866.5
90.00	Appurtenance(s)	1.00	1.24	7.499	8.25	0.00	1.200	1.658	5.00	12.905	15.49	127.7	295.3	840.4
90.50	Bot - Section 3	1.00	1.24	7.508	8.26	0.00	1.200	1.659	0.50	1.269	1.52	12.6	29.4	83.0
93.12	RB6	1.00	1.25	7.553	8.31	0.00	1.373 *	1.664	2.62	6.674	9.17	76.2	154.2	601.2
94.50	Top - Section 2	1.00	1.25	7.576	8.33	0.00	1.381 *	1.666	1.38	3.473	4.80	40.0	80.6	312.8
95.00		1.00	1.25	7.585	8.34	0.00	1.377 *	1.667	0.50	1.251	1.72	14.4	29.1	60.9
100.00	Appurtenance(s)	1.00	1.27	7.667	8.43	0.00	1.387 *	1.676	5.00	12.308	17.07	144.0	283.4	594.4
105.00		1.00	1.28	7.746	8.52	0.00	1.407 *	1.684	5.00	11.929	16.79	143.0	275.3	575.2
107.87	RT6	1.00	1.29	7.790	8.57	0.00	1.424 *	1.689	2.87	6.676	9.51	81.5	155.3	322.5
110.00		1.00	1.29	7.823	8.60	0.00	1.435 *	1.692	2.13	4.874	6.99	60.2	113.7	235.5
114.00	Appurtenance(s)	1.00	1.30	7.882	8.67	0.00	1.200	1.698	4.00	8.967	10.76	93.3	208.2	431.4
115.00		1.00	1.30	7.896	8.69	0.00	1.200	1.699	1.00	2.204	2.64	23.0	51.7	106.4
120.00		1.00	1.32	7.967	8.76	0.00	1.200	1.707	5.00	10.793	12.95	113.5	250.0	516.8
125.00	Appurtenance(s)	1.00	1.33	8.036	8.84	0.00	1.200	1.714	5.00	10.413	12.50	110.5	241.3	497.1
130.00		1.00	1.34	8.103	8.91	0.00	1.200	1.720	5.00	10.034	12.04	107.3	232.5	477.2
135.00	Appurtenance(s)	1.00	1.35	8.167	8.98	0.00	1.202 *	1.727	5.00	9.654	11.60	104.2	223.6	457.2
140.00		1.00	1.36	8.230	9.05	0.00	1.200	1.733	5.00	9.274	11.13	100.8	214.6	437.2
140.50		1.00	1.36	8.236	9.06	0.00	1.200	1.734	0.50	0.906	1.09	9.9	21.4	43.0
								Totals:	**140.50**			**3,717.6**		**26,614.3**

* Cf Adjusted by Linear Load Ra Effect

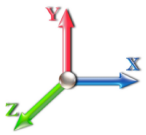
Discrete Appurtenance Forces

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

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	135.00	Commscope	3	8.167	8.984	0.73	0.80	1.27	63.61	0.000	0.000	11.37	0.00	0.00
2	135.00	Air 32	3	8.167	8.984	0.70	0.80	16.03	1022.20	0.000	0.000	144.02	0.00	0.00
3	135.00	AIR6449 B41	3	8.167	8.984	0.65	0.80	12.85	823.83	0.000	0.000	115.49	0.00	0.00
4	135.00	APXVAARR24_43-U-NA2	3	8.167	8.984	0.56	0.80	37.16	1699.80	0.000	0.000	333.85	0.00	0.00
5	135.00	Sector Frame	3	8.167	8.984	0.56	0.75	37.90	5638.45	0.000	0.000	340.51	0.00	0.00
6	135.00	Ericsson RRUS11 B4	3	8.167	8.984	0.40	0.80	3.85	302.43	0.000	0.000	34.60	0.00	0.00
7	135.00	Ericsson 4415 B25	3	8.167	8.984	0.40	0.80	2.91	268.99	0.000	0.000	26.16	0.00	0.00
8	135.00	Ericsson Radio 4449	3	8.167	8.984	0.40	0.80	2.62	454.05	0.000	0.000	23.52	0.00	0.00
9	125.00	Cci DMP65R-BU6DA	3	8.036	8.840	0.54	0.75	22.92	951.61	0.000	0.000	202.59	0.00	0.00
10	125.00	Ericcson AIR6419 N77G	3	8.060	8.865	0.57	0.75	7.83	453.27	0.000	1.750	69.45	0.00	121.55
11	125.00	Ericcson AIR6449 N77D	3	8.011	8.812	0.64	0.75	9.51	720.63	0.000	-1.830	83.77	0.00	-153.31
12	125.00	Ericcson 4415	3	8.036	8.840	0.38	0.75	2.45	325.69	0.000	0.000	21.65	0.00	0.00
13	125.00	Quintel QD6616-7	3	8.036	8.840	0.59	0.75	40.27	2658.85	0.000	0.000	355.99	0.00	0.00
14	125.00	CCI DTMABP7819VG12A	6	8.036	8.840	0.38	0.75	4.27	252.29	0.000	0.000	37.70	0.00	0.00
15	125.00	Raycap DC6-48-60-18-8F	2	8.036	8.840	0.38	0.75	1.62	164.73	0.000	0.000	14.30	0.00	0.00
16	125.00	B14 4478	3	8.036	8.840	0.38	0.75	2.45	392.87	0.000	0.000	21.65	0.00	0.00
17	125.00	Ericcson 4449	3	8.036	8.840	0.38	0.75	2.45	452.11	0.000	0.000	21.65	0.00	0.00
18	125.00	Ericcson RRUS 32 B30	3	8.036	8.840	0.38	0.75	3.89	474.13	0.000	0.000	34.35	0.00	0.00
19	125.00	Raycap	1	8.036	8.840	0.75	0.75	2.02	118.41	0.000	0.000	17.89	0.00	0.00
20	125.00	RMQLP-4120-H10	1	8.036	8.840	1.00	1.00	95.65	8301.89	0.000	0.000	845.54	0.00	0.00
21	125.00	RRUS 32 B66	3	8.036	8.840	0.38	0.75	3.89	448.93	0.000	0.000	34.35	0.00	0.00
22	125.00	DBC0061F1V51-2	6	8.036	8.840	0.38	0.75	1.60	247.54	0.000	0.000	14.12	0.00	0.00
23	125.00	Kathrein 782 10250	6	8.036	8.840	0.38	0.75	2.43	99.81	0.000	0.000	21.46	0.00	0.00
24	114.00	Low Profile Platform	1	7.882	8.670	1.00	1.00	45.38	3288.17	0.000	0.000	393.40	0.00	0.00
25	114.00	20" x 18" x 9" Junction Box	1	7.882	8.670	0.40	0.80	1.75	100.45	0.000	0.000	15.16	0.00	0.00
26	114.00	Andrew VHLP1-23-DW1	1	7.946	8.741	1.00	1.00	2.35	41.15	0.000	4.500	20.52	0.00	92.36
27	114.00	Andrew VHLP2-23-DW1	1	7.946	8.741	1.00	1.00	5.93	104.41	0.000	4.500	51.85	0.00	233.34
28	114.00	Argus LLPX310R-V1	3	7.889	8.678	0.55	0.80	8.68	499.21	0.000	0.500	75.36	0.00	37.68
29	114.00	Samsung	3	7.867	8.654	0.40	0.80	3.32	209.87	0.000	-1.000	28.76	0.00	-28.76
30	114.00	Alcatel Lucent	3	7.925	8.717	0.40	0.80	4.73	382.41	0.000	3.000	41.21	0.00	123.63
31	114.00	RFS APXVTM14	3	7.925	8.717	0.63	0.80	14.07	885.77	0.000	3.000	122.66	0.00	367.98
32	114.00	RFS APXVSPP18	3	7.925	8.717	0.66	0.80	18.48	1030.87	0.000	3.000	161.10	0.00	483.30
33	114.00	Alcatel Lucent	3	7.925	8.717	0.40	0.80	5.81	572.60	0.000	3.000	50.62	0.00	151.87
34	114.00	Alcatel Lucent	3	7.860	8.646	0.40	0.80	4.19	389.44	0.000	-1.500	36.20	0.00	-54.29
35	100.00	JMA Wireless	3	7.667	8.434	0.55	0.75	23.14	868.54	0.000	0.000	195.14	0.00	0.00
36	100.00	Fujitsu TA08025-B605 -	3	7.667	8.434	0.38	0.75	2.81	382.88	0.000	0.000	23.71	0.00	0.00
37	100.00	Raycap	1	7.667	8.434	0.38	0.75	0.96	64.71	0.000	0.000	8.08	0.00	0.00
38	100.00	Fujitsu TA08025-B604 -	3	7.667	8.434	0.38	0.75	2.81	339.59	0.000	0.000	23.71	0.00	0.00
39	100.00	Platform w/HRK	1	7.667	8.434	1.00	1.00	82.95	3320.17	0.000	0.000	699.57	0.00	0.00
40	90.00	RFS DB-T1-6Z-8AB-0Z	2	7.499	8.249	0.53	0.75	6.13	221.26	0.000	0.000	50.56	0.00	0.00
41	90.00	Alcatel Lucent B2/B66A	3	7.499	8.249	0.38	0.75	2.70	344.36	0.000	0.000	22.31	0.00	0.00
42	90.00	Samsung B5/B13	3	7.499	8.249	0.38	0.75	2.70	356.92	0.000	0.000	22.31	0.00	0.00
43	90.00	XXDWMM-12.5-65-8T	3	7.499	8.249	0.56	0.75	3.43	460.88	0.000	0.000	28.28	0.00	0.00
44	90.00	L-Sub6 Antenna	3	7.499	8.249	0.63	0.75	9.10	525.81	0.000	0.000	75.08	0.00	0.00
45	90.00	SLCP 2x6014	3	7.499	8.249	0.67	0.75	16.94	423.19	0.000	0.000	139.77	0.00	0.00
46	90.00	SBNHH-1D65B w/ Mount	6	7.499	8.249	0.62	0.75	35.07	1435.07	0.000	0.000	289.33	0.00	0.00
47	90.00	Platform w/ Hand Rails	1	7.499	8.249	1.00	1.00	59.90	4628.96	0.000	0.000	494.11	0.00	0.00

Discrete Appurtenance Forces

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Totals:	**47,212.78**	**5,894.77**

Total Applied Force Summary

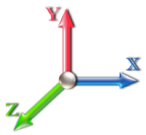
Structure:	CT16504-A-SBA		**Code:**	TIA-222-H	2/15/2022
Site Name:	Manchester 12, CT		**Exposure:**	C	
Height:	140.50 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 28

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



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
1.00		25.92	327.10	0.00	0.00
5.00		103.79	1351.56	0.00	0.00
10.00		128.65	1696.40	0.00	0.00
15.00		127.20	1687.59	0.00	0.00
20.00		133.33	1672.81	0.00	0.00
25.00		137.99	1654.57	0.00	0.00
30.00		141.54	1634.04	0.00	0.00
35.00		144.27	1611.87	0.00	0.00
40.00		146.38	1588.46	0.00	0.00
44.50		127.75	1402.64	0.00	0.00
45.00		14.35	225.60	0.00	0.00
50.00		145.66	2230.63	0.00	0.00
55.00		145.54	1394.01	0.00	0.00
60.00		146.01	1371.29	0.00	0.00
65.00		146.23	1348.09	0.00	0.00
67.50		72.83	665.86	0.00	0.00
70.00		72.82	659.93	0.00	0.00
75.00		133.70	1241.08	0.00	0.00
80.00		131.89	1216.16	0.00	0.00
85.00		129.90	1190.99	0.00	0.00
90.00	(24) attachments	1249.48	9562.01	0.00	0.00
90.50		12.58	106.66	0.00	0.00
93.12		76.15	757.04	0.00	0.00
94.50		39.97	394.97	0.00	0.00
95.00		14.37	90.64	0.00	0.00
100.00	(11) attachments	1094.20	5869.30	0.00	0.00
105.00		143.04	869.23	0.00	0.00
107.87		81.46	491.54	0.00	0.00
110.00		60.19	361.11	0.00	0.00
114.00	(25) attachments	1090.14	8128.92	0.00	1407.11
115.00		22.97	144.15	0.00	0.00
120.00		113.50	706.04	0.00	0.00
125.00	(49) attachments	1906.94	16749.54	0.00	-31.76
130.00		107.32	586.27	0.00	0.00
135.00	(24) attachments	1133.71	10840.12	0.00	0.00
140.00		100.75	437.17	0.00	0.00
140.50		9.85	43.02	0.00	0.00
	Totals:	**9,612.38**	**82,308.40**	**0.00**	**1,375.35**

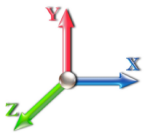
Linear Appurtenance Segment Forces (Factored)

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 29	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



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)
1.00	1 1/4" Fiber	Yes	1.00	0.000	0.00	0.00	0.00	0.104	1.012	5.149	0.00	5.90
1.00	1 5/8" Fiber	Yes	1.00	0.000	1.98	0.34	0.00	0.104	1.012	5.149	0.00	7.77
1.00	1.25" Reinforcing	Yes	1.00	0.000	1.25	0.28	0.00	0.104	1.012	5.149	0.00	3.68
1.00	1.25" Reinforcing	Yes	1.00	0.000	1.25	0.28	0.00	0.104	1.012	5.149	0.00	3.68
5.00	1 1/4" Fiber	Yes	4.00	0.000	0.00	0.00	0.00	0.105	1.015	5.149	0.00	27.46
5.00	1 5/8" Fiber	Yes	4.00	0.000	1.98	1.49	0.00	0.105	1.015	5.149	0.00	35.44
5.00	1.25" Reinforcing	Yes	4.00	0.000	1.25	1.24	0.00	0.105	1.015	5.149	0.00	18.24
5.00	1.25" Reinforcing	Yes	4.00	0.000	1.25	1.24	0.00	0.105	1.015	5.149	0.00	18.24
10.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.107	1.021	5.149	0.00	36.80
10.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	1.93	0.00	0.107	1.021	5.149	0.00	47.08
10.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	1.63	0.00	0.107	1.021	5.149	0.00	25.07
10.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	1.63	0.00	0.107	1.021	5.149	0.00	25.07
15.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.110	1.029	5.149	0.00	38.38
15.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	1.98	0.00	0.110	1.029	5.149	0.00	48.84
15.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	1.68	0.00	0.110	1.029	5.149	0.00	26.52
15.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	1.68	0.00	0.110	1.029	5.149	0.00	26.52
20.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.112	1.036	5.464	0.00	39.56
20.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.01	0.00	0.112	1.036	5.464	0.00	50.16
20.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	1.71	0.00	0.112	1.036	5.464	0.00	27.61
20.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	1.71	0.00	0.112	1.036	5.464	0.00	27.61
25.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.115	1.044	5.726	0.00	40.52
25.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.04	0.00	0.115	1.044	5.726	0.00	51.22
25.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	1.74	0.00	0.115	1.044	5.726	0.00	28.49
25.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	1.74	0.00	0.115	1.044	5.726	0.00	28.49
30.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.118	1.053	5.951	0.00	41.32
30.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.06	0.00	0.118	1.053	5.951	0.00	52.12
30.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	1.76	0.00	0.118	1.053	5.951	0.00	29.23
30.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	1.76	0.00	0.118	1.053	5.951	0.00	29.23
35.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.120	1.061	6.147	0.00	42.02
35.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.08	0.00	0.120	1.061	6.147	0.00	52.90
35.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	1.78	0.00	0.120	1.061	6.147	0.00	29.88
35.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	1.78	0.00	0.120	1.061	6.147	0.00	29.88
40.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.124	1.071	6.322	0.00	42.64
40.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.10	0.00	0.124	1.071	6.322	0.00	53.58
40.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	1.80	0.00	0.124	1.071	6.322	0.00	30.45
40.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	1.80	0.00	0.124	1.071	6.322	0.00	30.45
44.50	1 1/4" Fiber	Yes	4.50	0.000	0.00	0.00	0.00	0.112	1.037	6.466	0.00	38.83
44.50	1 5/8" Fiber	Yes	4.50	0.000	1.98	1.90	0.00	0.112	1.037	6.466	0.00	48.73
44.50	1" Reinforcing plate	Yes	4.50	0.000	1.00	1.53	0.00	0.112	1.037	6.466	0.00	24.70
44.50	1" Reinforcing plate	Yes	4.50	0.000	1.00	1.53	0.00	0.112	1.037	6.466	0.00	24.70
45.00	1 1/4" Fiber	Yes	0.50	0.000	0.00	0.00	0.00	0.114	1.042	6.481	0.00	4.32
45.00	1 5/8" Fiber	Yes	0.50	0.000	1.98	0.21	0.00	0.114	1.042	6.481	0.00	5.42
45.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.17	0.00	0.114	1.042	6.481	0.00	2.75
45.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.17	0.00	0.114	1.042	6.481	0.00	2.75
50.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.116	1.047	6.626	0.00	43.71
50.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.13	0.00	0.116	1.047	6.626	0.00	54.77
50.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.72	0.00	0.116	1.047	6.626	0.00	27.93

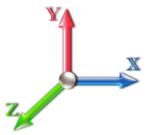
Linear Appurtenance Segment Forces (Factored)

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 30	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



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)
50.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.72	0.00	0.116	1.047	6.626	0.00	27.93
55.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.117	1.050	6.760	0.00	44.18
55.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.14	0.00	0.117	1.050	6.760	0.00	55.29
55.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.73	0.00	0.117	1.050	6.760	0.00	28.34
55.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.73	0.00	0.117	1.050	6.760	0.00	28.34
60.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.120	1.060	6.885	0.00	44.61
60.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.15	0.00	0.120	1.060	6.885	0.00	55.77
60.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.74	0.00	0.120	1.060	6.885	0.00	28.71
60.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.74	0.00	0.120	1.060	6.885	0.00	28.71
65.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.123	1.070	7.002	0.00	45.02
65.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.16	0.00	0.123	1.070	7.002	0.00	56.21
65.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.75	0.00	0.123	1.070	7.002	0.00	29.06
65.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.75	0.00	0.123	1.070	7.002	0.00	29.06
67.50	1 1/4" Fiber	Yes	2.50	0.000	0.00	0.00	0.00	0.126	1.078	7.058	0.00	22.60
67.50	1 5/8" Fiber	Yes	2.50	0.000	1.98	1.08	0.00	0.126	1.078	7.058	0.00	28.21
67.50	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.88	0.00	0.126	1.078	7.058	0.00	14.61
67.50	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.88	0.00	0.126	1.078	7.058	0.00	14.61
70.00	1 1/4" Fiber	Yes	2.50	0.000	0.00	0.00	0.00	0.128	1.084	7.113	0.00	22.70
70.00	1 5/8" Fiber	Yes	2.50	0.000	1.98	1.09	0.00	0.128	1.084	7.113	0.00	28.32
70.00	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.88	0.00	0.128	1.084	7.113	0.00	14.69
70.00	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.88	0.00	0.128	1.084	7.113	0.00	14.69
75.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.065	0.000	7.217	0.00	45.75
75.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.18	0.00	0.065	0.000	7.217	0.00	57.03
80.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.067	0.000	7.315	0.00	46.09
80.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.19	0.00	0.067	0.000	7.315	0.00	57.40
85.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.069	0.000	7.409	0.00	46.41
85.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.20	0.00	0.069	0.000	7.409	0.00	57.75
90.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.072	0.000	7.499	0.00	46.72
90.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.21	0.00	0.072	0.000	7.499	0.00	58.09
90.50	1 1/4" Fiber	Yes	0.50	0.000	0.00	0.00	0.00	0.073	0.000	7.508	0.00	4.67
90.50	1 5/8" Fiber	Yes	0.50	0.000	1.98	0.22	0.00	0.073	0.000	7.508	0.00	5.81
93.12	1 1/4" Fiber	Yes	2.62	0.000	0.00	0.00	0.00	0.148	1.145	7.553	0.00	24.57
93.12	1 5/8" Fiber	Yes	2.62	0.000	1.98	1.16	0.00	0.148	1.145	7.553	0.00	30.54
93.12	1" Reinforcing plate	Yes	2.62	0.000	1.00	0.94	0.00	0.148	1.145	7.553	0.00	13.44
93.12	1" Reinforcing plate	Yes	2.62	0.000	1.00	0.94	0.00	0.148	1.145	7.553	0.00	18.02
94.50	1 1/4" Fiber	Yes	1.38	0.000	0.00	0.00	0.00	0.150	1.151	7.576	0.00	12.97
94.50	1 5/8" Fiber	Yes	1.38	0.000	1.98	0.61	0.00	0.150	1.151	7.576	0.00	16.11
94.50	1" Reinforcing plate	Yes	1.38	0.000	1.00	0.50	0.00	0.150	1.151	7.576	0.00	7.10
94.50	1" Reinforcing plate	Yes	1.38	0.000	1.00	0.50	0.00	0.150	1.151	7.576	0.00	9.51
95.00	1 1/4" Fiber	Yes	0.50	0.000	0.00	0.00	0.00	0.149	1.147	7.585	0.00	4.70
95.00	1 5/8" Fiber	Yes	0.50	0.000	1.98	0.22	0.00	0.149	1.147	7.585	0.00	5.84
95.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.18	0.00	0.149	1.147	7.585	0.00	2.57
95.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.18	0.00	0.149	1.147	7.585	0.00	3.45
100.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.152	1.156	7.667	0.00	47.28
100.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.22	0.00	0.152	1.156	7.667	0.00	58.72
100.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.81	0.00	0.152	1.156	7.667	0.00	25.95
100.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.81	0.00	0.152	1.156	7.667	0.00	34.75

Linear Appurtenance Segment Forces (Factored)

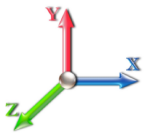
Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 31	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



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)
105.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.158	1.173	7.746	0.00	47.55
105.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.23	0.00	0.158	1.173	7.746	0.00	59.01
105.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.82	0.00	0.158	1.173	7.746	0.00	26.16
105.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	1.82	0.00	0.158	1.173	7.746	0.00	35.00
107.87	1 1/4" Fiber	Yes	2.87	0.000	0.00	0.00	0.00	0.162	1.187	7.790	0.00	27.38
107.87	1 5/8" Fiber	Yes	2.87	0.000	1.98	1.28	0.00	0.162	1.187	7.790	0.00	33.97
107.87	1" Reinforcing plate	Yes	2.87	0.000	1.00	1.05	0.00	0.162	1.187	7.790	0.00	15.08
107.87	1" Reinforcing plate	Yes	2.87	0.000	1.00	1.05	0.00	0.162	1.187	7.790	0.00	20.17
110.00	1 1/4" Fiber	Yes	2.13	0.000	0.00	0.00	0.00	0.165	1.196	7.823	0.00	20.37
110.00	1 5/8" Fiber	Yes	2.13	0.000	1.98	0.95	0.00	0.165	1.196	7.823	0.00	25.26
110.00	1" Reinforcing plate	Yes	2.13	0.000	1.00	0.78	0.00	0.165	1.196	7.823	0.00	11.23
110.00	1" Reinforcing plate	Yes	2.13	0.000	1.00	0.78	0.00	0.165	1.196	7.823	0.00	15.01
114.00	1 1/4" Fiber	Yes	4.00	0.000	0.00	0.00	0.00	0.095	0.000	7.882	0.00	38.41
114.00	1 5/8" Fiber	Yes	4.00	0.000	1.98	1.79	0.00	0.095	0.000	7.882	0.00	47.61
114.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.18	0.00	0.095	0.000	7.882	0.00	2.65
114.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.18	0.00	0.095	0.000	7.882	0.00	3.54
115.00	1 1/4" Fiber	Yes	1.00	0.000	0.00	0.00	0.00	0.086	0.000	7.896	0.00	9.61
115.00	1 5/8" Fiber	Yes	1.00	0.000	1.98	0.45	0.00	0.086	0.000	7.896	0.00	11.91
120.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.088	0.000	7.967	0.00	48.29
120.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.25	0.00	0.088	0.000	7.967	0.00	59.83
125.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.092	0.000	8.036	0.00	48.52
125.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.25	0.00	0.092	0.000	8.036	0.00	60.08
130.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.096	0.000	8.103	0.00	48.75
130.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.26	0.00	0.096	0.000	8.103	0.00	60.33
135.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.100	1.001	8.167	0.00	48.96
135.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	2.26	0.00	0.100	1.001	8.167	0.00	60.56
										Totals:	**0.0**	**3,718.9**

