

May 19, 2022

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

Regarding: Notice of Exempt Modification – AT&T Site CT3438 / FA# 10578403
Address: 100 Sunset Ridge, East Hartford, CT 06108

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC (“AT&T”) currently maintains a wireless telecommunications facility on an existing +/- 160’ Self Support Tower at the above-referenced address, latitude 41.7719400, longitude -72.5903500. Said Self Support Tower is owned by the Town of East Hartford.

AT&T desires to modify its existing telecommunications facility by swapping six (6) antennas, adding three (3) antennas, removing three (3) remote radio units (RRUS), and adding 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 110 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 Michael Walsh, Mayor of the Town of East Hartford, as elected official, Wilma Deleon, Zoning Enforcement Officer, Jeffrey Cormier, Town Planner of the Town of East Hartford and the Town of East Hartford as tower operator/property owner. We reached out to both the Building and Zoning Departments for the Town of East 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 17, 2022, and prepared by Hudson Design Group, LLC, 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 Michael Walsh, Mayor, Town of East Hartford, as elected official
Wilma Deleon, Zoning Enforcement Officer, Town of East Hartford
Jeffrey Cormier, Town Planner, Town of East Hartford
Town of East Hartford, tower operator/property owner.

EXHIBIT 1

PROJECT INFORMATION

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

- NEW AT&T ANTENNAS: QD8616-7 @ POS 2 (TYP. OF 1 PER SECTORS, TOTAL OF 3).
- PROPOSED AT&T ANTENNAS AIR 6419 B77G STACKED @ POS 1 (TYP. 1PER SECTOR, TOTAL OF 3).
- PROPOSED AT&T ANTENNAS AIR 6449 B77D STACKED @ POS 1 (TYP. 1PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNAS: DMP65R-BU8DA @ POS 4 (TYP. OF 1 PER SECTORS, TOTAL OF 3).
- NEW AT&T (3) 6 AWG DC TRUNKS.
- EXISTING AT&T SURGE: DC9-48-60-24-8C-EV (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRU: 4478 B14 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRU: 8843 B2/B66A (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRU: RRUS-E2 B29 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRU: 4449 B5/B12 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRU: RRUS-32 B30 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T (6) Y-CABLES (FOR DUAL BAND RADIOS)

ITEMS TO BE MOUNTED IN EQUIPMENT LOCATION:

- INSTALL (1) NEW DC12.
 - INSTALL (3) NEW RECTIFIERS IN EXISTING POWER PLANT (TOTAL OF 10)
 - ADD 6648+IDLE XCEDE CABLE.
- FINAL: 1x6601, 2x6630, 1xXMU03 +IDLe, 1x6648+IDLE XCEDE.

ITEMS TO BE REMOVED:

- DECOMMISSION EXISTING AT&T ANTENNA: 800-10799 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- DECOMMISSION EXISTING AT&T ANTENNA: OPA65R-BU8DA (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- DECOMMISSION EXISTING AT&T RRU: RRUS-4415 B25 (TYP. OF 1 PER SECTOR, TOTAL OF 3).

ITEMS TO REMAIN:

- (3) ANTENNAS, (15) RRU'S, (3) DC9, (6) DC POWER & (3) FIBER RUNS.

SITE ADDRESS: 100 SUNSET RIDGE
EAST HARTFORD, CT 06108

LATITUDE: 41.7719722° N, 41° 46' 19.1" N

LONGITUDE: 72.5903333° W, 72° 35' 25.2" W

TYPE OF SITE: SELF SUPPORT TOWER / INDOOR EQUIPMENT

TOWER HEIGHT: 160'-0"±

RAD CENTER: 110'-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 LAYOUT PLANS & ELEVATION	0
A-3	DETAILS	0
G-1	GROUNDING DETAILS	0
RF-1	RF PLUMBING DIAGRAM	0

VICINITY MAP

DIRECTIONS TO SITE:
HEAD SOUTHEAST TOWARD CAPITAL BLVD, TURN LEFT ONTO CAPITAL BLVD, USE THE LEFT LANE TO TURN LEFT ONTO STATE HWY 411, TURN LEFT TO MERGE WITH I-91 N, MERGE WITH I-91 N, USE THE LEFT LANE TO TAKE EXIT 29 FOR U.S.5 N/CONNECTICUT 15 N/I-84 E TOWARD E HARTFORD/BOSTON, MERGE WITH US-5 N, CONTINUE ONTO CT-15 N, TAKE EXIT 91 FOR SILVER LN, TURN RIGHT ONTO SILVER LN, TURN LEFT ONTO RIDGEWOOD RD, SLIGHT RIGHT ONTO SUNSET RIDGE DR.



SITE NUMBER: CT3438

SITE NAME: EAST HARTFORD SUNSET RIDGE

FA CODE: 10578403

PACE ID: MRCTB051470, MRCTB052282, MRCTB057738, MRCTB057742

PROJECT: 5G NR 1SR CBAND, 5G NR RADIO, 2022 UPGRADE

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

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: CT3438
SITE NAME: EAST HARTFORD SUNSET RIDGE
100 SUNSET RIDGE EAST HARTFORD, CT 06108 HARTFORD COUNTY

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

Professional Engineer Seal for Daniel P. Hamill, State of Connecticut, License No. 22129

NO.	DATE	REVISIONS	BY	CHK	APP
0	05/12/22	ISSUED FOR PERMITTING	ME	AT	DPA
A	03/10/22	ISSUED FOR REVIEW	SA	ME	ME

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

AT&T
TITLE SHEET
5G NR 1SR CBAND, 5G NR RADIO

SITE NUMBER	DRAWING NUMBER	REV
CT3438	T-1	0

ISSUED FOR PERMITTING

GROUNDING NOTES

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

GENERAL NOTES

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

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

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

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

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

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

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

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

ABBREVIATIONS

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

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

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

SITE NUMBER: CT3438
SITE NAME: EAST HARTFORD SUNSET RIDGE

100 SUNSET RIDGE
EAST HARTFORD, CT 06108
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP
0	05/12/22	ISSUED FOR PERMITTING	AS	AT	DPA
A	03/10/22	ISSUED FOR REVIEW	AS	AT	DPA

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

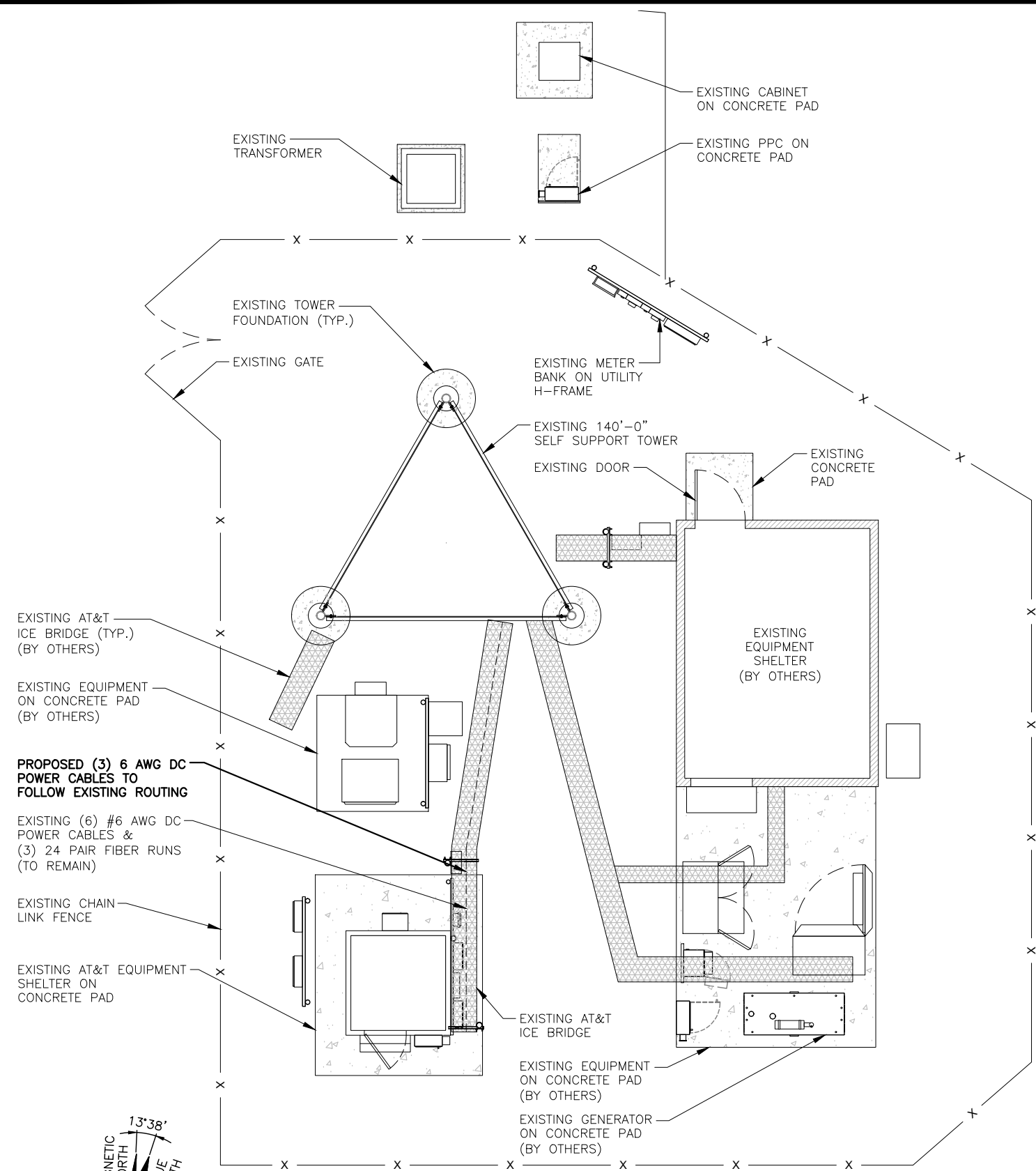
AT&T

GENERAL NOTES
5G NR 1SR CBAND, 5G NR RADIO

SITE NUMBER	DRAWING NUMBER	REV
CT3438	GN-1	0

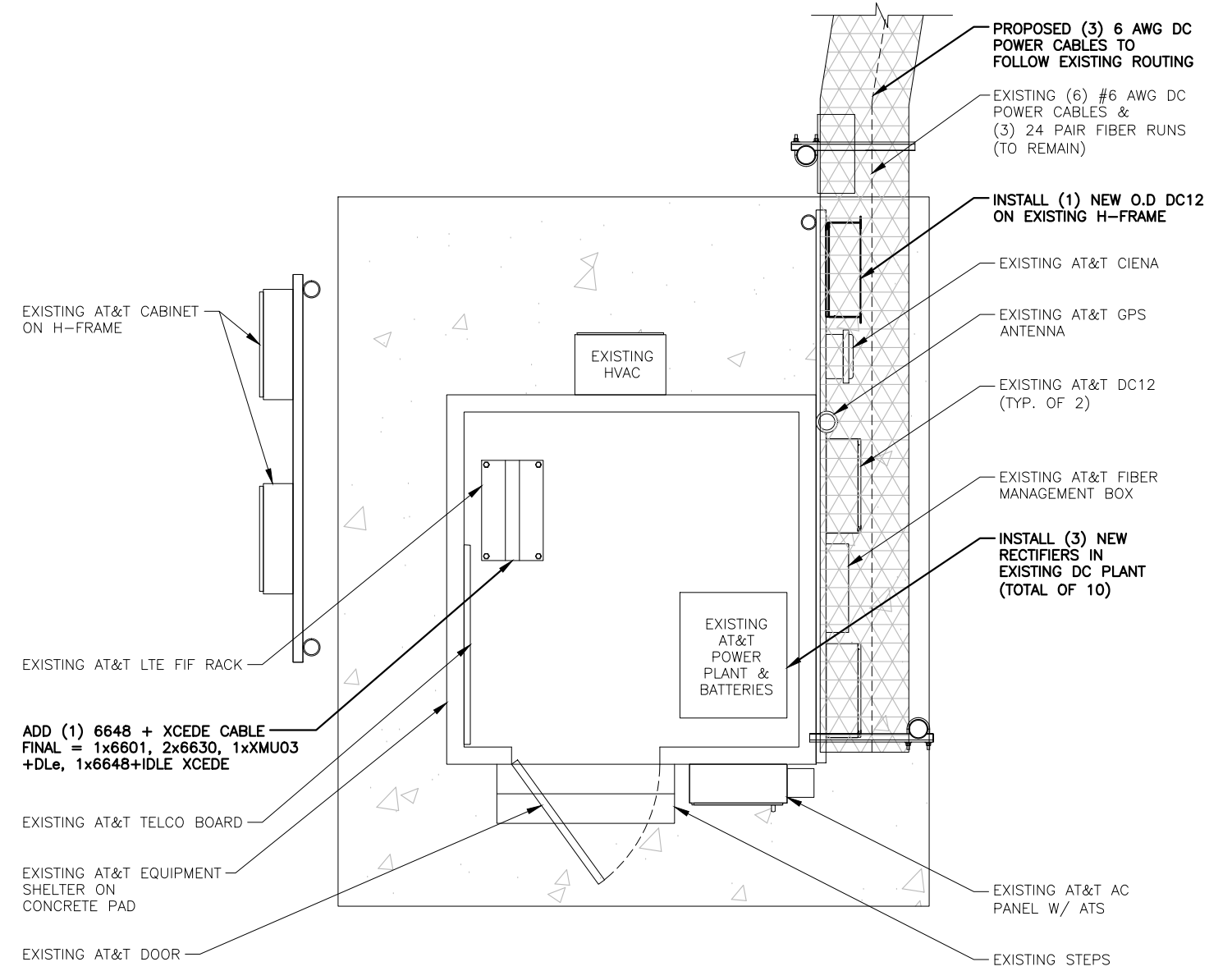
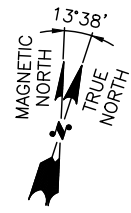
NOTE:
REFER TO THE FINAL/APPROVED
RFDS V2.0 DATED: 03/22/2022 DATA
SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF
THE EXISTING STRUCTURES TO
SUPPORT THE PROPOSED EQUIPMENT
HAS BEEN COMPLETED BY HUDSON
DESIGN GROUP, LLC. DATED:
04/08/2022



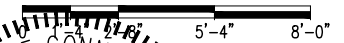
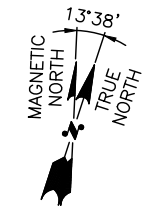
COMPOUND PLAN
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

1
A-1



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

2
A-1



HGD HUDSON Design Group LLC
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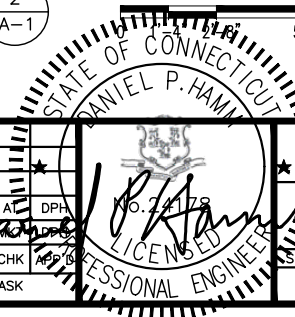
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET, SUITE #301
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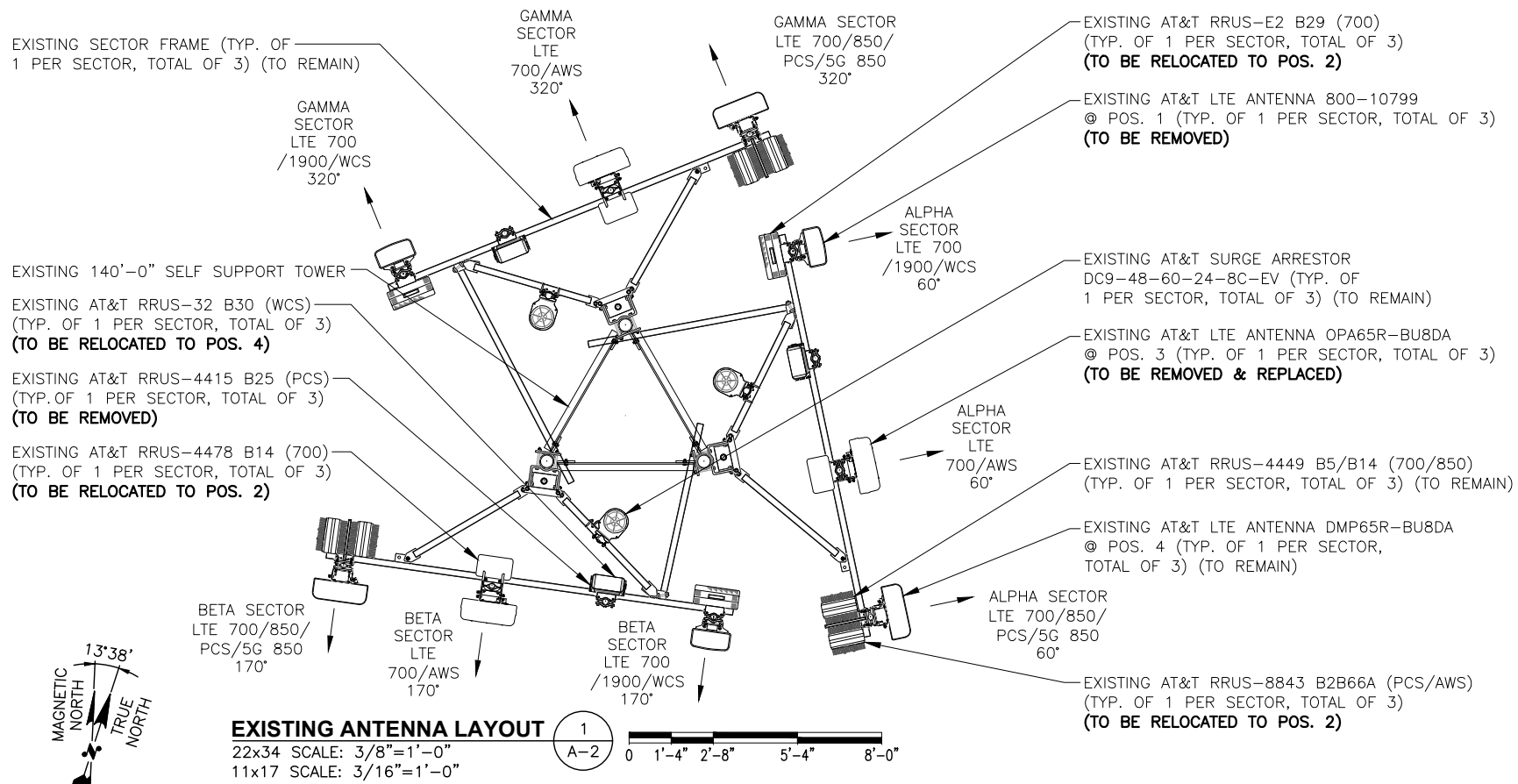
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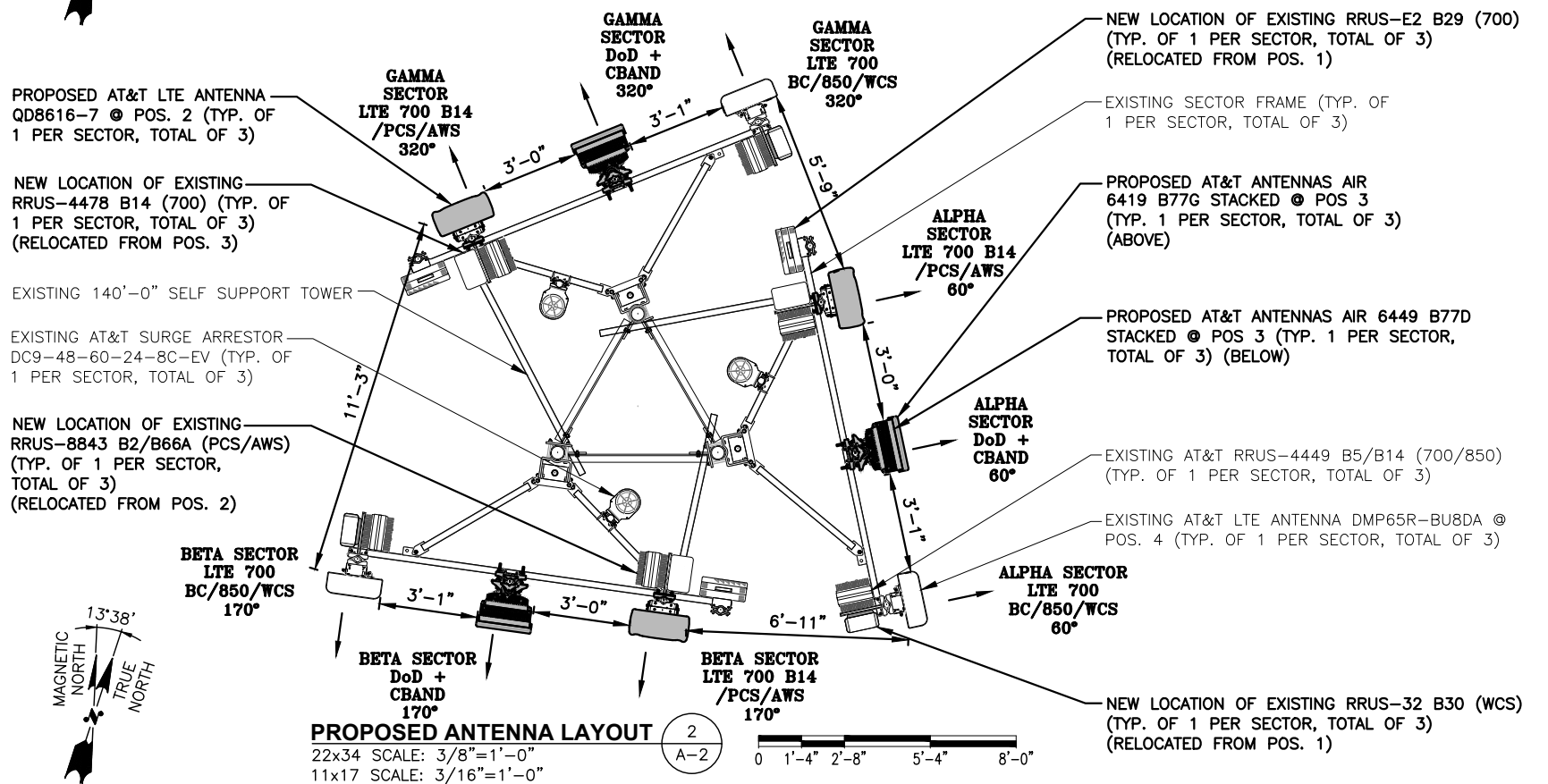
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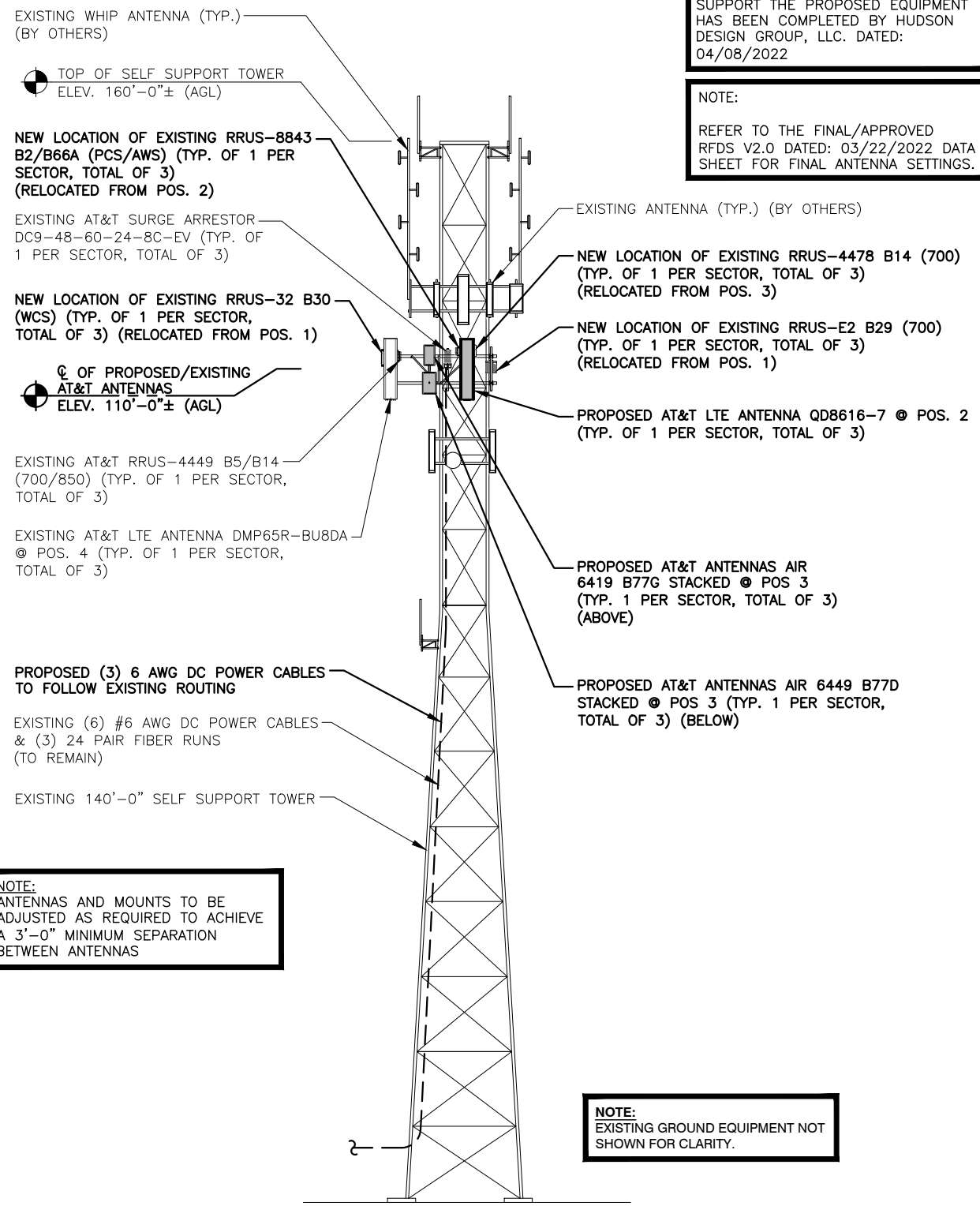
AT&T
COMPOUND & EQUIPMENT PLANS
5G NR 1SR CBAND, 5G NR RADIO
SITE NUMBER: CT3438 DRAWING NUMBER: A-1 REV: 0



EXISTING ANTENNA LAYOUT 1
 22x34 SCALE: 3/8"=1'-0"
 11x17 SCALE: 3/16"=1'-0"



PROPOSED ANTENNA LAYOUT 2
 22x34 SCALE: 3/8"=1'-0"
 11x17 SCALE: 3/16"=1'-0"



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

NOTE:
 AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT HAS BEEN COMPLETED BY HUDSON DESIGN GROUP, LLC. DATED: 04/08/2022

NOTE:
 REFER TO THE FINAL/APPROVED RFDS V2.0 DATED: 03/22/2022 DATA SHEET FOR FINAL ANTENNA SETTINGS.

