

May 13, 2022

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

Regarding: Notice of Exempt Modification – AT&T Site CT5259 / FA# 10071358
Address: 1030 New Britain Ave, West Hartford, CT 06110

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC (“AT&T”) currently maintains a wireless telecommunications facility on an existing +/- 185’ monopole at the above-referenced address, latitude 41.7360919, longitude -72.7204989. Said monopole is operated by Ten Thirty Tower Company.

AT&T desires to modify its existing telecommunications facility by swapping nine (9) antennae, swapping three (3) remote radio units, adding one (1) surge arrestor and accompanying feedlines as more particularly detailed and described on the enclosed Construction Drawings prepared by Hudson Design Group, LLC last revised May 12, 2022. The centerline height of the existing antennas is and will remain at 180 feet. This modification may include B2, B5, B17, B14, B29, B30, B66, & n77 hardware that is 4G(LTE) and/or 5GNR capable through remote software configuration and either or both services may be turned off at various times.

Please accept this letter as notification pursuant to R.C.S.A §16-50j-73 for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the following individuals: The Honorable Shari Cantor, Mayor of the Town of West Hartford. Brittany Macgilpin, Zoning Enforcement Officer and Todd Dumais Town Planner of the Town of West Hartford. Ten Thirty Tower Company, as tower operator/property owner. We have reached out to the Building and Zoning Departments for the Town West Hartford who conducted a search and could not locate the original tower approval.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require an extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. *Please see the RF emissions calculation for AT&T's modified facility enclosed herewith.*
5. The proposed modifications will not cause an ineligible change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading. *Please see the structural analysis dated May 9, 2022, and prepared by Paul J. Ford & Company, enclosed herewith.*

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

Sincerely,

Evan Renwick

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

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

cc: The Honorable Shari Cantor, Mayor, Town of West Hartford, as elected official
Brittany Macgilpin, Zoning Enforcement Officer
Todd Dumais, Town Planner
Ten Thirty Tower Company, as tower operator/property owner.



EXHIBIT 1

PROJECT INFORMATION

SCOPE OF WORK: ITEMS TO BE MOUNTED ON THE EXISTING SELF SUPPORT:

- INSTALL AT&T ANTENNA (QD6616-7) @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL AT&T ANTENNA (AIR6449 N77) @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3)(STACKED).
- INSTALL AT&T ANTENNA (AIR6419 N77G) @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3)(STACKED).
- INSTALL AT&T ANTENNA (DMP65R-BU6DA) @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL AT&T RRUS 4449 B5/B12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (ADD Y CABLE).
- INSTALL SURGE ARRESTOR (DC9-48-60-24-8C-EV) (TOTAL OF 1).
- RELOCATE EXISTING AT&T 4478 B14 (700)(TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED ON NEW BACK TO BACK MOUNT).
- RELOCATE AT&T RRUS 32 B30 (WCS)(TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED ON NEW BACK TO BACK MOUNT).
- RELOCATE AT&T RRUS 32 B66A (AWS)(TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED ON NEW BACK TO BACK MOUNT).
- RELOCATE AT&T RRUS 32 B2 (1900)(TYP. OF 1 PER SECTOR, TOTAL OF 3) (BELOW) (RELOCATED ON NEW BACK TO BACK MOUNT).
- INSTALL (1) 6 AWG DC TRUNKS & (1) 24 PAIR FIBER (TO FOLLOW EXISTING ROUTE).

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:

- ADD (1) 6630 +IDLE CABLE AND 6648 + XCEDE CABLE

ITEMS TO BE REMOVED:

- EXISTING (1) 5216 IN PURCELL.
- EXISTING (6) 1-5/8" COAX CABLES.
- EXISTING AT&T TMA'S (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T DC/FIBER SURGE ARRESTOR (TOTAL OF 1).
- EXISTING AT&T ANTENNA (7770) @ POS. 1 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNA (OPA-65R-LCUU-H6) @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNA (800 10965-K) @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNA (OPA-65R-LCUU-H6) @ POS. 4(TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS 11 B12 (700)(TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS-12 B5 (TYP. OF 1 PER SECTOR, TOTAL OF 3).(ON GROUND)

ITEMS TO REMAIN:

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

SITE ADDRESS: 1030 NEW BRITAIN AVE.
WEST HARTFORD, CT 06110

LATITUDE: 41.731308° N 41° 43' 52.71" N

LONGITUDE: 72.7238° W 72° 43' 25.68" W

TYPE OF SITE: SELF SUPPORT / OUTDOOR EQUIPMENT

STRUCTURE HEIGHT: 194'-0"±

RAD CENTER: 180'-0"±

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 PLANS	0
A-2	ANTENNA PLANS & ELEVATION	0
A-3	DETAILS	0
G-1	GROUNDING DETAILS	0
RF-1	RF PLUMBING DIAGRAM	0



SITE NUMBER: CT5259

SITE NAME: WEST HARTFORD-ELMSFORD

FA CODE: 10071358

PACE ID: MRCTB052203,MRCTB051317, MRCTB050859, MRCTB051170

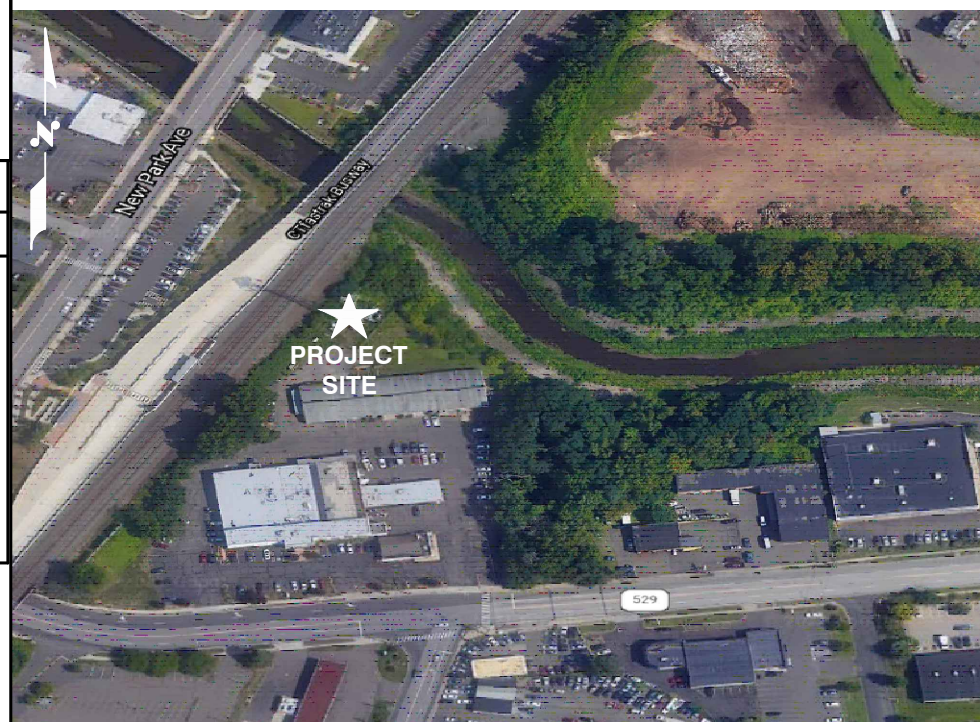
PROJECT: 5G NR RADIO, BBU ADD, ANTENNA MOD 4TXRX ANTENNA RETROFIT 2021 UPGRADE

ISSUED FOR PERMITTING

VICINITY MAP

DIRECTIONS TO SITE:

DEPART RT-30 WEST/COCHITUATE ROAD TOWARD BURR STREET. TURN BACK ON RT-30 EAST/COCHITUATE ROAD. TAKE RAMP RIGHT FOR I-90 WEST TOWARD SPRINGFIELD/WORCESTER. AT EXIT 9, TAKE RAMP RIGHT FOR I-84 TOWARD HARTFORD/NEW YORK CITY. AT EXIT 45, TAKE RAMP LEFT AND FOLLOW SIGNS FOR FLATBUSH AVENUE. TURN RIGHT ONTO FLATBUSH AVENUE. TURN LEFT ONTO NEW PARK AVENUE. TURN LEFT ONTO OAKWOOD AVENUE.



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

H2G 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: CT5259
SITE NAME: WEST HARTFORD-ELMSFORD
1030 NEW BRITAIN AVE. WEST HARTFORD, CT 06110 HARTFORD COUNTY

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

Professional Engineer Seal for Daniel P. Ham
NO. DATE REVISIONS BY CHK APP'D
0 05/12/22 ISSUED FOR PERMITTING
A 10/18/21 ISSUED FOR REVIEW

AT&T
TITLE SHEET
5G NR RADIO, BBU ADD, ANTENNA MOD 4TXRX ANTENNA RETROFIT 2021 UPGRADE
SITE NUMBER: CT5259
DRAWING NUMBER: T-1
REV: 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	CL	CENTER LINE	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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

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

**SITE NUMBER: CT5259
 SITE NAME: WEST HARTFORD-ELMSFORD**
 1030 NEW BRITAIN AVE. WEST HARTFORD, CT 06110 HARTFORD COUNTY

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

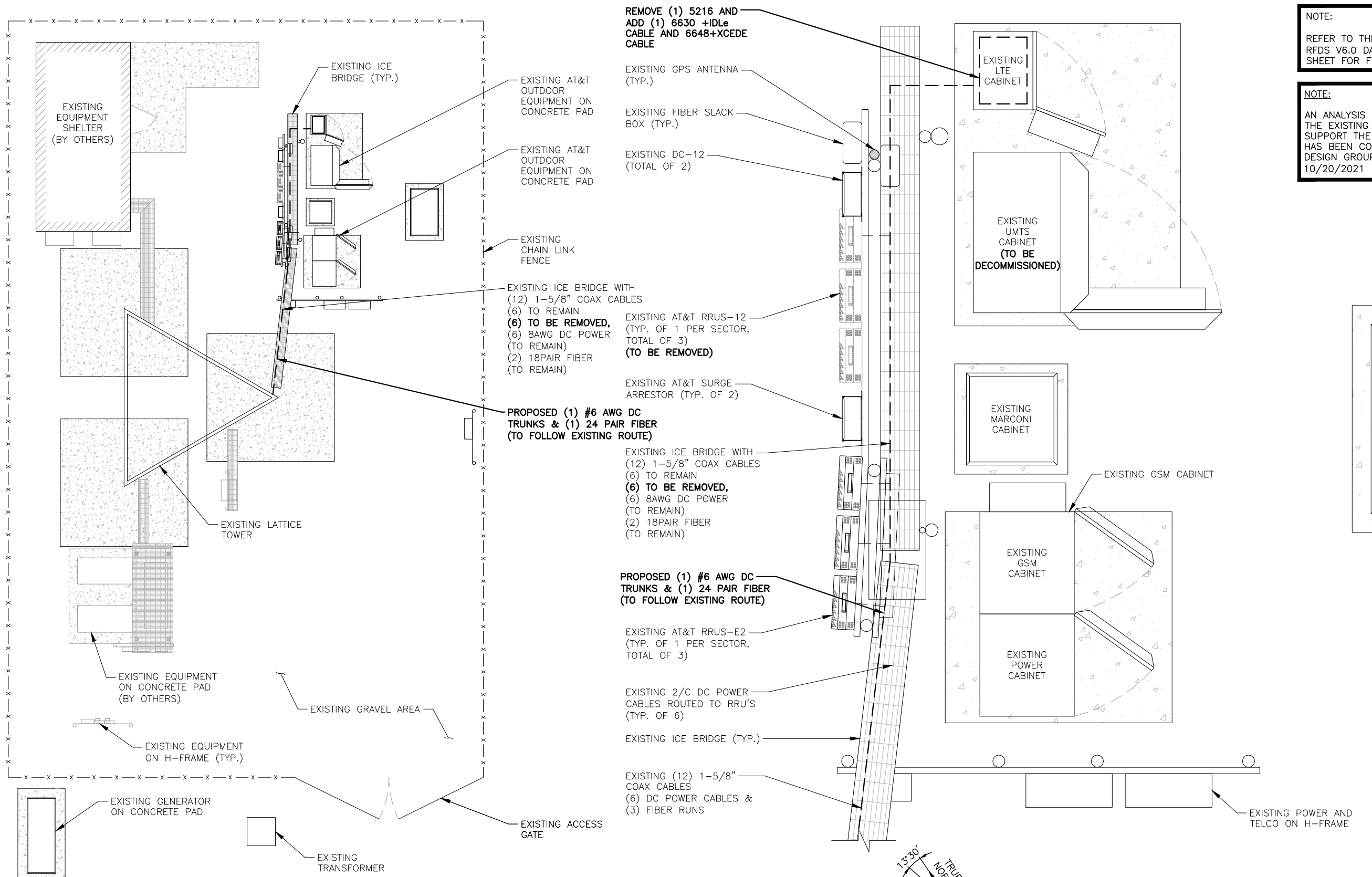
Professional Engineer Seal: DANIEL P. HANCOCK, STATE OF CONNECTICUT, LICENSED PROFESSIONAL ENGINEER, No. 22479

NO.	DATE	REVISIONS	BY	CHK	APP
0	05/12/22	ISSUED FOR PERMITTING	ME	AT	DPA
A	10/18/21	ISSUED FOR REVIEW	ME	AT	DPA

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

AT&T
 GENERAL NOTES
 5G NR RADIO, BBU ADD, ANTENNA MOD
 4TXRX ANTENNA RETROFIT 2021 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT5259	GN-1	0

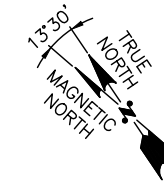
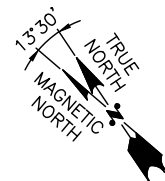


NOTE:
REFER TO THE FINAL/APPROVED
RFDS V6.0 DATED: 04/26/2022 DATA
SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF
THE EXISTING STRUCTURES TO
SUPPORT THE PROPOSED EQUIPMENT
HAS BEEN COMPLETED BY HUDSON
DESIGN GROUP, LLC. DATED:
10/20/2021

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

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



HG 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

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HARTFORD COUNTY

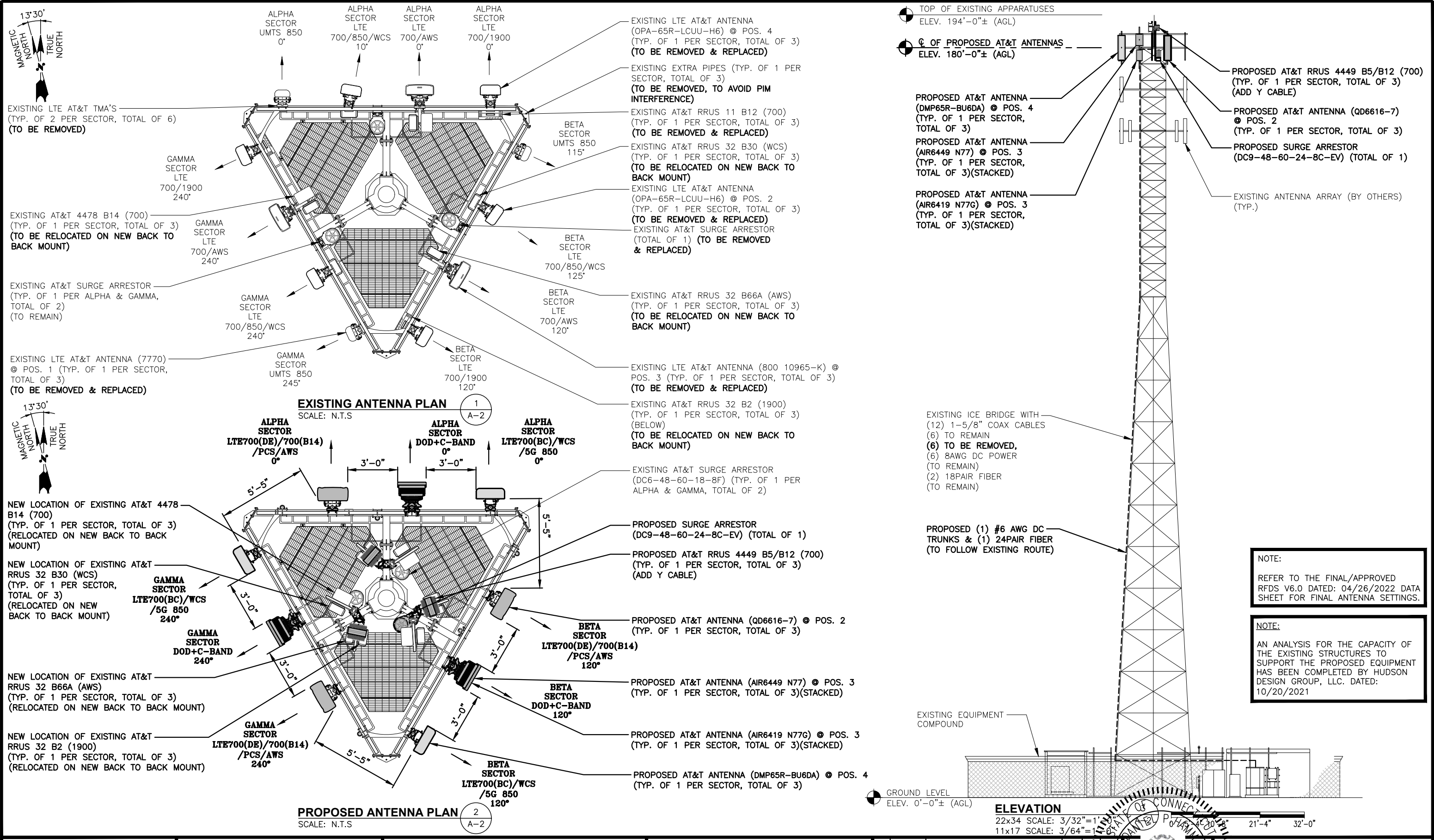
at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

Professional Engineer
DANIEL P. HANCOCK
STATE OF CONNECTICUT
No. 22179
10/18/21

NO.	DATE	REVISIONS	BY	CHK	APP
0	05/12/22	ISSUED FOR PERMITTING	ME	AT	DPA
A	10/18/21	ISSUED FOR REVIEW	SG	AT	DPA

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

AT&T
COMPOUND & EQUIPMENT PLANS
5C NR RADIO, BBU ADD, ANTENNA MOD
4TRX ANTENNA RETROFIT 2021 UPGRADE
SITE NUMBER: CT5259
DRAWING NUMBER: A-1
REV: 0



HGD HUDSON Design Group LLC
 45 BEECHWOOD DRIVE
 NORTH ANDOVER, MA 01845
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CENTERLINE COMMUNICATIONS
 750 WEST CENTER STREET, SUITE #301
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SITE NUMBER: CT5259
SITE NAME: WEST HARTFORD-ELMSFORD
 1030 NEW BRITAIN AVE.
 WEST HARTFORD, CT 06110
 HARTFORD COUNTY

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

0	05/12/22	ISSUED FOR PERMITTING	AT	DPA	No. 22118
A	10/18/21	ISSUED FOR REVIEW	SG	APP	
NO.	DATE	REVISIONS	BY	CHK	APP
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: SG		

AT&T
 ANTENNA LAYOUTS & ELEVATIONS
 5G-NR RADIO, BBU ADD, ANTENNA MOD
 4TRXR ANTENNA RETROFIT 2021 UPGRADE
 SITE NUMBER: CT5259
 DRAWING NUMBER: A-2
 REV: 0

NOTE:
 REFER TO THE FINAL/APPROVED
 RFDS V6.0 DATED: 04/26/2022 DATA
 SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
 AN ANALYSIS FOR THE CAPACITY OF
 THE EXISTING STRUCTURES TO
 SUPPORT THE PROPOSED EQUIPMENT
 HAS BEEN COMPLETED BY HUDSON
 DESIGN GROUP, LLC. DATED:
 10/20/2021

ANTENNA SCHEDULE

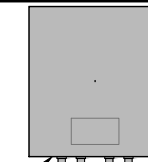
SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA CL HEIGHT	AZIMUTH	TMA/ DIPLXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	-	-	-	-	-	-	-	-	-	(2)(E)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
A2	PROPOSED	LTE700(DE)/700(B14) /PCS/AWS	QD6616-7	72"X22"X9.6"	180'-0"±	0°	-	(E)(1) RRUS-32 B2 (1900) (E)(1) RRUS-32 B66A (1900) (E)(1) RRUS-4478 B14 (700) (E)(G)(1) RRUS-E2 B29 (700)	-	(E)(2) DC POWER TRUNK (E)(1) FIBER TRUNK	(E) (1) RAYCAP DC6-48-60-18-8F
A3	PROPOSED	DoD C-BAND	AIR 6449 N77D AIR 6419 N77G	30.4"X15.9"X8.1" 31.1"X16.1X7.3"	180'-0"±	0°	-	-	-	-	(E) (1) RAYCAP DC6-48-60-18-8F
A4	PROPOSED	LTE700(BC)/WCS/5G 850	DMP65R-BU6DA	71.2"X20.7X7.7"	180'-0"±	0°	-	(P)(1) 4449 B5/B12 (700) (E)(1) RRUS-32 B30 (WCS)	17.9"X13.9"X9.4"	(P)(1) Y CABLE	(E) (1) RAYCAP DC9-48-60-24-8C-EV
B1	-	-	-	-	-	-	-	-	-	(2)(E)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
B2	PROPOSED	LTE700(DE)/700(B14) /PCS/AWS	QD6616-7	72"X22"X9.6"	180'-0"±	120°	-	(E)(1) RRUS-32 B2 (1900) (E)(1) RRUS-32 B66A (1900) (E)(1) RRUS-4478 B14 (700) (E)(G)(1) RRUS-E2 B29 (700)	-	(P)(1) #6 AWG DC TRUNK (P)(1) 24 PAIR FIBER TRUNK (E)(2) DC POWER	(E) (1) RAYCAP DC9-48-60-24-8C-EV
B3	PROPOSED	DoD C-BAND	AIR 6449 N77D AIR 6419 N77G	30.4"X15.9"X8.1" 31.1"X16.1X7.3"	180'-0"±	120°	-	-	-	-	(E) (1) RAYCAP DC6-48-60-18-8F
B4	PROPOSED	LTE700(BC)/WCS/5G 850	DMP65R-BU6DA	71.2"X20.7X7.7"	180'-0"±	120°	-	(P)(1) 4449 B5/B12 (700) (E)(1) RRUS-32 B30 (WCS)	17.9"X13.9"X9.4"	(P)(1) Y CABLE	(E) (1) RAYCAP DC6-48-60-18-8F
C1	-	-	-	-	-	-	-	-	-	(2)(E)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
C2	PROPOSED	LTE700(DE)/700(B14) /PCS/AWS	QD6616-7	72"X22"X9.6"	180'-0"±	240°	-	(E)(1) RRUS-32 B2 (1900) (E)(1) RRUS-32 B66A (1900) (E)(1) RRUS-4478 B14 (700) (E)(G)(1) RRUS-E2 B29 (700)	-	(E)(2) DC POWER TRUNK (E)(1) FIBER TRUNK	(E) (1) RAYCAP DC6-48-60-18-8F
C3	PROPOSED	DoD C-BAND	AIR 6449 N77D AIR 6419 N77G	30.4"X15.9"X8.1" 31.1"X16.1X7.3"	180'-0"±	240°	-	-	-	-	(E) (1) RAYCAP DC6-48-60-18-8F
C4	PROPOSED	LTE700(BC)/WCS/5G 850	DMP65R-BU6DA	71.2"X20.7X7.7"	180'-0"±	240°	-	(P)(1) 4449 B5/B12 (700) (E)(1) RRUS-32 B30 (WCS)	17.9"X13.9"X9.4"	(P)(1) Y CABLE	(E) (1) RAYCAP DC6-48-60-18-8F

RRU CHART		
QUANTITY	MODEL	SIZE (L x W x D)
3(E)	RRUS-32 B2 (1900)	27.2"X12.1"X7.0"
3(E)	RRUS-32 B66A (1900)	27.2"X12.1"X7.0"
3(E)	RRUS-32 B30 (WCS)	27.2"X12.1"X7.0"
3(E)	RRUS-4478 B14 (700)	18.1"X13.4"X8.3"
3(E)(G)	RRUS-E2 B29 (700)	20.4"X18.5"X7.5"
3(P)	RRUS-4449 B5/B12 (700)	17.9"X13.9"X9.4"

NOTE:
REFER TO THE FINAL/APPROVED RFDS V6.0 DATED: 04/26/2022 DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT HAS BEEN COMPLETED BY HUDSON DESIGN GROUP, LLC. DATED: 10/20/2021

NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



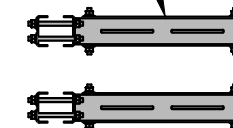
PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL
SCALE: N.T.S

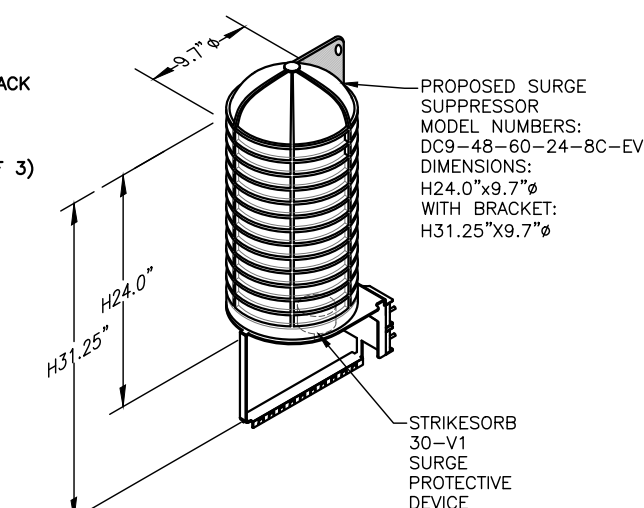
7
A-3

PROPOSED DUAL RRU MOUNT, ROSENBERGER PART #D220RRUSDM (TYP.)