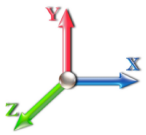
Calculated Forces

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 32	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 25

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	-82.31	-9.63	0.00	-1072.9	0.00	1072.96	3592.24	880.75	3081.19	3113.33	0.00	0.000	0.000	0.257
1.00	-81.97	-9.66	0.00	-1063.3	0.00	1063.34	3581.26	876.95	3054.64	3090.29	0.00	-0.019	0.000	0.225
5.00	-80.61	-9.66	0.00	-1024.6	0.00	1024.69	3536.93	861.73	2949.58	2998.63	0.05	-0.084	0.000	0.222
10.00	-78.90	-9.64	0.00	-976.40	0.00	976.40	3480.64	842.72	2820.85	2885.21	0.18	-0.167	0.000	0.218
15.00	-77.20	-9.62	0.00	-928.19	0.00	928.19	3423.37	823.70	2694.99	2773.12	0.40	-0.250	0.000	0.214
20.00	-75.51	-9.59	0.00	-880.09	0.00	880.09	3365.12	804.69	2572.00	2662.41	0.70	-0.333	0.000	0.222
25.00	-73.84	-9.56	0.00	-832.12	0.00	832.12	3305.89	785.67	2451.88	2553.15	1.10	-0.423	0.000	0.217
30.00	-72.20	-9.52	0.00	-784.33	0.00	784.33	3245.52	766.66	2334.64	2445.26	1.59	-0.512	0.000	0.211
35.00	-70.57	-9.47	0.00	-736.74	0.00	736.74	3165.03	747.64	2220.26	2324.87	2.18	-0.602	0.000	0.207
40.00	-68.97	-9.41	0.00	-689.40	0.00	689.40	3084.53	728.63	2108.76	2207.52	2.85	-0.692	0.000	0.220
44.50	-67.56	-9.32	0.00	-647.05	0.00	647.05	3012.08	711.52	2010.87	2104.51	3.55	-0.780	0.000	0.215
45.00	-67.33	-9.37	0.00	-642.39	0.00	642.39	3004.03	709.61	2000.14	2093.21	3.63	-0.791	0.000	0.212
50.00	-65.08	-9.30	0.00	-595.55	0.00	595.55	2423.81	587.47	1644.99	1680.79	4.51	-0.887	0.000	0.215
55.00	-63.67	-9.24	0.00	-549.05	0.00	549.05	2376.14	571.62	1557.44	1602.88	5.49	-0.982	0.000	0.222
60.00	-62.29	-9.18	0.00	-502.85	0.00	502.85	2327.49	555.78	1472.29	1526.13	6.57	-1.084	0.000	0.212
65.00	-60.93	-9.09	0.00	-456.96	0.00	456.96	2277.86	539.93	1389.54	1450.59	7.76	-1.184	0.000	0.200
67.50	-60.26	-9.05	0.00	-434.24	0.00	434.24	2252.16	532.01	1349.06	1412.97	8.40	-1.233	0.000	0.194
67.50	-60.26	-9.05	0.00	-434.24	0.00	434.24	2252.16	532.01	1349.06	1412.97	8.40	-1.233	0.000	0.194
70.00	-59.59	-9.07	0.00	-411.62	0.00	411.62	2218.62	524.08	1309.17	1370.99	9.05	-1.282	0.000	0.327
75.00	-58.32	-9.07	0.00	-366.25	0.00	366.25	2151.54	508.24	1231.20	1288.93	10.48	-1.444	0.000	0.312
80.00	-57.09	-9.06	0.00	-320.88	0.00	320.88	2084.46	492.39	1155.63	1209.39	12.08	-1.601	0.000	0.293
85.00	-55.88	-9.04	0.00	-275.57	0.00	275.57	2017.38	476.55	1082.45	1132.40	13.84	-1.750	0.000	0.271
90.00	-46.35	-7.55	0.00	-230.38	0.00	230.38	1950.30	460.70	1011.66	1057.93	15.75	-1.890	0.000	0.242
90.50	-46.24	-7.56	0.00	-226.60	0.00	226.60	1943.59	459.12	1004.71	1050.62	15.95	-1.904	0.000	0.240
93.12	-45.48	-7.50	0.00	-206.78	0.00	206.78	1908.44	450.81	968.70	1012.75	17.01	-1.974	0.000	0.128
94.50	-45.08	-7.46	0.00	-196.44	0.00	196.44	1035.36	273.09	592.44	557.40	17.59	-1.995	0.000	0.140
95.00	-44.99	-7.47	0.00	-192.71	0.00	192.71	1033.16	272.13	588.32	554.27	17.79	-2.002	0.000	0.174
100.00	-39.15	-6.22	0.00	-155.34	0.00	155.34	1010.63	262.63	547.93	523.10	19.94	-2.084	0.000	0.146
105.00	-38.28	-6.08	0.00	-124.23	0.00	124.23	987.11	253.12	508.98	492.30	22.16	-2.155	0.000	0.124
107.87	-37.79	-6.00	0.00	-106.76	0.00	106.76	973.17	247.66	487.27	474.80	23.46	-2.192	0.000	0.111
107.87	-37.79	-6.00	0.00	-106.76	0.00	106.76	973.17	247.66	487.27	474.80	23.46	-2.192	0.000	0.111
110.00	-37.43	-5.97	0.00	-93.98	0.00	93.98	962.61	243.61	471.46	461.91	24.45	-2.217	0.000	0.243
114.00	-29.34	-4.59	0.00	-68.68	0.00	68.68	942.31	236.01	442.48	437.94	26.35	-2.315	0.000	0.188
115.00	-29.20	-4.59	0.00	-64.09	0.00	64.09	937.13	234.11	435.38	431.99	26.84	-2.337	0.000	0.180
120.00	-28.49	-4.48	0.00	-41.14	0.00	41.14	910.67	224.60	400.73	402.61	29.33	-2.425	0.000	0.134
125.00	-11.84	-1.87	0.00	-18.72	0.00	18.72	883.23	215.09	367.52	373.80	31.91	-2.482	0.000	0.064
130.00	-11.25	-1.74	0.00	-9.37	0.00	9.37	854.80	205.58	335.75	345.64	34.52	-2.513	0.000	0.040
135.00	-0.47	-0.13	0.00	-0.66	0.00	0.66	825.39	196.08	305.42	318.16	37.16	-2.525	0.000	0.003
140.00	-0.04	-0.01	0.00	-0.01	0.00	0.01	789.80	186.57	276.52	289.54	39.81	-2.526	0.000	0.000
140.50	0.00	-0.01	0.00	0.00	0.00	0.00	785.78	185.62	273.70	286.58	40.07	-2.526	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 33	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Ev + 1.0Eh

Gust Response Factor	1.10			**Sds**	0.20	**Iterations**	21
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.09	**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.23	**SA**	0.02	**S1**	0.06
						Seismic Importance Factor	1.00

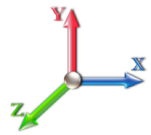
Top Elev (ft)	Description	Wz (lb)	Hz (lb)	Vertical Ev (lb)	Lateral Fs (lb)	R: 1.50
0.00	RB1	0.00	0.00	0.00	0.00	
1.00	RT1 RB2	218.55	0.50	8.77	0.00	
5.00		866.81	3.00	34.76	0.00	
10.00		1066.9	7.50	42.79	0.02	
15.00		1048.4	12.50	42.05	0.06	
20.00	RT2 RB3	1030.0	17.50	41.31	0.12	
25.00		1011.6	22.50	40.57	0.19	
30.00		993.19	27.50	39.83	0.27	
35.00		974.75	32.50	39.09	0.36	
40.00	RT3 RB4	956.32	37.50	38.35	0.47	
44.50	Bot - Section 2	844.93	42.25	33.89	0.46	
45.00		151.52	44.75	6.08	0.02	
50.00	Top - Section 1	1496.6	47.50	60.03	1.83	
55.00		802.57	52.50	32.19	0.64	
60.00	RT4 RB5	787.21	57.50	31.57	0.74	
65.00		771.85	62.50	30.96	0.84	
67.50	RT5	380.16	66.25	15.25	0.23	
70.00		376.32	68.75	15.09	0.24	
75.00		741.13	72.50	29.72	1.04	
80.00		725.76	77.50	29.11	1.14	
85.00		710.40	82.50	28.49	1.24	
90.00	Appurtenance(s)	4203.6	87.50	168.59	48.93	
90.50	Bot - Section 3	59.85	90.25	2.40	0.01	
93.12	RB6	452.43	91.81	18.15	0.62	
94.50	Top - Section 2	235.59	93.81	9.45	0.18	
95.00		41.69	94.75	1.67	0.01	
100.00	Appurtenance(s)	2770.9	97.50	111.13	26.40	
105.00		396.65	102.50	15.91	0.60	
107.87	RT6	223.51	106.44	8.96	0.20	
110.00		163.92	108.94	6.57	0.12	
114.00	Appurtenance(s)	3727.7	112.00	149.51	63.04	
115.00		65.88	114.50	2.64	0.02	
120.00		323.87	117.50	12.99	0.52	
125.00	Appurtenance(s)	5903.5	122.50	236.77	189.14	
130.00		224.31	127.50	9.00	0.30	
135.00	Appurtenance(s)	4262.9	132.50	170.97	115.38	
140.00		185.48	137.50	7.44	0.24	
140.50		18.04	140.25	0.72	0.00	
	Totals:	**39,215.3**		**1,572.8**	**455.6**	**Total Wind:** **34,079.1**

Calculated Forces

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H		2/15/2022
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 34

Tower Engineering Solutions

Load Case: 1.2D + 1.0Ev + 1.0Eh



Gust Response Factor	1.10			**Sds**	0.20			**Iterations**	21
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.09			**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.23	**SA**	0.02			**S1**	0.06
								Seismic Importance 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	-47.57	-0.46	0.00	-58.40	0.00	58.40	3592.24	880.75	3081.19	3113.33		0.00	0.00	0.023
1.00	-47.31	-0.46	0.00	-57.94	0.00	57.94	3581.26	876.95	3054.64	3090.29		0.00	0.00	0.019
5.00	-46.27	-0.46	0.00	-56.12	0.00	56.12	3536.93	861.73	2949.58	2998.63		0.00	0.00	0.019
10.00	-45.00	-0.46	0.00	-53.81	0.00	53.81	3480.64	842.72	2820.85	2885.21		0.01	-0.01	0.019
15.00	-43.74	-0.47	0.00	-51.50	0.00	51.50	3423.37	823.70	2694.99	2773.12		0.02	-0.01	0.018
20.00	-42.51	-0.47	0.00	-49.16	0.00	49.16	3365.12	804.69	2572.00	2662.41		0.04	-0.02	0.019
25.00	-41.31	-0.47	0.00	-46.81	0.00	46.81	3305.89	785.67	2451.88	2553.15		0.06	-0.02	0.019
30.00	-40.12	-0.48	0.00	-44.45	0.00	44.45	3245.52	766.66	2334.64	2445.26		0.09	-0.03	0.019
35.00	-38.96	-0.48	0.00	-42.07	0.00	42.07	3165.03	747.64	2220.26	2324.87		0.12	-0.03	0.018
40.00	-37.83	-0.48	0.00	-39.68	0.00	39.68	3084.53	728.63	2108.76	2207.52		0.16	-0.04	0.020
44.50	-36.82	-0.48	0.00	-37.51	0.00	37.51	3012.08	711.52	2010.87	2104.51		0.20	-0.04	0.019
45.00	-36.64	-0.48	0.00	-37.27	0.00	37.27	3004.03	709.61	2000.14	2093.21		0.20	-0.04	0.019
50.00	-34.83	-0.48	0.00	-34.86	0.00	34.86	2423.81	587.47	1644.99	1680.79		0.25	-0.05	0.019
55.00	-33.88	-0.49	0.00	-32.44	0.00	32.44	2376.14	571.62	1557.44	1602.88		0.31	-0.06	0.020
60.00	-32.95	-0.49	0.00	-30.02	0.00	30.02	2327.49	555.78	1472.29	1526.13		0.37	-0.06	0.020
65.00	-32.05	-0.49	0.00	-27.58	0.00	27.58	2277.86	539.93	1389.54	1450.59		0.44	-0.07	0.019
67.50	-31.60	-0.49	0.00	-26.36	0.00	26.36	2252.16	532.01	1349.06	1412.97		0.47	-0.07	0.019
67.50	-31.60	-0.49	0.00	-26.36	0.00	26.36	2252.16	532.01	1349.06	1412.97		0.47	-0.07	0.019
70.00	-31.16	-0.49	0.00	-25.14	0.00	25.14	2218.62	524.08	1309.17	1370.99		0.51	-0.07	0.032
75.00	-30.28	-0.49	0.00	-22.69	0.00	22.69	2151.54	508.24	1231.20	1288.93		0.59	-0.08	0.032
80.00	-29.43	-0.50	0.00	-20.22	0.00	20.22	2084.46	492.39	1155.63	1209.39		0.69	-0.09	0.031
85.00	-28.60	-0.50	0.00	-17.73	0.00	17.73	2017.38	476.55	1082.45	1132.40		0.79	-0.10	0.030
90.00	-23.44	-0.44	0.00	-15.24	0.00	15.24	1950.30	460.70	1011.66	1057.93		0.90	-0.11	0.026
90.50	-23.36	-0.44	0.00	-15.02	0.00	15.02	1943.59	459.12	1004.71	1050.62		0.91	-0.11	0.026
93.12	-22.82	-0.44	0.00	-13.86	0.00	13.86	1908.44	450.81	968.70	1012.75		0.98	-0.12	0.015
94.50	-22.54	-0.44	0.00	-13.25	0.00	13.25	1035.36	273.09	592.44	557.40		1.01	-0.12	0.016
95.00	-22.49	-0.44	0.00	-13.03	0.00	13.03	1033.16	272.13	588.32	554.27		1.02	-0.12	0.020
100.00	-19.08	-0.41	0.00	-10.81	0.00	10.81	1010.63	262.63	547.93	523.10		1.15	-0.13	0.017
105.00	-18.62	-0.41	0.00	-8.75	0.00	8.75	987.11	253.12	508.98	492.30		1.28	-0.13	0.016
107.87	-18.36	-0.41	0.00	-7.57	0.00	7.57	973.17	247.66	487.27	474.80		1.36	-0.13	0.015
107.87	-18.36	-0.41	0.00	-7.57	0.00	7.57	973.17	247.66	487.27	474.80		1.36	-0.13	0.015
110.00	-18.17	-0.41	0.00	-6.70	0.00	6.70	962.61	243.61	471.46	461.91		1.42	-0.13	0.033
114.00	-13.57	-0.34	0.00	-5.05	0.00	5.05	942.31	236.01	442.48	437.94		1.54	-0.14	0.026
115.00	-13.49	-0.34	0.00	-4.71	0.00	4.71	937.13	234.11	435.38	431.99		1.57	-0.14	0.025
120.00	-13.11	-0.34	0.00	-3.01	0.00	3.01	910.67	224.60	400.73	402.61		1.72	-0.15	0.022
125.00	-5.81	-0.13	0.00	-1.31	0.00	1.31	883.23	215.09	367.52	373.80		1.88	-0.15	0.010
130.00	-5.53	-0.13	0.00	-0.66	0.00	0.66	854.80	205.58	335.75	345.64		2.04	-0.16	0.008
135.00	-0.25	0.00	0.00	0.00	0.00	0.00	825.39	196.08	305.42	318.16		2.21	-0.16	0.000
140.00	-0.02	0.00	0.00	0.00	0.00	0.00	789.80	186.57	276.52	289.54		2.37	-0.16	0.000
140.50	0.00	0.00	0.00	0.00	0.00	0.00	785.78	185.62	273.70	286.58		2.39	-0.16	0.000

Seismic Segment Forces (Factored)

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 35	

Tower Engineering Solutions

Load Case: 0.9D + 1.0Ev + 1.0Eh

Gust Response Factor	1.10			**Sds**	0.20	**Iterations**	21
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.09	**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.23	**SA**	0.02	**S1**	0.06
						Seismic Importance Factor	1.00

Top Elev (ft)	Description	Wz (lb)	Hz (lb)	Vertical Ev (lb)	Lateral Fs (lb)	R: 1.50
0.00	RB1	0.00	0.00	0.00	0.00	
1.00	RT1 RB2	206.51	0.50	8.28	0.00	
5.00		818.67	3.00	32.83	0.00	
10.00		1006.7	7.50	40.38	0.02	
15.00		988.31	12.50	39.64	0.06	
20.00	RT2 RB3	969.87	17.50	38.90	0.11	
25.00		951.44	22.50	38.16	0.17	
30.00		933.01	27.50	37.42	0.24	
35.00		914.57	32.50	36.68	0.32	
40.00	RT3 RB4	896.14	37.50	35.94	0.41	
44.50	Bot - Section 2	790.76	42.25	31.71	0.41	
45.00		145.51	44.75	5.84	0.02	
50.00	Top - Section 1	1436.4	47.50	57.61	1.71	
55.00		742.39	52.50	29.77	0.56	
60.00	RT4 RB5	727.03	57.50	29.16	0.64	
65.00		711.67	62.50	28.54	0.73	
67.50	RT5	350.07	66.25	14.04	0.20	
70.00		346.23	68.75	13.89	0.21	
75.00		680.94	72.50	27.31	0.89	
80.00		665.58	77.50	26.69	0.98	
85.00		650.22	82.50	26.08	1.06	
90.00	Appurtenance(s)	4143.4	87.50	166.18	48.24	
90.50	Bot - Section 3	56.03	90.25	2.25	0.01	
93.12	RB6	432.44	91.81	17.34	0.58	
94.50	Top - Section 2	225.06	93.81	9.03	0.16	
95.00		37.88	94.75	1.52	0.00	
100.00	Appurtenance(s)	2732.8	97.50	109.60	26.06	
105.00		359.99	102.50	14.44	0.50	
107.87	RT6	202.47	106.44	8.12	0.17	
110.00		148.30	108.94	5.95	0.10	
114.00	Appurtenance(s)	3698.3	112.00	148.33	62.97	
115.00		60.80	114.50	2.44	0.02	
120.00		298.49	117.50	11.97	0.45	
125.00	Appurtenance(s)	5878.1	122.50	235.75	190.30	
130.00		219.21	127.50	8.79	0.29	
135.00	Appurtenance(s)	4257.8	132.50	170.77	116.81	
140.00		185.48	137.50	7.44	0.24	
140.50		18.04	140.25	0.72	0.00	
	Totals:	**37,887.0**		**1,519.5**	**455.6**	**Total Wind:** **34,079.1**

Calculated Forces

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H		2/15/2022
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 36

Tower Engineering Solutions

Load Case: 0.9D + 1.0Ev + 1.0Eh

Gust Response Factor	1.10			**Sds**	0.20			**Iterations**	21
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.09			**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.23	**SA**	0.02			**S1**	0.06
								Seismic Importance 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	-36.02	-0.46	0.00	-57.47	0.00	57.47	3592.24	880.75	3081.19	3113.33		0.00	0.00	0.020
1.00	-35.82	-0.46	0.00	-57.02	0.00	57.02	3581.26	876.95	3054.64	3090.29		0.00	0.00	0.017
5.00	-35.03	-0.46	0.00	-55.19	0.00	55.19	3536.93	861.73	2949.58	2998.63		0.00	0.00	0.017
10.00	-34.07	-0.46	0.00	-52.90	0.00	52.90	3480.64	842.72	2820.85	2885.21		0.01	-0.01	0.017
15.00	-33.12	-0.46	0.00	-50.59	0.00	50.59	3423.37	823.70	2694.99	2773.12		0.02	-0.01	0.016
20.00	-32.19	-0.47	0.00	-48.27	0.00	48.27	3365.12	804.69	2572.00	2662.41		0.04	-0.02	0.017
25.00	-31.28	-0.47	0.00	-45.94	0.00	45.94	3305.89	785.67	2451.88	2553.15		0.06	-0.02	0.017
30.00	-30.38	-0.47	0.00	-43.60	0.00	43.60	3245.52	766.66	2334.64	2445.26		0.09	-0.03	0.017
35.00	-29.51	-0.47	0.00	-41.25	0.00	41.25	3165.03	747.64	2220.26	2324.87		0.12	-0.03	0.016
40.00	-28.65	-0.47	0.00	-38.88	0.00	38.88	3084.53	728.63	2108.76	2207.52		0.16	-0.04	0.017
44.50	-27.89	-0.47	0.00	-36.75	0.00	36.75	3012.08	711.52	2010.87	2104.51		0.19	-0.04	0.017
45.00	-27.75	-0.48	0.00	-36.52	0.00	36.52	3004.03	709.61	2000.14	2093.21		0.20	-0.04	0.017
50.00	-26.38	-0.48	0.00	-34.14	0.00	34.14	2423.81	587.47	1644.99	1680.79		0.25	-0.05	0.017
55.00	-25.66	-0.48	0.00	-31.76	0.00	31.76	2376.14	571.62	1557.44	1602.88		0.30	-0.05	0.018
60.00	-24.96	-0.48	0.00	-29.38	0.00	29.38	2327.49	555.78	1472.29	1526.13		0.36	-0.06	0.018
65.00	-24.27	-0.48	0.00	-26.99	0.00	26.99	2277.86	539.93	1389.54	1450.59		0.43	-0.07	0.017
67.50	-23.94	-0.48	0.00	-25.79	0.00	25.79	2252.16	532.01	1349.06	1412.97		0.46	-0.07	0.017
67.50	-23.94	-0.48	0.00	-25.79	0.00	25.79	2252.16	532.01	1349.06	1412.97		0.46	-0.07	0.017
70.00	-23.60	-0.48	0.00	-24.60	0.00	24.60	2218.62	524.08	1309.17	1370.99		0.50	-0.07	0.029
75.00	-22.94	-0.48	0.00	-22.19	0.00	22.19	2151.54	508.24	1231.20	1288.93		0.58	-0.08	0.028
80.00	-22.30	-0.48	0.00	-19.78	0.00	19.78	2084.46	492.39	1155.63	1209.39		0.67	-0.09	0.027
85.00	-21.67	-0.49	0.00	-17.35	0.00	17.35	2017.38	476.55	1082.45	1132.40		0.77	-0.10	0.026
90.00	-17.76	-0.43	0.00	-14.92	0.00	14.92	1950.30	460.70	1011.66	1057.93		0.88	-0.11	0.023
90.50	-17.70	-0.43	0.00	-14.71	0.00	14.71	1943.59	459.12	1004.71	1050.62		0.90	-0.11	0.023
93.12	-17.29	-0.43	0.00	-13.57	0.00	13.57	1908.44	450.81	968.70	1012.75		0.96	-0.12	0.013
94.50	-17.08	-0.43	0.00	-12.97	0.00	12.97	1035.36	273.09	592.44	557.40		0.99	-0.12	0.014
95.00	-17.04	-0.43	0.00	-12.76	0.00	12.76	1033.16	272.13	588.32	554.27		1.00	-0.12	0.018
100.00	-14.46	-0.40	0.00	-10.59	0.00	10.59	1010.63	262.63	547.93	523.10		1.13	-0.12	0.015
105.00	-14.11	-0.40	0.00	-8.58	0.00	8.58	987.11	253.12	508.98	492.30		1.26	-0.13	0.014
107.87	-13.91	-0.40	0.00	-7.42	0.00	7.42	973.17	247.66	487.27	474.80		1.34	-0.13	0.013
107.87	-13.91	-0.40	0.00	-7.42	0.00	7.42	973.17	247.66	487.27	474.80		1.34	-0.13	0.013
110.00	-13.77	-0.40	0.00	-6.57	0.00	6.57	962.61	243.61	471.46	461.91		1.40	-0.13	0.029
114.00	-10.28	-0.33	0.00	-4.95	0.00	4.95	942.31	236.01	442.48	437.94		1.51	-0.14	0.022
115.00	-10.22	-0.33	0.00	-4.62	0.00	4.62	937.13	234.11	435.38	431.99		1.54	-0.14	0.022
120.00	-9.94	-0.33	0.00	-2.95	0.00	2.95	910.67	224.60	400.73	402.61		1.69	-0.15	0.018
125.00	-4.40	-0.13	0.00	-1.29	0.00	1.29	883.23	215.09	367.52	373.80		1.84	-0.15	0.008
130.00	-4.20	-0.13	0.00	-0.64	0.00	0.64	854.80	205.58	335.75	345.64		2.00	-0.15	0.007
135.00	-0.19	0.00	0.00	0.00	0.00	0.00	825.39	196.08	305.42	318.16		2.16	-0.15	0.000
140.00	-0.02	0.00	0.00	0.00	0.00	0.00	789.80	186.57	276.52	289.54		2.32	-0.15	0.000
140.50	0.00	0.00	0.00	0.00	0.00	0.00	785.78	185.62	273.70	286.58		2.34	-0.15	0.000