ELEVATION 3
 22x34 SCALE: 1"=10'
 11x17 SCALE: 1"=20"

HGD HUDSON Design Group LLC
 45 BEECHWOOD DRIVE
 NORTH ANDOVER, MA 01845
 TEL: (978) 557-5553
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at&t
 500 ENTERPRISE DRIVE, SUITE 3A
 ROCKY HILL, CT 06067

STATE OF CONNECTICUT
DANIEL P. HANCOCK
 LICENSED PROFESSIONAL ENGINEER

AT&T					
ANTENNA LAYOUT PLANS & ELEVATION 5G NR 1SR CBAND, 5G NR RADIO					
SITE NUMBER	DRAWING NUMBER				
CT3438	A-2				
NO.	DATE	REVISIONS	BY	CHK	APP
0	05/12/22	ISSUED FOR PERMITTING	ME	AT	DPA
A	03/10/22	ISSUED FOR REVIEW	ME	AT	DPA
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: ASK		REV
				0	

ANTENNA SCHEDULE											
SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA CL HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	-	-	-	-	-	-	-	-	-	-	-
A2	PROPOSED	LTE 700 B14 /PCS/AWS	QD8616-7	96.0"x22.0"x9.6"	110'-0"±	60°	-	(E)(1)RRUS-E2 B29 (700) (E)(1)RRUS-4478 B14 (700) (E)(1)RRUS-8843 B2/B66A (PCS/AWS)	-	(E)(2) #6 AWG DC POWER (E)(1) (Y-CABLE)	(E)(1) RAYCAP DC9-48-60-24-8C-EV
A3	PROPOSED	DoD + CBAND	AIR6419 B77G AIR6449 B77D	31.1"x16.1"x7.3" 30.4"x15.9"x8.1"	110'-0"±	60°	-	-	-	-	-
A4	EXISTING	LTE 700 BC/850/WCS	DMP65R-BU8DA	96.0"x20.7"x7.7"	110'-0"±	60°	-	(E)(1)RRUS-4449 B5/B12 (700/850) (E)(1)RRUS-32 B30 (WCS)	-	(E)(1) (Y-CABLE) (P)(1) 6 AWG DC POWER (E)(1) 24 PAIR FIBER	(E)(1) RAYCAP DC9-48-60-24-8C-EV
B1	-	-	-	-	-	-	-	-	-	-	-
B2	PROPOSED	LTE 700 B14 /PCS/AWS	QD8616-7	96.0"x22.0"x9.6"	110'-0"±	170°	-	(E)(1)RRUS-E2 B29 (700) (E)(1)RRUS-4478 B14 (700) (E)(1)RRUS-8843 B2/B66A (PCS/AWS)	-	(E)(2) #6 AWG DC POWER (E)(1) (Y-CABLE)	(E)(1) RAYCAP DC9-48-60-24-8C-EV
B3	PROPOSED	DoD + CBAND	AIR6419 B77G AIR6449 B77D	31.1"x16.1"x7.3" 30.4"x15.9"x8.1"	110'-0"±	170°	-	-	-	-	-
B4	EXISTING	LTE 700 BC/850/WCS	DMP65R-BU8DA	96.0"x20.7"x7.7"	110'-0"±	170°	-	(E)(1)RRUS-4449 B5/B12 (700/850) (E)(1)RRUS-32 B30 (WCS)	-	(E)(1) (Y-CABLE) (P)(1) 6 AWG DC POWER (E)(1) 24 PAIR FIBER	(E)(1) RAYCAP DC9-48-60-24-8C-EV
C1	-	-	-	-	-	-	-	-	-	-	-
C2	PROPOSED	LTE 700 B14 /PCS/AWS	QD8616-7	96.0"x22.0"x9.6"	110'-0"±	320°	-	(E)(1)RRUS-E2 B29 (700) (E)(1)RRUS-4478 B14 (700) (E)(1)RRUS-8843 B2/B66A (PCS/AWS)	-	(E)(2) #6 AWG DC POWER (E)(1) (Y-CABLE)	(E)(1) RAYCAP DC9-48-60-24-8C-EV
C3	PROPOSED	DoD + CBAND	AIR6419 B77G AIR6449 B77D	31.1"x16.1"x7.3" 30.4"x15.9"x8.1"	110'-0"±	320°	-	-	-	-	-
C4	EXISTING	LTE 700 BC/850/WCS	DMP65R-BU8DA	96.0"x20.7"x7.7"	110'-0"±	320°	-	(E)(1)RRUS-4449 B5/B12 (700/850) (E)(1)RRUS-32 B30 (WCS)	-	(E)(1) (Y-CABLE) (P)(1) 6 AWG DC POWER (E)(1) 24 PAIR FIBER	(E)(1) RAYCAP DC9-48-60-24-8C-EV

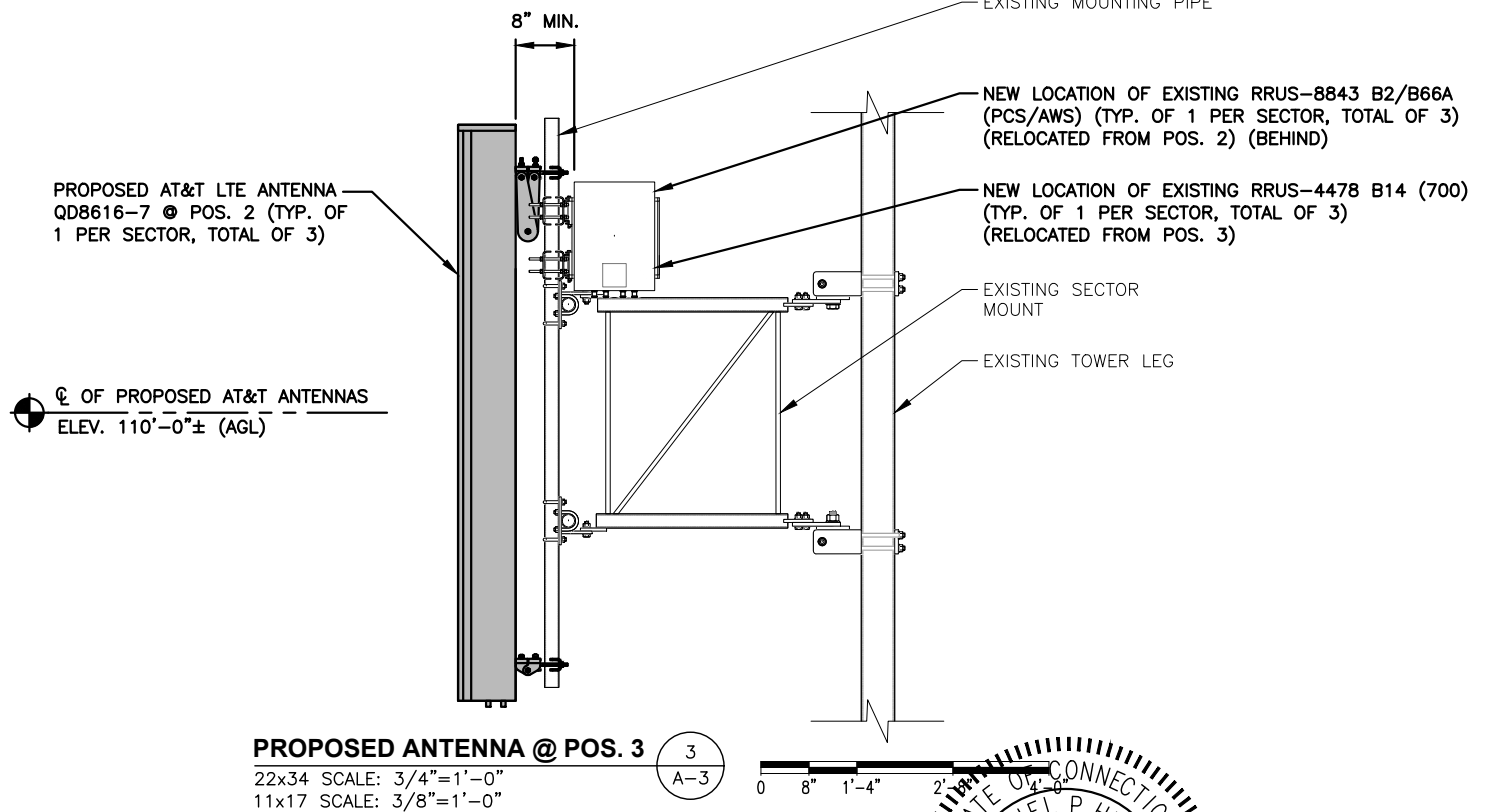
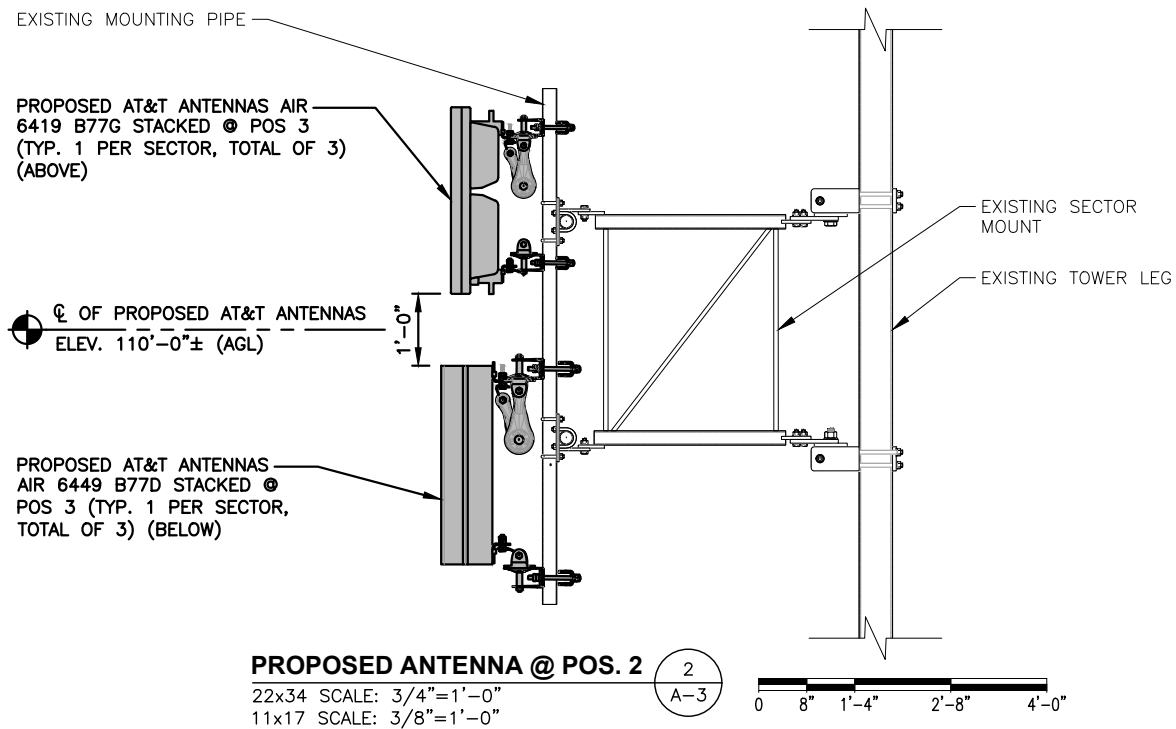
RRU CHART		
QUANTITY	MODEL	SIZE (L x W x D)
E(3)	4478 B14 (700)	18.1"x13.4"x8.3"
E(3)	RRUS-E2 B29 (700)	20.4"x18.5"x7.5"
E(3)	8843 B2/B66A (PCS/AWS)	14.9"x13.2"x10.9"
E(3)	4449 B5/B12 (700)	17.9"x13.2"x10.4"
E(3)	RRUS-32 B30 (WCS)	27.2"x12.1"x7.0"

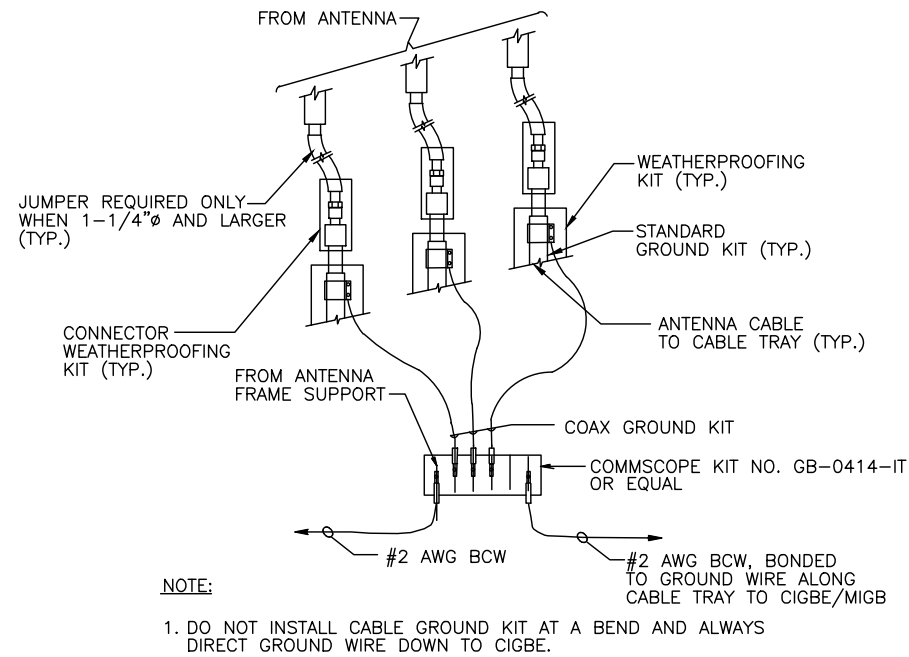
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:
REFER TO THE FINAL/APPROVED
RFDS V2.0 DATED: 03/22/2022 DATA
SHEET FOR FINAL ANTENNA SETTINGS.

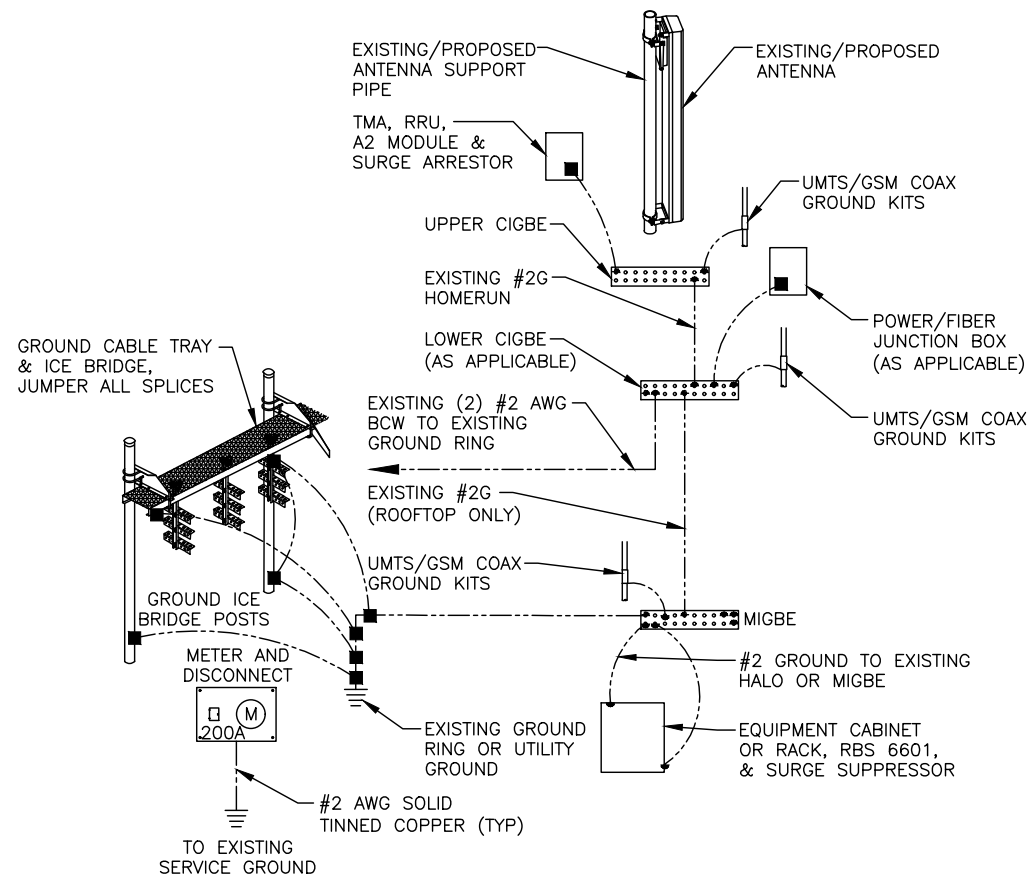
NOTE:
AN ANALYSIS FOR THE CAPACITY OF
THE EXISTING STRUCTURES TO
SUPPORT THE PROPOSED EQUIPMENT
HAS BEEN COMPLETED BY HUDSON
DESIGN GROUP, LLC. DATED:
04/08/2022

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

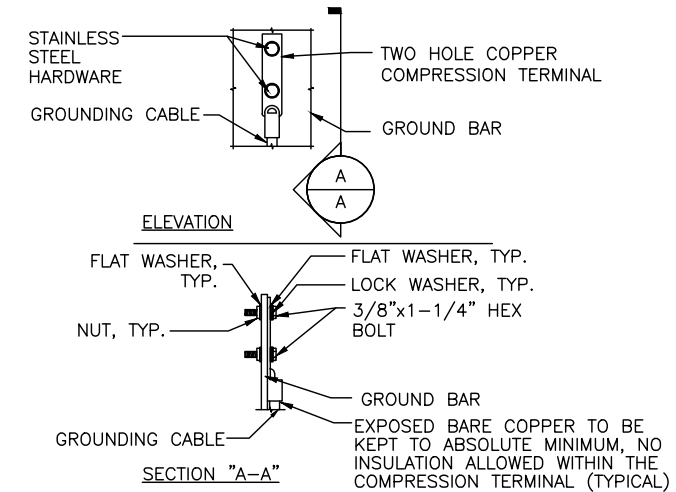




GROUND WIRE TO GROUND BAR CONNECTION DETAIL 1
SCALE: N.T.S. G-1



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



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

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

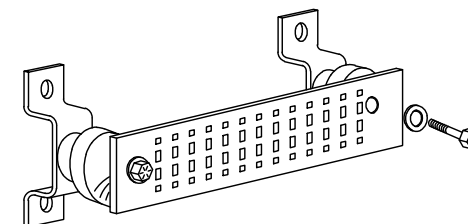
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" - SURGE PRODUCERS

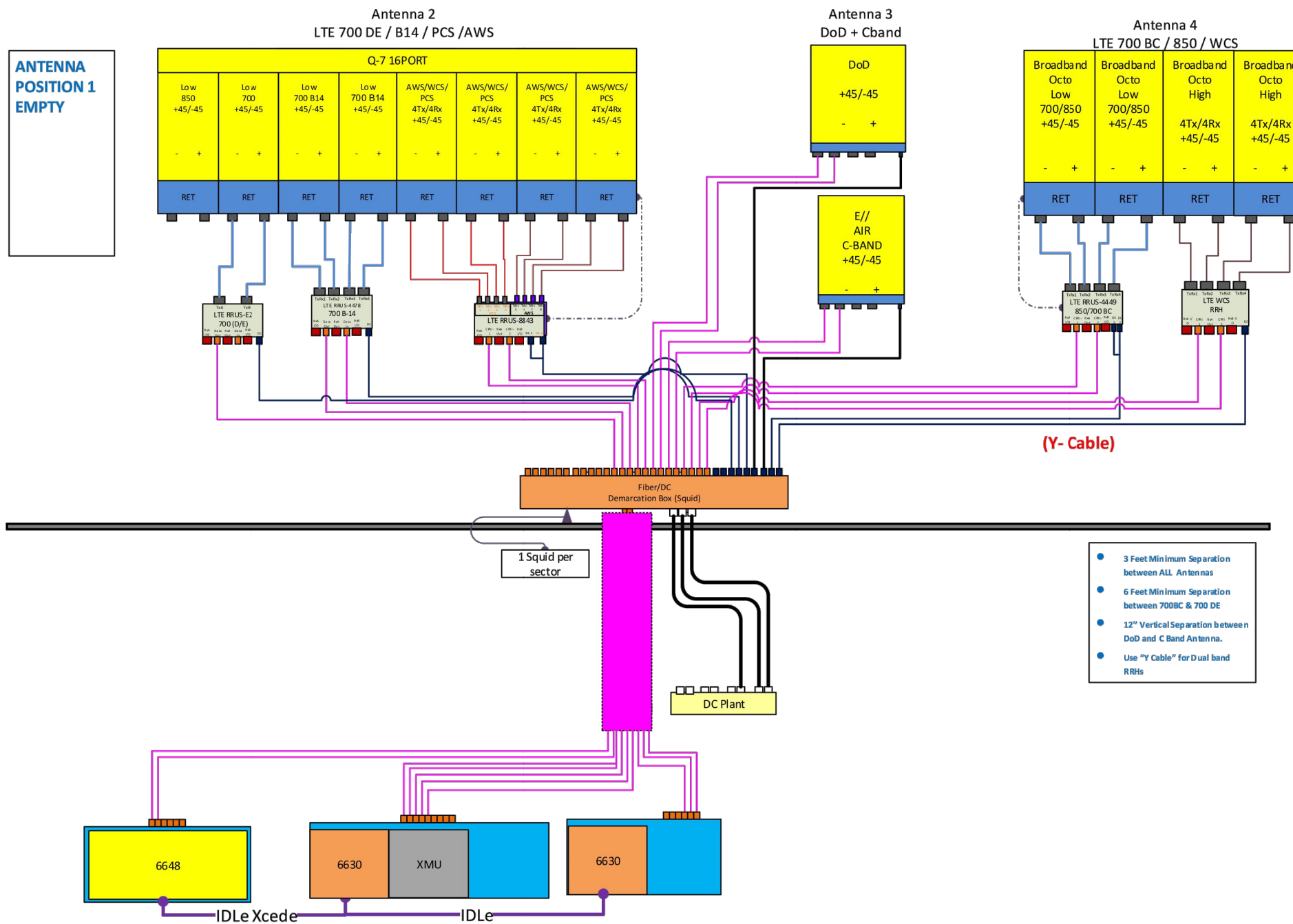
- CABLE ENTRY PORTS (HATCH PLATES) (#2 AWG)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2 AWG)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2 AWG)
- +24V POWER SUPPLY RETURN BAR (#2 AWG)
- 48V POWER SUPPLY RETURN BAR (#2 AWG)
- RECTIFIER FRAMES.

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.



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

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

NOTE:
REFER TO THE FINAL/APPROVED RFDS V2.0 DATED: 03/22/2022 DATA SHEET FOR FINAL ANTENNA SETTINGS.

0	05/12/22	ISSUED FOR PERMITTING	MB	AT	DPH
A	03/10/22	ISSUED FOR REVIEW	ASK	MKT	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: ASK		

AT&T		
RF PLUMBING DIAGRAM		
5G NR 1SR CBAND, 5G NR RADIO		
SITE NUMBER	DRAWING NUMBER	REV
CT3438	RF-1	0

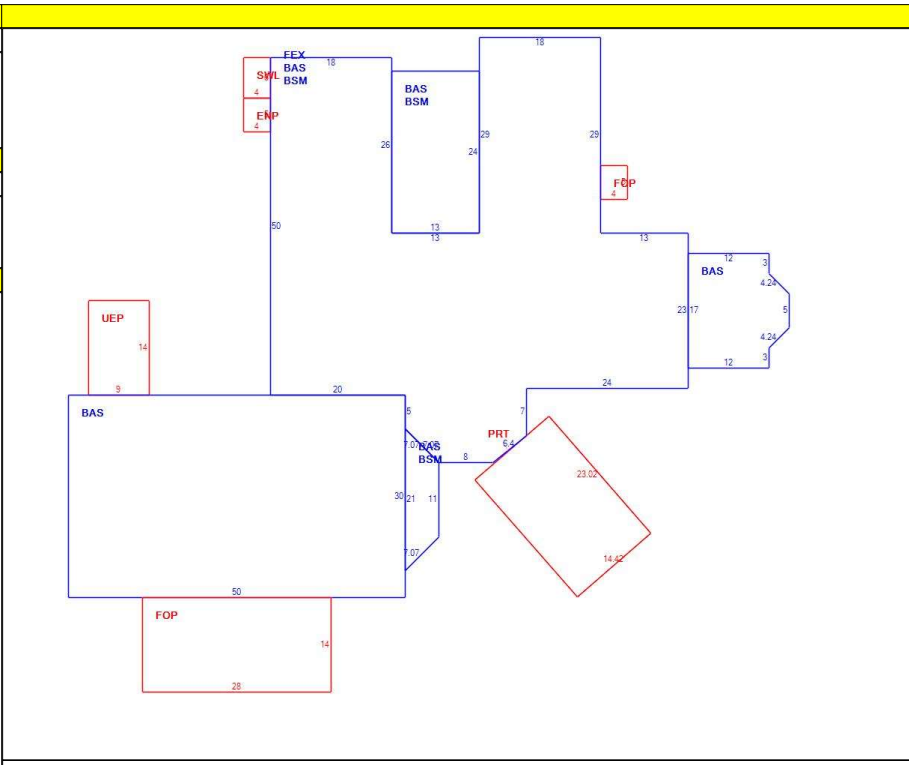
EXHIBIT 2

CURRENT OWNER		TOPO	UTILITIES	STRT / ROAD	LOCATION	CURRENT ASSESSMENT				6043 EAST HARTFORD, CT VISION					
TOWN OF EAST HARTFORD VETERANS MEMORIAL CLUBHSE 740 MAIN STREET EAST HARTFORD CT 06108		A Good	1 All	1 Paved		Description	Code	Appraised	Assessed						
						EX COM LN	21	152,280	106,600						
						EX COM BL	22	1,182,450	827,720						
SUPPLEMENTAL DATA															
		Alt Prcl ID 4840-0100	Homeown		Locn Suffix										
		Census 5111	VCS 0705		Zoning R-2										
		# Units 1	Class Exempt		Res Area 0										
		GIS ID			Non Res A 6168.6										
					Lot Size 1.64										
					Assoc Pid#										
						Total	1,334,730	934,320							
RECORD OF OWNERSHIP		BK-VOL/PAGE	SALE DATE	Q/U	V/I	SALE PRIC	VC	PREVIOUS ASSESSMENTS (HISTORY)							
TOWN OF EAST HARTFORD		0159 0039	01-01-1900	Q	V	0	NC	Year	Code	Assessed	Year	Code	Assessed		
								2021	21	106,600	2019	21	98,700		
									22	827,720		22	738,230		
								Total		934,320	Total		836,930		
								Total		934,320	Total		836,930		
EXEMPTIONS			OTHER ASSESSMENTS					This signature acknowledges a visit by a Data Collector or Assessor							
Year	Code	Description	Amount	Code	Description	Number	Amount	Comm Int							
Total			0.00												
ASSESSING NEIGHBORHOOD															
Nbhd		Nbhd Name		B		Tracing		Batch							
0001															
NOTES															
VETERAN'S MEMORIAL CLUBHOUSE. SKETCH REVISIONS, REVAL 2006.															
BUILDING PERMIT RECORD															
Permit Id	Issue Date	Type	Description	Amount	Insp Date	% Comp	Date Comp	Comments	Date	Id	Type	Is	Cd	Purpost/Result	
B-21-968	10-08-2021	RF	Roofing	133,289		0		Veterans memorial clubhouse.	08-10-2021	MAF	2	1	24	Permit Review	
E-21-663	10-05-2021	PP	Business Pers	6,000		0		WIRE NEW EQUIPMENT FO	01-12-2016	BJR			63	Verified	
E-21-610	08-31-2021	EL	Electric	10,000		100	10-01-2021	INSTALL 1 EQUIPMENT,BATT	03-12-2007	CH			62	Estimated	
E-21-545	08-18-2021	GEN	Generator	18,000		100	10-01-2021	25KE DIESEL GENERATOR							
B-21-626	07-14-2021	BLD	Building	32,500		0		Repl 3 existing antenna 3 new							
B-20-524	06-02-2021	PP	Business Pers	30,000		100	10-01-2021	AT & T ANTENNAS (6) & REM							
E-20-537	08-19-2020	EL	Electric	2,000		100		DISCONNECT AND RECONN							
LAND LINE VALUATION SECTION															
B	Use Code	Description	Zone	Land Type	Land Units	Unit Price	I. Factor	Site Index	Cond.	Nbhd.	Nhbd Adj	Notes	Location Adjustment	Adj Unit Pric	Land Value
1	902	Exempt Commer	R2		1.640 AC	135,000.00	0.68780	C	1.00	2000	1.000			0	152,280
Total Card Land Units					1.6400 AC	Parcel Total Land Area: 1.6400					Total Land Value 152,280				

CONSTRUCTION DETAIL			CONSTRUCTION DETAIL (CONTINUED)		
Element	Cd	Description	Element	Cd	Description
Style:	64	Cultural Facility			
Model	94	Comm/Ind			
Grade	67	1.30			
Stories:	1.0				
Occupancy	1.00				
Exterior Wall 1	21	Stone/Masonry			
Exterior Wall 2					
Roof Structure	08	Drmrs/Ex Gable			
Roof Cover	03	Asphalt			
Interior Wall 1	03	Plaster			
Interior Wall 2					
Interior Floor 1	12	Hardwood			
Interior Floor 2					
Heating Fuel	03	Gas			
Heating Type	06	Steam			
AC Type	01	None			
Finished %	100				
Bldg Use	902	Exempt Commercial			
Total Bedrooms	0				
Total Baths					
Num Fixtures	15				
Total Rooms	14				
Basement %	100				
Heat/AC	5	No A/C			
Frame Type	1	Wood Joist			
Baths/Plumbing	02	Average			
Common Wall	F	None			
Wall Height	0.00				
Perimeter	296.00				
1st Floor Use:					