BACK TO BACK RRU MOUNT DETAIL
SCALE: N.T.S

6
A-3



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

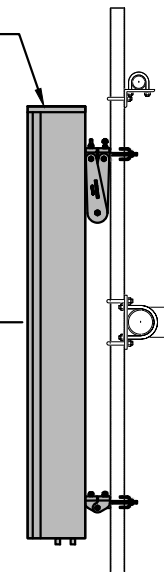
DC SURGE SUPPRESSOR DETAIL
SCALE: N.T.S

5
A-3

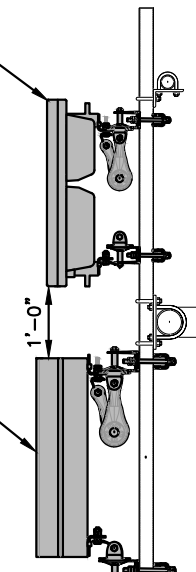
FINAL ANTENNA SCHEDULE
SCALE: N.T.S

1
A-3

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



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



CL OF PROPOSED AT&T ANTENNAS ELEV. 180'-0"± (AGL)

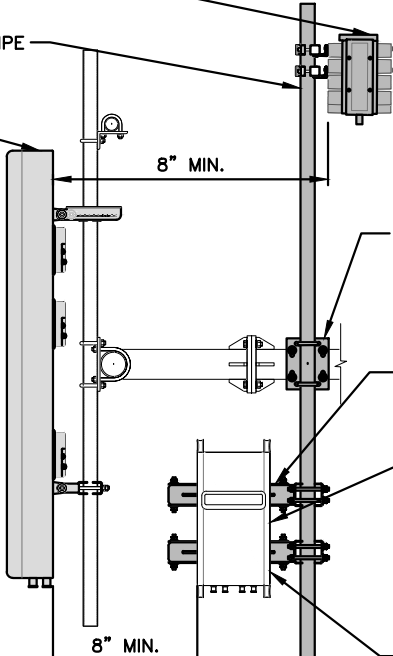
PROPOSED AT&T ANTENNA (AIR6449 N77) @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3)(STACKED)

PROPOSED AT&T RRUS 4449 B5/B12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (ADD Y CABLE)

PROPOSED 2" STD. (2.38" O.D.) 10' LONG PIPE MAST (TYP. OF 2 PER SECTOR, TOTAL OF 6)

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

CL OF PROPOSED AT&T ANTENNAS ELEV. 180'-0"± (AGL)



PROPOSED BACK TO BACK PIPE MOUNT KIT, SITEPRO-1 PART #BBPM-K3 (TYP. OF 1 PER SECTOR, TOTAL OF 3)

PROPOSED DUAL RRU MOUNT, ROSENBERGER PART #D220RRUSDM (TYP.)

NEW LOCATION OF EXISTING AT&T RRUS 32 B2 (1900) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED ON NEW BACK TO BACK MOUNT)

NEW LOCATION OF EXISTING AT&T RRUS 32 B66A (AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (RELOCATED ON NEW BACK TO BACK MOUNT)

PROPOSED ANTENNA @ POS. 2

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

2
A-3

PROPOSED ANTENNA @ POS. 3

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

3
A-3

PROPOSED ANTENNA @ POS. 4

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

4
A-3

HG 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: CT5259
SITE NAME: WEST HARTFORD-ELMSFORD
1030 NEW BRITAIN AVE. WEST HARTFORD, CT 06110 HARTFORD COUNTY

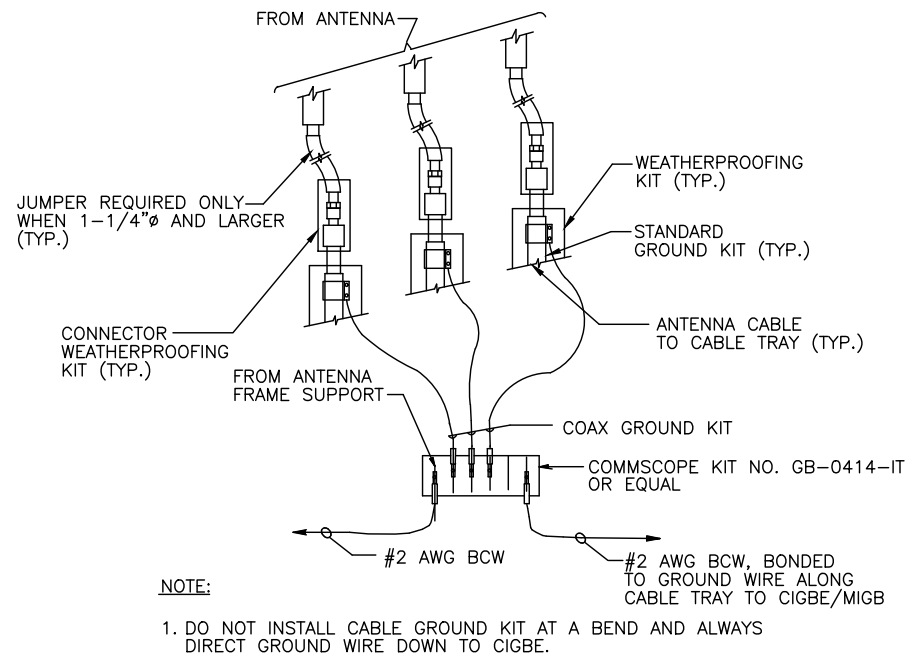
at&t
500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067

Professional Engineer Seal: DANIEL P. HANCOCK, No. 22478, State of Connecticut.

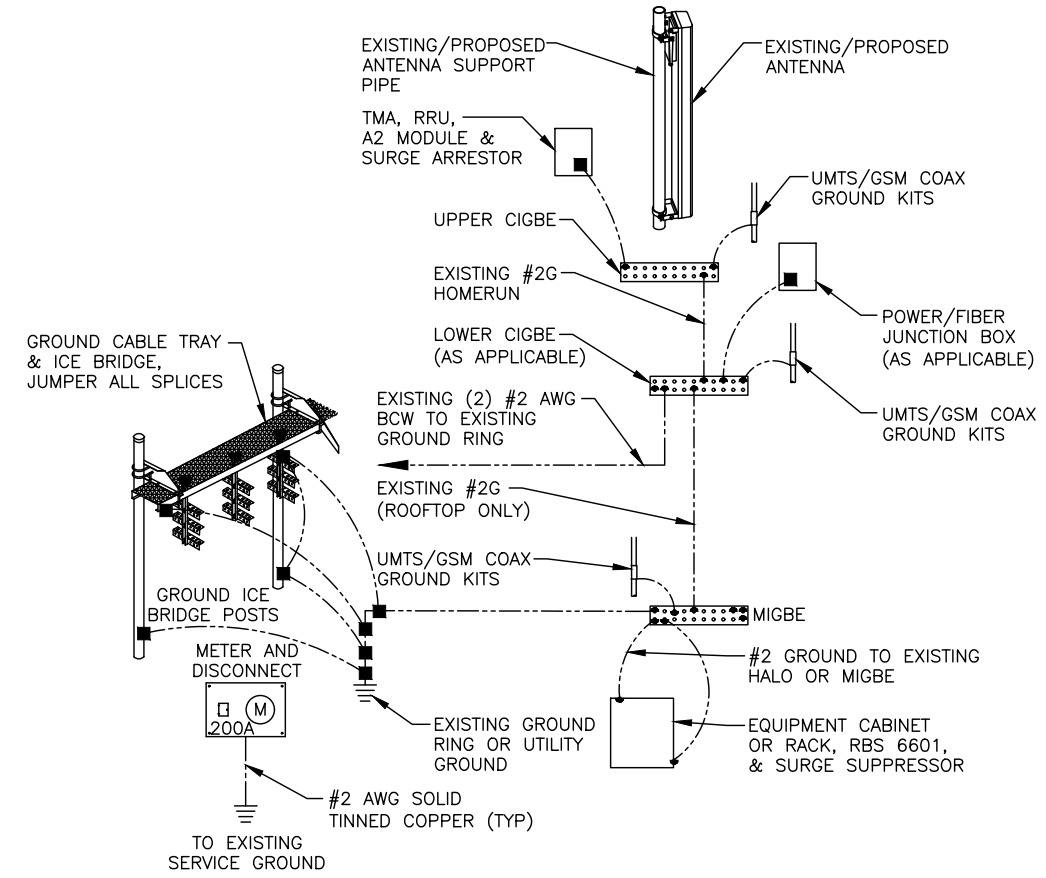
NO.	DATE	REVISIONS	BY	CHK	APP
0	05/12/22	ISSUED FOR PERMITTING	AT	AT	DPA
A	10/18/21	ISSUED FOR REVIEW	AT	AT	DPA

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

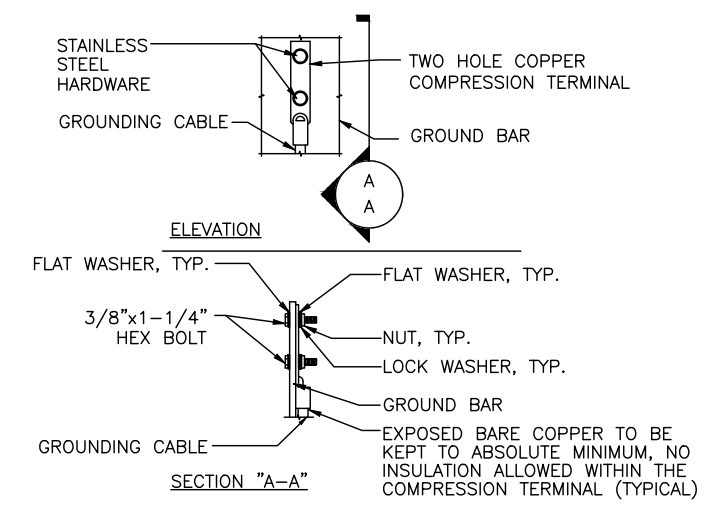
AT&T
DETAILS
5G NR RADIO, BBU ADD, ANTENNA MOD
4TXRX ANTENNA RETROFIT 2021 UPGRADE
SITE NUMBER: CT5259 DRAWING NUMBER: A-3 REV: 0



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



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



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

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

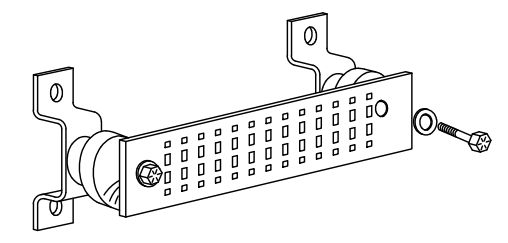
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" - SURGE PRODUCERS

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

SECTION "A" - SURGE ABSORBERS

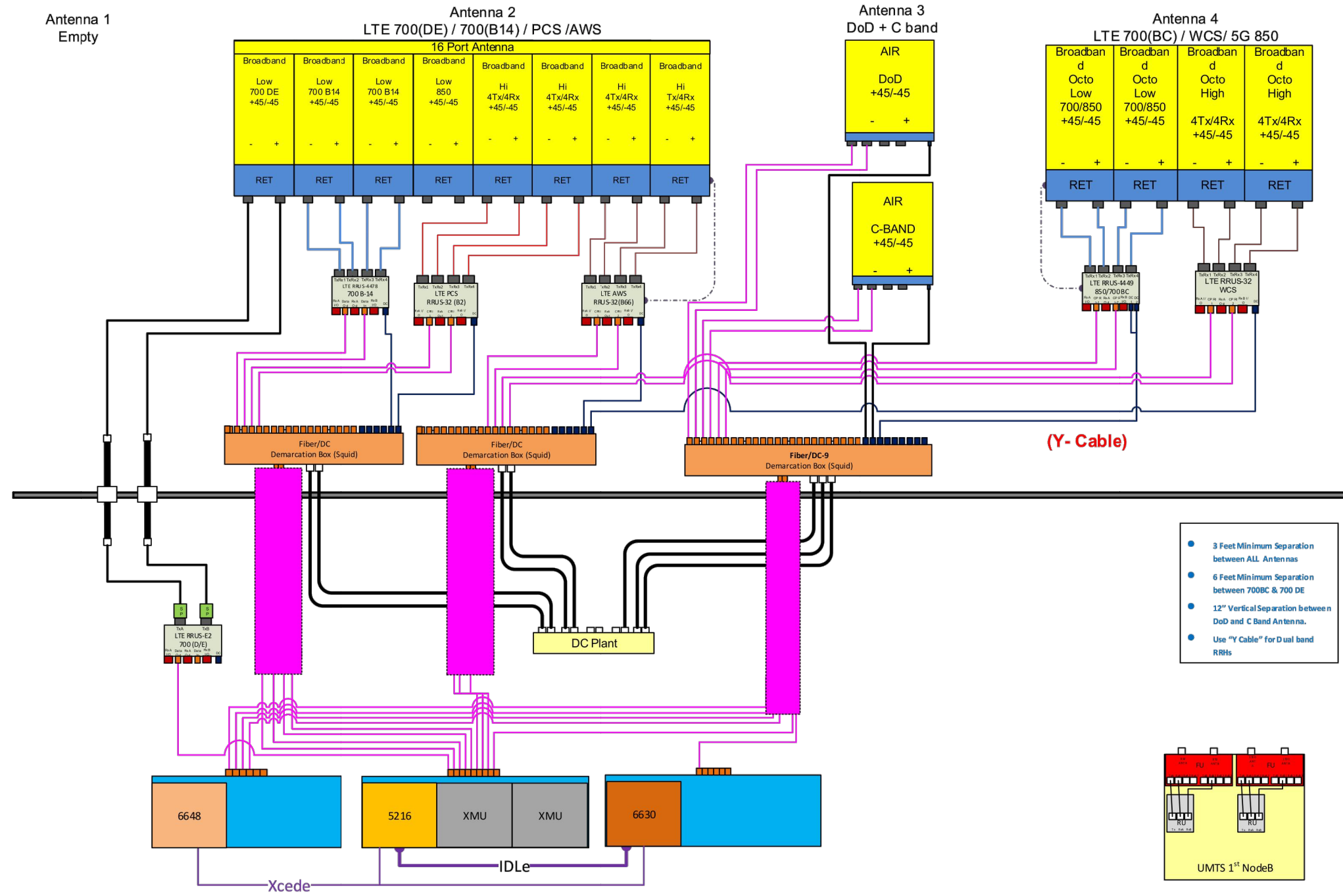
- INTERIOR GROUND RING (#2 AWG)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2 AWG)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2 AWG)
- BUILDING STEEL (IF AVAILABLE) (#2 AWG)



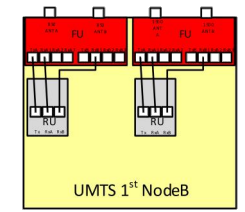
GROUND BAR - DETAIL (AS REQUIRED)
SCALE: N.T.S.

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A	10/18/21	ISSUED FOR REVIEW	AT	SG	
NO.	DATE	REVISIONS	BY	CHK	APP
SCALE:	AS SHOWN	DESIGNED BY:	AT	DRAWN BY:	SG

AT&T		
GROUNDING DETAILS		
5G NR RADIO, BBU ADD, ANTENNA MOD		
4TXRX ANTENNA RETROFIT 2021 UPGRADE		
SITE NUMBER	DRAWING NUMBER	REV
CT5259	G-1	0



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



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

NOTE:
 REFER TO THE FINAL/APPROVED RFDS V6.0 DATED: 04/26/2022 DATA SHEET FOR FINAL ANTENNA SETTINGS.

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

0	05/12/22	ISSUED FOR PERMITTING	MB	AT	DPH
A	10/18/21	ISSUED FOR REVIEW	SG	AT	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: SG		

AT&T		
RF PLUMBING DIAGRAM		
5G NR RADIO, BBU ADD, ANTENNA MOD		
4TXRX ANTENNA RETROFIT 2021 UPGRADE		
SITE NUMBER	DRAWING NUMBER	REV
CT5259	RF-1	0

EXHIBIT 2

1030 NEW BRITAIN AVENUE

Location 1030 NEW BRITAIN AVENUE

Mblu H15/ 3771/ 1030/ /

Parcel ID 3771 2 1030 0001

Owner TEN THIRTY BUILDING COMPANY LLC

Assessment \$1,248,100

Appraisal \$1,783,000

Vision Id # 18633

Building Count 2

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2021	\$854,900	\$928,100	\$1,783,000

Assessment			
Valuation Year	Improvements	Land	Total
2021	\$598,430	\$649,670	\$1,248,100

Owner of Record

Owner	TEN THIRTY BUILDING COMPANY LLC	Sale Price	\$1
Co-Owner		Certificate	1
Address	C/O HIRSCHFELD MGMT INC #106 1030 NEW BRITAIN AVENUE W HARTFORD, CT 06110	Book & Page	2004/0148
		Sale Date	04/21/1995
		Instrument	U

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
TEN THIRTY BUILDING COMPANY LLC	\$1	1	2004/0148	U	04/21/1995
HIRSCHFELD HELENE FERN TR	\$0	1	0911/0085	U	04/18/1984
RUBIN LUCILLE AND	\$650,000	1	0685/0183	U	05/17/1979
LINCOLN ICE CREAM CO INC	\$0	1	0627/0047	U	10/09/1978
	\$0	1	0534/0067	U	

Building Information

Building 1 : Section 1

Year Built: 1957
Living Area: 11,520
Replacement Cost: \$547,304

Building Photo

Building Percent Good: 23
Replacement Cost
Less Depreciation: \$125,900

Building Attributes	
Field	Description
STYLE	Distribution Whse
MODEL	Comm/Ind
Grade	D 0.65
Stories:	1
Occupancy	
Exterior Wall 1	Concrete Block
Exterior Wall 2	
Roof Structure	Curved Roof
Roof Cover	Metal Ribbed
Interior Wall 1	Typical
Interior Wall 2	
Floor Type	Concrete Slab
Floor Cover	Carpet
Heating Fuel	Typical
Heating Type	Forced Hot Air
AC Type	Central - Zone
As Built Use	TSGR
Bldg Use	Commercial
Num of Bedrooms	
Total Baths	
Type	
Wet Sprinkler	100
Dry Sprinkler	
1st Floor Use:	
Class	Class C
Frame Type	Rigid Steel
Plumbing	LIGHT
Ceiling	Acoustic Panel
Group1	IND
Wall Height	15.00
Adjustment	

Building 2 : Section 1

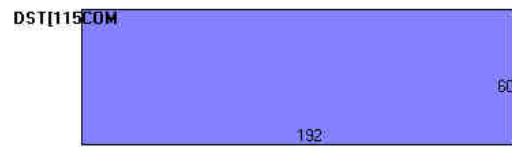
Year Built: 1960
Living Area: 24,386
Replacement Cost: \$2,544,107
Building Percent Good: 24
Replacement Cost
Less Depreciation: \$610,600

Building Attributes : Bldg 2 of 2



(<https://images.vgsi.com/photos/WestHartfordCTPhotos//0010123128.JPG>)

Building Layout



(<https://images.vgsi.com/photos/WestHartfordCTPhotos//Sketches/1863>)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
DST	DISTRIBUTION WHSE	11,520	11,520
COM	COMMERCIAL - NV	11,520	0
		23,040	11,520

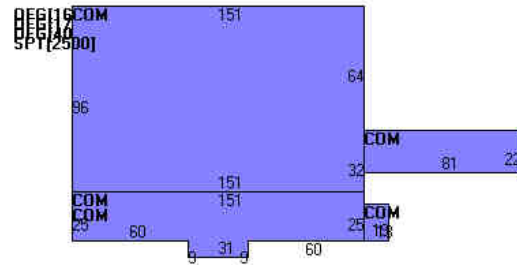
Building Photo

Field	Description
STYLE	Office Gen Lowrise
MODEL	Comm/Ind
Grade	D 0.65
Stories:	2
Occupancy	
Exterior Wall 1	Precast Panel
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Built Up
Interior Wall 1	Typical
Interior Wall 2	
Floor Type	Concrete Slab
Floor Cover	None
Heating Fuel	Typical
Heating Type	None
AC Type	None
As Built Use	LNDP
Bldg Use	Commercial
Num of Bedrooms	
Total Baths	
Type	
Wet Sprinkler	
Dry Sprinkler	
1st Floor Use:	
Class	Class C
Frame Type	Rigid Steel
Plumbing	LIGHT
Ceiling	Not Applicable
Group1	OFF
Wall Height	8.00
Adjustment	



(https://images.vgsi.com/photos/WestHartfordCTPhotos//default.jpg)

Building Layout



(https://images.vgsi.com/photos/WestHartfordCTPhotos//Sketches/18633_)

Building Sub-Areas (sq ft)		Legend	
Code	Description	Gross Area	Living Area
OFG	OFFICE GENERAL LOWRISE	21,886	21,886
SPT	MISC SPORT FACILITY	2,500	2,500
COM	COMMERCIAL - NV	24,633	0
		49,019	24,386



Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use		Land Line Valuation	
Use Code	201	Size (Acres)	2.82
Description	Commercial	Frontage	

