CENTERLINE COMMUNICATIONS

5952 Sellger Dr.
Norfolk, VA 23502
ahebel@clinellc.com
215.588.7035

March 19, 2021

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

Re: Notice of Exempt Modifications – AT&T Site CT1069
AT&T Telecommunications Facility @ 130 Vernon Road Bolton, CT 06043

Dear Ms. Bachman,

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains a wireless telecommunications facility on an existing +/- 286' guyed tower at the above referenced address, latitude 41.8025750, longitude -72.4411931. Said guyed tower is owned and managed by Mountaintop Enterprises, Inc.

AT&T desires to modify its existing telecommunications facility by replacing six (6) antennas, replacing three (3) remote radio units, adding (6) remote radio units, adding one (1) surge arrestor, adding two (2) DC cables and (1) fiber cable as more particularly detailed and described on the enclosed Construction Drawings prepared by Hudson Design Group Engineering, last revised on February 17, 2021. The centerline height of the existing antennas is and will remain at 164 feet.

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: Sandra W. Pierog First Selectman of the Town of Bolton: Jim Rupert Zoning Enforcement Officer of the Town of Bolton: Mountaintop Enterprises Inc. as tower owner and property owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require an extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commissions 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 alternation in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading. Please see the structural analysis dated February 11, 2021 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).

Best Regards,

Allison Hebel
Site Acquisition Consultant – Agent for AT&T
Centerline Communications LLC
750 West Center St. Ste 301
West Bridgewater, MA 02379
215-588-7035
ahebel@clinellc.com

Enclosures:
Exhibit 1 – Construction Drawings
Exhibit 2 – Property Card and GIS
Exhibit 3 – Structural Analysis
Exhibit 4 – Mount Analysis with Modifications
Exhibit 5 – RF Emissions Analysis Report Evaluation
Exhibit 6 – Available Town of Bolton Original Tower Approval Records
Exhibit 7 – Notice Deliver Confirmations

Cc:
Sandra W. Pierog First Selectman of the Town of Bolton
Jim Rupert Zoning Enforcement Officer of the Town of Bolton
Mountaintop Enterprises Inc. as tower owner and property owner

EXHIBIT 1

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING GUYED TOWER:
- NEW AT&T ANTENNAS: DMP65R-BU8DA @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: OPA65R-BU8DA @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: B5/B12 4449 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: B14 4478 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 8843 B2/B66A (AWS/PCS) @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T DC & FIBER SURGE ARRESTOR DC6-48-60-18-8C-EV (TOTAL OF 1) WITH (2) DC POWER & (1) FIBER RUN.
- INSTALL MOUNT MODIFICATIONS (SEE "S" SHEETS).
- INSTALL Y-CABLE @ POS. 4 ANTENNA (TYP. OF 2 PER SECTOR, TOTAL OF 6).

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- ADD UMTS HOME RUN.
- ADD (1) IDLe.
- ADD RBS 6630 FOR 5G.
- INSTALL (1) FIBER MANAGEMENT BOX.
- INSTALL (1) DC 12.

ITEMS TO BE REMOVED:
- EXISTING AT&T ANTENNAS: SBNH-1D6565C @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNAS: 7770 @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS: RRUS-11 B12 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T DIPLEXERS: LGP 21901 (TYP. OF 4 PER SECTOR, TOTAL OF 12).
- EXISTING (6) 1-5/8" COAX

ITEMS TO REMAIN:
- (3) ANTENNAS, (6) TMA'S, (6) DIPLEXERS (1) SURGE ARRESTOR, (6) COAX CABLES, (2) DC POWER & (1) FIBER.

PTN:	2051A0VCLW, 2051A0VA70, 2051A0VBA7
SITE ADDRESS:	130 VERNON ROAD BOLTON, CT 06043
LATITUDE:	41.802575° N, 41° 48' 9.27" N
LONGITUDE:	72.441193° W, 72° 26' 28.29" W
TYPE OF SITE:	GUYED TOWER / EQUIPMENT SHELTER
STRUCTURE HEIGHT:	282'-0"±
RAD CENTER:	164'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

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at&t

SITE NUMBER: CT1069
SITE NAME: BOLTON NORTH
FA CODE: 10035019
PACE ID: MRCTB047226, MRCTB047316, MRCTB047163, MRCTB048207, MRCTB048209
PROJECT: LTE 2C, 3C, 4C RETRO, 5G NR 2020 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

TURN LEFT ONTO CAPITAL BLVD. THEN 0.2 MILES TURN LEFT ONTO CAPITOL BLVD. THEN 0.4 MILES TURN LEFT TO MERGE ONTO I-91 N. THEN 7.4 MILES TAKE EXIT 29 TO MERGE ONTO CT-15 N/US 5 N TOWARD I-84 E/E HARTFORD/BOSTON, IN 0.8 MILES CONTINUE ONTO CT-15 N. IN 2.4 MILES TAKE THE EXIT ON THE LEFT ONTO I-84 E TOWARD BOSTON, THEN IN 0.8 MILES TAKE EXIT 59 FOR I-384 E TOWARDS PROVIDENCE, CONTINUE FOR 7.3 MILES ON I-384 E. CONTINUE ONTO US 44 E/US 6 E FOR 0.2 MILES, KEEP LEFT TO CONTINUE ON US-44 E, FOLLOW SIGNS FOR COVENTRY/MANSFIELD FOR 0.3 MILES. TURN LEFT ONTO QUARRY ROAD CONTINUE FOR 0.7 MILES, CONTINUE ONTO BOLTON RD/ VERNON RD.

GENERAL NOTES

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

72 HOURS

CALL
BEFORE YOU DIG
CALL TOLL FREE 1-800-922-4455
OR CALL 811

UNDERGROUND SERVICE ALERT

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

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

SITE NUMBER: CT1069
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at&t
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A	04/20/20	ISSUED FOR REVIEW	TR	AT	DPH

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

STATE OF CONNECTICUT — No. 21178 — LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
LTE 2C, 3C, 4C RETRO, 5G NR 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1069	T-1	2

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – CENTERLINE
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. **APPLICABLE BUILDING CODES:**
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

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

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

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

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

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

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

ABBREVIATIONS

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

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: CT1069
SITE NAME: BOLTON NORTH

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at&t
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR

Daniel P. Hamm
No. 24173
LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
LTE 2C, 3C, 4C RETRO, 5G NR 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1069	GN-1	2

NOTE:

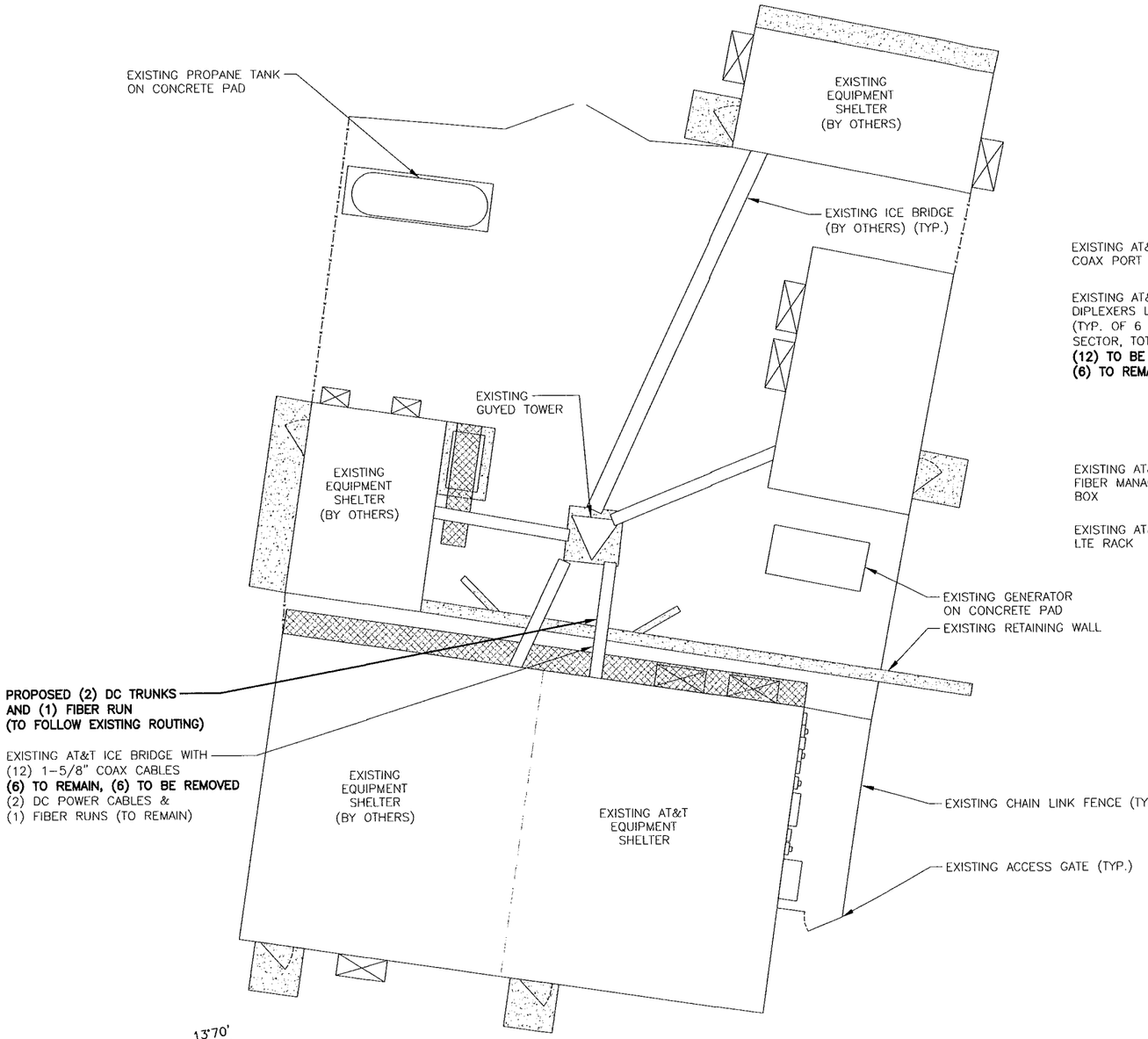
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: JANUARY 29, 2021 (REV. 1)

NOTE:

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

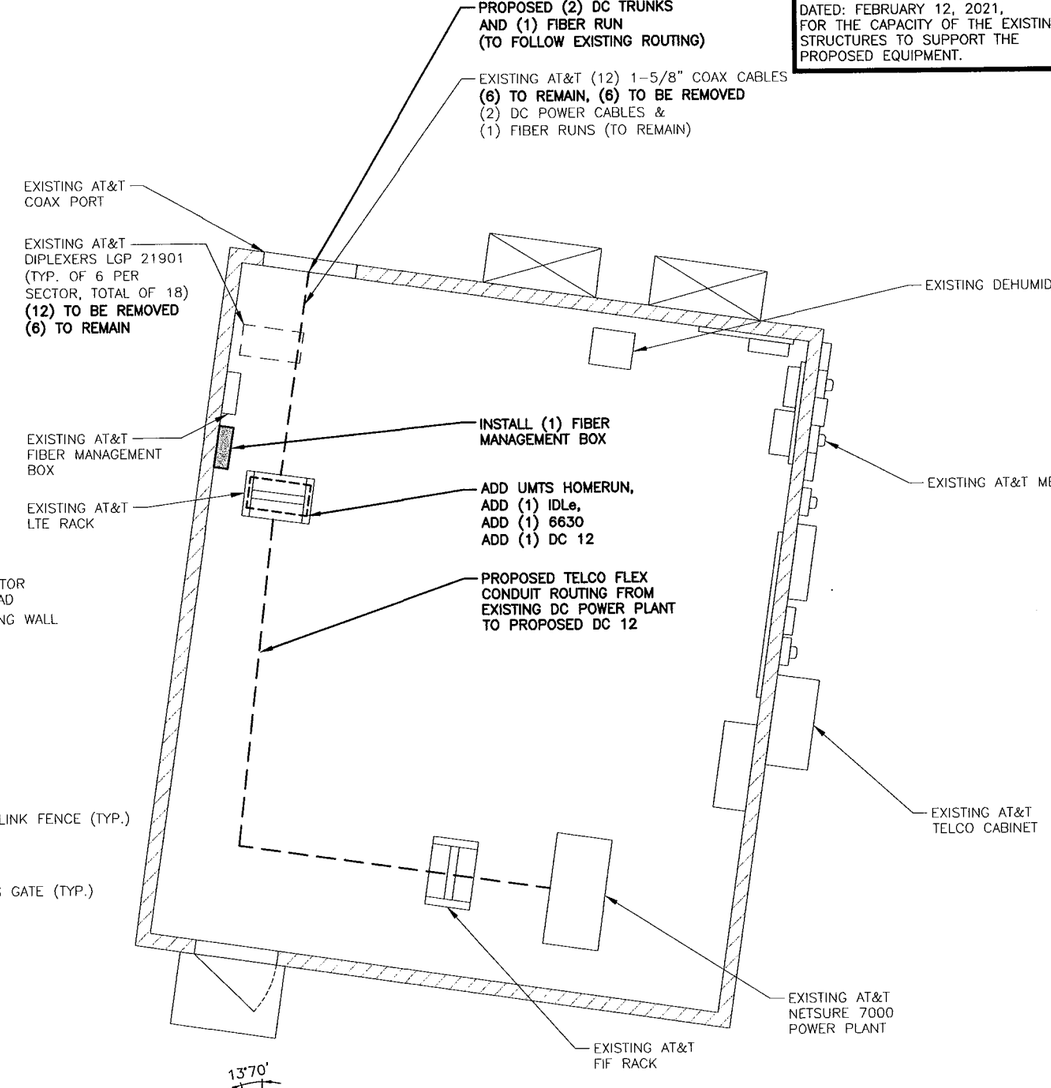
NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: FEBRUARY 12, 2021, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



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

0 2'-8" 5'-4" 10'-8" 16'-0"



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

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

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STATE OF CONNECTICUT · DANIEL P. HAMM · No. 21713 · LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLANS
LTE 2C, 3C, 4C RETRO, 5G NR 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
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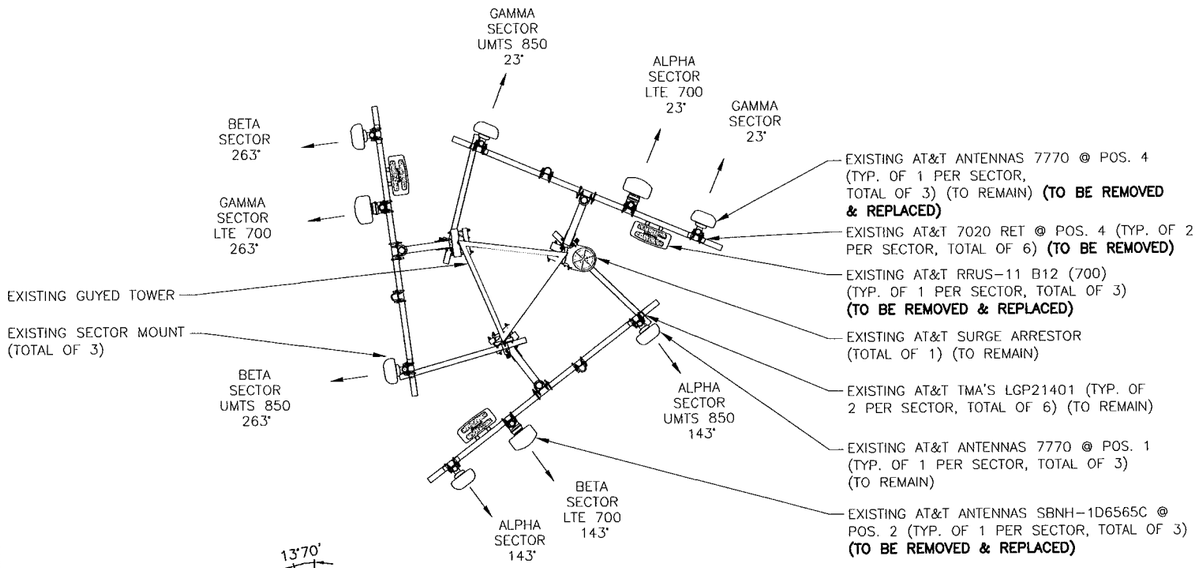
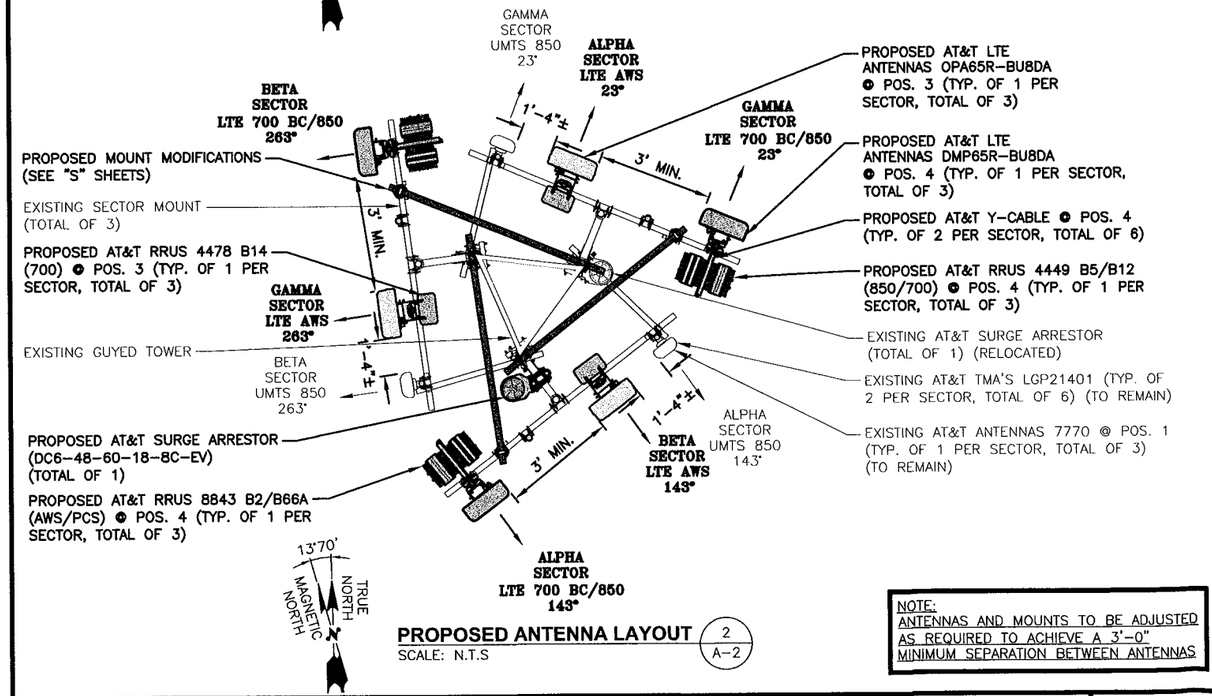


EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S



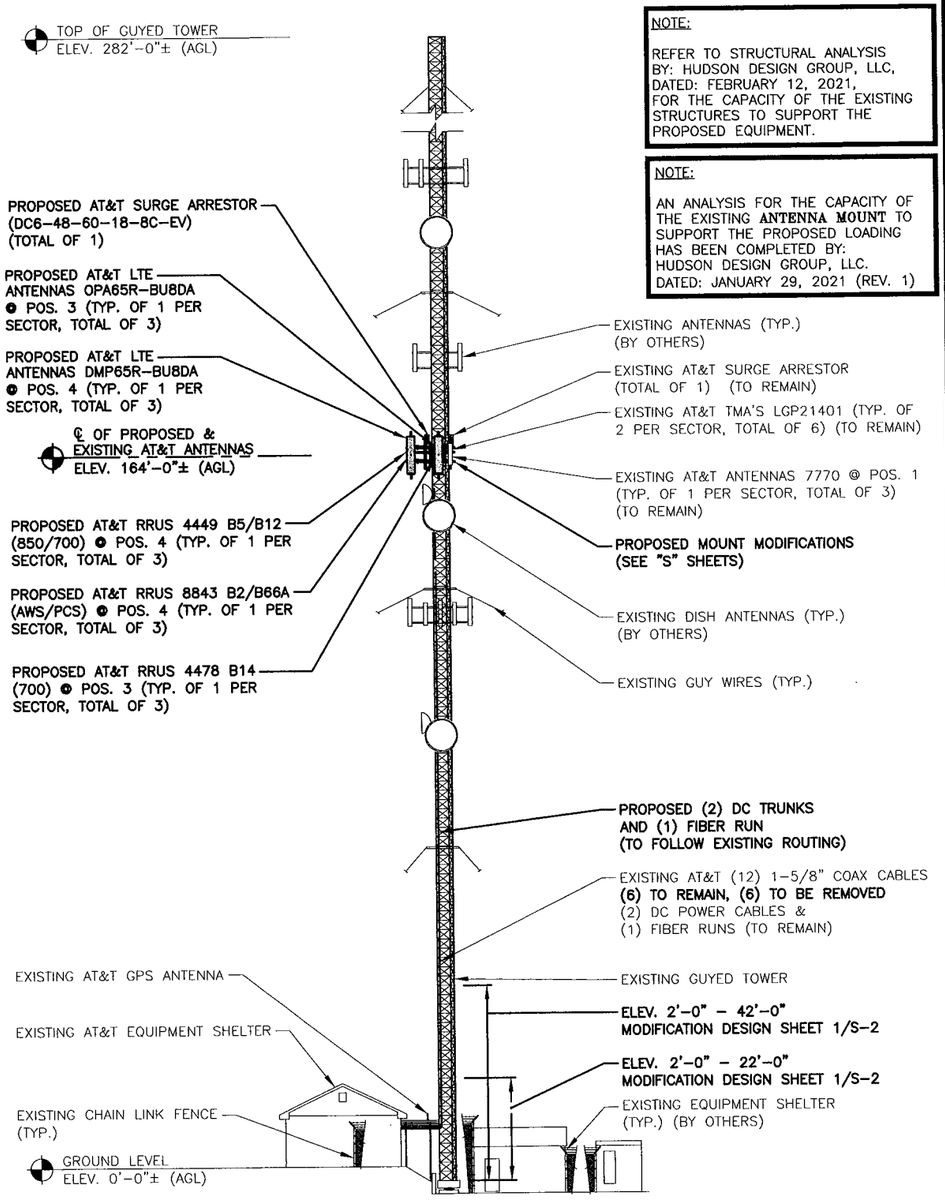
PROPOSED ANTENNA LAYOUT (2 / A-2)
SCALE: N.T.S

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

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

NOTE:
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: FEBRUARY 12, 2021, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: JANUARY 29, 2021 (REV. 1)



ELEVATION (3 / A-2)
22x34 SCALE: 1/16"=1'-0"
11x17 SCALE: 1/32"=1'-0"

0 8'-0" 16'-0" 32'-0" 48'-0"

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

SITE NUMBER: CT1069
SITE NAME: BOLTON NORTH

130 VERNON ROAD
BOLTON, CT 06043
TOLLAND COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	02/17/21	ISSUED FOR CONSTRUCTION	SG	AT	DPH
1	02/02/21	ISSUED FOR PERMITTING	SG	AT	DPH
A	04/20/20	ISSUED FOR REVIEW	TR	AT	DPH

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

Daniel P. Hamm
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

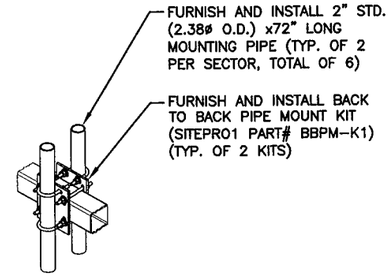
ANTENNA LAYOUTS & ELEVATION
LTE 2C, 3C, 4C RETRO, 5G NR 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1069	A-2	2

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS 850	7770	55X11X5	164'-0"±	23°	(2)(E) LGP21401 (2)(E)(G) LGP 21901	UMTS GAMMA	–	(2)1-5/8 COAX	(E) (1) RAYCAP DC6-48-60-18-8F
A2	–	–	–	–	–	–	–	–	–	–	
A3	PROPOSED	LTE AWS	OPA65R-BU8DA	96X21X7.8	164'-0"±	23°	–	(1)(P) 4478 B14 (700)	18.1X13.4X8.3	(2)(E) DC (1)(E) FIBER	
A4	PROPOSED	LTE 700 BC/850	DMP65R-BU8DA	96.0X20.7X7.7	164'-0"±	23°	(2)(P) Y-CABLE	(1)(P) 4449 B5/B12 (850/700) (1)(P) 8843 B2/B66A (AWS/PCS)	17.9X13.2X10.4 14.9X13.2X10.9	–	
B1	EXISTING	UMTS 850	7770	55X11X5	164'-0"±	143°	(2)(E) LGP21401 (2)(E)(G) LGP 21901	UMTS ALPHA	–	(2)1-5/8 COAX	(P) (1) RAYCAP DC6-48-60-18-8C-EV
B2	–	–	–	–	–	–	–	–	–	–	
B3	PROPOSED	LTE AWS	OPA65R-BU8DA	96X21X7.8	164'-0"±	143°	–	(1)(P) 4478 B14 (700)	18.1X13.4X8.3	–	
B4	PROPOSED	LTE 700 BC/850	DMP65R-BU8DA	96.0X20.7X7.7	164'-0"±	143°	(2)(P) Y-CABLE	(1)(P) 4449 B5/B12 (850/700) (1)(P) 8843 B2/B66A (AWS/PCS)	17.9X13.2X10.4 14.9X13.2X10.9	(2)(P) DC (1)(P) FIBER	
C1	EXISTING	UMTS 850	7770	55X11X5	164'-0"±	263°	(2)(E) LGP21401 (2)(E)(G) LGP 21901	UMTS BETA	–	(2)1-5/8 COAX	SHARED
C2	–	–	–	–	–	–	–	–	–	–	
C3	PROPOSED	LTE AWS	OPA65R-BU8DA	96X21X7.8	164'-0"±	263°	–	(1)(P) 4478 B14 (700)	18.1X13.4X8.3	–	
C4	PROPOSED	LTE 700 BC/850	DMP65R-BU8DA	96.0X20.7X7.7	164'-0"±	263°	(2)(P) Y-CABLE	(1)(P) 4449 B5/B12 (850/700) (1)(P) 8843 B2/B66A (AWS/PCS)	17.9X13.2X10.4 14.9X13.2X10.9	–	

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

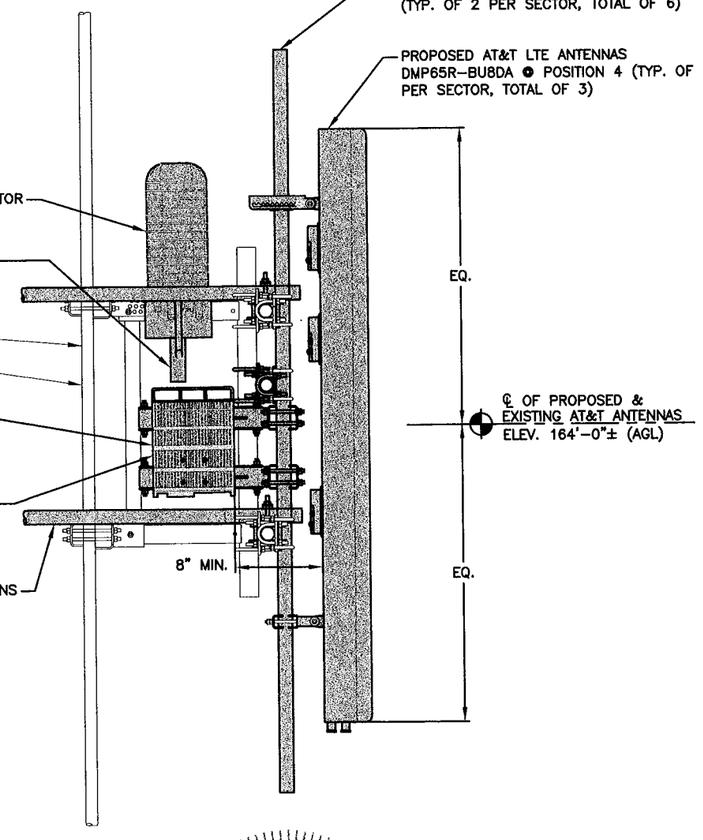


BACK TO BACK PIPE MOUNT KIT DETAIL (5 / A-3)
SCALE: N.T.S

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

NOTE:
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: FEBRUARY 12, 2021, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: JANUARY 29, 2021 (REV. 1)

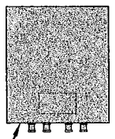


PROPOSED LTE ANTENNA & RRUS MOUNTING DETAIL (6 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0' 0'-6" 1'-0" 2'-0" 3'-0"

RRU CHART		
QUANTITY	**MODEL**	**SIZE (L x W x D)**
3(P)	4478 B14 (700)	18.1"x13.4"x8.3"
3(P)	4449 (850/700)	17.9"x13.2"x10.4"
3(P)	8843 B2/B66A (AWS/PCS)	14.9"X13.2"X10.9"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

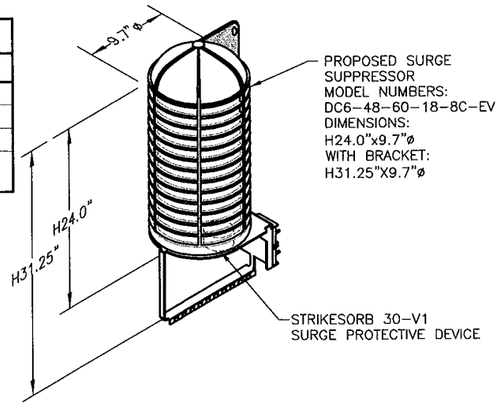


NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

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

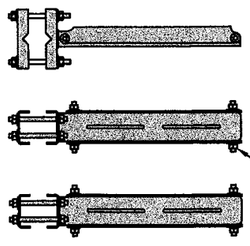
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

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



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (3 / A-3)
SCALE: N.T.S



BACK TO BACK RRU MOUNT DETAIL (4 / A-3)
SCALE: N.T.S

HUDSON Design Group LLC
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NORTH ANDOVER, MA 01845
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FAX: (978) 336-5586

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STATE OF CONNECTICUT — DANIEL P. HAMM — No. 24173 — LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS

LTE 2C, 3C, 4C RETRO, 5G NR 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1069	A-3	2

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-H STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
11. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

NOTES:

1. ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
2. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
3. SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
4. VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
5. CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
6. EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

NOTES:

1. REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2. PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3. PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4. HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5. ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
6. AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

SPECIAL INSPECTION CHECKLIST

BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
REQUIRED	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
REQUIRED	PACKING SLIPS [3]
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
REQUIRED	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
REQUIRED	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS [6]
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

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

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SITE NUMBER: CT1069
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STATE OF CONNECTION — DANIEL P. HAMM — No. 24173 — LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL NOTES
LTE 2C, 3C, 4C RETRO, 5G NR 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
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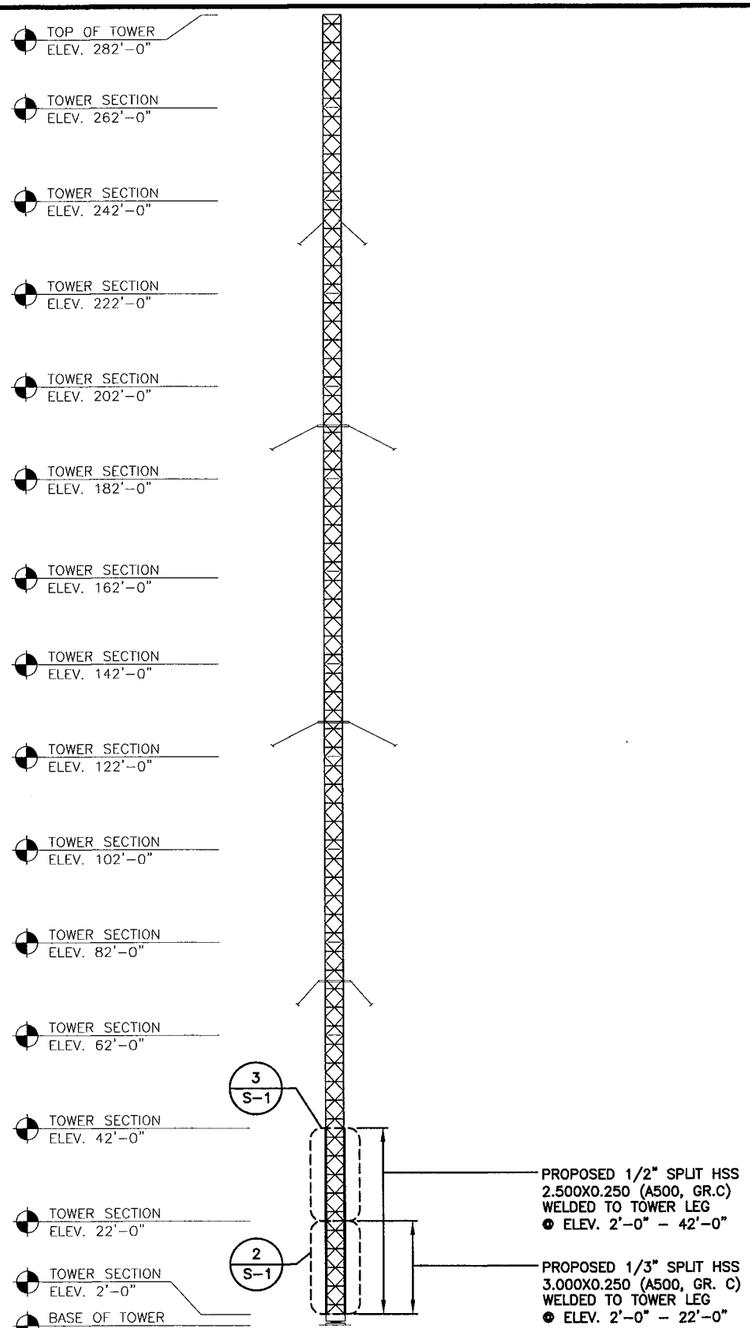
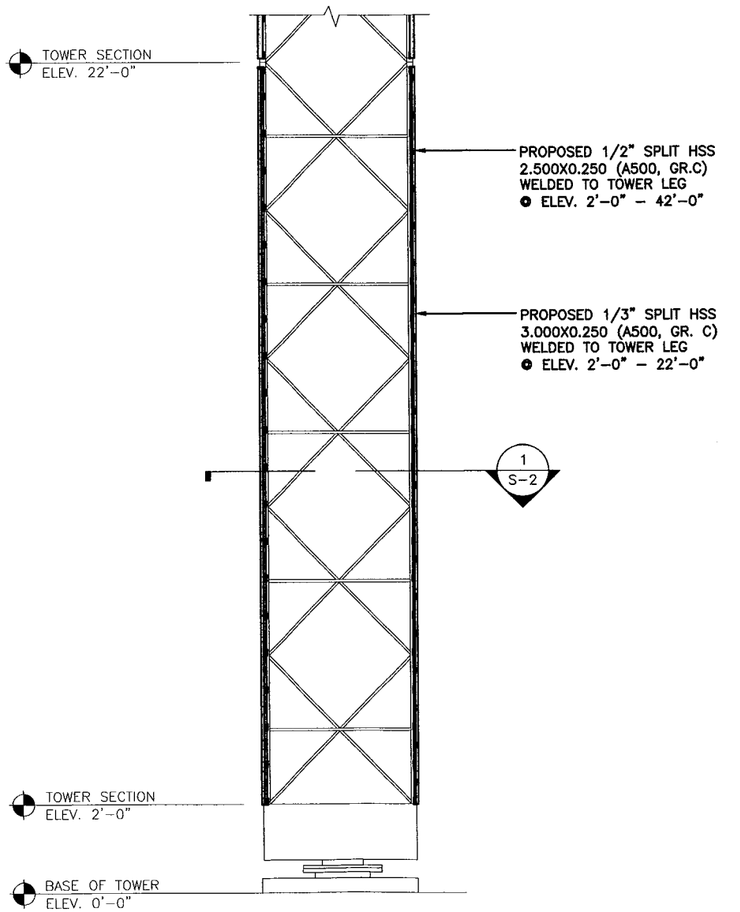


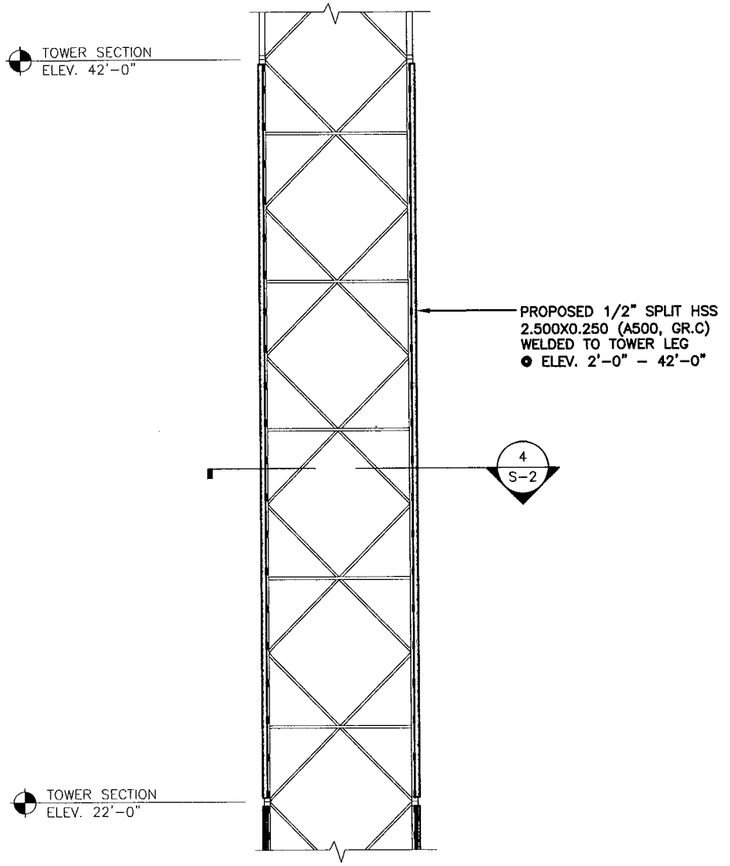
ELEVATION
22x34 SCALE: 1/16"=1'-0"
11x17 SCALE: 1/32"=1'-0"
1 S-1

0 8'-0" 16'-0" 32'-0" 48'-0"



TOWER REINFORCEMENT
ELEVATION (ELEV. 2'-0"-22'-0")
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"
2 S-1

0 1'-0" 2'-0" 4'-0" 6'-0"



TOWER REINFORCEMENT
ELEVATION (ELEV. 22'-0"-42'-0")
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"
3 S-1

0 1'-0" 2'-0" 4'-0" 6'-0"

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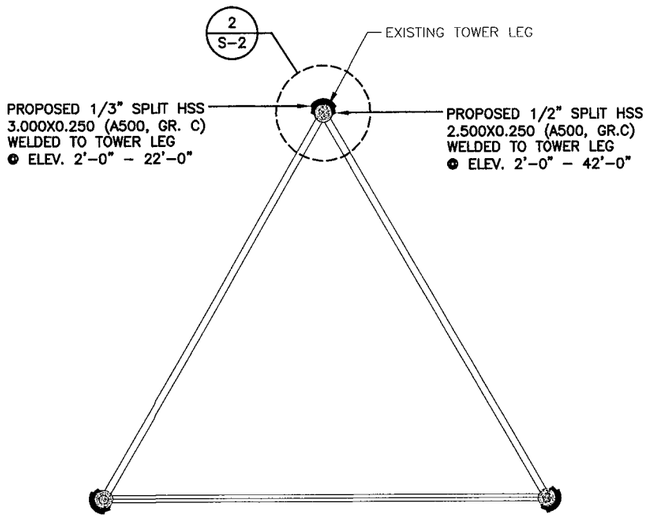
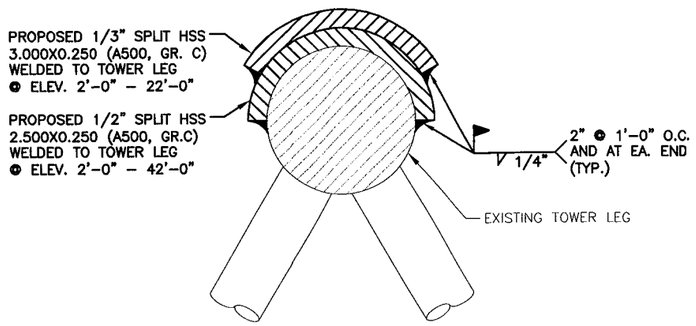
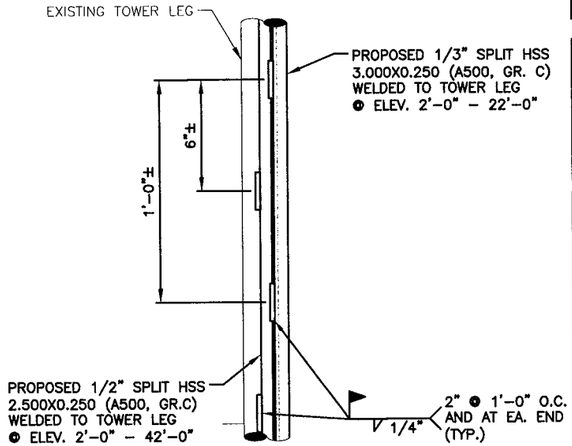