Wind Loading - Shaft

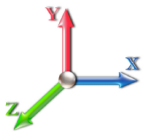
Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 37	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00	RB1	1.00	0.85	6.635	7.30	198.77	0.730	0.000	0.00	0.000	0.00	0.0	0.0	0.0
1.00	RT1 RB2	1.00	0.85	6.635	7.30	197.91	0.739 *	0.000	1.00	3.592	2.65	19.4	0.0	170.4
5.00		1.00	0.85	6.635	7.30	194.51	0.741 *	0.000	4.00	14.214	10.53	76.9	0.0	674.2
10.00		1.00	0.85	6.635	7.30	190.26	0.746 *	0.000	5.00	17.421	12.99	94.8	0.0	826.2
15.00		1.00	0.85	6.635	7.30	186.00	0.751 *	0.000	5.00	17.036	12.79	93.4	0.0	807.8
20.00	RT2 RB3	1.00	0.90	7.040	7.74	187.22	0.757 *	0.000	5.00	16.650	12.60	97.5	0.0	789.3
25.00		1.00	0.95	7.378	8.12	187.18	0.762 *	0.000	5.00	16.265	12.40	100.6	0.0	770.9
30.00		1.00	0.98	7.667	8.43	186.24	0.768 *	0.000	5.00	15.880	12.20	102.9	0.0	752.5
35.00		1.00	1.01	7.920	8.71	184.63	0.775 *	0.000	5.00	15.495	12.01	104.6	0.0	734.0
40.00	RT3 RB4	1.00	1.04	8.145	8.96	182.54	0.782 *	0.000	5.00	15.110	11.81	105.8	0.0	715.6
44.50	Bot - Section 2	1.00	1.07	8.330	9.16	180.31	0.757 *	0.000	4.50	13.270	10.05	92.1	0.0	628.3
45.00		1.00	1.07	8.350	9.18	180.04	0.761 *	0.000	0.50	1.482	1.13	10.4	0.0	127.5
50.00	Top - Section 1	1.00	1.09	8.537	9.39	177.22	0.764 *	0.000	5.00	14.604	11.16	104.8	0.0	1255.9
55.00		1.00	1.12	8.710	9.58	177.48	0.766 *	0.000	5.00	14.219	10.90	104.4	0.0	561.8
60.00	RT4 RB5	1.00	1.14	8.871	9.76	174.20	0.774 *	0.000	5.00	13.834	10.70	104.4	0.0	546.5
65.00		1.00	1.16	9.022	9.92	170.71	0.781 *	0.000	5.00	13.448	10.50	104.2	0.0	531.1
67.50	RT5	1.00	1.17	9.094	10.00	168.90	0.787 *	0.000	2.50	6.580	5.18	51.8	0.0	259.8
70.00		1.00	1.17	9.164	10.08	167.05	0.791 *	0.000	2.50	6.484	5.13	51.7	0.0	256.0
75.00		1.00	1.19	9.298	10.23	163.23	0.730	0.000	5.00	12.678	9.26	94.7	0.0	500.4
80.00		1.00	1.21	9.425	10.37	159.28	0.730	0.000	5.00	12.293	8.97	93.0	0.0	485.0
85.00		1.00	1.22	9.546	10.50	155.19	0.730	0.000	5.00	11.908	8.69	91.3	0.0	469.7
90.00	Appurtenance(s)	1.00	1.24	9.662	10.63	151.00	0.730	0.000	5.00	11.523	8.41	89.4	0.0	454.3
90.50	Bot - Section 3	1.00	1.24	9.673	10.64	150.57	0.730	0.000	0.50	1.131	0.83	8.8	0.0	44.6
93.12	RB6	1.00	1.25	9.731	10.70	148.32	0.836 *	0.000	2.62	5.947	4.97	53.2	0.0	372.4
94.50	Top - Section 2	1.00	1.25	9.762	10.74	147.13	0.840 *	0.000	1.38	3.090	2.60	27.9	0.0	193.5
95.00		1.00	1.25	9.772	10.75	148.82	0.838 *	0.000	0.50	1.112	0.93	10.0	0.0	26.4
100.00	Appurtenance(s)	1.00	1.27	9.879	10.87	144.44	0.844 *	0.000	5.00	10.911	9.21	100.1	0.0	259.2
105.00		1.00	1.28	9.981	10.98	139.96	0.856 *	0.000	5.00	10.526	9.01	98.9	0.0	250.0
107.87	RT6	1.00	1.29	10.037	11.04	137.36	0.866 *	0.000	2.87	5.868	5.08	56.1	0.0	139.3
110.00		1.00	1.29	10.079	11.09	135.41	0.873 *	0.000	2.13	4.273	3.73	41.4	0.0	101.4
114.00	Appurtenance(s)	1.00	1.30	10.155	11.17	131.71	0.730	0.000	4.00	7.835	5.72	63.9	0.0	186.0
115.00		1.00	1.30	10.174	11.19	130.78	0.730	0.000	1.00	1.920	1.40	15.7	0.0	45.6
120.00		1.00	1.32	10.265	11.29	126.07	0.730	0.000	5.00	9.370	6.84	77.2	0.0	222.3
125.00	Appurtenance(s)	1.00	1.33	10.354	11.39	121.30	0.730	0.000	5.00	8.985	6.56	74.7	0.0	213.1
130.00		1.00	1.34	10.440	11.48	116.47	0.730	0.000	5.00	8.600	6.28	72.1	0.0	203.9
135.00	Appurtenance(s)	1.00	1.35	10.523	11.58	111.58	0.731 *	0.000	5.00	8.215	6.00	69.5	0.0	194.7
140.00		1.00	1.36	10.604	11.66	106.63	0.730	0.000	5.00	7.830	5.72	66.7	0.0	185.5
140.50		1.00	1.36	10.612	11.67	106.13	0.730	0.000	0.50	0.762	0.56	6.5	0.0	18.0
								Totals:	**140.50**			**2,630.7**		**14,973.2**

* Cf Adjusted by Linear Load Ra Effect

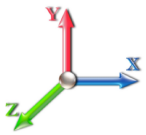
Discrete Appurtenance Forces

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 38	

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	135.00	Commscope	3	10.523	11.575	0.73	0.80	0.70	33.00	0.000	0.000	8.09	0.00	0.00
2	135.00	Air 32	3	10.523	11.575	0.70	0.80	13.59	396.60	0.000	0.000	157.34	0.00	0.00
3	135.00	AIR6449 B41	3	10.523	11.575	0.64	0.80	10.85	309.00	0.000	0.000	125.57	0.00	0.00
4	135.00	APXVAARR24_43-U-NA2	3	10.523	11.575	0.56	0.80	34.00	384.00	0.000	0.000	393.59	0.00	0.00
5	135.00	Sector Frame	3	10.523	11.575	0.56	0.75	25.31	2451.00	0.000	0.000	292.99	0.00	0.00
6	135.00	Ericsson RRUS11 B4	3	10.523	11.575	0.40	0.80	3.08	132.00	0.000	0.000	35.70	0.00	0.00
7	135.00	Ericsson 4415 B25	3	10.523	11.575	0.40	0.80	2.23	132.30	0.000	0.000	25.84	0.00	0.00
8	135.00	Ericsson Radio 4449	3	10.523	11.575	0.40	0.80	1.98	210.00	0.000	0.000	22.92	0.00	0.00
9	125.00	Cci DMP65R-BU6DA	3	10.354	11.389	0.54	0.75	20.59	238.20	0.000	0.000	234.50	0.00	0.00
10	125.00	Ericcson AIR6419 N77G	3	10.384	11.422	0.57	0.75	6.50	198.30	0.000	1.750	74.22	0.00	129.89
11	125.00	Ericcson AIR6449 N77D	3	10.322	11.354	0.64	0.75	7.90	264.00	0.000	-1.830	89.68	0.00	-164.11
12	125.00	Ericcson 4415	3	10.354	11.389	0.38	0.75	1.84	138.90	0.000	0.000	21.01	0.00	0.00
13	125.00	Quintel QD6616-7	3	10.354	11.389	0.56	0.75	22.92	155.70	0.000	0.000	260.99	0.00	0.00
14	125.00	CCI DTMABP7819VG12A	6	10.354	11.389	0.38	0.75	2.56	114.00	0.000	0.000	29.21	0.00	0.00
15	125.00	Raycap DC6-48-60-18-8F	2	10.354	11.389	0.38	0.75	1.10	65.60	0.000	0.000	12.56	0.00	0.00
16	125.00	B14 4478	3	10.354	11.389	0.38	0.75	1.86	178.20	0.000	0.000	21.14	0.00	0.00
17	125.00	Ericcson 4449	3	10.354	11.389	0.38	0.75	1.86	210.00	0.000	0.000	21.14	0.00	0.00
18	125.00	Ericcson RRUS 32 B30	3	10.354	11.389	0.38	0.75	3.08	180.00	0.000	0.000	35.11	0.00	0.00
19	125.00	Raycap	1	10.354	11.389	0.75	0.75	0.85	26.20	0.000	0.000	9.74	0.00	0.00
20	125.00	RMQLP-4120-H10	1	10.354	11.389	1.00	1.00	55.40	3470.00	0.000	0.000	630.95	0.00	0.00
21	125.00	RRUS 32 B66	3	10.354	11.389	0.38	0.75	3.08	159.00	0.000	0.000	35.11	0.00	0.00
22	125.00	DBC0061F1V51-2	6	10.354	11.389	0.38	0.75	0.97	152.40	0.000	0.000	11.02	0.00	0.00
23	125.00	Kathrein 782 10250	6	10.354	11.389	0.38	0.75	1.17	38.40	0.000	0.000	13.33	0.00	0.00
24	114.00	Low Profile Platform	1	10.155	11.170	1.00	1.00	25.00	1800.00	0.000	0.000	279.26	0.00	0.00
25	114.00	20" x 18" x 9" Junction Box	1	10.155	11.170	0.40	0.80	1.26	20.00	0.000	0.000	14.07	0.00	0.00
26	114.00	Andrew VHLP1-23-DW1	1	10.238	11.262	1.00	1.00	1.61	14.00	0.000	4.500	18.13	0.00	81.59
27	114.00	Andrew VHLP2-23-DW1	1	10.238	11.262	1.00	1.00	4.69	31.00	0.000	4.500	52.82	0.00	237.68
28	114.00	Argus LLPX310R-V1	3	10.164	11.181	0.55	0.80	7.14	152.10	0.000	0.500	79.80	0.00	39.90
29	114.00	Samsung	3	10.136	11.150	0.40	0.80	2.18	99.30	0.000	-1.000	24.35	0.00	-24.35
30	114.00	Alcatel Lucent	3	10.211	11.232	0.40	0.80	3.25	180.00	0.000	3.000	36.53	0.00	109.58
31	114.00	RFS APXVTM14	3	10.211	11.232	0.63	0.80	12.02	350.10	0.000	3.000	135.01	0.00	405.03
32	114.00	RFS APXVSPP18	3	10.211	11.232	0.66	0.80	15.98	375.90	0.000	3.000	179.43	0.00	538.30
33	114.00	Alcatel Lucent	3	10.211	11.232	0.40	0.80	4.86	210.00	0.000	3.000	54.59	0.00	163.76
34	114.00	Alcatel Lucent	3	10.127	11.139	0.40	0.80	2.88	192.00	0.000	-1.500	32.08	0.00	-48.12
35	100.00	JMA Wireless	3	9.879	10.866	0.55	0.75	20.80	193.50	0.000	0.000	225.98	0.00	0.00
36	100.00	Fujitsu TA08025-B605 -	3	9.879	10.866	0.38	0.75	2.21	225.00	0.000	0.000	23.96	0.00	0.00
37	100.00	Raycap	1	9.879	10.866	0.38	0.75	0.75	21.90	0.000	0.000	8.19	0.00	0.00
38	100.00	Fujitsu TA08025-B604 -	3	9.879	10.866	0.38	0.75	2.21	191.70	0.000	0.000	23.96	0.00	0.00
39	100.00	Platform w/HRK	1	9.879	10.866	1.00	1.00	37.59	1727.00	0.000	0.000	408.47	0.00	0.00
40	90.00	RFS DB-T1-6Z-8AB-0Z	2	9.662	10.628	0.53	0.75	5.11	37.80	0.000	0.000	54.33	0.00	0.00
41	90.00	Alcatel Lucent B2/B66A	3	9.662	10.628	0.38	0.75	2.11	253.20	0.000	0.000	22.48	0.00	0.00
42	90.00	Samsung B5/B13	3	9.662	10.628	0.38	0.75	2.11	210.90	0.000	0.000	22.48	0.00	0.00
43	90.00	XXDWMM-12.5-65-8T	3	9.662	10.628	0.55	0.75	2.55	261.90	0.000	0.000	27.07	0.00	0.00
44	90.00	L-Sub6 Antenna	3	9.662	10.628	0.63	0.75	7.62	244.80	0.000	0.000	80.95	0.00	0.00
45	90.00	SLCP 2x6014	3	9.662	10.628	0.67	0.75	13.00	60.00	0.000	0.000	138.12	0.00	0.00
46	90.00	SBNHH-1D65B w/ Mount	6	9.662	10.628	0.62	0.75	30.48	240.00	0.000	0.000	323.92	0.00	0.00
47	90.00	Platform w/ Hand Rails	1	9.662	10.628	1.00	1.00	40.00	2200.00	0.000	0.000	425.12	0.00	0.00

Discrete Appurtenance Forces

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 39	

Totals:	**18,928.90**	**5,252.85**

Total Applied Force Summary

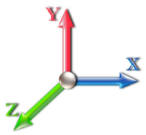
Structure:	CT16504-A-SBA		**Code:**	TIA-222-H	2/15/2022
Site Name:	Manchester 12, CT		**Exposure:**	C	
Height:	140.50 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 40

Tower Engineering Solutions

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
1.00		19.36	210.52	0.00	0.00
5.00		76.87	834.71	0.00	0.00
10.00		94.80	1026.80	0.00	0.00
15.00		93.36	1008.37	0.00	0.00
20.00		97.54	989.93	0.00	0.00
25.00		100.63	971.50	0.00	0.00
30.00		102.91	953.07	0.00	0.00
35.00		104.59	934.63	0.00	0.00
40.00		105.81	916.20	0.00	0.00
44.50		92.09	808.82	0.00	0.00
45.00		10.35	147.51	0.00	0.00
50.00		104.82	1456.53	0.00	0.00
55.00		104.41	762.45	0.00	0.00
60.00		104.42	747.09	0.00	0.00
65.00		104.24	731.73	0.00	0.00
67.50		51.80	360.10	0.00	0.00
70.00		51.70	356.26	0.00	0.00
75.00		94.66	701.00	0.00	0.00
80.00		93.04	685.64	0.00	0.00
85.00		91.28	670.28	0.00	0.00
90.00	(24) attachments	1183.87	4163.52	0.00	0.00
90.50		8.79	57.31	0.00	0.00
93.12		53.19	439.10	0.00	0.00
94.50		27.87	228.57	0.00	0.00
95.00		10.01	39.15	0.00	0.00
100.00	(11) attachments	790.61	2745.52	0.00	0.00
105.00		98.92	372.21	0.00	0.00
107.87		56.12	209.48	0.00	0.00
110.00		41.36	153.51	0.00	0.00
114.00	(25) attachments	969.96	3708.16	0.00	1503.37
115.00		15.69	62.50	0.00	0.00
120.00		77.24	306.95	0.00	0.00
125.00	(49) attachments	1574.42	5886.63	0.00	-34.22
130.00		72.09	220.91	0.00	0.00
135.00	(24) attachments	1131.54	4259.59	0.00	0.00
140.00		66.67	185.48	0.00	0.00
140.50		6.49	18.04	0.00	0.00
	Totals:	**7,883.55**	**38,329.76**	**0.00**	**1,469.14**

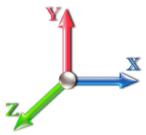
Linear Appurtenance Segment Forces (Factored)

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 41	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

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)
1.00	1 1/4" Fiber	Yes	1.00	0.000	0.00	0.00	0.00	0.104	1.012	6.635	0.00	1.32
1.00	1 5/8" Fiber	Yes	1.00	0.000	1.98	0.17	0.00	0.104	1.012	6.635	0.00	2.08
1.00	1.25" Reinforcing	Yes	1.00	0.000	1.25	0.10	0.00	0.104	1.012	6.635	0.00	0.00
1.00	1.25" Reinforcing	Yes	1.00	0.000	1.25	0.10	0.00	0.104	1.012	6.635	0.00	0.00
5.00	1 1/4" Fiber	Yes	4.00	0.000	0.00	0.00	0.00	0.105	1.015	6.635	0.00	5.28
5.00	1 5/8" Fiber	Yes	4.00	0.000	1.98	0.66	0.00	0.105	1.015	6.635	0.00	8.32
5.00	1.25" Reinforcing	Yes	4.00	0.000	1.25	0.42	0.00	0.105	1.015	6.635	0.00	0.00
5.00	1.25" Reinforcing	Yes	4.00	0.000	1.25	0.42	0.00	0.105	1.015	6.635	0.00	0.00
10.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.107	1.021	6.635	0.00	6.60
10.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.107	1.021	6.635	0.00	10.40
10.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.107	1.021	6.635	0.00	0.00
10.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.107	1.021	6.635	0.00	0.00
15.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.110	1.029	6.635	0.00	6.60
15.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.110	1.029	6.635	0.00	10.40
15.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.110	1.029	6.635	0.00	0.00
15.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.110	1.029	6.635	0.00	0.00
20.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.112	1.036	7.040	0.00	6.60
20.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.112	1.036	7.040	0.00	10.40
20.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.112	1.036	7.040	0.00	0.00
20.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.112	1.036	7.040	0.00	0.00
25.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.115	1.044	7.378	0.00	6.60
25.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.115	1.044	7.378	0.00	10.40
25.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.115	1.044	7.378	0.00	0.00
25.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.115	1.044	7.378	0.00	0.00
30.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.118	1.053	7.667	0.00	6.60
30.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.118	1.053	7.667	0.00	10.40
30.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.118	1.053	7.667	0.00	0.00
30.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.118	1.053	7.667	0.00	0.00
35.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.120	1.061	7.920	0.00	6.60
35.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.120	1.061	7.920	0.00	10.40
35.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.120	1.061	7.920	0.00	0.00
35.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.120	1.061	7.920	0.00	0.00
40.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.124	1.071	8.145	0.00	6.60
40.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.124	1.071	8.145	0.00	10.40
40.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.124	1.071	8.145	0.00	0.00
40.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.124	1.071	8.145	0.00	0.00
44.50	1 1/4" Fiber	Yes	4.50	0.000	0.00	0.00	0.00	0.112	1.037	8.330	0.00	5.94
44.50	1 5/8" Fiber	Yes	4.50	0.000	1.98	0.74	0.00	0.112	1.037	8.330	0.00	9.36
44.50	1" Reinforcing plate	Yes	4.50	0.000	1.00	0.38	0.00	0.112	1.037	8.330	0.00	0.00
44.50	1" Reinforcing plate	Yes	4.50	0.000	1.00	0.38	0.00	0.112	1.037	8.330	0.00	0.00
45.00	1 1/4" Fiber	Yes	0.50	0.000	0.00	0.00	0.00	0.114	1.042	8.350	0.00	0.66
45.00	1 5/8" Fiber	Yes	0.50	0.000	1.98	0.08	0.00	0.114	1.042	8.350	0.00	1.04
45.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.114	1.042	8.350	0.00	0.00
45.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.114	1.042	8.350	0.00	0.00
50.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.116	1.047	8.537	0.00	6.60
50.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.116	1.047	8.537	0.00	10.40
50.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.116	1.047	8.537	0.00	0.00

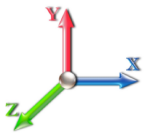
Linear Appurtenance Segment Forces (Factored)

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 42	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

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)
50.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.116	1.047	8.537	0.00	0.00
55.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.117	1.050	8.710	0.00	6.60
55.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.117	1.050	8.710	0.00	10.40
55.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.117	1.050	8.710	0.00	0.00
55.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.117	1.050	8.710	0.00	0.00
60.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.120	1.060	8.871	0.00	6.60
60.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.120	1.060	8.871	0.00	10.40
60.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.120	1.060	8.871	0.00	0.00
60.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.120	1.060	8.871	0.00	0.00
65.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.123	1.070	9.022	0.00	6.60
65.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.123	1.070	9.022	0.00	10.40
65.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.123	1.070	9.022	0.00	0.00
65.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.123	1.070	9.022	0.00	0.00
67.50	1 1/4" Fiber	Yes	2.50	0.000	0.00	0.00	0.00	0.126	1.078	9.094	0.00	3.30
67.50	1 5/8" Fiber	Yes	2.50	0.000	1.98	0.41	0.00	0.126	1.078	9.094	0.00	5.20
67.50	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.126	1.078	9.094	0.00	0.00
67.50	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.126	1.078	9.094	0.00	0.00
70.00	1 1/4" Fiber	Yes	2.50	0.000	0.00	0.00	0.00	0.128	1.084	9.164	0.00	3.30
70.00	1 5/8" Fiber	Yes	2.50	0.000	1.98	0.41	0.00	0.128	1.084	9.164	0.00	5.20
70.00	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.128	1.084	9.164	0.00	0.00
70.00	1" Reinforcing plate	Yes	2.50	0.000	1.00	0.21	0.00	0.128	1.084	9.164	0.00	0.00
75.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.065	0.000	9.298	0.00	6.60
75.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.065	0.000	9.298	0.00	10.40
80.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.067	0.000	9.425	0.00	6.60
80.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.067	0.000	9.425	0.00	10.40
85.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.069	0.000	9.546	0.00	6.60
85.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.069	0.000	9.546	0.00	10.40
90.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.072	0.000	9.662	0.00	6.60
90.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.072	0.000	9.662	0.00	10.40
90.50	1 1/4" Fiber	Yes	0.50	0.000	0.00	0.00	0.00	0.073	0.000	9.673	0.00	0.66
90.50	1 5/8" Fiber	Yes	0.50	0.000	1.98	0.08	0.00	0.073	0.000	9.673	0.00	1.04
93.12	1 1/4" Fiber	Yes	2.62	0.000	0.00	0.00	0.00	0.148	1.145	9.731	0.00	3.46
93.12	1 5/8" Fiber	Yes	2.62	0.000	1.98	0.43	0.00	0.148	1.145	9.731	0.00	5.45
93.12	1" Reinforcing plate	Yes	2.62	0.000	1.00	0.22	0.00	0.148	1.145	9.731	0.00	0.00
93.12	1" Reinforcing plate	Yes	2.62	0.000	1.00	0.22	0.00	0.148	1.145	9.731	0.00	0.00
94.50	1 1/4" Fiber	Yes	1.38	0.000	0.00	0.00	0.00	0.150	1.151	9.762	0.00	1.82
94.50	1 5/8" Fiber	Yes	1.38	0.000	1.98	0.23	0.00	0.150	1.151	9.762	0.00	2.87
94.50	1" Reinforcing plate	Yes	1.38	0.000	1.00	0.11	0.00	0.150	1.151	9.762	0.00	0.00
94.50	1" Reinforcing plate	Yes	1.38	0.000	1.00	0.11	0.00	0.150	1.151	9.762	0.00	0.00
95.00	1 1/4" Fiber	Yes	0.50	0.000	0.00	0.00	0.00	0.149	1.147	9.772	0.00	0.66
95.00	1 5/8" Fiber	Yes	0.50	0.000	1.98	0.08	0.00	0.149	1.147	9.772	0.00	1.04
95.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.149	1.147	9.772	0.00	0.00
95.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.149	1.147	9.772	0.00	0.00
100.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.152	1.156	9.879	0.00	6.60
100.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.152	1.156	9.879	0.00	10.40
100.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.152	1.156	9.879	0.00	0.00
100.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.152	1.156	9.879	0.00	0.00

Linear Appurtenance Segment Forces (Factored)