MIXED USE		
Code	Description	Percentage
902	Exempt Commercial	100
		0
		0

COST / MARKET VALUATION	
RCN	1,399,973
Year Built	1930
Effective Year Built	2002
Depreciation Code	VG
Remodel Rating	
Year Remodeled	
Depreciation %	19
Functional Obsol	
External Obsol	
Trend Factor	1
Condition	
Condition %	
Percent Good	81
RCNLD	1,133,980
Dep % Ovr	
Dep Ovr Comment	
Misc Imp Ovr	
Misc Imp Ovr Comment	
Cost to Cure Ovr	
Cost to Cure Ovr Comment	

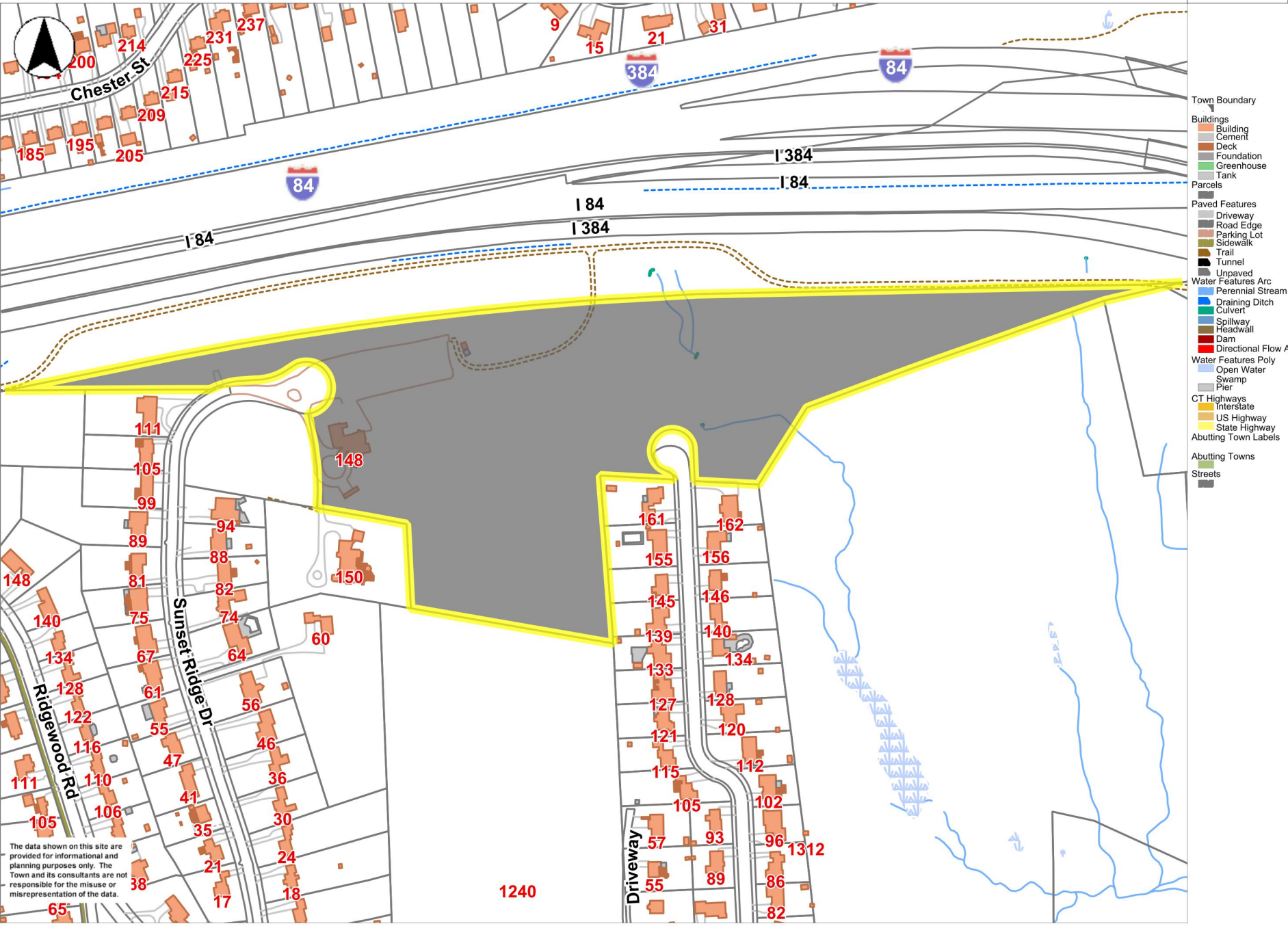


OB - OUTBUILDING & YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B)										
Code	Description	L/B	Units	Unit Price	Yr Blt	Cond. Cd	% Good	Grade	Grade Adj	Appr. Value
FPL	Fireplace	B	1	5000.00	1997		81		0.00	4,050
FBM	Fin Bsmt	B	1,567	35.00	1997		81		0.00	44,420

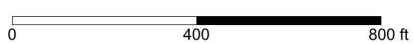
BUILDING SUB-AREA SUMMARY SECTION							
Code	Description	Living Area	Floor Area	Eff Area	Unit Cost	Undeprec Value	
BAS	First Floor	4,732	4,732	4,732	214.23	1,013,722	
BSM	Basement	0	3,004	150	10.70	32,134	
ENP	Enclosed Porch	0	20	8	85.69	1,714	
FEX	Finished 55%	1,437	2,612	1,437	117.86	307,844	
FOP	Open Porch	0	412	82	42.64	17,567	
PRT	Portico	0	332	66	42.59	14,139	
SWL	Stairwell	0	24	10	89.26	2,142	
UEP	Unfin. Enclosed Porch	0	126	50	85.01	10,711	
Ttl Gross Liv / Lease Area		6,169	11,262	6,535		1,399,973	



13740 03/24/2016



The data shown on this site are provided for informational and planning purposes only. The Town and its consultants are not responsible for the misuse or misrepresentation of the data.



Printed on 03/23/2022 at 03:34 PM

EXHIBIT 3

STRUCTURAL ANALYSIS REPORT

For

SITE NUMBER: CT3438

SITE NAME: EAST HARTFORD SUNSET RIDGE

100 Sunset Ridge
East Hartford, CT 06108

Antennas Mounted on the Tower



Prepared for:



Dated: May 17, 2022

Prepared by:



45 Beechwood Drive
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
www.hudsondesigngroupllc.com



HUDSON
Design Group LLC

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the 140' self-supporting tower supporting the proposed AT&T's antennas located at elevation 110' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of AT&T's existing and proposed antennas listed below.

The following documents were used for our reference:

- Tower Structural Analysis prepared by Centerline Communications dated May 3, 2021.
- Tower Mapping Report prepared by Provertic LLC dated May 2, 2022.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing tower **is in conformance** with the ANSI/TIA-222-H Standard for the loading considered under the criteria listed in this report. The tower structure is rated at **74.9 %** - (Legs at Tower Section T7 from EL.60.33' to EL.80.33' Controlling).

FOUNDATION SUMMARY:

Based on our evaluation, we have determined that the existing foundation **is in conformance** with the ANSI/TIA-222-H Standard for the loading considered under the criteria listed in this report.



APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	(1) 20' Lighting Rod	144'	Tower Leg
	(2) 6' Omni Antennas	144'	Side Mount Standoff
	(1) 4' Omni Antenna	141.5'	Side Mount Standoff
	(1) 2' Ø Dish Antenna	133'	Sector Frame
	(2) 8' Omni Antennas	129'	Sector Frame
	(3) AIR6449 B41 Antennas	121'	Sector Frame
	(3) AIR 32 B66A B2A Antennas	121'	Sector Frame
	(3) AIR 21 B2A/B4P Antennas	121'	Sector Frame
	(3) APXVAARR24_43-U-NA20 Antennas	121'	Sector Frame
	(3) 4449 B71+B85 RRH's	121'	Sector Frame
	(3) 4415 B25 RRH's	121'	Sector Frame
	(3) Gen. TMA's	121'	Sector Frame
AT&T	(3) DMP65R-BU8DA Antennas	110'	Sector Frame
AT&T	(3) RRUS-E2 B29 RRH's	110'	Sector Frame
AT&T	(3) B14 4478 RRH's	110'	Sector Frame
AT&T	(3) B2/B66A 8843 RRH's	110'	Sector Frame
AT&T	(3) 4449 B5/B12 RRH's	110'	Sector Frame
AT&T	(3) RRUS 32 B30 RRH's	110'	Sector Frame
AT&T	(3) Squid Surge Arrestors	110'	Sector Frame
AT&T	(3) QD8616-7 Antennas	110'	Sector Frame
AT&T	(3) AIR6419 Antennas	110'	Sector Frame
AT&T	(3) AIR6449 Antennas	110'	Sector Frame
	(3) 1900 RRH's	101.33'	Tower Leg
	(3) RRH2WB0 RRH's	101.33'	Tower Leg
	(1) 1'-6" Ø Dish Antenna	98.75'	Tower Leg
	(3) NNVV-65B-R4 Antennas	98'	Tower Leg
	(3) LLPX310R-V1 Antennas	95.23'	Tower Leg
	(1) 3' Ø Dish Antenna	98'	Tower Leg
	(2) HPD2-4.7NS Dish Antenna	96.5'	Tower Leg
	(6) 800 RRH's	95.66'	Tower Leg
	(1) 6' Whip Antenna	90'	Tower Leg

**Proposed AT&T Appurtenances shown in Bold.*

AT&T EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
AT&T	(6) DC Power Cables	110'	Tower Face
AT&T	(3) Fiber Cables	110'	Tower Face
AT&T	(3) DC Power Cables	110'	Tower Face

**Proposed AT&T Coax Cables shown in Bold.*



ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Legs	74.9 %	60.33 – 80.33	PASS	Controlling
Diagonals	65.4 %	0.33 – 20.33	PASS	
Top Girt	1.0 %	120.33 – 140.33	PASS	

FOUNDATION COMPARISON RESULTS SUMMARY:

	*Design Reactions	Proposed Reactions	Pass/Fail
AXIAL	473.0 kips	42.1 kips	PASS
SHEAR	100.5 kips	38.9 kips	PASS
MOMENT	5314.0 ft-kips	3283.5 ft-kips	PASS

HDG obtained design reactions from Tower Structural Analysis Report prepared by Centerline Communications dated May 3, 2021.



HUDSON
Design Group LLC

DESIGN CRITERIA:

1. EIA/TIA-222-H Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

County: Hartford

Ultimate Wind Speed: 125 mph (3 second gust)

Structural Class: II

Exposure Category: B

Topographic Category: 1

Nominal Ice Thickness: 1.5 inch

2. Approximate height above grade to proposed antennas: 110'

***Calculations and referenced documents are attached.**

ASSUMPTIONS:

1. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
2. The tower and foundation are properly constructed and maintained. 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. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas be mounted on the existing sector frame supported by the tower.

Reference HDG's Latest Construction Drawings for all component and connection requirements (attached).



HUDSON
Design Group LLC



Photo 1: Photo illustrating the Tower with Appurtenances shown.



HUDSON
Design Group LLC

CALCULATIONS

DESIGNED APPURTENANCE LOADING

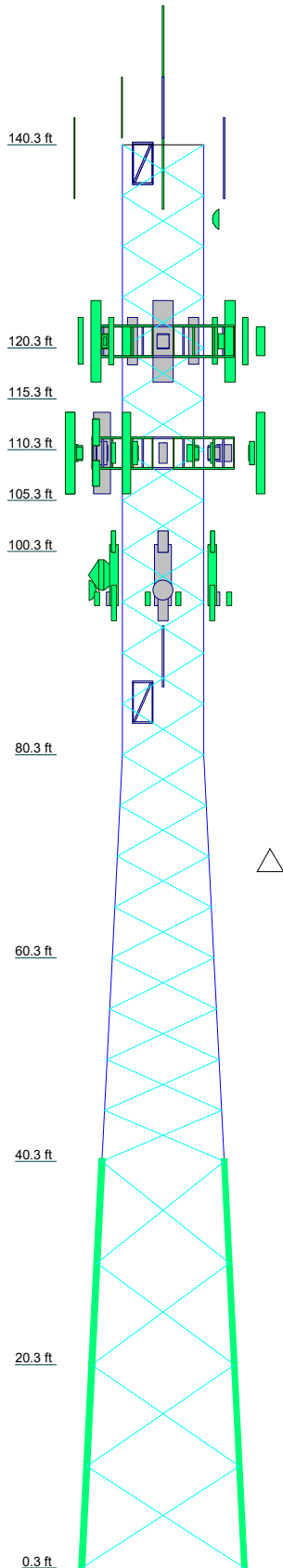
TYPE	ELEVATION	TYPE	ELEVATION
20' Lightning Rod	144	B14 4478 RRH	110
Omni 2"x6'	144	B14 4478 RRH	110
Omni 2"x6'	144	B14 4478 RRH	110
Omni 1"x4'	141.5	B2/B66A 8843 RRH	110
3' Side Mount Standoff	138.5	B2/B66A 8843 RRH	110
3' Side Mount Standoff	138.5	B2/B66A 8843 RRH	110
3' Side Mount Standoff	138.5	4449 B5/B12 RRH	110
2' Ø Dish Antenna w/o Radome	133	4449 B5/B12 RRH	110
Omni 2"x8'	129	4449 B5/B12 RRH	110
Omni 2"x8'	129	RRUS 32 B30 RRH	110
12'-6" Sector Frame	121	RRUS 32 B30 RRH	110
12'-6" Sector Frame	121	RRUS 32 B30 RRH	110
AIR6449 B41 Antenna w/ Mounting Pipe (T-Mobile)	121	Squid Surge Arrestor	110
AIR6449 B41 Antenna w/ Mounting Pipe (T-Mobile)	121	Squid Surge Arrestor	110
AIR6449 B41 Antenna w/ Mounting Pipe (T-Mobile)	121	QD8616-7 Antenna w/ Mounting Pipe	110
AIR6449 B41 Antenna w/ Mounting Pipe (T-Mobile)	121	QD8616-7 Antenna w/ Mounting Pipe	110
AIR 32 B66A B2A Antenna w/ Mounting Pipe	121	QD8616-7 Antenna w/ Mounting Pipe	110
AIR 32 B66A B2A Antenna w/ Mounting Pipe	121	AIR 6419 Antenna w/ Mounting Pipe (ATI)	110
AIR 32 B66A B2A Antenna w/ Mounting Pipe	121	AIR 6419 Antenna w/ Mounting Pipe (ATI)	110
AIR 32 B66A B2A Antenna w/ Mounting Pipe	121	AIR 6419 Antenna w/ Mounting Pipe (ATI)	110
AIR 21 B2A/B4P w/Mounting Pipe	121	AIR 6449 Antenna (ATI)	110
AIR 21 B2A/B4P w/Mounting Pipe	121	AIR 6449 Antenna (ATI)	110
AIR 21 B2A/B4P w/Mounting Pipe	121	AIR 6449 Antenna (ATI)	110
APXVAARR24_43-U-NA20 Antenna w/ Mounting Pipe	121	1900 RRH	101.33
APXVAARR24_43-U-NA20 Antenna w/ Mounting Pipe	121	1900 RRH	101.33
APXVAARR24_43-U-NA20 Antenna w/ Mounting Pipe	121	1900 RRH	101.33
APXVAARR24_43-U-NA20 Antenna w/ Mounting Pipe	121	RRH2WB0 RRH	101.33
APXVAARR24_43-U-NA20 Antenna w/ Mounting Pipe	121	RRH2WB0 RRH	101.33
12'-6" Sector Frame	121	RRH2WB0 RRH	101.33
4449 B71+B85 RRH	121	1'-6" Ø Dish Antenna w/o Radome	98.75
4449 B71+B85 RRH	121	NNVV-65B-R4 Antenna w/ Mounting Pipe	98
4449 B71+B85 RRH	121	NNVV-65B-R4 Antenna w/ Mounting Pipe	98
4415 B25 RRH	121	NNVV-65B-R4 Antenna w/ Mounting Pipe	98
4415 B25 RRH	121	NNVV-65B-R4 Antenna w/ Mounting Pipe	98
4415 B25 RRH	121	NNVV-65B-R4 Antenna w/ Mounting Pipe	98
Gen. TMA	121	3' Ø Dish Antenna w/ Radome	98
Gen. TMA	121	HPD2-4.7NS Dish Antenna	96.5
Gen. TMA	121	HPD2-4.7NS Dish Antenna	96.5
12'-6" Sector Frame	110	(2) 800 RRH	95.66
12'-6" Sector Frame	110	(2) 800 RRH	95.66
12'-6" Sector Frame	110	(2) 800 RRH	95.66
DMP65R-BU8DA Antenna w/ Mounting Pipe	110	(2) 800 RRH	95.66
DMP65R-BU8DA Antenna w/ Mounting Pipe	110	LLPX310R-V1 Antenna w/ Mounting Pipe	95.23
DMP65R-BU8DA Antenna w/ Mounting Pipe	110	LLPX310R-V1 Antenna w/ Mounting Pipe	95.23
DMP65R-BU8DA Antenna w/ Mounting Pipe	110	LLPX310R-V1 Antenna w/ Mounting Pipe	95.23
RRUS-E2 B29	110	LLPX310R-V1 Antenna w/ Mounting Pipe	95.23
RRUS-E2 B29	110	6' Whip	90
RRUS-E2 B29	110	3' Side Mount Standoff	85.5

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L1 3/4x1 3/4x1/4		

MATERIAL STRENGTH

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



Section	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Pirol 105219	Pirol 105218	SR 3 1/4	SR 3	SR 2 3/4	SR 2 3/4	SR 2 1/4	SR 2 1/4	SR 2 1/4	SR 2 1/4
Leg Grade	L3x3x5/16	L2 1/2x2 1/2x5/16	L2 1/2x2 1/2x1/4	L2 1/2x2 1/2x1/4	L2x2x1/4	L2x2x1/4	L2x2x1/4	L2x2x1/4	L2x2x1/4	L1 3/4x1 3/4x1/8
Diagonals	L3x3x5/16	L2 1/2x2 1/2x5/16	L2 1/2x2 1/2x1/4	L2 1/2x2 1/2x1/4	L2x2x1/4	L2x2x1/4	L2x2x1/4	L2x2x1/4	L2x2x1/4	L1 3/4x1 3/4x1/8
Diagonal Grade	L3x3x5/16	L2 1/2x2 1/2x5/16	L2 1/2x2 1/2x1/4	L2 1/2x2 1/2x1/4	L2x2x1/4	L2x2x1/4	L2x2x1/4	L2x2x1/4	L2x2x1/4	L1 3/4x1 3/4x1/8
Top Girts	N.A.	N.A.	A36	A36	A36	A36	A36	A36	A36	L3x3x3/8
Face Width (ft)	16	16	16	16	16	16	16	16	16	16
# Panels @ (ft)	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10	4 @ 10
Weight (lb) 18'00.9	4015.0	3351.8	3137.6	2873.7	2126.5	383.6	383.6	359.4	359.4	1309.1

Hudson Design Group 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job: 140' Self-Support Tower Project: CT3438		
	Client: AT&T Code: TIA-222-H Path: <small>W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\TrxTower\Trx Projects\AT&T\CT3438\CT3438.dwg</small>	Drawn by: ID Date: 05/18/22	App'd: Scale: NTS Dwg No. E-1

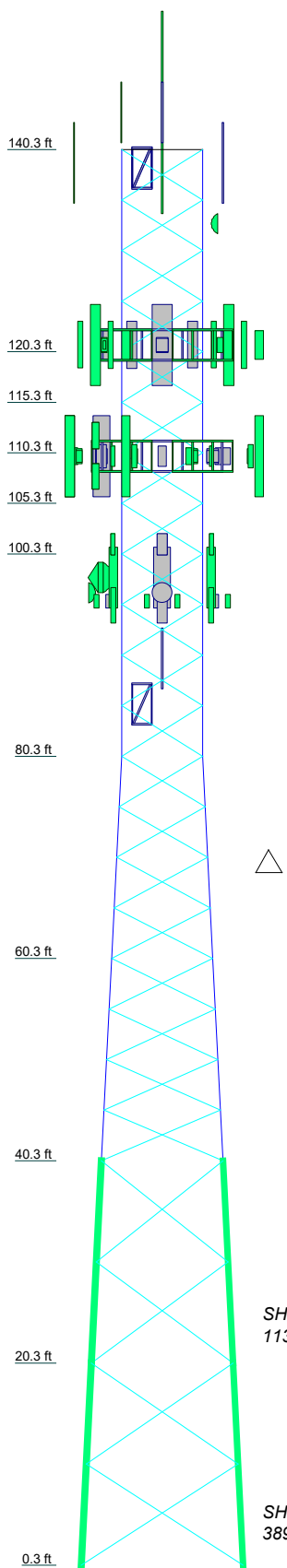
SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L1 3/4x1 3/4x1/4		

TOWER DESIGN NOTES

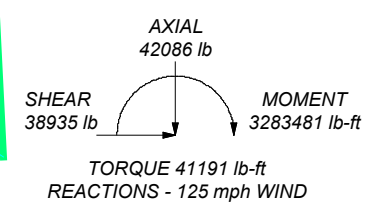
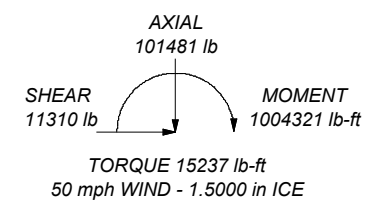
1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 74.9%

Section	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Pirol 105219	Pirol 105218	SR 3 1/4	SR 3	SR 2 3/4	SR 2 3/4	SR 2 1/4	SR 2 1/4	SR 2 1/4	SR 2 1/4
Leg Grade										
Diagonals		L3x3x5/16		L2 1/2x2 1/2x5/16	L2 1/2x2 1/2x1/4	L2x2x1/4	L2x2x1/4	L2x2x1/4	L1 3/4x1 3/4x1/8	L1 3/4x1 3/4x1/8
Diagonal Grade										
Top Girts				N.A.	A36					L3x3x3/8
Face Width (ft)	16	12	10	10	10	10	10	10	10	8
# Panels @ (ft)	4 @ 10	4 @ 10	4 @ 10	4 @ 10	20 @ 5	20 @ 5	20 @ 5	20 @ 5	20 @ 5	20 @ 5
Weight (lb) 18'00.9	4013.0	3351.8	3137.6	2873.7	2126.5	383.6	383.6	359.4	359.4	1309.1



ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
 DOWN: 250989 lb
 SHEAR: 26024 lb
 UPLIFT: -216161 lb
 SHEAR: 23118 lb



Hudson Design Group
 45 Beechwood Drive
 North Andover, MA 01845
 Phone: (978) 557-5553
 FAX: (978) 336-5586

Job: 140' Self-Support Tower		
Project: CT3438		
Client: AT&T	Drawn by: ID	App'd:
Code: TIA-222-H	Date: 05/18/22	Scale: NTS
Path: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\Tower\Tower\Projects\AT&T\CT3438\CT3438.dwg		Dwg No. E-1

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	Project CT3438	Date 11:03:44 05/18/22
	Client AT&T	Designed by ID

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 140.33 ft above the ground line.

The base of the tower is set at an elevation of 0.33 ft above the ground line.

The face width of the tower is 8.00 ft at the top and 16.00 ft at the base.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower base elevation above sea level: 0.33 ft.

Basic wind speed of 125 mph.

Risk Category II.

Exposure Category B.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.00 ft.

Nominal ice thickness of 1.5000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

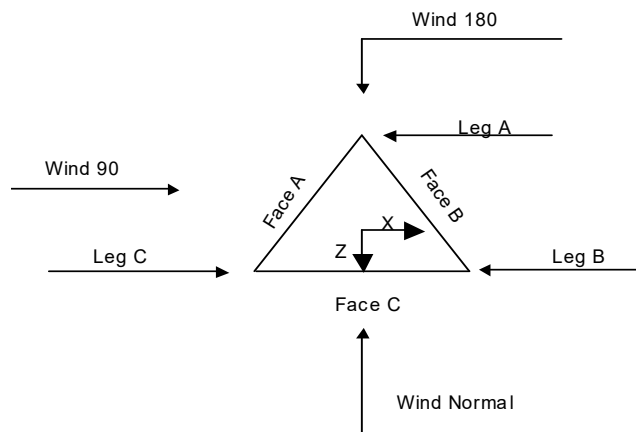
Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

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.