Zone BG
 Neighborhood
 Alt Land Appr No
 Category

Depth
 Assessed Value \$649,670
 Appraised Value \$928,100

Outbuildings

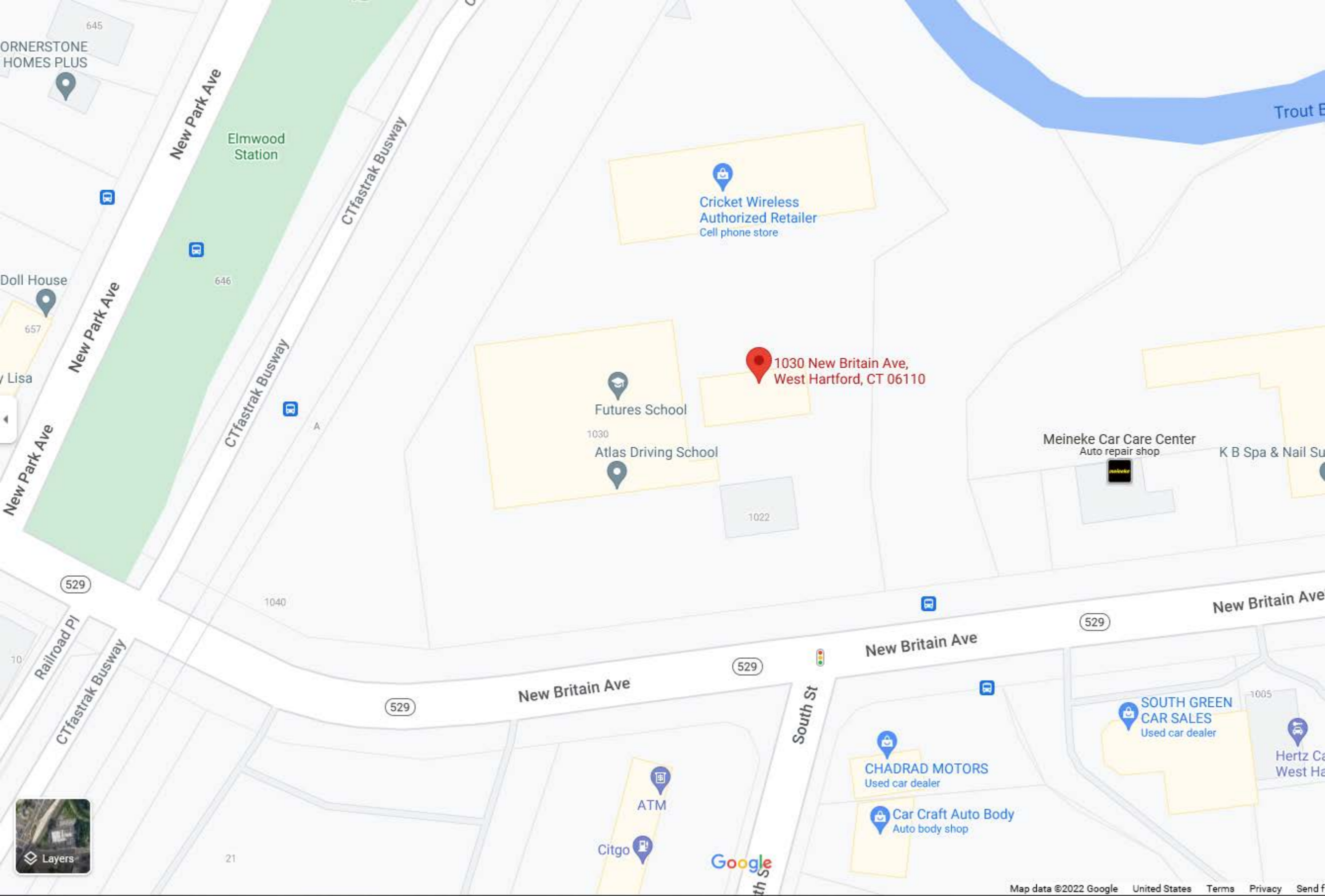
Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
CLP4	Paving, Asphalt			5700.00 SF	\$13,800	1
COH1	Overhead Door Commercial			100.00 SF	\$500	1
COH3	Overhead Metal Door			330.00 UNIT	\$2,200	1
CLP4	Paving, Asphalt			39375.00 SF	\$95,300	1
CLD2	Loading Dock - Stl/Conc			330.00 SF	\$2,000	1
CCP5	Canopy-roof only			594.00 SF	\$3,700	1
CFC5	Shed - Concrete Block			169.00 SF	\$900	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2021	\$854,900	\$928,100	\$1,783,000
2020	\$797,000	\$807,000	\$1,604,000
2019	\$797,000	\$807,000	\$1,604,000

Assessment			
Valuation Year	Improvements	Land	Total
2021	\$598,430	\$649,670	\$1,248,100
2020	\$557,900	\$564,900	\$1,122,800
2019	\$557,900	\$564,900	\$1,122,800

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CORNERSTONE HOMES PLUS

645

New Park Ave

Elmwood Station

CTfastrak Busway

646

Doll House

657

y Lisa

New Park Ave

CTfastrak Busway

Futures School

1030

Atlas Driving School

1022

1030 New Britain Ave,
West Hartford, CT 06110

Meineke Car Care Center
Auto repair shop

K B Spa & Nail Su

529

10

Railroad Pl

CTfastrak Busway

1040

529

New Britain Ave

529

New Britain Ave

529

New Britain Ave

ATM

Citgo

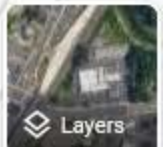
CHADRAD MOTORS
Used car dealer

Car Craft Auto Body
Auto body shop

SOUTH GREEN
CAR SALES
Used car dealer

Hertz Car
West Ha

1005



Layers

21

Google

EXHIBIT 3

Report Date: May 9, 2022

Client: Hirschfeld Communications LLC
1030 New Britain Avenue
West Hartford, CT 06110
Attn: Ian Ormesher
(703) 447-1350
iormesher@hirschfeldcos.com

Structure: Existing 185-ft Self Support Tower
Site Name: West Hartford
Site Reference #: CT001
Site Address: 1030 New Britain Ave
City, County, State: West Hartford, Hartford County, CT
Latitude, Longitude: 41.736092°, -72.720499°

PJF Project: A64122-0003.001.8700

Paul J. Ford and Company is pleased to submit this “**Structural Analysis Report**” to determine the tower stress level.

Analysis Criteria:

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Proposed Appurtenance Loads:

The structure was analyzed with the proposed loading configuration shown in Table 1 combined with the other considered equipment shown in Table 2 of this report.

Summary of Analysis Results:

Existing Structure: Pass – 92.5%
Existing Foundation: Pass – 31.5%

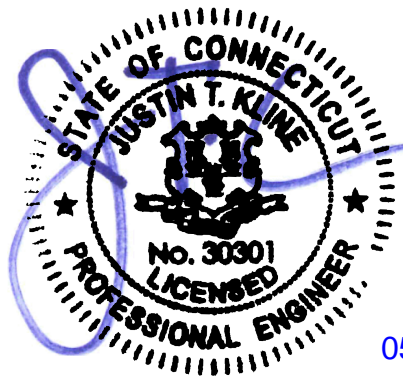
We at Paul J. Ford and Company appreciate the opportunity of providing our continuing professional services to you and Hirschfeld Communications LLC. If you have any questions or need further assistance on this or any other projects, please give us a call.

Respectfully Submitted by:
Paul J. Ford and Company

Michael T Bange

Michael Bange, EI
Structural Designer
mbange@pualjford.com

CMH



05/09/2022

TABLE OF CONTENTS

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2) ANALYSIS CRITERIA

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Additional Calculations

1) INTRODUCTION

This tower is a 180 ft Self Support tower designed by PiRod in June of 1998.

2) ANALYSIS CRITERIA

TIA-222 Revision: TIA-222-G
Risk Category: II
Nominal Wind Speed: 96.8 mph
Exposure Category: C
Topographic Factor: 1
Ice Thickness: 1 in
Wind Speed with Ice: 50 mph
Service Wind Speed: 60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
180.0	181.1	3	ericsson	AIR 6449 N77 w/ Mount Pipe	12 4 3 3	1-5/8 3/4 0.92 1/2
	180.0	3	cci	DMP65R-BU6DA w/ Mount Pipe		
		3	ericsson	RRUS 4478 B14		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 32 B30		
		3	ericsson	RRUS 32 B66A		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS E2 B29		
		3	quintel technology	QD6616-7 w/ Mount Pipe		
		2	raycap	DC6-48-60-18-8F		
		1	raycap	DC9-48-60-24-8C-EV		
		3	commscope	CBC23SR-43		
		3	commscope	ION-M23 SDARS		
		1	miscl	GPS		
		12	powerwave technologies	LGP21401		
		1	tower mounts	Platform Mount		
178.3	3	ericsson	AIR 6419 N77G w/ Mount Pipe			

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
165.0	165.0	3	ericsson	RRUS 4415 B25	3	1-1/4
		3	ericsson	AIR32 KRD901146-1_B66_B2A w/ Mount Pipe		
		3	ericsson	AIR6449 B41 w/ Mount Pipe		
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		3	Sitepro1	SFR-K-L Reinforcement Kit		
		3	tower mounts	Sector Mount		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference
Manufacturer Drawings	PiROD Inc., 6/10/1998	203949-B
Geotechnical Report	PiROD Inc., 6/5/1998	A-114804
Pile Driving Report	Simeon Beer, 7/13/1998	-
Site Application	Hirschfeld Communications, 5/5/2022	-

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were maintained in accordance with the TIA-222 Standard.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	180 - 170	Leg	1 1/2" solid	3	-18.63	54.43	34.2	Pass
T2	170 - 150	Leg	2" solid	38	71.20	106.69	66.7	Pass
T3	150 - 130	Leg	2 1/4" solid	102	-130.75	148.69	87.9	Pass
T4	130 - 120	Leg	Pirod 105244 (12x1.25)	166	-131.77	142.49	92.5	Pass
T5	120 - 100	Leg	Pirod 105217 (12x1.5)	175	-157.02	214.86	73.1	Pass
T6	100 - 80	Leg	Pirod 105217 (12x1.5)	190	-177.68	214.86	82.7	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T7	80 - 60	Leg	Pirod 105218 (12x1.75)	205	-199.00	300.68	66.2	Pass
T8	60 - 40	Leg	Pirod 105218 (12x1.75)	220	-220.52	300.68	73.3	Pass
T9	40 - 20	Leg	Pirod 105219 (12x2)	235	-243.02	399.87	60.8	Pass
T10	20 - 0	Leg	Pirod 105219 (12x2)	250	-264.46	399.87	66.1	Pass
T1	180 - 170	Diagonal	3/4" solid	12	-3.42	6.09	56.2	Pass
T2	170 - 150	Diagonal	7/8" solid	48	-5.55	9.34	59.4	Pass
T3	150 - 130	Diagonal	1" solid	161	-6.11	15.16	40.3	Pass
T4	130 - 120	Diagonal	L 2.5 x 2.5 x 3/16	170	-7.58	13.56	55.9 65.3 (b)	Pass
T5	120 - 100	Diagonal	L 2.5 x 2.5 x 3/16	186	-4.99	11.92	41.8 49.1 (b)	Pass
T6	100 - 80	Diagonal	L 2.5 x 2.5 x 3/16	194	-4.66	8.66	53.8	Pass
T7	80 - 60	Diagonal	L 3 x 3 x 3/16	209	-5.12	12.12	42.2 43.1 (b)	Pass
T8	60 - 40	Diagonal	L 3 x 3 x 3/16	224	-5.57	9.79	56.9	Pass
T9	40 - 20	Diagonal	L 3 x 3 x 5/16	239	-6.25	12.87	48.6	Pass
T10	20 - 0	Diagonal	L 3 x 3 x 5/16	254	-7.87	10.64	74.0	Pass
T1	180 - 170	Horizontal	3/4" solid	30	-0.48	3.31	14.4	Pass
T2	170 - 150	Horizontal	3/4" solid	52	-1.34	2.74	48.9	Pass
T3	150 - 130	Horizontal	7/8" solid	116	-2.33	4.10	56.8	Pass
T1	180 - 170	Top Girt	7/8" solid	5	-1.69	6.14	27.5	Pass
T2	170 - 150	Top Girt	7/8" solid	42	-1.89	6.22	30.3	Pass
T3	150 - 130	Top Girt	1" solid	104	-2.33	8.40	27.8	Pass
T1	180 - 170	Bottom Girt	7/8" solid	7	-1.38	6.14	22.6	Pass
T2	170 - 150	Bottom Girt	7/8" solid	43	-2.43	4.94	49.3	Pass
T3	150 - 130	Bottom Girt	1" solid	107	-2.69	6.83	39.5	Pass
							Summary	
						Leg (T4)	92.5	Pass
						Diagonal (T10)	74.0	Pass
						Horizontal (T3)	56.8	Pass
						Top Girt (T2)	30.3	Pass
						Bottom Girt (T2)	49.3	Pass
						Bolt Checks	65.3	Pass
						Rating =	92.5	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (m)	% Capacity	Pass / Fail
1	Anchor Rods	0	48.0	Pass
1	Base Foundation (Structure)	0	9.1	Pass
1	Base Foundation (Soil Interaction)	0	31.5	Pass

Structure Rating (max from all components) =	92.5%
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Notes:

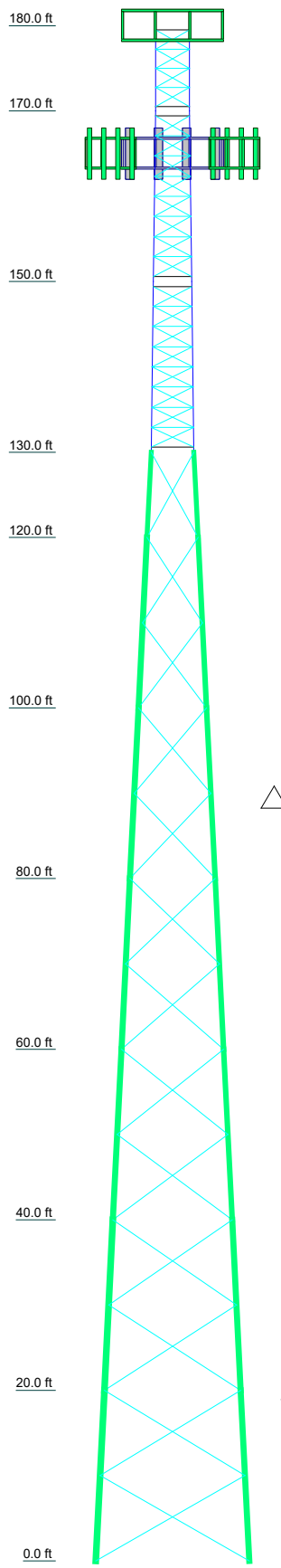
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11
Legs	SR 2 1/4" solid	SR 2" solid	SR 2 1/4" solid	B	Pirod 105217 (12x1.5)	Pirod 105218 (12x1.75)	Pirod 105219 (12x2)	Pirod 105218 (12x1.75)	L 3 x 3 x 5/16	L 3 x 3 x 3/16	A572-50
Leg Grade	SR 7/8" solid	SR 7/8" solid	SR 1" solid	SR 1" solid	SR 1" solid	SR 1" solid	SR 1" solid	SR 1" solid	L 2.5 x 2.5 x 3/16	L 3 x 3 x 3/16	SR 3/4" solid
Diagonals	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A572-50	A36	A36	A572-50
Diagonal Grade	SR 7/8" solid	SR 7/8" solid	SR 7/8" solid	SR 7/8" solid	SR 7/8" solid	SR 7/8" solid	SR 7/8" solid	SR 7/8" solid	N.A.	N.A.	SR 7/8" solid
Top Girts	SR 7/8" solid	SR 7/8" solid	SR 7/8" solid	SR 7/8" solid	SR 7/8" solid	SR 7/8" solid	SR 7/8" solid	SR 7/8" solid	N.A.	N.A.	SR 7/8" solid
Bottom Girts	SR 3/4" solid	SR 3/4" solid	SR 3/4" solid	SR 3/4" solid	SR 3/4" solid	SR 3/4" solid	SR 3/4" solid	SR 3/4" solid	N.A.	N.A.	SR 3/4" solid
Horizontals	SR 3/4" solid	SR 3/4" solid	SR 3/4" solid	SR 3/4" solid	SR 3/4" solid	SR 3/4" solid	SR 3/4" solid	SR 3/4" solid	N.A.	N.A.	SR 3/4" solid
Face Width (ft)	4	4	4.5	5	6	8	10	12	14	16	18
# Panels @ (ft)	4 @ 2.25	4 @ 2.25	16 @ 2.35833	1.1	2.6	2.7	3.2	3.3	5.0	5.2	26.4
Weight (K)	0.4	1.3	1.7	1.1	2.6	2.7	3.2	3.3	5.0	5.2	26.4



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	SR 1 1/2" solid	B	Pirod 105244 (12x1.25)

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97.0 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.0 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.0 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 92.5%

ALL REACTIONS
ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 271 K
SHEAR: 25 K

UPLIFT: -239 K
SHEAR: 22 K

AXIAL
148 K
SHEAR
14 K
MOMENT
1492 kip-ft
TORQUE 14 kip-ft
50.0 mph WIND - 1.00 in ICE

AXIAL
46 K
SHEAR
37 K
MOMENT
3985 kip-ft
TORQUE 30 kip-ft
REACTIONS - 97.0 mph WIND

PJF Paul J. Ford and Company
250 E. Broad St., Ste 600
Columbus, OH 43215
Phone: 614-221-6679
FAX:

Job: **180-ft Self-Support Tower / WESTHARTFORD_DEXTERS**
Project: PJF# 64122-0003 / CT0001
Client: Hirschfeld Communications, LLC Drawn by: Michael Bange App'd:
Code: TIA-222-G Date: 05/09/22 Scale: NTS
Path: Dwg No. E-1

Tower Input Data

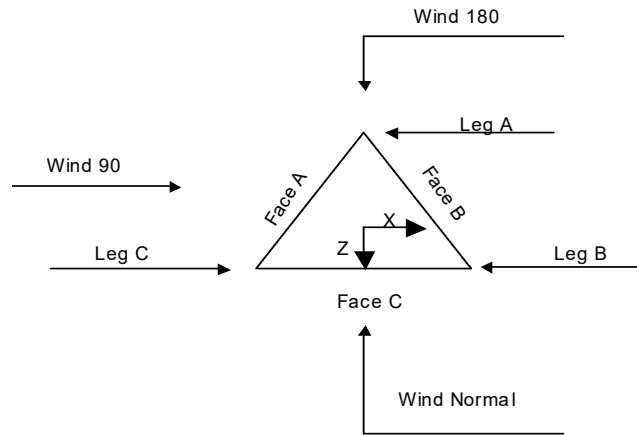
The main tower is a 3x free standing tower with an overall height of 180.00 ft above the ground line.
 The base of the tower is set at an elevation of 0.00 ft above the ground line.
 The face width of the tower is 4.00 ft at the top and 18.00 ft at the base.
 This tower is designed using the TIA-222-G standard.

The following design criteria apply:

- Tower is located in Hartford County, Connecticut.
- ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
- Basic wind speed of 97.0 mph.
- Structure Class II.
- Exposure Category C.
- Topographic Category 1.
- Crest Height 0.00 ft.
- Nominal ice thickness of 1.00 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50.0 mph is used in combination with ice.
- Deflections calculated using a wind speed of 60.0 mph.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile ✓ Include Bolts In Member Capacity Leg Bolts Are At Top Of Section ✓ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) ✓ SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area ✓ Use Clear Spans For KL/r Retension Guys To Initial Tension Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules ✓ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA ✓ SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque ✓ Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180.00-170.00		106778 (48)	4.00	1	10.00
T2	170.00-150.00		100246 (48/54)	4.00	1	20.00
T3	150.00-130.00		119703 (54/60)	4.50	1	20.00
T4	130.00-120.00		U06 105218 [L2.5 x 3/16]	5.00	1	10.00
T5	120.00-100.00		U08 105217 [L2.5 x 3/16]	6.00	1	20.00
T6	100.00-80.00		U10 105217 [L2.5 x 3/16]	8.00	1	20.00
T7	80.00-60.00		U12 105218 [L3 x 3/16]	10.00	1	20.00
T8	60.00-40.00		U14 105218 [L3 x 3/16]	12.00	1	20.00
T9	40.00-20.00		U16 105219 [L3 x 5/16]	14.00	1	20.00
T10	20.00-0.00		U18 105219 [L3 x 5/16]	16.00	1	20.00

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	180.00-170.00	2.25	X Brace	No	Steps	6.00	6.00
T2	170.00-150.00	2.36	X Brace	No	Steps	6.80	6.80
T3	150.00-130.00	2.36	X Brace	No	Steps	6.80	6.80
T4	130.00-120.00	10.00	X Brace	No	No	0.00	0.00
T5	120.00-100.00	10.00	X Brace	No	No	0.00	0.00
T6	100.00-80.00	10.00	X Brace	No	No	0.00	0.00
T7	80.00-60.00	10.00	X Brace	No	No	0.00	0.00
T8	60.00-40.00	10.00	X Brace	No	No	0.00	0.00
T9	40.00-20.00	10.00	X Brace	No	No	0.00	0.00
T10	20.00-0.00	10.00	X Brace	No	No	0.00	0.00

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.00-170.00	Solid Round	1 1/2" solid	A572-50 (50 ksi)	Solid Round	3/4" solid	A572-50 (50 ksi)
T2 170.00-150.00	Solid Round	2" solid	A572-50 (50 ksi)	Solid Round	7/8" solid	A572-50 (50 ksi)
T3 150.00-130.00	Solid Round	2 1/4" solid	A572-50 (50 ksi)	Solid Round	1" solid	A572-50 (50 ksi)
T4 130.00-120.00	Truss Leg	Pirod 105244 (12x1.25)	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)
T5 120.00-100.00	Truss Leg	Pirod 105217 (12x1.5)	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)
T6 100.00-80.00	Truss Leg	Pirod 105217 (12x1.5)	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)
T7 80.00-60.00	Truss Leg	Pirod 105218 (12x1.75)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 3/16	A36 (36 ksi)
T8 60.00-40.00	Truss Leg	Pirod 105218 (12x1.75)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 3/16	A36 (36 ksi)
T9 40.00-20.00	Truss Leg	Pirod 105219 (12x2)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 5/16	A36 (36 ksi)
T10 20.00-0.00	Truss Leg	Pirod 105219 (12x2)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 5/16	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 180.00-170.00	Solid Round	7/8" solid	A572-50 (50 ksi)	Solid Round	7/8" solid	A572-50 (50 ksi)
T2 170.00-150.00	Solid Round	7/8" solid	A572-50 (50 ksi)	Solid Round	7/8" solid	A572-50 (50 ksi)
T3 150.00-130.00	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	1" solid	A572-50 (50 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 180.00-170.00	None	Solid Round		A572-50 (50 ksi)	Solid Round	3/4" solid	A572-50 (50 ksi)
T2 170.00-150.00	None	Solid Round		A36 (36 ksi)	Solid Round	3/4" solid	A572-50 (50 ksi)
T3 150.00-130.00	None	Solid Round		A572-50 (50 ksi)	Solid Round	7/8" solid	A572-50 (50 ksi)

Tower Section Geometry (cont'd)