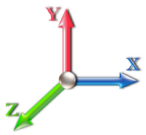
Structure:	CT16504-A-SBA	**Code:**	TIA-222-H		2/15/2022
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II		Page: 43

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

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)
105.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.158	1.173	9.981	0.00	6.60
105.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.158	1.173	9.981	0.00	10.40
105.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.158	1.173	9.981	0.00	0.00
105.00	1" Reinforcing plate	Yes	5.00	0.000	1.00	0.42	0.00	0.158	1.173	9.981	0.00	0.00
107.87	1 1/4" Fiber	Yes	2.87	0.000	0.00	0.00	0.00	0.162	1.187	10.037	0.00	3.79
107.87	1 5/8" Fiber	Yes	2.87	0.000	1.98	0.47	0.00	0.162	1.187	10.037	0.00	5.97
107.87	1" Reinforcing plate	Yes	2.87	0.000	1.00	0.24	0.00	0.162	1.187	10.037	0.00	0.00
107.87	1" Reinforcing plate	Yes	2.87	0.000	1.00	0.24	0.00	0.162	1.187	10.037	0.00	0.00
110.00	1 1/4" Fiber	Yes	2.13	0.000	0.00	0.00	0.00	0.165	1.196	10.079	0.00	2.81
110.00	1 5/8" Fiber	Yes	2.13	0.000	1.98	0.35	0.00	0.165	1.196	10.079	0.00	4.43
110.00	1" Reinforcing plate	Yes	2.13	0.000	1.00	0.18	0.00	0.165	1.196	10.079	0.00	0.00
110.00	1" Reinforcing plate	Yes	2.13	0.000	1.00	0.18	0.00	0.165	1.196	10.079	0.00	0.00
114.00	1 1/4" Fiber	Yes	4.00	0.000	0.00	0.00	0.00	0.095	0.000	10.155	0.00	5.28
114.00	1 5/8" Fiber	Yes	4.00	0.000	1.98	0.66	0.00	0.095	0.000	10.155	0.00	8.32
114.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.095	0.000	10.155	0.00	0.00
114.00	1" Reinforcing plate	Yes	0.50	0.000	1.00	0.04	0.00	0.095	0.000	10.155	0.00	0.00
115.00	1 1/4" Fiber	Yes	1.00	0.000	0.00	0.00	0.00	0.086	0.000	10.174	0.00	1.32
115.00	1 5/8" Fiber	Yes	1.00	0.000	1.98	0.17	0.00	0.086	0.000	10.174	0.00	2.08
120.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.088	0.000	10.265	0.00	6.60
120.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.088	0.000	10.265	0.00	10.40
125.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.092	0.000	10.354	0.00	6.60
125.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.092	0.000	10.354	0.00	10.40
130.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.096	0.000	10.440	0.00	6.60
130.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.096	0.000	10.440	0.00	10.40
135.00	1 1/4" Fiber	Yes	5.00	0.000	0.00	0.00	0.00	0.100	1.001	10.523	0.00	6.60
135.00	1 5/8" Fiber	Yes	5.00	0.000	1.98	0.82	0.00	0.100	1.001	10.523	0.00	10.40
										Totals:	**0.0**	**459.0**

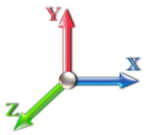
Calculated Forces

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 44	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 23

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	-38.33	-7.89	0.00	-827.18	0.00	827.18	3592.24	880.75	3081.19	3113.33	0.00	0.000	0.000	0.192
1.00	-38.11	-7.89	0.00	-819.30	0.00	819.30	3581.26	876.95	3054.64	3090.29	0.00	-0.014	0.000	0.170
5.00	-37.27	-7.85	0.00	-787.74	0.00	787.74	3536.93	861.73	2949.58	2998.63	0.04	-0.065	0.000	0.167
10.00	-36.24	-7.79	0.00	-748.49	0.00	748.49	3480.64	842.72	2820.85	2885.21	0.14	-0.128	0.000	0.163
15.00	-35.22	-7.74	0.00	-709.53	0.00	709.53	3423.37	823.70	2694.99	2773.12	0.31	-0.192	0.000	0.159
20.00	-34.22	-7.67	0.00	-670.85	0.00	670.85	3365.12	804.69	2572.00	2662.41	0.54	-0.256	0.000	0.165
25.00	-33.24	-7.61	0.00	-632.48	0.00	632.48	3305.89	785.67	2451.88	2553.15	0.84	-0.324	0.000	0.161
30.00	-32.28	-7.54	0.00	-594.44	0.00	594.44	3245.52	766.66	2334.64	2445.26	1.22	-0.392	0.000	0.156
35.00	-31.34	-7.46	0.00	-556.76	0.00	556.76	3165.03	747.64	2220.26	2324.87	1.67	-0.460	0.000	0.152
40.00	-30.41	-7.38	0.00	-519.44	0.00	519.44	3084.53	728.63	2108.76	2207.52	2.18	-0.527	0.000	0.161
44.50	-29.60	-7.30	0.00	-486.21	0.00	486.21	3012.08	711.52	2010.87	2104.51	2.71	-0.594	0.000	0.157
45.00	-29.45	-7.31	0.00	-482.56	0.00	482.56	3004.03	709.61	2000.14	2093.21	2.78	-0.602	0.000	0.155
50.00	-27.98	-7.23	0.00	-445.99	0.00	445.99	2423.81	587.47	1644.99	1680.79	3.44	-0.674	0.000	0.156
55.00	-27.21	-7.15	0.00	-409.86	0.00	409.86	2376.14	571.62	1557.44	1602.88	4.19	-0.745	0.000	0.161
60.00	-26.46	-7.07	0.00	-374.12	0.00	374.12	2327.49	555.78	1472.29	1526.13	5.01	-0.821	0.000	0.152
65.00	-25.72	-6.98	0.00	-338.78	0.00	338.78	2277.86	539.93	1389.54	1450.59	5.91	-0.895	0.000	0.144
67.50	-25.36	-6.94	0.00	-321.34	0.00	321.34	2252.16	532.01	1349.06	1412.97	6.39	-0.932	0.000	0.139
67.50	-25.36	-6.94	0.00	-321.34	0.00	321.34	2252.16	532.01	1349.06	1412.97	6.39	-0.932	0.000	0.139
70.00	-24.99	-6.91	0.00	-304.00	0.00	304.00	2218.62	524.08	1309.17	1370.99	6.88	-0.968	0.000	0.233
75.00	-24.28	-6.86	0.00	-269.44	0.00	269.44	2151.54	508.24	1231.20	1288.93	7.96	-1.087	0.000	0.221
80.00	-23.58	-6.80	0.00	-235.16	0.00	235.16	2084.46	492.39	1155.63	1209.39	9.16	-1.202	0.000	0.206
85.00	-22.90	-6.73	0.00	-201.18	0.00	201.18	2017.38	476.55	1082.45	1132.40	10.48	-1.312	0.000	0.189
90.00	-18.76	-5.47	0.00	-167.53	0.00	167.53	1950.30	460.70	1011.66	1057.93	11.91	-1.414	0.000	0.168
90.50	-18.70	-5.47	0.00	-164.79	0.00	164.79	1943.59	459.12	1004.71	1050.62	12.06	-1.424	0.000	0.167
93.12	-18.26	-5.41	0.00	-150.47	0.00	150.47	1908.44	450.81	968.70	1012.75	12.86	-1.475	0.000	0.088
94.50	-18.03	-5.38	0.00	-143.00	0.00	143.00	1035.36	273.09	592.44	557.40	13.28	-1.490	0.000	0.097
95.00	-17.99	-5.38	0.00	-140.31	0.00	140.31	1033.16	272.13	588.32	554.27	13.44	-1.495	0.000	0.120
100.00	-15.26	-4.53	0.00	-113.41	0.00	113.41	1010.63	262.63	547.93	523.10	15.04	-1.555	0.000	0.100
105.00	-14.89	-4.43	0.00	-90.74	0.00	90.74	987.11	253.12	508.98	492.30	16.70	-1.607	0.000	0.084
107.87	-14.68	-4.38	0.00	-78.02	0.00	78.02	973.17	247.66	487.27	474.80	17.67	-1.634	0.000	0.075
107.87	-14.68	-4.38	0.00	-78.02	0.00	78.02	973.17	247.66	487.27	474.80	17.67	-1.634	0.000	0.075
110.00	-14.53	-4.34	0.00	-68.69	0.00	68.69	962.61	243.61	471.46	461.91	18.40	-1.652	0.000	0.164
114.00	-10.85	-3.27	0.00	-49.81	0.00	49.81	942.31	236.01	442.48	437.94	19.82	-1.724	0.000	0.125
115.00	-10.78	-3.26	0.00	-46.54	0.00	46.54	937.13	234.11	435.38	431.99	20.18	-1.739	0.000	0.119
120.00	-10.47	-3.19	0.00	-30.22	0.00	30.22	910.67	224.60	400.73	402.61	22.04	-1.804	0.000	0.087
125.00	-4.64	-1.43	0.00	-14.29	0.00	14.29	883.23	215.09	367.52	373.80	23.95	-1.846	0.000	0.044
130.00	-4.42	-1.35	0.00	-7.15	0.00	7.15	854.80	205.58	335.75	345.64	25.90	-1.869	0.000	0.026
135.00	-0.20	-0.08	0.00	-0.40	0.00	0.40	825.39	196.08	305.42	318.16	27.87	-1.879	0.000	0.002
140.00	-0.02	-0.01	0.00	0.00	0.00	0.00	789.80	186.57	276.52	289.54	29.83	-1.879	0.000	0.000
140.50	0.00	-0.01	0.00	0.00	0.00	0.00	785.78	185.62	273.70	286.58	30.03	-1.879	0.000	0.000

Final Analysis Summary

Structure:	CT16504-A-SBA	**Code:**	TIA-222-H	2/15/2022	
Site Name:	Manchester 12, CT	**Exposure:**	C		
Height:	140.50 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 45	

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Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.0W 118 mph Wind	34.1	0.00	45.98	0.00	0.00	3606.83
0.9D + 1.0W 118 mph Wind	34.1	0.00	34.48	0.00	0.00	3547.21
1.2D + 1.0Di + 1.0Wi 50 mph Wind	9.6	0.00	82.31	0.00	0.00	1072.96
1.2D + 1.0Ev + 1.0Eh	0.5	0.00	47.57	0.00	0.00	58.40
0.9D + 1.0Ev + 1.0Eh	0.5	0.00	36.02	0.00	0.00	57.47
1.0D + 1.0W 60 mph Wind	7.9	0.00	38.33	0.00	0.00	827.18

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.0W 118 mph Wind	-27.85	-30.22	0.00	-1331.1	0.00	-1331.1	2218.62	524.08	1309.17	1370.99	70.00	0.987
0.9D + 1.0W 118 mph Wind	-20.39	-29.59	0.00	-1294.8	0.00	-1294.8	2218.62	524.08	1309.17	1370.99	70.00	0.957
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-59.59	-9.07	0.00	-411.62	0.00	-411.62	2218.62	524.08	1309.17	1370.99	70.00	0.327
1.2D + 1.0Ev + 1.0Eh	-18.17	-0.41	0.00	-6.70	0.00	-6.70	962.61	243.61	471.46	461.91	110.00	0.033
0.9D + 1.0Ev + 1.0Eh	-23.60	-0.48	0.00	-24.60	0.00	-24.60	2218.62	524.08	1309.17	1370.99	70.00	0.029
1.0D + 1.0W 60 mph Wind	-24.99	-6.91	0.00	-304.00	0.00	-304.00	2218.62	524.08	1309.17	1370.99	70.00	0.233

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors VQ/I (lb/in)	Vu (kips)	phi Vn (kips)	Lower Termination MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	Upper Termination MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	Max Member Pu (kips)	phi Pn (kips)	phi Tn (kips)	Ratio
0.0	1.0	(4) SOL-2 1/4" William R71	-332.1	-5.98	25.3	275.8	25.3	11	0	417.1	25.3			275.82	370.7	385.56	0.744
1.0	20.0	(4) LNP-LP7X125-B-20A	-370.8	-8.90	25.3	417.1	25.3			391.1	25.3			417.14	460.8	435.94	0.957
20.0	40.0	(4) LNP-LP6X125-G-20AB	-383.8	-9.21	25.3	358.7	25.3			325.1	25.3			358.66	395.0	360.94	0.994
40.0	60.0	(4) LNP-LP6X100-G-20BC	-412.5	-9.90	25.3	284.7	25.3			262.6	25.3			284.68	297.8	288.75	0.986
60.0	67.5	(4) LNP-LP6X100-G-10CT	-433.2	-10.40	25.3	262.6	25.3			241.3	25.3	10	0	262.58	297.8	288.75	0.909
93.1	107.9	(3) LNP-LP6X100-G-20TT	636.3	15.27	25.3	167.2	22.7	8	8	126.4	22.7	6	8	199.16	297.8	288.75	0.690

Pier Foundation Design For Monopole

				Date
				2/15/2022
	Customer Name:	AT&T	**EIA/TIA Standard:**	TIA-222-H
	Site Name:		**Structure Height (Ft.):**	140.5
	Site Number:	CT16504-A-SBA	**Engineer Name:**	J. Tibbetts
	Engr. Number:	123540	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

Analysis or Design? Analysis

Acceptable overstress (5.0%

Base Reactions (Factored):

Axial Load (Kips):	46.0	Shear Force (Kips):	34.1
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3606.8

Foundation Geometries:

Diameter of Pier (ft.):	6.0	Depth of Base B. G. S. :	30.0	ft.
Pier Height A. G. (ft.):	0.50			

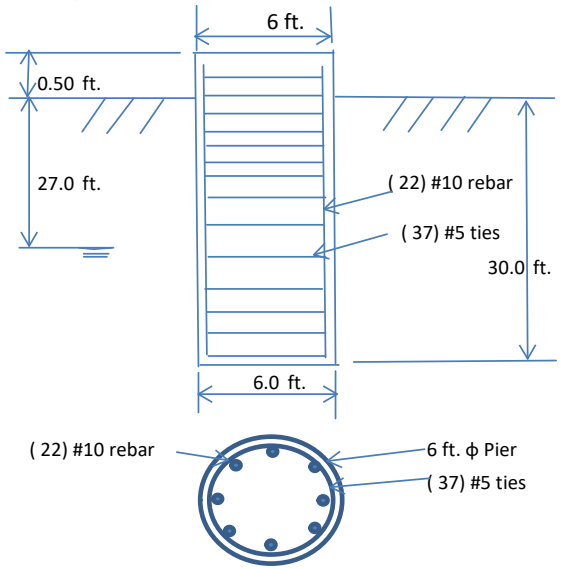
Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield strength:	60	ksi
Vertical Rebar Size #:	10	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	22	Tie Spacing:	12.0	in.
Concrete Cover (in.):	4	Concrete unit weight:	150.0	pcf

Soil Design Parameters:

Water Table B.G.S. (ft):	27.0	Unit weight of water:	62.4	psf
Ratio of Uplift/Axial Skin Friction:	1.0	Pullout failure Angle:	30	(°)

Skin Frictions are to be obtained from: Soil Report



Monopole Pier Foundation

Sand

Depth of Layers (ft) Top	Depth of Layers (ft) Bottom	γ_{soil} (pcf)	ϕ (°)	Cohesion (psf)	Ultimate Skin Friction (psf)	Ultimate Bearing (psf)	Soil Types
0.0	1.0	100	0	0			Sand
1.0	5.0	135	40	0			Sand
5.0	7.0	120	33	0			Sand
7.0	10.0	130	38	0			Sand
10.0	15.0	128	37	0			Sand
15.0	30.0	132	39	0			Sand
30.0	35.0	127	36	0			Sand

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

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Soil Bearing Strength Reduction Factor:	0.75	
Total Dry Soil Volume from Conical Failure (cu. Ft.):	14250	Dry Soil Weight from Conical Failure:	1844	Kips
Total Buoyant Soil Volume from Conical Failure (cu. Ft.):	58	Buoyant Soil Weight from Conical Failure (Ki	5	Kips
Total Dry Concrete Volume (cu. Ft.):	778	Total Dry Concrete Weight:	116.6	Kips
Total Buoyant Concrete Volume (cu. Ft.):	84.8	Total Buoyant Concrete Weight:	7.43	Kips
Total Effective Concrete Weight (Kips):	124.1	Total Effective Soil Weight:	1849.0	Kips
Total Effective Vertical Load on Base (Kips):	64.0			

Check Soil Capacities:

					Usage	
Allowable Foundation Overturning Resistance (kips-ft.):	16168.7	>	Design Factored Moment (kips-ft):	4321	0.27	OK!
Factor of Safety of Passive Soil Resistance against Moment:	3.74	OK!				

Check the capacities of Reinforceing Concrete:

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

Reinforcing Concrete Pier:

					Usage	
Vertical Steel Rebar Area (sq. in./each):	1.27		Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	3931.4	>	Design Factored Moment (Mu, K-Ft):	3711.1	0.94	OK!
Calculated Shear Capacity (Kips):	707.8	>	Design Factored Shear (Kips):	310.1	0.44	OK!
Calculated Tension Capacity (Tn, Kips):	1508.8	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	5362	>	Design Factored Axial Load (Pu Kips):	46.0	0.01	OK!
Moment & Axial Strength Combination:	0.94	OK!	Max. Allowable Tie/Stirrup Spacing:	12.00	in.	
Pier Reinforcement Ratio:	0.007	Reinforcement Ratio is satisfied per ACI				

EXHIBIT 4

October 18, 2021

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

RE:		
	Site Number:	CT1080 (C-BAND)
	FA Number:	10035244
	PACE Number:	MRCTB052627
	PT Number:	2051A103K9
	Site Name:	MANCHESTER SAND & GRAVEL
	Site Address:	60 Adams Street Manchester, CT 06040

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 mount to determine their capability of supporting the following additional loading:

- (3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) RRUS-32 B66A RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (2) Squid Surge Arrestor (24.0"x9.7" Ø – Wt. = 33 lbs.)
- **(3) QD6616-7 Antennas (72.0"x22.0"x9.6" – Wt. = 130 lbs. /each)**
- **(3) AIR6449 N77D Antennas (30.6"x15.9"x10.6" – Wt. = 82 lbs. /each)**
- **(3) AIR6419 N77G Antennas (31.0"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) DMP65R-BU6DA Antennas (71.2"x20.7"x7.7" – Wt. = 80 lbs. /each)**
- **(3) 4415 B25 RRH's (16.5"x13.4"x5.9" – Wt. = 46 lbs. /each)**
- **(3) B5/B12 4449 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Ø – Wt. = 33 lbs.)**

**Proposed equipment shown in bold.*

Mount fabrication drawings prepared by SitePro1 P/N RMQLP-4120-H10, dated October 18, 2019, P/N LWRM, dated August 24, 2012, and 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 – R13.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 125 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.5 in. An escalated ice thickness of 1.71 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 0.178 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.064.
- 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 1.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.

Based on our evaluation, we have determined that the Proposed SitePro1 P/N RMQLP-4120-H10 mount, (1) Proposed SitePro1 LWRM ring mount and (3) Proposed SitePro1 MM01 standoffs **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Proposed (C-BAND) Mount Rating	95	LC1	59%	**PASS**

Reference Documents:

- Fabrication drawings prepared by SitePro1 P/N RMQLP-4120-H10, dated October 18, 2019.
- 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 mount 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 replace.*







06/01/2021 13:22


06/01/2021 13:28


06/01/2021 12:54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HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 10/18/2021
Project Name: MANCHESTER SAND & GRAVEL
Project No.: CT1080
Designed By: KM **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

	z=	125	(ft)
	z_g=	900	(ft)
K_z= **1.326**	α=	9.5	

$K_{zmin} \le K_z \le 2.01$

Table 2-4

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

2.6.6.2 Topographic Factor:

Table 2-5

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

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

K_{zt}= **1**	K_h=	1	
	K_c=	1	(from Table 2-4)
(If Category 1 then K_{zt}=1.0)	K_t=	0	(from Table 2-5)
	f=	0	(from Table 2-5)
Category= 1	z=	125	
	z_s=	130	(Mean elevation of base of structure above sea level)
	H=	0	(Ht. of the crest above surrounding terrain)
	K_{zt}=	1.00	(from 2.6.6.2.1)
	K_e=	1.00	(from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness =	t_i =	1.50	in
Importance Factor =	I=	1.0	(from Table 2-3)
	K_{iz} =	1.14	(from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$ t_{iz} = 1.71 in

Date: 10/18/2021
Project Name: MANCHESTER SAND & GRAVEL
Project No.: CT1080
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

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

h=	140	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

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

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

2.6.11.2 Design Wind Force on Appurtenances

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

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

		K_z=	1.326	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**50.17**	K_e=	1.00	(from 2.6.8)
$q_{z\ (ice)}$=	**8.03**	K_d=	0.95	(from Table 2-2)
$q_{z\ (30)}$=	**2.89**	V_{max}=	125	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

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

Date: 10/18/2021
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Determine Ca:

Table 2-9

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

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

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

Ice Thickness = 1.71 in | **Angle =** 0 (deg) | **Equivalent Angle =** 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
QD6616-7 Antenna	72.0	22.0	9.6	11.00	3.27	1.23	681	132	39
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	1.92	1.20	203	44	12
AIR6419 N77G Antenna	31.0	16.1	7.3	3.47	1.93	1.20	209	45	12
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.32	1.20	415	83	24
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.36	1.20	99	24	6
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	0.00	1.20	70	18	4
4415 B25 RRH	16.5	13.5	6.3	1.55	1.22	1.20	93	23	5
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	0.00	1.20	43	13	3
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	101	24	6
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	0.00	1.20	63	17	4
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	2.25	1.20	138	32	8
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	0.00	1.20	80	21	5
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	2.25	1.20	138	32	8
RRUS-32 B66A RRH (Side)	27.2	7.0	12.1	1.32	0.00	1.20	80	21	5
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	57	14	3
PL 6x3/8	0.4	12.0	-	0.03	0.03	2.00	3		
HSS 4x4	4.0	12.0	-	0.33	0.33	1.25	21		
L 2-1/2x2-1/2 Angle	2.5	12.0	-	0.21	0.21	2.00	21		
L 2x2 Angle	2.0	12.0	-	0.17	0.17	2.00	17		
3" Pipe	3.5	12.0	-	0.29	0.29	1.20	18		
2-1/2" Pipe	2.9	12.0	-	0.24	0.24	1.20	14		
2" Pipe	2.4	12.0	-	0.20	0.20	1.20	12		

Date: 10/18/2021
Project Name: MANCHESTER SAND & GRAVEL
Project No.: CT1080
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 30 (deg) | Ice Thickness = 1.71 in. | Equivalent Angle = 210 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio (normal)	Aspect Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	681	341	596
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	203	138	187
AIR6419 N77G Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	209	101	182
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	415	176	356
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	99	70	92
B5/B12 4449 RRH (Side)	17.9	6.6	13.2	0.82	1.64	2.71	1.36	1.21	1.20	50	99	62
4415 B25 RRH	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	93	44	81
4415 B25 RRH (Side)	16.5	6.8	13.5	0.77	1.55	2.44	1.22	1.20	1.20	47	93	58
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	101	63	92
B14 4478 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	51	101	64
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	138	84	124
RRUS-32 B30 RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	74	138	90
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	138	84	124
RRUS-32 B66A RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	74	138	90

WIND LOADS WITH ICE:

QD6616-7 Antenna	75.4	25.4	13.0	13.32	6.82	2.97	5.79	1.22	1.35	131	74	116
AIR6449 N77D Antenna	34.0	19.3	14.0	4.57	3.31	1.76	2.43	1.20	1.20	44	32	41
AIR6419 N77G Antenna	34.4	19.5	10.7	4.67	2.56	1.76	3.21	1.20	1.23	45	25	40
DMP65R-BU4DA Antenna	51.4	24.1	11.1	8.62	3.97	2.13	4.62	1.20	1.29	83	41	73
B5/B12 4449 RRH	21.3	16.6	12.8	2.46	1.90	1.28	1.66	1.20	1.20	24	18	22
B5/B12 4449 RRH (Side)	21.3	8.3	16.6	1.23	2.46	2.57	1.28	1.20	1.20	12	24	15
4415 B25 RRH	19.9	16.9	9.7	2.34	1.35	1.18	2.05	1.20	1.20	23	13	20
4415 B25 RRH (Side)	19.9	8.5	16.9	1.17	2.34	2.35	1.18	1.20	1.20	11	23	14
B14 4478 RRH	21.5	16.8	11.7	2.52	1.75	1.28	1.84	1.20	1.20	24	17	22
B14 4478 RRH (Side)	21.5	8.4	16.8	1.26	2.52	2.56	1.28	1.20	1.20	12	24	15
RRUS-32 B30 RRH	30.6	15.5	10.4	3.30	2.22	1.97	2.94	1.20	1.22	32	22	29
RRUS-32 B30 RRH (Side)	30.6	7.8	15.5	1.65	3.30	3.94	1.97	1.26	1.20	17	32	21
RRUS-32 B66A RRH	30.6	15.5	10.4	3.30	2.22	1.97	2.94	1.20	1.22	32	22	29
RRUS-32 B66A RRH (Side)	30.6	7.8	15.5	1.65	3.30	3.94	1.97	1.26	1.20	17	32	21