Triangular Tower

tnxTower Hudson Design Group 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job	140' Self-Support Tower	Page	2 of 31
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Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	140.33-120.33			8.00	1	20.00
T2	120.33-115.33			8.00	1	5.00
T3	115.33-110.33			8.00	1	5.00
T4	110.33-105.33			8.00	1	5.00
T5	105.33-100.33			8.00	1	5.00
T6	100.33-80.33			8.00	1	20.00
T7	80.33-60.33			8.00	1	20.00
T8	60.33-40.33			10.00	1	20.00
T9	40.33-20.33			12.00	1	20.00
T10	20.33-0.33			14.00	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
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	140.33-120.33	5.00	X Brace	No	No	0.0000	0.0000
T2	120.33-115.33	5.00	X Brace	No	No	0.0000	0.0000
T3	115.33-110.33	5.00	X Brace	No	No	0.0000	0.0000
T4	110.33-105.33	5.00	X Brace	No	No	0.0000	0.0000
T5	105.33-100.33	5.00	X Brace	No	No	0.0000	0.0000
T6	100.33-80.33	5.00	X Brace	No	No	0.0000	0.0000
T7	80.33-60.33	5.00	X Brace	No	No	0.0000	0.0000
T8	60.33-40.33	5.00	X Brace	No	No	0.0000	0.0000
T9	40.33-20.33	10.00	X Brace	No	No	0.0000	0.0000
T10	20.33-0.33	10.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
<i>ft</i>						
T1 140.33-120.33	Solid Round	2 1/4	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x1/8	A36 (36 ksi)
T2 120.33-115.33	Solid Round	2 1/4	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x1/4	A36 (36 ksi)
T3 115.33-110.33	Solid Round	2 1/4	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x1/4	A36 (36 ksi)
T4 110.33-105.33	Solid Round	2 1/4	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T5 105.33-100.33	Solid Round	2 1/4	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T6 100.33-80.33	Solid Round	2 3/4	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T7 80.33-60.33	Solid Round	3	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)

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Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T8 60.33-40.33	Solid Round	3 1/4	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)
T9 40.33-20.33	Truss Leg	Pirod 105218	A572-50 (50 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T10 20.33-0.33	Truss Leg	Pirod 105219	A572-50 (50 ksi)	Equal Angle	L3x3x5/16	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 140.33-120.33	Equal Angle	L3x3x3/8	A36 (36 ksi)	Flat Bar		A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
T1 140.33-120.33	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2 120.33-115.33	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 115.33-110.33	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 110.33-105.33	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5 105.33-100.33	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T6 100.33-80.33	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T7 80.33-60.33	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T8 60.33-40.33	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T9 40.33-20.33	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T10 20.33-0.33	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Section Geometry (cont'd)

K Factors¹

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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
T4 110.33-105.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 105.33-100.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 100.33-80.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 80.33-60.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 60.33-40.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 40.33-20.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 20.33-0.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	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 140.33-120.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 120.33-115.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 115.33-110.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 110.33-105.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 105.33-100.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 100.33-80.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 80.33-60.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 60.33-40.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 40.33-20.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 20.33-0.33	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

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
1 5/8 (T-Mobile)	B	No	No	Ar (CaAa)	121.00 - 6.33	0.0000	0.5	6	6	0.0000 1.9100	1.9100		1.04
1 1/4	B	No	No	Ar (CaAa)	121.00 - 6.33	0.0000	0.5	2	2	0.0000 1.5500	1.5500		0.66
1 1/2	B	No	No	Ar (CaAa)	121.00 - 6.33	0.0000	0.5	2	2	0.0000 1.5000	1.5000		1.04
** 1 1/4 (Sprint)	C	No	No	Ar (CaAa)	101.33 - 6.33	0.0000	0.5	3	3	0.0000 1.5500	1.5500		0.66

tnxTower Hudson Design Group 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job	140' Self-Support Tower	Page	6 of 31
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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
2 1/2	C	No	No	Ar (CaAa)	101.33 - 6.33	0.0000	0.5	2	1	0.0000 2.6250	2.6250		1.16
**													
7/8 (Other)	B	No	No	Af (CaAa)	140.33 - 6.33	0.0000	0.5	7	7	0.0000 1.1100	1.1100		0.54
1/2	B	No	No	Af (CaAa)	140.33 - 6.33	0.0000	0.5	1	1	0.0000 0.5800	0.5800		0.25
3/8	B	No	No	Af (CaAa)	140.33 - 6.33	0.0000	0.5	2	2	0.0000 0.3750	0.3750		0.40
**													
Feedline Ladder	B	No	No	Af (CaAa)	140.33 - 6.33	-4.0000	0.44	1	1	0.0000 3.0000	3.0000		8.40
Feedline Ladder	C	No	No	Af (CaAa)	140.33 - 6.33	0.0000	0.4	1	1	0.0000 3.0000	3.0000		8.40
Feedline Ladder	B	No	No	Af (CaAa)	140.33 - 6.33	-2.0000	0.44	1	1	0.0000 3.0000	3.0000		8.40
Safety Line 3/8	B	No	No	Ar (CaAa)	140.33 - 6.33	4.0000	0.5	1	1	0.3750	0.3750		0.22
**													
DC Cable (AT&T - Existing)	C	No	No	Ar (CaAa)	110.00 - 6.33	0.0000	0.5	6	6	0.0000 0.9570	0.9570		0.88
Fiber Cable (1-1/4")	C	No	No	Ar (CaAa)	110.00 - 6.33	0.0000	0.5	3	3	0.0000 1.2500	1.2500		0.48
**													
DC Cable (AT&T - Proposed)	C	No	No	Ar (CaAa)	110.00 - 6.33	0.0000	0.5	3	1	0.0000 0.9570	0.9570		0.88

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	C _A A _A ft ² /ft	Weight plf
1/2	C	No	No	CaAa (Out Of Face)	101.33 - 6.33	0.0000	0.5	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.06 0.16 0.26 0.46 6.55

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
T1	140.33-120.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	52.260	0.000	443.46
		C	0.000	0.000	10.000	0.000	168.00
T2	120.33-115.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	21.551	0.000	157.45
		C	0.000	0.000	2.500	0.000	42.00

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Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight lb
T3	115.33-110.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	21.551	0.000	157.45
		C	0.000	0.000	2.500	0.000	42.00
T4	110.33-105.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	21.551	0.000	157.45
		C	0.000	0.000	8.274	0.000	85.64
T5	105.33-100.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	21.551	0.000	157.45
		C	0.000	0.000	9.672	0.116	93.53
T6	100.33-80.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	86.203	0.000	629.80
		C	0.000	0.000	54.526	2.320	450.90
T7	80.33-60.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	86.203	0.000	629.80
		C	0.000	0.000	54.526	2.320	450.90
T8	60.33-40.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	86.203	0.000	629.80
		C	0.000	0.000	54.526	2.320	450.90
T9	40.33-20.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	86.203	0.000	629.80
		C	0.000	0.000	54.526	2.320	450.90
T10	20.33-0.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	60.342	0.000	440.86
		C	0.000	0.000	38.168	1.624	315.63

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight lb
T1	140.33-120.33	A	1.721	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	96.640	0.000	1590.74
		C		0.000	0.000	16.883	0.000	415.80
T2	120.33-115.33	A	1.704	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	43.384	0.000	631.32
		C		0.000	0.000	4.204	0.000	103.11
T3	115.33-110.33	A	1.696	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	43.292	0.000	628.55
		C		0.000	0.000	4.196	0.000	102.76
T4	110.33-105.33	A	1.689	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	43.197	0.000	625.67
		C		0.000	0.000	20.438	0.000	323.97
T5	105.33-100.33	A	1.681	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	43.097	0.000	622.67
		C		0.000	0.000	24.303	0.788	381.32
T6	100.33-80.33	A	1.659	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	171.310	0.000	2458.41
		C		0.000	0.000	140.646	15.591	2187.54
T7	80.33-60.33	A	1.618	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	169.267	0.000	2397.91
		C		0.000	0.000	139.090	15.263	2127.79
T8	60.33-40.33	A	1.565	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	166.616	0.000	2320.58
		C		0.000	0.000	137.072	14.837	2051.35
T9	40.33-20.33	A	1.487	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	162.772	0.000	2210.82
		C		0.000	0.000	134.148	14.219	1942.66
T10	20.33-0.33	A	1.336	0.000	0.000	0.000	0.00	

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
		B		0.000	0.000	108.661	0.000	1402.52
		C		0.000	0.000	89.891	9.103	1215.81

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
T1	140.33-120.33	14.1568	14.3454	15.4451	14.1472
T2	120.33-115.33	20.9668	17.3061	22.9805	17.3597
T3	115.33-110.33	20.9668	17.3061	22.9754	17.3587
T4	110.33-105.33	13.0797	18.1051	11.9803	18.9599
T5	105.33-100.33	11.2132	18.5251	8.7053	19.7329
T6	100.33-80.33	5.7394	18.6623	-0.1576	21.5183
T7	80.33-60.33	6.2749	20.2461	-0.1204	23.5401
T8	60.33-40.33	7.2744	23.2478	-0.0546	27.3598
T9	40.33-20.33	8.1458	25.3971	0.0438	28.0781
T10	20.33-0.33	7.3153	22.8778	0.1954	25.7552

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	1		1 5/8 120.33 - 121.00	0.6000	0.6000
T1	2		1 1/4 120.33 - 121.00	0.6000	0.6000
T1	3		1 1/2 120.33 - 121.00	0.6000	0.6000
T1	9		7/8 120.33 - 140.33	0.6000	0.6000
T1	10		1/2 120.33 - 140.33	0.6000	0.6000
T1	11		3/8 120.33 - 140.33	0.6000	0.6000
T1	13	Feedline Ladder	120.33 - 140.33	1.0000	1.0000
T1	14	Feedline Ladder	120.33 - 140.33	1.0000	1.0000
T1	15	Feedline Ladder	120.33 - 140.33	1.0000	1.0000
T1	16	Safety Line 3/8	120.33 - 140.33	1.0000	1.0000
T2	1		1 5/8 115.33 - 120.33	0.6000	0.6000
T2	2		1 1/4 115.33 - 120.33	0.6000	0.6000
T2	3		1 1/2 115.33 - 120.33	0.6000	0.6000
T2	9		7/8 115.33 - 120.33	0.6000	0.6000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	10		1/2 115.33 - 120.33	0.6000	0.6000
T2	11		3/8 115.33 - 120.33	0.6000	0.6000
T2	13	Feedline Ladder	115.33 - 120.33	1.0000	1.0000
T2	14	Feedline Ladder	115.33 - 120.33	1.0000	1.0000
T2	15	Feedline Ladder	115.33 - 120.33	1.0000	1.0000
T2	16	Safety Line 3/8	115.33 - 120.33	1.0000	1.0000
T3	1		1 5/8 110.33 - 115.33	0.6000	0.6000
T3	2		1 1/4 110.33 - 115.33	0.6000	0.6000
T3	3		1 1/2 110.33 - 115.33	0.6000	0.6000
T3	9		7/8 110.33 - 115.33	0.6000	0.6000
T3	10		1/2 110.33 - 115.33	0.6000	0.6000
T3	11		3/8 110.33 - 115.33	0.6000	0.6000
T3	13	Feedline Ladder	110.33 - 115.33	1.0000	1.0000
T3	14	Feedline Ladder	110.33 - 115.33	1.0000	1.0000
T3	15	Feedline Ladder	110.33 - 115.33	1.0000	1.0000
T3	16	Safety Line 3/8	110.33 - 115.33	1.0000	1.0000
T4	1		1 5/8 105.33 - 110.33	0.6000	0.6000
T4	2		1 1/4 105.33 - 110.33	0.6000	0.6000
T4	3		1 1/2 105.33 - 110.33	0.6000	0.6000
T4	9		7/8 105.33 - 110.33	0.6000	0.6000
T4	10		1/2 105.33 - 110.33	0.6000	0.6000
T4	11		3/8 105.33 - 110.33	0.6000	0.6000
T4	13	Feedline Ladder	105.33 - 110.33	1.0000	1.0000
T4	14	Feedline Ladder	105.33 - 110.33	1.0000	1.0000
T4	15	Feedline Ladder	105.33 - 110.33	1.0000	1.0000
T4	16	Safety Line 3/8	105.33 - 110.33	1.0000	1.0000
T4	18	DC Cable	105.33 - 110.00	0.6000	0.6000
T4	19	Fiber Cable (1-1/4")	105.33 - 110.00	0.6000	0.6000
T4	21	DC Cable	105.33 - 110.00	0.6000	0.6000
T5	1		1 5/8 100.33 - 105.33	0.6000	0.6000
T5	2		1 1/4 100.33 - 105.33	0.6000	0.6000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T5	3	1 1/2	100.33 - 105.33	0.6000	0.6000
T5	5	1 1/4	100.33 - 101.33	0.6000	0.6000
T5	7	2 1/2	100.33 - 101.33	0.6000	0.6000
T5	9	7/8	100.33 - 105.33	0.6000	0.6000
T5	10	1/2	100.33 - 105.33	0.6000	0.6000
T5	11	3/8	100.33 - 105.33	0.6000	0.6000
T5	13	Feedline Ladder	100.33 - 105.33	1.0000	1.0000
T5	14	Feedline Ladder	100.33 - 105.33	1.0000	1.0000
T5	15	Feedline Ladder	100.33 - 105.33	1.0000	1.0000
T5	16	Safety Line 3/8	100.33 - 105.33	1.0000	1.0000
T5	18	DC Cable	100.33 - 105.33	0.6000	0.6000
T5	19	Fiber Cable (1-1/4")	100.33 - 105.33	0.6000	0.6000
T5	21	DC Cable	100.33 - 105.33	0.6000	0.6000
T6	1	1 5/8	80.33 - 100.33	0.6000	0.6000
T6	2	1 1/4	80.33 - 100.33	0.6000	0.6000
T6	3	1 1/2	80.33 - 100.33	0.6000	0.6000
T6	5	1 1/4	80.33 - 100.33	0.6000	0.6000
T6	7	2 1/2	80.33 - 100.33	0.6000	0.6000
T6	9	7/8	80.33 - 100.33	0.6000	0.6000
T6	10	1/2	80.33 - 100.33	0.6000	0.6000
T6	11	3/8	80.33 - 100.33	0.6000	0.6000
T6	13	Feedline Ladder	80.33 - 100.33	1.0000	1.0000
T6	14	Feedline Ladder	80.33 - 100.33	1.0000	1.0000
T6	15	Feedline Ladder	80.33 - 100.33	1.0000	1.0000
T6	16	Safety Line 3/8	80.33 - 100.33	1.0000	1.0000
T6	18	DC Cable	80.33 - 100.33	0.6000	0.6000
T6	19	Fiber Cable (1-1/4")	80.33 - 100.33	0.6000	0.6000
T6	21	DC Cable	80.33 - 100.33	0.6000	0.6000
T7	1	1 5/8	60.33 - 80.33	0.6000	0.6000
T7	2	1 1/4	60.33 - 80.33	0.6000	0.6000
T7	3	1 1/2	60.33 - 80.33	0.6000	0.6000
T7	5	1 1/4	60.33 - 80.33	0.6000	0.6000
T7	7	2 1/2	60.33 - 80.33	0.6000	0.6000
T7	9	7/8	60.33 - 80.33	0.6000	0.6000
T7	10	1/2	60.33 - 80.33	0.6000	0.6000
T7	11	3/8	60.33 - 80.33	0.6000	0.6000
T7	13	Feedline Ladder	60.33 - 80.33	1.0000	1.0000
T7	14	Feedline Ladder	60.33 - 80.33	1.0000	1.0000
T7	15	Feedline Ladder	60.33 - 80.33	1.0000	1.0000
T7	16	Safety Line 3/8	60.33 - 80.33	1.0000	1.0000
T7	18	DC Cable	60.33 - 80.33	0.6000	0.6000
T7	19	Fiber Cable (1-1/4")	60.33 - 80.33	0.6000	0.6000
T7	21	DC Cable	60.33 - 80.33	0.6000	0.6000
T8	1	1 5/8	40.33 - 60.33	0.6000	0.6000
T8	2	1 1/4	40.33 - 60.33	0.6000	0.6000
T8	3	1 1/2	40.33 - 60.33	0.6000	0.6000
T8	5	1 1/4	40.33 - 60.33	0.6000	0.6000
T8	7	2 1/2	40.33 - 60.33	0.6000	0.6000
T8	9	7/8	40.33 - 60.33	0.6000	0.6000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T8	10	1/2	40.33 - 60.33	0.6000	0.6000
T8	11	3/8	40.33 - 60.33	0.6000	0.6000
T8	13	Feedline Ladder	40.33 - 60.33	1.0000	1.0000
T8	14	Feedline Ladder	40.33 - 60.33	1.0000	1.0000
T8	15	Feedline Ladder	40.33 - 60.33	1.0000	1.0000
T8	16	Safety Line 3/8	40.33 - 60.33	1.0000	1.0000
T8	18	DC Cable	40.33 - 60.33	0.6000	0.6000
T8	19	Fiber Cable (1-1/4")	40.33 - 60.33	0.6000	0.6000
T8	21	DC Cable	40.33 - 60.33	0.6000	0.6000
T9	1	1 5/8	20.33 - 40.33	0.6000	0.6000
T9	2	1 1/4	20.33 - 40.33	0.6000	0.6000
T9	3	1 1/2	20.33 - 40.33	0.6000	0.6000
T9	5	1 1/4	20.33 - 40.33	0.6000	0.6000
T9	7	2 1/2	20.33 - 40.33	0.6000	0.6000
T9	9	7/8	20.33 - 40.33	0.6000	0.6000
T9	10	1/2	20.33 - 40.33	0.6000	0.6000
T9	11	3/8	20.33 - 40.33	0.6000	0.6000
T9	13	Feedline Ladder	20.33 - 40.33	1.0000	1.0000
T9	14	Feedline Ladder	20.33 - 40.33	1.0000	1.0000
T9	15	Feedline Ladder	20.33 - 40.33	1.0000	1.0000
T9	16	Safety Line 3/8	20.33 - 40.33	1.0000	1.0000
T9	18	DC Cable	20.33 - 40.33	0.6000	0.6000
T9	19	Fiber Cable (1-1/4")	20.33 - 40.33	0.6000	0.6000
T9	21	DC Cable	20.33 - 40.33	0.6000	0.6000
T10	1	1 5/8	6.33 - 20.33	0.6000	0.6000
T10	2	1 1/4	6.33 - 20.33	0.6000	0.6000
T10	3	1 1/2	6.33 - 20.33	0.6000	0.6000
T10	5	1 1/4	6.33 - 20.33	0.6000	0.6000
T10	7	2 1/2	6.33 - 20.33	0.6000	0.6000
T10	9	7/8	6.33 - 20.33	0.6000	0.6000
T10	10	1/2	6.33 - 20.33	0.6000	0.6000
T10	11	3/8	6.33 - 20.33	0.6000	0.6000
T10	13	Feedline Ladder	6.33 - 20.33	1.0000	1.0000
T10	14	Feedline Ladder	6.33 - 20.33	1.0000	1.0000
T10	15	Feedline Ladder	6.33 - 20.33	1.0000	1.0000
T10	16	Safety Line 3/8	6.33 - 20.33	1.0000	1.0000
T10	18	DC Cable	6.33 - 20.33	0.6000	0.6000
T10	19	Fiber Cable (1-1/4")	6.33 - 20.33	0.6000	0.6000
T10	21	DC Cable	6.33 - 20.33	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C_{AA} Front	C_{AA} Side	Weight
			ft ft ft	°	ft	ft ²	ft ²	lb
20' Lightning Rod	A	None		0.0000	144.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.50 4.52 6.55 10.68	100.00 121.51 155.52 261.63
** Omni 1"x4'	B	From Leg	0.00	0.0000	141.50	No Ice	0.40	15.00

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	lb
			0.00			1/2" Ice	0.81	0.81	18.77
			0.00			1" Ice	1.06	1.06	25.23
						2" Ice	1.58	1.58	46.87
3' Side Mount Standoff	A	From Face	0.00		0.0000	No Ice	1.50	1.50	45.00
			0.00			1/2" Ice	2.20	2.20	70.00
			0.00			1" Ice	2.90	2.90	95.00
						2" Ice	4.30	4.30	145.00
Omni 2"X6'	A	From Leg	0.00		0.0000	No Ice	1.20	1.20	35.00
			0.00			1/2" Ice	1.80	1.80	44.39
			0.00			1" Ice	2.17	2.17	57.81
						2" Ice	2.93	2.93	97.31
3' Side Mount Standoff	A	From Face	0.00		0.0000	No Ice	1.50	1.50	45.00
			0.00			1/2" Ice	2.20	2.20	70.00
			0.00			1" Ice	2.90	2.90	95.00
						2" Ice	4.30	4.30	145.00
Omni 2"X6'	C	From Leg	0.00		0.0000	No Ice	1.20	1.20	35.00
			0.00			1/2" Ice	1.80	1.80	44.39
			0.00			1" Ice	2.17	2.17	57.81
						2" Ice	2.93	2.93	97.31
3' Side Mount Standoff	C	From Face	0.00		0.0000	No Ice	1.50	1.50	45.00
			0.00			1/2" Ice	2.20	2.20	70.00
			0.00			1" Ice	2.90	2.90	95.00
						2" Ice	4.30	4.30	145.00
6' Whip	A	From Leg	0.00		0.0000	No Ice	1.20	1.20	30.00
			0.00			1/2" Ice	1.80	1.80	39.39
			0.00			1" Ice	2.17	2.17	52.81
						2" Ice	2.93	2.93	92.31
3' Side Mount Standoff	A	From Face	0.00		0.0000	No Ice	1.50	1.50	45.00
			0.00			1/2" Ice	2.20	2.20	70.00
			0.00			1" Ice	2.90	2.90	95.00
						2" Ice	4.30	4.30	145.00
**									
12'-6" Sector Frame	A	From Leg	0.00		0.0000	No Ice	13.50	9.50	700.00
			0.00			1/2" Ice	20.00	15.00	850.00
			0.00			1" Ice	26.00	20.00	1050.00
						2" Ice	39.50	31.50	1300.00
12'-6" Sector Frame	B	From Leg	0.00		0.0000	No Ice	13.50	9.50	700.00
			0.00			1/2" Ice	20.00	15.00	850.00
			0.00			1" Ice	26.00	20.00	1050.00
						2" Ice	39.50	31.50	1300.00
12'-6" Sector Frame	C	From Leg	0.00		0.0000	No Ice	13.50	9.50	700.00
			0.00			1/2" Ice	20.00	15.00	850.00
			0.00			1" Ice	26.00	20.00	1050.00
						2" Ice	39.50	31.50	1300.00
AIR6449 B41 Antenna w/ Mounting Pipe (T-Mobile)	A	From Leg	3.00		0.0000	No Ice	6.42	3.89	124.90
			-6.00			1/2" Ice	7.00	4.62	179.59
			0.00			1" Ice	7.50	5.22	240.17
						2" Ice	8.56	6.47	382.30
AIR6449 B41 Antenna w/ Mounting Pipe (T-Mobile)	B	From Leg	3.00		0.0000	No Ice	6.42	3.89	124.90
			-6.00			1/2" Ice	7.00	4.62	179.59
			0.00			1" Ice	7.50	5.22	240.17
						2" Ice	8.56	6.47	382.30
AIR6449 B41 Antenna w/ Mounting Pipe (T-Mobile)	C	From Leg	3.00		0.0000	No Ice	6.42	3.89	124.90
			-6.00			1/2" Ice	7.00	4.62	179.59
			0.00			1" Ice	7.50	5.22	240.17
						2" Ice	8.56	6.47	382.30
AIR 32 B66A B2A Antenna	A	From Leg	3.00		0.0000	No Ice	6.81	6.14	154.90

tnxTower Hudson Design Group 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job		140' Self-Support Tower				Page		13 of 31
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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			ft ft ft	°	ft	ft ²	ft ²	lb
w/ Mounting Pipe			-3.00 0.00			1/2" Ice 7.30 1" Ice 7.76 2" Ice 8.71	6.99 7.73 9.24	216.61 285.26 446.66
AIR 32 B66A B2A Antenna w/ Mounting Pipe	B	From Leg	3.00 -3.00 0.00	0.0000	121.00	No Ice 6.81 1/2" Ice 7.30 1" Ice 7.76 2" Ice 8.71	6.14 6.99 7.73 9.24	154.90 216.61 285.26 446.66
AIR 32 B66A B2A Antenna w/ Mounting Pipe	C	From Leg	3.00 -3.00 0.00	0.0000	121.00	No Ice 6.81 1/2" Ice 7.30 1" Ice 7.76 2" Ice 8.71	6.14 6.99 7.73 9.24	154.90 216.61 285.26 446.66
AIR 21 B2A/B4P w/Mounting Pipe	A	From Leg	3.00 3.00 0.00	0.0000	121.00	No Ice 6.26 1/2" Ice 6.74 1" Ice 7.20 2" Ice 8.14	5.64 6.49 7.21 8.69	104.90 161.79 225.40 376.09
AIR 21 B2A/B4P w/Mounting Pipe	B	From Leg	3.00 3.00 0.00	0.0000	121.00	No Ice 6.26 1/2" Ice 6.74 1" Ice 7.20 2" Ice 8.14	5.64 6.49 7.21 8.69	104.90 161.79 225.40 376.09
AIR 21 B2A/B4P w/Mounting Pipe	C	From Leg	3.00 3.00 0.00	0.0000	121.00	No Ice 6.26 1/2" Ice 6.74 1" Ice 7.20 2" Ice 8.14	5.64 6.49 7.21 8.69	104.90 161.79 225.40 376.09
APXVAARR24_43-U-NA20 Antenna w/ Mounting Pipe	A	From Leg	3.00 0.00 0.00	0.0000	121.00	No Ice 20.24 1/2" Ice 20.89 1" Ice 21.55 2" Ice 22.88	10.79 12.21 13.49 15.72	157.20 290.89 435.20 759.63
APXVAARR24_43-U-NA20 Antenna w/ Mounting Pipe	B	From Leg	3.00 0.00 0.00	0.0000	121.00	No Ice 20.24 1/2" Ice 20.89 1" Ice 21.55 2" Ice 22.88	10.79 12.21 13.49 15.72	157.20 290.89 435.20 759.63
APXVAARR24_43-U-NA20 Antenna w/ Mounting Pipe	C	From Leg	3.00 0.00 0.00	0.0000	121.00	No Ice 20.24 1/2" Ice 20.89 1" Ice 21.55 2" Ice 22.88	10.79 12.21 13.49 15.72	157.20 290.89 435.20 759.63
Omni 2"X8'	A	From Leg	2.00 6.00 10.00	0.0000	129.00	No Ice 1.60 1/2" Ice 2.42 1" Ice 3.24 2" Ice 4.23	1.60 2.42 3.24 4.23	35.00 47.45 65.14 116.86
Omni 2"X8'	C	From Leg	2.00 6.00 10.00	0.0000	129.00	No Ice 1.60 1/2" Ice 2.42 1" Ice 3.24 2" Ice 4.23	1.60 2.42 3.24 4.23	35.00 47.45 65.14 116.86
4449 B71+B85 RRH	A	From Leg	2.00 0.00 0.00	0.0000	121.00	No Ice 1.97 1/2" Ice 2.15 1" Ice 2.33 2" Ice 2.72	1.40 1.56 1.72 2.07	74.00 92.48 113.77 165.60
4449 B71+B85 RRH	B	From Leg	2.00 0.00 0.00	0.0000	121.00	No Ice 1.97 1/2" Ice 2.15 1" Ice 2.33 2" Ice 2.72	1.40 1.56 1.72 2.07	74.00 92.48 113.77 165.60
4449 B71+B85 RRH	C	From Leg	2.00 0.00 0.00	0.0000	121.00	No Ice 1.97 1/2" Ice 2.15 1" Ice 2.33 2" Ice 2.72	1.40 1.56 1.72 2.07	74.00 92.48 113.77 165.60
4415 B25 RRH	A	From Leg	2.00 0.00	0.0000	121.00	No Ice 1.84 1/2" Ice 2.01	0.82 0.94	46.00 60.07

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	lb	
			0.00				1" Ice	2.19	1.07	76.66
							2" Ice	2.57	1.37	118.17
4415 B25 RRH	B	From Leg	2.00	0.0000	121.00		No Ice	1.84	0.82	46.00
			0.00				1/2" Ice	2.01	0.94	60.07
			0.00				1" Ice	2.19	1.07	76.66
							2" Ice	2.57	1.37	118.17
4415 B25 RRH	C	From Leg	2.00	0.0000	121.00		No Ice	1.84	0.82	46.00
			0.00				1/2" Ice	2.01	0.94	60.07
			0.00				1" Ice	2.19	1.07	76.66
							2" Ice	2.57	1.37	118.17
Gen. TMA	A	From Leg	2.00	0.0000	121.00		No Ice	0.50	0.33	16.00
			0.00				1/2" Ice	0.59	0.41	20.70
			0.00				1" Ice	0.69	0.50	26.89
							2" Ice	0.91	0.70	44.52
Gen. TMA	B	From Leg	2.00	0.0000	121.00		No Ice	0.50	0.33	16.00
			0.00				1/2" Ice	0.59	0.41	20.70
			0.00				1" Ice	0.69	0.50	26.89
							2" Ice	0.91	0.70	44.52
Gen. TMA	C	From Leg	2.00	0.0000	121.00		No Ice	0.50	0.33	16.00
			0.00				1/2" Ice	0.59	0.41	20.70
			0.00				1" Ice	0.69	0.50	26.89
							2" Ice	0.91	0.70	44.52
**										
NNVV-65B-R4 Antenna w/ Mounting Pipe	A	From Leg	1.00	0.0000	98.00		No Ice	12.27	7.17	131.90
			0.00				1/2" Ice	12.77	8.13	219.93
			0.00				1" Ice	13.27	8.97	316.27
							2" Ice	14.29	10.68	537.17
NNVV-65B-R4 Antenna w/ Mounting Pipe	B	From Leg	1.00	0.0000	98.00		No Ice	12.27	7.17	131.90
			0.00				1/2" Ice	12.77	8.13	219.93
			0.00				1" Ice	13.27	8.97	316.27
							2" Ice	14.29	10.68	537.17
NNVV-65B-R4 Antenna w/ Mounting Pipe	C	From Leg	1.00	0.0000	98.00		No Ice	12.27	7.17	131.90
			0.00				1/2" Ice	12.77	8.13	219.93
			0.00				1" Ice	13.27	8.97	316.27
							2" Ice	14.29	10.68	537.17
LLPX310R-V1 Antenna w/ Mounting Pipe	A	From Leg	1.00	0.0000	95.23		No Ice	4.92	3.39	49.90
			0.00				1/2" Ice	5.42	4.16	91.84
			0.00				1" Ice	5.88	4.80	139.46
							2" Ice	6.81	6.13	254.99
LLPX310R-V1 Antenna w/ Mounting Pipe	B	From Leg	1.00	0.0000	95.23		No Ice	4.92	3.39	49.90
			0.00				1/2" Ice	5.42	4.16	91.84
			0.00				1" Ice	5.88	4.80	139.46
							2" Ice	6.81	6.13	254.99
LLPX310R-V1 Antenna w/ Mounting Pipe	C	From Leg	1.00	0.0000	95.23		No Ice	4.92	3.39	49.90
			0.00				1/2" Ice	5.42	4.16	91.84
			0.00				1" Ice	5.88	4.80	139.46
							2" Ice	6.81	6.13	254.99
(2) 800 RRH	A	From Leg	0.00	0.0000	95.66		No Ice	1.71	1.84	64.00
			0.00				1/2" Ice	1.88	2.01	85.14
			0.00				1" Ice	2.05	2.19	109.25
							2" Ice	2.41	2.56	167.16
(2) 800 RRH	B	From Leg	0.00	0.0000	95.66		No Ice	1.71	1.84	64.00
			0.00				1/2" Ice	1.88	2.01	85.14
			0.00				1" Ice	2.05	2.19	109.25
							2" Ice	2.41	2.56	167.16
(2) 800 RRH	C	From Leg	0.00	0.0000	95.66		No Ice	1.71	1.84	64.00
			0.00				1/2" Ice	1.88	2.01	85.14