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_r	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
T1 180.00-170.00	0.00	0.00	A36 (36 ksi)	1	1	1.02	Mid-Pt	Mid-Pt	Mid-Pt
T2 170.00-150.00	0.00	0.00	A36 (36 ksi)	1	1	1.03	Mid-Pt	Mid-Pt	Mid-Pt
T3 150.00-130.00	0.00	0.00	A36 (36 ksi)	1	1	1.03	Mid-Pt	Mid-Pt	Mid-Pt
T4 130.00-120.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T5 120.00-100.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T6 100.00-80.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T7 80.00-60.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T8 60.00-40.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T9 40.00-20.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T10 20.00-0.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹						
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
ft				X Y	X Y	X Y	X Y	X Y	X Y	X Y
T1 180.00-170.00	No	Yes	1	1	1	1	1	1	1	1
T2 170.00-150.00	No	Yes	1	1	1	1	1	1	1	1
T3 150.00-130.00	No	Yes	1	1	1	1	1	1	1	1
T4 130.00-120.00	Yes	No	1	1	1	1	1	1	1	1
T5 120.00-100.00	Yes	No	1	1	1	1	1	1	1	1
T6 100.00-80.00	Yes	No	1	1	1	1	1	1	1	1
T7 80.00-60.00	Yes	No	1	1	1	1	1	1	1	1
T8 60.00-40.00	Yes	No	1	1	1	1	1	1	1	1
T9 40.00-20.00	Yes	No	1	1	1	1	1	1	1	1
T10 20.00-0.00	Yes	No	1	1	1	1	1	1	1	1

¹Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

Tower Section Geometry (cont'd)

Truss-Leg K Factors						
Tower Elevation ft	Truss-Legs Used As Leg Members			Truss-Legs Used As Inner Members		
	Leg Panels	X Brace Diagonals	Z Brace Diagonals	Leg Panels	X Brace Diagonals	Z Brace Diagonals
T4 130.00-120.00	1	0.5	0.85	1	0.5	0.85
T5 120.00-100.00	1	0.5	0.85	1	0.5	0.85
T6 100.00-80.00	1	0.5	0.85	1	0.5	0.85
T7 80.00-60.00	1	0.5	0.85	1	0.5	0.85
T8 60.00-40.00	1	0.5	0.85	1	0.5	0.85
T9 40.00-20.00	1	0.5	0.85	1	0.5	0.85
T10 20.00-0.00	1	0.5	0.85	1	0.5	0.85

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 180.00-170.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1
T2 170.00-150.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1
T3 150.00-130.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1
T4 130.00-120.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T5 120.00-100.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T6 100.00-80.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T7 80.00-60.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T8 60.00-40.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T9 40.00-20.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T10 20.00-0.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 180.00-170.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T2 170.00-150.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T3 150.00-130.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T4 130.00-120.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T5 120.00-100.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T6 100.00-80.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T7 80.00-60.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T8 60.00-40.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T9 40.00-20.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T10 20.00-0.00	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
				Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 180.00-170.00	Sleeve DS	0.63 A325 X-N (PiRod)	5	0.00	0	0.00	0	0.00	0	0.63	0	0.00	0	0.63	0
T2 170.00-150.00	Sleeve DS	0.75 A325 X-N (PiRod)	5	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
T3 150.00-130.00	Flange	1.00 A325N	6	0.00	0	0.00	0	0.00	0	0.50	0	0.00	0	0.50	0
T4 130.00-120.00	Flange	1.00 A325N	6	1.00	1	0.00	0	0.00	0	1.00	0	1.00	0	1.00	0
T5 120.00-100.00	Flange	1.00 A325N	6	1.00	1	0.00	0	0.00	0	1.00	0	1.00	0	1.00	0
T6 100.00-80.00	Flange	1.00 A325N	6	1.00	1	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
T7 80.00-60.00	Flange	1.00 A325N	6	1.00	1	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
T8 60.00-40.00	Flange	1.00 A325N	6	1.00	1	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
T9 40.00-20.00	Flange	1.25 A325N	6	1.25	1	0.00	0	0.00	0	1.25	0	1.25	0	1.25	0
T10 20.00-0.00	Flange	1.25 F1554-105	0	1.25	1	0.00	0	0.00	0	1.00	0	1.00	0	1.00	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A (1 5/8" foam)	A	No	No	Ar (CaAa)	180.00 - 8.00	-6.00	0.45	6	6	1.00	1.98		0.92
FSJ4-50B(1/2")	A	No	No	Ar (CaAa)	180.00 - 8.00	-6.00	0.45	3	3	1.00	0.52		0.14
9776(3/4")	A	No	No	Ar (CaAa)	180.00 - 8.00	-6.00	0.45	4	4	1.00	0.73		0.31

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
0.92" cable	A	No	No	Ar (CaAa)	180.00 - 8.00	-6.00	0.45	3	3	0.96	0.96		0.08
T-Brackets (Af) ***	A	No	No	Af (CaAa)	180.00 - 8.00	-6.00	0.45	1	1	1.00	1.00		8.40
T-Brackets (Af)	C	No	No	Af (CaAa)	165.00 - 8.00	-6.00	-0.45	1	1	1.00	1.00		8.40
LDF6-50 (1 1/4" foam) ****	C	No	No	Ar (CaAa)	165.00 - 8.00	-6.00	-0.45	3	3	1.00	1.55		0.66

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
Platform Mount [LP 405-1]	C	None		0.000	180.00	No Ice	20.88	1.80
						1/2" Ice	28.89	2.28
						Ice	37.04	2.87
						1" Ice		
QD6616-7_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice	13.82	0.16
						1/2" Ice	14.43	0.26
						Ice	15.00	0.37
						1" Ice		
QD6616-7_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice	13.82	0.16
						1/2" Ice	14.43	0.26
						Ice	15.00	0.37
						1" Ice		
QD6616-7_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice	13.82	0.16
						1/2" Ice	14.43	0.26
						Ice	15.00	0.37
						1" Ice		
AIR 6449 N77_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 1.08	0.000	180.00	No Ice	4.26	0.11
						1/2" Ice	4.58	0.15
						Ice	4.91	0.20
						1" Ice		
AIR 6449 N77_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 1.08	0.000	180.00	No Ice	4.26	0.11
						1/2" Ice	4.58	0.15
						Ice	4.91	0.20
						1" Ice		
AIR 6449 N77_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 1.08	0.000	180.00	No Ice	4.26	0.11
						1/2" Ice	4.58	0.15
						Ice	4.91	0.20
						1" Ice		
AIR 6419 N77G_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 -1.75	0.000	180.00	No Ice	3.87	0.08
						1/2" Ice	4.18	0.11
						Ice	4.50	0.15
						1" Ice		
AIR 6419 N77G_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 -1.75	0.000	180.00	No Ice	3.87	0.08
						1/2" Ice	4.18	0.11
						Ice	4.50	0.15
						1" Ice		
AIR 6419 N77G_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 -1.75	0.000	180.00	No Ice	3.87	0.08
						1/2" Ice	4.18	0.11
						Ice	4.50	0.15
						1" Ice		
DMP65R-BU6DA_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.000	180.00	No Ice	12.95	0.11
						1/2" Ice	13.55	0.21
						Ice	14.11	0.31
						1" Ice		

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft ²	ft ²	K	
DMP65R-BU6DA_TIA w/ Mount Pipe	B	From Leg	4.00	0.00	0.000	180.00	No Ice	12.95	7.26	0.11
			0.00	0.00			1/2"	13.55	8.43	0.21
			0.00	0.00			Ice	14.11	9.31	0.31
DMP65R-BU6DA_TIA w/ Mount Pipe	C	From Leg	4.00	0.00	0.000	180.00	No Ice	12.95	7.26	0.11
			0.00	0.00			1/2"	13.55	8.43	0.21
			0.00	0.00			Ice	14.11	9.31	0.31
DC9-48-60-24-8C-EV	B	From Leg	4.00	0.00	0.000	180.00	No Ice	2.74	4.78	0.03
			0.00	0.00			1/2"	2.96	5.06	0.06
			0.00	0.00			Ice	3.20	5.35	0.10
RRUS 4449 B5/B12	A	From Leg	4.00	0.00	0.000	180.00	No Ice	1.97	1.41	0.07
			0.00	0.00			1/2"	2.14	1.56	0.09
			0.00	0.00			Ice	2.33	1.73	0.11
RRUS 4449 B5/B12	B	From Leg	4.00	0.00	0.000	180.00	No Ice	1.97	1.41	0.07
			0.00	0.00			1/2"	2.14	1.56	0.09
			0.00	0.00			Ice	2.33	1.73	0.11
RRUS 4449 B5/B12	C	From Leg	4.00	0.00	0.000	180.00	No Ice	1.97	1.41	0.07
			0.00	0.00			1/2"	2.14	1.56	0.09
			0.00	0.00			Ice	2.33	1.73	0.11
RRUS 4478 B14	A	From Leg	4.00	0.00	0.000	180.00	No Ice	0.00	1.25	0.06
			0.00	0.00			1/2"	0.00	1.40	0.08
			0.00	0.00			Ice	0.00	1.55	0.10
RRUS 4478 B14	B	From Leg	4.00	0.00	0.000	180.00	No Ice	0.00	1.25	0.06
			0.00	0.00			1/2"	0.00	1.40	0.08
			0.00	0.00			Ice	0.00	1.55	0.10
RRUS 4478 B14	C	From Leg	4.00	0.00	0.000	180.00	No Ice	0.00	1.25	0.06
			0.00	0.00			1/2"	0.00	1.40	0.08
			0.00	0.00			Ice	0.00	1.55	0.10
RRUS 32 B2	A	From Leg	4.00	0.00	0.000	180.00	No Ice	2.74	1.67	0.05
			0.00	0.00			1/2"	2.96	1.86	0.07
			0.00	0.00			Ice	3.19	2.05	0.10
RRUS 32 B2	B	From Leg	4.00	0.00	0.000	180.00	No Ice	2.74	1.67	0.05
			0.00	0.00			1/2"	2.96	1.86	0.07
			0.00	0.00			Ice	3.19	2.05	0.10
RRUS 32 B2	C	From Leg	4.00	0.00	0.000	180.00	No Ice	2.74	1.67	0.05
			0.00	0.00			1/2"	2.96	1.86	0.07
			0.00	0.00			Ice	3.19	2.05	0.10
RRUS 32 B66A	A	From Leg	4.00	0.00	0.000	180.00	No Ice	2.86	1.78	0.06
			0.00	0.00			1/2"	3.09	1.97	0.08
			0.00	0.00			Ice	3.32	2.17	0.10
RRUS 32 B66A	B	From Leg	4.00	0.00	0.000	180.00	No Ice	2.86	1.78	0.06
			0.00	0.00			1/2"	3.09	1.97	0.08
			0.00	0.00			Ice	3.32	2.17	0.10
RRUS 32 B66A	C	From Leg	4.00	0.00	0.000	180.00	No Ice	2.86	1.78	0.06
			0.00	0.00			1/2"	3.09	1.97	0.08
			0.00	0.00			Ice	3.32	2.17	0.10
RRUS E2 B29	A	From Leg	4.00	0.00	0.000	180.00	No Ice	3.15	1.29	0.06
			0.00	0.00			1/2"	3.36	1.44	0.08
			0.00	0.00			Ice	3.59	1.60	0.11
RRUS E2 B29	B	From Leg	4.00	0.000	180.00	No Ice	3.15	1.29	0.06	

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			0.00			1/2"	3.36	1.44	0.08
			0.00			Ice	3.59	1.60	0.11
RRUS E2 B29	C	From Leg	4.00	0.000	180.00	1" Ice			
			0.00			No Ice	3.15	1.29	0.06
			0.00			1/2"	3.36	1.44	0.08
			0.00			Ice	3.59	1.60	0.11
RRUS 32 B30	A	From Leg	4.00	0.000	180.00	1" Ice			
			0.00			No Ice	2.74	1.67	0.05
			0.00			1/2"	2.96	1.86	0.07
			0.00			Ice	3.19	2.05	0.10
RRUS 32 B30	B	From Leg	4.00	0.000	180.00	1" Ice			
			0.00			No Ice	2.74	1.67	0.05
			0.00			1/2"	2.96	1.86	0.07
			0.00			Ice	3.19	2.05	0.10
RRUS 32 B30	C	From Leg	4.00	0.000	180.00	1" Ice			
			0.00			No Ice	2.74	1.67	0.05
			0.00			1/2"	2.96	1.86	0.07
			0.00			Ice	3.19	2.05	0.10
DC6-48-60-18-8F	A	From Leg	4.00	0.000	180.00	1" Ice			
			0.00			No Ice	1.21	1.21	0.03
			0.00			1/2"	1.89	1.89	0.05
			0.00			Ice	2.11	2.11	0.08
DC6-48-60-18-8F	C	From Leg	4.00	0.000	180.00	1" Ice			
			0.00			No Ice	1.21	1.21	0.03
			0.00			1/2"	1.89	1.89	0.05
			0.00			Ice	2.11	2.11	0.08
ION-M23 SDARS	A	From Leg	4.00	0.000	180.00	1" Ice			
			0.00			No Ice	1.84	1.76	0.05
			0.00			1/2"	2.05	1.98	0.06
			0.00			Ice	2.27	2.19	0.08
ION-M23 SDARS	B	From Leg	4.00	0.000	180.00	1" Ice			
			0.00			No Ice	1.84	1.76	0.05
			0.00			1/2"	2.05	1.98	0.06
			0.00			Ice	2.27	2.19	0.08
ION-M23 SDARS	C	From Leg	4.00	0.000	180.00	1" Ice			
			0.00			No Ice	1.84	1.76	0.05
			0.00			1/2"	2.05	1.98	0.06
			0.00			Ice	2.27	2.19	0.08
CBC23SR-43	A	From Leg	4.00	0.000	180.00	1" Ice			
			0.00			No Ice	0.42	0.14	0.01
			0.00			1/2"	0.50	0.20	0.01
			0.00			Ice	0.59	0.27	0.01
CBC23SR-43	B	From Leg	4.00	0.000	180.00	1" Ice			
			0.00			No Ice	0.42	0.14	0.01
			0.00			1/2"	0.50	0.20	0.01
			0.00			Ice	0.59	0.27	0.01
CBC23SR-43	C	From Leg	4.00	0.000	180.00	1" Ice			
			0.00			No Ice	0.42	0.14	0.01
			0.00			1/2"	0.50	0.20	0.01
			0.00			Ice	0.59	0.27	0.01
(4) LGP21401	A	From Leg	4.00	0.000	180.00	1" Ice			
			0.00			No Ice	1.10	0.35	0.01
			0.00			1/2"	1.24	0.44	0.02
			0.00			Ice	1.38	0.54	0.03
(4) LGP21401	B	From Leg	4.00	0.000	180.00	1" Ice			
			0.00			No Ice	1.10	0.35	0.01
			0.00			1/2"	1.24	0.44	0.02
			0.00			Ice	1.38	0.54	0.03
(4) LGP21401	C	From Leg	4.00	0.000	180.00	1" Ice			
			0.00			No Ice	1.10	0.35	0.01
			0.00			1/2"	1.24	0.44	0.02
			0.00			Ice	1.38	0.54	0.03
GPS	C	From Leg	4.00	0.000	180.00	1" Ice			
			0.00			No Ice	0.13	0.13	0.02
							0.24	0.24	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			0.00			1/2" Ice 1" Ice	0.31 0.31	0.02	
*** AIR32 KRD901146-1_B66_B2A w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.000	165.00	No Ice 1/2" Ice 1" Ice	11.39 11.86 12.33	5.90 6.56 7.24	0.11 0.19 0.28
AIR32 KRD901146-1_B66_B2A w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.000	165.00	No Ice 1/2" Ice 1" Ice	11.39 11.86 12.33	5.90 6.56 7.24	0.11 0.19 0.28
AIR32 KRD901146-1_B66_B2A w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.000	165.00	No Ice 1/2" Ice 1" Ice	11.39 11.86 12.33	5.90 6.56 7.24	0.11 0.19 0.28
APXVAARR24_43-U-NA20_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.000	165.00	No Ice 1/2" Ice 1" Ice	20.48 21.23 21.99	11.02 12.55 14.10	0.19 0.32 0.47
APXVAARR24_43-U-NA20_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.000	165.00	No Ice 1/2" Ice 1" Ice	20.48 21.23 21.99	11.02 12.55 14.10	0.19 0.32 0.47
APXVAARR24_43-U-NA20_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.000	165.00	No Ice 1/2" Ice 1" Ice	20.48 21.23 21.99	11.02 12.55 14.10	0.19 0.32 0.47
AIR6449 B41_TIA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.000	165.00	No Ice 1/2" Ice 1" Ice	5.89 6.26 6.63	3.28 3.74 4.22	0.12 0.17 0.22
AIR6449 B41_TIA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.000	165.00	No Ice 1/2" Ice 1" Ice	5.89 6.26 6.63	3.28 3.74 4.22	0.12 0.17 0.22
AIR6449 B41_TIA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.000	165.00	No Ice 1/2" Ice 1" Ice	5.89 6.26 6.63	3.28 3.74 4.22	0.12 0.17 0.22
RADIO 4449 B12/B71	A	From Leg	4.00 0.00 0.00	0.000	165.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
RADIO 4449 B12/B71	B	From Leg	4.00 0.00 0.00	0.000	165.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
RADIO 4449 B12/B71	C	From Leg	4.00 0.00 0.00	0.000	165.00	No Ice 1/2" Ice 1" Ice	1.65 1.81 1.98	1.16 1.30 1.45	0.07 0.09 0.11
RRUS 4415 B25	A	From Leg	4.00 0.00 0.00	0.000	165.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.68 0.79 0.91	0.04 0.06 0.07
RRUS 4415 B25	B	From Leg	4.00 0.00 0.00	0.000	165.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.68 0.79 0.91	0.04 0.06 0.07
RRUS 4415 B25	C	From Leg	4.00 0.00 0.00	0.000	165.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.68 0.79 0.91	0.04 0.06 0.07
Sector Mount [SM 402-3]	C	From Leg	0.00	0.000	165.00	No Ice	18.87	18.87	0.85

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.00			1/2" Ice 33.99	26.47 26.47	1.21 1.70
(2) L 2 x 2 x 3/16 x 6.5' Mount Angle	A	From Leg	2.00 0.00 0.00	0.000	165.00	No Ice 1/2" Ice 2.20	1.30 0.03 0.06 0.09	0.02 0.03 0.05
(2) L 2 x 2 x 3/16 x 6.5' Mount Angle	B	From Leg	2.00 0.00 0.00	0.000	165.00	1" Ice No Ice 1/2" Ice 2.20	1.30 0.03 0.06 0.09	0.02 0.03 0.05
(2) L 2 x 2 x 3/16 x 6.5' Mount Angle	C	From Leg	2.00 0.00 0.00	0.000	165.00	1" Ice No Ice 1/2" Ice 2.20	1.30 0.03 0.06 0.09	0.02 0.03 0.05

Truss-Leg Properties

Section Designation	Area in ²	Area Ice in ²	Self Weight K	Ice Weight K	Equiv. Diameter r in	Equiv. Diameter r Ice in	Leg Area in ²
Pirod 105244 (12x1.25)	1026.86	3397.26	0.56	0.95	7.13	23.59	3.68
Pirod 105217 (12x1.5)	2303.92	6585.93	0.71	1.94	8.00	22.87	5.30
Pirod 105217 (12x1.5)	2303.92	6554.05	0.71	1.88	8.00	22.76	5.30
Pirod 105218 (12x1.75)	2432.86	6587.02	0.85	1.83	8.45	22.87	7.22
Pirod 105218 (12x1.75)	2432.86	6536.27	0.85	1.74	8.45	22.70	7.22
Pirod 105219 (12x2)	2608.79	6534.42	1.22	1.70	9.06	22.69	9.42
Pirod 105219 (12x2)	2608.79	6387.80	1.22	1.38	9.06	22.18	9.42

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice

Comb. No.	Description
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	257.44	20.61	-12.42
	Max. H _x	18	257.44	20.61	-12.42
	Max. H _z	7	-229.14	-18.14	10.99
	Min. Vert	7	-229.14	-18.14	10.99
	Min. H _x	7	-229.14	-18.14	10.99
	Min. H _z	18	257.44	20.61	-12.42
Leg B	Max. Vert	10	270.85	-21.48	-13.49
	Max. H _x	23	-238.81	18.85	11.94
	Max. H _z	23	-238.81	18.85	11.94
	Min. Vert	23	-238.81	18.85	11.94
	Min. H _x	10	270.85	-21.48	-13.49
	Min. H _z	10	270.85	-21.48	-13.49
Leg A	Max. Vert	2	263.15	0.28	24.48
	Max. H _x	20	15.37	1.55	1.26
	Max. H _z	2	263.15	0.28	24.48
	Min. Vert	15	-227.90	-0.26	-21.23
	Min. H _x	9	12.24	-1.52	0.99
	Min. H _z	15	-227.90	-0.26	-21.23

Tower Mast Reaction Summary

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	37.97	0.00	0.00	-8	-6	0
1.2 Dead+1.6 Wind 0 deg - No Ice	45.57	0.04	-35.72	-3865	-13	8
0.9 Dead+1.6 Wind 0 deg - No Ice	34.17	0.04	-35.72	-3863	-12	8
1.2 Dead+1.6 Wind 30 deg - No Ice	45.57	15.74	-27.26	-3020	-1745	4
0.9 Dead+1.6 Wind 30 deg - No Ice	34.17	15.74	-27.26	-3018	-1744	4
1.2 Dead+1.6 Wind 60 deg - No Ice	45.57	29.39	-17.01	-1885	-3244	-14
0.9 Dead+1.6 Wind 60 deg - No Ice	34.17	29.39	-17.01	-1883	-3242	-14
1.2 Dead+1.6 Wind 90 deg - No Ice	45.57	35.84	-0.04	-16	-3923	-30
0.9 Dead+1.6 Wind 90 deg - No Ice	34.17	35.84	-0.04	-13	-3922	-30
1.2 Dead+1.6 Wind 120 deg - No Ice	45.57	32.16	18.57	1983	-3457	-29
0.9 Dead+1.6 Wind 120 deg - No Ice	34.17	32.16	18.57	1985	-3455	-29
1.2 Dead+1.6 Wind 150 deg - No Ice	45.57	18.19	31.58	3422	-1981	-22
0.9 Dead+1.6 Wind 150 deg - No Ice	34.17	18.19	31.58	3424	-1979	-22
1.2 Dead+1.6 Wind 180 deg - No Ice	45.57	-0.04	34.07	3728	-1	-8
0.9 Dead+1.6 Wind 180 deg - No Ice	34.17	-0.04	34.07	3730	1	-8
1.2 Dead+1.6 Wind 210 deg - No Ice	45.57	-15.62	27.06	2970	1713	-4
0.9 Dead+1.6 Wind 210 deg - No Ice	34.17	-15.62	27.06	2972	1715	-4
1.2 Dead+1.6 Wind 240 deg - No Ice	45.57	-30.41	17.60	1890	3269	14
0.9 Dead+1.6 Wind 240 deg - No Ice	34.17	-30.41	17.60	1892	3271	14
1.2 Dead+1.6 Wind 270 deg - No Ice	45.57	-35.60	0.04	-3	3873	30
0.9 Dead+1.6 Wind 270 deg - No Ice	34.17	-35.60	0.04	-1	3874	30
1.2 Dead+1.6 Wind 300 deg - No Ice	45.57	-30.94	-17.86	-1960	3372	29
0.9 Dead+1.6 Wind 300 deg - No Ice	34.17	-30.94	-17.86	-1958	3373	29
1.2 Dead+1.6 Wind 330 deg - No Ice	45.57	-18.19	-31.58	-3440	1966	22
0.9 Dead+1.6 Wind 330 deg - No Ice	34.17	-18.19	-31.58	-3438	1968	22
1.2 Dead+1.0 Ice	148.37	0.00	-0.00	-69	-26	0
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	148.37	0.01	-12.93	-1484	-27	4
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	148.37	6.15	-10.65	-1248	-706	0
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	148.37	10.87	-6.28	-764	-1227	-6
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	148.37	13.40	-0.01	-70	-1490	-13
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	148.37	11.72	6.77	651	-1274	-14
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	148.37	6.54	11.35	1148	-727	-9
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	148.37	-0.01	12.25	1259	-24	-4
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	148.37	-5.90	10.22	1043	617	0
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	148.37	-10.59	6.12	592	1118	6