TOWER LEG PLAN VIEW
(ELEV. 2'-0"-22'-0") (1 / S-2)
22x34 SCALE: 1-1/2"=1'-0"
11x17 SCALE: 3/4"=1'-0"

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



TOWER LEG WELD DETAIL
(ELEV. 2'-0"-22'-0") (2 / S-2)
SCALE: N.T.S

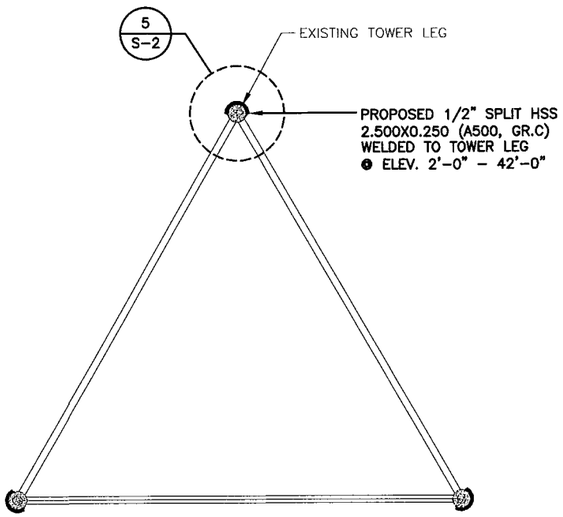


WELDED CONNECTION
DETAIL (ELEV. 2'-0"-22'-0") (3 / S-2)
SCALE: N.T.S

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

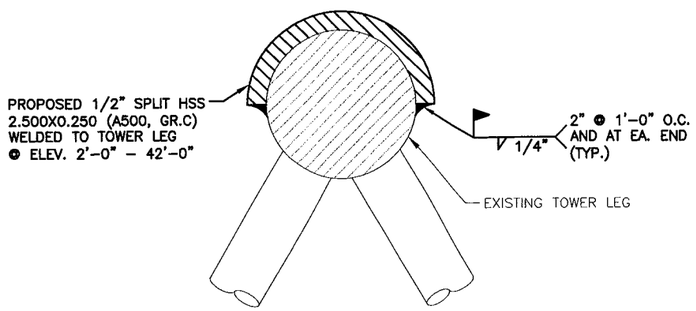
NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: JANUARY 29, 2021 (REV. 1)

NOTE:
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC,
DATED: FEBRUARY 12, 2021,
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

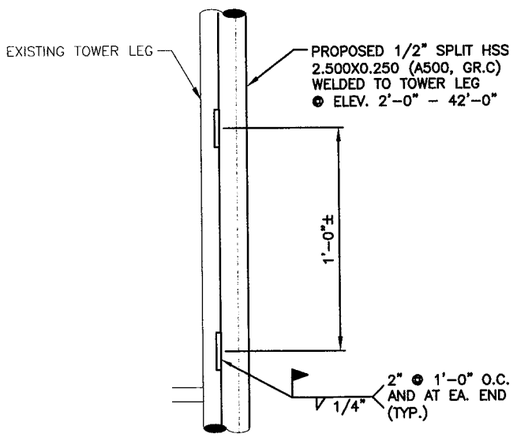


TOWER LEG PLAN VIEW
(ELEV. 2'-0"-42'-0") (4 / S-2)
22x34 SCALE: 1-1/2"=1'-0"
11x17 SCALE: 3/4"=1'-0"

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



TOWER LEG WELD DETAIL
(ELEV. 2'-0"-42'-0") (5 / S-2)
SCALE: N.T.S



WELDED CONNECTION
DETAIL (ELEV. 2'-0"-42'-0") (6 / S-2)
SCALE: N.T.S

STATE OF CONNECTICUT — DANIEL P. HAMM — No. 24178 — LICENSED PROFESSIONAL ENGINEER

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: CT1069
SITE NAME: BOLTON NORTH

130 VERNON ROAD
BOLTON, CT 06043
TOLLAND COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	02/17/21	ISSUED FOR CONSTRUCTION	SG	AT	DPH
1	02/02/21	ISSUED FOR PERMITTING	SG	AT	DPH
A	04/20/20	ISSUED FOR REVIEW	TR	AT	DPH

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

AT&T

STRUCTURAL DETAILS
LTE 2C, 3C, 4C RETRO, 5G NR 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1069	S-2	2

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: JANUARY 29, 2021 (REV. 1)

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NOTE:

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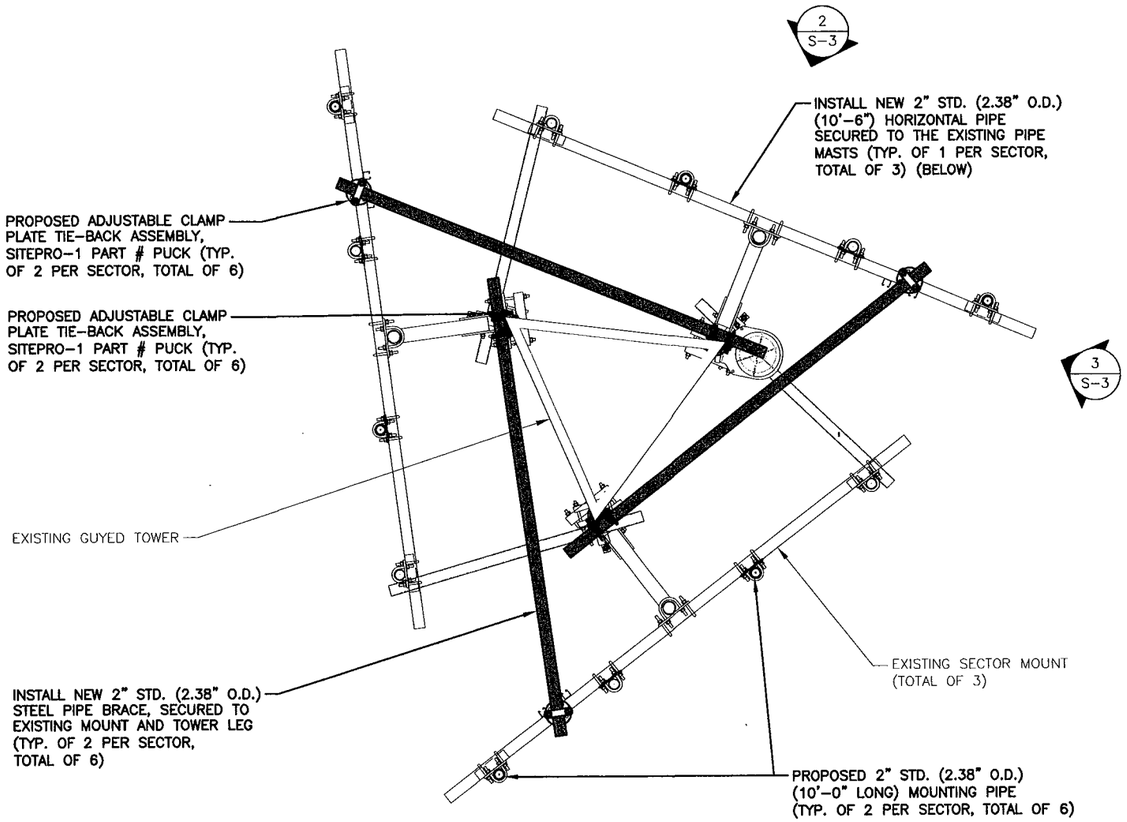
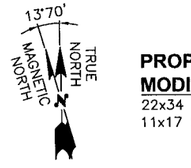
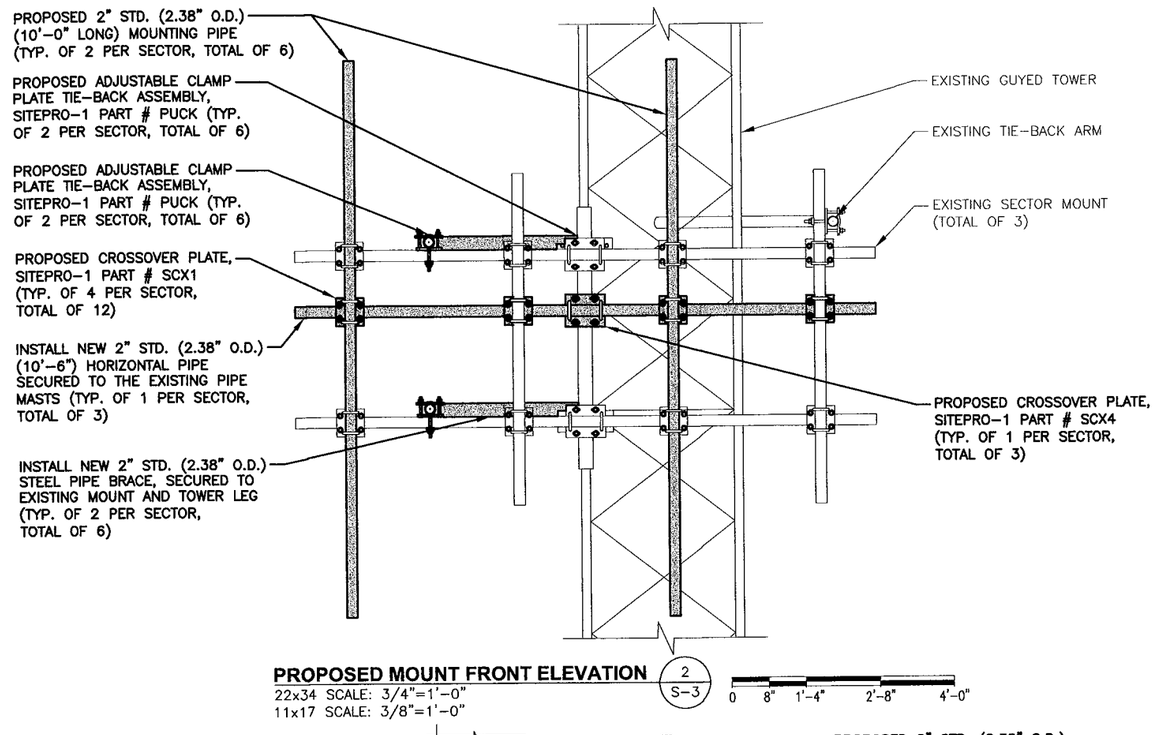




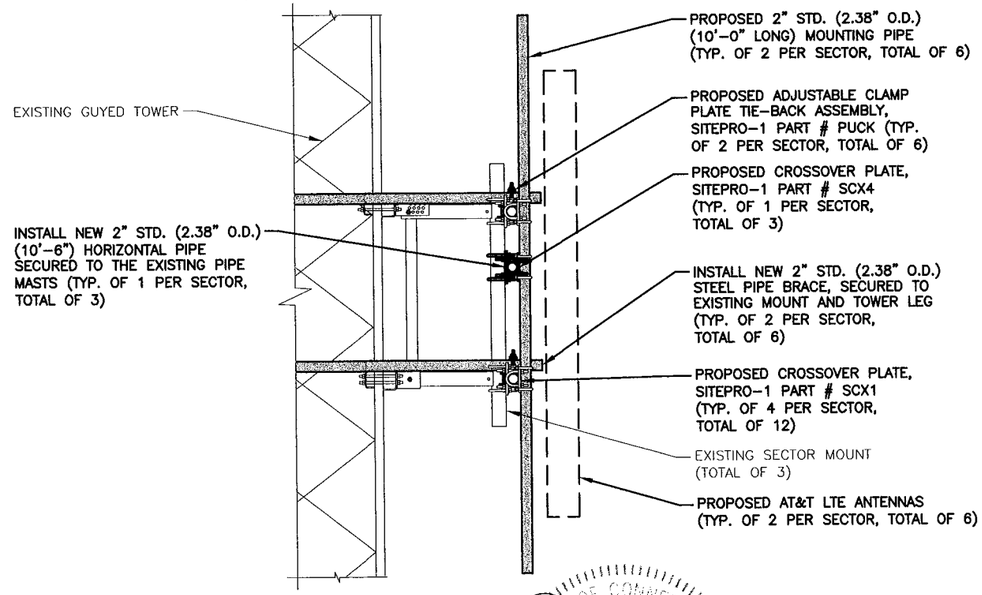
PROPOSED MOUNT MODIFICATIONS PLAN (1 / S-3)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

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



PROPOSED MOUNT FRONT ELEVATION (2 / S-3)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

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



PROPOSED MOUNT SIDE ELEVATION (3 / S-3)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

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

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SITE NUMBER: CT1069
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at&t
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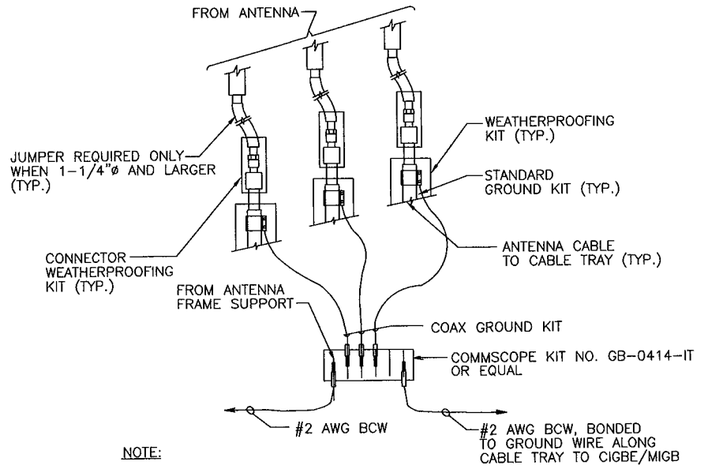
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR

STATE OF CONNECTICUT — DANIEL P. HAMM — No. 21178 — LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL DETAILS
LTE 2C, 3C, 4C RETRO, 5G NR 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1069	S-5	2

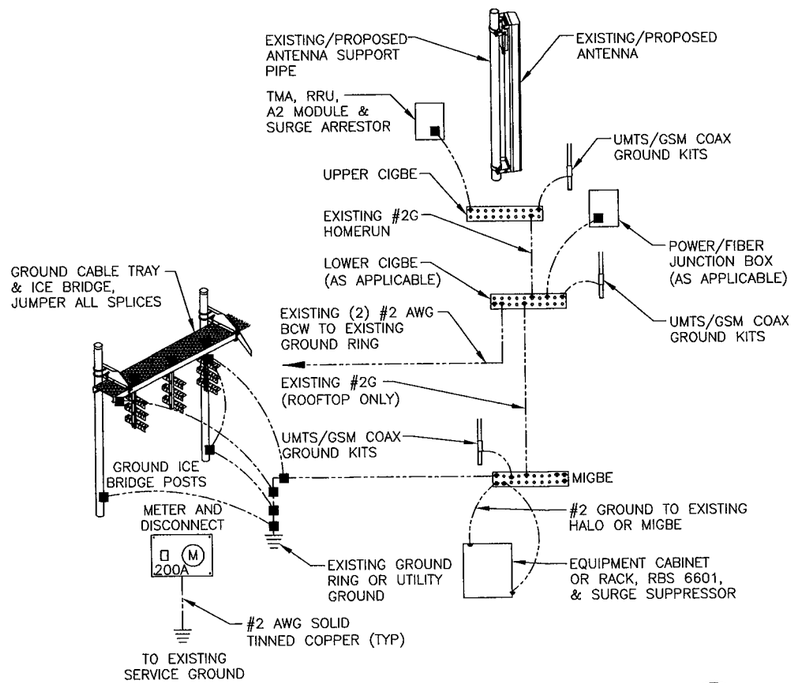


NOTE:

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

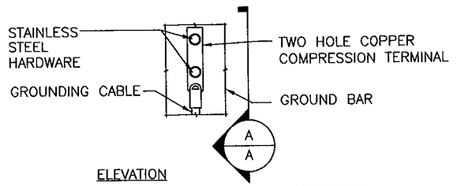
GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

SCALE: N.T.S



GROUNDING RISER DIAGRAM (2 / G-1)

SCALE: N.T.S



NOTES:

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

TYPICAL GROUND BAR CONNECTION DETAIL (3 / G-1)

SCALE: N.T.S

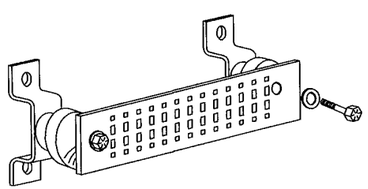
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL (AS REQUIRED) (4 / G-1)

SCALE: N.T.S

HUDSON Design Group LLC
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CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET, SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT1069
SITE NAME: BOLTON NORTH

130 VERNON ROAD
BOLTON, CT 06043
TOLLAND COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
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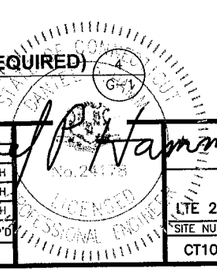
A	04/20/20	ISSUED FOR REVIEW	TR	AT	DPH

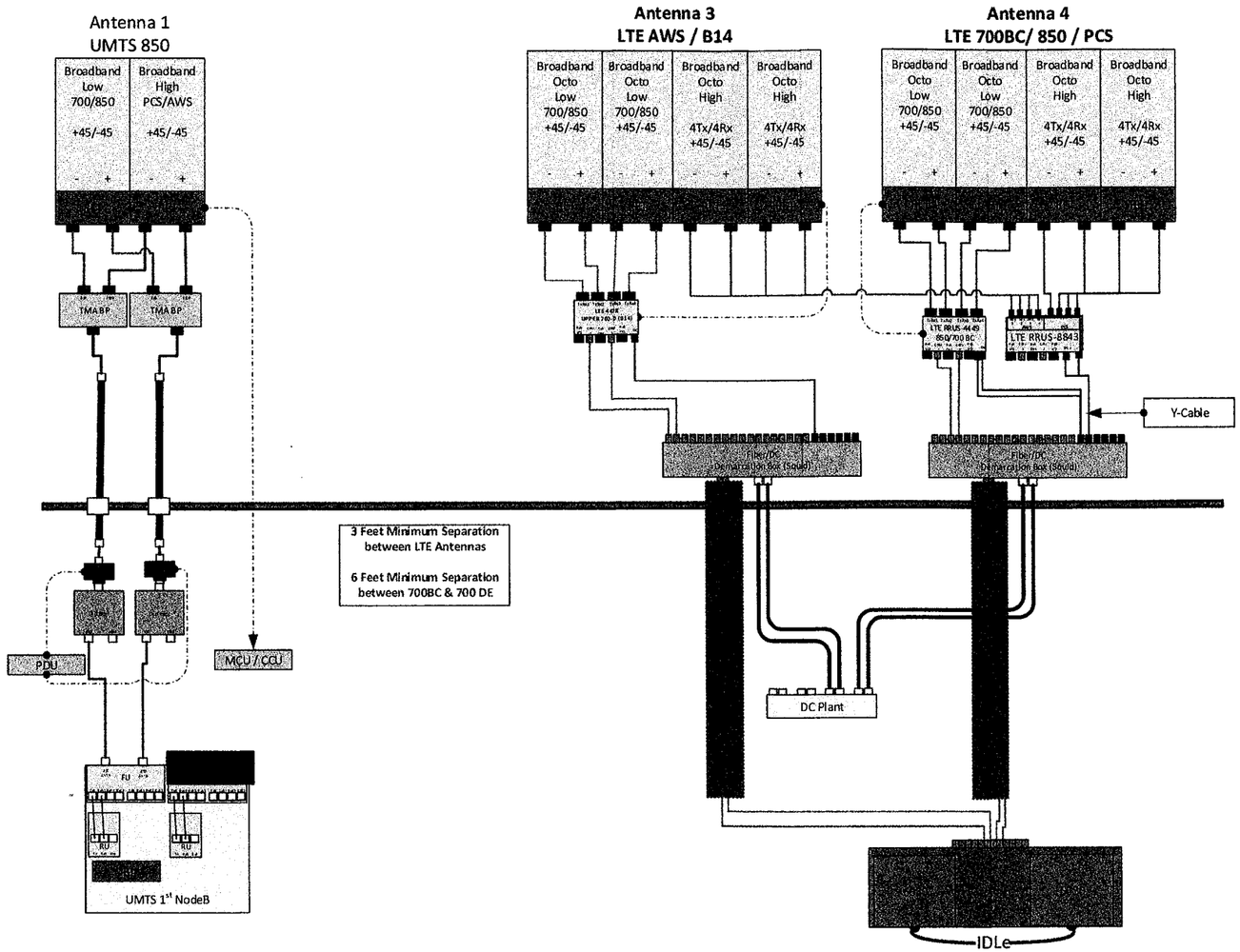
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR



AT&T

GROUNDING DETAILS
LTE 2C, 3C, 4C RETRO, 5G NR 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1069	G-1	2



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

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

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

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WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT1069
SITE NAME: BOLTON NORTH

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A	04/20/20	ISSUED FOR REVIEW	TR	AT	DPH

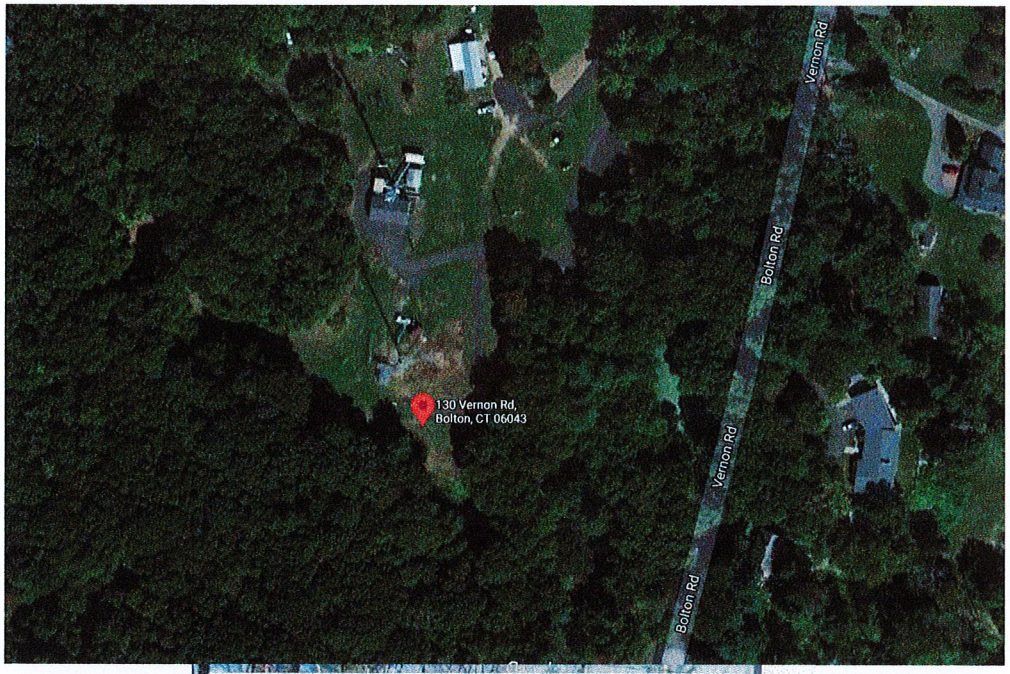
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: TR

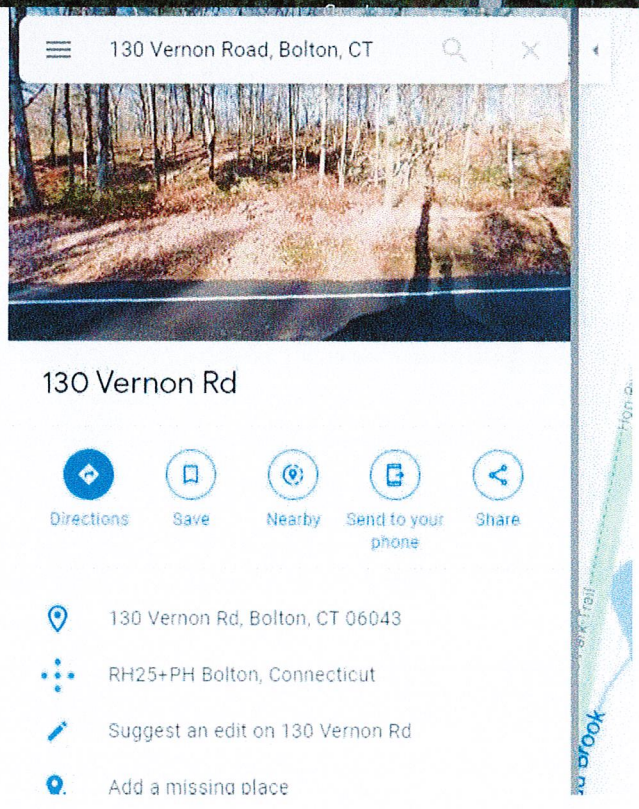
AT&T

RF PLUMBING DIAGRAM
LTE 2C, 3C, 4C RETRO, 5G NR 2020 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1069	RF–1	2

EXHIBIT 2


130 Vernon Rd,
Bolton, CT 06043
Vernon Rd
Bolton Rd
Vernon Rd
Bolton Rd


130 Vernon Road, Bolton, CT
130 Vernon Rd
Directions
Save
Nearby
Send to your phone
Share
130 Vernon Rd, Bolton, CT 06043
RH25+PH Bolton, Connecticut
Suggest an edit on 130 Vernon Rd
Add a missing place

130 VERNON RD

Location	130 VERNON RD	**Mblu**	02/ / 3/ /
Owner	MOUNTAINTOP ENTERPRISES INC	**Assessment**	$344,420
		Appraisal	$683,000
PID	1982	**Building Count**	1

Current Value

Appraisal	
Valuation Year	**Total**
2018	$683,000
Assessment	
Valuation Year	**Total**
2018	$344,420

Owner of Record

Owner	MOUNTAINTOP ENTERPRISES INC	**Sale Price**	$0
Co-Owner		**Certificate**	
Address	PO BOX 9219 BOLTON, CT 06043	**Book & Page**	166/656
		Sale Date	10/01/2014
		Instrument	24

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
MOUNTAINTOP ENTERPRISES INC	$0		166/656	24	10/01/2014
MOUNTAINTOP ENTERPRISES INC	$0		0051/0920		01/30/1979

Building Information

Building 1 : Section 1

Year Built:	1980
Living Area:	1,920
Building Percent Good:	76

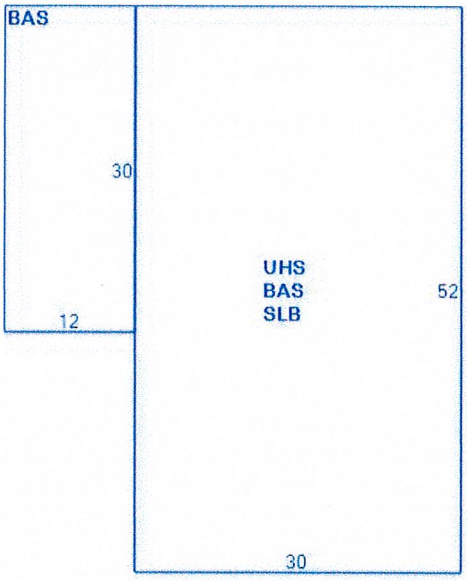
Building Attributes	
Field	**Description**

STYLE	Equipment Garage
MODEL	Comm/Ind
Grade	D
Stories:	1.5
Occupancy	1.00
Exterior Wall 1	Board & Batten
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Metal
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Minimum
Interior Floor 2	
Heating Fuel	None
Heating Type	None
% Central Air	0
Frame Type	WOOD FRAME
Fin. Bsmt. Area	
Wall Height	8.00

Building Photo

(PhotoHandler.ashx?pid=1982&bid=1982)

Building Layout



(ParcelSketch.ashx?pid=1982&bid=1982)

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,920	1,920
SLB	Slab	1,560	0
UHS	Unfinished Half Story	1,560	0
		5,040	1,920

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Zone R-3

Land Line Valuation

Size (Acres)	30.30
Depth	
Assessed Value	$297,220
Appraised Value	$615,500

Outbuildings

Outbuildings					Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Bldg #**
SHD1	Shed	MS	Masonry	128.00 S.F.	1
SHD1	Shed	MS	Masonry	200.00 S.F.	1
BRN1	1 Story Barn	FR	Frame	4000.00 S.F.	1
CELL	Cell Tower			150.00 FEET	1
CELL	Cell Tower			200.00 FEET	1
SHD1	Shed	MS	Masonry	264.00 S.F.	1
SHD1	Shed	MS	Masonry	256.00 S.F.	1
SHD1	Shed	MS	Masonry	1144.00 S.F.	1

Valuation History

Appraisal	
Valuation Year	**Total**
2019	$683,000
2018	$683,000

Assessment	
Valuation Year	**Total**
2019	$344,420
2018	$344,420

EXHIBIT 3

(Revised)
STRUCTURAL ANALYSIS REPORT

For

SITE NUMBER: CT1069
SITE NAME: BOLTON NORTH
FA CODE: 10035019
PROJECT: LTE 2C, 3C, 4C RETRO, 5G NR 2020 UPGRADE

130 VERNON Road
BOLTON, CT 06043

Antennas Mounted to the Tower

Prepared for:

CENTERLINE COMMUNICATIONS

at&t

Dated: February 11, 2021 (Rev 1)
Dated: December 1, 2020

Prepared by:

HUDSON Design Group LLC

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

STATE OF CONNECTICUT
GI KAI WANG
No. 28220
LICENSED
PROFESSIONAL ENGINEER

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 280' guyed tower supporting the proposed AT&T antennas located at elevation 164' 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.

Record drawings of the existing tower were not available for our use. The previous structural analysis report prepared by URS Corporation, dated July 26, 2012, was available and obtained for our use. Tower inspection report prepared by Northeast Towers Inc., dated January 14, 2020, was provided to this office.

CONCLUSION SUMMARY:

HDG performed structural analysis of the existing tower with the following proposed modifications:

1. Add HSS2.500x0.25 (1/2 split pipe) to the tower leg from El.2' to El.42'.
2. Add HSS3.000x0.25 (1/3 split pipe) to the tower leg from El.2' to El.22'.

Based on our evaluation, we have determined that the existing tower with proposed modifications and foundation **are 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 **99.5%** - (Legs at Tower Section T14 from EL.2' to EL.22' Controlling).

HUDSON
Design Group LLC

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	(1) Top Beacon	282'	Top of Tower
	(1) FM Antenna	289'	Top of Tower
	(1) MF-950B	280'	Tower Leg
	(1) DCR-T-R-FM	280'	Tower Leg
	(1) 14' Omni	260'	Side Mount Standoff
	(1) BA1012-2	260'	Side Mount Standoff
	(1) DB589-Y	235'	Side Mount Standoff
	(1) 531-70HD	218'	Side Mount Standoff
	(1) 8' Dish	212.5'	Tower Leg
	(1) 8' Dish	204.5'	Tower Leg
	(1) 6' Dish	204.5'	Tower Leg
	(1) Side Mount Standoff	180.5'	Tower Leg
AT&T	(3) Powerwave 7770 Antennas	164'	***Mod. Sector Mount***
AT&T	(3) LGP21401	164'	***Mod. Sector Mount***
AT&T	(1) DC6-48-60-18-8F	164'	Tower Leg
AT&T	***(3) OPA65R-BU8DA Antennas***	164'	***Mod. Sector Mount***
AT&T	***(3) DMP65R-BU8DA Antennas***	164'	***Mod. Sector Mount***
AT&T	***(3) 4478 B14***	164'	***Mod. Sector Mount***
AT&T	***(3) 4449 B5/B12***	164'	***Mod. Sector Mount***
AT&T	***(3) 8843 B2/B66A***	164'	***Mod. Sector Mount***
AT&T	***(1) DC6-48-60-18-8C-EV***	164'	***Mod. Sector Mount***
	(1) 5.5' Dish	153'	Tower Leg
	(3) Obstruction Lights	140'	Tower Leg
	(1) 22' Omni	132'	Side Mount Standoff
	(1) 12' Dipole	132'	Side Mount Standoff
	(1) 13' Omni	125'	Side Mount Standoff
	(1) 1' Yagi	124.5'	Tower Leg
	(2) BXA-70063-6CF Antennas	121'	Sector Mount
	(2) LPA-80080-4CF Antennas	121'	Sector Mount
	(2) LPA-80063-4CF Antennas	121'	Sector Mount
	(2) LPA-171080/8CF Antennas	121'	Sector Mount
	(2) LPA-171063-8CF Antennas	121'	Sector Mount
	(1) 4' Dish	113'	Tower Leg
	(1) 9' Dish	104.5'	Tower Leg

Proposed AT&T Appurtenances shown in Bold.

HUDSON
Design Group LLC

AT&T EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
AT&T	(6) 1 5/8" Cables	164'	Tower Face
AT&T	(2) DC Power Cables	164'	Tower Face
AT&T	(1) Fiber Cable	164'	Tower Face
AT&T	***(2) DC Power Cables***	164'	Tower Face
AT&T	***(1) Fiber Cable***	164'	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	**99.5 %**	2 – 22	PASS	**Controlling**
Diagonals	94.6 %	62 – 82	PASS	
Secondary Horizontals	3.7 %	2 – 22	PASS	
Top Girt	5.8 %	262 – 282	PASS	
Guy	76.6 %	128	PASS	
Guy Pull-Off	21.0 %	128	PASS	
Torque Arm	38.5 %	196	PASS	

FOUNDATION COMPARISON SUMMARY:

Tower Mast	Design Reactions X 1.35	Proposed Reactions	Pass/Fail	Comments
AXIAL	319.8 k	**227.2 k**	PASS	

Guy Anchor	Design Reactions X 1.35	Proposed Reactions	Pass/Fail	Comments
UPLIFT	292.0 k	**57.9 k**	PASS	
SHEAR	101.3 k	**68.5 k**	PASS	

HUDSON
Design Group LLC

DESIGN CRITERIA:

1. EIA/TIA-222-H Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures

2. 2018 Connecticut State Building Code

   City/Town: Bolton
   County: Tolland
   Basic Wind Speed: 125 mph
   Risk Category: II
   Exposure Category: C
   Topographic Category: 1
   Ice Thickness: 1.5 inch

3. Approximate height above grade to proposed antennas: 164'

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.

4. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas, RRHs and surge arrestor be mounted on the existing sector mount supported by the tower.

EXHIBIT 4

January 29, 2021 (Rev.1)
October 14, 2020

CENTERLINE COMMUNICATIONS at&t

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

RE:		
	Site Number:	CT1069 (LTE 2C/ 5G NR)
	FA Number:	10035019
	PACE Number:	MRCTB047226
	PT Number:	2051A0VCLW
	Site Name:	BOLTON NORTH
	Site Address:	130 Vernon Road Bolton, CT 06043

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) 7770 Antennas (55.0"x11.0"x5.0" - Wt. = 35 lbs. /each)
- (6) LGP21401 TMA's (14.4"x9.0"x2.7" – Wt. = 19 lbs. /each)
- (1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each) (Tower Mount)
- **(3) OPA65R-BU8DA Antennas (96.0"x21.0"x7.8" – Wt. = 77 lbs. /each)**
- **(3) DMP65R-BU8DA Antennas (96.0"x20.7"x7.7" – Wt. = 96 lbs. /each)**
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(3) B5/B12 4449 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)**
- **(3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(1) Squid Surge Arrestor (24.0"x9.7" Φ – Wt. = 33 lbs. /each) (Tower Mount)**

**Proposed equipment shown in bold*

Mount Mapping Report prepared by Northeast Towers Inc, dated September 18, 2020 was used to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R13.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30-degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 125 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.5 in. An escalated ice thickness of 1.76 in was used for this analysis.
- HDG considers this site to be exposure category C; tower is located near large, flat, open, terrain/grasslands.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- HDG considers this site to have a spectral response acceleration parameter at short periods, S_S, of 0.177 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.063.
- The mount has been analyzed with load combinations consisting of 250 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing tower with bent plates and threaded rods. The connection is considered OK by visual inspection.

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

- **Install new 2" std. (2.38" O.D.) steel pipe brace, secured to existing mount and tower leg (typ. of 2 per sector, total of 6).**
- **Install new 2" std. (2.38" O.D.) horizontal pipe secured to the existing pipe masts (typ. of 1 per sector, total of 3).**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (LTE 2C/ 5G NR) Mount Rating	24	LC7	256%	**FAIL**
Modified (LTE 2C/ 5G NR) Mount Rating	24	LC36	84%	**PASS**

Reference Documents:

- Mount Mapping Report prepared by Northeast Towers Inc, dated September 18, 2020

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.

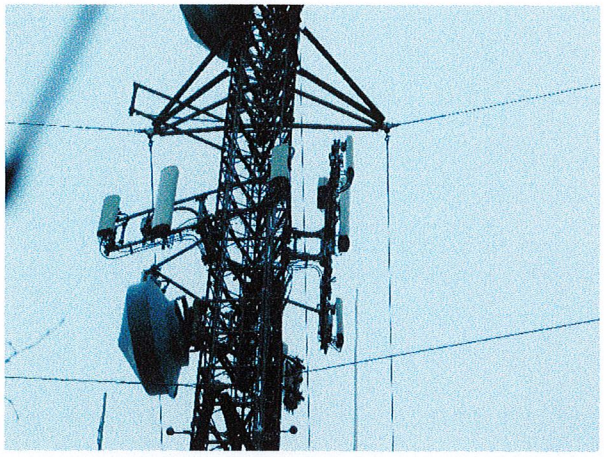
Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Vice President

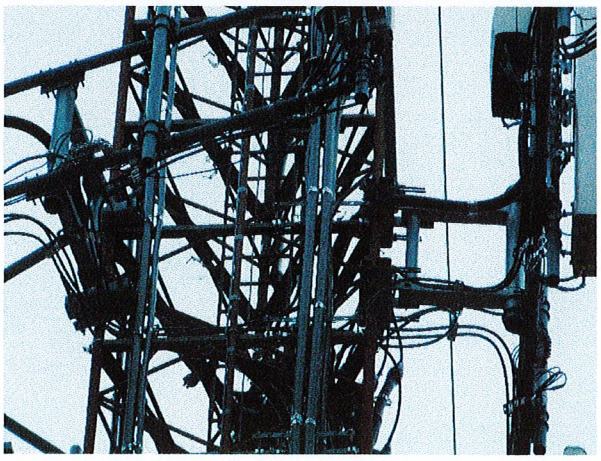
STATE OF CONNECTICUT
DANIEL HAMM
24178
LICENSED
PROFESSIONAL ENGINEER

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:

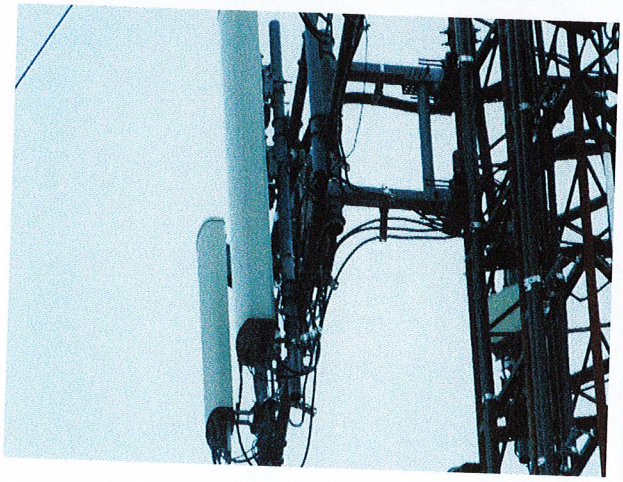
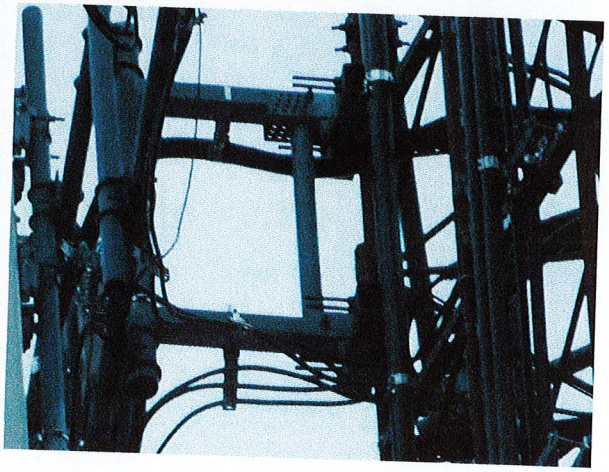








p: 978.557.5553 f: 978.336.5586 a: 45 Beechwood Drive, N. Andover, MA 01845

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 1/28/2021
Project Name: BOLTON NORTH
Project No.: CT1069
Designed By: ID **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

K_z=	1.405	
z=	164	(ft)
z_g=	900	(ft)
α=	9.5	

Kzmin ≤ Kz ≤ 2.01

Table 2-4

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

2.6.6.2 Topographic Factor:

Table 2-5

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

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

$K_h = e^{(f*z/H)}$

K_{zt}=	#DIV/0!	
K_h=	#DIV/0!	
K_c=	1	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	164	
z_s=	815	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.97	(from 2.6.8)