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	lb	
			0.00				1" Ice	2.05	2.19	109.25
							2" Ice	2.41	2.56	167.16
1900 RRH	A	From Leg	1.00	0.0000	101.33	No Ice	2.31	2.38	60.00	
			0.00			1/2" Ice	2.52	2.58	83.90	
			0.00			1" Ice	2.73	2.79	111.08	
						2" Ice	3.17	3.24	176.02	
1900 RRH	B	From Leg	1.00	0.0000	101.33	No Ice	2.31	2.38	60.00	
			0.00			1/2" Ice	2.52	2.58	83.90	
			0.00			1" Ice	2.73	2.79	111.08	
						2" Ice	3.17	3.24	176.02	
1900 RRH	C	From Leg	1.00	0.0000	101.33	No Ice	2.31	2.38	60.00	
			0.00			1/2" Ice	2.52	2.58	83.90	
			0.00			1" Ice	2.73	2.79	111.08	
						2" Ice	3.17	3.24	176.02	
RRH2WB0 RRH	A	From Leg	1.00	0.0000	101.33	No Ice	2.31	2.38	40.00	
			0.00			1/2" Ice	2.52	2.58	63.90	
			0.00			1" Ice	2.73	2.79	91.08	
						2" Ice	3.17	3.24	156.02	
RRH2WB0 RRH	B	From Leg	1.00	0.0000	101.33	No Ice	2.31	2.38	40.00	
			0.00			1/2" Ice	2.52	2.58	63.90	
			0.00			1" Ice	2.73	2.79	91.08	
						2" Ice	3.17	3.24	156.02	
RRH2WB0 RRH	C	From Leg	1.00	0.0000	101.33	No Ice	2.31	2.38	40.00	
			0.00			1/2" Ice	2.52	2.58	63.90	
			0.00			1" Ice	2.73	2.79	91.08	
						2" Ice	3.17	3.24	156.02	
**										
12'-6" Sector Frame	A	From Leg	0.00	0.0000	110.00	No Ice	13.50	9.50	700.00	
			0.00			1/2" Ice	20.00	15.00	850.00	
			0.00			1" Ice	26.00	20.00	1050.00	
						2" Ice	39.50	31.50	1300.00	
12'-6" Sector Frame	B	From Leg	0.00	0.0000	110.00	No Ice	13.50	9.50	700.00	
			0.00			1/2" Ice	20.00	15.00	850.00	
			0.00			1" Ice	26.00	20.00	1050.00	
						2" Ice	39.50	31.50	1300.00	
12'-6" Sector Frame	C	From Leg	0.00	0.0000	110.00	No Ice	13.50	9.50	700.00	
			0.00			1/2" Ice	20.00	15.00	850.00	
			0.00			1" Ice	26.00	20.00	1050.00	
						2" Ice	39.50	31.50	1300.00	
DMP65R-BU8DA Antenna w/ Mounting Pipe	A	From Leg	3.00	0.0000	110.00	No Ice	17.87	10.02	125.20	
			-6.00			1/2" Ice	18.50	11.44	243.88	
			0.00			1" Ice	19.14	12.72	372.91	
						2" Ice	20.44	14.94	665.96	
DMP65R-BU8DA Antenna w/ Mounting Pipe	B	From Leg	3.00	0.0000	110.00	No Ice	17.87	10.02	125.20	
			-6.00			1/2" Ice	18.50	11.44	243.88	
			0.00			1" Ice	19.14	12.72	372.91	
						2" Ice	20.44	14.94	665.96	
DMP65R-BU8DA Antenna w/ Mounting Pipe	C	From Leg	3.00	0.0000	110.00	No Ice	17.87	10.02	125.20	
			-6.00			1/2" Ice	18.50	11.44	243.88	
			0.00			1" Ice	19.14	12.72	372.91	
						2" Ice	20.44	14.94	665.96	
RRUS-E2 B29	A	From Leg	2.00	0.0000	110.00	No Ice	3.15	1.29	53.00	
			6.00			1/2" Ice	3.36	1.44	76.22	
			0.00			1" Ice	3.59	1.60	102.64	
						2" Ice	4.07	1.95	165.88	
RRUS-E2 B29	B	From Leg	2.00	0.0000	110.00	No Ice	3.15	1.29	53.00	
			6.00			1/2" Ice	3.36	1.44	76.22	

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	lb	
			0.00				1" Ice	3.59	1.60	102.64
							2" Ice	4.07	1.95	165.88
RRUS-E2 B29	C	From Leg	2.00	0.0000	110.00		No Ice	3.15	1.29	53.00
			6.00				1/2" Ice	3.36	1.44	76.22
			0.00				1" Ice	3.59	1.60	102.64
							2" Ice	4.07	1.95	165.88
B14 4478 RRH	A	From Leg	2.00	0.0000	110.00		No Ice	2.02	1.25	60.00
			5.00				1/2" Ice	2.20	1.40	77.66
			0.00				1" Ice	2.39	1.56	98.08
							2" Ice	2.78	1.90	148.04
B14 4478 RRH	B	From Leg	2.00	0.0000	110.00		No Ice	2.02	1.25	60.00
			5.00				1/2" Ice	2.20	1.40	77.66
			0.00				1" Ice	2.39	1.56	98.08
							2" Ice	2.78	1.90	148.04
B14 4478 RRH	C	From Leg	2.00	0.0000	110.00		No Ice	2.02	1.25	60.00
			5.00				1/2" Ice	2.20	1.40	77.66
			0.00				1" Ice	2.39	1.56	98.08
							2" Ice	2.78	1.90	148.04
B2/B66A 8843 RRH	A	From Leg	2.00	0.0000	110.00		No Ice	1.64	1.35	72.00
			5.00				1/2" Ice	1.80	1.50	89.60
			0.00				1" Ice	1.97	1.65	109.91
							2" Ice	2.32	1.99	159.50
B2/B66A 8843 RRH	B	From Leg	2.00	0.0000	110.00		No Ice	1.64	1.35	72.00
			5.00				1/2" Ice	1.80	1.50	89.60
			0.00				1" Ice	1.97	1.65	109.91
							2" Ice	2.32	1.99	159.50
B2/B66A 8843 RRH	C	From Leg	2.00	0.0000	110.00		No Ice	1.64	1.35	72.00
			5.00				1/2" Ice	1.80	1.50	89.60
			0.00				1" Ice	1.97	1.65	109.91
							2" Ice	2.32	1.99	159.50
4449 B5/B12 RRH	A	From Leg	2.00	0.0000	110.00		No Ice	1.97	1.40	7.20
			-6.00				1/2" Ice	2.15	1.56	25.68
			0.00				1" Ice	2.33	1.72	46.97
							2" Ice	2.72	2.07	98.80
4449 B5/B12 RRH	B	From Leg	2.00	0.0000	110.00		No Ice	1.97	1.40	7.20
			-6.00				1/2" Ice	2.15	1.56	25.68
			0.00				1" Ice	2.33	1.72	46.97
							2" Ice	2.72	2.07	98.80
4449 B5/B12 RRH	C	From Leg	2.00	0.0000	110.00		No Ice	1.97	1.40	7.20
			-6.00				1/2" Ice	2.15	1.56	25.68
			0.00				1" Ice	2.33	1.72	46.97
							2" Ice	2.72	2.07	98.80
RRUS 32 B30 RRH	A	From Leg	2.00	0.0000	110.00		No Ice	2.74	1.67	60.00
			-6.00				1/2" Ice	2.96	1.86	81.11
			0.00				1" Ice	3.19	2.05	105.42
							2" Ice	3.68	2.46	164.41
RRUS 32 B30 RRH	B	From Leg	2.00	0.0000	110.00		No Ice	2.74	1.67	60.00
			-6.00				1/2" Ice	2.96	1.86	81.11
			0.00				1" Ice	3.19	2.05	105.42
							2" Ice	3.68	2.46	164.41
RRUS 32 B30 RRH	C	From Leg	2.00	0.0000	110.00		No Ice	2.74	1.67	60.00
			-6.00				1/2" Ice	2.96	1.86	81.11
			0.00				1" Ice	3.19	2.05	105.42
							2" Ice	3.68	2.46	164.41
Squid Surge Arrestor	A	From Leg	1.00	0.0000	110.00		No Ice	0.81	0.81	33.00
			0.00				1/2" Ice	1.30	1.30	48.38
			0.00				1" Ice	1.48	1.48	66.11

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	lb
Squid Surge Arrestor	B	From Leg	1.00	0.0000	110.00	2" Ice	1.86	1.86	109.29
			0.00	No Ice		0.81	0.81	33.00	
			0.00	1/2" Ice		1.30	1.30	48.38	
			0.00	1" Ice		1.48	1.48	66.11	
Squid Surge Arrestor	C	From Leg	1.00	0.0000	110.00	2" Ice	1.86	1.86	109.29
			0.00	No Ice		0.81	0.81	33.00	
			0.00	1/2" Ice		1.30	1.30	48.38	
			0.00	1" Ice		1.48	1.48	66.11	
					2" Ice	1.86	1.86	109.29	
**									
QD8616-7 Antenna w/ Mounting Pipe	C	From Leg	3.00	0.0000	110.00	No Ice	18.81	11.50	179.20
			5.00	1/2" Ice		19.45	12.93	309.62	
			0.00	1" Ice		20.10	14.22	450.59	
			0.00	2" Ice		21.41	16.46	768.16	
QD8616-7 Antenna w/ Mounting Pipe	C	From Leg	3.00	0.0000	110.00	No Ice	18.81	11.50	179.20
			5.00	1/2" Ice		19.45	12.93	309.62	
			0.00	1" Ice		20.10	14.22	450.59	
			0.00	2" Ice		21.41	16.46	768.16	
QD8616-7 Antenna w/ Mounting Pipe	C	From Leg	3.00	0.0000	110.00	No Ice	18.81	11.50	179.20
			5.00	1/2" Ice		19.45	12.93	309.62	
			0.00	1" Ice		20.10	14.22	450.59	
			0.00	2" Ice		21.41	16.46	768.16	
AIR 6419 Antenna w/ Mounting Pipe (AT&T)	C	From Leg	3.00	0.0000	110.00	No Ice	4.97	3.43	87.90
			0.00	1/2" Ice		5.52	4.14	132.90	
			2.00	1" Ice		6.00	4.73	183.30	
			2.00	2" Ice		7.01	5.95	303.56	
AIR 6419 Antenna w/ Mounting Pipe (AT&T)	C	From Leg	3.00	0.0000	110.00	No Ice	4.97	3.43	87.90
			0.00	1/2" Ice		5.52	4.14	132.90	
			2.00	1" Ice		6.00	4.73	183.30	
			2.00	2" Ice		7.01	5.95	303.56	
AIR 6419 Antenna w/ Mounting Pipe (AT&T)	C	From Leg	3.00	0.0000	110.00	No Ice	4.97	3.43	87.90
			0.00	1/2" Ice		5.52	4.14	132.90	
			2.00	1" Ice		6.00	4.73	183.30	
			2.00	2" Ice		7.01	5.95	303.56	
AIR 6449 Antenna (AT&T)	C	From Leg	3.00	0.0000	110.00	No Ice	4.05	2.74	82.00
			0.00	1/2" Ice		4.32	2.97	115.62	
			-2.00	1" Ice		4.59	3.20	153.14	
			-2.00	2" Ice		5.15	3.68	240.65	
AIR 6449 Antenna (AT&T)	C	From Leg	3.00	0.0000	110.00	No Ice	4.05	2.74	82.00
			0.00	1/2" Ice		4.32	2.97	115.62	
			-2.00	1" Ice		4.59	3.20	153.14	
			-2.00	2" Ice		5.15	3.68	240.65	
AIR 6449 Antenna (AT&T)	C	From Leg	3.00	0.0000	110.00	No Ice	4.05	2.74	82.00
			0.00	1/2" Ice		4.32	2.97	115.62	
			-2.00	1" Ice		4.59	3.20	153.14	
			-2.00	2" Ice		5.15	3.68	240.65	
**									

Dishes

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Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight lb	
2' Ø Dish Antenna w/o Radome	B	Paraboloid w/o Radome	From Leg	1.00	0.0000		133.00	2.00	No Ice	3.14	10.00
				0.00					1/2" Ice	3.41	78.35
				0.00					1" Ice	3.68	116.70
									2" Ice	4.22	193.40
3' Ø Dish Antenna w/ Radome	C	Paraboloid w/Radome	From Leg	1.00	0.0000		98.00	3.00	No Ice	7.07	50.00
				0.00					1/2" Ice	7.47	88.35
				0.00					1" Ice	7.86	126.69
									2" Ice	8.66	203.38
1'-6" Ø Dish Antenna w/o Radome	A	Paraboloid w/o Radome	From Leg	2.00	0.0000		98.75	1.50	No Ice	1.77	20.00
				0.00					1/2" Ice	1.97	30.11
				0.00					1" Ice	2.17	40.23
									2" Ice	2.57	60.45
HPD2-4.7NS Dish Antenna	A	Paraboloid w/o Radome	From Leg	3.00	0.0000		96.50	2.00	No Ice	3.14	50.00
				0.00					1/2" Ice	3.41	67.50
				0.00					1" Ice	3.68	85.01
									2" Ice	4.21	120.02
HPD2-4.7NS Dish Antenna	C	Paraboloid w/o Radome	From Leg	3.00	0.0000		96.50	2.00	No Ice	3.14	50.00
				0.00					1/2" Ice	3.41	67.50
				0.00					1" Ice	3.68	85.01
									2" Ice	4.21	120.02

Truss-Leg Properties

Section Designation	Area in ²	Area Ice in ²	Self Weight lb	Ice Weight lb	Equiv. Diameter in	Equiv. Diameter Ice in	Leg Area in ²
Pirod 105218	2263.4687	6419.9046	718.59	945.61	7.8593	22.2913	7.2158
Pirod 105219	2441.8688	6357.6434	899.30	838.81	8.4787	22.0752	9.4248

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice

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Comb. No.	Description
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
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 Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T1	140.33 - 120.33	Leg	Max Tension	15	3545.71	-15.92	-113.43
			Max. Compression	31	-8237.98	-128.19	-69.34
			Max. Mx	8	-618.38	690.02	-9.84
		Diagonal	Max. My	14	-2756.10	-97.94	614.67
			Max. Vy	20	-1360.70	437.60	-119.52
			Max. Vx	2	-1372.69	36.23	500.56
			Max Tension	6	1894.90	0.00	0.00
			Max. Compression	18	-2015.12	0.00	0.00
			Max. Mx	29	-281.79	27.21	0.14
			Max. My	16	-1065.11	4.05	6.05
			Max. Vy	29	-26.86	27.21	0.14
			Max. Vx	16	-1.28	4.05	6.05
		Top Girt	Max Tension	19	191.24	0.00	0.00
			Max. Compression	6	-238.77	0.00	0.00
			Max. Mx	27	2.31	-169.23	0.00
			Max. My	8	-8.07	0.00	-0.00
			Max. Vy	27	84.61	0.00	0.00
			Max. Vx	8	0.00	0.00	0.00
T2	120.33 - 115.33	Leg	Max Tension	15	6766.66	-36.03	-485.22
			Max. Compression	10	-12143.49	209.97	114.56

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T3	115.33 - 110.33	Leg	Max. Mx	18	-11748.06	461.77	-213.87
			Max. My	2	-11567.41	36.23	500.56
			Max. Vy	18	180.30	461.77	-213.87
			Max. Vx	2	170.28	36.23	500.56
			Max Tension	20	3668.72	0.00	0.00
			Max. Compression	8	-3676.00	0.00	0.00
			Max. Mx	35	244.69	32.12	-0.25
			Max. My	8	-3640.24	6.96	-15.61
			Max. Vy	35	-30.84	32.12	-0.25
			Max. Vx	8	3.32	6.96	-15.61
			Max Tension	15	12849.91	-77.34	225.57
			Max. Compression	10	-18866.52	-374.23	-122.53
			Max. Mx	10	-18866.52	-374.23	-122.53
			Max. My	2	-18113.99	-107.37	384.51
			Max. Vy	18	-157.74	352.01	-233.65
T4	110.33 - 105.33	Leg	Max. Vx	2	-146.79	-107.37	384.51
			Max Tension	8	3940.17	0.00	0.00
			Max. Compression	20	-3950.19	0.00	0.00
			Max. Mx	29	-212.34	35.69	-0.10
			Max. My	16	-2819.58	7.07	15.07
			Max. Vy	29	-31.50	35.69	-0.10
			Max. Vx	16	-3.20	7.07	15.07
			Max Tension	15	20615.17	106.12	-361.82
			Max. Compression	18	-30154.48	18.63	14.92
			Max. Mx	6	-15578.17	609.30	-10.86
			Max. My	14	-17655.14	-162.70	586.23
			Max. Vy	18	1988.01	64.90	-190.64
			Max. Vx	2	2377.83	-103.33	198.72
			Max Tension	8	6391.79	0.00	0.00
			Max. Compression	20	-6361.01	0.00	0.00
T5	105.33 - 100.33	Leg	Max. Mx	38	1285.22	35.90	1.65
			Max. My	20	-6318.67	3.12	22.93
			Max. Vy	38	-33.94	35.90	1.65
			Max. Vx	20	-4.87	3.12	22.93
			Max Tension	23	31396.87	53.18	-39.91
			Max. Compression	18	-42966.98	268.40	-99.83
			Max. Mx	20	-4159.81	313.96	-24.58
			Max. My	24	-6744.23	162.86	323.30
			Max. Vy	18	-193.99	268.40	-99.83
			Max. Vx	2	-185.32	29.73	277.94
			Max Tension	20	6991.91	0.00	0.00
			Max. Compression	8	-7060.82	0.00	0.00
			Max. Mx	34	1058.08	44.50	-0.45
			Max. My	24	-5409.48	3.78	16.90
			Max. Vy	36	-35.65	44.50	1.34
T6	100.33 - 80.33	Leg	Max. Vx	24	-3.59	3.78	16.90
			Max Tension	7	86033.21	-16.16	-40.58
			Max. Compression	18	-103601.58	323.19	-109.64
			Max. Mx	8	-5630.94	-435.99	-32.41
			Max. My	4	-6163.66	-219.73	448.67
			Max. Vy	8	371.08	-435.99	-32.41
			Max. Vx	2	-411.43	97.33	404.61
			Max Tension	8	9899.79	0.00	0.00
			Max. Compression	8	-10161.74	0.00	0.00
			Max. Mx	34	1074.53	68.81	-0.76
			Max. My	20	-9262.13	-12.07	25.40
			Max. Vy	34	-45.39	68.81	-0.76
			Max. Vx	20	-5.40	-12.07	25.40

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft			
T7	80.33 - 60.33	Leg	Max Tension	7	127354.56	-85.36	-45.16			
			Max. Compression	18	-148944.56	140.20	40.49			
			Max. Mx	18	-117299.94	334.71	66.64			
			Max. My	16	-6033.50	-63.56	425.84			
			Max. Vy	18	101.12	334.71	66.64			
			Max. Vx	16	-174.91	-63.57	425.84			
		Diagonal	Max Tension	8	7000.82	0.00	0.00			
			Max. Compression	8	-7054.31	0.00	0.00			
			Max. Mx	34	1479.97	71.34	-5.62			
			Max. My	20	-6921.12	-17.21	28.94			
			Max. Vy	33	51.60	63.01	7.42			
			Max. Vx	20	-6.58	0.00	0.00			
			T8	60.33 - 40.33	Leg	Max Tension	7	159667.00	-152.50	-28.77
						Max. Compression	18	-185289.64	376.31	71.57
Max. Mx	19	-182078.96				379.33	72.68			
Max. My	16	-8601.93				-26.53	858.78			
Max. Vy	37	84.84				-270.84	49.04			
Max. Vx	16	-294.97				-26.53	858.78			
Diagonal	Max Tension	8			7176.33	0.00	0.00			
	Max. Compression	8			-7356.79	0.00	0.00			
	Max. Mx	34			692.85	83.36	-8.25			
	Max. My	8			-6997.15	7.11	-24.49			
	Max. Vy	34			58.94	77.00	-7.66			
	Max. Vx	8			4.45	0.00	0.00			
	T9	40.33 - 20.33			Leg	Max Tension	7	183324.36	-4773.42	-130.33
						Max. Compression	18	-212314.40	4837.92	50.86
Max. Mx			6	180502.21		-4844.50	-140.30			
Max. My			16	-9389.47		-312.42	6505.44			
Max. Vy			6	541.66		-4844.49	-140.30			
Max. Vx			16	-714.15		-312.42	6505.44			
Diagonal			Max Tension	8	9010.12	0.00	0.00			
			Max. Compression	8	-9294.18	0.00	0.00			
			Max. Mx	35	3081.98	148.25	-15.17			
			Max. My	8	-8287.77	-21.65	-29.25			
			Max. Vy	33	77.99	140.29	17.52			
			Max. Vx	36	-4.90	0.00	0.00			
			T10	20.33 - 0.33	Leg	Max Tension	7	208842.99	-4452.42	-81.05
						Max. Compression	18	-242094.44	0.00	-0.16
Max. Mx	35	-95500.53				6049.94	-149.52			
Max. My	16	-11434.51				-416.82	7589.51			
Max. Vy	37	-822.61				-4093.61	99.58			
Max. Vx	16	893.30				-416.82	7589.51			
Diagonal	Max Tension	9			9358.95	0.00	0.00			
	Max. Compression	18			-10077.94	0.00	0.00			
	Max. Mx	33			-91.04	168.07	21.44			
	Max. My	30			-4276.75	137.14	-25.43			
	Max. Vy	33			79.81	168.07	21.44			
	Max. Vx	30			4.98	0.00	0.00			

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	18	250988.81	23188.70	-11813.28
	Max. H _x	18	250988.81	23188.70	-11813.28
	Max. H _z	7	-216160.73	-20662.53	10368.45

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Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg B	Min. Vert	7	-216160.73	-20662.53	10368.45
	Min. H _x	7	-216160.73	-20662.53	10368.45
	Min. H _z	18	250988.81	23188.70	-11813.28
	Max. Vert	10	245202.53	-22710.41	-11698.69
	Max. H _x	23	-210718.90	20140.24	10255.21
	Max. H _z	23	-210718.90	20140.24	10255.21
Leg A	Min. Vert	23	-210718.90	20140.24	10255.21
	Min. H _x	10	245202.53	-22710.41	-11698.69
	Min. H _z	10	245202.53	-22710.41	-11698.69
	Max. Vert	2	242766.93	140.50	25461.98
	Max. H _x	6	126163.79	480.36	13078.80
	Max. H _z	2	242766.93	140.50	25461.98
	Min. Vert	15	-212579.10	-162.60	-22631.81
	Min. H _x	20	9889.02	-453.38	924.47
Min. H _z	15	-212579.10	-162.60	-22631.81	

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	35071.26	0.06	-0.10	20104.69	2493.12	-0.03
1.2 Dead+1.0 Wind 0 deg - No Ice	42085.51	398.93	-38254.32	-3169492.64	-36167.57	4119.05
0.9 Dead+1.0 Wind 0 deg - No Ice	31564.13	398.93	-38254.51	-3171494.18	-36888.25	4133.91
1.2 Dead+1.0 Wind 30 deg - No Ice	42085.51	19166.71	-32280.73	-2684505.28	-1618289.90	23999.93
0.9 Dead+1.0 Wind 30 deg - No Ice	31564.13	19166.80	-32280.89	-2687113.21	-1616966.08	23996.92
1.2 Dead+1.0 Wind 60 deg - No Ice	42085.51	32382.40	-18704.07	-1553792.16	-2730248.29	37623.73
0.9 Dead+1.0 Wind 60 deg - No Ice	31564.13	32382.56	-18704.17	-1557848.27	-2727489.65	37599.66
1.2 Dead+1.0 Wind 90 deg - No Ice	42085.51	37517.47	-461.01	-25332.68	-3153203.18	41191.20
0.9 Dead+1.0 Wind 90 deg - No Ice	31564.13	37517.65	-461.01	-31351.41	-3149904.54	41154.96
1.2 Dead+1.0 Wind 120 deg - No Ice	42085.51	33300.59	18828.59	1587892.21	-2782014.34	33623.16
0.9 Dead+1.0 Wind 120 deg - No Ice	31564.13	33300.75	18828.68	1579803.19	-2779207.60	33576.70
1.2 Dead+1.0 Wind 150 deg - No Ice	42084.99	18331.32	31913.42	2693796.18	-1529220.51	17020.12
0.9 Dead+1.0 Wind 150 deg - No Ice	31564.13	18331.39	31913.97	2684283.20	-1528020.62	16990.94
1.2 Dead+1.0 Wind 180 deg - No Ice	42085.51	-379.78	36674.96	3101411.13	44428.82	-4175.72
0.9 Dead+1.0 Wind 180 deg - No Ice	31564.13	-379.79	36675.15	3091370.91	43603.78	-4189.93
1.2 Dead+1.0 Wind 210 deg - No Ice	42085.51	-18998.95	32340.19	2738842.87	1607868.92	-24212.21
0.9 Dead+1.0 Wind 210 deg - No Ice	31564.13	-18999.05	32340.36	2729272.36	1605031.30	-24209.34
1.2 Dead+1.0 Wind 240 deg - No Ice	42085.51	-33690.93	19514.60	1659291.55	2833372.42	-37742.96
0.9 Dead+1.0 Wind 240 deg - No Ice	31564.13	-33691.10	19514.70	1651114.36	2828963.61	-37711.01

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Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
No Ice						
1.2 Dead+1.0 Wind 270 deg - No Ice	42085.51	-37465.60	316.65	57358.30	3155835.27	-41183.12
0.9 Dead+1.0 Wind 270 deg - No Ice	31564.13	-37465.79	316.65	51235.09	3151001.61	-41146.94
1.2 Dead+1.0 Wind 300 deg - No Ice	42085.51	-31914.27	-17995.26	-1478244.51	2688216.14	-33447.78
0.9 Dead+1.0 Wind 300 deg - No Ice	31564.13	-31914.43	-17995.35	-1482396.91	2683982.24	-33409.56
1.2 Dead+1.0 Wind 330 deg - No Ice	42085.51	-18431.87	-31833.25	-2637512.80	1548276.73	-16816.89
0.9 Dead+1.0 Wind 330 deg - No Ice	31564.13	-18431.97	-31833.41	-2640184.88	1545517.98	-16787.04
1.2 Dead+1.0 Ice+1.0 Temp	101480.69	0.11	-0.26	85597.12	16842.69	1.74
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	101480.69	49.38	-11226.13	-841686.62	12395.85	-793.27
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	101480.69	5618.74	-9607.75	-709348.10	-449915.62	6898.32
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	101480.69	9622.00	-5557.05	-375274.10	-781553.19	12774.28
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	101480.69	11125.13	-62.66	78991.12	-904993.18	15237.19
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	101480.69	9740.64	5580.58	545691.06	-788417.13	13595.13
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	101480.69	5502.66	9566.42	876379.17	-437680.25	8304.69
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	101480.69	-46.08	11020.88	997641.22	21878.13	782.07
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	101480.69	-5584.34	9621.29	882049.13	480261.15	-6942.41
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	101480.69	-9788.97	5665.50	554203.14	827991.10	-12802.42
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	101480.69	-11115.40	32.79	88913.88	938121.79	-15236.33
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	101480.69	-9559.28	-5467.62	-365913.44	809057.21	-13556.27
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	101480.69	-5524.53	-9548.88	-703308.59	474232.85	-8261.40
Dead+Wind 0 deg - Service	35071.26	91.92	-8818.01	-715507.58	-6505.84	951.30
Dead+Wind 30 deg - Service	35071.26	4418.13	-7441.14	-603799.26	-370942.88	5525.88
Dead+Wind 60 deg - Service	35071.26	7464.57	-4311.54	-343341.92	-627090.16	8665.08
Dead+Wind 90 deg - Service	35071.26	8648.25	-106.23	8748.19	-724520.63	9489.02
Dead+Wind 120 deg - Service	35071.26	7676.11	4340.21	380358.38	-639030.38	7741.13
Dead+Wind 150 deg - Service	35071.26	4225.64	7356.60	635123.89	-350455.63	3913.19
Dead+Wind 180 deg - Service	35071.26	-87.50	8454.14	729025.58	12047.82	-963.96
Dead+Wind 210 deg - Service	35071.26	-4379.46	7454.84	645494.85	372201.55	-5574.43
Dead+Wind 240 deg - Service	35071.26	-7766.04	4498.27	396795.69	654494.97	-8692.65
Dead+Wind 270 deg - Service	35071.26	-8636.30	72.94	27783.85	728769.31	-9487.60
Dead+Wind 300 deg - Service	35071.26	-7356.71	-4148.23	-325949.78	621055.26	-7701.12
Dead+Wind 330 deg - Service	35071.26	-4248.82	-7338.04	-592981.29	358466.82	-3866.18