WIND LOADS AT 30 MPH:

QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	39	20	34
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	12	8	11
AIR6419 N77G Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	12	6	10
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	24	10	20
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	6	4	5
B5/B12 4449 RRH (Side)	17.9	6.6	13.2	0.82	1.64	2.71	1.36	1.21	1.20	3	6	4
4415 B25 RRH	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	5	3	5
4415 B25 RRH (Side)	16.5	6.8	13.5	0.77	1.55	2.44	1.22	1.20	1.20	3	5	3
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	5
B14 4478 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	3	6	4
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	7
RRUS-32 B30 RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	4	8	5
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	7
RRUS-32 B66A RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	4	8	5

Date: 10/18/2021
Project Name: MANCHESTER SAND & GRAVEL
Project No.: CT1080
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 60 (deg) | Ice Thickness = 1.71 in. | Equivalent Angle = 240 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio (normal)	Aspect Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	681	341	426
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	203	138	154
AIR6419 N77G Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	209	101	128
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	415	176	236
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	99	70	77
B5/B12 4449 RRH (Side)	17.9	9.9	13.2	1.23	1.64	1.81	1.36	1.20	1.20	74	99	93
4415 B25 RRH	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	93	44	56
4415 B25 RRH (Side)	16.5	10.1	13.5	1.16	1.55	1.63	1.22	1.20	1.20	70	93	87
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	101	63	72
B14 4478 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	76	101	95
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	138	84	97
RRUS-32 B30 RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	105	138	129
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	138	84	97
RRUS-32 B66A RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	105	138	129

WIND LOADS WITH ICE:

QD6616-7 Antenna	75.4	25.4	13.0	13.32	6.82	2.97	5.79	1.22	1.35	131	74	88
AIR6449 N77D Antenna	34.0	19.3	14.0	4.57	3.31	1.76	2.43	1.20	1.20	44	32	35
AIR6419 N77G Antenna	34.4	19.5	10.7	4.67	2.56	1.76	3.21	1.20	1.23	45	25	30
DMP65R-BU4DA Antenna	51.4	24.1	11.1	8.62	3.97	2.13	4.62	1.20	1.29	83	41	52
B5/B12 4449 RRH	21.3	16.6	12.8	2.46	1.90	1.28	1.66	1.20	1.20	24	18	20
B5/B12 4449 RRH (Side)	21.3	12.5	16.6	1.85	2.46	1.71	1.28	1.20	1.20	18	24	22
4415 B25 RRH	19.9	16.9	9.7	2.34	1.35	1.18	2.05	1.20	1.20	23	13	15
4415 B25 RRH (Side)	19.9	12.7	16.9	1.76	2.34	1.57	1.18	1.20	1.20	17	23	21
B14 4478 RRH	21.5	16.8	11.7	2.52	1.75	1.28	1.84	1.20	1.20	24	17	19
B14 4478 RRH (Side)	21.5	12.6	16.8	1.89	2.52	1.71	1.28	1.20	1.20	18	24	23
RRUS-32 B30 RRH	30.6	15.5	10.4	3.30	2.22	1.97	2.94	1.20	1.22	32	22	24
RRUS-32 B30 RRH (Side)	30.6	11.6	15.5	2.48	3.30	2.63	1.97	1.21	1.20	24	32	30
RRUS-32 B66A RRH	30.6	15.5	10.4	3.30	2.22	1.97	2.94	1.20	1.22	32	22	24
RRUS-32 B66A RRH (Side)	30.6	11.6	15.5	2.48	3.30	2.63	1.97	1.21	1.20	24	32	30

WIND LOADS AT 30 MPH:

QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	39	20	25
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	12	8	9
AIR6419 N77G Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	12	6	7
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	24	10	14
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	6	4	4
B5/B12 4449 RRH (Side)	17.9	9.9	13.2	1.23	1.64	1.81	1.36	1.20	1.20	4	6	5
4415 B25 RRH	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	5	3	3
4415 B25 RRH (Side)	16.5	10.1	13.5	1.16	1.55	1.63	1.22	1.20	1.20	4	5	5
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	4
B14 4478 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	4	6	5
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	6
RRUS-32 B30 RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	6	8	7
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	6
RRUS-32 B66A RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	6	8	7

Date: 10/18/2021
Project Name: MANCHESTER SAND & GRAVEL
Project No.: CT1080
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.71	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio (normal)	Aspect Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	681	341	341
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	203	138	138
AIR6419 N77G Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	209	101	101
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	415	176	176
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	99	70	70
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	0.00	1.36	1.20	1.20	70	99	99
4415 B25 RRH	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	93	44	44
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	0.00	1.22	1.20	1.20	43	93	93
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	101	63	63
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	0.00	1.35	1.20	1.20	63	101	101
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	138	84	84
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	0.00	2.25	1.20	1.20	80	138	138
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	138	84	84
RRUS-32 B66A RRH (Side)	27.2	7.0	12.1	1.32	2.29	0.00	2.25	1.20	1.20	80	138	138

WIND LOADS WITH ICE:

QD6616-7 Antenna	75.4	25.4	13.0	13.32	6.82	2.97	5.79	1.22	1.35	131	74	74
AIR6449 N77D Antenna	34.0	19.3	14.0	4.57	3.31	1.76	2.43	1.20	1.20	44	32	32
AIR6419 N77G Antenna	34.4	19.5	10.7	4.67	2.56	1.76	3.21	1.20	1.23	45	25	25
DMP65R-BU4DA Antenna	51.4	24.1	11.1	8.62	3.97	2.13	4.62	1.20	1.29	83	41	41
B5/B12 4449 RRH	21.3	16.6	12.8	2.46	1.90	1.28	1.66	1.20	1.20	24	18	18
B5/B12 4449 RRH (Side)	21.3	12.8	16.6	1.90	2.46	1.66	1.28	1.20	1.20	18	24	24
4415 B25 RRH	19.9	16.9	9.7	2.34	1.35	1.18	2.05	1.20	1.20	23	13	13
4415 B25 RRH (Side)	19.9	9.7	16.9	1.35	2.34	2.05	1.18	1.20	1.20	13	23	23
B14 4478 RRH	21.5	16.8	11.7	2.52	1.75	1.28	1.84	1.20	1.20	24	17	17
B14 4478 RRH (Side)	21.5	11.7	16.8	1.75	2.52	1.84	1.28	1.20	1.20	17	24	24
RRUS-32 B30 RRH	30.6	15.5	10.4	3.30	2.22	1.97	2.94	1.20	1.22	32	22	22
RRUS-32 B30 RRH (Side)	30.6	10.4	15.5	2.22	3.30	2.94	1.97	1.22	1.20	22	32	32
RRUS-32 B66A RRH	30.6	15.5	10.4	3.30	2.22	1.97	2.94	1.20	1.22	32	22	22
RRUS-32 B66A RRH (Side)	30.6	10.4	15.5	2.22	3.30	2.94	1.97	1.22	1.20	22	32	32

WIND LOADS AT 30 MPH:

QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	39	20	20
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	12	8	8
AIR6419 N77G Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	12	6	6
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	24	10	10
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	6	4	4
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	0.00	1.36	1.20	1.20	4	6	6
4415 B25 RRH	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	5	3	3
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	0.00	1.22	1.20	1.20	3	5	5
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	4
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	0.00	1.35	1.20	1.20	4	6	6
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	5
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	0.00	2.25	1.20	1.20	5	8	8
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	5
RRUS-32 B66A RRH (Side)	27.2	7.0	12.1	1.32	2.29	0.00	2.25	1.20	1.20	5	8	8

Date: 10/18/2021
Project Name: MANCHESTER SAND & GRAVEL
Project No.: CT1080
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 120 (deg) | Ice Thickness = 1.71 in. | Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio (normal)	Aspect Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	681	341	426
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	203	138	154
AIR6419 N77G Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	209	101	128
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	415	176	236
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	99	70	77
B5/B12 4449 RRH (Side)	17.9	9.9	13.2	1.23	1.64	1.81	1.36	1.20	1.20	74	99	93
4415 B25 RRH	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	93	44	56
4415 B25 RRH (Side)	16.5	10.1	13.5	1.16	1.55	1.63	1.22	1.20	1.20	70	93	87
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	101	63	72
B14 4478 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	76	101	95
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	138	84	97
RRUS-32 B30 RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	105	138	129
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	138	84	97
RRUS-32 B66A RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	105	138	129

WIND LOADS WITH ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio (normal)	Aspect Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
QD6616-7 Antenna	75.4	25.4	13.0	13.32	6.82	2.97	5.79	1.22	1.35	131	74	88
AIR6449 N77D Antenna	34.0	19.3	14.0	4.57	3.31	1.76	2.43	1.20	1.20	44	32	35
AIR6419 N77G Antenna	34.4	19.5	10.7	4.67	2.56	1.76	3.21	1.20	1.23	45	25	30
DMP65R-BU4DA Antenna	51.4	24.1	11.1	8.62	3.97	2.13	4.62	1.20	1.29	83	41	52
B5/B12 4449 RRH	21.3	16.6	12.8	2.46	1.90	1.28	1.66	1.20	1.20	24	18	20
B5/B12 4449 RRH (Side)	21.3	12.5	16.6	1.85	2.46	1.71	1.28	1.20	1.20	18	24	22
4415 B25 RRH	19.9	16.9	9.7	2.34	1.35	1.18	2.05	1.20	1.20	23	13	15
4415 B25 RRH (Side)	19.9	12.7	16.9	1.76	2.34	1.57	1.18	1.20	1.20	17	23	21
B14 4478 RRH	21.5	16.8	11.7	2.52	1.75	1.28	1.84	1.20	1.20	24	17	19
B14 4478 RRH (Side)	21.5	12.6	16.8	1.89	2.52	1.71	1.28	1.20	1.20	18	24	23
RRUS-32 B30 RRH	30.6	15.5	10.4	3.30	2.22	1.97	2.94	1.20	1.22	32	22	24
RRUS-32 B30 RRH (Side)	30.6	11.6	15.5	2.48	3.30	2.63	1.97	1.21	1.20	24	32	30
RRUS-32 B66A RRH	30.6	15.5	10.4	3.30	2.22	1.97	2.94	1.20	1.22	32	22	24
RRUS-32 B66A RRH (Side)	30.6	11.6	15.5	2.48	3.30	2.63	1.97	1.21	1.20	24	32	30

WIND LOADS AT 30 MPH:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio (normal)	Aspect Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	39	20	25
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	12	8	9
AIR6419 N77G Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	12	6	7
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	24	10	14
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	6	4	4
B5/B12 4449 RRH (Side)	17.9	9.9	13.2	1.23	1.64	1.81	1.36	1.20	1.20	4	6	5
4415 B25 RRH	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	5	3	3
4415 B25 RRH (Side)	16.5	10.1	13.5	1.16	1.55	1.63	1.22	1.20	1.20	4	5	5
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	4
B14 4478 RRH (Side)	18.1	10.1	13.4	1.26	1.68	1.80	1.35	1.20	1.20	4	6	5
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	6
RRUS-32 B30 RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	6	8	7
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	6
RRUS-32 B66A RRH (Side)	27.2	9.1	12.1	1.71	2.29	3.00	2.25	1.22	1.20	6	8	7

Date: 10/18/2021
Project Name: MANCHESTER SAND & GRAVEL
Project No.: CT1080
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 150 (deg) | Ice Thickness = 1.71 in. | Equivalent Angle = 330 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio (normal)	Aspect Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	681	341	596
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	203	138	187
AIR6419 N77G Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	209	101	182
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	415	176	356
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	99	70	92
B5/B12 4449 RRH (Side)	17.9	6.6	13.2	0.82	1.64	2.71	1.36	1.21	1.20	50	99	62
4415 B25 RRH	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	93	44	81
4415 B25 RRH (Side)	16.5	6.8	13.5	0.77	1.55	2.44	1.22	1.20	1.20	47	93	58
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	101	63	92
B14 4478 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	51	101	64
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	138	84	124
RRUS-32 B30 RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	74	138	90
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	138	84	124
RRUS-32 B66A RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	74	138	90

WIND LOADS WITH ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio (normal)	Aspect Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
QD6616-7 Antenna	75.4	25.4	13.0	13.32	6.82	2.97	5.79	1.22	1.35	131	74	116
AIR6449 N77D Antenna	34.0	19.3	14.0	4.57	3.31	1.76	2.43	1.20	1.20	44	32	41
AIR6419 N77G Antenna	34.4	19.5	10.7	4.67	2.56	1.76	3.21	1.20	1.23	45	25	40
DMP65R-BU4DA Antenna	51.4	24.1	11.1	8.62	3.97	2.13	4.62	1.20	1.29	83	41	73
B5/B12 4449 RRH	21.3	16.6	12.8	2.46	1.90	1.28	1.66	1.20	1.20	24	18	22
B5/B12 4449 RRH (Side)	21.3	8.3	16.6	1.23	2.46	2.57	1.28	1.20	1.20	12	24	15
4415 B25 RRH	19.9	16.9	9.7	2.34	1.35	1.18	2.05	1.20	1.20	23	13	20
4415 B25 RRH (Side)	19.9	8.5	16.9	1.17	2.34	2.35	1.18	1.20	1.20	11	23	14
B14 4478 RRH	21.5	16.8	11.7	2.52	1.75	1.28	1.84	1.20	1.20	24	17	22
B14 4478 RRH (Side)	21.5	8.4	16.8	1.26	2.52	2.56	1.28	1.20	1.20	12	24	15
RRUS-32 B30 RRH	30.6	15.5	10.4	3.30	2.22	1.97	2.94	1.20	1.22	32	22	29
RRUS-32 B30 RRH (Side)	30.6	7.8	15.5	1.65	3.30	3.94	1.97	1.26	1.20	17	32	21
RRUS-32 B66A RRH	30.6	15.5	10.4	3.30	2.22	1.97	2.94	1.20	1.22	32	22	29
RRUS-32 B66A RRH (Side)	30.6	7.8	15.5	1.65	3.30	3.94	1.97	1.26	1.20	17	32	21

WIND LOADS AT 30 MPH:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio (normal)	Aspect Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	39	20	34
AIR6449 N77D Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	12	8	11
AIR6419 N77G Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	12	6	10
DMP65R-BU4DA Antenna	48.0	20.7	7.7	6.90	2.57	2.32	6.23	1.20	1.37	24	10	20
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	6	4	5
B5/B12 4449 RRH (Side)	17.9	6.6	13.2	0.82	1.64	2.71	1.36	1.21	1.20	3	6	4
4415 B25 RRH	16.5	13.5	6.3	1.55	0.72	1.22	2.62	1.20	1.21	5	3	5
4415 B25 RRH (Side)	16.5	6.8	13.5	0.77	1.55	2.44	1.22	1.20	1.20	3	5	3
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	6	4	5
B14 4478 RRH (Side)	18.1	6.7	13.4	0.84	1.68	2.70	1.35	1.21	1.20	3	6	4
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	7
RRUS-32 B30 RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	4	8	5
RRUS-32 B66A RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	8	5	7
RRUS-32 B66A RRH (Side)	27.2	6.1	12.1	1.14	2.29	4.50	2.25	1.29	1.20	4	8	5

Date: 10/18/2021
Project Name: MANCHESTER SAND & GRAVEL
Project No.: CT1080
Designed By: KM **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.71 in.
Density of ice: 56 pcf

QD6616-7 Antenna
Weight of ice based on total radial SF area:
Height (in): 72.0
Width (in): 22.0
Depth (in): 9.6
Total weight of ice on object: 322 lbs
Weight of object: 130.0 lbs
Combined weight of ice and object: 452 lbs

AIR6449 N77D Antenna
Weight of ice based on total radial SF area:
Height (in): 30.6
Width (in): 15.9
Depth (in): 10.6
Total weight of ice on object: 111 lbs
Weight of object: 82.0 lbs
Combined weight of ice and object: 193 lbs

AIR6419 N77G Antenna
Weight of ice based on total radial SF area:
Height (in): 31.0
Width (in): 16.1
Depth (in): 7.3
Total weight of ice on object: 105 lbs
Weight of object: 66.0 lbs
Combined weight of ice and object: 171 lbs

DMP65R-BU6DA Antenna
Weight of ice based on total radial SF area:
Height (in): 71.2
Width (in): 20.7
Depth (in): 7.7
Total weight of ice on object: 295 lbs
Weight of object: 80.0 lbs
Combined weight of ice and object: 375 lbs

B5/B12 4449 RRH
Weight of ice based on total radial SF area:
Height (in): 17.9
Width (in): 13.2
Depth (in): 9.4
Total weight of ice on object: 56 lbs
Weight of object: 73.0 lbs
Combined weight of ice and object: 129 lbs

4415 B25 RRH
Weight of ice based on total radial SF area:
Height (in): 16.5
Width (in): 13.4
Depth (in): 5.9
Total weight of ice on object: 47 lbs
Weight of object: 46.0 lbs
Combined weight of ice and object: 93 lbs

B14 4478 RRH
Weight of ice based on total radial SF area:
Height (in): 18.1
Width (in): 13.4
Depth (in): 8.3
Total weight of ice on object: 55 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 115 lbs

RRUS-32 B30 RRH
Weight of ice based on total radial SF area:
Height (in): 27.2
Width (in): 12.1
Depth (in): 7.0
Total weight of ice on object: 74 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 134 lbs

RRUS-32 B66A RRH
Weight of ice based on total radial SF area:
Height (in): 27.2
Width (in): 12.1
Depth (in): 7.0
Total weight of ice on object: 74 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 134 lbs

Squid Surge Arrestor
Weight of ice based on total radial SF area:
Depth (in): 24.0
Diameter(in): 9.7
Total weight of ice on object: 48 lbs
Weight of object: 33 lbs
Combined weight of ice and object: 81 lbs

PL 6x3/8
Weight of ice based on total radial SF area:
Height (in): 6
Width (in): 0.375
Per foot weight of ice on object: 16 plf

L 2-1/2x2-1/2 Angles
Weight of ice based on total radial SF area:
Height (in): 2.5
Width (in): 2.5
Per foot weight of ice on object: 11 plf

HSS 4x4
Weight of ice based on total radial SF area:
Height (in): 4
Width (in): 4
Per foot weight of ice on object: 15 plf

3" Pipe
Per foot weight of ice:
diameter (in): 3.5
Per foot weight of ice on object: 11 plf

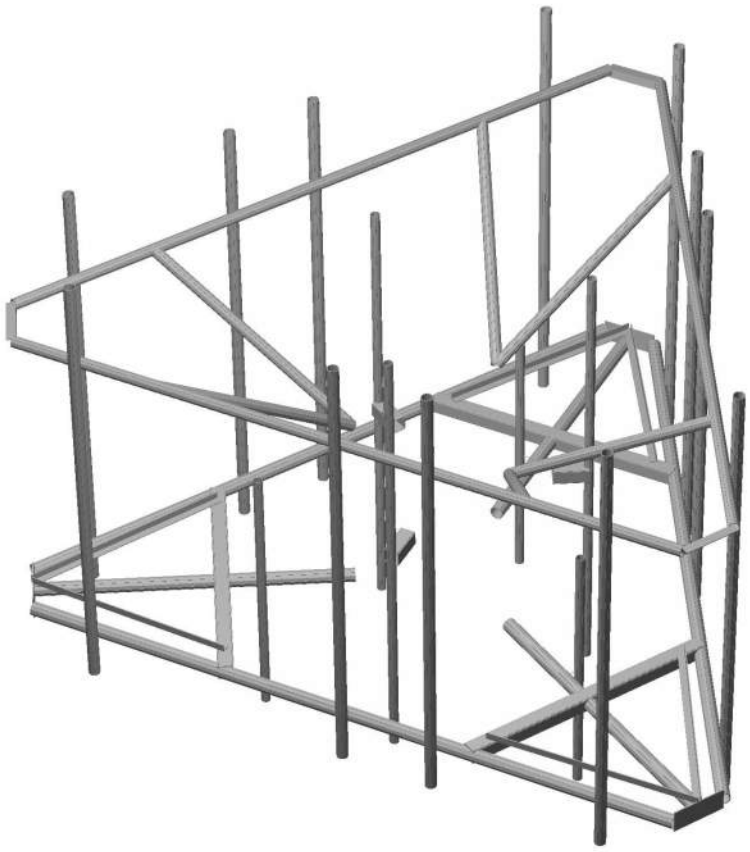
L 2x2 Angles
Weight of ice based on total radial SF area:
Height (in): 2
Width (in): 2
Per foot weight of ice on object: 9 plf

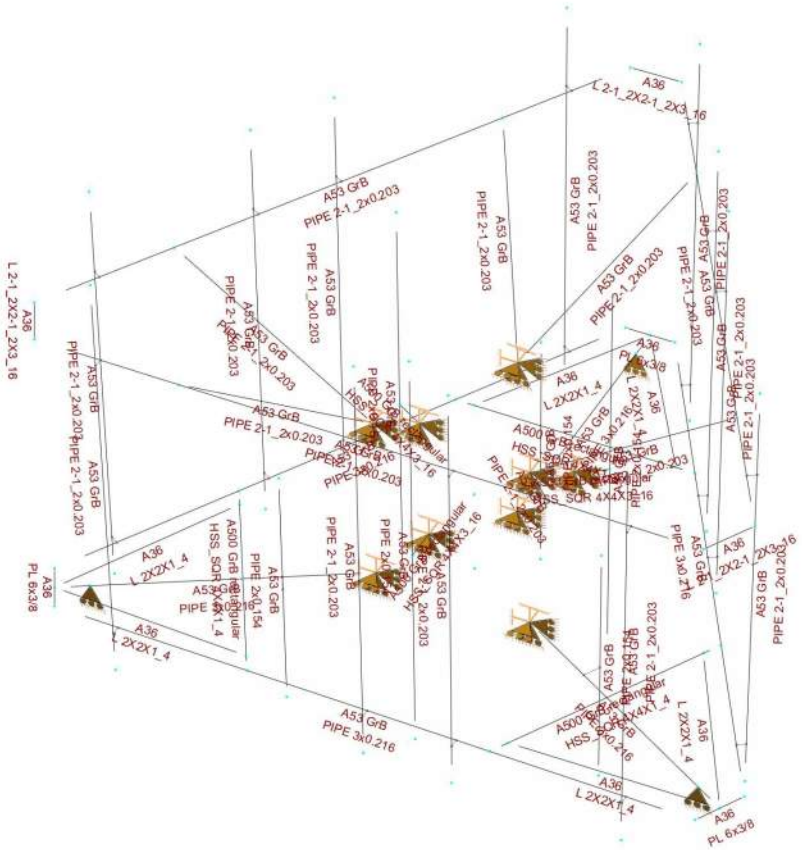
2" pipe
Per foot weight of ice:
diameter (in): 2.38
Per foot weight of ice on object: 9 plf

2-1/2" pipe
Per foot weight of ice:
diameter (in): 2.88
Per foot weight of ice on object: 10 plf

HUDSON
Design Group LLC

Mount Calculations
(Proposed Conditions)