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

Category= 1

2.6.10 Design Ice Thickness

Max Ice Thickness =
Importance Factor =

t_i =	1.50	in
I=	1.0	(from Table 2-3)
K_{iz} =	1.17	(from Sec. 2.6.10)

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

t_{iz} = 1.76 in

Date: 1/28/2021
Project Name: BOLTON NORTH
Project No.: CT1069
Designed By: ID Checked By: MSC

HUDSON Design Group LLC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

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

h=	280	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

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

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

2.6.11.2 Design Wind Force on Appurtenances

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

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

q_z=	**46.37**	K_z=	1.405	(from 2.6.5.2)
$q_{z\,(ice)}$=	**7.42**	K_{zt}=	1.0	(from 2.6.6.2.1)
$q_{z\,(30)}$=	**2.67**	K_s=	1.0	(from 2.6.7)
		K_e=	0.97	(from 2.6.8)
		K_d=	0.85	(from Table 2-2)
		V_{max}=	125	mph (Ultimate Wind Speed)
		$V_{max\,(ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

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

Date: 1/28/2021
Project Name: BOLTON NORTH
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HUDSON Design Group LLC

Determine Ca:

Table 2-9

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

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

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

Ice Thickness = 1.76 in **Angle =** 0 (deg) **Equivalent Angle =** 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	255	57	15
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	4.57	1.29	839	162	48
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	4.64	1.30	829	161	48
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	94	23	5
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	0.00	1.20	0	5	0
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.90	1.20	65	17	4
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	0.00	1.20	33	11	2
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.20	63	16	4
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	0.00	1.20	31	10	2
LGP21401 TMA	14.4	2.7	9.0	0.27	5.33	1.33	17	8	1
LGP21401 TMA (Shielded)	14.4	0.0	9.0	0.00	0.00	1.20	0	4	0
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	52	13	3
HSS 3x3	3.0	12.0		0.25	0.25	1.25	14		
3" Pipe	3.5	12.0		0.29	0.29	1.20	16		
2" Pipe	2.4	12.0		0.20	0.20	1.20	11		
1-1/2" Pipe	1.9	12.0		0.16	0.16	1.20	9		

Date: 1/28/2021
Project Name: BOLTON NORTH
Project No.: CT1069
Designed By: ID Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.76	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	255	136	225
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	839	380	724
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	829	377	716
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	94	58	85
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	47	58	50
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	65	91	72
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	34	91	48
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	63	76	66
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	32	76	43
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	17	50	25
LGP21401 TMA (Shielded)	14.4	1.4	9.0	0.14	0.90	10.67	1.60	1.52	1.20	10	50	20

WIND LOADS WITH ICE:

7770 Antenna	58.5	14.5	8.5	5.90	3.46	4.03	6.87	1.27	1.39	56	36	51
OPA65R-BU8DA Antenna	99.5	24.5	11.3	16.95	7.82	4.06	8.79	1.27	1.46	160	85	141
DMP65R-BU8DA Antenna	99.5	24.2	11.2	16.74	7.76	4.11	8.87	1.27	1.46	158	84	139
B14 4478 RRH	21.6	16.9	11.8	2.54	1.78	1.28	1.83	1.20	1.20	23	16	21
B14 4478 RRH (Shielded)	21.6	8.5	11.8	1.27	1.78	2.56	1.83	1.20	1.20	11	16	12
B5/B12 4449 RRH	21.4	12.9	16.7	1.92	2.49	1.66	1.28	1.20	1.20	17	22	18
B5/B12 4449 RRH (Shielded)	21.4	6.5	16.7	0.96	2.49	3.32	1.28	1.24	1.20	9	22	12
B2/B66A 8843 RRH	18.4	14.4	16.7	1.84	2.14	1.28	1.10	1.20	1.20	16	19	17
B2/B66A 8843 RRH (Shielded)	18.4	7.2	16.7	0.92	2.14	2.55	1.10	1.20	1.20	8	19	11
LGP21401 TMA	17.9	6.2	12.5	0.77	1.56	2.88	1.43	1.22	1.20	7	14	9
LGP21401 TMA (Shielded)	17.9	3.1	12.5	0.39	1.56	5.76	1.43	1.34	1.20	4	14	6

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	15	8	13
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	48	22	42
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	48	22	41
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	5
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	3	3	3
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	4
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	3
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	4	4
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	2
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	1
LGP21401 TMA (Shielded)	14.4	1.4	9.0	0.14	0.90	10.67	1.60	1.52	1.20	1	3	1

Date: 1/28/2021
Project Name: BOLTON NORTH
Project No.: CT1069
Designed By: ID Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.76	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	255	136	166
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	839	380	495
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	829	377	490
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	94	58	67
B14 4478 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	70	58	61
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	65	91	85
B5/B12 4449 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	49	91	81
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	63	76	73
B2/B66A 8843 RRH (Shielded)	14.9	8.2	13.2	0.85	1.37	1.82	1.13	1.20	1.20	47	76	69
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	17	50	42
LGP21401 TMA (Shielded)	14.4	2.0	9.0	0.20	0.90	7.11	1.60	1.40	1.20	13	50	41

WIND LOADS WITH ICE:

7770 Antenna	58.5	14.5	8.5	5.90	3.46	4.03	6.87	1.27	1.39	56	36	41
OPA65R-BU8DA Antenna	99.5	24.5	11.3	16.95	7.82	4.06	8.79	1.27	1.46	160	85	103
DMP65R-BU8DA Antenna	99.5	24.2	11.2	16.74	7.76	4.11	8.87	1.27	1.46	158	84	103
B14 4478 RRH	21.6	16.9	11.8	2.54	1.78	1.28	1.83	1.20	1.20	23	16	18
B14 4478 RRH (Shielded)	21.6	12.7	11.8	1.91	1.78	1.70	1.83	1.20	1.20	17	16	16
B5/B12 4449 RRH	21.4	12.9	16.7	1.92	2.49	1.66	1.28	1.20	1.20	17	22	21
B5/B12 4449 RRH (Shielded)	21.4	9.7	16.7	1.44	2.49	2.21	1.28	1.20	1.20	13	22	20
B2/B66A 8843 RRH	18.4	14.4	16.7	1.84	2.14	1.28	1.10	1.20	1.20	16	19	18
B2/B66A 8843 RRH (Shielded)	18.4	10.8	16.7	1.38	2.14	1.70	1.10	1.20	1.20	12	19	17
LGP21401 TMA	17.9	6.2	12.5	0.77	1.56	2.88	1.43	1.22	1.20	7	14	12
LGP21401 TMA (Shielded)	17.9	4.7	12.5	0.58	1.56	3.84	1.43	1.26	1.20	5	14	12

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	15	8	10
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	48	22	29
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	48	22	28
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
B14 4478 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	4	3	4
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	5
B5/B12 4449 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	3	5	5
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	4	4
B2/B66A 8843 RRH (Shielded)	14.9	8.2	13.2	0.85	1.37	1.82	1.13	1.20	1.20	3	4	4
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	2
LGP21401 TMA (Shielded)	14.4	2.0	9.0	0.20	0.90	7.11	1.60	1.40	1.20	1	3	2

Date: 1/28/2021
Project Name: BOLTON NORTH
Project No.: CT1069
Designed By: ID Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 90 (deg)

Ice Thickness = 1.76 in.

Equivalent Angle = 270 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	255	136	136
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	839	380	380
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	829	377	377
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	94	58	58
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	1.04	0.00	2.18	0.00	1.20	0	58	58
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	65	91	91
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	0.00	1.36	0.00	1.20	0	91	91
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	63	76	76
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	0.00	1.13	0.00	1.20	0	76	76
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	17	50	50
LGP21401 TMA (Shielded)	14.4	0.0	9.0	0.00	0.90	0.00	1.60	0.00	1.20	0	50	50

WIND LOADS WITH ICE:

7770 Antenna	58.5	14.5	8.5	5.90	3.46	4.03	6.87	1.27	1.39	56	36	36
OPA65R-BU8DA Antenna	99.5	24.5	11.3	16.95	7.82	4.06	8.79	1.27	1.46	160	85	85
DMP65R-BU8DA Antenna	99.5	24.2	11.2	16.74	7.76	4.11	8.87	1.27	1.46	158	84	84
B14 4478 RRH	21.6	16.9	11.8	2.54	1.78	1.28	1.83	1.20	1.20	23	16	16
B14 4478 RRH (Shielded)	21.6	3.5	11.8	0.53	1.78	6.14	1.83	1.36	1.20	5	16	16
B5/B12 4449 RRH	21.4	12.9	16.7	1.92	2.49	1.66	1.28	1.20	1.20	17	22	22
B5/B12 4449 RRH (Shielded)	21.4	8.2	16.7	1.22	2.49	2.61	1.28	1.20	1.20	11	22	22
B2/B66A 8843 RRH	18.4	14.4	16.7	1.84	2.14	1.28	1.10	1.20	1.20	16	19	19
B2/B66A 8843 RRH (Shielded)	18.4	9.0	16.7	1.15	2.14	2.05	1.10	1.20	1.20	10	19	19
LGP21401 TMA	17.9	6.2	12.5	0.77	1.56	2.88	1.43	1.22	1.20	7	14	14
LGP21401 TMA (Shielded)	17.9	3.5	12.5	0.44	1.56	5.09	1.43	1.32	1.20	4	14	14

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	15	8	8
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	48	22	22
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	48	22	22
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
B14 4478 RRH (Shielded)	18.1	0.0	8.3	0.00	1.04	0.00	2.18	0.00	1.20	0	3	3
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	5
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	0.00	1.36	0.00	1.20	0	5	5
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	4	4
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	0.00	1.13	0.00	1.20	0	4	4
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	3
LGP21401 TMA (Shielded)	14.4	0.0	9.0	0.00	0.90	0.00	1.60	0.00	1.20	0	3	3

Date: 1/28/2021
Project Name: BOLTON NORTH
Project No.: CT1069
Designed By: ID Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 120 (deg)

Ice Thickness = 1.76 in.

Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	255	136	166
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	839	380	495
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	829	377	490
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	94	58	67
B14 4478 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	70	58	61
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	65	91	85
B5/B12 4449 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	49	91	81
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	63	76	73
B2/B66A 8843 RRH (Shielded)	14.9	8.2	13.2	0.85	1.37	1.82	1.13	1.20	1.20	47	76	69
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	17	50	42
LGP21401 TMA (Shielded)	14.4	2.0	9.0	0.20	0.90	7.11	1.60	1.40	1.20	13	50	41

WIND LOADS WITH ICE:

7770 Antenna	58.5	14.5	8.5	5.90	3.46	4.03	6.87	1.27	1.39	56	36	41
OPA65R-BU8DA Antenna	99.5	24.5	11.3	16.95	7.82	4.06	8.79	1.27	1.46	160	85	103
DMP65R-BU8DA Antenna	99.5	24.2	11.2	16.74	7.76	4.11	8.87	1.27	1.46	158	84	103
B14 4478 RRH	21.6	16.9	11.8	2.54	1.78	1.28	1.83	1.20	1.20	23	16	18
B14 4478 RRH (Shielded)	21.6	12.7	11.8	1.91	1.78	1.70	1.83	1.20	1.20	17	16	16
B5/B12 4449 RRH	21.4	12.9	16.7	1.92	2.49	1.66	1.28	1.20	1.20	17	22	21
B5/B12 4449 RRH (Shielded)	21.4	9.7	16.7	1.44	2.49	2.21	1.28	1.20	1.20	13	22	20
B2/B66A 8843 RRH	18.4	14.4	16.7	1.84	2.14	1.28	1.10	1.20	1.20	16	19	18
B2/B66A 8843 RRH (Shielded)	18.4	10.8	16.7	1.38	2.14	1.70	1.10	1.20	1.20	12	19	17
LGP21401 TMA	17.9	6.2	12.5	0.77	1.56	2.88	1.43	1.22	1.20	7	14	12
LGP21401 TMA (Shielded)	17.9	4.7	12.5	0.58	1.56	3.84	1.43	1.26	1.20	5	14	12

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	15	8	10
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	48	22	29
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	48	22	28
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
B14 4478 RRH (Shielded)	18.1	10.1	8.3	1.26	1.04	1.80	2.18	1.20	1.20	4	3	4
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	5
B5/B12 4449 RRH (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	3	5	5
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	4	4
B2/B66A 8843 RRH (Shielded)	14.9	8.2	13.2	0.85	1.37	1.82	1.13	1.20	1.20	3	4	4
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	2
LGP21401 TMA (Shielded)	14.4	2.0	9.0	0.20	0.90	7.11	1.60	1.40	1.20	1	3	2

Date: 1/28/2021
Project Name: BOLTON NORTH
Project No.: CT1069
Designed By: ID Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.76	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	255	136	225
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	839	380	724
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	829	377	716
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	94	58	85
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	47	58	50
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	65	91	72
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	34	91	48
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	63	76	66
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	32	76	43
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	17	50	25
LGP21401 TMA (Shielded)	14.4	1.4	9.0	0.14	0.90	10.67	1.60	1.52	1.20	10	50	20

WIND LOADS WITH ICE:

7770 Antenna	58.5	14.5	8.5	5.90	3.46	4.03	6.87	1.27	1.39	56	36	51
OPA65R-BU8DA Antenna	99.5	24.5	11.3	16.95	7.82	4.06	8.79	1.27	1.46	160	85	141
DMP65R-BU8DA Antenna	99.5	24.2	11.2	16.74	7.76	4.11	8.87	1.27	1.46	158	84	139
B14 4478 RRH	21.6	16.9	11.8	2.54	1.78	1.28	1.83	1.20	1.20	23	16	21
B14 4478 RRH (Shielded)	21.6	8.5	11.8	1.27	1.78	2.56	1.83	1.20	1.20	11	16	12
B5/B12 4449 RRH	21.4	12.9	16.7	1.92	2.49	1.66	1.28	1.20	1.20	17	22	18
B5/B12 4449 RRH (Shielded)	21.4	6.5	16.7	0.96	2.49	3.32	1.28	1.24	1.20	9	22	12
B2/B66A 8843 RRH	18.4	14.4	16.7	1.84	2.14	1.28	1.10	1.20	1.20	16	19	17
B2/B66A 8843 RRH (Shielded)	18.4	7.2	16.7	0.92	2.14	2.55	1.10	1.20	1.20	8	19	11
LGP21401 TMA	17.9	6.2	12.5	0.77	1.56	2.88	1.43	1.22	1.20	7	14	9
LGP21401 TMA (Shielded)	17.9	3.1	12.5	0.39	1.56	5.76	1.43	1.34	1.20	4	14	6

WIND LOADS AT 30 MPH:

7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	15	8	13
OPA65R-BU8DA Antenna	96.0	21.0	7.8	14.00	5.20	4.57	12.31	1.29	1.58	48	22	42
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	48	22	41
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	5
B14 4478 RRH (Shielded)	18.1	6.7	8.3	0.84	1.04	2.70	2.18	1.21	1.20	3	3	3
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	4
B5/B12 4449 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	3
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	4	4	4
B2/B66A 8843 RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	2
LGP21401 TMA	14.4	2.7	9.0	0.27	0.90	5.33	1.60	1.33	1.20	1	3	1
LGP21401 TMA (Shielded)	14.4	1.4	9.0	0.14	0.90	10.67	1.60	1.52	1.20	1	3	1

Date: 1/28/2021
Project Name: BOLTON NORTH
Project No.: CT1069
Designed By: ID **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.76 in.
Density of ice: 56 pcf

7770 Antenna

Weight of ice based on total radial SF area:

Height (in):	55.0	
Width (in):	11.0	
Depth (in):	5.0	
Total weight of ice on object:		136 lbs
Weight of object:	35.0 lbs	
Combined weight of ice and object:		171 lbs

OPA65R-BU8DA Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	21.0	
Depth (in):	7.8	
Total weight of ice on object:		416 lbs
Weight of object:	77.0 lbs	
Combined weight of ice and object:		493 lbs

DMP65R-BU8DA Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		410 lbs
Weight of object:	96.0 lbs	
Combined weight of ice and object:		506 lbs

B14 4478 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		57 lbs
Weight of object:	60.0 lbs	
Combined weight of ice and object:		117 lbs

B5/B12 4449 RRH

Weight of ice based on total radial SF area:

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

B2/B66A 8843 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.9	
Total weight of ice on object:		50 lbs
Weight of object:	72.0 lbs	
Combined weight of ice and object:		122 lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	24.0	
Diameter(in):	9.7	
Total weight of ice on object:		49 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		82 lbs

LGP21401 TMA

Weight of ice based on total radial SF area:

Height (in):	14.4	
Width (in):	2.7	
Depth (in):	9.0	
Total weight of ice on object:		29 lbs
Weight of object:	19.0 lbs	
Combined weight of ice and object:		48 lbs

3" Pipe

Per foot weight of ice:

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

HSS 3x3

Weight of ice based on total radial SF area:

Height (in):	3	
Width (in):	3	
Per foot weight of ice on object:		13 plf

1-1/2" Pipe

Per foot weight of ice:

diameter (in):	1.9	
Per foot weight of ice on object:		8 plf

2" Pipe

Per foot weight of ice:

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

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)

Bentley

Current Date: 1/29/2021 8:52 AM
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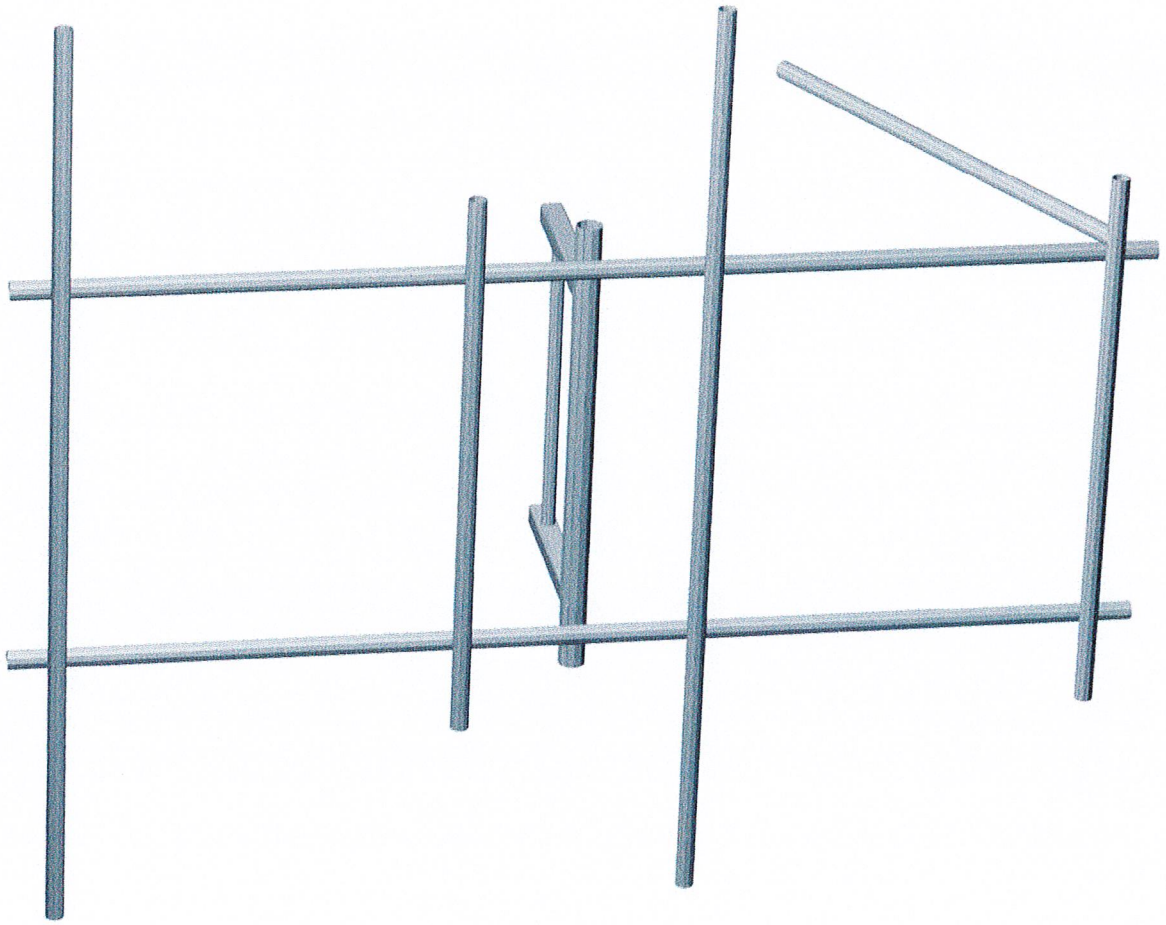