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	-0.00	-35071.26	0.00	-0.06	35071.26	0.10	0.000%
2	398.94	-42085.51	-38255.00	-398.93	42085.51	38254.32	0.001%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
3	398.94	-31564.14	-38255.00	-398.93	31564.13	38254.51	0.001%
4	19167.12	-42085.51	-32281.33	-19166.71	42085.51	32280.73	0.001%
5	19167.12	-31564.14	-32281.33	-19166.80	31564.13	32280.89	0.001%
6	32383.07	-42085.51	-18704.46	-32382.40	42085.51	18704.07	0.001%
7	32383.07	-31564.14	-18704.46	-32382.56	31564.13	18704.17	0.001%
8	37518.19	-42085.51	-461.07	-37517.47	42085.51	461.01	0.001%
9	37518.19	-31564.14	-461.07	-37517.65	31564.13	461.01	0.001%
10	33301.18	-42085.51	18828.92	-33300.59	42085.51	-18828.59	0.001%
11	33301.18	-31564.14	18828.92	-33300.75	31564.13	-18828.68	0.001%
12	18331.61	-42085.51	31914.46	-18331.32	42084.99	-31913.42	0.002%
13	18331.61	-31564.14	31914.46	-18331.39	31564.13	-31913.97	0.001%
14	-379.79	-42085.51	36675.73	379.78	42085.51	-36674.96	0.001%
15	-379.79	-31564.14	36675.73	379.79	31564.13	-36675.15	0.001%
16	-18999.28	-42085.51	32340.85	18998.95	42085.51	-32340.19	0.001%
17	-18999.28	-31564.14	32340.85	18999.05	31564.13	-32340.36	0.001%
18	-33691.54	-42085.51	19514.95	33690.93	42085.51	-19514.60	0.001%
19	-33691.54	-31564.14	19514.95	33691.10	31564.13	-19514.70	0.001%
20	-37466.33	-42085.51	316.61	37465.60	42085.51	-316.65	0.001%
21	-37466.33	-31564.14	316.61	37465.79	31564.13	-316.65	0.001%
22	-31914.93	-42085.51	-17995.63	31914.27	42085.51	17995.26	0.001%
23	-31914.93	-31564.14	-17995.63	31914.43	31564.13	17995.35	0.001%
24	-18432.27	-42085.51	-31833.83	18431.87	42085.51	31833.25	0.001%
25	-18432.27	-31564.14	-31833.83	18431.97	31564.13	31833.41	0.001%
26	-0.00	-101480.69	0.00	-0.11	101480.69	0.26	0.000%
27	49.37	-101480.69	-11226.24	-49.38	101480.69	11226.13	0.000%
28	5618.79	-101480.69	-9607.83	-5618.74	101480.69	9607.75	0.000%
29	9622.10	-101480.69	-5557.09	-9622.00	101480.69	5557.05	0.000%
30	11125.24	-101480.69	-62.65	-11125.13	101480.69	62.66	0.000%
31	9740.73	-101480.69	5580.65	-9740.64	101480.69	-5580.58	0.000%
32	5502.71	-101480.69	9566.54	-5502.66	101480.69	-9566.42	0.000%
33	-46.09	-101480.69	11021.01	46.08	101480.69	-11020.88	0.000%
34	-5584.40	-101480.69	9621.41	5584.34	101480.69	-9621.29	0.000%
35	-9789.08	-101480.69	5665.57	9788.97	101480.69	-5665.50	0.000%
36	-11115.53	-101480.69	32.81	11115.40	101480.69	-32.79	0.000%
37	-9559.39	-101480.69	-5467.67	9559.28	101480.69	5467.62	0.000%
38	-5524.60	-101480.69	-9548.97	5524.53	101480.69	9548.88	0.000%
39	91.92	-35071.26	-8818.15	-91.92	35071.26	8818.01	0.000%
40	4418.20	-35071.26	-7441.25	-4418.13	35071.26	7441.14	0.000%
41	7464.69	-35071.26	-4311.60	-7464.57	35071.26	4311.54	0.000%
42	8648.39	-35071.26	-106.23	-8648.25	35071.26	106.23	0.000%
43	7676.22	-35071.26	4340.28	-7676.11	35071.26	-4340.21	0.000%
44	4225.70	-35071.26	7356.72	-4225.64	35071.26	-7356.60	0.000%
45	-87.50	-35071.26	8454.28	87.50	35071.26	-8454.14	0.000%
46	-4379.53	-35071.26	7454.96	4379.46	35071.26	-7454.84	0.000%
47	-7766.16	-35071.26	4498.34	7766.04	35071.26	-4498.27	0.000%
48	-8636.44	-35071.26	72.95	8636.30	35071.26	-72.94	0.000%
49	-7356.83	-35071.26	-4148.29	7356.71	35071.26	4148.23	0.000%
50	-4248.89	-35071.26	-7338.15	4248.82	35071.26	7338.04	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.0000001	0.00007518
2	Yes	9	0.0000001	0.00008729
3	Yes	9	0.0000001	0.00006330

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4	Yes	9	0.00000001	0.00009467
5	Yes	9	0.00000001	0.00007058
6	Yes	9	0.00000001	0.00010090
7	Yes	9	0.00000001	0.00007658
8	Yes	9	0.00000001	0.00009468
9	Yes	9	0.00000001	0.00007059
10	Yes	9	0.00000001	0.00008746
11	Yes	9	0.00000001	0.00006342
12	Yes	9	0.00000001	0.00009466
13	Yes	9	0.00000001	0.00007048
14	Yes	9	0.00000001	0.00010077
15	Yes	9	0.00000001	0.00007642
16	Yes	9	0.00000001	0.00009411
17	Yes	9	0.00000001	0.00007001
18	Yes	9	0.00000001	0.00008711
19	Yes	9	0.00000001	0.00006310
20	Yes	9	0.00000001	0.00009418
21	Yes	9	0.00000001	0.00007007
22	Yes	9	0.00000001	0.00010096
23	Yes	9	0.00000001	0.00007657
24	Yes	9	0.00000001	0.00009470
25	Yes	9	0.00000001	0.00007052
26	Yes	8	0.00000001	0.00012414
27	Yes	10	0.00000001	0.00004648
28	Yes	10	0.00000001	0.00004657
29	Yes	10	0.00000001	0.00004771
30	Yes	10	0.00000001	0.00004839
31	Yes	10	0.00000001	0.00004936
32	Yes	10	0.00000001	0.00005063
33	Yes	10	0.00000001	0.00005155
34	Yes	10	0.00000001	0.00005130
35	Yes	10	0.00000001	0.00005075
36	Yes	10	0.00000001	0.00005026
37	Yes	10	0.00000001	0.00004959
38	Yes	10	0.00000001	0.00004786
39	Yes	9	0.00000001	0.00007252
40	Yes	9	0.00000001	0.00007391
41	Yes	9	0.00000001	0.00007536
42	Yes	9	0.00000001	0.00007409
43	Yes	9	0.00000001	0.00007290
44	Yes	9	0.00000001	0.00007438
45	Yes	9	0.00000001	0.00007573
46	Yes	9	0.00000001	0.00007442
47	Yes	9	0.00000001	0.00007315
48	Yes	9	0.00000001	0.00007433
49	Yes	9	0.00000001	0.00007563
50	Yes	9	0.00000001	0.00007410

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	140.33 - 120.33	2.889	47	0.1544	0.0371
T2	120.33 - 115.33	2.238	47	0.1533	0.0343
T3	115.33 - 110.33	2.069	47	0.1522	0.0334
T4	110.33 - 105.33	1.911	47	0.1503	0.0323
T5	105.33 - 100.33	1.744	47	0.1468	0.0313
T6	100.33 - 80.33	1.588	47	0.1417	0.0300
T7	80.33 - 60.33	1.011	47	0.1163	0.0236

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T8	60.33 - 40.33	0.570	47	0.0850	0.0166
T9	40.33 - 20.33	0.251	47	0.0571	0.0095
T10	20.33 - 0.33	0.065	47	0.0246	0.0045

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
144.00	20' Lightning Rod	47	2.889	0.1544	0.0371	192988
141.50	Omni 1"x4'	47	2.889	0.1544	0.0371	192988
138.50	3' Side Mount Standoff	47	2.831	0.1544	0.0369	192988
133.00	2' Ø Dish Antenna w/o Radome	47	2.656	0.1544	0.0361	131643
129.00	Omni 2"X8'	47	2.527	0.1543	0.0356	85167
121.00	12'-6" Sector Frame	47	2.261	0.1534	0.0344	115091
110.00	12'-6" Sector Frame	47	1.900	0.1502	0.0322	34344
101.33	1900 RRH	47	1.619	0.1428	0.0303	45445
98.75	1'-6" Ø Dish Antenna w/o Radome	47	1.540	0.1400	0.0296	133470
98.00	3' Ø Dish Antenna w/ Radome	47	1.517	0.1391	0.0293	153196
96.50	HPD2-4.7NS Dish Antenna	47	1.472	0.1374	0.0289	135792
95.66	(2) 800 RRH	47	1.447	0.1364	0.0286	114181
95.23	LLPX310R-V1 Antenna w/ Mounting Pipe	47	1.434	0.1359	0.0285	104625
90.00	6' Whip	47	1.279	0.1295	0.0268	51715
85.50	3' Side Mount Standoff	47	1.150	0.1236	0.0253	36035

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	140.33 - 120.33	12.264	18	0.6509	0.1612
T2	120.33 - 115.33	9.518	18	0.6464	0.1490
T3	115.33 - 110.33	8.805	18	0.6415	0.1452
T4	110.33 - 105.33	8.137	18	0.6332	0.1403
T5	105.33 - 100.33	7.433	18	0.6197	0.1359
T6	100.33 - 80.33	6.774	18	0.5994	0.1304
T7	80.33 - 60.33	4.323	18	0.4942	0.1024
T8	60.33 - 40.33	2.445	18	0.3625	0.0723
T9	40.33 - 20.33	1.080	18	0.2441	0.0413
T10	20.33 - 0.33	0.282	18	0.1053	0.0197

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
144.00	20' Lightning Rod	18	12.264	0.6509	0.1612	43463
141.50	Omni 1"x4'	18	12.264	0.6509	0.1612	43463

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Elevation <i>ft</i>	Appurtenance	Gov. Load Comb.	Deflection <i>in</i>	Tilt <i>°</i>	Twist <i>°</i>	Radius of Curvature <i>ft</i>
138.50	3' Side Mount Standoff	18	12.020	0.6509	0.1602	43463
133.00	2' Ø Dish Antenna w/o Radome	18	11.280	0.6508	0.1569	29647
129.00	Omni 2"X8'	18	10.736	0.6503	0.1545	19181
121.00	12'-6" Sector Frame	18	9.615	0.6469	0.1494	25985
110.00	12'-6" Sector Frame	18	8.091	0.6325	0.1400	7812
101.33	1900 RRH	18	6.903	0.6038	0.1316	11238
98.75	1'-6" Ø Dish Antenna w/o Radome	18	6.571	0.5923	0.1284	34119
98.00	3' Ø Dish Antenna w/ Radome	18	6.475	0.5888	0.1275	39299
96.50	HPD2-4.7NS Dish Antenna	18	6.282	0.5818	0.1255	34264
95.66	(2) 800 RRH	18	6.175	0.5778	0.1244	28478
95.23	LLPX310R-V1 Antenna w/ Mounting Pipe	18	6.120	0.5758	0.1238	25969
90.00	6' Whip	18	5.461	0.5495	0.1166	12502
85.50	3' Side Mount Standoff	18	4.915	0.5249	0.1100	8645

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation <i>ft</i>	Size	L <i>ft</i>	L _u <i>ft</i>	Kl/r	A <i>in²</i>	P _u <i>lb</i>	φP _n <i>lb</i>	Ratio $\frac{P_u}{\phi P_n}$
T1	140.33 - 120.33	2 1/4	20.00	5.00	106.7 K=1.00	3.9761	-8237.98	77870.40	0.106 ¹ ✓
T2	120.33 - 115.33	2 1/4	5.00	5.00	106.7 K=1.00	3.9761	-12143.50	77870.40	0.156 ¹ ✓
T3	115.33 - 110.33	2 1/4	5.00	5.00	106.7 K=1.00	3.9761	-18866.50	77870.40	0.242 ¹ ✓
T4	110.33 - 105.33	2 1/4	5.00	5.00	106.7 K=1.00	3.9761	-30154.50	77870.40	0.387 ¹ ✓
T5	105.33 - 100.33	2 1/4	5.00	5.00	106.7 K=1.00	3.9761	-42967.00	77870.40	0.552 ¹ ✓
T6	100.33 - 80.33	2 3/4	20.00	5.00	87.3 K=1.00	5.9396	-103602.00	153147.00	0.676 ¹ ✓
T7	80.33 - 60.33	3	20.03	5.01	80.1 K=1.00	7.0686	-148945.00	198902.00	0.749 ¹ ✓
T8	60.33 - 40.33	3 1/4	20.03	5.01	74.0 K=1.00	8.2958	-185290.00	250223.00	0.740 ¹ ✓
T9	40.33 - 20.33	Pirod 105218	20.03	10.02	32.4 K=1.00	7.2158	-212314.00	300681.00	0.706 ¹ ✓
T10	20.33 - 0.33	Pirod 105219	20.03	10.02	28.4 K=1.00	9.4248	-242094.00	399868.00	0.605 ¹ ✓

¹ P_u / φP_n controls

Truss-Leg Diagonal Data

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Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n lb	A in ²	V_u lb	ϕV_n lb	Stress Ratio
T9	40.33 - 20.33	0.5	1.46	119.0	324713.00	0.1963	740.77	3377.71	0.219
T10	20.33 - 0.33	0.625	1.45	94.4	424115.00	0.3068	895.33	6957.62	0.129



Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140.33 - 120.33	L1 3/4x1 3/4x1/8	9.43	4.61	159.4 K=1.00	0.4219	-2015.12	4753.13	0.424 ¹
T2	120.33 - 115.33	L1 3/4x1 3/4x1/4	9.43	4.61	161.9 K=1.00	0.8125	-3676.00	8868.44	0.415 ¹
T3	115.33 - 110.33	L1 3/4x1 3/4x1/4	9.43	4.61	161.9 K=1.00	0.8125	-3950.19	8868.44	0.445 ¹
T4	110.33 - 105.33	L2x2x1/4	9.43	4.61	141.4 K=1.00	0.9380	-6361.01	13432.60	0.474 ¹
T5	105.33 - 100.33	L2x2x1/4	9.43	4.61	141.4 K=1.00	0.9380	-7060.82	13432.60	0.526 ¹
T6	100.33 - 80.33	L2 1/2x2 1/2x1/4	9.43	4.58	112.0 K=1.00	1.1900	-10161.70	25948.10	0.392 ¹
T7	80.33 - 60.33	L2 1/2x2 1/2x5/16	10.96	5.48	134.5 K=1.00	1.4600	-6986.45	23114.30	0.302 ¹
T8	60.33 - 40.33	L2 1/2x2 1/2x5/16	12.77	6.37	156.4 K=1.00	1.4600	-7125.35	17080.30	0.417 ¹
T9	40.33 - 20.33	L3x3x5/16	16.80	8.09	164.8 K=1.00	1.7800	-9294.18	18752.10	0.496 ¹
T10	20.33 - 0.33	L3x3x5/16	18.45	8.93	181.9 K=1.00	1.7800	-10077.90	15403.20	0.654 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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140.33 - 120.33	L3x3x3/8	8.00	7.81	159.7 K=1.00	2.1100	-238.77	23676.30	0.010 ¹

¹ $P_u / \phi P_n$ controls

Tension Checks

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Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140.33 - 120.33	2 1/4	20.00	5.00	106.7	3.9761	3545.71	178924.00	0.020 ¹
T2	120.33 - 115.33	2 1/4	5.00	5.00	106.7	3.9761	6766.66	178924.00	0.038 ¹
T3	115.33 - 110.33	2 1/4	5.00	5.00	106.7	3.9761	12849.90	178924.00	0.072 ¹
T4	110.33 - 105.33	2 1/4	5.00	5.00	106.7	3.9761	20615.20	178924.00	0.115 ¹
T5	105.33 - 100.33	2 1/4	5.00	5.00	106.7	3.9761	31396.90	178924.00	0.175 ¹
T6	100.33 - 80.33	2 3/4	20.00	5.00	87.3	5.9396	86033.20	267281.00	0.322 ¹
T7	80.33 - 60.33	3	20.03	5.01	80.1	7.0686	127355.00	318086.00	0.400 ¹
T8	60.33 - 40.33	3 1/4	20.03	5.01	74.0	8.2958	159667.00	373310.00	0.428 ¹
T9	40.33 - 20.33	Pirolod 105218	20.03	10.02	32.4	7.2158	183324.00	324713.00	0.565 ¹
T10	20.33 - 0.33	Pirolod 105219	20.03	10.02	28.4	9.4248	208843.00	424115.00	0.492 ¹

¹ P_u / φP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L _d ft	Kl/r	φP _n lb	A in ²	V _u lb	φV _n lb	Stress Ratio
T9	40.33 - 20.33	0.5	1.46	119.0	324713.00	0.1963	740.77	3377.71	0.219
T10	20.33 - 0.33	0.625	1.45	94.4	424115.00	0.3068	895.33	6957.62	0.129

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140.33 - 120.33	L1 3/4x1 3/4x1/8	9.43	4.61	101.3	0.4219	1894.90	13668.80	0.139 ¹
T2	120.33 - 115.33	L1 3/4x1 3/4x1/4	9.43	4.61	104.5	0.8125	3668.72	26325.00	0.139 ¹
T3	115.33 - 110.33	L1 3/4x1 3/4x1/4	9.43	4.61	104.5	0.8125	3940.17	26325.00	0.150 ¹

tnxTower Hudson Design Group 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job	140' Self-Support Tower	Page	30 of 31
	Project	CT3438	Date	11:03:44 05/18/22
	Client	AT&T	Designed by	ID

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	110.33 - 105.33	L2x2x1/4	9.43	4.61	90.8	0.9380	6391.79	30391.20	0.210 ¹
T5	105.33 - 100.33	L2x2x1/4	9.43	4.61	90.8	0.9380	6991.91	30391.20	0.230 ¹
T6	100.33 - 80.33	L2 1/2x2 1/2x1/4	9.43	4.58	71.5	1.1900	9899.79	38556.00	0.257 ¹
T7	80.33 - 60.33	L2 1/2x2 1/2x5/16	10.96	5.48	86.4	1.4600	7000.82	47304.00	0.148 ¹
T8	60.33 - 40.33	L2 1/2x2 1/2x5/16	12.31	6.15	96.9	1.4600	7176.33	47304.00	0.152 ¹
T9	40.33 - 20.33	L3x3x5/16	16.80	8.09	105.3	1.7800	9010.12	57672.00	0.156 ¹
T10	20.33 - 0.33	L3x3x5/16	18.45	8.93	116.2	1.7800	9358.95	57672.00	0.162 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140.33 - 120.33	L3x3x3/8	8.00	7.81	102.7	2.1100	191.24	68364.00	0.003 ¹

¹ P_u / φP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	φP _{allow} lb	% Capacity	Pass Fail
T1	140.33 - 120.33	Leg	2 1/4	2	-8237.98	77870.40	10.6	Pass
T2	120.33 - 115.33	Leg	2 1/4	32	-12143.50	77870.40	15.6	Pass
T3	115.33 - 110.33	Leg	2 1/4	41	-18866.50	77870.40	24.2	Pass
T4	110.33 - 105.33	Leg	2 1/4	49	-30154.50	77870.40	38.7	Pass
T5	105.33 - 100.33	Leg	2 1/4	58	-42967.00	77870.40	55.2	Pass
T6	100.33 - 80.33	Leg	2 3/4	67	-103602.00	153147.00	67.6	Pass
T7	80.33 - 60.33	Leg	3	94	-148945.00	198902.00	74.9	Pass
T8	60.33 - 40.33	Leg	3 1/4	121	-185290.00	250223.00	74.0	Pass
T9	40.33 - 20.33	Leg	Pirol 105218	148	-212314.00	300681.00	70.6	Pass
T10	20.33 - 0.33	Leg	Pirol 105219	163	-242094.00	399868.00	60.5	Pass
T1	140.33 - 120.33	Diagonal	L1 3/4x1 3/4x1/8	7	-2015.12	4753.13	42.4	Pass
T2	120.33 - 115.33	Diagonal	L1 3/4x1 3/4x1/4	35	-3676.00	8868.44	41.5	Pass
T3	115.33 - 110.33	Diagonal	L1 3/4x1 3/4x1/4	43	-3950.19	8868.44	44.5	Pass
T4	110.33 - 105.33	Diagonal	L2x2x1/4	52	-6361.01	13432.60	47.4	Pass
T5	105.33 - 100.33	Diagonal	L2x2x1/4	62	-7060.82	13432.60	52.6	Pass
T6	100.33 - 80.33	Diagonal	L2 1/2x2 1/2x1/4	71	-10161.70	25948.10	39.2	Pass
T7	80.33 - 60.33	Diagonal	L2 1/2x2 1/2x5/16	98	-6986.45	23114.30	30.2	Pass
T8	60.33 - 40.33	Diagonal	L2 1/2x2 1/2x5/16	125	-7125.35	17080.30	41.7	Pass

tnxTower Hudson Design Group 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job	140' Self-Support Tower	Page	31 of 31
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	Client	AT&T	Designed by	ID

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail	
T9	40.33 - 20.33	Diagonal	L3x3x5/16	152	-9294.18	18752.10	49.6	Pass	
T10	20.33 - 0.33	Diagonal	L3x3x5/16	166	-10077.90	15403.20	65.4	Pass	
T1	140.33 - 120.33	Top Girt	L3x3x3/8	5	-238.77	23676.30	1.0	Pass	
							Summary		
							Leg (T7)	74.9	Pass
							Diagonal (T10)	65.4	Pass
							Top Girt (T1)	1.0	Pass
							RATING =	74.9	Pass

EXHIBIT 4

April 8, 2022



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

RE: Site Number: CT3438
 FA Number: 10578403
 PACE Number: MRCTB051470
 PT Number: 2051A0Z7KQ
 Site Name: EAST HARTFORD SUNSET RIDGE
 Site Address: 100 Sunset Ridge
 East Hartford, CT 06108

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

- (3) DMP65R-BU8DA Antennas (96.0"x20.7"x7.7" – Wt. = 119 lbs. /each)
- (3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)
- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (3) 8843 B2/B66A RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)
- (3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) RRUS-E2 B29 RRH's (20.4"x18.5"x7.5" – Wt. = 53 lbs. /each)
- (3) DC9-48-60-24-8C-EV Surge Arrestor (24.0"x9.7" Ø – Wt. = 33 lbs. /each)
- **(3) AIR6449 Antennas (30.6"x15.9"x10.6" – Wt. = 82 lbs. /each)**
- **(3) AIR6419 Antennas (31.1"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) QD8616-7 Antennas (96.0"x22.0"x9.6" – Wt. = 150 lbs. /each)**

**Proposed equipment shown in bold*

Mount fabrication drawings prepared by Sabre Industries, P/N C10857001C, dated December 22, 2015, were available and used to perform this analysis. HDG conducted a ground audit of the existing antenna mounts on March 21, 2022.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive - R16.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed of 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 1.69 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 0.180 and a spectral response acceleration parameter at a period of 1 second, S_1 , of 0.064.
- The mount has been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 1.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mounts are secured to the existing self supporting tower with threaded rods and steel plates tightened around the tower leg. HDG considers the threaded rods as the governing connection members.

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

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing Mount Rating	10	LC18	69%	PASS

Reference Documents:

- Fabrication drawings prepared by Sabre Industries, P/N C10857001C, dated December 22, 2015.

This determination was based on the following limitations and assumptions:

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

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

Respectfully Submitted,
Hudson Design Group LLC



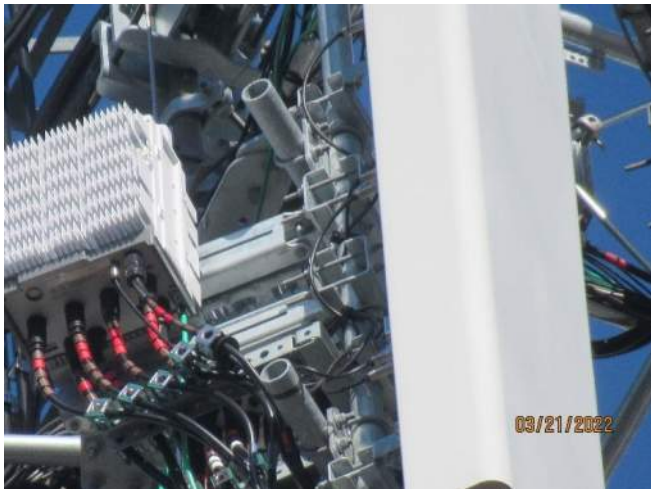
Michael Cabral
Vice President



Daniel P. Hamm, PE
Principal

FIELD PHOTOS:







HUDSON
Design Group LLC

**Wind & Ice
Calculations**

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

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

CT3438 - EAST HARTFORD SUNSET RIDGE

Connecticut
Hartford
II
B
1 - Kzt = 1
z _s 190.68 ft
z 110 ft

Reference
 Table 2-1
 Section 2.6.5.1.2
 Section 2.6.6.2.1
 ASCE7-16 Hazards

Wind Parameters
Basic wind speed
Wind direction probability factor
Gust effect factor
Velocity Pressure (K _a = 0.9)

V 125 mph
K _d 0.95
G _h 1
34.49 psf

Appendix N of Connecticut State Building
 Section 16.6
 Section 16.6
 Section 2.6.11.6

Wind & Ice Parameters
Base windspeed in conjunction with ice, V _i
Base Ice thickness
Ice Velocity Pressure (K _a = 0.9)
Design Ice Thickness

50 mph
t _i 1.50 in
q _{ice} 5.52 psf
t _{iz} 1.69 in

ASCE7-16 Hazards Tool
ASCE7-16 Hazards Tool
 Section 2.6.11.6
 Section 2.6.10

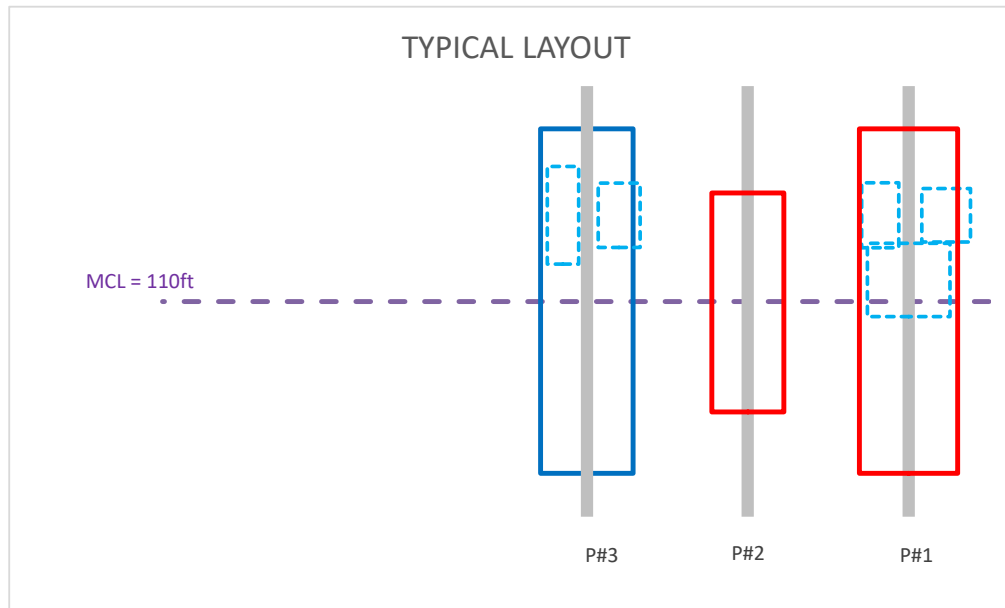
Seismic Parameters
Site Soil Class
Seismic Design Category
Spectral Response at Short Periods
Spectral Response at 1sec
Long Period Transition Period
Seismic Importance Factor
Response modification coefficient
Short-Period Site Coefficient
Design Spectral Response at Short Periods
Seismic Response Coefficient