Load Combination	Vertical	Shear _x	Shear _z	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	148.37	-12.90	0.01	-68	1363	13
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	148.37	-11.57	-6.68	-785	1214	14
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	148.37	-6.54	-11.35	-1286	676	9
Dead+Wind 0 deg - Service	37.97	0.01	-8.54	-930	-7	2
Dead+Wind 30 deg - Service	37.97	3.76	-6.52	-728	-422	1
Dead+Wind 60 deg - Service	37.97	7.03	-4.07	-456	-780	-3
Dead+Wind 90 deg - Service	37.97	8.57	-0.01	-9	-942	-7
Dead+Wind 120 deg - Service	37.97	7.69	4.44	469	-831	-7
Dead+Wind 150 deg - Service	37.97	4.35	7.55	813	-478	-5
Dead+Wind 180 deg - Service	37.97	-0.01	8.15	886	-4	-2
Dead+Wind 210 deg - Service	37.97	-3.74	6.47	705	405	-1
Dead+Wind 240 deg - Service	37.97	-7.27	4.21	447	778	3
Dead+Wind 270 deg - Service	37.97	-8.51	0.01	-6	922	7
Dead+Wind 300 deg - Service	37.97	-7.40	-4.27	-474	802	7
Dead+Wind 330 deg - Service	37.97	-4.35	-7.55	-828	466	5

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-37.97	0.00	0.00	37.97	0.00	0.000%
2	0.04	-45.57	-35.72	-0.04	45.57	35.72	0.000%
3	0.04	-34.17	-35.72	-0.04	34.17	35.72	0.000%
4	15.74	-45.57	-27.26	-15.74	45.57	27.26	0.000%
5	15.74	-34.17	-27.26	-15.74	34.17	27.26	0.000%
6	29.39	-45.57	-17.01	-29.39	45.57	17.01	0.000%
7	29.39	-34.17	-17.01	-29.39	34.17	17.01	0.000%
8	35.84	-45.57	-0.04	-35.84	45.57	0.04	0.000%
9	35.84	-34.17	-0.04	-35.84	34.17	0.04	0.000%
10	32.16	-45.57	18.57	-32.16	45.57	-18.57	0.000%
11	32.16	-34.17	18.57	-32.16	34.17	-18.57	0.000%
12	18.19	-45.57	31.58	-18.19	45.57	-31.58	0.000%
13	18.19	-34.17	31.58	-18.19	34.17	-31.58	0.000%
14	-0.04	-45.57	34.07	0.04	45.57	-34.07	0.000%
15	-0.04	-34.17	34.07	0.04	34.17	-34.07	0.000%
16	-15.62	-45.57	27.06	15.62	45.57	-27.06	0.000%
17	-15.62	-34.17	27.06	15.62	34.17	-27.06	0.000%
18	-30.41	-45.57	17.60	30.41	45.57	-17.60	0.000%
19	-30.41	-34.17	17.60	30.41	34.17	-17.60	0.000%
20	-35.60	-45.57	0.04	35.60	45.57	-0.04	0.000%
21	-35.60	-34.17	0.04	35.60	34.17	-0.04	0.000%
22	-30.94	-45.57	-17.86	30.94	45.57	17.86	0.000%
23	-30.94	-34.17	-17.86	30.94	34.17	17.86	0.000%
24	-18.19	-45.57	-31.58	18.19	45.57	31.58	0.000%
25	-18.19	-34.17	-31.58	18.19	34.17	31.58	0.000%
26	0.00	-148.37	0.00	-0.00	148.37	0.00	0.000%
27	0.01	-148.37	-12.93	-0.01	148.37	12.93	0.000%
28	6.15	-148.37	-10.65	-6.15	148.37	10.65	0.000%
29	10.87	-148.37	-6.28	-10.87	148.37	6.28	0.000%
30	13.40	-148.37	-0.01	-13.40	148.37	0.01	0.000%
31	11.72	-148.37	6.77	-11.72	148.37	-6.77	0.000%
32	6.54	-148.37	11.35	-6.54	148.37	-11.35	0.000%
33	-0.01	-148.37	12.25	0.01	148.37	-12.25	0.000%
34	-5.90	-148.37	10.22	5.90	148.37	-10.22	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
35	-10.59	-148.37	6.12	10.59	148.37	-6.12	0.000%
36	-12.90	-148.37	0.01	12.90	148.37	-0.01	0.000%
37	-11.57	-148.37	-6.68	11.57	148.37	6.68	0.000%
38	-6.54	-148.37	-11.35	6.54	148.37	11.35	0.000%
39	0.01	-37.97	-8.54	-0.01	37.97	8.54	0.000%
40	3.76	-37.97	-6.52	-3.76	37.97	6.52	0.000%
41	7.03	-37.97	-4.07	-7.03	37.97	4.07	0.000%
42	8.57	-37.97	-0.01	-8.57	37.97	0.01	0.000%
43	7.69	-37.97	4.44	-7.69	37.97	-4.44	0.000%
44	4.35	-37.97	7.55	-4.35	37.97	-7.55	0.000%
45	-0.01	-37.97	8.15	0.01	37.97	-8.15	0.000%
46	-3.74	-37.97	6.47	3.74	37.97	-6.47	0.000%
47	-7.27	-37.97	4.21	7.27	37.97	-4.21	0.000%
48	-8.51	-37.97	0.01	8.51	37.97	-0.01	0.000%
49	-7.40	-37.97	-4.27	7.40	37.97	4.27	0.000%
50	-4.35	-37.97	-7.55	4.35	37.97	7.55	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 170	7.40	50	0.450	0.062
T2	170 - 150	6.41	50	0.439	0.060
T3	150 - 130	4.60	50	0.386	0.053
T4	130 - 120	3.10	50	0.297	0.043
T5	120 - 100	2.53	50	0.245	0.035
T6	100 - 80	1.63	50	0.180	0.024
T7	80 - 60	0.98	43	0.124	0.017
T8	60 - 40	0.53	43	0.086	0.011
T9	40 - 20	0.23	43	0.050	0.006
T10	20 - 0	0.06	43	0.025	0.003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	Platform Mount [LP 405-1]	50	7.40	0.450	0.062	38575
165.00	AIR32 KRD901146-1_B66_B2A w/ Mount Pipe	50	5.93	0.430	0.059	18422

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 170	30.87	24	1.875	0.260
T2	170 - 150	26.73	24	1.829	0.250
T3	150 - 130	19.17	24	1.608	0.221
T4	130 - 120	12.95	24	1.240	0.179
T5	120 - 100	10.55	10	1.020	0.146
T6	100 - 80	6.82	10	0.752	0.102
T7	80 - 60	4.11	10	0.516	0.069
T8	60 - 40	2.23	10	0.358	0.046
T9	40 - 20	0.97	10	0.211	0.024
T10	20 - 0	0.27	10	0.103	0.012

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
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Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	Platform Mount [LP 405-1]	24	30.87	1.875	0.260	9289
165.00	AIR32 KRD901146-1_B66_B2A w/ Mount Pipe	24	24.74	1.790	0.246	4467

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria
T1	180	Leg	A325 X-N (PiRod)	0.63	5	4.27	27.61	0.155	1	Bolt DS
T2	170	Leg	A325 X-N (PiRod)	0.75	5	15.46	39.76	0.389	1	Bolt DS
T3	150	Leg	A325N	1.00	6	21.13	53.01	0.399	1	Bolt Tension
T4	130	Leg	A325N	1.00	6	20.72	53.01	0.391	1	Bolt Tension
		Diagonal	A325N	1.00	1	6.96	10.66	0.653	1	Member Block Shear
T5	120	Leg	A325N	1.00	6	24.36	53.01	0.460	1	Bolt Tension
		Diagonal	A325N	1.00	1	5.24	10.66	0.491	1	Member Block Shear
T6	100	Leg	A325N	1.00	6	27.30	53.01	0.515	1	Bolt Tension
		Diagonal	A325N	1.00	1	4.56	10.66	0.428	1	Member Block Shear
T7	80	Leg	A325N	1.00	6	30.29	53.01	0.571	1	Bolt Tension
		Diagonal	A325N	1.00	1	5.03	11.68	0.431	1	Member Block Shear
T8	60	Leg	A325N	1.00	6	33.26	53.01	0.627	1	Bolt Tension
		Diagonal	A325N	1.00	1	5.46	11.68	0.467	1	Member Block Shear
T9	40	Leg	A325N	1.25	6	36.22	82.83	0.437	1	Bolt Tension
		Diagonal	A325N	1.25	1	6.09	20.30	0.300	1	Member Block Shear
T10	20	Diagonal	A325N	1.25	1	7.17	20.30	0.353	1	Member Block Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	1 1/2" solid	10.00	2.25	72.0 K=1.00	1.77	-18.63	54.43	0.342 ¹

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T2	170 - 150	2" solid	20.00	2.36	56.6 K=1.00	3.14	-72.63	111.84	0.649 ¹
T3	150 - 130	2 1/4" solid	20.00	2.36	50.3 K=1.00	3.98	-130.75	148.69	0.879 ¹
T4	130 - 120	Pirod 105244 (12x1.25)	10.02	10.02	45.4 K=1.00	3.68	-131.77	142.49	0.925 ¹
T5	120 - 100	Pirod 105217 (12x1.5)	20.03	10.02	37.8 K=1.00	5.30	-157.02	214.86	0.731 ¹
T6	100 - 80	Pirod 105217 (12x1.5)	20.03	10.02	37.8 K=1.00	5.30	-177.68	214.86	0.827 ¹
T7	80 - 60	Pirod 105218 (12x1.75)	20.03	10.02	32.4 K=1.00	7.22	-199.00	300.68	0.662 ¹
T8	60 - 40	Pirod 105218 (12x1.75)	20.03	10.02	32.4 K=1.00	7.22	-220.52	300.68	0.733 ¹
T9	40 - 20	Pirod 105219 (12x2)	20.03	10.02	28.4 K=1.00	9.42	-243.02	399.87	0.608 ¹
T10	20 - 0	Pirod 105219 (12x2)	20.03	10.02	28.4 K=1.00	9.42	-264.46	399.87	0.661 ¹

¹ P_u / φP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L _d ft	Kl/r	φP _n K	A in ²	V _u K	φV _n K	Stress Ratio
T4	130 - 120	0.5	1.48	121.0	165.67	0.20	1.14	3.39	0.336
T5	120 - 100	0.5	1.47	120.0	238.57	0.20	0.94	3.34	0.283
T6	100 - 80	0.5	1.47	120.0	238.57	0.20	0.30	3.34	0.090
T7	80 - 60	0.5	1.46	119.0	324.71	0.20	0.26	3.38	0.079
T8	60 - 40	0.5	1.46	119.0	324.71	0.20	0.25	3.38	0.075
T9	40 - 20	0.625	1.45	94.4	424.12	0.31	0.29	6.96	0.043
T10	20 - 0	0.625	1.45	94.4	424.12	0.31	0.91	6.96	0.132

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	3/4" solid	4.59	2.22	128.0 K=0.90	0.44	-3.42	6.09	0.562 ¹
T2	170 - 150	7/8" solid	5.04	2.44	120.6 K=0.90	0.60	-5.55	9.34	0.594 ¹
T3	150 - 130	1" solid	5.12	2.47	107.6 K=0.91	0.79	-6.11	15.16	0.403 ¹
T4	130 - 120	L 2.5 x 2.5 x 3/16	11.42	4.98	120.8 K=1.00	0.90	-7.58	13.56	0.559 ¹
T5	120 - 100	L 2.5 x 2.5 x 3/16	11.93	5.38	130.5 K=1.00	0.90	-4.99	11.92	0.418 ¹
T6	100 - 80	L 2.5 x 2.5 x 3/16	13.80	6.33	153.4 K=1.00	0.90	-4.66	8.66	0.538 ¹
T7	80 - 60	L 3 x 3 x 3/16	15.24	7.08	142.5 K=1.00	1.09	-5.12	12.12	0.422 ¹
T8	60 - 40	L 3 x 3 x 3/16	16.80	7.88	158.6 K=1.00	1.09	-5.57	9.79	0.569 ¹
T9	40 - 20	L 3 x 3 x 5/16	18.45	8.68	176.8 K=1.00	1.78	-6.25	12.87	0.486 ¹
T10	20 - 0	L 3 x 3 x 5/16	20.16	9.54	194.4 K=1.00	1.78	-7.87	10.64	0.740 ¹

¹ $P_u / \phi P_n$ controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	3/4" solid	4.00	3.88	173.6 K=0.70	0.44	-0.48	3.31	0.144 ¹
T2	170 - 150	3/4" solid	4.43	4.26	190.9 K=0.70	0.44	-1.34	2.74	0.489 ¹
T3	150 - 130	7/8" solid	4.93	4.74	182.0 K=0.70	0.60	-2.33	4.10	0.568 ¹

¹ $P_u / \phi P_n$ controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	7/8" solid	4.00	3.88	148.8 K=0.70	0.60	-1.69	6.14	0.275 ¹
T2	170 - 150	7/8" solid	4.01	3.85	147.7 K=0.70	0.60	-1.89	6.22	0.303 ¹
T3	150 - 130	1" solid	4.51	4.33	145.4 K=0.70	0.79	-2.33	8.40	0.278 ¹

¹ $P_u / \phi P_n$ controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	7/8" solid	4.00	3.88	148.8 K=0.70	0.60	-1.38	6.14	0.226 ¹
T2	170 - 150	7/8" solid	4.49	4.32	165.9 K=0.70	0.60	-2.43	4.94	0.493 ¹
T3	150 - 130	1" solid	4.99	4.80	161.2 K=0.70	0.79	-2.69	6.83	0.395 ¹

¹ $P_u / \phi P_n$ controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	1 1/2" solid	10.00	0.50	16.0	1.77	17.67	79.52	0.222 ¹

Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	170 - 150	2" solid	20.00	0.57	13.6	2.19	71.20	106.69	0.667 ¹
T3	150 - 130	2 1/4" solid	20.00	0.57	12.1	3.98	126.78	178.92	0.709 ¹
T4	130 - 120	Pirod 105244 (12x1.25)	10.02	10.02	45.4	3.68	124.30	165.67	0.750 ¹
T5	120 - 100	Pirod 105217 (12x1.5)	20.03	10.02	37.8	5.30	146.19	238.57	0.613 ¹
T6	100 - 80	Pirod 105217 (12x1.5)	20.03	10.02	37.8	5.30	163.82	238.57	0.687 ¹
T7	80 - 60	Pirod 105218 (12x1.75)	20.03	10.02	32.4	7.22	181.73	324.71	0.560 ¹
T8	60 - 40	Pirod 105218 (12x1.75)	20.03	10.02	32.4	7.22	199.56	324.71	0.615 ¹
T9	40 - 20	Pirod 105219 (12x2)	20.03	10.02	28.4	9.42	217.33	424.12	0.512 ¹
T10	20 - 0	Pirod 105219 (12x2)	20.03	10.02	28.4	9.42	233.87	424.12	0.551 ¹

¹ $P_u / \phi P_n$ controls

Based on net area of leg in section below

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	KI/r	ϕP_n K	A in ²	V_u K	ϕV_n K	Stress Ratio
T4	130 - 120	0.5	1.48	121.0	165.67	0.20	1.14	3.39	0.336
T5	120 - 100	0.5	1.47	120.0	238.57	0.20	0.94	3.34	0.283
T6	100 - 80	0.5	1.47	120.0	238.57	0.20	0.30	3.34	0.090
T7	80 - 60	0.5	1.46	119.0	324.71	0.20	0.26	3.38	0.079
T8	60 - 40	0.5	1.46	119.0	324.71	0.20	0.25	3.38	0.075
T9	40 - 20	0.625	1.45	94.4	424.12	0.31	0.29	6.96	0.043
T10	20 - 0	0.625	1.45	94.4	424.12	0.31	0.91	6.96	0.132

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	3/4" solid	4.59	2.22	142.3	0.44	3.41	19.88	0.172 ¹
T2	170 - 150	7/8" solid	5.04	2.44	134.0	0.60	5.51	27.06	0.204 ¹
T3	150 - 130	1" solid	5.12	2.47	118.7	0.79	6.05	35.34	0.171 ¹
T4	130 - 120	L 2.5 x 2.5 x 3/16	11.42	4.98	80.0	0.52	6.96	22.55	0.309 ¹
T5	120 - 100	L 2.5 x 2.5 x 3/16	11.93	5.38	86.2	0.52	5.24	22.55	0.232 ¹
T6	100 - 80	L 2.5 x 2.5 x 3/16	13.80	6.33	100.7	0.52	4.56	22.55	0.202 ¹
T7	80 - 60	L 3 x 3 x 3/16	15.24	7.08	93.1	0.66	5.03	28.67	0.175 ¹
T8	60 - 40	L 3 x 3 x 3/16	16.80	7.88	103.4	0.66	5.46	28.67	0.190 ¹
T9	40 - 20	L 3 x 3 x 5/16	18.45	8.68	116.3	1.01	6.09	44.05	0.138 ¹
T10	20 - 0	L 3 x 3 x 5/16	20.16	9.54	127.6	1.01	7.17	44.05	0.163 ¹

¹ $P_u / \phi P_n$ controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	3/4" solid	4.00	3.88	248.0	0.44	0.65	19.88	0.032 ¹
T2	170 - 150	3/4" solid	4.37	4.20	268.9	0.44	1.34	19.88	0.067 ¹
T3	150 - 130	7/8" solid	4.87	4.68	256.8	0.60	2.33	27.06	0.086 ¹

¹ $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	7/8" solid	4.00	3.88	212.6	0.60	1.69	27.06	0.062 ¹
T2	170 - 150	7/8" solid	4.01	3.85	211.1	0.60	1.89	27.06	0.070 ¹
T3	150 - 130	1" solid	4.51	4.33	207.7	0.79	2.33	35.34	0.066 ¹

¹ $P_u / \phi P_n$ controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	7/8" solid	4.00	3.88	212.6	0.60	1.47	27.06	0.054 ¹
T2	170 - 150	7/8" solid	4.49	4.32	236.9	0.60	2.53	27.06	0.093 ¹
T3	150 - 130	1" solid	4.99	4.80	230.3	0.79	2.88	35.34	0.081 ¹

¹ $P_u / \phi P_n$ controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	180 - 170	Leg	1 1/2" solid	3	-18.63	54.43	34.2	Pass
T2	170 - 150	Leg	2" solid	38	71.20	106.69	66.7	Pass
T3	150 - 130	Leg	2 1/4" solid	102	-130.75	148.69	87.9	Pass
T4	130 - 120	Leg	Pirod 105244 (12x1.25)	166	-131.77	142.49	92.5	Pass
T5	120 - 100	Leg	Pirod 105217 (12x1.5)	175	-157.02	214.86	73.1	Pass
T6	100 - 80	Leg	Pirod 105217 (12x1.5)	190	-177.68	214.86	82.7	Pass
T7	80 - 60	Leg	Pirod 105218 (12x1.75)	205	-199.00	300.68	66.2	Pass
T8	60 - 40	Leg	Pirod 105218 (12x1.75)	220	-220.52	300.68	73.3	Pass
T9	40 - 20	Leg	Pirod 105219 (12x2)	235	-243.02	399.87	60.8	Pass
T10	20 - 0	Leg	Pirod 105219 (12x2)	250	-264.46	399.87	66.1	Pass
T1	180 - 170	Diagonal	3/4" solid	12	-3.42	6.09	56.2	Pass
T2	170 - 150	Diagonal	7/8" solid	48	-5.55	9.34	59.4	Pass
T3	150 - 130	Diagonal	1" solid	161	-6.11	15.16	40.3	Pass
T4	130 - 120	Diagonal	L 2.5 x 2.5 x 3/16	170	-7.58	13.56	55.9	Pass
T5	120 - 100	Diagonal	L 2.5 x 2.5 x 3/16	186	-4.99	11.92	65.3 (b) 41.8	Pass
T6	100 - 80	Diagonal	L 2.5 x 2.5 x 3/16	194	-4.66	8.66	49.1 (b) 53.8	Pass
T7	80 - 60	Diagonal	L 3 x 3 x 3/16	209	-5.12	12.12	42.2 43.1 (b)	Pass
T8	60 - 40	Diagonal	L 3 x 3 x 3/16	224	-5.57	9.79	56.9	Pass
T9	40 - 20	Diagonal	L 3 x 3 x 5/16	239	-6.25	12.87	48.6	Pass
T10	20 - 0	Diagonal	L 3 x 3 x 5/16	254	-7.87	10.64	74.0	Pass
T1	180 - 170	Horizontal	3/4" solid	30	-0.48	3.31	14.4	Pass
T2	170 - 150	Horizontal	3/4" solid	52	-1.34	2.74	48.9	Pass
T3	150 - 130	Horizontal	7/8" solid	116	-2.33	4.10	56.8	Pass
T1	180 - 170	Top Girt	7/8" solid	5	-1.69	6.14	27.5	Pass
T2	170 - 150	Top Girt	7/8" solid	42	-1.89	6.22	30.3	Pass
T3	150 - 130	Top Girt	1" solid	104	-2.33	8.40	27.8	Pass
T1	180 - 170	Bottom Girt	7/8" solid	7	-1.38	6.14	22.6	Pass
T2	170 - 150	Bottom Girt	7/8" solid	43	-2.43	4.94	49.3	Pass
T3	150 - 130	Bottom Girt	1" solid	107	-2.69	6.83	39.5	Pass