Bentley

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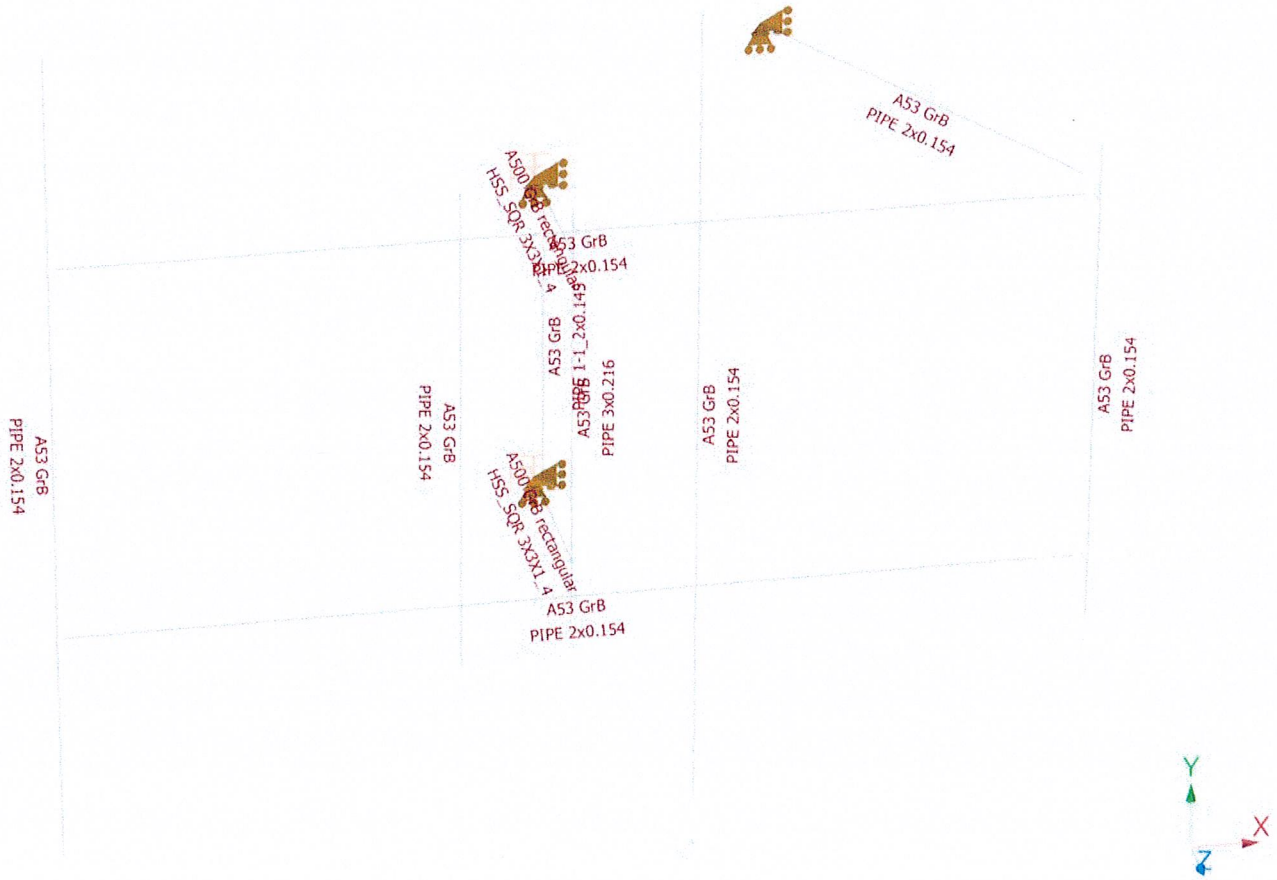

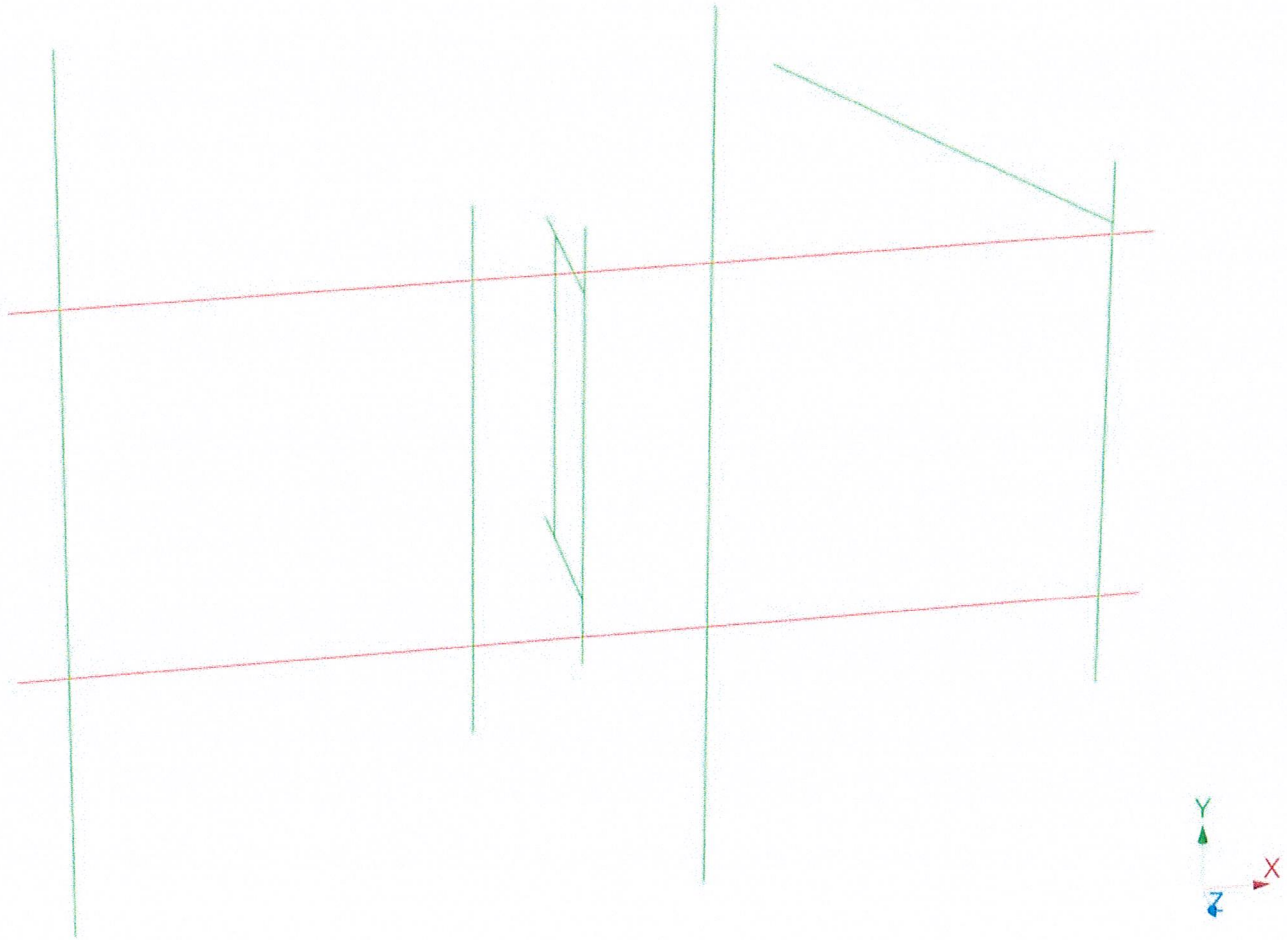
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Bentley

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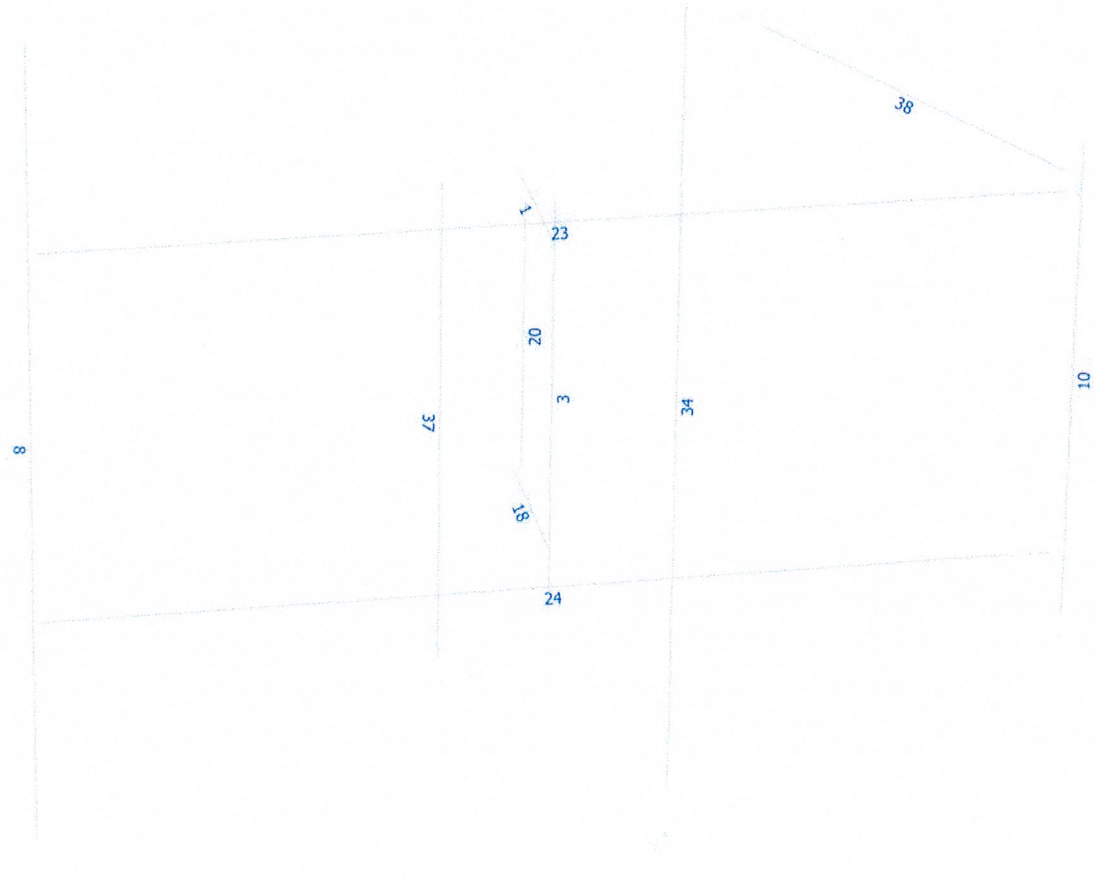

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Load data

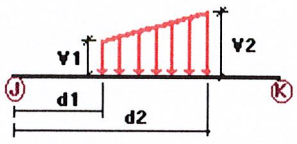
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

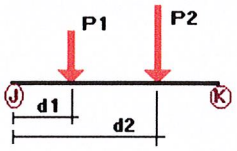
Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load Right End of Mount	No	LL
LL3	250 lb Live Load Left End of Mount	No	LL
LLa1	250 lb Live Load Antenna 1	No	LL
LLa2	250 lb Live Load Antenna 2	No	LL
LLa3	250 lb Live Load Antenna 3	No	LL
LLa4	250 lb Live Load Antenna 4	No	LL

Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	1	z	-0.014	0.00	0.00	No	0.00	No
	3	z	-0.016	0.00	0.00	No	0.00	No
	18	z	-0.014	0.00	0.00	No	0.00	No
	20	z	-0.009	0.00	0.00	No	0.00	No
	23	z	-0.011	0.00	0.00	No	0.00	No
	24	z	-0.011	0.00	0.00	No	0.00	No
	37	z	-0.011	0.00	0.00	No	0.00	No
	38	z	-0.011	0.00	0.00	No	0.00	No
W30	1	z	-0.014	0.00	0.00	No	0.00	No
	3	z	-0.016	0.00	0.00	No	0.00	No
	18	z	-0.014	0.00	0.00	No	0.00	No
	20	z	-0.009	0.00	0.00	No	0.00	No
	23	z	-0.011	0.00	0.00	No	0.00	No
	24	z	-0.011	0.00	0.00	No	0.00	No
	37	z	-0.011	0.00	0.00	No	0.00	No
	38	z	-0.011	0.00	0.00	No	0.00	No
W60	1	x	-0.014	0.00	0.00	No	0.00	No
	3	x	-0.016	0.00	0.00	No	0.00	No
	18	x	-0.014	0.00	0.00	No	0.00	No
	20	x	-0.009	0.00	0.00	No	0.00	No
	23	x	-0.011	0.00	0.00	No	0.00	No
	24	x	-0.011	0.00	0.00	No	0.00	No
	37	x	-0.011	0.00	0.00	No	0.00	No
	38	x	-0.011	0.00	0.00	No	0.00	No
W90	1	x	-0.014	0.00	0.00	No	0.00	No
	3	x	-0.016	0.00	0.00	No	0.00	No
	18	x	-0.014	0.00	0.00	No	0.00	No
	20	x	-0.009	0.00	0.00	No	0.00	No
	23	x	-0.011	0.00	0.00	No	0.00	No
	24	x	-0.011	0.00	0.00	No	0.00	No
	37	x	-0.011	0.00	0.00	No	0.00	No
	38	x	-0.011	0.00	0.00	No	0.00	No
W120	1	x	-0.014	0.00	0.00	No	0.00	No
	3	x	-0.016	0.00	0.00	No	0.00	No
	18	x	-0.014	0.00	0.00	No	0.00	No
	20	x	-0.009	0.00	0.00	No	0.00	No
	23	x	-0.011	0.00	0.00	No	0.00	No
	24	x	-0.011	0.00	0.00	No	0.00	No
	37	x	-0.011	0.00	0.00	No	0.00	No
	38	x	-0.011	0.00	0.00	No	0.00	No
W150	1	z	0.014	0.00	0.00	No	0.00	No
	3	z	0.016	0.00	0.00	No	0.00	No
	18	z	0.014	0.00	0.00	No	0.00	No
	20	z	0.009	0.00	0.00	No	0.00	No
	23	z	0.011	0.00	0.00	No	0.00	No
	24	z	0.011	0.00	0.00	No	0.00	No
	37	z	0.011	0.00	0.00	No	0.00	No
	38	z	0.011	0.00	0.00	No	0.00	No
Di	1	y	-0.013	0.00	0.00	No	0.00	No
	3	y	-0.011	0.00	0.00	No	0.00	No
	8	y	-0.009	0.00	0.00	No	0.00	No
	10	y	-0.009	0.00	0.00	No	0.00	No
	18	y	-0.013	0.00	0.00	No	0.00	No
	20	y	-0.008	0.00	0.00	No	0.00	No
	23	y	-0.009	0.00	0.00	No	0.00	No
	24	y	-0.009	0.00	0.00	No	0.00	No
	34	y	-0.009	0.00	0.00	No	0.00	No
	37	y	-0.009	0.00	0.00	No	0.00	No
	38	y	-0.009	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	8	y	-0.048	2.00	No
		y	-0.048	8.00	No
		y	-0.073	5.00	No
		y	-0.072	5.00	No
	10	y	-0.018	0.50	No
		y	-0.018	4.50	No
		y	-0.038	50.00	Yes
	34	y	-0.039	2.00	No
		y	-0.039	8.00	No
		y	-0.06	5.00	No
Wo	8	z	-0.415	2.00	No
		z	-0.415	8.00	No
		z	-0.033	5.00	No
		z	-0.031	5.00	No
	10	z	-0.128	0.50	No
		z	-0.128	4.50	No
	34	z	-0.42	2.00	No
		z	-0.42	8.00	No
W30	8	3	-0.358	2.00	No
		3	-0.358	8.00	No
		3	-0.048	5.00	No
	10	3	-0.113	0.50	No
		3	-0.113	4.50	No
		3	-0.04	50.00	Yes
	34	3	-0.362	2.00	No
		3	-0.362	8.00	No
		3	-0.05	5.00	No
W60	8	3	-0.245	2.00	No
		3	-0.245	8.00	No
		3	-0.081	5.00	No
	10	3	-0.083	0.50	No
		3	-0.083	4.50	No
		3	-0.082	50.00	Yes
	34	3	-0.248	2.00	No
		3	-0.248	8.00	No
		3	-0.061	5.00	No
W90	8	x	-0.189	2.00	No
		x	-0.189	8.00	No
		x	-0.091	5.00	No
	10	x	-0.068	0.50	No
		x	-0.068	4.50	No
		x	-0.10	50.00	Yes
	34	x	-0.19	2.00	No
		x	-0.19	8.00	No
		x	-0.058	5.00	No
W120	8	2	-0.245	2.00	No
		2	-0.245	8.00	No
		2	-0.081	5.00	No
	10	2	-0.083	0.50	No
		2	-0.083	4.50	No
		2	-0.082	50.00	Yes
	34	2	-0.248	2.00	No

		2	-0.248	8.00	No
		2	-0.061	5.00	No
W150	8	2	-0.358	2.00	No
		2	-0.358	8.00	No
		2	-0.048	5.00	No
	10	2	-0.113	0.50	No
		2	-0.113	4.50	No
		2	-0.04	50.00	Yes
	34	2	-0.362	2.00	No
		2	-0.362	8.00	No
		2	-0.05	5.00	No
Di	8	y	-0.205	2.00	No
		y	-0.205	8.00	No
		y	-0.058	5.00	No
		y	-0.05	5.00	No
	10	y	-0.068	0.50	No
		y	-0.068	4.50	No
		y	-0.058	50.00	Yes
	34	y	-0.208	2.00	No
		y	-0.208	8.00	No
		y	-0.057	5.00	No
WI0	8	z	-0.081	2.00	No
		z	-0.081	8.00	No
		z	-0.011	5.00	No
	10	z	-0.029	0.50	No
		z	-0.029	4.50	No
	34	z	-0.081	2.00	No
		z	-0.081	8.00	No
WI30	8	3	-0.07	2.00	No
		3	-0.07	8.00	No
		3	-0.012	5.00	No
	10	3	-0.026	0.50	No
		3	-0.026	4.50	No
		3	-0.012	50.00	Yes
	34	3	-0.071	2.00	No
		3	-0.071	8.00	No
		3	-0.012	5.00	No
WI60	8	3	-0.052	2.00	No
		3	-0.052	8.00	No
		3	-0.02	5.00	No
	10	3	-0.021	0.50	No
		3	-0.021	4.50	No
		3	-0.024	50.00	Yes
	34	3	-0.052	2.00	No
		3	-0.052	8.00	No
		3	-0.016	5.00	No
WI90	8	x	-0.042	2.00	No
		x	-0.042	8.00	No
		x	-0.022	5.00	No
	10	x	-0.018	0.50	No
		x	-0.018	4.50	No
		x	-0.028	50.00	Yes
	34	x	-0.043	2.00	No
		x	-0.043	8.00	No
		x	-0.016	5.00	No
WI120	8	2	-0.052	2.00	No
		2	-0.052	8.00	No
		2	-0.02	5.00	No
	10	2	-0.021	0.50	No
		2	-0.021	4.50	No

		2	-0.024	50.00	Yes
	34	2	-0.052	2.00	No
		2	-0.052	8.00	No
		2	-0.016	5.00	No
WI150	8	2	-0.07	2.00	No
		2	-0.07	8.00	No
		2	-0.012	5.00	No
	10	2	-0.026	0.50	No
		2	-0.026	4.50	No
		2	-0.012	50.00	Yes
	34	2	-0.071	2.00	No
		2	-0.071	8.00	No
		2	-0.012	5.00	No
WL0	8	z	-0.024	2.00	No
		z	-0.024	8.00	No
		z	-0.002	5.00	No
	10	z	-0.008	0.50	No
		z	-0.008	4.50	No
	34	z	-0.024	2.00	No
		z	-0.024	8.00	No
WL30	8	3	-0.021	2.00	No
		3	-0.021	8.00	No
		3	-0.003	5.00	No
	10	3	-0.007	0.50	No
		3	-0.007	4.50	No
		3	-0.002	50.00	Yes
	34	3	-0.021	2.00	No
		3	-0.021	8.00	No
		3	-0.003	5.00	No
WL60	8	3	-0.014	2.00	No
		3	-0.014	8.00	No
		3	-0.005	5.00	No
	10	3	-0.005	0.50	No
		3	-0.005	4.50	No
		3	-0.004	50.00	Yes
	34	3	-0.015	2.00	No
		3	-0.015	8.00	No
		3	-0.004	5.00	No
WL90	8	x	-0.011	2.00	No
		x	-0.011	8.00	No
		x	-0.005	5.00	No
	10	x	-0.004	0.50	No
		x	-0.004	4.50	No
		x	-0.006	50.00	Yes
	34	x	-0.011	2.00	No
		x	-0.011	8.00	No
		x	-0.003	5.00	No
WL120	8	2	-0.014	2.00	No
		2	-0.014	8.00	No
		2	-0.005	5.00	No
	10	2	-0.005	0.50	No
		2	-0.005	4.50	No
		2	-0.004	50.00	Yes
	34	2	-0.015	2.00	No
		2	-0.015	8.00	No
		2	-0.004	5.00	No
WL150	8	2	-0.021	2.00	No
		2	-0.021	8.00	No
		2	-0.003	5.00	No
	10	2	-0.007	0.50	No