D - Default
B
S _s 0.18
S ₁ 0.064
T _L 6
I _s 1
R 2
F _a 1.6
S _{DS} 0.192
C _s 0.096

Table 2-10
ASCE7-16 Hazards Tool
Appendix N of Connecticut State Building
Appendix N of Connecticut State Building
ASCE7-16 Hazards Tool
 Table 2-3
 Section 16.7
 Table 2-11
 Section 2.7.5
 Section 2.7.7.1

TYPICAL SECTOR

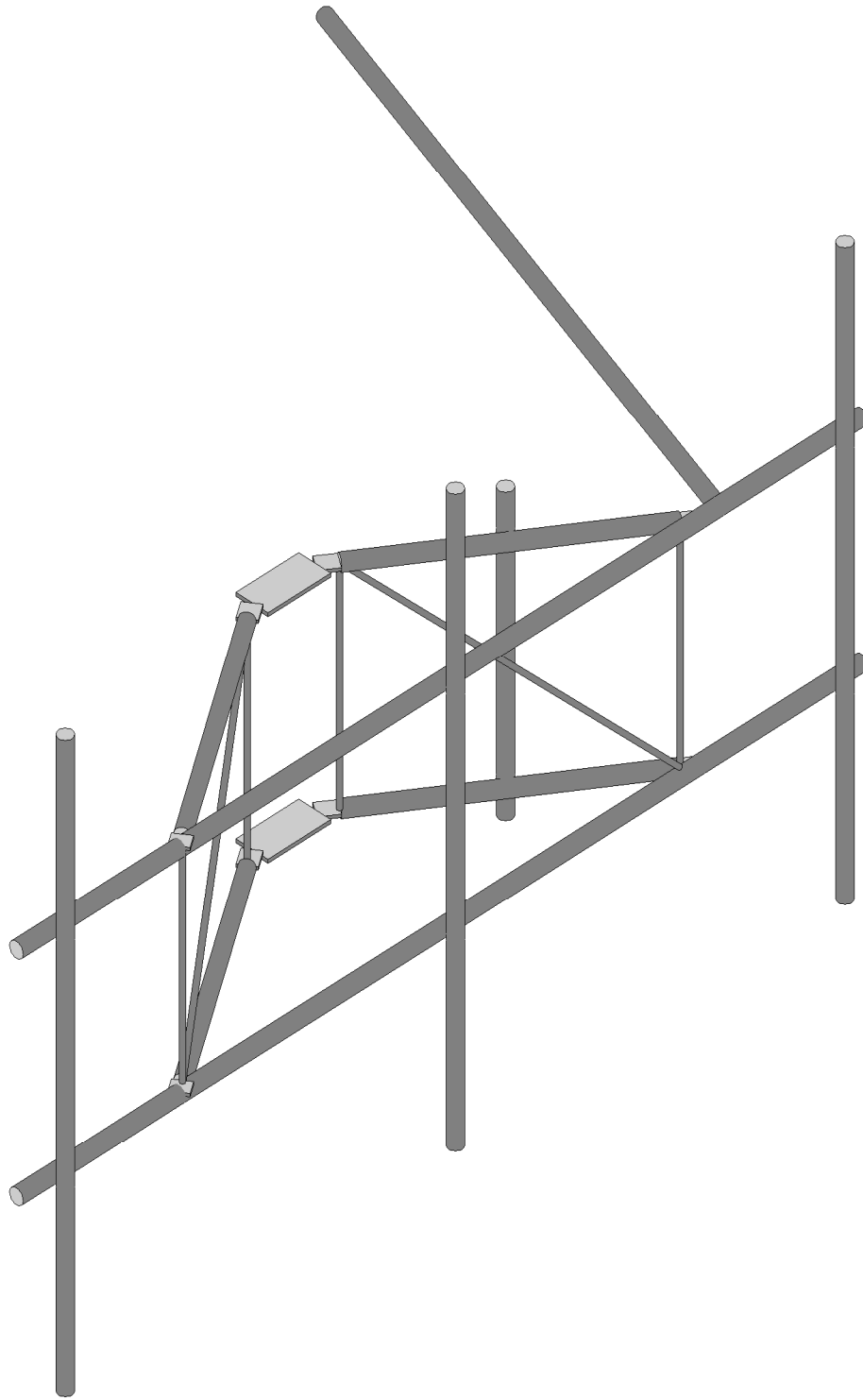
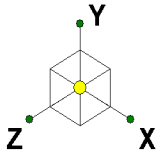
Position	Appurtenance properties						Wind		Ice	Seismic
	Manufacturer	Model	L [in]	W [in]	D [in]	Weight [lbs]	0° [lbs]	90° [lbs]	IceWeight [lbs]	E _H [lbs]
1	Quintel	QD8616-7	96.0	22.0	9.6	150.0	649.0	331.1	432.4	14.4
2	Ericsson	AIR6449 + AIR6419 STACKED	61.0	16.1	10.6	148.0	295.8	208.3	226.4	14.2
3	CCI	DMP65R-BU8DA	96.0	20.7	7.7	119.0	616.4	280.1	400.1	11.4
-	Raycap	DC9-48-60-24-8C-EV	24.0	9.7	9.7	33.0	66.9	66.9	68.2	3.2
1	Ericsson	4478 B14	18.1	13.4	8.3	60.0	43.2	69.7	59.5	5.8
1	Ericsson	8843 B2/B66A	14.9	13.2	10.9	72.0	46.7	56.5	53.8	6.9
1	Ericsson	RRUS-E2 B29	20.4	18.5	7.5	60.0	108.5	44.3	82.4	5.8
3	Ericsson	4449 B5/B12	17.9	13.2	9.4	73.0	48.4	67.9	60.4	7.0
3	Ericsson	RRUS-32 B30	27.2	12.1	7.0	60.0	57.5	94.6	78.0	5.8





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Design Group LLC

**Mount Calculations
(Existing Conditions)**



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ML

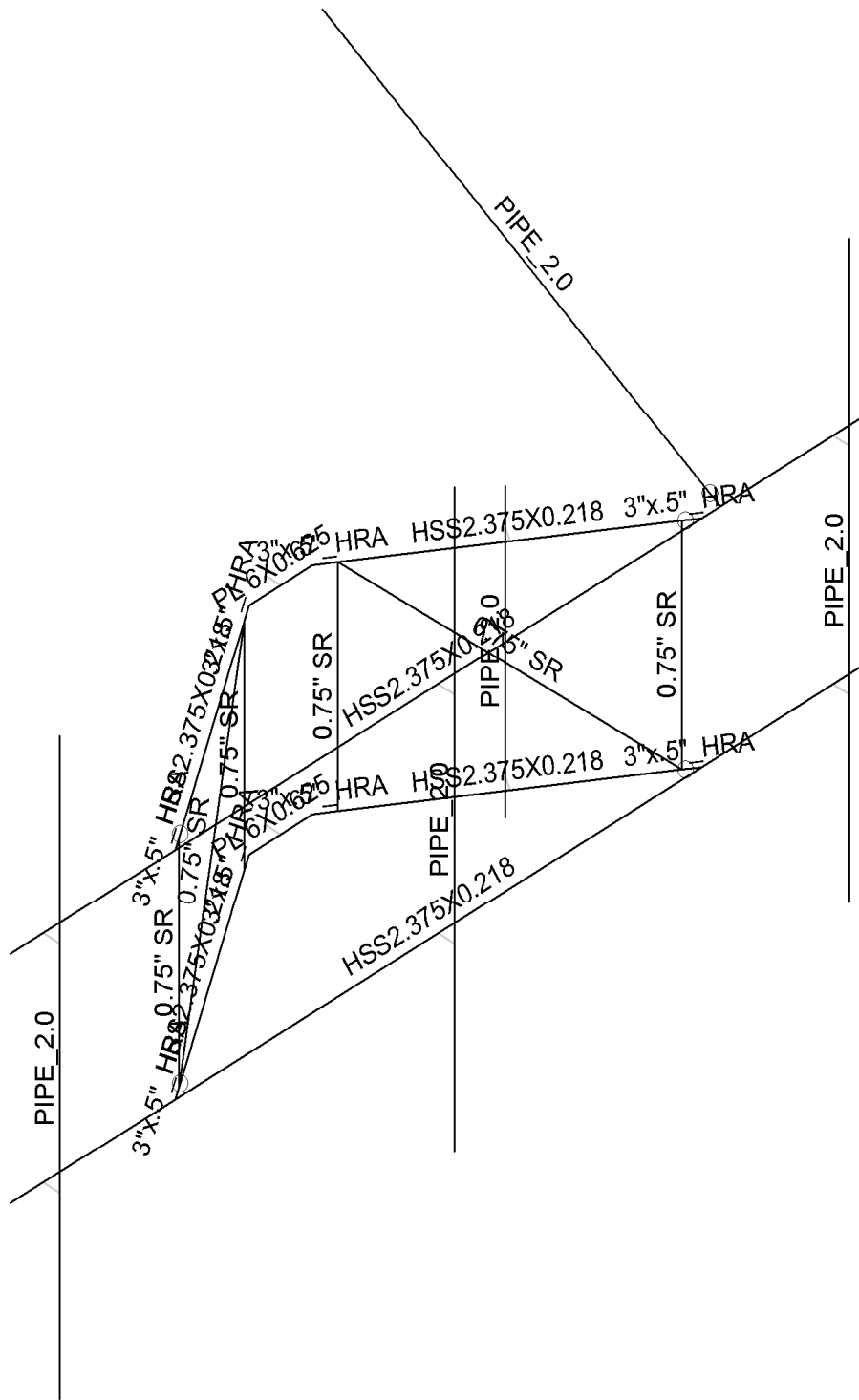
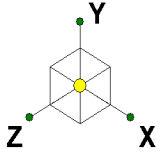
CT3438

EAST HARTFORD SUNSET RIDGE

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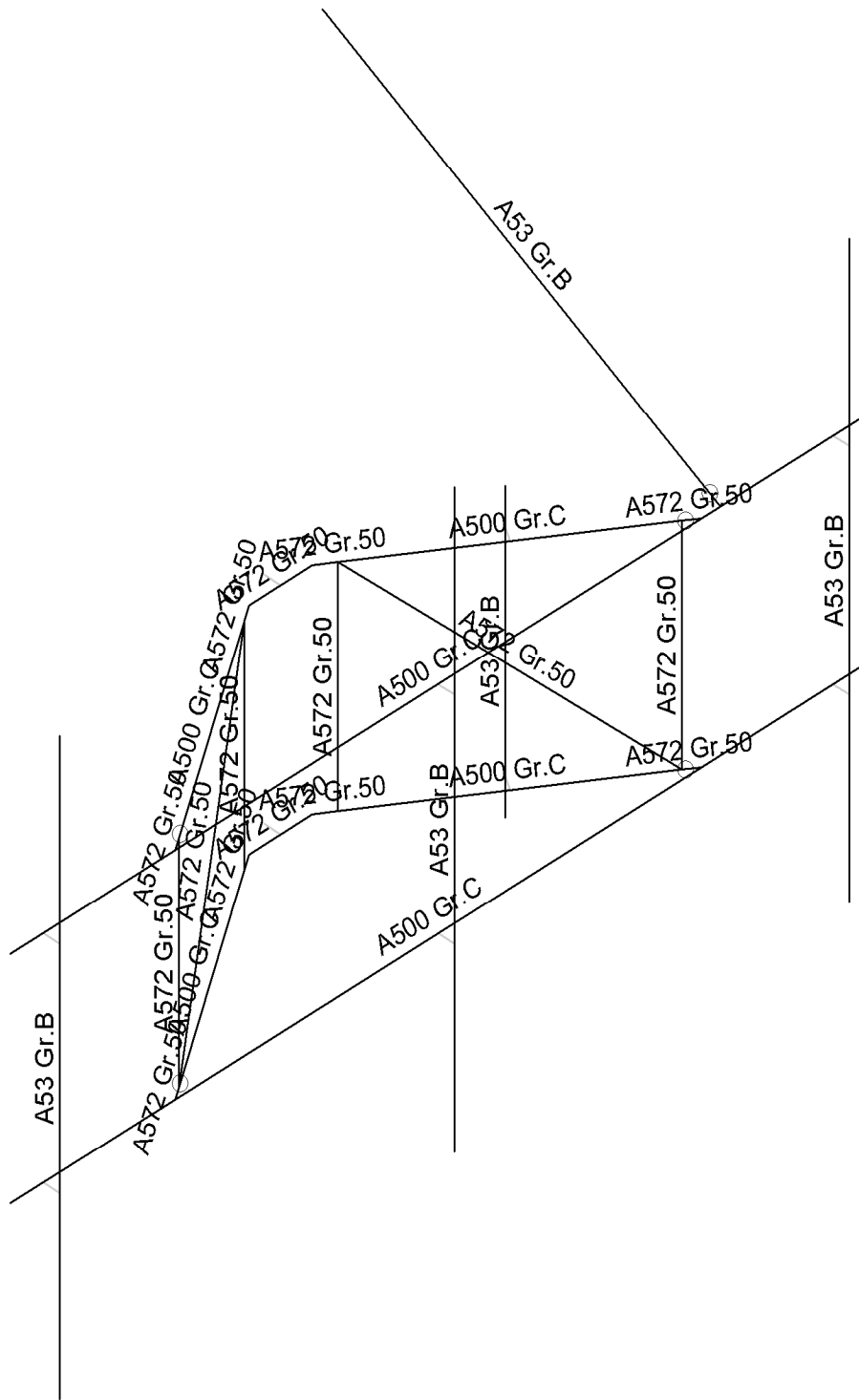
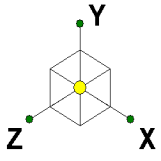
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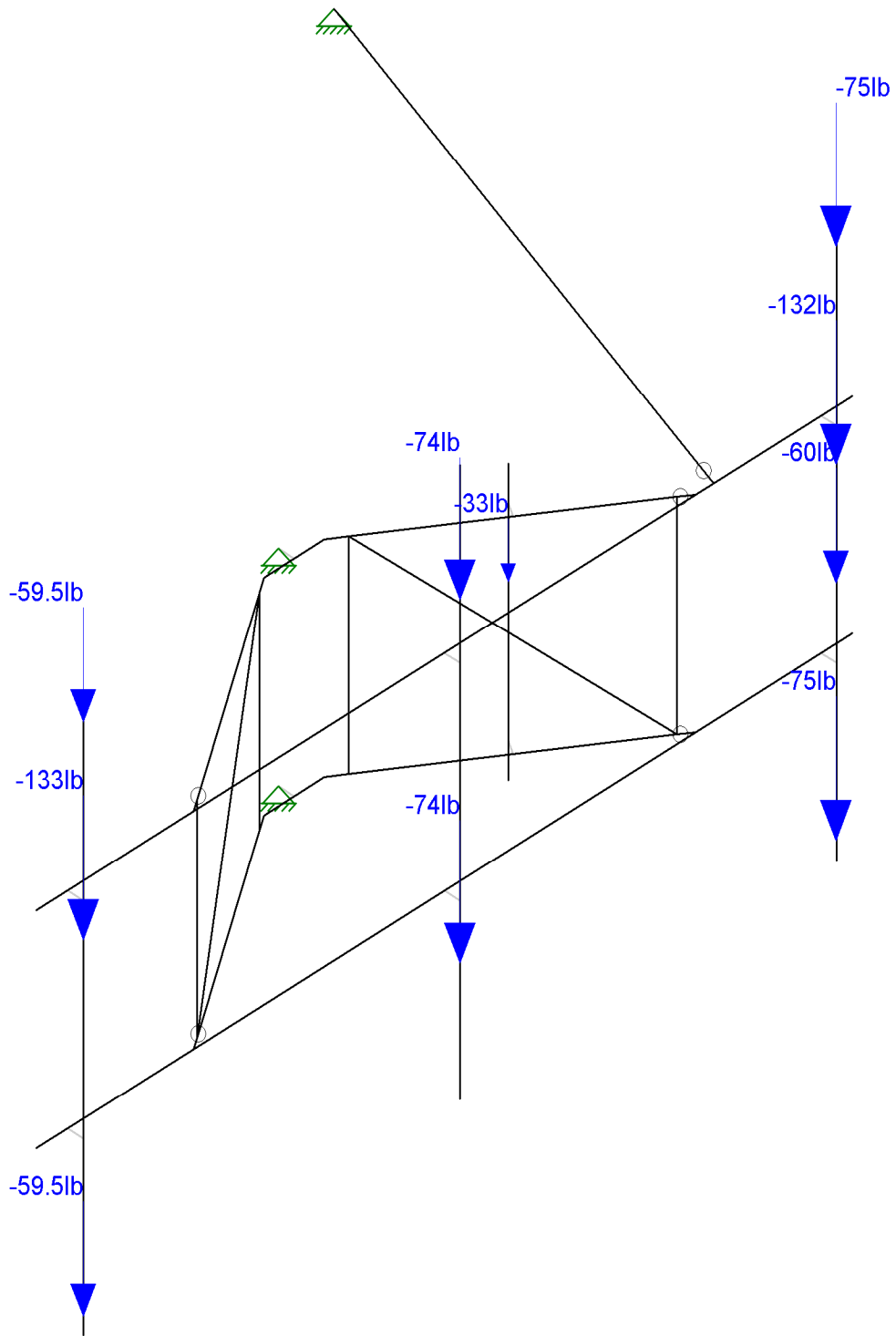
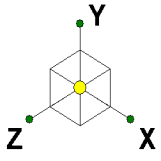
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EAST HARTFORD SUNSET RIDGE

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Loads: BLC 2, We
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Hudson Design Group, LLC

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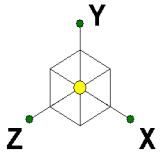
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EAST HARTFORD SUNSET RIDGE

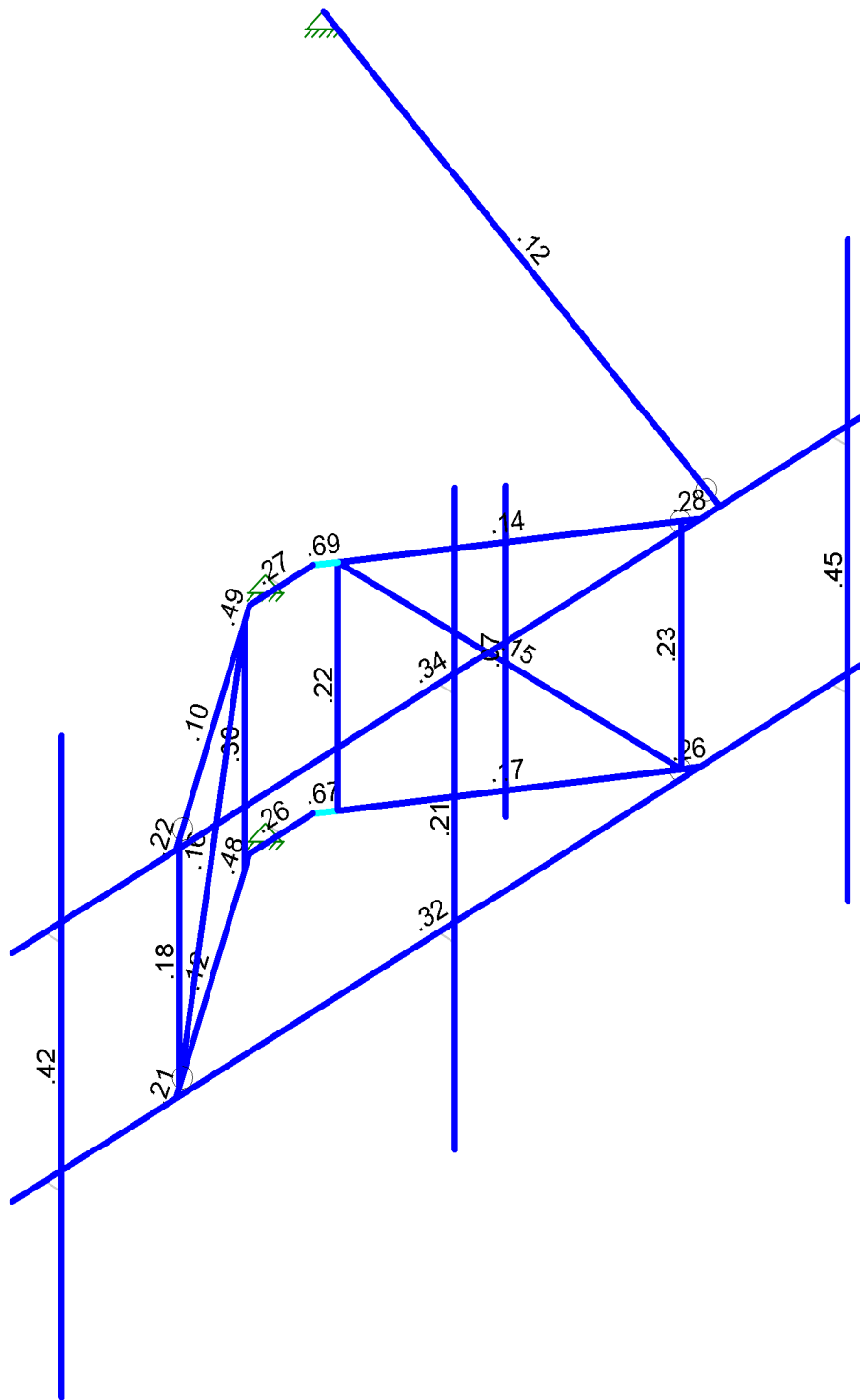
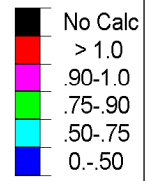
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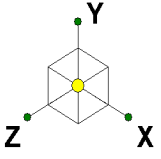


Code Check
(Env)

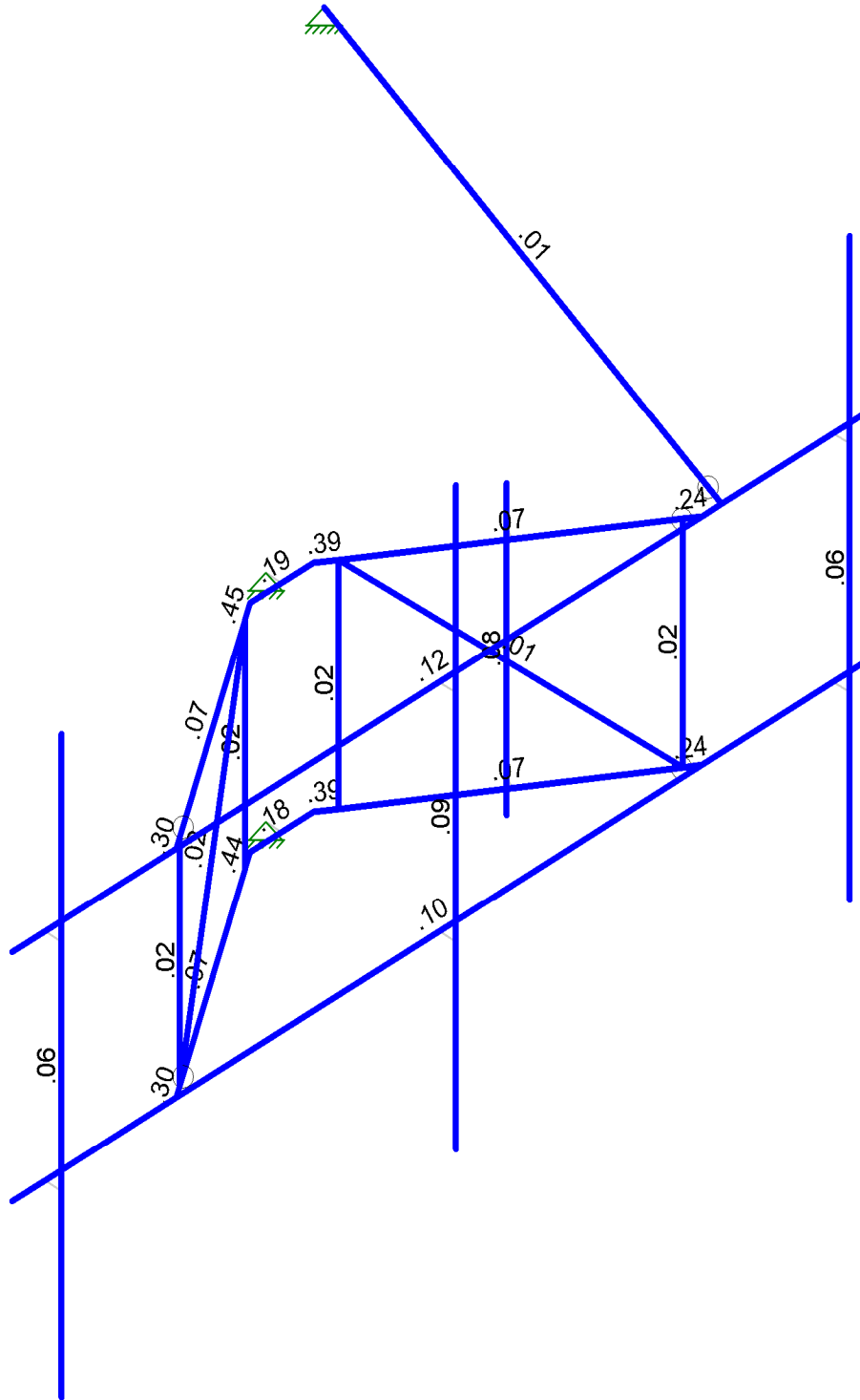
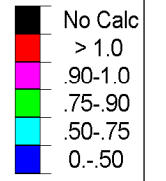


Member Code Checks Displayed (Enveloped)
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Shear Check (Env)



Member Shear Checks Displayed (Enveloped)
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CT3438

EAST HARTFORD SUNSET RIDGE

SK - 6

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CT3438.r3d



Company : Hudson Design Group, LLC
 Designer : ML
 Job Number : CT3438
 Model Name : EAST HARTFORD SUNSET RIDGE

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(Global) Model Settings

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

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

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parame Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mount Pipes	PIPE 2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
2	Stabilizer	PIPE 2.0	HBrace	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
3	Bracing	0.75" SR	VBrace	BAR	A572 Gr.50	Typical	.442	.016	.016	.031
4	Standoff Arm	HSS2.375X0.218	Beam	Pipe	A500 Gr.C	Typical	1.39	.824	.824	1.65
5	Frame Rail	HSS2.375X0.218	Beam	Pipe	A500 Gr.C	Typical	1.39	.824	.824	1.65
6	Plate	3"x.5" HRA	Beam	RECT	A572 Gr.50	Typical	1.5	.031	1.125	.112
7	Connection Plate	PL 6X0.625	Beam	RECT	A572 Gr.50	Typical	3.75	.122	11.25	.456

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N32	Reaction	Reaction	Reaction			
2	N33	Reaction	Reaction	Reaction			
3	N38	Reaction	Reaction	Reaction			