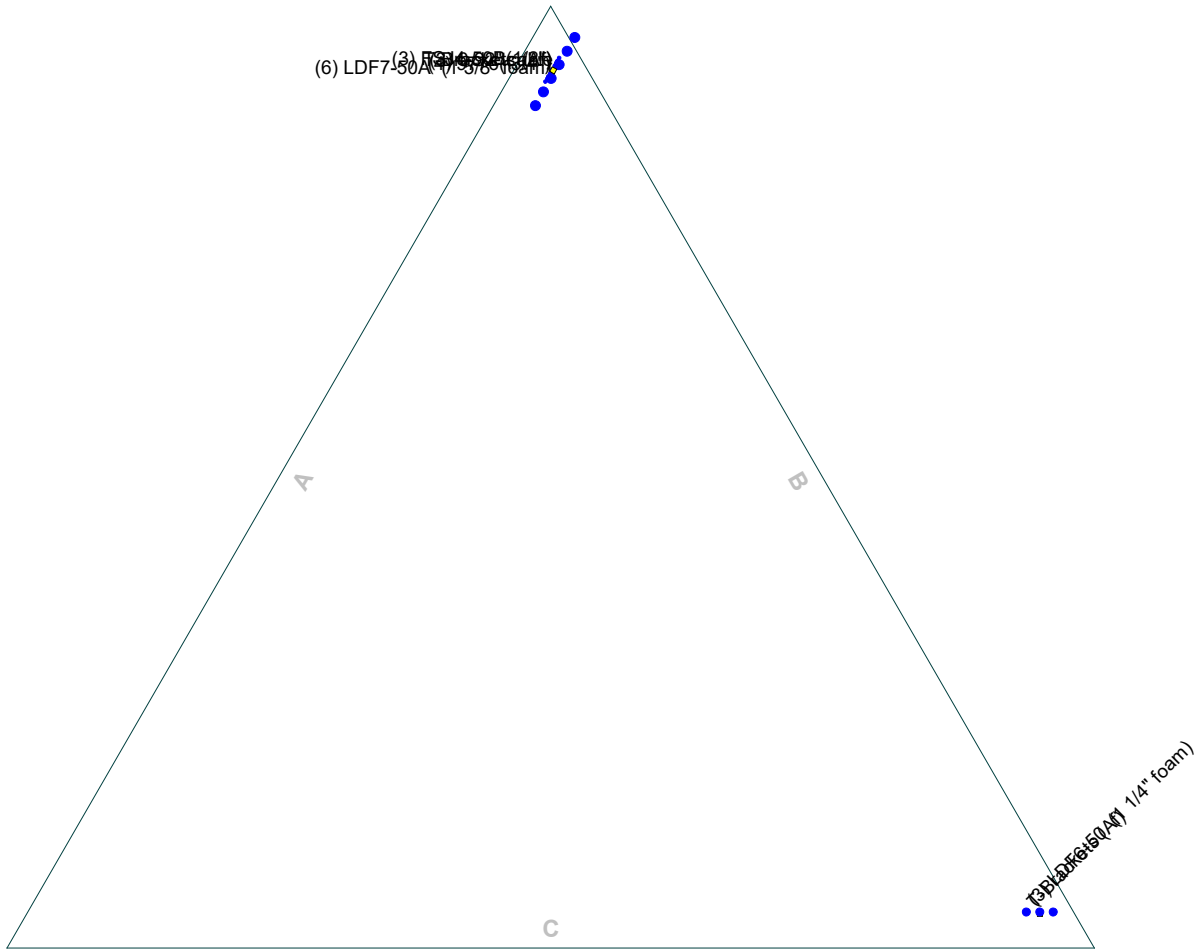
Summary

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$\phi P_{allow} / K$	% Capacity	Pass Fail
						Leg (T4)	92.5	Pass
						Diagonal (T10)	74.0	Pass
						Horizontal (T3)	56.8	Pass
						Top Girt (T2)	30.3	Pass
						Bottom Girt (T2)	49.3	Pass
						Bolt	65.3	Pass
						Checks		
						RATING =	92.5	Pass

APPENDIX B
BASE LEVEL DRAWING

Feed Line Plan

— Round
 — Flat
 — App In Face
 — App Out Face
 — Truss-Leg



<p>Paul J. Ford and Company 250 E. Broad St., Ste 600 Columbus, OH 43215 Phone: 614-221-6679 FAX:</p>	Job: 180-ft Self-Support Tower / WESTHARTFORD_DEXTERS		
	Project: PJF# 64122-0003 / CT0001		
	Client: Hirschfeld Communications, LLC	Drawn by: Michael Bange	App'd:
	Code: TIA-222-G	Date: 05/06/22	Scale: NTS
	Path:		Dwg No. E-7

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APPENDIX C
ADDITIONAL CALCULATIONS

Self-Support Tower Anchor Rod Capacity - TIA-G

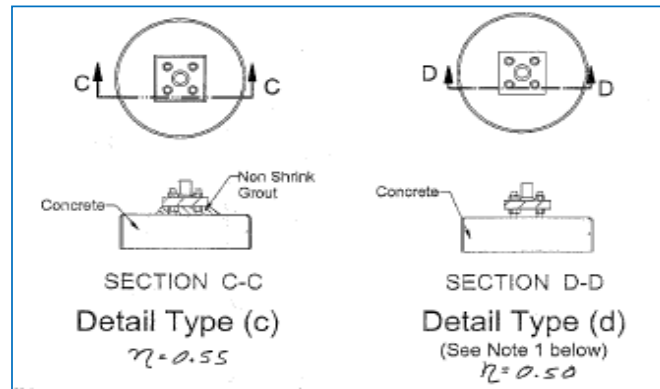
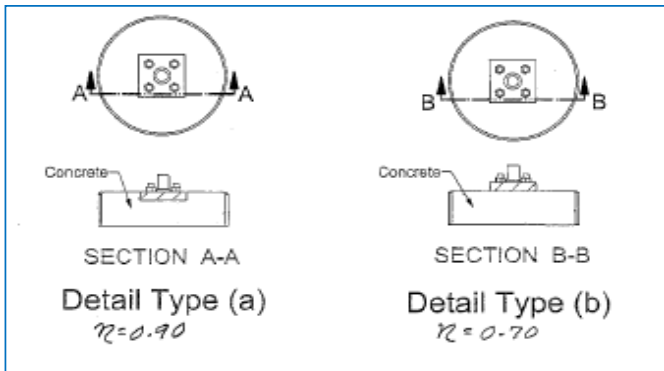
Loads

Compression :	271	kips	Tension :	239	kips
Comp. Shear :	25	kips	Ten. Shear :	22	kips

Code:	TIA-G
Maximum Ratio:	1.00

Existing Anchor Rods

Anchor Rod Condition (n) :	0.55
Anchor Rod ϕ :	1 1/4 in
Anchor Rod Quantity :	6
Anchor Rod Grade :	F1554 Gr. 105
F_y :	105 ksi
F_u :	125 ksi
Threads per Inch	7
Net Tensile Area	0.97 in ²
ϕ_t :	0.80
$\phi_t R_{nt}$:	581.47 kip
Anchor Rod Ratio :	0.480



Factored Foundation Loads:

Factored Axial Load (+Comp, -Ten) =	271	-239	kip
Factored Horiz. Load at Top of Pier =	25	22	kip
Factored OTM at Top of Pier =	0	0	k-ft

LRFD Resistance and Load Factors:

Φ	Dead Load Factors		
Soil Bearing =	0.75	1.2	0.9
Soil Weight =	0.75	1.2	0.9
Concrete Weight =	0.75	1.2	0.9

Soil Properties:

Depth to Water Table =	99	ft
Uplift Cone from	Top	of footing
Depth to Ignore for Uplift and PP =	3.33	ft

Layer Thk ft	Soil Density pcf	Cohesion ksf	Friction Angle degrees	Ult Bearing ksf	Depth ft
3.5	100	0	28	12	3.50

Dimensions:

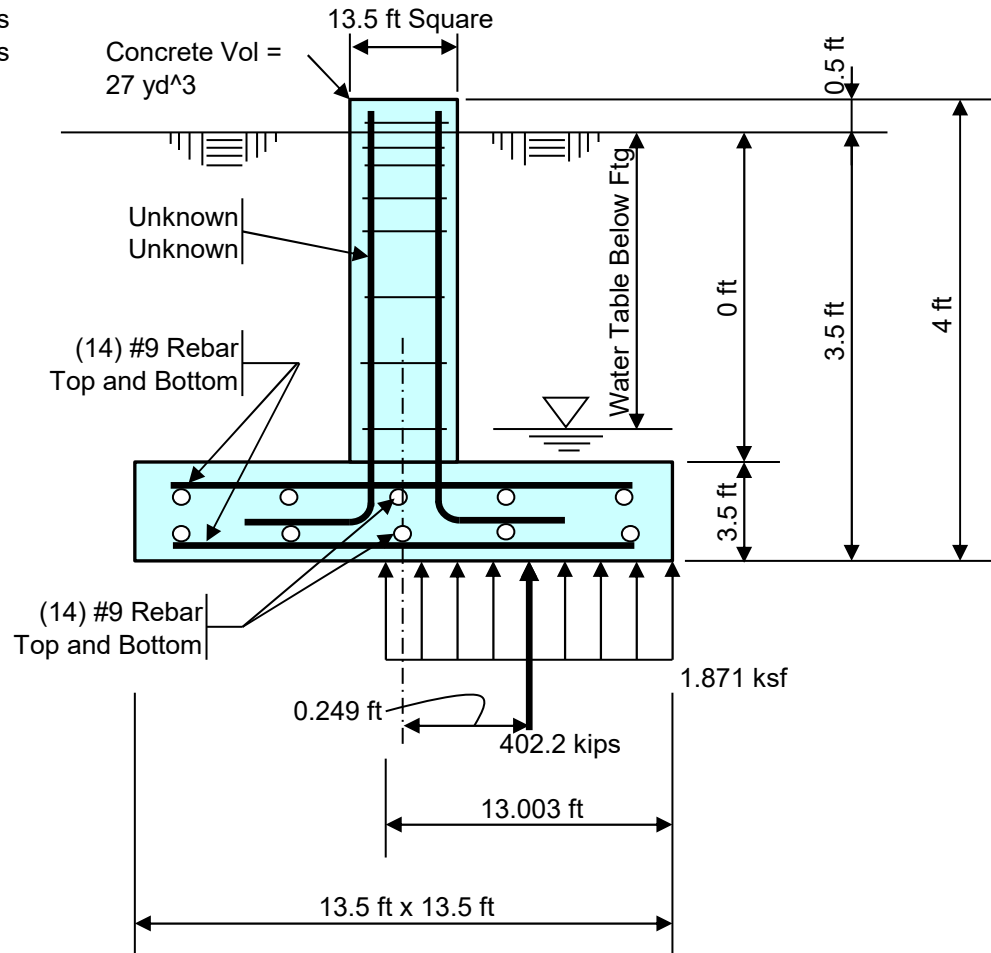
Pier Shape =	Square
Pier Width =	13.5 ft Square
Pier Height above Grade =	0.5 ft
Depth to Bottom of Footing =	3.5 ft
Footing Thickness =	3.5 ft
Footing Width, B =	13.5 ft
Footing Length, L =	13.5 ft

Concrete:

Concrete Strength =	3	ksi
Rebar Strength =	60	ksi

Summary Results:

Maximum Net Soil Bearing =	1.871	ksf	Required	9.000	ksf	Available
Uplift =	239.0	kip		96.4	kip	
Punching Shear Stress =	0.000	ksi		0.159	ksi	
Bending Shear Stress =	-4.7	kip		496.6	kip	
Bending Moment =	0.004	in / in		0.0	in / in	
Conc Pier Reinforcing Steel =						Rebar Unknown

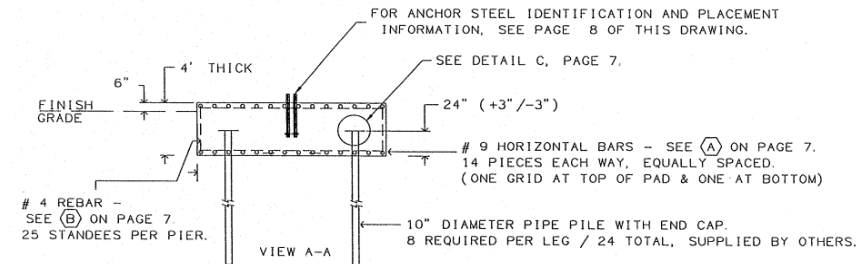
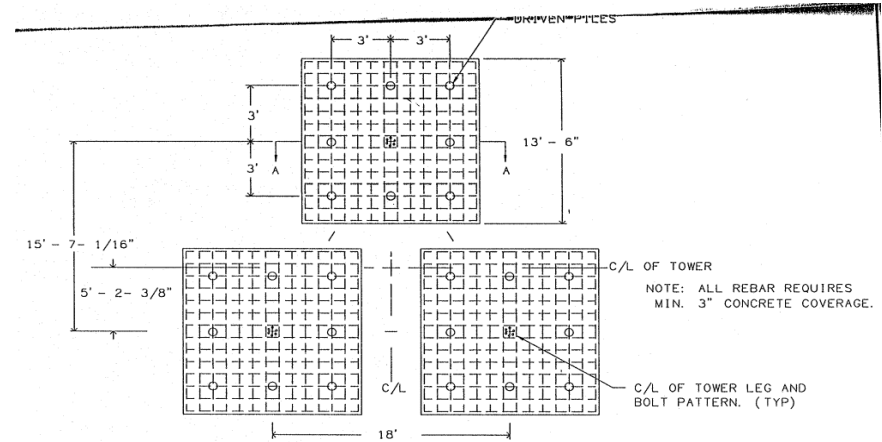


Total Pad Reinf Stl =	28.00	in ² >= 12.25 in ² = Min Stl, OK
Total Pier Reinf Stl =		
Footing Thickness =	3.50	ft >= 0.75 ft = Min Ftg Thk, OK

Stress Ratio =	0.0%	in Punching Shear
Stress Ratio =	0.9%	in Bending Shear
Stress Ratio =	9.1%	in Bending Moment

West Hartford Foundation Analysis

Uplift (kips):	239
Compression (kips):	271
Concrete Weight (kcf):	0.15
Mat Length/Width (ft):	13.5
Mat Depth (ft):	4
Mat Weight (kips):	109.4
Mat Bearing Area (ft ²):	182.3
Pile Quantity	8
Pile Diameter (in):	10
Pile Length (ft):	50
Depth to Ignore (ft):	8
Total Pile Surface Area (ft ²):	879.6
Ultimate Bearing Pressure (ksf):	12
Ultimate Skin Friction (ksf):	1
ϕ_{soil} :	0.75
Mat Bearing Capacity (kips):	1640.3
Skin Friction Capacity (kips):	659.7
Total Uplift Load (kips):	239.0
Total Compression Load (kips):	402.2



Uplift Capacity (kips):	758.1
Compression Capacity (kips):	2300.0
Uplift Usage Capacity:	31.5%
Compression Usage Capacity:	17.5%

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON
EXISTING STRUCTURES BY PAUL J. FORD AND COMPANY

- 1) Paul J. Ford and Company has not made a field inspection to verify the tower member sizes or the antenna/coax loading. If the existing conditions are not as represented on these drawings, we should be contacted immediately to evaluate the significance of the deviation.
- 2) No allowance was made for any damaged, missing, or rusted members. The analysis of this tower assumes that no physical deterioration has occurred in any of the structural components of the tower and that all the tower members have the same load carrying capacity as the day the tower was erected.
- 3) It is not possible to have all the detailed information to perform a thorough analysis of every structural sub-component of an existing tower. The structural analysis by Paul J. Ford and Company verifies the adequacy of the main structural members of the tower. Paul J. Ford and Company provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc.
- 4) This tower has been analyzed according to the minimum design wind loads recommended by the Telecommunications Industry Association Standard ANSI/TIA-222-H. If the owner or local or state agencies require a higher design wind load, Paul J. Ford and Company should be made aware of this requirement.
- 5) The enclosed sketches are a schematic representation of the tower that we have analyzed. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions and for the proper fit and clearance in the field.
- 6) Miscellaneous items such as antenna mounts etc. have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

EXHIBIT 4

October 20, 2021



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

RE:	Site Number:	CT5259 (C-Band)
	FA Number:	10071358
	PACE Number:	MRCTB050859
	PT Number:	2051A0Z7C6
	Site Name:	WEST HARTFORD-ELMWOOD
	Site Address:	1030 New Britain Avenue West Hartford, CT 06110

To Whom It May Concern:

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

- (3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) RRUS-32 B2 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (3) RRUS-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 Arrestors (24.0"x9.7" Ø – Wt. = 33 lbs. /each)
- **(3) QD6616-7 Antennas (72.0"x22.0"x9.6" – Wt. = 59 lbs. /each)**
- **(3) AIR 6449 Antennas (30.6"x15.9"x10.6" – Wt. = 82 lbs. /each)**
- **(3) AIR 6419 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) 4449 B5/B12 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*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mounts on May 26, 2021.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – 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 1.78 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- 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 0.181 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 2.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing tower with bent plates and threaded rods. The connection is considered OK by visual inspection.

Based on our evaluation, we have determined that the existing mount **IS CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (C-Band) Mount Rating	35	LC9	49%	PASS

Reference Documents:

- Mount mapping report prepared by ProVertic LLC dated June 4, 2021.

This determination was based on the following limitations and assumptions:

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

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

Respectfully Submitted,
Hudson Design Group LLC



Michael Cabral
Vice President



Daniel P. Hamm, PE
Principal

FIELD PHOTOS:



FIELD PHOTOS (CONT.):





HUDSON
Design Group LLC

Wind & Ice Calculations

Date: 10/20/2021
 Project Name: WEST HARTFORD-ELMWOOD
 Project No.: CT5259
 Designed By: RL Checked By: MSC



2.6.5.2 Velocity Pressure Coeff:

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

$K_z =$ **1.169**

$z =$ 180 (ft)
 $z_g =$ 1200 (ft)
 $\alpha =$ 7.0

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

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

$$K_{zt} = [1 + (K_c K_t / K_h)]^2$$

$$K_h = e^{(fz/H)}$$

$K_{zt} =$ **1**

$K_h =$ 1

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

$K_c =$ 1.0 (from Table 2-4)

$K_t =$ (from Table 2-5)

$f =$ (from Table 2-5)

$z =$ 180

$z_s =$ 515 (Mean elevation of base of structure above sea level)

$H =$ (Ht. of the crest above surrounding terrain)

$K_{zt} =$ 1.00 (from 2.6.6.2.1)

$K_e =$ 0.98 (from 2.6.8)

Category = 1

2.6.10 Design Ice Thickness

Max Ice Thickness =

$t_i =$ 1.50 in

Importance Factor =

$I =$ 1.00 (from Table 2-3)

$K_{iz} =$ 1.18 (from Sec. 2.6.10)

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

$t_{iz} =$ 1.78 in

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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

$h =$ 180 $G_h =$ 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 $G_h =$ 1.00

2.6.11.2 Design Wind Force on Appurtenances

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

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

$q_z =$ 39.01
 $q_{z(ice)} =$ 6.24
 $q_{z(30)} =$ 2.25

$K_z =$ 1.169 (from 2.6.5.2)
 $K_{zt} =$ 1.0 (from 2.6.6.2.1)
 $K_s =$ 1.0 (from 2.6.7)
 $K_e =$ 0.98 (from 2.6.8)
 $K_d =$ 0.85 (from Table 2-2)
 $V_{max} =$ 125 mph (Ultimate Wind Speed)
 $V_{max(ice)} =$ 50 mph
 $V_{30} =$ 30 mph

Table 2-2

Structure Type	Wind Direction Probability Factor, K_d
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

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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 = **1.78 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	530	103	31
AIR 6449 Antenna	30.6	15.9	10.6	3.38	1.92	1.20	158	35	9
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.44	1.24	496	98	29
AIR 6419 Antenna	31.0	16.1	7.3	3.47	1.93	1.20	162	35	9
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.36	1.20	77	19	4
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	3.89	1.26	65	18	4
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	3.89	1.26	65	18	4
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.90	1.20	55	14	3
4478 B14 RRH	18.1	8.3	13.4	1.04	2.18	1.20	49	13	3
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	44	11	3
2" Pipe	2.4	12.0	-	0.20	0.20	1.20	9		
4" Pipe	4.5	12.0	-	0.38	0.38	1.20	18		
HSS 5x5	5.0	12.0	-	0.42	0.42	1.25	20		
PL 10x1/2	0.5	12.0	-	0.04	0.04	1.25	2		
L 6-1/2x2 Angles	2.0	12.0	-	0.17	0.17	1.25	8		

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WIND LOADS

Angle = 30 (deg)

Ice Thickness = 1.78 in.

Equivalent Angle = 210 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (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	530	265	464
AIR 6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	158	107	145
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	496	219	427
AIR 6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	162	78	141
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	77	55	71
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	65	107	76
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	65	107	76
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	55	77	60
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	49	79	56

WIND LOADS WITH ICE:

QD6616-7 Antenna	75.6	25.6	13.2	13.41	6.90	2.96	5.74	1.22	1.34	102	58	91
AIR 6449 Antenna	34.2	19.5	14.2	4.61	3.36	1.76	2.41	1.20	1.20	35	25	32
DMP65R-BU6DA Antenna	74.8	24.3	11.3	12.59	5.84	3.08	6.64	1.23	1.38	96	50	85
AIR 6419 Antenna	34.6	19.7	10.9	4.72	2.60	1.76	3.18	1.20	1.23	35	20	31
4449 B5/B12 RRH	21.5	16.8	13.0	2.50	1.93	1.28	1.66	1.20	1.20	19	14	18
RRUS-32 B2 RRH	30.8	10.6	15.7	2.25	3.34	2.91	1.96	1.22	1.20	17	25	19
RRUS-32 B30 RRH	30.8	10.6	15.7	2.25	3.34	2.91	1.96	1.22	1.20	17	25	19
4449 B5/B12 RRH	21.5	13.0	16.8	1.93	2.50	1.66	1.28	1.20	1.20	14	19	16
4478 B14 RRH	21.7	11.9	17.0	1.78	2.55	1.83	1.28	1.20	1.20	13	19	15

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	31	15	27
AIR 6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	8
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	25
AIR 6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	9	5	8
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	4	3	4
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	4
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	4
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3

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WIND LOADS

Angle = 60 (deg)

Ice Thickness = 1.78 in.

Equivalent Angle = 240 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (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	530	265	331
AIR 6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	158	107	120
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	496	219	288
AIR 6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	162	78	99
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	77	55	60
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	65	107	97
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	65	107	97
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	55	77	71
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	49	79	71

WIND LOADS WITH ICE:

QD6616-7 Antenna	75.6	25.6	13.2	13.41	6.90	2.96	5.74	1.22	1.34	102	58	69
AIR 6449 Antenna	34.2	19.5	14.2	4.61	3.36	1.76	2.41	1.20	1.20	35	25	27
DMP65R-BU6DA Antenna	74.8	24.3	11.3	12.59	5.84	3.08	6.64	1.23	1.38	96	50	62
AIR 6419 Antenna	34.6	19.7	10.9	4.72	2.60	1.76	3.18	1.20	1.23	35	20	24
4449 B5/B12 RRH	21.5	16.8	13.0	2.50	1.93	1.28	1.66	1.20	1.20	19	14	16
RRUS-32 B2 RRH	30.8	10.6	15.7	2.25	3.34	2.91	1.96	1.22	1.20	17	25	23
RRUS-32 B30 RRH	30.8	10.6	15.7	2.25	3.34	2.91	1.96	1.22	1.20	17	25	23
4449 B5/B12 RRH	21.5	13.0	16.8	1.93	2.50	1.66	1.28	1.20	1.20	14	19	18
4478 B14 RRH	21.7	11.9	17.0	1.78	2.55	1.83	1.28	1.20	1.20	13	19	18

WIND LOADS AT 30 MPH:

QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	31	15	19
AIR 6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	7
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	17
AIR 6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	9	5	6
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	4	3	3
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4

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 Designed By: RL Checked By: MSC



WIND LOADS

Angle = 90 (deg)

Ice Thickness = 1.78 in.

Equivalent Angle = 270 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (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	530	265	265
AIR 6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	158	107	107
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	496	219	219
AIR 6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	162	78	78
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	77	55	55
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	65	107	107
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	65	107	107
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	55	77	77
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	49	79	79

WIND LOADS WITH ICE:

QD6616-7 Antenna	75.6	25.6	13.2	13.41	6.90	2.96	5.74	1.22	1.34	102	58	58
AIR 6449 Antenna	34.2	19.5	14.2	4.61	3.36	1.76	2.41	1.20	1.20	35	25	25
DMP65R-BU6DA Antenna	74.8	24.3	11.3	12.59	5.84	3.08	6.64	1.23	1.38	96	50	50
AIR 6419 Antenna	34.6	19.7	10.9	4.72	2.60	1.76	3.18	1.20	1.23	35	20	20
4449 B5/B12 RRH	21.5	16.8	13.0	2.50	1.93	1.28	1.66	1.20	1.20	19	14	14
RRUS-32 B2 RRH	30.8	10.6	15.7	2.25	3.34	2.91	1.96	1.22	1.20	17	25	25
RRUS-32 B30 RRH	30.8	10.6	15.7	2.25	3.34	2.91	1.96	1.22	1.20	17	25	25
4449 B5/B12 RRH	21.5	13.0	16.8	1.93	2.50	1.66	1.28	1.20	1.20	14	19	19
4478 B14 RRH	21.7	11.9	17.0	1.78	2.55	1.83	1.28	1.20	1.20	13	19	19

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	31	15	15
AIR 6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	6
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	13
AIR 6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	9	5	5
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	4	3	3
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5

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 Project No.: CT5259
 Designed By: RL Checked By: MSC



WIND LOADS

Angle = 120 (deg)

Ice Thickness = 1.78 in.

Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (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	590	265	331
AIR 6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	158	107	120
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	496	219	288
AIR 6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	162	78	99
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	77	55	60
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	65	107	97
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	65	107	97
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	55	77	71
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	49	79	71

WIND LOADS WITH ICE:

QD6616-7 Antenna	75.6	25.6	13.2	13.41	6.90	2.96	5.74	1.22	1.34	102	58	69
AIR 6449 Antenna	34.2	19.5	14.2	4.61	3.36	1.76	2.41	1.20	1.20	35	25	27
DMP65R-BU6DA Antenna	74.8	24.3	11.3	12.59	5.84	3.08	6.64	1.23	1.38	96	50	62
AIR 6419 Antenna	34.6	19.7	10.9	4.72	2.60	1.76	3.18	1.20	1.23	35	20	24
4449 B5/B12 RRH	21.5	16.8	13.0	2.50	1.93	1.28	1.66	1.20	1.20	19	14	16
RRUS-32 B2 RRH	30.8	10.6	15.7	2.25	3.34	2.91	1.96	1.22	1.20	17	25	23
RRUS-32 B30 RRH	30.8	10.6	15.7	2.25	3.34	2.91	1.96	1.22	1.20	17	25	23
4449 B5/B12 RRH	21.5	13.0	16.8	1.93	2.50	1.66	1.28	1.20	1.20	14	19	18
4478 B14 RRH	21.7	11.9	17.0	1.78	2.55	1.83	1.28	1.20	1.20	13	19	18

WIND LOADS AT 30 MPH:

QD6616-7 Antenna	72.0	22.0	9.6	11.00	4.80	3.27	7.50	1.23	1.42	31	15	19
AIR 6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	7
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	17
AIR 6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	9	5	6
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	4	3	3
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4

Date: 10/20/2021
 Project Name: WEST HARTFORD-ELMWOOD
 Project No.: CT5259
 Designed By: RL Checked By: MSC



WIND LOADS

Angle = 150 (deg)

Ice Thickness = 1.78 in.

Equivalent Angle = 330 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (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	530	265	464
AIR 6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	158	107	145
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	496	219	427
AIR 6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	162	78	141
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	77	55	71
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	65	107	76
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	65	107	76
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	55	77	60
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	49	79	56

WIND LOADS WITH ICE:

QD6616-7 Antenna	75.6	25.6	13.2	13.41	6.90	2.96	5.74	1.22	1.34	102	58	91
AIR 6449 Antenna	34.2	19.5	14.2	4.61	3.36	1.76	2.41	1.20	1.20	35	25	32
DMP65R-BU6DA Antenna	74.8	24.3	11.3	12.59	5.84	3.08	6.64	1.23	1.38	96	50	85
AIR 6419 Antenna	34.6	19.7	10.9	4.72	2.60	1.76	3.18	1.20	1.23	35	20	31
4449 B5/B12 RRH	21.5	16.8	13.0	2.50	1.93	1.28	1.66	1.20	1.20	19	14	18
RRUS-32 B2 RRH	30.8	10.6	15.7	2.25	3.34	2.91	1.96	1.22	1.20	17	25	19
RRUS-32 B30 RRH	30.8	10.6	15.7	2.25	3.34	2.91	1.96	1.22	1.20	17	25	19
4449 B5/B12 RRH	21.5	13.0	16.8	1.93	2.50	1.66	1.28	1.20	1.20	14	19	16
4478 B14 RRH	21.7	11.9	17.0	1.78	2.55	1.83	1.28	1.20	1.20	13	19	15

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	31	15	27
AIR 6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	8
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	29	13	25
AIR 6419 Antenna	31.0	16.1	7.3	3.47	1.57	1.93	4.25	1.20	1.28	9	5	8
4449 B5/B12 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	4	3	4
RRUS-32 B2 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	4
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	4
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
4478 B14 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3

Date: 10/20/2021

Project Name: WEST HARTFORD-ELMWOOD

Project No.: CT5259

Designed By: RL Checked By: MSC



ICE WEIGHT CALCULATIONS

Thickness of ice: 1.78 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: 336 lbs
Weight of object: 59.0 lbs
Combined weight of ice and object: 395 lbs

AIR 6449 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: 116 lbs
Weight of object: 82.0 lbs
Combined weight of ice and object: 198 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: 308 lbs
Weight of object: 80.0 lbs
Combined weight of ice and object: 388 lbs

AIR 6419 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: 109 lbs
Weight of object: 66.0 lbs
Combined weight of ice and object: 175 lbs

4449 B5/B12 RRH

Weight of ice based on total radial SF area:
Height (in): 17.9
Width (in): 13.2
Depth (in): 9.4
Total weight of ice on object: 58 lbs
Weight of object: 73.0 lbs
Combined weight of ice and object: 131 lbs

RRUS-32 B2 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: 78 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 138 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: 78 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 138 lbs

4478 B14 RRH

Weight of ice based on total radial SF area:
Height (in): 18.1
Width (in): 13.4
Depth (in): 8.3
Total weight of ice on object: 58 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 118 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: 78 lbs
Weight of object: 60.0 lbs
Combined weight of ice and object: 138 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: 50 lbs
Weight of object: 33 lbs
Combined weight of ice and object: 83 lbs

2" Pipe

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

4" Pipe

Per foot weight of ice:
diameter (in): 4.5
Per foot weight of ice on object: 14 plf

PL 10x1/2

Weight of ice based on total radial SF area:
Height (in): 10
Width (in): 0.5
Per foot weight of ice on object: 26 plf

L 6-1/2x2 Angles

Weight of ice based on total radial SF area:
Height (in): 6.5
Width (in): 2
Per foot weight of ice on object: 19 plf

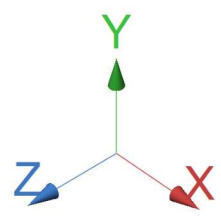
HSS 5x5

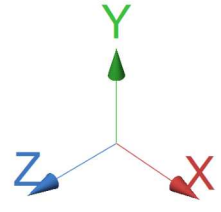
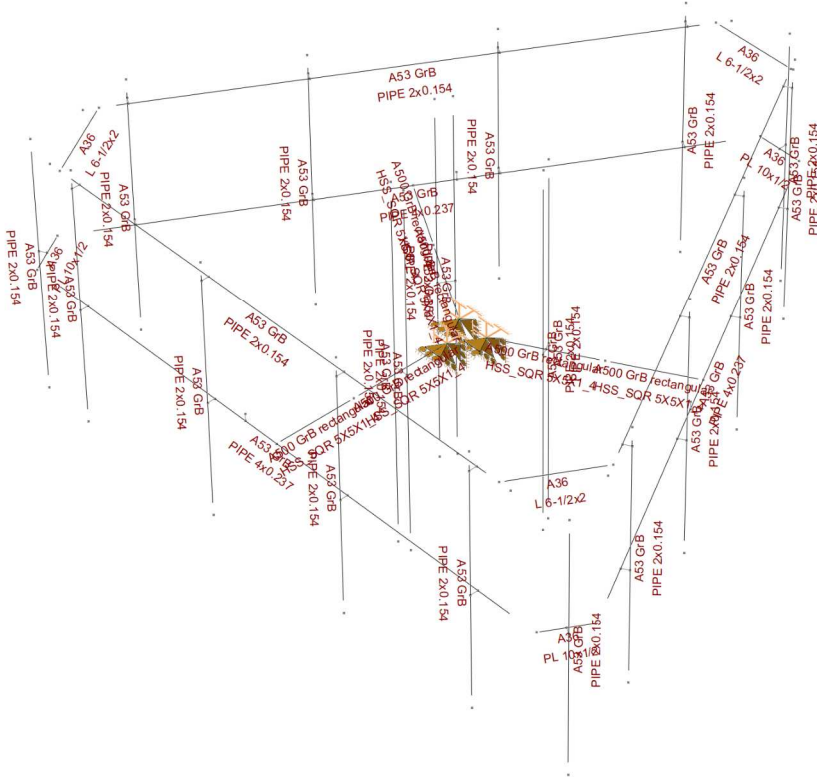
Weight of ice based on total radial SF area:
Height (in): 5
Width (in): 5
Per foot weight of ice on object: 19 plf



HUDSON
Design Group LLC

**Mount Calculations
(Existing Conditions)**

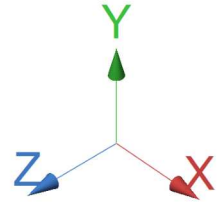
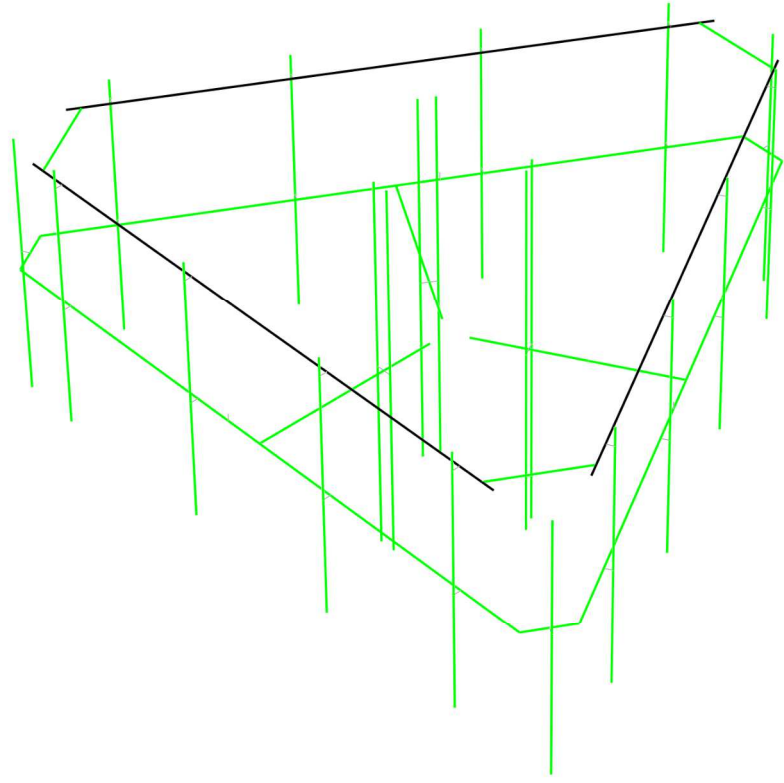


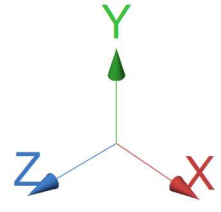
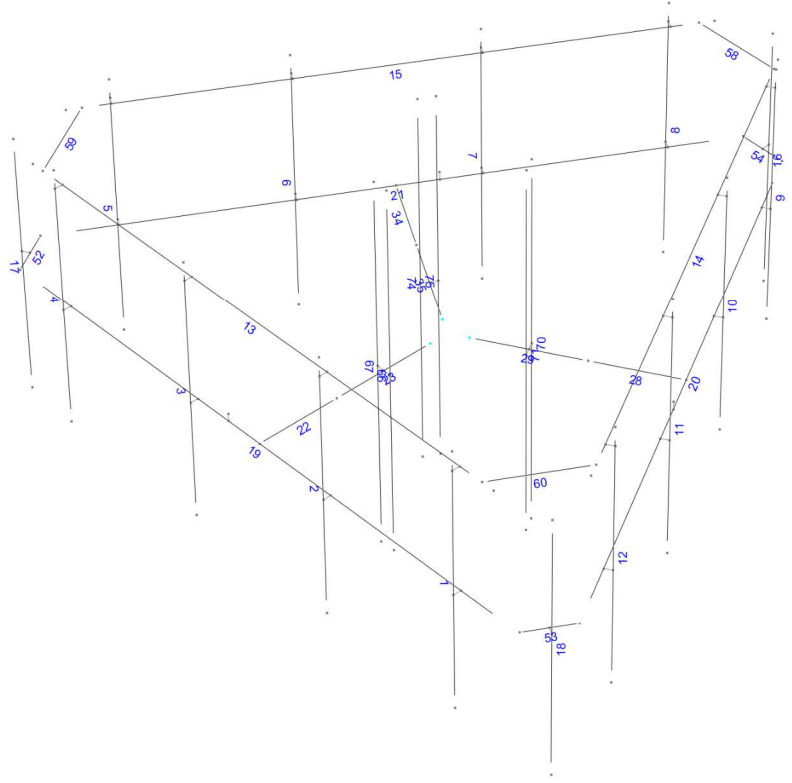




Design status

-  Not designed
-  Error on design
-  Design O.K.
-  With warnings





Current Date: 10/20/2021 11:54 AM

Units system: English

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Load data

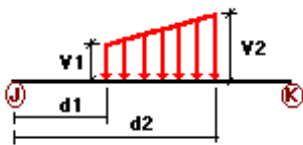
GLOSSARY

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

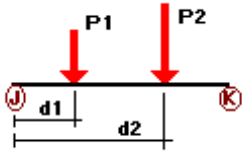


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	19	y	-0.01	-0.01	0.00	Yes	40.00	Yes
		y	-0.01	-0.01	60.00	Yes	100.00	Yes
	20	y	-0.01	-0.01	0.00	Yes	40.00	Yes
		y	-0.01	-0.01	60.00	Yes	100.00	Yes
	21	y	-0.01	-0.01	0.00	Yes	40.00	Yes
		y	-0.01	-0.01	60.00	Yes	100.00	Yes
	22	y	-0.01	-0.01	0.00	No	100.00	Yes
	28	y	-0.01	-0.01	0.00	No	100.00	Yes
34	y	-0.01	-0.01	0.00	No	100.00	Yes	
W0	66	z	-0.009	-0.009	0.00	No	100.00	Yes
	67	z	-0.009	-0.009	0.00	No	100.00	Yes
	1	z	-0.009	-0.009	0.00	No	100.00	Yes
	5	z	-0.009	-0.009	0.00	No	100.00	Yes
	6	z	-0.009	-0.009	0.00	No	100.00	Yes

	7	z	-0.009	-0.009	0.00	No	100.00	Yes
	8	z	-0.009	-0.009	0.00	No	100.00	Yes
	9	z	-0.009	-0.009	0.00	No	100.00	Yes
	10	z	-0.009	-0.009	0.00	No	100.00	Yes
	11	z	-0.009	-0.009	0.00	No	100.00	Yes
	12	z	-0.009	-0.009	0.00	No	100.00	Yes
	13	z	-0.009	-0.009	0.00	No	100.00	Yes
	14	z	-0.009	-0.009	0.00	No	100.00	Yes
	15	z	-0.009	-0.009	0.00	No	100.00	Yes
	16	z	-0.009	-0.009	0.00	No	100.00	Yes
	17	z	-0.009	-0.009	0.00	No	100.00	Yes
	18	z	-0.009	-0.009	0.00	No	100.00	Yes
	19	z	-0.018	-0.018	0.00	No	100.00	Yes
	20	z	-0.018	-0.018	0.00	No	100.00	Yes
	21	z	-0.018	-0.018	0.00	No	100.00	Yes
	28	z	-0.02	-0.02	0.00	No	100.00	Yes
	29	z	-0.02	-0.02	0.00	No	100.00	Yes
	34	z	-0.02	-0.02	0.00	No	100.00	Yes
	35	z	-0.02	-0.02	0.00	No	100.00	Yes
	52	z	-0.002	-0.002	0.00	No	100.00	Yes
	53	z	-0.002	-0.002	0.00	No	100.00	Yes
	54	z	-0.002	-0.002	0.00	No	100.00	Yes
	58	z	-0.008	-0.008	0.00	No	100.00	Yes
	59	z	-0.008	-0.008	0.00	No	100.00	Yes
	60	z	-0.008	-0.008	0.00	No	100.00	Yes
	70	z	-0.009	-0.009	0.00	No	100.00	Yes
	71	z	-0.009	-0.009	0.00	No	100.00	Yes
	74	z	-0.009	-0.009	0.00	No	100.00	Yes
	75	z	-0.009	-0.009	0.00	No	100.00	Yes
W30	66	x	-0.009	-0.009	0.00	No	100.00	Yes
	67	x	-0.009	-0.009	0.00	No	100.00	Yes
	1	x	-0.009	-0.009	0.00	No	100.00	Yes
	2	x	-0.009	-0.009	0.00	No	100.00	Yes
	3	x	-0.009	-0.009	0.00	No	100.00	Yes
	4	x	-0.009	-0.009	0.00	No	100.00	Yes
	5	x	-0.009	-0.009	0.00	No	100.00	Yes
	6	x	-0.009	-0.009	0.00	No	100.00	Yes
	7	x	-0.009	-0.009	0.00	No	100.00	Yes
	8	x	-0.009	-0.009	0.00	No	100.00	Yes
	9	x	-0.009	-0.009	0.00	No	100.00	Yes
	14	x	-0.009	-0.009	0.00	No	100.00	Yes
	15	x	-0.009	-0.009	0.00	No	100.00	Yes
	16	x	-0.009	-0.009	0.00	No	100.00	Yes
	17	x	-0.009	-0.009	0.00	No	100.00	Yes
	18	x	-0.009	-0.009	0.00	No	100.00	Yes
	20	x	-0.018	-0.018	0.00	No	100.00	Yes
	21	x	-0.018	-0.018	0.00	No	100.00	Yes
	22	x	-0.02	-0.02	0.00	No	100.00	Yes
	23	x	-0.02	-0.02	0.00	No	100.00	Yes
	28	x	-0.02	-0.02	0.00	No	100.00	Yes
	29	x	-0.02	-0.02	0.00	No	100.00	Yes
	34	x	-0.02	-0.02	0.00	No	100.00	Yes
	35	x	-0.02	-0.02	0.00	No	100.00	Yes
	52	x	-0.002	-0.002	0.00	No	100.00	Yes
	53	x	-0.002	-0.002	0.00	No	100.00	Yes
	59	x	-0.008	-0.008	0.00	No	100.00	Yes
	60	x	-0.008	-0.008	0.00	No	100.00	Yes
	70	x	-0.009	-0.009	0.00	No	100.00	Yes
	71	x	-0.009	-0.009	0.00	No	100.00	Yes
	74	x	-0.009	-0.009	0.00	No	100.00	Yes

Di	75	x	-0.009	-0.009	0.00	No	100.00	Yes
	66	y	-0.009	-0.009	0.00	No	100.00	Yes
	67	y	-0.009	-0.009	0.00	No	100.00	Yes
	1	y	-0.009	-0.009	0.00	No	100.00	Yes
	2	y	-0.009	-0.009	0.00	No	100.00	Yes
	3	y	-0.009	-0.009	0.00	No	100.00	Yes
	4	y	-0.009	-0.009	0.00	No	100.00	Yes
	5	y	-0.009	-0.009	0.00	No	100.00	Yes
	6	y	-0.009	-0.009	0.00	No	100.00	Yes
	7	y	-0.009	-0.009	0.00	No	100.00	Yes
	8	y	-0.009	-0.009	0.00	No	100.00	Yes
	9	y	-0.009	-0.009	0.00	No	100.00	Yes
	10	y	-0.009	-0.009	0.00	No	100.00	Yes
	11	y	-0.009	-0.009	0.00	No	100.00	Yes
	12	y	-0.009	-0.009	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
	19	y	-0.014	-0.014	0.00	No	100.00	Yes
	20	y	-0.014	-0.014	0.00	No	100.00	Yes
	21	y	-0.014	-0.014	0.00	No	100.00	Yes
	22	y	-0.019	-0.019	0.00	No	100.00	Yes
	23	y	-0.019	-0.019	0.00	No	100.00	Yes
	28	y	-0.019	-0.019	0.00	No	100.00	Yes
	29	y	-0.019	-0.019	0.00	No	100.00	Yes
34	y	-0.019	-0.019	0.00	No	100.00	Yes	
35	y	-0.019	-0.019	0.00	No	100.00	Yes	
52	y	-0.026	-0.026	0.00	No	100.00	Yes	
53	y	-0.026	-0.026	0.00	No	100.00	Yes	
54	y	-0.026	-0.026	0.00	No	100.00	Yes	
58	y	-0.019	-0.019	0.00	No	100.00	Yes	
59	y	-0.019	-0.019	0.00	No	100.00	Yes	
60	y	-0.019	-0.019	0.00	No	100.00	Yes	
70	y	-0.009	-0.009	0.00	No	100.00	Yes	
71	y	-0.009	-0.009	0.00	No	100.00	Yes	
74	y	-0.009	-0.009	0.00	No	100.00	Yes	
75	y	-0.009	-0.009	0.00	No	100.00	Yes	