Y
X
Z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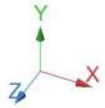
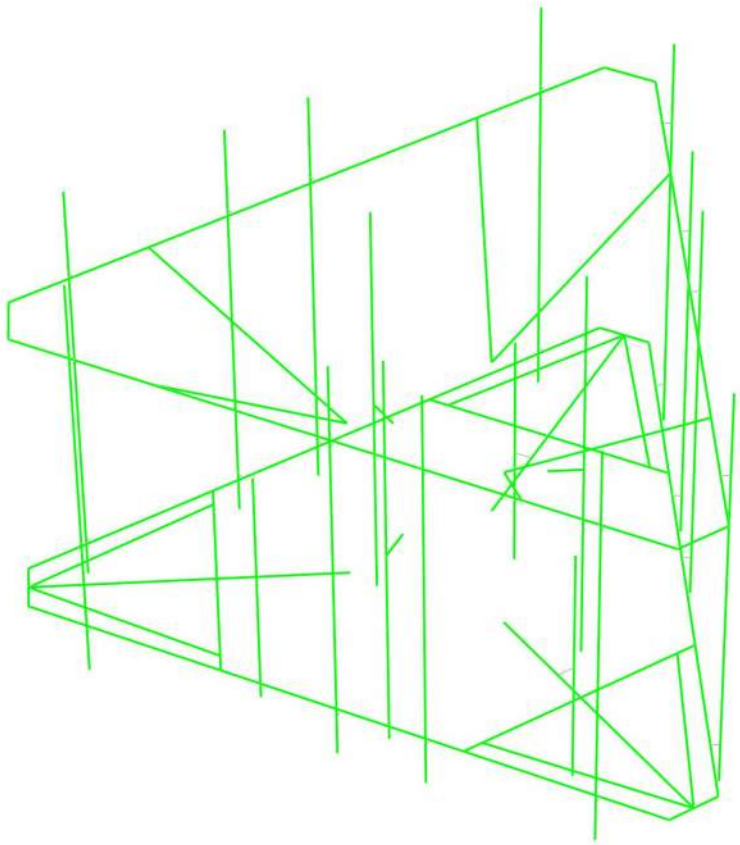
L 2-1_2X2-1_2X3_16
A53 GrB
PIPE 2-1_2x0.203
A36
L 2X2X1_4
A53 GrB
PIPE 3x0.216
A36
PL 6x3/8
A500 GrB Rectangular
HSS_SQR 4X4X1_4
A53 GrB
PIPE 2x0.154


Y
X
Z


Design status
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Error on design
Design O.K.
With warnings
Y
X
Z

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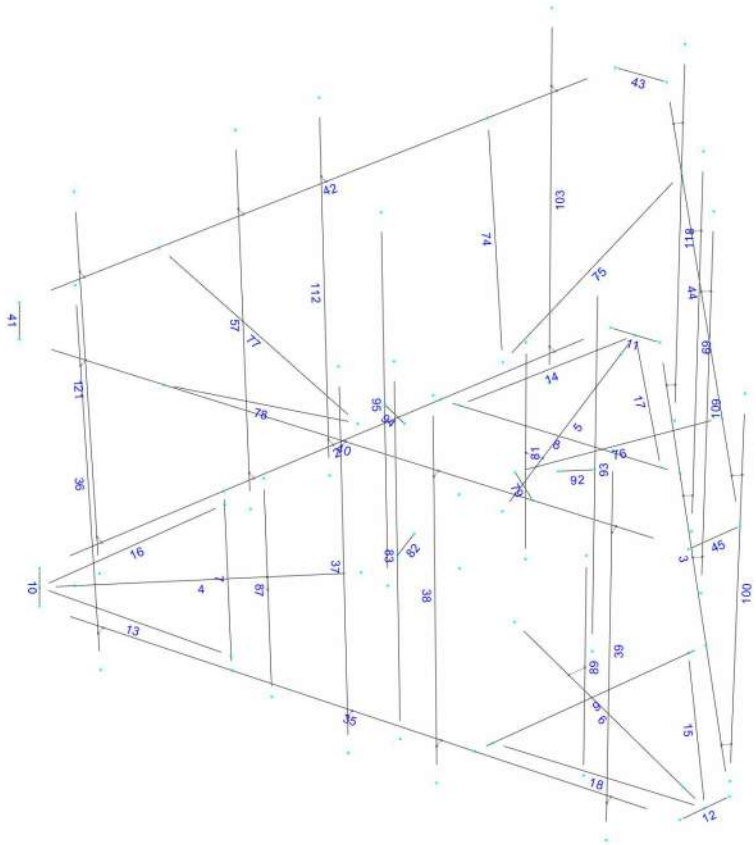

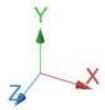

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Load data

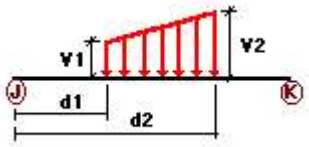
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	500 lb Live Load Antenna 1	No	LL
LLa2	500 lb Live Load Antenna 2	No	LL
LLa3	500 lb Live Load Antenna 3	No	LL
LLa4	500 lb Live Load Antenna 4	No	LL

Distributed force on members



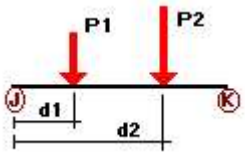
Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	4	y	-0.01	-0.01	0.00	No	3.90	No
	5	y	-0.01	-0.01	0.00	No	3.90	No
	6	y	-0.01	-0.01	0.00	No	3.90	No
	7	y	-0.01	0.00	0.00	No	0.00	No
	8	y	-0.01	0.00	0.00	No	0.00	No
	9	y	-0.01	0.00	0.00	No	0.00	No
	13	y	-0.01	0.00	0.00	No	0.00	No
	14	y	-0.01	0.00	0.00	No	0.00	No
	15	y	-0.01	0.00	0.00	No	0.00	No
	16	y	-0.01	0.00	0.00	No	0.00	No
	17	y	-0.01	0.00	0.00	No	0.00	No
	18	y	-0.01	0.00	0.00	No	0.00	No
W0	2	z	-0.018	-0.018	0.00	No	100.00	Yes
	3	z	-0.018	-0.018	0.00	No	100.00	Yes

	4	z	-0.018	-0.018	0.00	No	100.00	Yes
	6	z	-0.018	-0.018	0.00	No	100.00	Yes
	7	z	-0.021	-0.021	0.00	No	100.00	Yes
	8	z	-0.021	-0.021	0.00	No	100.00	Yes
	9	z	-0.021	-0.021	0.00	No	100.00	Yes
	10	z	-0.003	-0.003	0.00	No	100.00	Yes
	11	z	-0.003	-0.003	0.00	No	100.00	Yes
	12	z	-0.003	-0.003	0.00	No	100.00	Yes
	13	z	-0.017	-0.017	0.00	No	100.00	Yes
	14	z	-0.017	-0.017	0.00	No	100.00	Yes
	15	z	-0.017	-0.017	0.00	No	100.00	Yes
	16	z	-0.017	-0.017	0.00	No	100.00	Yes
	17	z	-0.017	-0.017	0.00	No	100.00	Yes
	18	z	-0.017	-0.017	0.00	No	100.00	Yes
	35	z	-0.018	-0.018	0.00	No	100.00	Yes
	38	z	-0.014	-0.014	0.00	No	100.00	Yes
	40	z	-0.014	-0.014	0.00	No	100.00	Yes
	41	z	-0.021	-0.021	0.00	No	100.00	Yes
	42	z	-0.014	-0.014	0.00	No	100.00	Yes
	43	z	-0.021	-0.021	0.00	No	100.00	Yes
	44	z	-0.014	-0.014	0.00	No	100.00	Yes
	45	z	-0.021	-0.021	0.00	No	100.00	Yes
	57	z	-0.014	-0.014	0.00	No	100.00	Yes
	69	z	-0.014	-0.014	0.00	No	100.00	Yes
	74	z	-0.014	-0.014	0.00	No	100.00	Yes
	75	z	-0.014	-0.014	0.00	No	100.00	Yes
	76	z	-0.014	-0.014	0.00	No	100.00	Yes
	77	z	-0.014	-0.014	0.00	No	100.00	Yes
	78	z	-0.014	-0.014	0.00	No	100.00	Yes
	79	z	-0.014	-0.014	0.00	No	100.00	Yes
	81	z	-0.012	-0.012	0.00	No	100.00	Yes
	83	z	-0.012	-0.012	0.00	No	100.00	Yes
	87	z	-0.012	-0.012	0.00	No	100.00	Yes
	89	z	-0.012	-0.012	0.00	No	100.00	Yes
	92	z	-0.021	-0.021	0.00	No	100.00	Yes
	93	z	-0.012	-0.012	0.00	No	100.00	Yes
	94	z	-0.021	-0.021	0.00	No	100.00	Yes
	95	z	-0.012	-0.012	0.00	No	100.00	Yes
	100	z	-0.014	-0.014	0.00	No	100.00	Yes
	103	z	-0.014	-0.014	0.00	No	100.00	Yes
	109	z	-0.014	-0.014	0.00	No	100.00	Yes
	112	z	-0.014	-0.014	0.00	No	100.00	Yes
	118	z	-0.014	-0.014	0.00	No	100.00	Yes
	121	z	-0.014	-0.014	0.00	No	100.00	Yes
W30	2	x	-0.018	-0.018	0.00	No	100.00	Yes
	3	x	-0.018	-0.018	0.00	No	100.00	Yes
	4	x	-0.018	-0.018	0.00	No	100.00	Yes
	5	x	-0.018	-0.018	0.00	No	100.00	Yes
	6	x	-0.018	-0.018	0.00	No	100.00	Yes
	7	x	-0.021	-0.021	0.00	No	100.00	Yes
	9	x	-0.021	-0.021	0.00	No	100.00	Yes
	10	x	-0.003	-0.003	0.00	No	100.00	Yes
	11	x	-0.003	-0.003	0.00	No	100.00	Yes
	12	x	-0.003	-0.003	0.00	No	100.00	Yes
	13	x	-0.017	-0.017	0.00	No	100.00	Yes
	14	x	-0.017	-0.017	0.00	No	100.00	Yes
	15	x	-0.017	-0.017	0.00	No	100.00	Yes
	16	x	-0.017	-0.017	0.00	No	100.00	Yes
	17	x	-0.017	-0.017	0.00	No	100.00	Yes
	18	x	-0.017	-0.017	0.00	No	100.00	Yes

	36	x	-0.014	-0.014	0.00	No	100.00	Yes
	37	x	-0.014	-0.014	0.00	No	100.00	Yes
	38	x	-0.014	-0.014	0.00	No	100.00	Yes
	39	x	-0.014	-0.014	0.00	No	100.00	Yes
	41	x	-0.021	-0.021	0.00	No	100.00	Yes
	42	x	-0.014	-0.014	0.00	No	100.00	Yes
	44	x	-0.014	-0.014	0.00	No	100.00	Yes
	45	x	-0.021	-0.021	0.00	No	100.00	Yes
	57	x	-0.014	-0.014	0.00	No	100.00	Yes
	69	x	-0.014	-0.014	0.00	No	100.00	Yes
	74	x	-0.014	-0.014	0.00	No	100.00	Yes
	75	x	-0.014	-0.014	0.00	No	100.00	Yes
	76	x	-0.014	-0.014	0.00	No	100.00	Yes
	77	x	-0.014	-0.014	0.00	No	100.00	Yes
	78	x	-0.014	-0.014	0.00	No	100.00	Yes
	79	x	-0.014	-0.014	0.00	No	100.00	Yes
	81	x	-0.012	-0.012	0.00	No	100.00	Yes
	82	x	-0.021	-0.021	0.00	No	100.00	Yes
	83	x	-0.012	-0.012	0.00	No	100.00	Yes
	87	x	-0.012	-0.012	0.00	No	100.00	Yes
	89	x	-0.012	-0.012	0.00	No	100.00	Yes
	92	x	-0.021	-0.021	0.00	No	100.00	Yes
	93	x	-0.012	-0.012	0.00	No	100.00	Yes
	94	x	-0.021	-0.021	0.00	No	100.00	Yes
	95	x	-0.012	-0.012	0.00	No	100.00	Yes
	103	x	-0.014	-0.014	0.00	No	100.00	Yes
	112	x	-0.014	-0.014	0.00	No	100.00	Yes
	121	x	-0.014	-0.014	0.00	No	100.00	Yes
Di	2	y	-0.011	-0.011	0.00	No	100.00	Yes
	3	y	-0.011	-0.011	0.00	No	100.00	Yes
	4	y	-0.011	-0.011	0.00	No	100.00	Yes
	5	y	-0.011	-0.011	0.00	No	100.00	Yes
	6	y	-0.011	-0.011	0.00	No	100.00	Yes
	7	y	-0.015	-0.015	0.00	No	100.00	Yes
	8	y	-0.015	-0.015	0.00	No	100.00	Yes
	9	y	-0.015	-0.015	0.00	No	100.00	Yes
	10	y	-0.016	-0.016	0.00	No	100.00	Yes
	11	y	-0.016	-0.016	0.00	No	100.00	Yes
	12	y	-0.016	-0.016	0.00	No	100.00	Yes
	13	y	-0.009	-0.009	0.00	No	100.00	Yes
	14	y	-0.009	-0.009	0.00	No	100.00	Yes
	15	y	-0.009	-0.009	0.00	No	100.00	Yes
	16	y	-0.009	-0.009	0.00	No	100.00	Yes
	17	y	-0.009	-0.009	0.00	No	100.00	Yes
	18	y	-0.009	-0.009	0.00	No	100.00	Yes
	35	y	-0.011	-0.011	0.00	No	100.00	Yes
	36	y	-0.01	-0.01	0.00	No	100.00	Yes
	37	y	-0.01	-0.01	0.00	No	100.00	Yes
	38	y	-0.01	-0.01	0.00	No	100.00	Yes
	39	y	-0.01	-0.01	0.00	No	100.00	Yes
	40	y	-0.01	-0.01	0.00	No	100.00	Yes
	41	y	-0.011	-0.011	0.00	No	100.00	Yes
	42	y	-0.01	-0.01	0.00	No	100.00	Yes
	43	y	-0.011	-0.011	0.00	No	100.00	Yes
	44	y	-0.01	-0.01	0.00	No	100.00	Yes
	45	y	-0.011	-0.011	0.00	No	100.00	Yes
	57	y	-0.01	-0.01	0.00	No	100.00	Yes
	69	y	-0.01	-0.01	0.00	No	100.00	Yes
	74	y	-0.01	-0.01	0.00	No	100.00	Yes
	75	y	-0.01	-0.01	0.00	No	100.00	Yes

76	y	-0.01	-0.01	0.00	No	100.00	Yes
77	y	-0.01	-0.01	0.00	No	100.00	Yes
78	y	-0.01	-0.01	0.00	No	100.00	Yes
79	y	-0.01	-0.01	0.00	No	100.00	Yes
81	y	-0.009	-0.009	0.00	No	100.00	Yes
82	y	-0.015	-0.015	0.00	No	100.00	Yes
83	y	-0.009	-0.009	0.00	No	100.00	Yes
87	y	-0.009	-0.009	0.00	No	100.00	Yes
89	y	-0.009	-0.009	0.00	No	100.00	Yes
92	y	-0.015	-0.015	0.00	No	100.00	Yes
93	y	-0.009	-0.009	0.00	No	100.00	Yes
94	y	-0.015	-0.015	0.00	No	100.00	Yes
95	y	-0.009	-0.009	0.00	No	100.00	Yes
100	y	-0.01	-0.01	0.00	No	100.00	Yes
103	y	-0.01	-0.01	0.00	No	100.00	Yes
109	y	-0.01	-0.01	0.00	No	100.00	Yes
112	y	-0.01	-0.01	0.00	No	100.00	Yes
118	y	-0.01	-0.01	0.00	No	100.00	Yes
121	y	-0.01	-0.01	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	36	y	-0.04	3.00	No
		y	-0.04	8.00	No
	37	y	-0.041	2.50	No
		y	-0.041	4.50	No
		y	-0.033	6.50	No
		y	-0.033	8.50	No
	39	y	-0.065	3.00	No
		y	-0.065	8.00	No
	81	y	-0.033	2.00	No
	83	y	-0.073	1.50	No
		y	-0.046	1.50	No
		y	-0.06	4.00	No
		y	-0.06	8.00	No
		y	-0.06	8.00	No
	87	y	-0.033	2.00	No
	89	y	-0.033	2.00	No
	93	y	-0.073	1.50	No
		y	-0.046	1.50	No
		y	-0.06	4.00	No
		y	-0.06	8.00	No
		y	-0.06	8.00	No
	95	y	-0.073	1.50	No
		y	-0.046	1.50	No
		y	-0.06	4.00	No
		y	-0.06	8.00	No
		y	-0.06	8.00	No

	100	y	-0.04	3.00	No
		y	-0.04	8.00	No
	103	y	-0.04	3.00	No
		y	-0.04	8.00	No
	109	y	-0.041	2.50	No
		y	-0.041	4.50	No
		y	-0.033	6.50	No
		y	-0.033	8.50	No
	112	y	-0.041	2.50	No
		y	-0.041	4.50	No
		y	-0.033	6.50	No
		y	-0.033	8.50	No
	118	y	-0.065	3.00	No
		y	-0.065	8.00	No
	121	y	-0.065	3.00	No
		y	-0.065	8.00	No
W0	36	z	-0.208	3.00	No
		z	-0.208	8.00	No
	37	z	-0.102	2.50	No
		z	-0.102	4.50	No
		z	-0.105	6.50	No
		z	-0.105	8.50	No
	39	z	-0.341	3.00	No
		z	-0.341	8.00	No
	81	z	-0.057	2.00	No
	83	z	-0.07	1.50	No
		z	-0.043	1.50	No
		z	-0.063	4.00	No
		z	-0.08	8.00	No
		z	-0.08	8.00	No
	87	z	-0.057	2.00	No
	89	z	-0.057	2.00	No
	93	z	-0.093	1.50	No
		z	-0.095	4.00	No
		z	-0.129	8.00	No
	95	z	-0.093	1.50	No
		z	-0.095	4.00	No
		z	-0.129	8.00	No
	100	z	-0.118	3.00	No
		z	-0.118	8.00	No
	103	z	-0.118	3.00	No
		z	-0.118	8.00	No
	109	z	-0.077	2.50	No
		z	-0.077	4.50	No
		z	-0.064	6.50	No
		z	-0.064	8.50	No
	112	z	-0.077	2.50	No
		z	-0.077	4.50	No
		z	-0.064	6.50	No
		z	-0.064	8.50	No
	118	z	-0.213	3.00	No
		z	-0.213	8.00	No
	121	z	-0.213	3.00	No
		z	-0.213	8.00	No
W30	36	x	-0.088	3.00	No
		x	-0.088	8.00	No
	37	x	-0.069	2.50	No
		x	-0.069	4.50	No
		x	-0.051	6.50	No
		x	-0.051	8.50	No

	39	x	-0.171	3.00	No
		x	-0.171	8.00	No
	81	x	-0.057	2.00	No
	83	x	-0.099	1.50	No
		x	-0.101	4.00	No
		x	-0.138	8.00	No
	87	x	-0.057	2.00	No
	89	x	-0.057	2.00	No
	93	x	-0.062	1.50	No
		x	-0.064	4.00	No
		x	-0.09	8.00	No
	95	x	-0.062	1.50	No
		x	-0.064	4.00	No
		x	-0.09	8.00	No
	100	x	-0.178	3.00	No
		x	-0.178	8.00	No
	103	x	-0.178	3.00	No
		x	-0.178	8.00	No
	109	x	-0.094	2.50	No
		x	-0.094	4.50	No
		x	-0.091	6.50	No
		x	-0.091	8.50	No
	112	x	-0.094	2.50	No
		x	-0.094	4.50	No
		x	-0.091	6.50	No
		x	-0.091	8.50	No
	118	x	-0.298	3.00	No
		x	-0.298	8.00	No
	121	x	-0.298	3.00	No
		x	-0.298	8.00	No
Di	36	y	-0.148	3.00	No
		y	-0.148	8.00	No
	37	y	-0.056	2.50	No
		y	-0.056	4.50	No
		y	-0.053	6.50	No
		y	-0.053	8.50	No
	39	y	-0.161	3.00	No
		y	-0.161	8.00	No
	81	y	-0.048	2.00	No
	83	y	-0.056	1.50	No
		y	-0.047	1.50	No
		y	-0.055	4.00	No
		y	-0.074	8.00	No
		y	-0.074	8.00	No
	87	y	-0.048	2.00	No
	89	y	-0.048	2.00	No
	93	y	-0.056	1.50	No
		y	-0.047	1.50	No
		y	-0.055	4.00	No
		y	-0.074	8.00	No
		y	-0.074	8.00	No
	95	y	-0.056	1.50	No
		y	-0.047	1.50	No
		y	-0.055	4.00	No
		y	-0.074	8.00	No
		y	-0.074	8.00	No
	100	y	-0.148	3.00	No
		y	-0.148	8.00	No
	103	y	-0.148	3.00	No
		y	-0.148	8.00	No

	109	y	-0.056	2.50	No
		y	-0.056	4.50	No
		y	-0.053	6.50	No
		y	-0.053	8.50	No
	112	y	-0.056	2.50	No
		y	-0.056	4.50	No
		y	-0.053	6.50	No
		y	-0.053	8.50	No
	118	y	-0.161	3.00	No
		y	-0.161	8.00	No
	121	y	-0.161	3.00	No
		y	-0.161	8.00	No
Wi0	36	z	-0.042	3.00	No
		z	-0.042	8.00	No
	37	z	-0.022	2.50	No
		z	-0.022	4.50	No
		z	-0.023	6.50	No
		z	-0.023	8.50	No
	39	z	-0.066	3.00	No
		z	-0.066	8.00	No
	81	z	-0.014	2.00	No
	83	z	-0.018	1.50	No
		z	-0.013	1.50	No
		z	-0.017	4.00	No
		z	-0.021	8.00	No
		z	-0.021	8.00	No
	87	z	-0.014	2.00	No
	89	z	-0.014	2.00	No
	93	z	-0.022	1.50	No
		z	-0.023	4.00	No
		z	-0.03	8.00	No
	95	z	-0.022	1.50	No
		z	-0.023	4.00	No
		z	-0.03	8.00	No
	100	z	-0.026	3.00	No
		z	-0.026	8.00	No
	103	z	-0.026	3.00	No
		z	-0.026	8.00	No
	109	z	-0.018	2.50	No
		z	-0.018	4.50	No
		z	-0.015	6.50	No
		z	-0.015	8.50	No
	112	z	-0.018	2.50	No
		z	-0.018	4.50	No
		z	-0.015	6.50	No
		z	-0.015	8.50	No
	118	z	-0.044	3.00	No
		z	-0.044	8.00	No
	121	z	-0.044	3.00	No
		z	-0.044	8.00	No
Wi30	36	x	-0.021	3.00	No
		x	-0.021	8.00	No
	37	x	-0.016	2.50	No
		x	-0.016	4.50	No
		x	-0.013	6.50	No
		x	-0.013	8.50	No
	39	x	-0.037	3.00	No
		x	-0.037	8.00	No
	81	x	-0.014	2.00	No
	83	x	-0.024	1.50	No

		x	-0.024	4.00	No
		x	-0.032	8.00	No
	87	x	-0.014	2.00	No
	89	x	-0.014	2.00	No
	93	x	-0.015	1.50	No
		x	-0.015	4.00	No
		x	-0.021	8.00	No
	95	x	-0.015	1.50	No
		x	-0.015	4.00	No
		x	-0.021	8.00	No
	100	x	-0.037	3.00	No
		x	-0.037	8.00	No
	103	x	-0.037	3.00	No
		x	-0.037	8.00	No
	109	x	-0.021	2.50	No
		x	-0.021	4.50	No
		x	-0.02	6.50	No
		x	-0.02	8.50	No
	112	x	-0.021	2.50	No
		x	-0.021	4.50	No
		x	-0.02	6.50	No
		x	-0.02	8.50	No
	118	x	-0.058	3.00	No
		x	-0.058	8.00	No
	121	x	-0.058	3.00	No
		x	-0.058	8.00	No
WL0	36	z	-0.012	3.00	No
		z	-0.012	8.00	No
	37	z	-0.006	2.50	No
		z	-0.006	4.50	No
		z	-0.006	6.50	No
		z	-0.006	8.50	No
	39	z	-0.02	3.00	No
		z	-0.02	8.00	No
	81	z	-0.003	2.00	No
	83	z	-0.004	1.50	No
		z	-0.003	1.50	No
		z	-0.004	4.00	No
		z	-0.005	8.00	No
		z	-0.005	8.00	No
	87	z	-0.003	2.00	No
	89	z	-0.003	2.00	No
	93	z	-0.005	1.50	No
		z	-0.005	4.00	No
		z	-0.007	8.00	No
	95	z	-0.005	1.50	No
		z	-0.005	4.00	No
		z	-0.007	8.00	No
	100	z	-0.007	3.00	No
		z	-0.007	8.00	No
	103	z	-0.007	3.00	No
		z	-0.007	8.00	No
	109	z	-0.005	2.50	No
		z	-0.005	4.50	No
		z	-0.004	6.50	No
		z	-0.004	8.50	No
	112	z	-0.005	2.50	No
		z	-0.005	4.50	No
		z	-0.004	6.50	No
		z	-0.004	8.50	No