		2	-0.007	4.50	No
		2	-0.002	50.00	Yes
	34	2	-0.021	2.00	No
		2	-0.021	8.00	No
		2	-0.003	5.00	No
LL1	23	y	-0.25	50.00	Yes
LL2	23	y	-0.25	100.00	Yes
LL3	23	y	-0.25	0.00	Yes
LLa1	10	y	-0.25	50.00	Yes
LLa2	34	y	-0.25	50.00	Yes
LLa3	8	y	-0.25	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load Right End of Mount	No	0.00	0.00	0.00
LL3	250 lb Live Load Left End of Mount	No	0.00	0.00	0.00
LLa1	250 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	250 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

Current Date: 1/29/2021 8:58 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT1069\LTE 2C_5G NR\Rev.1\CT1069.retx

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC38=1.2D+1.5LL1
LC39=1.2D+1.5LL2
LC40=1.2D+1.5LL3
LC41=1.2D+WL0+1.5LLa1
LC42=1.2D+WL30+1.5LLa1
LC43=1.2D+WL60+1.5LLa1
LC44=1.2D+WL90+1.5LLa1
LC45=1.2D+WL120+1.5LLa1
LC46=1.2D+WL150+1.5LLa1
LC47=1.2D-WL0+1.5LLa1
LC48=1.2D-WL30+1.5LLa1
LC49=1.2D-WL60+1.5LLa1
LC50=1.2D-WL90+1.5LLa1
LC51=1.2D-WL120+1.5LLa1
LC52=1.2D-WL150+1.5LLa1
LC53=1.2D+WL0+1.5LLa2
LC54=1.2D+WL30+1.5LLa2

LC55=1.2D+WL60+1.5LLa2
LC56=1.2D+WL90+1.5LLa2
LC57=1.2D+WL120+1.5LLa2
LC58=1.2D+WL150+1.5LLa2
LC59=1.2D-WL0+1.5LLa2
LC60=1.2D-WL30+1.5LLa2
LC61=1.2D-WL60+1.5LLa2
LC62=1.2D-WL90+1.5LLa2
LC63=1.2D-WL120+1.5LLa2
LC64=1.2D-WL150+1.5LLa2
LC65=1.2D+WL0+1.5LLa3
LC66=1.2D+WL30+1.5LLa3
LC67=1.2D+WL60+1.5LLa3
LC68=1.2D+WL90+1.5LLa3
LC69=1.2D+WL120+1.5LLa3
LC70=1.2D+WL150+1.5LLa3
LC71=1.2D-WL0+1.5LLa3
LC72=1.2D-WL30+1.5LLa3
LC73=1.2D-WL60+1.5LLa3
LC74=1.2D-WL90+1.5LLa3
LC75=1.2D-WL120+1.5LLa3
LC76=1.2D-WL150+1.5LLa3
LC77=1.2D+WL0+1.5LLa4
LC78=1.2D+WL30+1.5LLa4
LC79=1.2D+WL60+1.5LLa4
LC80=1.2D+WL90+1.5LLa4
LC81=1.2D+WL120+1.5LLa4
LC82=1.2D+WL150+1.5LLa4
LC83=1.2D-WL0+1.5LLa4
LC84=1.2D-WL30+1.5LLa4
LC85=1.2D-WL60+1.5LLa4
LC86=1.2D-WL90+1.5LLa4
LC87=1.2D-WL120+1.5LLa4
LC88=1.2D-WL150+1.5LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 3X3X1_4	**1**	LC2 at 0.00%	0.55	OK	Eq. H1-1b
		18	LC8 at 0.00%	**0.57**	**OK**	Eq. H1-1b
	PIPE 1-1_2x0.145	**20**	LC31 at 100.00%	**0.15**	**OK**	Eq. H1-1b
	PIPE 2x0.154	**8**	LC32 at 68.75%	0.96	OK	Eq. H1-1b
		10	LC39 at 15.63%	0.74	OK	Eq. H1-1b
		23	LC1 at 48.96%	2.45	N.G.	Eq. H1-1b
		24	LC7 at 50.00%	**2.56**	**N.G.**	Eq. H1-1b
		34	LC39 at 68.75%	0.45	OK	Eq. H1-1b
		37	LC36 at 16.67%	0.78	OK	Eq. H1-1b
		38	LC1 at 0.00%	0.19	OK	Eq. H1-1b
	PIPE 3x0.216	**3**	LC7 at 85.00%	**0.41**	**OK**	Eq. H3-1

Bentley

Current Date: 1/29/2021 8:59 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT1069\LTE 2C_5G NR\Rev.1\CT1069.retx

Geometry data

GLOSSARY

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

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.25	0.00	0
2	0.00	0.25	2.0833	0
6	0.00	1.00	2.0833	0
7	0.00	-4.00	2.0833	0
33	-5.50	3.50	2.4833	0
35	5.50	1.50	2.4833	0
36	-5.50	-6.50	2.4833	0
38	5.50	-4.50	2.4833	0
41	0.00	0.25	0.50	0
43	0.00	-3.25	0.00	0
44	0.00	-3.25	2.0833	0
46	0.00	-3.25	0.50	0
47	0.00	0.5833	2.0833	0
48	0.00	-3.5833	2.0833	0
49	0.00	0.5833	2.2833	0
50	0.00	-3.5833	2.2833	0
51	6.00	0.5833	2.2833	0
52	6.00	-3.5833	2.2833	0
53	-6.00	0.5833	2.2833	0
54	-6.00	-3.5833	2.2833	0
55	-5.50	0.5833	2.2833	0
56	-5.50	-3.5833	2.2833	0

57	5.50	0.5833	2.2833	0
58	5.50	-3.5833	2.2833	0
63	-5.50	0.5833	2.4833	0
64	-5.50	-3.5833	2.4833	0
65	5.50	0.5833	2.4833	0
66	5.50	-3.5833	2.4833	0
70	-1.25	0.5833	2.2833	0
71	-1.25	-3.5833	2.2833	0
72	-1.25	0.5833	2.4833	0
73	-1.25	-3.5833	2.4833	0
74	-1.25	-4.50	2.4833	0
75	-1.25	1.50	2.4833	0
76	1.25	0.5833	2.2833	0
77	1.25	-3.5833	2.2833	0
78	1.25	0.5833	2.4833	0
79	1.25	-3.5833	2.4833	0
80	1.25	-6.50	2.4833	0
81	1.25	3.50	2.4833	0
82	5.50	0.80	2.4833	0
83	3.00	0.80	-2.5167	0
115	0.00	-4.15	2.2833	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1
43	1	1	1	1	1	1
83	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	1	2		HSS_SQR 3X3X1_4	A500 GrB rectangular	0.00	0.00	0.00
3	6	7		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
8	33	36		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
10	35	38		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
18	43	44		HSS_SQR 3X3X1_4	A500 GrB rectangular	0.00	0.00	0.00
20	41	46		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
23	53	51		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
24	52	54		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
34	81	80		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
37	75	74		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
38	82	83		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
8	315.00	0	0.00	0.00	0.00
10	315.00	0	0.00	0.00	0.00
34	315.00	0	0.00	0.00	0.00
37	315.00	0	0.00	0.00	0.00

HUDSON
Design Group LLC

Mount Calculations
(Modified Conditions)

Bentley

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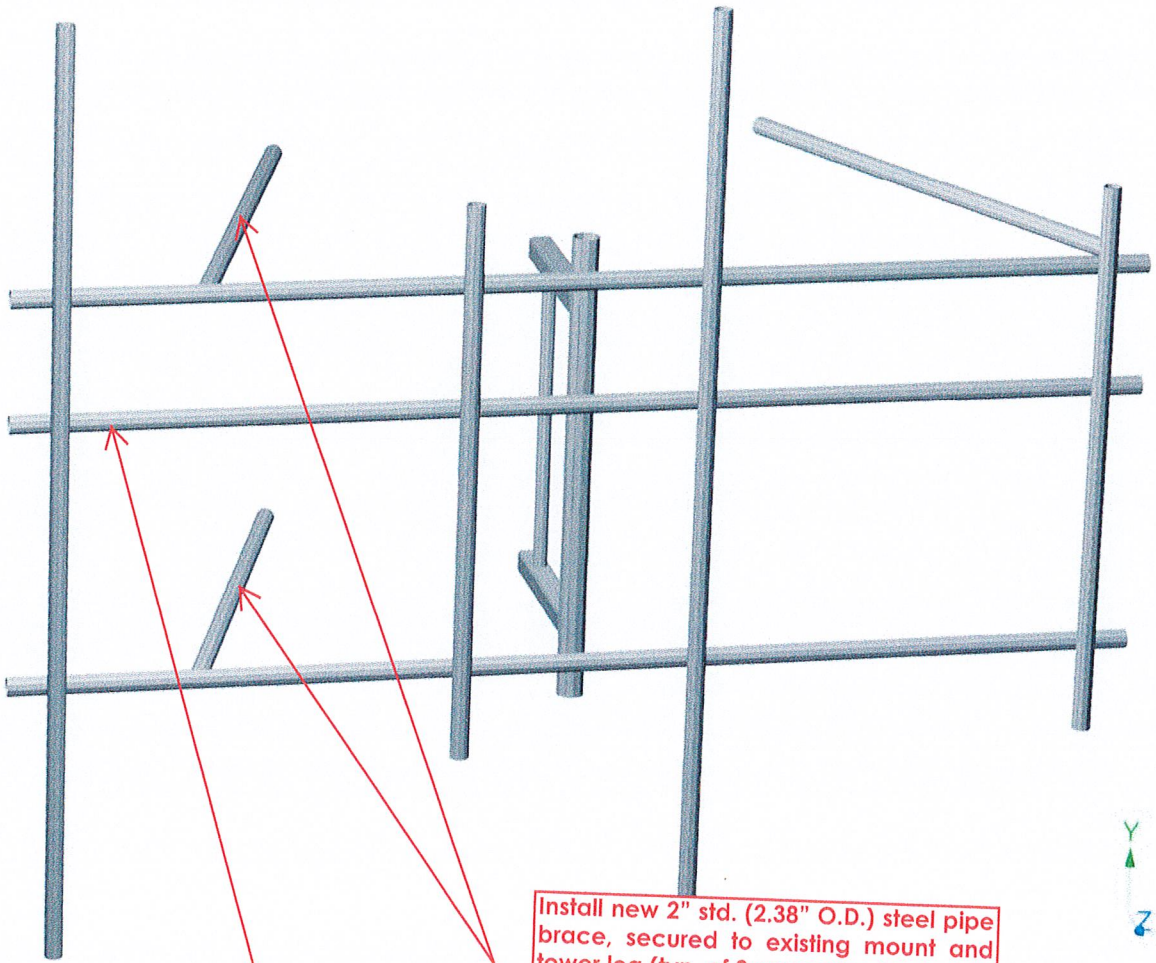

Install new 2" std. (2.38" O.D.) steel pipe brace, secured to existing mount and tower leg (typ. of 2 per sector, total of 6).

Install new 2" std. (2.38" O.D.) horizontal pipe secured to the existing pipe masts (typ. of 1 per sector, total of 3).

Bentley

Current Date: 1/29/2021 8:59 AM
Units system: English
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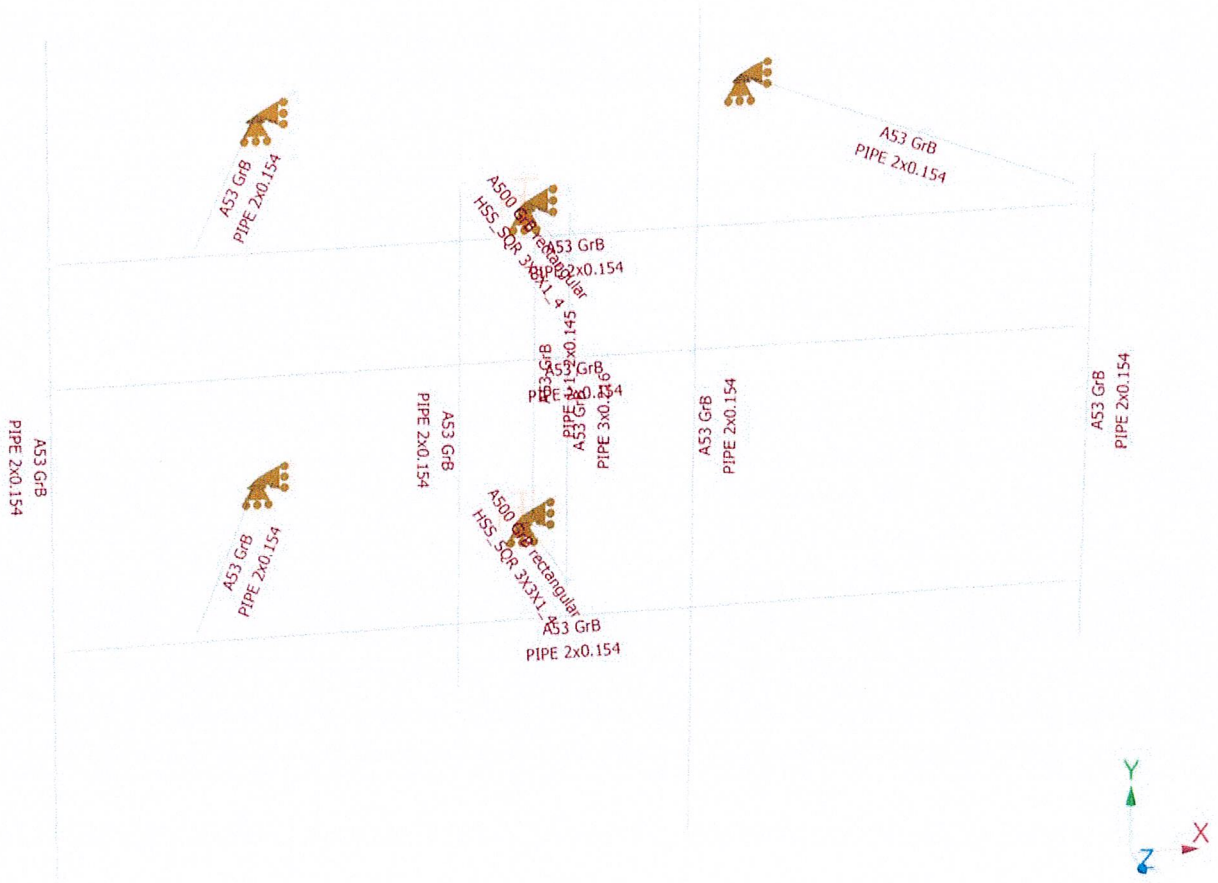

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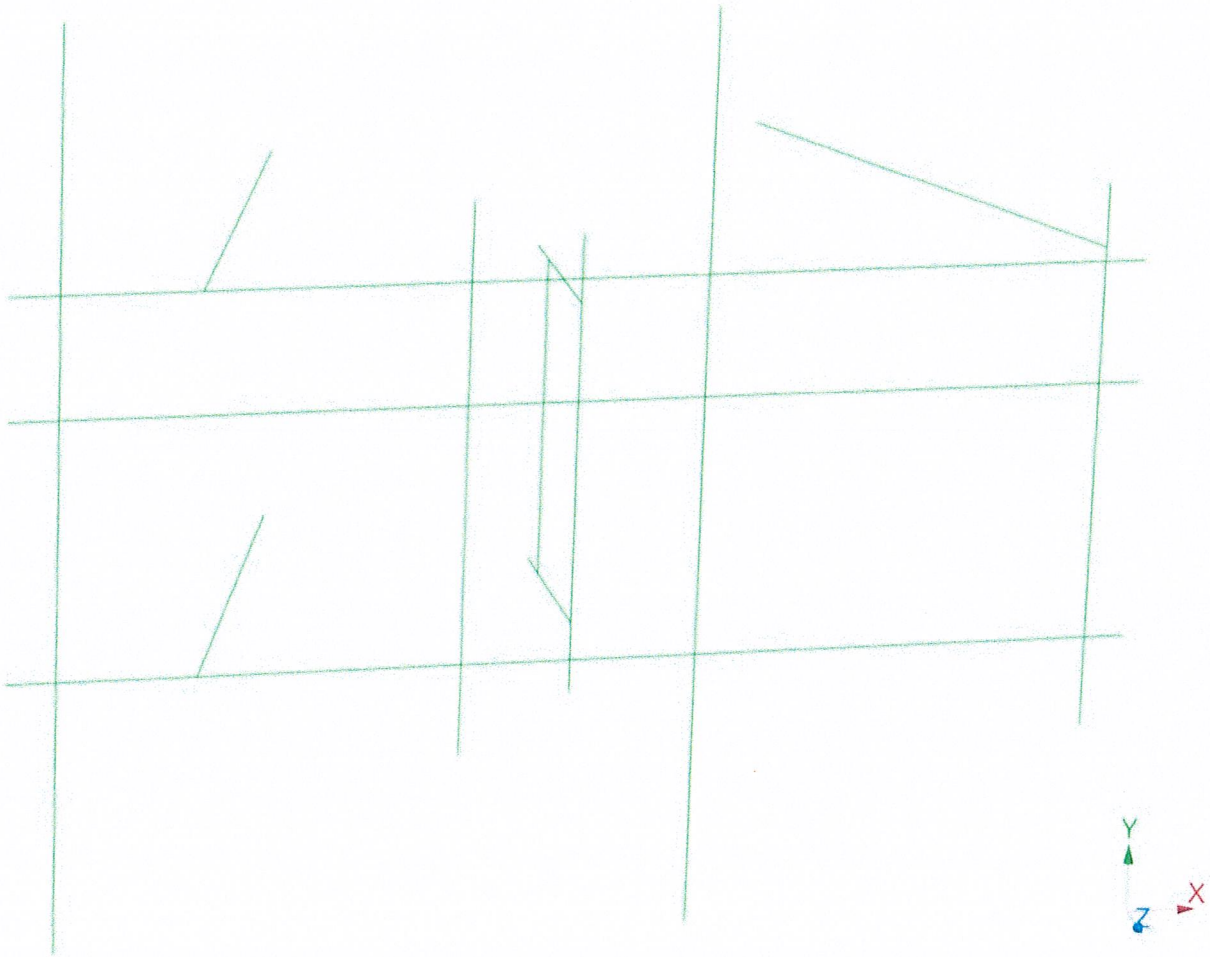

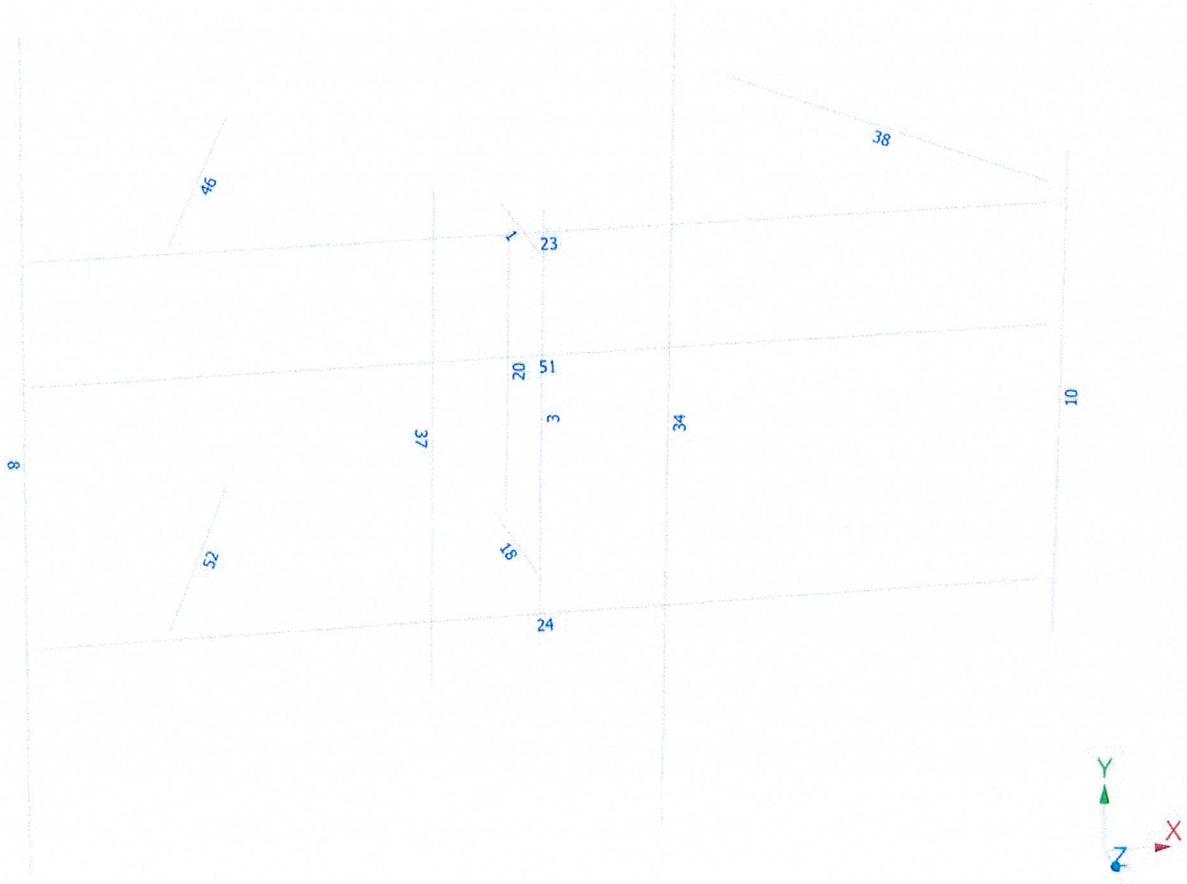
38
46
1
23
20
51
3
34
10
37
8
52
18
24
Y
X
Z