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N3	N6			Standoff Arm	Beam	Pipe	A500 Gr.C	Typical
2	M2	N4	N5			Standoff Arm	Beam	Pipe	A500 Gr.C	Typical
3	M3	N6	N5			Bracing	VBrace	BAR	A572 Gr.50	Typical
4	M4	N3	N4			Bracing	VBrace	BAR	A572 Gr.50	Typical
5	M5	N4	N6			Bracing	VBrace	BAR	A572 Gr.50	Typical
6	M6	N12	N10			Frame Rail	Beam	Pipe	A500 Gr.C	Typical
7	M7	N11	N9			Frame Rail	Beam	Pipe	A500 Gr.C	Typical
8	M8	N5	N13		90	Plate	Beam	RECT	A572 Gr.50	Typical
9	M9	N6	N14		90	Plate	Beam	RECT	A572 Gr.50	Typical
10	M10	N2	N4		90	Plate	Beam	RECT	A572 Gr.50	Typical
11	M11	N1	N3		90	Plate	Beam	RECT	A572 Gr.50	Typical
12	M12	N15	N18			Standoff Arm	Beam	Pipe	A500 Gr.C	Typical
13	M13	N16	N17			Standoff Arm	Beam	Pipe	A500 Gr.C	Typical
14	M14	N18	N17			Bracing	VBrace	BAR	A572 Gr.50	Typical
15	M15	N15	N16			Bracing	VBrace	BAR	A572 Gr.50	Typical
16	M16	N16	N18			Bracing	VBrace	BAR	A572 Gr.50	Typical
17	M17	N17	N19		90	Plate	Beam	RECT	A572 Gr.50	Typical
18	M18	N18	N20		90	Plate	Beam	RECT	A572 Gr.50	Typical
19	M19	N8	N16		90	Plate	Beam	RECT	A572 Gr.50	Typical
20	M20	N7	N15		90	Plate	Beam	RECT	A572 Gr.50	Typical
21	M21	N25	N24			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
22	M22	N29	N28			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
23	M23	N8	N2		90	Connection Pl...	Beam	RECT	A572 Gr.50	Typical
24	M24	N7	N1		90	Connection Pl...	Beam	RECT	A572 Gr.50	Typical
25	M25	N30	N32			RIGID	None	None	RIGID	Typical
26	M26	N31	N33			RIGID	None	None	RIGID	Typical
27	M27	N37	N36			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
28	M28	N21	N38			Stabilizer	HBrace	Pipe	A53 Gr.B	Typical
29	M29	N39	N22			RIGID	None	None	RIGID	Typical
30	M30	N40	N23			RIGID	None	None	RIGID	Typical
31	M31	N43	N34			RIGID	None	None	RIGID	Typical
32	M32	N44	N35			RIGID	None	None	RIGID	Typical
33	M33	N41	N26			RIGID	None	None	RIGID	Typical
34	M34	N42	N27			RIGID	None	None	RIGID	Typical
35	M35	N49	N50			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
36	M36	N46	N48			RIGID	None	None	RIGID	Typical
37	M37	N45	N47			RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes				None
2	M2						Yes				None
3	M3						Yes	** NA **			None
4	M4						Yes	** NA **			None
5	M5						Yes	** NA **			None
6	M6						Yes				None
7	M7						Yes				None
8	M8		BenPIN				Yes				None
9	M9		BenPIN				Yes				None
10	M10						Yes				None
11	M11						Yes				None
12	M12						Yes				None
13	M13						Yes				None
14	M14						Yes	** NA **			None
15	M15						Yes	** NA **			None
16	M16						Yes	** NA **			None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat..	Analysis ...	Inactive	Seismic...
17	M17		BenPIN				Yes				None
18	M18		BenPIN				Yes				None
19	M19						Yes				None
20	M20						Yes				None
21	M21						Yes	** NA **			None
22	M22						Yes	** NA **			None
23	M23						Yes				None
24	M24						Yes				None
25	M25						Yes	** NA **			None
26	M26						Yes	** NA **			None
27	M27						Yes	** NA **			None
28	M28	BenPIN					Yes	** NA **			None
29	M29						Yes	** NA **			None
30	M30						Yes	** NA **			None
31	M31						Yes	** NA **			None
32	M32						Yes	** NA **			None
33	M33						Yes	** NA **			None
34	M34						Yes	** NA **			None
35	M35						Yes	** NA **			None
36	M36						Yes	** NA **			None
37	M37						Yes	** NA **			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Standoff Arm	45.25			Lbyy						Lateral
2	M2	Standoff Arm	45.25			Lbyy						Lateral
3	M3	Bracing	36						.7	.7		Lateral
4	M4	Bracing	36						.7	.7		Lateral
5	M5	Bracing	57.824						.7	.7		Lateral
6	M6	Frame Rail	156	96		Lbyy						Lateral
7	M7	Frame Rail	156	96		Lbyy						Lateral
8	M8	Plate	2.5			Lbyy						Lateral
9	M9	Plate	2.5			Lbyy						Lateral
10	M10	Plate	3.312			Lbyy						Lateral
11	M11	Plate	3.312			Lbyy						Lateral
12	M12	Standoff Arm	45.25			Lbyy						Lateral
13	M13	Standoff Arm	45.25			Lbyy						Lateral
14	M14	Bracing	36						.7	.7		Lateral
15	M15	Bracing	36						.7	.7		Lateral
16	M16	Bracing	57.824						.7	.7		Lateral
17	M17	Plate	2.5			Lbyy						Lateral
18	M18	Plate	2.5			Lbyy						Lateral
19	M19	Plate	3.313			Lbyy						Lateral
20	M20	Plate	3.313			Lbyy						Lateral
21	M21	Mount Pipes	96									Lateral
22	M22	Mount Pipes	96									Lateral
23	M23	Connection ...	11.562									Lateral
24	M24	Connection ...	11.562									Lateral
25	M27	Mount Pipes	96									Lateral
26	M28	Stabilizer	129.668									Lateral
27	M35	Mount Pipes	48									Lateral

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...)	Surface(P...
1	Self We	DL		-1.1					
2	We	DL					12		
3	Ice We	DL					12	17	
4	W0	WL					12	17	
5	W30	WL					24	34	
6	W60	WL					24	34	
7	W90	WL					12	17	
8	W120	WL					24	34	
9	W150	WL					24	34	
10	W0 + Ice	WL					12	17	
11	W30 + Ice	WL					24	34	
12	W60 + Ice	WL					24	34	
13	W90 + Ice	WL					12	17	
14	W120 + Ice	WL					24	34	
15	W150 + Ice	WL					24	34	
16	500lbs LM 1	LL				1			
17	500lbs LM 2	LL				1			
18	500lbs LM 3	LL				1			
19	500lbs LM 4	LL							
20	250lbs LV 5	LL				1			
21	250lbs LV 6	LL				1			
22	E0	EL	-1				12		
23	E90	EL			.1		12		

Load Combinations

	Description	Sol..	PD..	SR..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..	BLC Fact..
1	Dead	Yes	Y		1	1.4	2	1.4	0	0									
2	Dead + Wi...	Yes	Y		1	1.2	2	1.2	4	1	0								
3	Dead + Wi...	Yes	Y		1	1.2	2	1.2	5	1	0								
4	Dead + Wi...	Yes	Y		1	1.2	2	1.2	6	1	0								
5	Dead + Wi...	Yes	Y		1	1.2	2	1.2	7	1	0								
6	Dead + Wi...	Yes	Y		1	1.2	2	1.2	8	1	0								
7	Dead + Wi...	Yes	Y		1	1.2	2	1.2	9	1	0								
8	Dead + Wi...	Yes	Y		1	1.2	2	1.2	4	-1	0								
9	Dead + Wi...	Yes	Y		1	1.2	2	1.2	5	-1	0								
10	Dead + Wi...	Yes	Y		1	1.2	2	1.2	6	-1	0								
11	Dead + Wi...	Yes	Y		1	1.2	2	1.2	7	-1	0								
12	Dead + Wi...	Yes	Y		1	1.2	2	1.2	8	-1	0								
13	Dead + Wi...	Yes	Y		1	1.2	2	1.2	9	-1	0								
14	Dead + Ic...	Yes	Y		1	1.2	2	1.2	10	1	3	1							
15	Dead + Ic...	Yes	Y		1	1.2	2	1.2	11	1	3	1							
16	Dead + Ic...	Yes	Y		1	1.2	2	1.2	12	1	3	1							
17	Dead + Ic...	Yes	Y		1	1.2	2	1.2	13	1	3	1							
18	Dead + Ic...	Yes	Y		1	1.2	2	1.2	14	1	3	1							
19	Dead + Ic...	Yes	Y		1	1.2	2	1.2	15	1	3	1							
20	Dead + Ic...	Yes	Y		1	1.2	2	1.2	10	-1	3	1							
21	Dead + Ic...	Yes	Y		1	1.2	2	1.2	11	-1	3	1							
22	Dead + Ic...	Yes	Y		1	1.2	2	1.2	12	-1	3	1							
23	Dead + Ic...	Yes	Y		1	1.2	2	1.2	13	-1	3	1							
24	Dead + Ic...	Yes	Y		1	1.2	2	1.2	14	-1	3	1							
25	Dead + Ic...	Yes	Y		1	1.2	2	1.2	15	-1	3	1							
26	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	4	.058							
27	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	5	.058							
28	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	6	.058							
29	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	7	.058							
30	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	8	.058							
31	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	9	.058							



Load Combinations (Continued)

	Description	Sol.	PD	SR	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.	BLC Fact.
32	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	4	-.058			
33	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	5	-.058			
34	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	6	-.058			
35	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	7	-.058			
36	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	8	-.058			
37	Dead + L...	Yes	Y		1	1.2	2	1.2	16	1.5	9	-.058			
38	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	4	.058			
39	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	5	.058			
40	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	6	.058			
41	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	7	.058			
42	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	8	.058			
43	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	9	.058			
44	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	4	-.058			
45	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	5	-.058			
46	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	6	-.058			
47	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	7	-.058			
48	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	8	-.058			
49	Dead + L...	Yes	Y		1	1.2	2	1.2	17	1.5	9	-.058			
50	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	4	.058			
51	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	5	.058			
52	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	6	.058			
53	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	7	.058			
54	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	8	.058			
55	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	9	.058			
56	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	4	-.058			
57	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	5	-.058			
58	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	6	-.058			
59	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	7	-.058			
60	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	8	-.058			
61	Dead + L...	Yes	Y		1	1.2	2	1.2	18	1.5	9	-.058			
62	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	4	.058			
63	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	5	.058			
64	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	6	.058			
65	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	7	.058			
66	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	8	.058			
67	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	9	.058			
68	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	4	-.058			
69	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	5	-.058			
70	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	6	-.058			
71	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	7	-.058			
72	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	8	-.058			
73	Dead + L...	Yes	Y		1	1.2	2	1.2	19	1.5	9	-.058			
74	Dead + LV...	Yes	Y		1	1.2	2	1.2	20	1.5	0				
75	Dead + LV...	Yes	Y		1	1.2	2	1.2	21	1.5	0				
76	Service 60...	Yes	Y		1	1	2	1	4	.23	0				
77	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	1	23				
78	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	.866	23	.5			
79	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	.5	23	.866			
80	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22		23	1			
81	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	-.5	23	.866			
82	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	-.866	23	.5			
83	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	-1	23				
84	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	-.866	23	-.5			
85	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	-.5	23	-.866			
86	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22		23	-1			
87	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	.5	23	-.866			
88	(1.2 + 0.2...	Yes	Y		1	1.238	2	1.238	22	.866	23	-.5			

Envelope Joint Reactions

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-in]	LC	MY [k-in]	LC	MZ [k-in]	LC	
1	N32	max	214.24	3	1930.906	15	1825.483	34	0	88	0	88	0	88
2		min	-3532.135	21	640.589	76	-1230.288	52	0	1	0	1	0	1
3	N33	max	3457.682	14	1749.566	19	1249.082	60	0	88	0	88	0	88
4		min	65.424	8	561.236	76	-1843.813	30	0	1	0	1	0	1
5	N38	max	878.78	12	111.391	12	358.964	12	0	88	0	88	0	88
6		min	-882.528	6	-61.466	6	-360.318	6	0	1	0	1	0	1
7	Totals:	max	2515.328	2	3714.155	15	1614.947	10						
8		min	-2515.32	8	1226.76	76	-1614.947	4						

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

Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [l...	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
1	M10	3"x.5" HRA	.693	3.312	18	.391	0	y	18	64929.826	67500	8.46	50.625	1... H1-1b
2	M11	3"x.5" HRA	.672	3.312	18	.389	0	y	25	64929.826	67500	8.46	50.625	1... H1-1b
3	M19	3"x.5" HRA	.486	3.313	60	.455	0	y	14	64929.826	67500	8.46	50.625	1... H1-1b
4	M20	3"x.5" HRA	.477	3.313	60	.442	0	y	19	64929.826	67500	8.46	50.625	1... H1-1b
5	M21	PIPE 2.0	.447	30	2	.063	30		22	14916.096	32130	22.459	22.459	1... H1-1b
6	M22	PIPE 2.0	.415	66	8	.062	30		19	14916.096	32130	22.459	22.459	1... H1-1b
7	M7	HSS2.375X0...	.342	125.1...	8	.117	126.75		3	7649.232	57546	39.744	39.744	1... H1-1b
8	M6	HSS2.375X0...	.324	125.1...	8	.101	126.75		7	7649.232	57546	39.744	39.744	1... H1-1b
9	M15	0.75" SR	.300	0	16	.019	0		6	5525.431	19880.37	2.982	2.982	2... H1-1b
10	M8	3"x.5" HRA	.277	0	16	.244	0	y	2	66023.816	67500	8.46	50.625	1... H1-1b
11	M23	PL 6X0.625	.272	5.781	22	.186	5.781	y	19	124976.9...	168750	26.367	253.125	1... H1-1b
12	M24	PL 6X0.625	.262	5.781	16	.184	5.781	y	16	124976.9...	168750	26.367	253.125	1... H1-1b
13	M9	3"x.5" HRA	.257	0	21	.242	0	y	8	66023.816	67500	8.46	50.625	1... H1-1b
14	M3	0.75" SR	.233	0	16	.023	36		6	5525.431	19880.37	2.982	2.982	2... H1-1a
15	M17	3"x.5" HRA	.218	0	25	.302	0	y	14	66023.816	67500	8.46	50.625	1... H1-1b
16	M4	0.75" SR	.215	0	15	.018	0		12	5525.431	19880.37	2.982	2.982	2... H1-1b
17	M18	3"x.5" HRA	.215	0	19	.298	0	y	20	66023.816	67500	8.46	50.625	1... H1-1b
18	M27	PIPE 2.0	.214	30	7	.090	30		6	14916.096	32130	22.459	22.459	1... H1-1b
19	M14	0.75" SR	.178	0	25	.018	36		6	5525.431	19880.37	2.982	2.982	2... H1-1b
20	M1	HSS2.375X0...	.165	0	16	.074	22.625		19	45615.157	57546	39.744	39.744	1... H1-1b
21	M16	0.75" SR	.156	57.824	14	.020	0		7	2141.715	19880.37	2.982	2.982	2... H1-1b
22	M5	0.75" SR	.151	57.824	16	.011	57.824		9	2141.715	19880.37	2.982	2.982	1... H1-1b
23	M2	HSS2.375X0...	.138	0	18	.074	22.625		16	45615.157	57546	39.744	39.744	1... H1-1b
24	M28	PIPE 2.0	.119	64.834	10	.007	129.6...		22	8424.477	32130	22.459	22.459	1... H1-1b
25	M12	HSS2.375X0...	.119	0	61	.067	45.25		20	45615.157	57546	39.744	39.744	2... H1-1b
26	M13	HSS2.375X0...	.097	0	58	.067	45.25		14	45615.157	57546	39.744	39.744	2... H1-1b
27	M35	PIPE 2.0	.071	6	8	.076	6		6	26521.424	32130	22.459	22.459	1... H1-1b



HUDSON
Design Group LLC

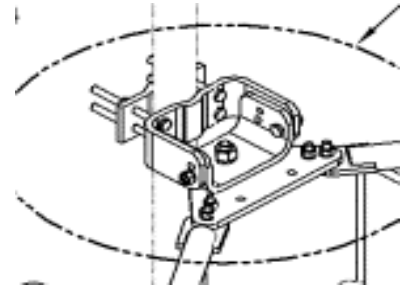
Connection Check

SITE DETAILS

Site Name/Code	EAST HARTFORD SUNSET RIDGE
Date	08-04-2022
Engineer	ML

CONNECTION PARAMETERS

Loadcase #	21
Number of bolts	1
Bolt Diameter	d 1 in
Tensile Area	A _b 0.79 in ²
Tensile Area	A _n 0.61 in ²
Grade	A325
Bolt Ultimate Strength	F _{ub} 120 ksi
Connection length reduction factor	R _b 1



Connection Sketch/Photo

FLANGE LOADS

Bending Moment	M _{zz}	0.00 kips-in
Bending Moment	M _{yy}	0.00 kips-in
Torsional Moment	M _{xx}	0.00 kips-in
Shear Force	V _y	3.53 kips
Shear Force	V _z	0.72 kips
Axial Force	P _x	1.90 kips

SOFTWARE REACTIONS TABLE

L...	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [k-in]	MY [k-in]	MZ [k-in]
21	N32	-3532.135	1898.981	718.525	0	0	0
21	N38	96.601	80.51	46.974	0	0	0
21	N33	2936.94	1734.662	-477.615	0	0	0
21	Totals:	-498.594	3714.153	287.884			

BOLT CHECK

Bolt Tension Capacity

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

$$\phi R_{nt} = 54.5 \text{ kips}$$

Bolt Shear Capacity

$$\phi R_{nv} = 0.75 * 0.45 * F_{ub} * A_b * R_b$$

$$\phi R_{nv} = 35.3 \text{ kips}$$

Maximum Bolt Tension

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

$$T_{ub} = 1.90 \text{ kips}$$

Maximum Bolt Shear

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

$$V_{ub} = 3.60 \text{ kips}$$

Tension Ratio:

3.5 %

PASS

Shear Ratio:

10.2 %

PASS

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

OK

Ratio

1.2% PASS

EXHIBIT 5



Radio Frequency Exposure Analysis Report

April 6, 2022

Centerline on behalf of AT&T
Centerline Communications Project Number: 566504

AT&T Site Name: East Hartford Sunset Ridge
Site Number: CT3438
FA#: 10578403
USID: 156889

Site Address: 100 Sunset Ridge, East Hartford, CT 06108

Site Compliance Summary

AT&T Compliance Status:	Compliant
Cumulative Calculated Power Density (Ground Level):	2.35545 $\mu\text{W}/\text{cm}^2$
Cumulative General Population % MPE (Ground Level):	0.271076%



April 6, 2022

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

RF Exposure Analysis for Site: **East Hartford Sunset Ridge**

Centerline Communications, LLC (“Centerline”) was contracted to analyze the proposed AT&T facility at **100 Sunset Ridge, East Hartford, CT 06108** 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.

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 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 QD8616-7	700	12.99	110.00	4.00	40.00	3188.01	0.00012	466.67	0.00003
AT&T A 1	QUINTEL QD8616-7	700	12.99	110.00	2.00	40.00	1594.01	0.00006	466.67	0.00001
AT&T A 1	QUINTEL QD8616-7	1900	15.26	110.00	2.00	40.00	2687.26	0.00003	1000.00	0.00000
AT&T A 1	QUINTEL QD8616-7	1900	15.25	110.00	2.00	40.00	2680.22	0.00004	1000.00	0.00000
AT&T A 1	QUINTEL QD8616-7	2100	15.77	110.00	2.00	40.00	3019.40	0.00002	1000.00	0.00000
AT&T A 1	QUINTEL QD8616-7	2100	15.83	110.00	2.00	40.00	3060.41	0.00002	1000.00	0.00000
AT&T A 2	ERICSSON AIR6449	3700	23.55	110.00	1.00	108.40	24548.74	0.00446	1000.00	0.00045
AT&T A 3	ERICSSON AIR6419 LTE	3400	22.85	110.00	1.00	54.20	10447.19	0.00096	1000.00	0.00010
AT&T A 3	ERICSSON AIR6419 NR	3400	22.85	110.00	1.00	54.00	10408.63	0.00107	1000.00	0.00011
AT&T A 4	CCI OPA65R-BU8D	700	13.15	110.00	2.00	40.00	1652.30	0.00006	466.67	0.00001
AT&T A 4	CCI OPA65R-BU8D	2300	15.75	110.00	4.00	25.00	3758.37	0.00001	1000.00	0.00000
AT&T A 4	CCI OPA65R-BU8D	850	13.75	110.00	2.00	40.00	1897.10	0.00003	566.67	0.00001
AT&T B 5	QUINTEL QD8616-7	700	12.99	110.00	4.00	40.00	3188.01	0.00001	466.67	0.00000
AT&T B 5	QUINTEL QD8616-7	700	12.99	110.00	2.00	40.00	1594.01	0.00000	466.67	0.00000
AT&T B 5	QUINTEL QD8616-7	1900	15.26	110.00	2.00	40.00	2687.26	0.00001	1000.00	0.00000
AT&T B 5	QUINTEL QD8616-7	1900	15.25	110.00	2.00	40.00	2680.22	0.00001	1000.00	0.00000
AT&T B 5	QUINTEL QD8616-7	2100	15.77	110.00	2.00	40.00	3019.40	0.00000	1000.00	0.00000
AT&T B 5	QUINTEL QD8616-7	2100	15.83	110.00	2.00	40.00	3060.41	0.00000	1000.00	0.00000
AT&T B 6	ERICSSON AIR6449	3700	23.55	110.00	1.00	108.40	24548.74	0.00013	1000.00	0.00001
AT&T B 7	ERICSSON AIR6419 LTE	3400	22.85	110.00	1.00	54.20	10447.19	0.00001	1000.00	0.00000
AT&T B 7	ERICSSON AIR6419 NR	3400	22.85	110.00	1.00	54.00	10408.63	0.00001	1000.00	0.00000
AT&T B 8	CCI OPA65R-BU8D	700	13.15	110.00	2.00	40.00	1652.30	0.00001	466.67	0.00000
AT&T B 8	CCI OPA65R-BU8D	2300	15.75	110.00	4.00	25.00	3758.37	0.00000	1000.00	0.00000
AT&T B 8	CCI OPA65R-BU8D	850	13.75	110.00	2.00	40.00	1897.10	0.00000	566.67	0.00000
AT&T C 9	QUINTEL QD8616-7	700	12.99	110.00	4.00	40.00	3188.01	0.01748	466.67	0.00375
AT&T C 9	QUINTEL QD8616-7	700	12.99	110.00	2.00	40.00	1594.01	0.00875	466.67	0.00187
AT&T C 9	QUINTEL QD8616-7	1900	15.26	110.00	2.00	40.00	2687.26	0.00531	1000.00	0.00053
AT&T C 9	QUINTEL QD8616-7	1900	15.25	110.00	2.00	40.00	2680.22	0.00519	1000.00	0.00052
AT&T C 9	QUINTEL QD8616-7	2100	15.77	110.00	2.00	40.00	3019.40	0.00493	1000.00	0.00049
AT&T C 9	QUINTEL QD8616-7	2100	15.83	110.00	2.00	40.00	3060.41	0.00471	1000.00	0.00047
AT&T C 10	ERICSSON AIR6449	3700	23.55	110.00	1.00	108.40	24548.74	0.65292	1000.00	0.06529
AT&T C 11	ERICSSON AIR6419 LTE	3400	22.85	110.00	1.00	54.20	10447.19	0.06818	1000.00	0.00682
AT&T C 11	ERICSSON AIR6419 NR	3400	22.85	110.00	1.00	54.00	10408.63	0.07646	1000.00	0.00765
AT&T C 12	CCI OPA65R-BU8D	700	13.15	110.00	2.00	40.00	1652.30	0.05930	466.67	0.01271
AT&T C 12	CCI OPA65R-BU8D	2300	15.75	110.00	4.00	25.00	3758.37	0.05028	1000.00	0.00503



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 C 12	CCI OPA65R-BU8D	850	13.75	110.00	2.00	40.00	1897.10	0.04278	566.67	0.00755
Unknown A 13	GENERIC PANEL 6FT	850	12.62	119.00	4.00	40.00	2924.96	0.00005	566.67	0.00001
Unknown A 13	GENERIC PANEL 6FT	1900	15.84	119.00	4.00	40.00	6139.32	0.00006	1000.00	0.00001
Unknown A 14	GENERIC PANEL 6FT	2100	16.39	119.00	4.00	40.00	6968.19	0.00010	1000.00	0.00001
Unknown A 15	GENERIC PANEL 6FT	700	12.33	119.00	4.00	40.00	2736.02	0.00022	466.67	0.00005
Unknown A 16	GENERIC PANEL	3700	23.34	119.00	4.00	50.00	43154.89	0.00387	1000.00	0.00039
Unknown B 17	GENERIC PANEL 6FT	850	12.62	119.00	4.00	40.00	2924.96	0.00002	566.67	0.00000
Unknown B 17	GENERIC PANEL 6FT	1900	15.84	119.00	4.00	40.00	6139.32	0.00006	1000.00	0.00001
Unknown B 18	GENERIC PANEL 6FT	2100	16.39	119.00	4.00	40.00	6968.19	0.00001	1000.00	0.00000
Unknown B 19	GENERIC PANEL 6FT	700	12.33	119.00	4.00	40.00	2736.02	0.00001	466.67	0.00000
Unknown B 20	GENERIC PANEL	3700	23.34	119.00	4.00	50.00	43154.89	0.00042	1000.00	0.00004
Unknown C 21	GENERIC PANEL 6FT	850	12.62	119.00	4.00	40.00	2924.96	0.00944	566.67	0.00167
Unknown C 21	GENERIC PANEL 6FT	1900	15.84	119.00	4.00	40.00	6139.32	0.00621	1000.00	0.00062
Unknown C 22	GENERIC PANEL 6FT	2100	16.39	119.00	4.00	40.00	6968.19	0.02248	1000.00	0.00225
Unknown C 23	GENERIC PANEL 6FT	700	12.33	119.00	4.00	40.00	2736.02	0.11296	466.67	0.02421
Unknown C 24	GENERIC PANEL	3700	23.34	119.00	4.00	50.00	43154.89	1.10692	1000.00	0.11069
Unknown A 25	GENERIC OMNI	150	9.00	142.00	1.00	12.65	100.48	0.00124	200.00	0.00062
Unknown B 26	GENERIC OMNI	150	9.00	142.00	1.00	12.65	100.48	0.00132	200.00	0.00066
Unknown A 27	GENERIC OMNI	850	8.96	128.00	1.00	12.65	99.56	0.00065	566.67	0.00012
Unknown B 28	GENERIC OMNI	850	8.96	128.00	1.00	12.65	99.56	0.00064	566.67	0.00011
Unknown A 29	GENERIC PANEL 6FT	850	12.62	99.00	1.00	60.00	1096.86	0.00002	566.67	0.00000
Unknown A 30	GENERIC PANEL 6FT	850	12.62	99.00	1.00	60.00	1096.86	0.00002	566.67	0.00000
Unknown B 31	GENERIC PANEL 6FT	850	12.62	99.00	1.00	60.00	1096.86	0.00001	566.67	0.00000
Unknown B 32	GENERIC PANEL 6FT	850	12.62	99.00	1.00	60.00	1096.86	0.00000	566.67	0.00000
Unknown C 33	GENERIC PANEL 6FT	850	12.62	99.00	1.00	60.00	1096.86	0.01826	566.67	0.00322
Unknown C 34	GENERIC PANEL 6FT	850	12.62	99.00	1.00	60.00	1096.86	0.06359	566.67	0.01122
Unknown A 35	GENERIC MICROWAVE	18000	36.95	97.00	1.00	0.10	495.45	0.00000	1000.00	0.00000
Unknown A 36	GENERIC OMNI	150	9.00	78.00	1.00	12.65	100.48	0.00351	200.00	0.00176



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
							Cumulative Power Density:	2.35545 $\mu\text{W}/\text{cm}^2$	Cumulative % MPE:	0.27108%



Summary

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

Michelle Stone
RF EME Technical Writer
Centerline Communications, LLC

EXHIBIT 6

Proof of Delivery

Dear Customer,

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

Tracking Number

1Z9Y45030332061987

Weight

1.00 LBS

Service

UPS Ground

Shipped / Billed On

04/20/2022

Delivered On

05/20/2022 3:02 P.M.

Delivered To

740 MAIN ST
EAST HARTFORD, CT, 06108, US

Received By

KATE

Left At

Receiver

Reference Number(s)

CT3438- CSC MAYOR

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

Sincerely,

UPS

Tracking results provided by UPS: 05/26/2022 1:04 P.M. EST

Proof of Delivery

Dear Customer,

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

Tracking Number

1Z9Y45030324942200

Weight

1.00 LBS

Service

UPS Ground

Shipped / Billed On

04/20/2022

Delivered On

05/20/2022 3:04 P.M.

Delivered To

740 MAIN ST
EAST HARTFORD, CT, 06108, US

Received By

MICHELLE

Left At

Receiver

Reference Number(s)

CT3438-CSC TOWN PLANNER

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

Sincerely,

UPS

Tracking results provided by UPS: 05/26/2022 1:06 P.M. EST

Proof of Delivery

Dear Customer,

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

Tracking Number

1Z9Y45030332655596

Weight

1.00 LBS

Service

UPS Ground

Shipped / Billed On

04/20/2022

Delivered On

05/20/2022 3:05 P.M.

Delivered To

740 MAIN ST
EAST HARTFORD, CT, 06108, US

Received By

MICHELLE

Left At

Inside Delivery

Reference Number(s)

CT3438-CSC ZEO

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

Sincerely,

UPS

Tracking results provided by UPS: 05/26/2022 1:07 P.M. EST