	118	z	-0.013	3.00	No
		z	-0.013	8.00	No
	121	z	-0.013	3.00	No
		z	-0.013	8.00	No
WL30	36	x	-0.005	3.00	No
		x	-0.005	8.00	No
	37	x	-0.004	2.50	No
		x	-0.004	4.50	No
		x	-0.003	6.50	No
		x	-0.003	8.50	No
	39	x	-0.01	3.00	No
		x	-0.01	8.00	No
	81	x	-0.003	2.00	No
	83	x	-0.006	1.50	No
		x	-0.006	4.00	No
		x	-0.008	8.00	No
	87	x	-0.003	2.00	No
	89	x	-0.003	2.00	No
	93	x	-0.004	1.50	No
		x	-0.004	4.00	No
		x	-0.005	8.00	No
	95	x	-0.004	1.50	No
		x	-0.004	4.00	No
		x	-0.005	8.00	No
	100	x	-0.01	3.00	No
		x	-0.01	8.00	No
	103	x	-0.01	3.00	No
		x	-0.01	8.00	No
	109	x	-0.006	2.50	No
		x	-0.006	4.50	No
		x	-0.005	6.50	No
		x	-0.005	8.50	No
	112	x	-0.006	2.50	No
		x	-0.006	4.50	No
		x	-0.005	6.50	No
		x	-0.005	8.50	No
	118	x	-0.017	3.00	No
		x	-0.017	8.00	No
	121	x	-0.017	3.00	No
		x	-0.017	8.00	No
LL1	35	y	-0.25	50.00	Yes
LL2	35	y	-0.25	100.00	Yes
LLa1	39	y	-0.50	50.00	Yes
LLa2	38	y	-0.50	50.00	Yes
LLa3	37	y	-0.50	50.00	Yes
LLa4	36	y	-0.50	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00

Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	0.00	0.00	0.00
Di	0.00	0.00	0.00
Wi0	0.00	0.00	0.00
Wi30	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

Current Date: 10/18/2021 9:30 AM
Units system: English
File name: Z:\Shared\Work2.0\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT1080\CT1080 (C-BAND).retx

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+W0
LC2=1.2DL+W30
LC3=1.2DL-W0
LC4=1.2DL-W30
LC5=0.9DL+W0
LC6=0.9DL+W30
LC7=0.9DL-W0
LC8=0.9DL-W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.4DL
LC14=1.2DL+1.6LL1
LC15=1.2DL+1.6LL2
LC16=1.2DL+WL0+1.6LLa1
LC17=1.2DL+WL30+1.6LLa1
LC18=1.2DL-WL0+1.6LLa1
LC19=1.2DL-WL30+1.6LLa1
LC20=1.2DL+WL0+1.6LLa2
LC21=1.2DL+WL30+1.6LLa2
LC22=1.2DL-WL0+1.6LLa2
LC23=1.2DL-WL30+1.6LLa2
LC24=1.2DL+WL0+1.6LLa3
LC25=1.2DL+WL30+1.6LLa3
LC26=1.2DL-WL0+1.6LLa3
LC27=1.2DL-WL30+1.6LLa3
LC28=1.2DL+WL0+1.6LLa4
LC29=1.2DL+WL30+1.6LLa4
LC30=1.2DL-WL0+1.6LLa4
LC31=1.2DL-WL30+1.6LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**7**	LC2 at 50.00%	**0.18**	**OK**	Eq. H1-1b
		8	LC1 at 50.00%	0.17	OK	Eq. H1-1b
		9	LC3 at 50.00%	0.17	OK	Eq. H1-1b
	HSS_SQR 4X4X3_16	**82**	LC2 at 0.00%	**0.08**	**OK**	Eq. H1-1b
		92	LC1 at 0.00%	0.07	OK	Eq. H1-1b
		94	LC1 at 0.00%	0.07	OK	Eq. H1-1b
	L 2-1_2X2-1_2X3_16	**41**	LC4 at 100.00%	0.48	OK	Eq. H2-1
		43	LC3 at 75.00%	**0.50**	**OK**	Sec. F1
		45	LC2 at 100.00%	0.48	OK	Sec. F1
	L 2X2X1_4	**13**	LC3 at 100.00%	0.24	OK	Eq. H2-1
		14	LC1 at 100.00%	0.26	OK	Eq. H2-1
		15	LC4 at 100.00%	0.27	OK	Eq. H2-1
		16	LC2 at 0.00%	**0.29**	**OK**	Eq. H2-1
		17	LC1 at 0.00%	0.28	OK	Eq. H2-1

	18	LC3 at 0.00%	0.25	OK	Eq. H2-1
PIPE 2-1_2x0.203	**36**	LC2 at 89.58%	0.14	OK	Eq. H1-1b
	37	LC2 at 89.58%	0.12	OK	Eq. H1-1b
	38	LC22 at 89.58%	0.11	OK	Eq. H1-1b
	39	LC4 at 89.58%	0.15	OK	Eq. H1-1b
	40	LC1 at 22.32%	0.39	OK	Eq. H1-1b
	42	LC4 at 22.32%	**0.53**	**OK**	Eq. H1-1b
	44	LC3 at 22.32%	0.51	OK	Eq. H1-1b
	57	LC3 at 89.58%	0.09	OK	Eq. H1-1b
	69	LC1 at 89.58%	0.13	OK	Eq. H1-1b
	74	LC2 at 0.00%	0.35	OK	Eq. H1-1b
	75	LC4 at 0.00%	0.37	OK	Eq. H1-1b
	76	LC4 at 0.00%	0.35	OK	Eq. H1-1b
	77	LC2 at 0.00%	0.35	OK	Eq. H1-1b
	78	LC2 at 0.00%	0.23	OK	Eq. H1-1b
	79	LC3 at 0.00%	0.27	OK	Eq. H1-1b
	100	LC4 at 89.58%	0.15	OK	Eq. H1-1b
	103	LC1 at 89.58%	0.17	OK	Eq. H1-1b
	109	LC3 at 89.58%	0.13	OK	Eq. H1-1b
	112	LC4 at 45.83%	0.14	OK	Eq. H1-1b
	118	LC1 at 89.58%	0.19	OK	Eq. H1-1b
	121	LC2 at 89.58%	0.21	OK	Eq. H1-1b
PIPE 2x0.154	**81**	LC2 at 46.88%	0.08	OK	Eq. H1-1b
	83	LC3 at 50.00%	0.51	OK	Eq. H1-1b
	87	LC3 at 46.88%	0.10	OK	Eq. H1-1b
	89	LC3 at 46.88%	0.10	OK	Eq. H1-1b
	93	LC1 at 50.00%	0.59	OK	Eq. H1-1b
	95	LC1 at 50.00%	**0.59**	**OK**	Eq. H1-1b
PIPE 3x0.216	**2**	LC2 at 9.82%	0.19	OK	Eq. H1-1b
	3	LC4 at 50.00%	0.19	OK	Eq. H1-1b
	4	LC3 at 100.00%	0.43	OK	Eq. H1-1b
	5	LC4 at 100.00%	**0.57**	**OK**	Eq. H1-1b
	6	LC3 at 100.00%	0.48	OK	Eq. H1-1b
	35	LC25 at 50.00%	0.23	OK	Eq. H1-1b
PL 6x3/8	**10**	LC2 at 46.88%	0.22	OK	Eq. H1-1b
	11	LC1 at 50.00%	**0.25**	**OK**	Eq. H1-1b
	12	LC4 at 50.00%	0.22	OK	Eq. H1-1b

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Geometry data

GLOSSARY

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

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	-4.00	0.00	0
3	0.596	-4.00	-8.7157	0
4	7.846	-4.00	3.8417	0
9	-7.846	-4.00	3.8417	0
10	-0.596	-4.00	-8.7157	0
12	7.25	-4.00	4.874	0
13	-7.25	-4.00	4.874	0
14	7.548	-4.00	4.3578	0
15	1.7716	-4.00	1.0228	0
18	-7.548	-4.00	4.3578	0
19	-1.7716	-4.00	1.0228	0
20	0.00	-4.00	-8.7157	0
21	0.00	-4.00	-2.0457	0
22	2.846	-4.00	-4.8186	0
23	5.596	-4.00	-0.0554	0
26	-2.846	-4.00	-4.8186	0
27	-5.596	-4.00	-0.0554	0
28	-2.75	-4.00	4.874	0
29	2.75	-4.00	4.874	0
30	5.3725	-4.00	0.3317	0
31	2.9735	-4.00	4.4869	0

34	-2.9735	-4.00	4.4869	0
35	-5.3725	-4.00	0.3317	0
36	-2.399	-4.00	-4.8186	0
37	2.399	-4.00	-4.8186	0
100	5.75	5.00	5.074	0
101	2.00	5.00	5.074	0
102	0.00	5.00	5.074	0
103	-5.75	5.00	5.074	0
104	5.75	-5.00	5.074	0
105	2.00	-5.00	5.074	0
106	0.00	-5.00	5.074	0
107	-5.75	-5.00	5.074	0
108	-7.25	3.00	4.874	0
109	-7.846	3.00	3.8417	0
110	-0.596	3.00	-8.7157	0
111	0.596	3.00	-8.7157	0
112	7.25	3.00	4.874	0
113	7.846	3.00	3.8417	0
114	-1.7716	0.00	1.0228	0
115	0.00	0.00	-2.0457	0
116	1.7716	0.00	1.0228	0
139	-5.3942	5.00	-0.8049	0
140	-5.3942	-5.00	-0.8049	0
163	3.3942	5.00	-4.2691	0
164	3.3942	-5.00	-4.2691	0
173	6.221	3.00	1.0271	0
174	-4.00	3.00	4.874	0
175	-2.221	3.00	-5.9011	0
176	4.00	3.00	4.874	0
177	-6.221	3.00	1.0271	0
178	2.221	3.00	-5.9011	0
179	0.00	-4.00	-7.9746	0
180	6.9062	-4.00	3.9873	0
181	-6.9062	-4.00	3.9873	0
183	0.00	-2.00	0.00	0
187	-0.40	-7.00	-4.00	0
188	-0.40	-1.00	-4.00	0
194	0.00	-1.50	2.0457	0
195	0.00	-1.50	2.7957	0
196	0.00	-6.50	2.7957	0
197	0.00	3.50	2.7957	0
203	-3.2641	-7.00	2.3464	0
204	-3.2641	-1.00	2.3464	0
206	3.6641	-7.00	1.6536	0
207	3.6641	-1.00	1.6536	0
212	1.7716	-1.50	-1.0228	0
213	2.4211	-1.50	-1.3978	0
214	2.4211	-6.50	-1.3978	0
215	2.4211	3.50	-1.3978	0
216	-1.7716	-1.50	-1.0228	0
217	-2.4211	-1.50	-1.3978	0
218	-2.4211	-6.50	-1.3978	0
219	-2.4211	3.50	-1.3978	0
228	7.2692	5.00	2.4426	0
229	7.2692	-5.00	2.4426	0
234	-1.5192	5.00	-7.5166	0
235	-1.5192	-5.00	-7.5166	0
246	4.3942	5.00	-2.537	0
247	4.3942	-5.00	-2.537	0
252	-4.3942	5.00	-2.537	0

253	-4.3942	-5.00	-2.537	0
264	1.5192	5.00	-7.5166	0
265	1.5192	-5.00	-7.5166	0
270	-7.2692	5.00	2.4426	0
271	-7.2692	-5.00	2.4426	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
15	1	1	1	1	1	1
19	1	1	1	1	1	1
21	1	1	1	1	1	1
114	1	1	1	1	1	1
115	1	1	1	1	1	1
116	1	1	1	1	1	1
179	0	1	0	0	0	0
180	0	1	0	0	0	0
181	0	1	0	0	0	0
194	1	1	1	1	1	1
212	1	1	1	1	1	1
216	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
2	9	10		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
3	3	4		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
4	18	19		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
5	20	21		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
6	14	15		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
7	28	27		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
8	26	22		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
9	23	29		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
10	13	9		PL 6x3/8	A36	0.00	0.00	0.00
11	10	3		PL 6x3/8	A36	0.00	0.00	0.00
12	12	4		PL 6x3/8	A36	0.00	0.00	0.00
13	34	18		L 2X2X1_4	A36	0.00	0.00	0.00
14	36	20		L 2X2X1_4	A36	0.00	0.00	0.00
15	30	14		L 2X2X1_4	A36	0.00	0.00	0.00
16	18	35		L 2X2X1_4	A36	0.00	0.00	0.00
17	20	37		L 2X2X1_4	A36	0.00	0.00	0.00
18	14	31		L 2X2X1_4	A36	0.00	0.00	0.00
35	12	13		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
36	103	107		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
37	102	106		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
38	101	105		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
39	100	104		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
40	112	108		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
41	108	109		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
42	109	110		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00

43	110	111	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
44	111	113	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
45	112	113	L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
57	139	140	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
69	163	164	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
74	115	175	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
75	115	178	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
76	116	173	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
77	114	177	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
78	114	174	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
79	116	176	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
81	188	187	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
82	194	195	HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
83	197	196	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
87	204	203	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
89	207	206	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
92	212	213	HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
93	215	214	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
94	216	217	HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
95	219	218	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
100	228	229	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
103	234	235	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
109	246	247	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
112	252	253	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
118	264	265	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
121	270	271	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
41	180.00	0	0.00	0.00	0.00
43	180.00	0	0.00	0.00	0.00
45	90.00	0	0.00	0.00	0.00
87	0.00	2	0.50	0.00	0.866
89	0.00	2	0.50	0.00	-0.866
93	0.00	2	0.50	0.00	0.866
95	0.00	2	0.50	0.00	-0.866
100	0.00	2	-0.50	0.00	-0.866
103	0.00	2	-0.50	0.00	0.866
109	0.00	2	-0.50	0.00	-0.866
112	0.00	2	-0.50	0.00	0.866
118	0.00	2	-0.50	0.00	-0.866
121	0.00	2	-0.50	0.00	0.866

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
13	0.00	3.00	0.00	0.00	3.00	0.00
14	0.00	3.00	0.00	0.00	3.00	0.00
15	0.00	3.00	0.00	0.00	3.00	0.00
16	0.00	3.00	0.00	0.00	3.00	0.00
17	0.00	3.00	0.00	0.00	3.00	0.00
18	0.00	3.00	0.00	0.00	3.00	0.00

EXHIBIT 5

Radio Frequency Emissions Analysis Report

March 24, 2022

Centerline Communications on behalf of AT&T
Centerline Communications Project Number: 566477

Site Name: MANCHESTER SAND GRAVEL
Site Address: 60 Adams Street, Manchester, CT 06040
FA#: 10035244
USID: 59369

Site Compliance Summary

Compliance Status:	Compliant
Carrier MPE% of FCC General Population Allowable Limit:	4.57692900%
Composite MPE% of FCC General Population Allowable Limit:	7.60935200%

March 24, 2022

Attn: AT&T

Emissions Analysis for Site: **MANCHESTER SAND GRAVEL**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility to be located a monopole near **60 Adams Street, Manchester CT 06040** for the purpose of determining whether the emissions from the proposed facility are within specified federal limits.

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

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter (µW/cm^2). The general population exposure limits for the 700 MHz is 466.67 µW/cm^2, the 850 MHz is 567 µW/cm^2, and the 1900 MHz, 2100 MHz, 3400 MHz, and 3700 MHz bands is 1000 µW/cm^2.

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.

Calculations

Calculations were performed for the proposed facility using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing focused omnidirectional antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. This is a very conservative estimate since the gain reduction in actual applications is typically greater than 10 dB in the direction of ground immediately surrounding the facility. Real world emissions values from this facility are expected to be lower than values listed in this report at ground level. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

RRH #	Frequency Band	Technology	Channel Count	Transmit Power per Channel (W)
1	700	LTE	4	40
2	700	FNET	2	40
3	1900	LTE	2	40
3	1900	NR	2	40
3	2100	LTE	2	40
3	2100	NR	2	40
4	3700	CBAND	1	108.4
5	3400	DOD	1	54
5	3400	DOD	1	54
6	700	LTE	4	40
7	2300	LTE	4	25
6	850	NR	4	40
8	700	LTE	4	40
9	700	FNET	2	40
10	1900	LTE	2	40
10	1900	NR	2	40
10	2100	LTE	2	40

10	2100	NR	2	40
11	3700	CBAND	1	108.4
12	3400	DOD	1	54
12	3400	DOD	1	54
13	700	LTE	4	40
14	2300	LTE	4	25
13	850	NR	4	40
15	700	LTE	4	40
16	700	FNET	2	40
17	1900	LTE	2	40
17	1900	NR	2	40
17	2100	LTE	2	40
17	2100	NR	2	40
18	3700	CBAND	1	108.4
19	3400	DOD	1	54
19	3400	DOD	1	54
20	700	LTE	4	40
21	2300	LTE	4	25
20	850	NR	4	40
22	1900	LTE	4	30
22	2100	LTE	4	30
23	2500	LTE	1	90
23	2500	NR	1	90
23	2500	LTE	1	30
23	2500	NR	1	30
24	700	LTE	2	40
24	600	LTE	4	60
24	600	NR	2	40
25	1900	LTE	4	30
25	2100	LTE	4	30
26	2500	LTE	1	90
26	2500	NR	1	90
26	2500	LTE	1	30
26	2500	NR	1	30
27	700	LTE	2	40
27	600	LTE	4	60
27	600	NR	2	40
28	1900	LTE	4	30
28	2100	LTE	4	30
29	2500	LTE	1	90

29	2500	NR	1	90
29	2500	LTE	1	30
29	2500	NR	1	30
30	700	LTE	2	40
30	600	LTE	4	60
30	600	NR	2	40
-	23000	MW	1	0.1
-	23000	MW	1	0.1
31	1900	LTE	1	100
31	1900	LTE	1	100
32	850	LTE	1	90
33	2500	LTE	1	120
34	1900	LTE	1	100
34	1900	LTE	1	100
35	850	LTE	1	90
36	2500	LTE	1	120
37	1900	LTE	1	100
37	1900	LTE	1	100
38	850	LTE	1	90
39	2500	LTE	1	120
40	600	NR	4	40
41	2007	NR	4	40
41	2100	NR	4	40
42	600	NR	4	40
43	2007	NR	4	40
43	2100	NR	4	40
44	600	NR	4	40
45	2007	NR	4	40
45	2100	NR	4	40
46	850	CDMA	7	20
47	700	LTE	2	40
47	850	LTE	2	40
48	1900	LTE	4	40
47	700	LTE	2	40
47	850	LTE	2	40
48	2100	LTE	4	40
49	3700	CBAND	4	50
50	3550	CBRS	4	5
51	850	CDMA	7	20
52	700	LTE	2	40

52	850	LTE	2	40
53	1900	LTE	4	40
52	700	LTE	2	40
52	850	LTE	2	40
53	2100	LTE	4	40
54	3700	CBAND	4	50
55	3550	CBRS	4	5
56	850	CDMA	7	20
57	700	LTE	2	40
57	850	LTE	2	40
58	1900	LTE	4	40
57	700	LTE	2	40
57	850	LTE	2	40
58	2100	LTE	4	40
59	3700	CBAND	4	50
60	3550	CBRS	4	5

Table 1: Channel Data Table

The following antennas listed in Table 2 were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz, 2100 MHz, 3400 MHz, and 3700 MHz frequency bands. This is based on information from the carrier with regard to anticipated antenna selection.

Sector	Antenna Number	Make / Model	Centerline (ft)
A	1	QUINTEL QD6616-7 V1	125
A	1	QUINTEL QD6616-7 V1	125
A	1	QUINTEL QD6616-7 V1	125
A	1	QUINTEL QD6616-7 V1	125
A	1	QUINTEL QD6616-7 V1	125
A	1	QUINTEL QD6616-7 V1	125
A	2	ERICSSON SON_AIR6449	126.75
A	2	ERICSSON SON_AIR6419	123.2
A	2	ERICSSON SON_AIR6419	123.2
A	3	CCI DMP65R-BU6D	125
A	3	CCI DMP65R-BU6D	125
A	3	CCI DMP65R-BU6D	125
B	4	QUINTEL QD6616-7 V1	125
B	4	QUINTEL QD6616-7 V1	125
B	4	QUINTEL QD6616-7 V1	125
B	4	QUINTEL QD6616-7 V1	125
B	4	QUINTEL QD6616-7 V1	125
B	4	QUINTEL QD6616-7 V1	125
B	5	ERICSSON SON_AIR6449	126.75
B	5	ERICSSON SON_AIR6419	123.2
B	5	ERICSSON SON_AIR6419	123.2
B	6	CCI DMP65R-BU6D	125
B	6	CCI DMP65R-BU6D	125
B	6	CCI DMP65R-BU6D	125
C	7	QUINTEL QD6616-7 V1	125
C	7	QUINTEL QD6616-7 V1	125
C	7	QUINTEL QD6616-7 V1	125
C	7	QUINTEL QD6616-7 V1	125
C	7	QUINTEL QD6616-7 V1	125
C	7	QUINTEL QD6616-7 V1	125
C	8	ERICSSON SON_AIR6449	126.75
C	8	ERICSSON SON_AIR6419	123.2
C	8	ERICSSON SON_AIR6419	123.2

C	9	CCI DMP65R-BU6D	125
C	9	CCI DMP65R-BU6D	125
C	9	CCI DMP65R-BU6D	125
A	10	ERICSSON AIR 32	135
A	10	ERICSSON AIR 32	135
A	11	ERICSSON SON_AIR6449	135
A	11	ERICSSON SON_AIR6449	135
A	11	ERICSSON SON_AIR6449	135
A	11	ERICSSON SON_AIR6449	135
A	12	RFS APXVAARR24 43-U-NA20	135
A	12	RFS APXVAARR24 43-U-NA20	135
A	12	RFS APXVAARR24 43-U-NA20	135
B	13	ERICSSON AIR 32	135
B	13	ERICSSON AIR 32	135
B	14	ERICSSON SON_AIR6449	135
B	14	ERICSSON SON_AIR6449	135
B	14	ERICSSON SON_AIR6449	135
B	14	ERICSSON SON_AIR6449	135
B	15	RFS APXVAARR24 43-U-NA20	135
B	15	RFS APXVAARR24 43-U-NA20	135
B	15	RFS APXVAARR24 43-U-NA20	135
C	16	ERICSSON AIR 32	135
C	16	ERICSSON AIR 32	135
C	17	ERICSSON SON_AIR6449	135
C	17	ERICSSON SON_AIR6449	135
C	17	ERICSSON SON_AIR6449	135
C	17	ERICSSON SON_AIR6449	135
C	18	RFS APXVAARR24 43-U-NA20	135
C	18	RFS APXVAARR24 43-U-NA20	135
C	18	RFS APXVAARR24 43-U-NA20	135
A	19	Andrew VHLP1-23-DW1	118.5
A	20	Andrew VHLP2-23-DW1	118.5
A	21	RFS APXVSPP18-C-A20	117
A	21	RFS APXVSPP18-C-A20	117
A	21	RFS APXVSPP18-C-A20	117
A	22	RFS APXVTM14 ALU-I20	117
B	23	RFS APXVSPP18-C-A20	117

B	23	RFS APXVSPP18-C-A20	117
B	23	RFS APXVSPP18-C-A20	117
B	24	RFS APXVTM14 ALU-I20	117
C	25	RFS APXVSPP18-C-A20	117
C	25	RFS APXVSPP18-C-A20	117
C	25	RFS APXVSPP18-C-A20	117
C	26	RFS APXVTM14 ALU-I20	117
A	27	JMA MX08FRO665-21	100
A	27	JMA MX08FRO665-21	100
A	27	JMA MX08FRO665-21	100
B	28	JMA MX08FRO665-21	100
B	28	JMA MX08FRO665-21	100
B	28	JMA MX08FRO665-21	100
C	29	JMA MX08FRO665-21	100
C	29	JMA MX08FRO665-21	100
C	29	JMA MX08FRO665-21	100
A	30	SWEDCOM ALP 6014	90
A	31	COMMSCOPE SBNHH-1D65B	90
A	31	COMMSCOPE SBNHH-1D65B	90
A	31	COMMSCOPE SBNHH-1D65B	90
A	32	COMMSCOPE SBNHH-1D65B	90
A	32	COMMSCOPE SBNHH-1D65B	90
A	32	COMMSCOPE SBNHH-1D65B	90
A	33	L-Sub6 Antenna	90
A	34	SAMSUNG XXDWMM-12.5-65-8T	90
B	35	SWEDCOM ALP 6014	90
B	36	COMMSCOPE SBNHH-1D65B	90
B	36	COMMSCOPE SBNHH-1D65B	90
B	36	COMMSCOPE SBNHH-1D65B	90
B	37	COMMSCOPE SBNHH-1D65B	90
B	37	COMMSCOPE SBNHH-1D65B	90
B	37	COMMSCOPE SBNHH-1D65B	90
B	38	L-Sub6 Antenna	90
B	39	SAMSUNG XXDWMM-12.5-65-8T	90
C	40	SWEDCOM ALP 6014	90
C	41	COMMSCOPE SBNHH-1D65B	90
C	41	COMMSCOPE SBNHH-1D65B	90

C	41	COMMSCOPE SBNHH-1D65B	90
C	42	COMMSCOPE SBNHH-1D65B	90
C	42	COMMSCOPE SBNHH-1D65B	90
C	42	COMMSCOPE SBNHH-1D65B	90
C	43	L-Sub6 Antenna	90
C	44	SAMSUNG XXDWMM-12.5-65-8T	90

Table 2: Antenna Data

All calculations were done with respect to uncontrolled / general population threshold limits.