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	66	y	-0.073	2.00	No
		y	-0.06	7.00	No
		y	-0.06	7.00	No
	67	y	-0.06	2.00	No
		y	-0.06	2.00	No

		y	-0.033	7.00	No
2		y	-0.03	1.00	No
		y	-0.03	5.00	No
3		y	-0.041	1.00	No
		y	-0.041	2.50	No
		y	-0.033	3.50	No
		y	-0.033	4.50	No
4		y	-0.04	1.00	No
		y	-0.04	5.00	No
6		y	-0.03	1.00	No
		y	-0.03	5.00	No
7		y	-0.041	1.00	No
		y	-0.041	2.50	No
		y	-0.033	3.50	No
		y	-0.033	4.50	No
8		y	-0.04	1.00	No
		y	-0.04	5.00	No
10		y	-0.03	1.00	No
		y	-0.03	5.00	No
11		y	-0.041	1.00	No
		y	-0.041	2.50	No
		y	-0.033	3.50	No
		y	-0.033	4.50	No
12		y	-0.04	1.00	No
		y	-0.04	5.00	No
70		y	-0.073	2.00	No
		y	-0.06	7.00	No
		y	-0.06	7.00	No
71		y	-0.06	2.00	No
		y	-0.06	2.00	No
		y	-0.033	7.00	No
74		y	-0.073	2.00	No
		y	-0.06	7.00	No
		y	-0.06	7.00	No
75		y	-0.06	2.00	No
		y	-0.06	2.00	No
		y	-0.033	7.00	No
WO	66	z	-0.077	2.00	No
		z	-0.065	7.00	No
		z	-0.065	7.00	No
67		z	-0.055	2.00	No
		z	-0.049	2.00	No
		z	-0.044	7.00	No
2		z	-0.265	1.00	No
		z	-0.265	5.00	No
3		z	-0.08	1.00	No
		z	-0.08	2.50	No
		z	-0.082	3.50	No
		z	-0.082	4.50	No
4		z	-0.248	1.00	No
		z	-0.248	5.00	No
6		z	-0.166	1.00	No
		z	-0.166	5.00	No
7		z	-0.06	1.00	No
		z	-0.06	2.50	No
		z	-0.05	3.50	No
		z	-0.05	4.50	No
8		z	-0.145	1.00	No
		z	-0.145	5.00	No
10		z	-0.166	1.00	No

		z	-0.166	5.00	No
	11	z	-0.06	1.00	No
		z	-0.06	2.50	No
		z	-0.05	3.50	No
		z	-0.05	4.50	No
	12	z	-0.145	1.00	No
		z	-0.145	5.00	No
	70	z	-0.06	2.00	No
		z	-0.097	7.00	No
	71	z	-0.071	2.00	No
		z	-0.044	7.00	No
	74	z	-0.06	2.00	No
		z	-0.097	7.00	No
	75	z	-0.071	2.00	No
		z	-0.044	7.00	No
W30	66	x	-0.055	2.00	No
		x	-0.107	7.00	No
	67	x	-0.079	2.00	No
		x	-0.044	7.00	No
	2	x	-0.133	1.00	No
		x	-0.133	5.00	No
	3	x	-0.054	1.00	No
		x	-0.054	2.50	No
		x	-0.04	3.50	No
		x	-0.04	4.50	No
	4	x	-0.11	1.00	No
		x	-0.11	5.00	No
	6	x	-0.232	1.00	No
		x	-0.232	5.00	No
	7	x	-0.073	1.00	No
		x	-0.073	2.50	No
		x	-0.071	3.50	No
		x	-0.071	4.50	No
	8	x	-0.214	1.00	No
		x	-0.214	5.00	No
	10	x	-0.232	1.00	No
		x	-0.232	5.00	No
	11	x	-0.073	1.00	No
		x	-0.073	2.50	No
		x	-0.071	3.50	No
		x	-0.071	4.50	No
	12	x	-0.214	1.00	No
		x	-0.214	5.00	No
	70	x	-0.071	2.00	No
		x	-0.076	7.00	No
	71	x	-0.06	2.00	No
		x	-0.044	7.00	No
	74	x	-0.071	2.00	No
		x	-0.076	7.00	No
	75	x	-0.06	2.00	No
		x	-0.044	7.00	No
Di	66	y	-0.058	2.00	No
		y	-0.078	7.00	No
		y	-0.078	7.00	No
	67	y	-0.058	2.00	No
		y	-0.078	2.00	No
		y	-0.05	7.00	No
	2	y	-0.168	1.00	No
		y	-0.168	5.00	No
	3	y	-0.058	1.00	No

	y	-0.058	2.50	No	
	y	-0.055	3.50	No	
	y	-0.055	4.50	No	
4	y	-0.154	1.00	No	
	y	-0.154	5.00	No	
6	y	-0.168	1.00	No	
	y	-0.168	5.00	No	
7	y	-0.058	1.00	No	
	y	-0.058	2.50	No	
	y	-0.055	3.50	No	
	y	-0.055	4.50	No	
8	y	-0.154	1.00	No	
	y	-0.154	5.00	No	
10	y	-0.168	1.00	No	
	y	-0.168	5.00	No	
11	y	-0.058	1.00	No	
	y	-0.058	2.50	No	
	y	-0.055	3.50	No	
	y	-0.055	4.50	No	
12	y	-0.154	1.00	No	
	y	-0.154	5.00	No	
70	y	-0.058	2.00	No	
	y	-0.078	7.00	No	
	y	-0.078	7.00	No	
71	y	-0.058	2.00	No	
	y	-0.078	2.00	No	
	y	-0.05	7.00	No	
74	y	-0.058	2.00	No	
	y	-0.078	7.00	No	
	y	-0.078	7.00	No	
75	y	-0.058	2.00	No	
	y	-0.078	2.00	No	
	y	-0.05	7.00	No	
Wi0	66	z	-0.019	2.00	No
		z	-0.018	7.00	No
		z	-0.018	7.00	No
67	z	-0.014	2.00	No	
	z	-0.013	2.00	No	
	z	-0.011	7.00	No	
2	z	-0.052	1.00	No	
	z	-0.052	5.00	No	
3	z	-0.018	1.00	No	
	z	-0.018	2.50	No	
	z	-0.018	3.50	No	
	z	-0.018	4.50	No	
4	z	-0.049	1.00	No	
	z	-0.049	5.00	No	
6	z	-0.035	1.00	No	
	z	-0.035	5.00	No	
7	z	-0.014	1.00	No	
	z	-0.014	2.50	No	
	z	-0.012	3.50	No	
	z	-0.012	4.50	No	
8	z	-0.031	1.00	No	
	z	-0.031	5.00	No	
10	z	-0.035	1.00	No	
	z	-0.035	5.00	No	
11	z	-0.014	1.00	No	
	z	-0.014	2.50	No	
	z	-0.012	3.50	No	

		z	-0.012	4.50	No
	12	z	-0.031	1.00	No
		z	-0.031	5.00	No
	70	z	-0.016	2.00	No
		z	-0.023	7.00	No
	71	z	-0.018	2.00	No
		z	-0.011	7.00	No
	74	z	-0.016	2.00	No
		z	-0.023	7.00	No
	75	z	-0.018	2.00	No
		z	-0.011	7.00	No
Wi30	66	x	-0.014	2.00	No
		x	-0.025	7.00	No
	67	x	-0.019	2.00	No
		x	-0.011	7.00	No
	2	x	-0.029	1.00	No
		x	-0.029	5.00	No
	3	x	-0.013	1.00	No
		x	-0.013	2.50	No
		x	-0.011	3.50	No
		x	-0.011	4.50	No
	4	x	-0.026	1.00	No
		x	-0.026	5.00	No
	6	x	-0.046	1.00	No
		x	-0.046	5.00	No
	7	x	-0.017	1.00	No
		x	-0.017	2.50	No
		x	-0.016	3.50	No
		x	-0.016	4.50	No
	8	x	-0.043	1.00	No
		x	-0.043	5.00	No
	10	x	-0.046	1.00	No
		x	-0.046	5.00	No
	11	x	-0.017	1.00	No
		x	-0.017	2.50	No
		x	-0.016	3.50	No
		x	-0.016	4.50	No
	12	x	-0.043	1.00	No
		x	-0.043	5.00	No
	70	x	-0.018	2.00	No
		x	-0.019	7.00	No
	71	x	-0.016	2.00	No
		x	-0.011	7.00	No
	74	x	-0.018	2.00	No
		x	-0.019	7.00	No
	75	x	-0.016	2.00	No
		x	-0.011	7.00	No
WLO	66	z	-0.004	2.00	No
		z	-0.004	7.00	No
		z	-0.004	7.00	No
	67	z	-0.003	2.00	No
		z	-0.003	2.00	No
		z	-0.003	7.00	No
	2	z	-0.016	1.00	No
		z	-0.016	5.00	No
	3	z	-0.005	1.00	No
		z	-0.005	2.50	No
		z	-0.005	3.50	No
		z	-0.005	4.50	No
	4	z	-0.015	1.00	No

		z	-0.015	5.00	No
6		z	-0.01	1.00	No
		z	-0.01	5.00	No
7		z	-0.004	1.00	No
		z	-0.004	2.50	No
		z	-0.003	3.50	No
		z	-0.003	4.50	No
8		z	-0.009	1.00	No
		z	-0.009	5.00	No
10		z	-0.01	1.00	No
		z	-0.01	5.00	No
11		z	-0.004	1.00	No
		z	-0.004	2.50	No
		z	-0.003	3.50	No
		z	-0.003	4.50	No
12		z	-0.009	1.00	No
		z	-0.009	5.00	No
70		z	-0.003	2.00	No
		z	-0.006	7.00	No
71		z	-0.004	2.00	No
		z	-0.003	7.00	No
74		z	-0.003	2.00	No
		z	-0.006	7.00	No
75		z	-0.004	2.00	No
		z	-0.003	7.00	No
WL30	66	x	-0.003	2.00	No
		x	-0.006	7.00	No
67		x	-0.005	2.00	No
		x	-0.003	7.00	No
2		x	-0.008	1.00	No
		x	-0.008	5.00	No
3		x	-0.004	1.00	No
		x	-0.004	2.50	No
		x	-0.003	3.50	No
		x	-0.003	4.50	No
4		x	-0.007	1.00	No
		x	-0.007	5.00	No
6		x	-0.014	1.00	No
		x	-0.014	5.00	No
7		x	-0.005	1.00	No
		x	-0.005	2.50	No
		x	-0.005	3.50	No
		x	-0.005	4.50	No
8		x	-0.013	1.00	No
		x	-0.013	5.00	No
10		x	-0.014	1.00	No
		x	-0.014	5.00	No
11		x	-0.005	1.00	No
		x	-0.005	2.50	No
		x	-0.005	3.50	No
		x	-0.005	4.50	No
12		x	-0.013	1.00	No
		x	-0.013	5.00	No
70		x	-0.004	2.00	No
		x	-0.004	7.00	No
71		x	-0.003	2.00	No
		x	-0.003	7.00	No
74		x	-0.004	2.00	No
		x	-0.004	7.00	No
75		x	-0.003	2.00	No

		x	-0.003	7.00	No
LL1	13	y	-0.25	50.00	Yes
LL2	13	y	-0.25	100.00	Yes
LLa1	1	y	-0.50	50.00	Yes
LLa2	2	y	-0.50	50.00	Yes
LLa3	3	y	-0.50	50.00	Yes
LLa4	4	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

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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+W0+1.6LLa1
- LC17=1.2DL+W30+1.6LLa1
- LC18=1.2DL-W0+1.6LLa1
- LC19=1.2DL-W30+1.6LLa1
- LC20=1.2DL+W0+1.6LLa2
- LC21=1.2DL+W30+1.6LLa2
- LC22=1.2DL-W0+1.6LLa2
- LC23=1.2DL-W30+1.6LLa2
- LC24=1.2DL+W0+1.6LLa3
- LC25=1.2DL+W30+1.6LLa3
- LC26=1.2DL-W0+1.6LLa3
- LC27=1.2DL-W30+1.6LLa3
- LC28=1.2DL+W0+1.6LLa4
- LC29=1.2DL+W30+1.6LLa4
- LC30=1.2DL-W0+1.6LLa4
- LC31=1.2DL-W30+1.6LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 5X5X1_4	22	LC11 at 0.00%	0.16	OK	
		23	LC10 at 0.00%	0.48	OK	
		28	LC12 at 0.00%	0.16	OK	
		29	LC12 at 0.00%	0.48	OK	
		34	LC10 at 0.00%	0.16	OK	
		35	LC9 at 0.00%	0.49	OK	
	L 6-1/2x2	58	LC10 at 0.00%	0.27	OK	
		59	LC3 at 0.00%	0.28	OK	
		60	LC12 at 0.00%	0.27	OK	
	PIPE 2x0.154	1	LC10 at 54.17%	0.42	OK	
		2	LC1 at 54.17%	0.41	OK	
		3	LC1 at 54.17%	0.40	OK	
		4	LC12 at 54.17%	0.44	OK	
		5	LC9 at 54.17%	0.43	OK	
		6	LC4 at 54.17%	0.39	OK	

7	LC4 at 54.17%	0.37	OK
8	LC2 at 54.17%	0.37	OK
9	LC12 at 54.17%	0.33	OK
10	LC2 at 54.17%	0.37	OK
11	LC10 at 54.17%	0.36	OK
12	LC9 at 54.17%	0.44	OK
13	LC12 at 35.71%	0.28	With warnings
14	LC9 at 35.71%	0.28	With warnings
15	LC10 at 35.71%	0.28	With warnings
16	LC1 at 46.88%	0.03	OK
17	LC3 at 46.88%	0.05	OK
18	LC4 at 46.88%	0.05	OK
66	LC3 at 50.00%	0.20	OK
67	LC3 at 46.88%	0.21	OK
70	LC1 at 50.00%	0.23	OK
71	LC1 at 46.88%	0.22	OK
74	LC1 at 50.00%	0.23	OK
75	LC1 at 46.88%	0.22	OK

PIPE 4x0.237

19	LC3 at 50.00%	0.36	OK
20	LC4 at 49.11%	0.38	OK
21	LC2 at 50.00%	0.39	OK

PL 10x1/2

52	LC3 at 0.00%	0.15	OK
53	LC3 at 0.00%	0.13	OK
54	LC4 at 0.00%	0.17	OK

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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
2	0.00	0.00	0.50	0
15	0.433	0.00	-0.25	0
28	-0.433	0.00	-0.25	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
2	1	1	1	1	1	1
15	1	1	1	1	1	1
28	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	Ig factor
66	254	256		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
67	255	257		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
1	275	272		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
2	224	236		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
3	223	235		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
4	222	234		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
5	277	274		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
6	232	244		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
7	231	243		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
8	230	242		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
9	276	273		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
10	228	240		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
11	227	239		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
12	226	238		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
13	66	65		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
14	70	69		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
15	68	67		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
16	73	74		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
17	77	78		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
18	81	82		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
19	6	5		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
20	19	18		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
21	32	31		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
22	3	4		HSS_SQR 5X5X1_4	A500 GrB rectangular	0.00	0.00	0.00
23	2	3		HSS_SQR 5X5X1_4	A500 GrB rectangular	0.00	0.00	0.00
28	16	17		HSS_SQR 5X5X1_4	A500 GrB rectangular	0.00	0.00	0.00
29	15	16		HSS_SQR 5X5X1_4	A500 GrB rectangular	0.00	0.00	0.00
34	29	30		HSS_SQR 5X5X1_4	A500 GrB rectangular	0.00	0.00	0.00
35	28	29		HSS_SQR 5X5X1_4	A500 GrB rectangular	0.00	0.00	0.00
52	6	31		PL 10x1/2	A36	0.00	0.00	0.00
53	5	19		PL 10x1/2	A36	0.00	0.00	0.00
54	18	32		PL 10x1/2	A36	0.00	0.00	0.00
58	216	215		L 6-1/2x2	A36	0.00	0.00	0.00
59	218	217		L 6-1/2x2	A36	0.00	0.00	0.00
60	220	219		L 6-1/2x2	A36	0.00	0.00	0.00
70	261	263		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
71	262	264		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
74	268	270		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
75	269	271		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
17	0.00	2	-0.50	0.00	-0.866
18	0.00	2	-0.50	0.00	0.866
58	180.00	0	0.00	0.00	0.00
59	180.00	0	0.00	0.00	0.00
60	180.00	0	0.00	0.00	0.00
70	0.00	2	-0.50	0.00	-0.866
71	0.00	2	-0.50	0.00	-0.866
74	0.00	2	-0.50	0.00	0.866
75	0.00	2	-0.50	0.00	0.866

EXHIBIT 5



Radio Frequency Exposure Analysis Report

April 1, 2022

Centerline on behalf of AT&T
Centerline Communications Project Number: 566556

AT&T Site Name: WEST HARTFORD-ELMWOOD
Site Number: CT5259
FA#: 10071358
USID: 25914

Site Address: 1030 NEW BRITAIN AVENUE, WEST HARTFORD, CT
06110

Site Compliance Summary

AT&T Compliance Status:	Compliant
Cumulative Calculated Power Density (Ground Level):	0.74905 $\mu\text{W}/\text{cm}^2$
Cumulative General Population % MPE (Ground Level):	0.08133%



April 1, 2022

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

RF Exposure Analysis for Site: **WEST HARTFORD-ELMWOOD**

Centerline Communications, LLC (“Centerline”) was contracted to analyze the proposed AT&T facility at **1030 NEW BRITAIN AVENUE, WEST HARTFORD, CT 06110** for the purpose of determining whether the predictive exposure from the proposed facility is within specified federal limits.

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

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

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

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



Calculation Methodology

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

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



Data & Results

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

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

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



Maximum Calculated Cumulative Power Density (Location: approximately 67' southeast of site)

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/Channel (watts)	ERP (watts)	Calculated Power Density ($\mu\text{W}/\text{cm}^2$)	General Population MPE Limit ($\mu\text{W}/\text{cm}^2$)	General Population % MPE
AT&T A 1	QUINTEL QD6616-7 V1	700	11.97	180.00	4.00	30.00	1889.26	0.00001	466.67	0.00000
AT&T A 1	QUINTEL QD6616-7 V1	700	11.93	180.00	4.00	30.00	1871.85	0.00001	466.67	0.00000
AT&T A 1	QUINTEL QD6616-7 V1	1900	15.12	180.00	4.00	30.00	3896.65	0.00000	1000.00	0.00000
AT&T A 1	QUINTEL QD6616-7 V1	2100	15.62	180.00	4.00	30.00	4381.08	0.00000	1000.00	0.00000
AT&T A 2	ERICSSON SON_AIR6449	3400	11.85	182.00	1.00	54.20	829.85	0.00000	1000.00	0.00000
AT&T A 3	ERICSSON SON_AIR6419	3400	12.45	182.00	1.00	54.20	952.79	0.00004	1000.00	0.00000
AT&T A 3	ERICSSON SON_AIR6419	3400	23.55	178.00	1.00	108.40	24548.74	0.00011	1000.00	0.00001
AT&T A 4	CCI DMP65R-BU6D	850	11.45	180.00	4.00	30.00	1675.64	0.00001	566.67	0.00000
AT&T A 4	CCI DMP65R-BU6D	700	11.75	180.00	2.00	30.00	897.74	0.00000	466.67	0.00000
AT&T A 4	CCI DMP65R-BU6D	2300	14.95	180.00	4.00	18.00	2250.78	0.00000	1000.00	0.00000
AT&T B 5	QUINTEL QD6616-7 V1	700	11.97	180.00	4.00	30.00	1889.26	0.00011	466.67	0.00002
AT&T B 5	QUINTEL QD6616-7 V1	700	11.93	180.00	4.00	30.00	1871.85	0.00012	466.67	0.00003
AT&T B 5	QUINTEL QD6616-7 V1	1900	15.12	180.00	4.00	30.00	3896.65	0.00007	1000.00	0.00001
AT&T B 5	QUINTEL QD6616-7 V1	2100	15.62	180.00	4.00	30.00	4381.08	0.00004	1000.00	0.00000
AT&T B 6	ERICSSON SON_AIR6449	3400	11.85	182.00	1.00	54.20	829.85	0.00003	1000.00	0.00000
AT&T B 7	ERICSSON SON_AIR6419	3400	12.45	182.00	1.00	54.20	952.79	0.00006	1000.00	0.00001
AT&T B 7	ERICSSON SON_AIR6419	3400	23.55	178.00	1.00	108.40	24548.74	0.00184	1000.00	0.00018
AT&T B 8	CCI DMP65R-BU6D	850	11.45	180.00	4.00	30.00	1675.64	0.00001	566.67	0.00000
AT&T B 8	CCI DMP65R-BU6D	700	11.75	180.00	2.00	30.00	897.74	0.00003	466.67	0.00001
AT&T B 8	CCI DMP65R-BU6D	2300	14.95	180.00	4.00	18.00	2250.78	0.00002	1000.00	0.00000
AT&T C 9	QUINTEL QD6616-7 V1	700	11.97	180.00	4.00	30.00	1889.26	0.02752	466.67	0.00590
AT&T C 9	QUINTEL QD6616-7 V1	700	11.93	180.00	4.00	30.00	1871.85	0.02784	466.67	0.00597
AT&T C 9	QUINTEL QD6616-7 V1	1900	15.12	180.00	4.00	30.00	3896.65	0.03126	1000.00	0.00313
AT&T C 9	QUINTEL QD6616-7 V1	2100	15.62	180.00	4.00	30.00	4381.08	0.03068	1000.00	0.00307
AT&T C 10	ERICSSON SON_AIR6449	3700	11.85	182.00	1.00	54.20	829.85	0.08718	1000.00	0.00872
AT&T C 11	ERICSSON SON_AIR6419	3400	12.45	182.00	1.00	54.20	952.79	0.08719	1000.00	0.00872
AT&T C 11	ERICSSON SON_AIR6419	3400	23.55	178.00	1.00	108.40	24548.74	0.45376	1000.00	0.04538
AT&T C 12	CCI DMP65R-BU6D	850	11.45	180.00	4.00	30.00	1675.64	0.00041	566.67	0.00007
AT&T C 12	CCI DMP65R-BU6D	700	11.75	180.00	2.00	30.00	897.74	0.00034	466.67	0.00007
AT&T C 12	CCI DMP65R-BU6D	2300	14.95	180.00	4.00	18.00	2250.78	0.00037	1000.00	0.00004
Unknown A 13	GENERIC PANEL 6FT	850	12.62	150.00	1.00	60.00	1096.86	0.00000	566.67	0.00000
Unknown A 14	GENERIC PANEL 6FT	850	12.62	150.00	1.00	60.00	1096.86	0.00000	566.67	0.00000
Unknown B 15	GENERIC PANEL 6FT	850	12.62	150.00	1.00	60.00	1096.86	0.00000	566.67	0.00000
Unknown B 16	GENERIC PANEL 6FT	850	12.62	150.00	1.00	60.00	1096.86	0.00000	566.67	0.00000



Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density ($\mu\text{W}/\text{cm}^2$)	General Population MPE Limit ($\mu\text{W}/\text{cm}^2$)	General Population % MPE
Unknown C 17	GENERIC PANEL 6FT	850	12.62	150.00	1.00	60.00	1096.86	0.00000	566.67	0.00000
Unknown C 18	GENERIC PANEL 6FT	850	12.62	150.00	1.00	60.00	1096.86	0.00000	566.67	0.00000
							Cumulative Power Density:	0.74905 $\mu\text{W}/\text{cm}^2$	Cumulative % MPE:	0.08133%



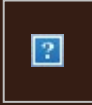
Summary

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

Katrina Styx
RF EME Technical Writer
Centerline Communications, LLC

EXHIBIT 6

From: [UPS](#)
To: [Evan Renwick](#)
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030339036288
Date: Monday, May 16, 2022 9:34:21 AM



Hello, your package has been delivered.

Delivery Date: Monday, 05/16/2022

Delivery Time: 9:23 AM

Left At: MAIL ROOM

Signed by: RICHARDI

CENTERLINE SITE ACQUISITION

Tracking Number:	1Z9Y45030339036288
Ship To:	OFFICE OF THE MAYOR 50 SOUTH MAIN STREET ROOM 313 WEST HARTFORD, CT 061072485 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CT5259- CSC MAYOR

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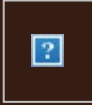
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To: [Evan Renwick](#)
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030307365661
Date: Monday, May 16, 2022 9:34:18 AM



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Delivery Date: Monday, 05/16/2022

Delivery Time: 9:23 AM

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Signed by: RICHARDI

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Tracking Number:	1Z9Y45030307365661
Ship To:	PLANNING & ZONING DEPARTMENT 50 SOUTH MAIN STREET ROOM 214 WEST HARTFORD, CT 061072485 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CT5259- CSC TOWN PLANNER

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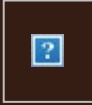
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To: [Evan Renwick](#)
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030300832650
Date: Monday, May 16, 2022 9:34:18 AM



Hello, your package has been delivered.

Delivery Date: Monday, 05/16/2022

Delivery Time: 9:23 AM

Left At: MAIL ROOM

Signed by: RICHARDI

CENTERLINE SITE ACQUISITION

Tracking Number:	1Z9Y45030300832650
Ship To:	PLANNING & ZONING DEPARTMENT 50 SOUTH MAIN STREET ROOM 214 WEST HARTFORD, CT 061072485 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CT5259-CSC ZEO

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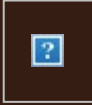
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To: [Evan Renwick](#)
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Date: Monday, May 16, 2022 12:51:12 PM



Hello, your package has been delivered.

Delivery Date: Monday, 05/16/2022

Delivery Time: 12:42 PM

Left At: OFFICE

Signed by: JACKIE

CENTERLINE SITE ACQUISITION

Tracking Number:	1Z9Y45030326219891
Ship To:	TEN THIRTY TOWER COMPANY 1030 NEW BRITAIN AVENUE WEST HARTFORD, CT 061102261 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CT5259-CSC TEN THIRTY TOWER CO.

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