Results

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels at the maximum predicted spot at ground level and percentages of the FCC's allowable general population limit.

ID	Make / Model	Frequency Band	Gain (dBd)	Centerline (ft)	Channel Count	TX Power (W)	ERP (W)	MPE %
AT&T 1	QUINTEL QD6616-7 V1	700	11.9309	125.0	4	40	2495.8012	0.000016000
AT&T 1	QUINTEL QD6616-7 V1	700	11.9449	125.0	2	40	1251.9298	0.000013000
AT&T 1	QUINTEL QD6616-7 V1	1900	14.9676	125.0	2	40	2511.0189	0.000003000
AT&T 1	QUINTEL QD6616-7 V1	1900	14.9676	125.0	2	40	2511.0189	0.000003000
AT&T 1	QUINTEL QD6616-7 V1	2100	15.6169	125.0	2	40	2915.9494	0.000003000
AT&T 1	QUINTEL QD6616-7 V1	2100	15.6169	125.0	2	40	2915.9494	0.000003000
AT&T 2	ERICSSON SON_AIR6449	3700	23.55	126.8	1	108.4	24548.7443	0.000092000
AT&T 2	ERICSSON SON_AIR6419	3400	22.85	123.2	1	54	10408.6345	1.143475000
AT&T 2	ERICSSON SON_AIR6419	3400	22.85	123.2	1	54	10408.6345	1.143475000
AT&T 3	CCI DMP65R-BU6D	700	11.45	125.0	4	40	2234.1894	0.000032000
AT&T 3	CCI DMP65R-BU6D	2300	14.15	125.0	4	25	2600.1596	0.000002000
AT&T 3	CCI DMP65R-BU6D	850	11.35	125.0	4	40	2183.3330	0.000019000
AT&T 4	QUINTEL QD6616-7 V1	700	11.9309	125.0	4	40	2495.8012	0.000000000
AT&T 4	QUINTEL QD6616-7 V1	700	11.7526	125.0	2	40	1197.7053	0.000000000
AT&T 4	QUINTEL QD6616-7 V1	1900	15.1762	125.0	2	40	2634.5715	0.000000000
AT&T 4	QUINTEL QD6616-7 V1	1900	15.1762	125.0	2	40	2634.5715	0.000000000
AT&T 4	QUINTEL QD6616-7 V1	2100	15.3631	125.0	2	40	2750.4261	0.000000000
AT&T 4	QUINTEL QD6616-7 V1	2100	15.3631	125.0	2	40	2750.4261	0.000000000
AT&T 5	ERICSSON SON_AIR6449	3700	23.55	126.8	1	108.4	24548.7443	0.000000000
AT&T 5	ERICSSON SON_AIR6419	3400	22.85	123.2	1	54	10408.6345	0.001337000
AT&T 5	ERICSSON SON_AIR6419	3400	22.85	123.2	1	54	10408.6345	0.001337000
AT&T 6	CCI DMP65R-BU6D	700	11.35	125.0	4	40	2183.3330	0.000000000
AT&T 6	CCI DMP65R-BU6D	2300	15.25	125.0	4	25	3349.6544	0.000000000
AT&T 6	CCI DMP65R-BU6D	850	11.35	125.0	4	40	2183.3330	0.000000000
AT&T 7	QUINTEL QD6616-7 V1	700	11.9309	125.0	4	40	2495.8012	0.000012000
AT&T 7	QUINTEL QD6616-7 V1	700	12.0513	125.0	2	40	1282.9803	0.000007000
AT&T 7	QUINTEL QD6616-7 V1	1900	15.1381	125.0	2	40	2611.5599	0.000006000
AT&T 7	QUINTEL QD6616-7 V1	1900	15.1381	125.0	2	40	2611.5599	0.000006000
AT&T 7	QUINTEL QD6616-7 V1	2100	15.4987	125.0	2	40	2837.6576	0.000008000
AT&T 7	QUINTEL QD6616-7 V1	2100	15.4987	125.0	2	40	2837.6576	0.000008000
AT&T 8	ERICSSON SON_AIR6449	3700	23.55	126.8	1	108.4	24548.7443	0.000092000
AT&T 8	ERICSSON SON_AIR6419	3400	22.85	123.2	1	54	10408.6345	1.143475000
AT&T 8	ERICSSON SON_AIR6419	3400	22.85	123.2	1	54	10408.6345	1.143475000
AT&T 9	CCI DMP65R-BU6D	700	11.65	125.0	4	40	2339.4835	0.000022000
AT&T 9	CCI DMP65R-BU6D	2300	15.25	125.0	4	25	3349.6544	0.000003000
AT&T 9	CCI DMP65R-BU6D	850	11.45	125.0	4	40	2234.1894	0.000005000
							AT&T MPE%	**4.57692900 %**

Table 3: AT&T Antenna Inventory & Power Level

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 4* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s).

Frequency Band	Technology	Centerline (ft.)	# of Channels	ERP W (Per Channel)	Total Power Density ($\mu W/cm^2$)	Allowable MPE ($\mu W/cm^2$)	MPE %
700	LTE	125.0	4	623.9502906	0.0000770	467	0.00001600
700	FNET	125.0	2	625.9649141	0.0000580	467	0.00001300
1900	LTE	125.0	2	1255.509466	0.0000320	1000	0.00000300
1900	NR	125.0	2	1255.509466	0.0000320	1000	0.00000300
2100	LTE	125.0	2	1457.974712	0.0000290	1000	0.00000300
2100	NR	125.0	2	1457.974712	0.0000290	1000	0.00000300
3700	CBAND	126.8	1	24548.74429	0.0009190	1000	0.00009200
3400	DOD	123.2	1	10408.63453	11.4347520	1000	1.14347500
3400	DOD	123.2	1	10408.63453	11.4347520	1000	1.14347500
700	LTE	125.0	4	558.5473444	0.0001510	467	0.00003200
2300	LTE	125.0	4	650.0398908	0.0000230	1000	0.00000200
850	NR	125.0	4	545.8332546	0.0001060	567	0.00001900
700	LTE	125.0	4	623.9502906	0.0000000	467	0.00000000
700	FNET	125.0	2	598.8526715	0.0000010	467	0.00000000
1900	LTE	125.0	2	1317.285743	0.0000000	1000	0.00000000
1900	NR	125.0	2	1317.285743	0.0000000	1000	0.00000000
2100	LTE	125.0	2	1375.21307	0.0000000	1000	0.00000000
2100	NR	125.0	2	1375.21307	0.0000000	1000	0.00000000
3700	CBAND	126.8	1	24548.74429	0.0000030	1000	0.00000000
3400	DOD	123.2	1	10408.63453	0.0133730	1000	0.00133700
3400	DOD	123.2	1	10408.63453	0.0133730	1000	0.00133700
700	LTE	125.0	4	545.8332546	0.0000000	467	0.00000000
2300	LTE	125.0	4	837.4135979	0.0000000	1000	0.00000000
850	NR	125.0	4	545.8332546	0.0000000	567	0.00000000
700	LTE	125.0	4	623.9502906	0.0000570	467	0.00001200
700	FNET	125.0	2	641.4901487	0.0000340	467	0.00000700
1900	LTE	125.0	2	1305.779937	0.0000600	1000	0.00000600
1900	NR	125.0	2	1305.779937	0.0000600	1000	0.00000600
2100	LTE	125.0	2	1418.828787	0.0000750	1000	0.00000800
2100	NR	125.0	2	1418.828787	0.0000750	1000	0.00000800
3700	CBAND	126.8	1	24548.74429	0.0009190	1000	0.00009200
3400	DOD	123.2	1	10408.63453	11.4347520	1000	1.14347500
3400	DOD	123.2	1	10408.63453	11.4347520	1000	1.14347500
700	LTE	125.0	4	584.8708698	0.0001040	467	0.00002200

2300	LTE	125.0	4	837.4135979	0.0000300	1000	0.00000300
850	NR	125.0	4	558.5473444	0.0000290	567	0.00000500
						AT&T MPE%	**4.57692900 %**

Table 4: AT&T Maximum Sector MPE Power Values

Summary

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

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

Carrier	Predicted MPE %
AT&T	4.57692900%
T-Mobile	3.03158600%
Sprint	0.00003400%
Dish	0.00010100%
Verizon	0.00070200%
Composite	**7.60935200%**

Table 5: Total Predicted MPE(%) by Carrier

Compliance Status:

The anticipated composite MPE value for this site assuming all carriers present is **7.60935200%** of the allowable FCC established general population limit sampled at the ground level.

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

Samuel Cosgrove
RF Compliance Consultant
Centerline Communications, LLC
750 West Center St. Suite 301
West Bridgewater, MA 02379

EXHIBIT 6

TOWN OF MANCHESTER
41 CENTER STREET - P.O. BOX 191
MANCHESTER, CT 06045-0191
(860) 647-3052 FAX: (860) 647-3144

BUILDING PERMIT

PERMIT/APPLICATION NBR: 99 00001764 DATE APPLIED: 4/21/99
PERMIT TYPE: BLDG APP TYPE: CB PREPARED BY: PAT21
DESCR OF WORK: 5'X140' TOWER - BELL ATLANTIC DATE ISSUED: 5/05/99
NEW COMMERCIAL BLDG

PROPERTY ADDRESS:
60 ADAMS STREET

LEGAL DESCRIPTION:

OWNER NAME/ADDRESS:
THORNTON WILLIAM B
C/O PATRICK ONORATO
60 ADAMS STREET
MANCHESTER CT 06040

CONTRACTOR NAME/ADDRESS:
BELL ATLANTIC MOBILE
20 ALEXANDER DRIVE
WALLINGFORD CT 06492

VALUATION:	120000		
CONSTRUCTION TYPE:	STEEL FRAME	ROOFING TYPE:	MEMBRANE R
OCCUPANCY TYPE:	COMMERCIAL BUIL	Plot Plan w/permit applic:	YES
Number of bathrooms:	N/A	CERTIFICATE OF O-C-U-P-T:	C
CITY SEWER:	N/A	CALL BEFORE YOU DIG:	N/A
CITY WATER:	N/A	Dist from REAR lot line:	N/A
Dimensions of structure:	N/A	Dist from LEFT lot line:	N/A
Dist from RIGHT lot line:	N/A	Dist from STREET line:	N/A
HANDICAPPED BATHROOM:	N/A	Plans for building:	YES
Plans for Fire Marshal:	YES	PROJECT NAME:	BELL ATLAN
SEWER 8TH DISTRICT:	N/A	SQ FT COMMERCIAL/INDUSTRL:	N/A
Number of stories:	2.00	STAMPED PLANS OVER 5000':	N/A
NUMBER OF UNITS (C404):	1.00	WORKMAN CMP INS CERTIFICA:	N/A

PERMIT FEE: $ 1445.00 REVIEWED BY: CH
AMOUNT PAID: $ 1445.00
DATE RECEIVED: 4/21/99
RECEIVED BY: MAGGIE21

THIS PERMIT SHALL BE A LICENSE TO PROCEED WITH THE WORK AND SHALL NOT BE CONSTRUED AS AUTHORITY TO VIOLATE, CANCEL OR SET ASIDE ANY OF THE PROVISIONS OF THIS CODE OR ANY OF THE ORDINANCES. VOID IF WORK NOT COMMENCED WITHIN 180 DAYS.

Leo Belval
APPROVAL SIGNATURE

5-7-99
DATE

FILE COPY

TOWN OF MANCHESTER
41 CENTER STREET - P.O. BOX 191
MANCHESTER, CT 06045-0191
(860) 647-3052 FAX: (860) 647-3144

ZONING PERMIT

CERTIFICATION OF ZONING COMPLIANCE REQUEST

PERMIT/APPLICATION NBR: 99 00001764
PERMIT TYPE: ZONE APP TYPE: CB
DATE APPLIED: 4/21/99
PREPARED BY: PAT21
DATE ISSUED: 5/05/99

NEW COMMERCIAL BLDG

PROPERTY ADDRESS:
60 ADAMS STREET
TENANT:

LEGAL DESCRIPTION:

OWNER NAME/ADDRESS:
THORNTON WILLIAM B
C/O PATRICK ONORATO
60 ADAMS STREET
MANCHESTER CT 06040

CONTRACTOR NAME/ADDRESS:
BELL ATLANTIC MOBILE
20 ALEXANDER DRIVE
WALLINGFORD CT 06492

VALUATION:

CONSTRUCTION TYPE:	STEEL FRAME	ROOFING TYPE:	MEMBRANE R
OCCUPANCY TYPE:	COMMERCIAL BUIL	Plot Plan w/permit applic:	YES
Number of bathrooms:	N/A	CERTIFICATE OF O-C-U-P-T:	C
CITY SEWER:	N/A	CALL BEFORE YOU DIG:	N/A
CITY WATER:	N/A	Dist from REAR lot line:	N/A
Dimensions of structure:	N/A	Dist from LEFT lot line:	N/A
Dist from RIGHT lot line:	N/A	Dist from STREET line:	N/A
HANDICAPPED BATHROOM:	N/A	Plans for building:	YES
Plans for Fire Marshal:	YES	PROJECT NAME:	BELL ATLAN
SEWER 8TH DISTRICT:	N/A	SQ FT COMMERCIAL/INDUSTRL:	N/A
Number of stories:	2.00	STAMPED PLANS OVER 5000':	N/A
NUMBER OF UNITS (C404):	1.00	WORKMAN CMP INS CERTIFICA:	N/A

DESCRIPTION OF OTHER BUILDINGS NOT SHOWN: _____
CONDITIONS: _____ REMARKS: _____
ADDTNL APPROVAL: _____ ADDTNL PERMITS: _____

THIS IS TO CERTIFY THAT THE ABOVE STATED INFORMATION IS A PERMITTED AND LAWFUL USE AS CONTROLLED BY THE ZONING REGULATIONS OF THE TOWN OF MANCHESTER, CONNECTICUT, UPON AUTHORIZED SIGNATURE OF THE ZONING ENFORCEMENT OFFICER.

Thomas R O'Mara
APPROVAL SIGNATURE

5/7/99
DATE

FILE COPY

99-1764

TOWN OF MANCHESTER ZONING PERMIT

41 Center Street — **Please Print or Type** — Telephone: 647-3052

TO: ZONING ENFORCEMENT OFFICER

Certification of Zoning Approval is hereby requested for:

application of a Building Permit — Other:

Decision is based on the following information:

1.) Location: (street and no. or lot no.) 60 ADAMS ST

2.) Owner's Name: BELL ATLANTIC MOBILE

3.) Builder: BELL ATLANTIC MOBILE

Address: 20 ALEXANDER DR WALLINGFOR CT 06492

4.) Check Type of Construction: /__/ New Building /__/ Addition /__/ Alteration /__/ Repair /__/ Miscellaneous

5.) Job Description* CONSTRUCT A 140-0 MONOPOLE TOWER WITH TWO MODULAR BUILDINGS

(*Plot Plan required for all additions to buildings and accessory structures).

6.) Other Buildings Not Shown: _____

7.) Merestones or Stakes Indicating Lot Boundaries? ON PLANS

8.) Distance from Street Line: 500 +

9.) Distance from Side Line: Left 100 + Right 100 +

10.) Distance from Building to Rear Lot Line: 100 +

11.) Proposed Use: CELLULAR COMMUNICATION FACILITY

(For example: manufacturing, office, storage, dwelling, school, bath, garage)

12.) /__/ Sewer /__/ Septic /__/ Water /__/ Well

THIS PERMIT SHALL NOT BE EFFECTIVE FOR 24 HOURS AFTER APPROVAL

I hereby certify that the above statements are true to the best of my knowledge and belief.

4-19-99	Mark D. Gaylor	203-494-0023
Date	Signature	Telephone

FOR OFFICE USE ONLY

This is to certify that the above-stated information is a permitted and lawful use as controlled by the Zoning Regulations of the Town of Manchester, Connecticut, upon authorized signature of the Zoning Enforcement Officer.

Zoning Permit Issued: 4/29/99 Conditions: _____

Zone: IND Approved By: Thomas J Mann

Zoning Enforcement Officer

ADDITIONAL APPROVAL FOR BUSINESS AND INDUSTRIAL USE

Date	Engineering	Date	Police	Date	Fire
/		/			

Comments: approved by zoning council

Additional Permits May Be Required From: _____ Dept(s).

for _____

99-1764

RECEIVED
APR 21 1999
TOWN OF MANCHESTER
BUILDING INSPECTION DIVISION

TOWN OF MANCHESTER
BUILDING DEPARTMENT
494 MAIN STREET
P.O. BOX 191
MANCHESTER, CT 06045-0191
(860) 647-3052

APPLICATION FOR PLAN EXAMINATION AND BUILDING PERMIT

NO. _____ STREET _____

IMPORTANT – Applicant to complete all items in sections: I, II, III, IV, and IX.

ZONING DISTRICT I

I. LOCATION OF BUILDING

AT (LOCATION) 60 (NO.) ADAM ST (STREET) AND BELL Atlantic Tower (CROSS STREET)

BETWEEN _____ (CROSS STREET) LOT _____ BLOCK _____ LOT SIZE _____

SUBDIVISION _____

II. TYPE AND COST OF BUILDING – All applicants complete Parts A – D

A. TYPE OF IMPROVEMENT

1 [X] New building
2 [ ] Addition (*If residential, enter number of new housing units added, if any, in Part D, 13*)
3 [ ] Alteration (*See 2 above*)
4 [ ] Repair, replacement
5 [ ] Wrecking (*If multifamily residential, enter number of units in building in Part D, 13*)
6 [ ] Moving (relocation)
7 [ ] Foundation only

B. OWNERSHIP

8 [X] Private (individual, corporation, nonprofit institution, etc.)
9 [ ] Public (Federal, State, or local government)

D. PROPOSED USE – For "Wrecking" most recent use

Residential

12 [ ] One family
13 [ ] Two or more family – *Enter number of units* → _____
14 [ ] Transient hotel, motel, or dormitory – *Enter number of units* → _____
15 [ ] Garage
16 [ ] Carport
17 [ ] Other – *Specify* _____

Nonresidential

18 [ ] Amusement, recreational
19 [ ] Church, other religious
20 [ ] Industrial
21 [ ] Parking garage
22 [ ] Service station, repair garage
23 [ ] Hospital, institutional
24 [ ] Office, bank, professional
25 [ ] Public utility
26 [ ] School, library, other educational
27 [ ] Stores, mercantile
28 [ ] Tanks, towers
29 [ ] Other – *Specify* _____

C. COST

	(Omit cents)
10. Cost of improvement	$ 120,000.-
To be installed but not included in the above cost	
a. Electrical	30,000
b. Plumbing	
c. Heating, air conditioning	
d. Other (elevator, etc.)	
11. TOTAL COST OF IMPROVEMENT	$

Nonresidential – Describe in detail proposed use of buildings, e.g., food processing plant, machine shop, laundry building at hospital, elementary school, secondary school, college, parochial school, parking garage for department store, rental office building, office building at industrial plant. If use of existing building is being changed, enter proposed use.

CONSTRUCT A 140.0 ±5' MONAPOLE TOWER. & INSTALL 2 MODULAR BUILDING

III. SELECTED CHARACTERISTICS OF BUILDING – For new buildings and additions, complete Parts E – L; for wrecking, complete only Part J, for all others skip to IV.

E. PRINCIPAL TYPE OF FRAME

30 [ ] Masonry (wall bearing)
31 [ ] Wood frame
32 [ ] Structural steel
33 [ ] Reinforced concrete
34 [ ] Other – *Specify* _____

G. TYPE OF SEWAGE DISPOSAL

40 [ ] Public or private company
41 [ ] Private (septic tank, etc.)

H. TYPE OF WATER SUPPLY

42 [ ] Public or private company
43 [ ] Private (well, cistern)

J. DIMENSIONS

48. Number of stories 1
49. Total square feet of floor area, all floors, based on exterior dimensions ..... 700±
50. Total land area, sq. ft. .....

K. NUMBER OF OFF-STREET PARKING SPACES

51. Enclosed .....
52. Outdoors.....

F. PRINCIPAL TYPE OF HEATING FUEL

35 [ ] Gas
36 [ ] Oil
37 [X] Electricity
[ ] Coal

I. TYPE OF MECHANICAL

Will there be central air conditioning?
44 [ ] Yes 45 [X] No

Will there be an elevator?
47 [X] No

L. RESIDENTIAL BUILDINGS ONLY

53. Number of bedrooms .....
54. Number of bathrooms { Full ..... Partial .....

EXHIBIT 7

From: UPS
To: Evan Renwick
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030336787688
Date: Thursday, March 31, 2022 11:54:28 AM

Hello, your package has been delivered.

Delivery Date: Thursday, 03/31/2022
Delivery Time: 11:50 AM
Left At: OFFICE
Signed by: FRANCIS

CENTERLINE SITE ACQUISITION

Tracking Number:	1Z9Y45030336787688
Ship To:	POM- POM GALI, LLC 60 ADAMS ST MANCHESTER, CT 060421804 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CT1080 CSC-MANCHESTER SAND & GRAVEL

Discover more about UPS:

Visit https://link.edgepilot.com/s/6aa06811/m3fJfp1qp0Wzt2iv0blqTQ?u=http://www.ups.com/

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Download the UPS mobile app

From: UPS
To: Evan Renwick
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030323777516
Date: Thursday, March 31, 2022 12:57:40 PM

Hello, your package has been delivered.

Delivery Date: Thursday, 03/31/2022
Delivery Time: 12:46 PM
Left At: RECEIVER
Signed by: DROP BOX

CENTERLINE SITE ACQUISITION

Tracking Number:	1Z9Y45030323777516
Ship To:	MANCHESTER BOARD OF DIRECTORS 41 CENTER STREET MANCHESTER, CT 060405067 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CT1080 CSC- MAYOR, JAY MORAN

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Read Compass Online

Download the UPS mobile app

From: UPS
To: Evan Renwick
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030329487908
Date: Thursday, March 31, 2022 12:21:22 PM

Hello, your package has been delivered.

Delivery Date: Thursday, 03/31/2022
Delivery Time: 12:19 PM
Left At: INSIDE DELIV
Signed by: ROTELLA

CENTERLINE SITE ACQUISITION

Tracking Number:	1Z9Y45030329487908
Ship To:	PLANNING DEPARTMENT 494 MAIN STREET LINCOLN CENTER, 2ND FLOOR MANCHESTER, CT 060404102 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CT1080 TOWN OF MANCHESTER- CSC

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Read Compass Online

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From: UPS
To: Evan Renwick
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030320791292
Date: Monday, April 4, 2022 1:46:47 PM

Hello, your package has been delivered.

Delivery Date: Monday, 04/04/2022
Delivery Time: 1:44 PM
Left At: MAIL ROOM
Signed by: JARED

CENTERLINE SITE ACQUISITION

Tracking Number:	1Z9Y45030320791292
Ship To:	SBA TOWERS VLLL, LLC 8051 CONGRESS AVENUE BOCA RATON, FL 334871307 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CT1080 SBA TOWERS CSC

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