Bentley

Current Date: 1/29/2021 9:01 AM
Units system: English
File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT1069\LTE 2C_5G NR\Rev.1\CT1069 - Mod.retx

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC38=1.2D+1.5LL1
LC39=1.2D+1.5LL2
LC40=1.2D+1.5LL3
LC41=1.2D+WL0+1.5LLa1
LC42=1.2D+WL30+1.5LLa1
LC43=1.2D+WL60+1.5LLa1
LC44=1.2D+WL90+1.5LLa1
LC45=1.2D+WL120+1.5LLa1
LC46=1.2D+WL150+1.5LLa1
LC47=1.2D-WL0+1.5LLa1
LC48=1.2D-WL30+1.5LLa1
LC49=1.2D-WL60+1.5LLa1
LC50=1.2D-WL90+1.5LLa1
LC51=1.2D-WL120+1.5LLa1
LC52=1.2D-WL150+1.5LLa1
LC53=1.2D+WL0+1.5LLa2

LC54=1.2D+WL30+1.5LLa2
LC55=1.2D+WL60+1.5LLa2
LC56=1.2D+WL90+1.5LLa2
LC57=1.2D+WL120+1.5LLa2
LC58=1.2D+WL150+1.5LLa2
LC59=1.2D-WL0+1.5LLa2
LC60=1.2D-WL30+1.5LLa2
LC61=1.2D-WL60+1.5LLa2
LC62=1.2D-WL90+1.5LLa2
LC63=1.2D-WL120+1.5LLa2
LC64=1.2D-WL150+1.5LLa2
LC65=1.2D+WL0+1.5LLa3
LC66=1.2D+WL30+1.5LLa3
LC67=1.2D+WL60+1.5LLa3
LC68=1.2D+WL90+1.5LLa3
LC69=1.2D+WL120+1.5LLa3
LC70=1.2D+WL150+1.5LLa3
LC71=1.2D-WL0+1.5LLa3
LC72=1.2D-WL30+1.5LLa3
LC73=1.2D-WL60+1.5LLa3
LC74=1.2D-WL90+1.5LLa3
LC75=1.2D-WL120+1.5LLa3
LC76=1.2D-WL150+1.5LLa3
LC77=1.2D+WL0+1.5LLa4
LC78=1.2D+WL30+1.5LLa4
LC79=1.2D+WL60+1.5LLa4
LC80=1.2D+WL90+1.5LLa4
LC81=1.2D+WL120+1.5LLa4
LC82=1.2D+WL150+1.5LLa4
LC83=1.2D-WL0+1.5LLa4
LC84=1.2D-WL30+1.5LLa4
LC85=1.2D-WL60+1.5LLa4
LC86=1.2D-WL90+1.5LLa4
LC87=1.2D-WL120+1.5LLa4
LC88=1.2D-WL150+1.5LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 3X3X1_4	**1**	LC30 at 0.00%	0.46	OK	Eq. H1-1b
		18	LC34 at 0.00%	**0.47**	**OK**	Eq. H1-1b
	PIPE 1-1_2x0.145	**20**	LC36 at 100.00%	**0.16**	**OK**	Eq. H1-1b
	PIPE 2x0.154	**8**	LC30 at 29.69%	0.69	OK	Eq. H1-1b
		10	LC39 at 16.25%	0.53	OK	Eq. H1-1b
		23	LC26 at 49.11%	0.72	OK	Eq. H1-1b
		24	LC36 at 50.00%	**0.84**	**OK**	Eq. H1-1b
		34	LC36 at 29.69%	0.44	OK	Eq. H1-1b
		37	LC36 at 15.63%	0.67	OK	Eq. H1-1b
		38	LC6 at 0.00%	0.22	OK	Eq. H1-1b
		46	LC1 at 0.00%	0.31	OK	Eq. H1-1b
		51	LC25 at 61.25%	0.77	OK	Eq. H1-1b
		52	LC7 at 0.00%	0.34	OK	Eq. H1-1b
	PIPE 3x0.216	**3**	LC26 at 15.00%	**0.32**	**OK**	Eq. H1-1b

Bentley

Current Date: 1/29/2021 8:59 AM
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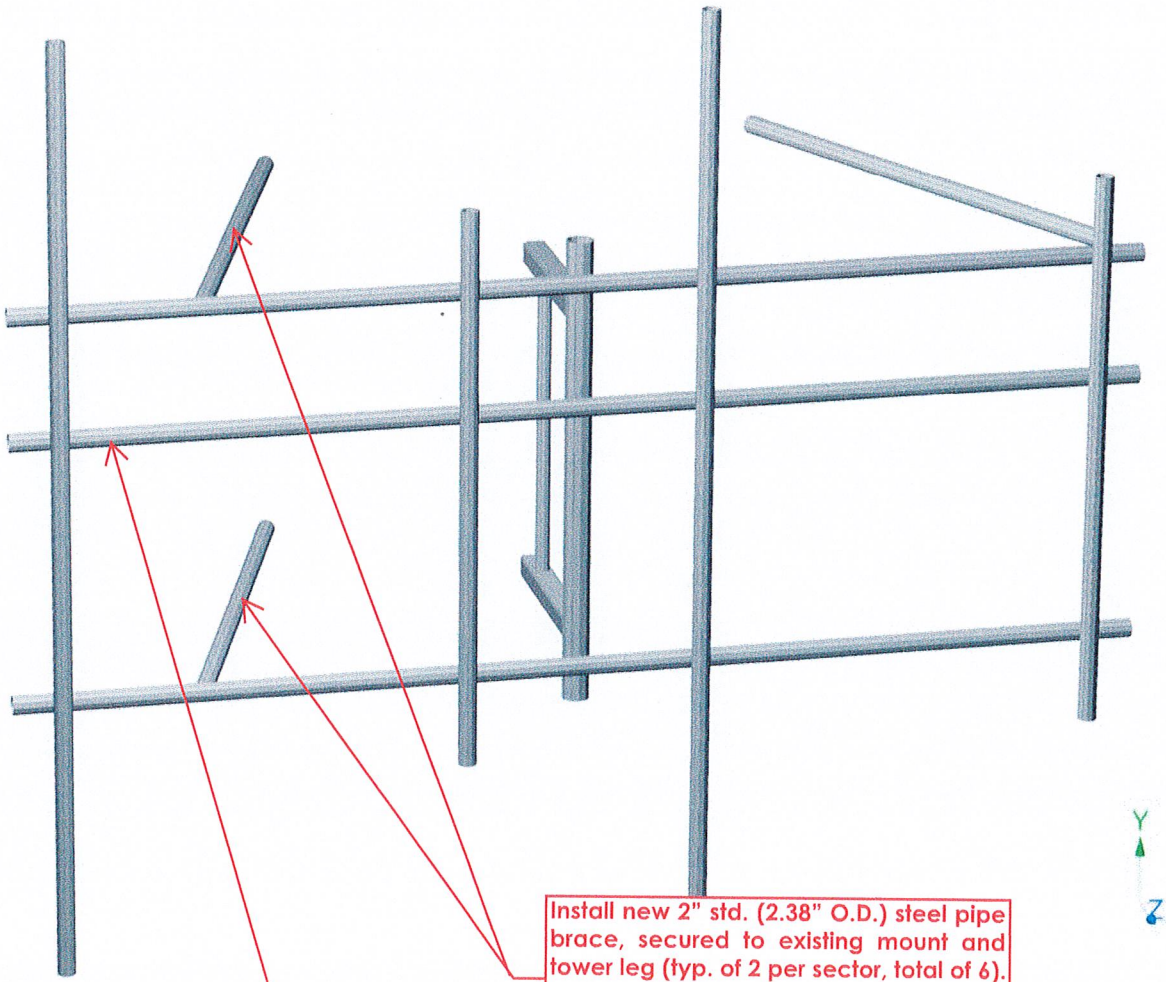


Install new 2" std. (2.38" O.D.) steel pipe brace, secured to existing mount and tower leg (typ. of 2 per sector, total of 6).

Install new 2" std. (2.38" O.D.) horizontal pipe secured to the existing pipe masts (typ. of 1 per sector, total of 3).

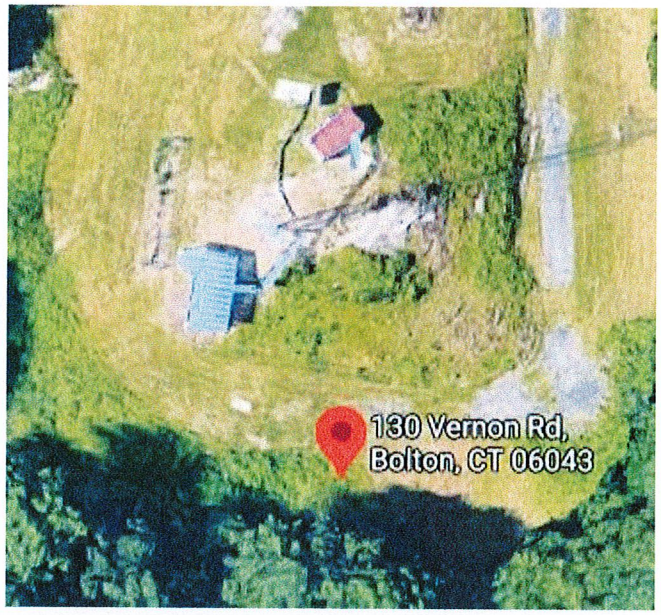
EXHIBIT 5

Radio Frequency Emissions Analysis Report

February 22, 2021

Centerline Communications on behalf of AT&T

Site Name: Bolton North
Site Address: 130 Vernon Road, Bolton, CT 06043
FA#: 10035019



Site Compliance Summary

Compliance Status:	Compliant
Carrier MPE% of FCC General Population Allowable Limit:	0.10049500%
Composite MPE% of FCC General Population Allowable Limit:	0.20861200%

750 West Center St. Suite 301 | West Bridgewater, MA 02379

February 22, 2021

AT&T New England
Attn: John Benedetto, RF Manager
5050 Cochituate Road Suite 550 - 13&14
Framingham, MA 01701

Emissions Analysis for Site: **Bolton North**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility to be located a guyed tower near **130 Vernon Road, Bolton CT 06043** for the purpose of determining whether the emissions from the proposed facility are within specified federal limits.

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

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$).

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

Calculations

Calculations were performed for the proposed facility using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Real world emissions values from this facility are expected to be lower than values listed in this report at ground level. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

RRH #	Frequency Band	Azimuth	Technology	Channel Count	Transmit Power per Channel (W)
1	850	23	UMTS	1	40
2	700	23	LTE	4	40
3	2100	23	AWS	4	40
4	700	23	LTE	2	40
4	850	23	5G	2	40
3	1900	23	PCS	4	40
5	850	143	UMTS	1	40
6	700	143	LTE	4	40
7	2100	143	AWS	4	40
8	700	143	LTE	2	40
8	850	143	5G	2	40
7	1900	143	PCS	4	40
9	850	263	UMTS	1	40
10	700	263	LTE	4	40
11	2100	263	AWS	4	40
12	700	263	LTE	2	40
12	850	263	5G	2	40
11	1900	263	PCS	4	40

Table 1: Channel Data Table

The following antennas listed in Table 2 were used in the modeling for transmission in the 750 MHz (LTE), 850 MHz (LTE) 1900 MHz (PCS), and 2100 MHz (AWS) frequency bands. This is based on information from the carrier with regard to anticipated antenna selection.

Sector	Azimuth	Antenna Number	Make / Model	Centerline (ft)
A	23	1	POWERWAVE 7770 00	164.1
A	23	2	CCI OPA65R-BU8D	164.1
A	23	2	CCI OPA65R-BU8D	164.1
A	23	3	CCI DMP65R-BU8D	164.1
A	23	3	CCI DMP65R-BU8D	164.1
A	23	3	CCI DMP65R-BU8D	164.1
B	143	4	POWERWAVE 7770 00	164.1
B	143	5	CCI OPA65R-BU8D	164.1
B	143	5	CCI OPA65R-BU8D	164.1
B	143	6	CCI DMP65R-BU8D	164.1
B	143	6	CCI DMP65R-BU8D	164.1
B	143	6	CCI DMP65R-BU8D	164.1
C	263	7	POWERWAVE 7770 00	164.1
C	263	8	CCI OPA65R-BU8D	164.1
C	263	8	CCI OPA65R-BU8D	164.1
C	263	9	CCI DMP65R-BU8D	164.1
C	263	9	CCI DMP65R-BU8D	164.1
C	263	9	CCI DMP65R-BU8D	164.1

Table 2: Antenna Data

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

Results

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

ID	Make / Model	Azimuth	Frequency Band	Gain (dBd)	Centerline (ft)	Channel Count	TX Power (W)	ERP (W)	MPE %
AT&T 1	POWERWAVE 7770 00	23	850	11.35	164.1	1	40	545.8333	0.002665
AT&T 2	CCI OPA65R-BU8D	23	700	13.15	164.1	4	40	3304.6082	0.012044
AT&T 2	CCI OPA65R-BU8D	23	2100	15.25	164.1	4	40	5359.4470	0.004749
AT&T 3	CCI DMP65R-BU8D	23	700	12.25	164.1	2	40	1343.0432	0.004966
AT&T 3	CCI DMP65R-BU8D	23	850	12.55	164.1	2	40	1439.0967	0.004262
AT&T 3	CCI DMP65R-BU8D	23	1900	14.15	164.1	4	40	4160.2553	0.004921
AT&T 4	POWERWAVE 7770 00	143	850	11.35	164.1	1	40	545.8333	0.002543
AT&T 5	CCI OPA65R-BU8D	143	700	13.15	164.1	4	40	3304.6082	0.012092
AT&T 5	CCI OPA65R-BU8D	143	2100	15.25	164.1	4	40	5359.4470	0.004767
AT&T 6	CCI DMP65R-BU8D	143	700	12.25	164.1	2	40	1343.0432	0.004922
AT&T 6	CCI DMP65R-BU8D	143	850	12.55	164.1	2	40	1439.0967	0.004245
AT&T 6	CCI DMP65R-BU8D	143	1900	14.15	164.1	4	40	4160.2553	0.004912
AT&T 7	POWERWAVE 7770 00	263	850	11.35	164.1	1	40	545.8333	0.002534
AT&T 8	CCI OPA65R-BU8D	263	700	13.15	164.1	4	40	3304.6082	0.012042
AT&T 8	CCI OPA65R-BU8D	263	2100	15.25	164.1	4	40	5359.4470	0.004736
AT&T 9	CCI DMP65R-BU8D	263	700	12.25	164.1	2	40	1343.0432	0.004929
AT&T 9	CCI DMP65R-BU8D	263	850	12.55	164.1	2	40	1439.0967	0.00425
AT&T 9	CCI DMP65R-BU8D	263	1900	14.15	164.1	4	40	4160.2553	0.004918
								AT&T MPE%	**0.10049500 %**

Table 3: AT&T Antenna Inventory & Power Level

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

Frequency Band	Azimuth	Technology	Centerline (ft.)	# of Channels	ERP W (Per Channel)	Total Power Density (μW/cm²)	Allowable MPE (μW/cm²)	MPE %
850	23	UMTS	164.1	1	545.8332546	0.0157318	567	0.002665
700	23	LTE	164.1	4	826.1520623	0.0458224	467	0.012044
2100	23	AWS	164.1	4	1339.861757	0.0372718	1000	0.004749
700	23	LTE	164.1	2	671.5216072	0.0169604	467	0.004966
850	23	5G	164.1	2	719.5483661	0.0147035	567	0.004262
1900	23	PCS	164.1	4	1040.063825	0.0311821	1000	0.004921
850	143	UMTS	164.1	1	545.8332546	0.0000498	567	0.002543
700	143	LTE	164.1	4	826.1520623	0.0000116	467	0.012092
2100	143	AWS	164.1	4	1339.861757	0.0000020	1000	0.004767
700	143	LTE	164.1	2	671.5216072	0.0000095	467	0.004922
850	143	5G	164.1	2	719.5483661	0.0000009	567	0.004245
1900	143	PCS	164.1	4	1040.063825	0.0000022	1000	0.004912
850	263	UMTS	164.1	1	545.8332546	0.0003554	567	0.002534
700	263	LTE	164.1	4	826.1520623	0.0000650	467	0.012042
2100	263	AWS	164.1	4	1339.861757	0.0000950	1000	0.004736
700	263	LTE	164.1	2	671.5216072	0.0000019	467	0.004929
850	263	5G	164.1	2	719.5483661	0.0000281	567	0.00425
1900	263	PCS	164.1	4	1040.063825	0.0000419	1000	0.004918
							AT&T MPE%	**0.10049500 %**

Table 4: AT&T Maximum Sector MPE Power Values

Summary

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

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

Carrier	Predicted MPE %
AT&T	0.10049500%
Unknown	0.00071000%
Verizon	0.10740700%
Composite	**0.20861200%**

Table 5: Total Predicted MPE(%) by Carrier

Compliance Status:

The anticipated composite MPE value for this site assuming all carriers present is **0.20861200%** of the allowable FCC established general population limit sampled at the ground level.

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

Alex Van Abbema
RF Compliance Consultant
Centerline Communications, LLC
750 West Center St. Suite 301
West Bridgewater, MA 02379

EXHIBIT 6

PERMIT NO. 600
LICENSE NO.

APPLICATION FOR BUILDING PERMIT ✓

(Application must be typed or printed)

TOWN OF BOLTON
CONNECTICUT

LOCATION OF JOB
Zone: R-1
Street: Vernon Rd. Card No.: 14
Map: N Block: 21 Lot: 9

OWNER
Motorola Communications and Electronics Inc.
No. 85 Street: Harristown Rd.
Town or City: Glen Rock State: NJ Zip: 07452

APPLICANT
Mountain Top Enterprises Inc
No. Street: Vernon Rd.
Town or City: Bolton State: Conn Zip: 06040

BUILDER
Motorola Communications and Electronics Inc
No. 85 Street: Harristown Rd.
Glen Rock NJ 07452

FEE SCHEDULE

FEE	Estimated Cost
$3	$ 1- 200
4	201- 600
5	601-1000
5	per additional thousand or fraction thereof.

Building Official may demand affidavit of actual cost.

	COST	FEE
Estimated	5,000	25.
Actual	Co	3.
Difference		
Additional		28.

DEPARTMENT DECISION
Application is hereby ☑ Approved ☐ Disapproved

Date: 7-16-79 Inspector: C Hutchinson

THIS PERMIT EXPIRES ONE YEAR FROM DATE OF ISSUE

FEE COVERS
Permit Number

- ☑ BUILDING
- ☐ HEATING
- ☐ PLUMBING
- ☐ ELECTRICAL
- ☑ Certificate of Use and Occupancy

REQUIREMENTS
- ☐ TOWN PLANNING
- ☐ TOWN ZONING
- ☐ APPEALS BOARD
- ☑ PLOT PLAN
- ☑ BLUE PRINTS
- ☐ DRIVEWAY
- ☐ SANITATION APPLICATION

TYPE OF BUILDING
- ☐ Residential
- ☑ Commercial

Other: radio tower

TYPE OF JOB
- ☐ Original Construction
- ☐ Repair
- ☑ Alteration
- ☐ Demolition

SIZE OF BUILDING
NA
Stories / No. Families
Height / Depth / Front
Garage / Height / Depth / Front

DISTANCES FROM LOT LINE
(Circle Front Lot Line) plot
E 500' W 200' N 200' S 300'

MATERIAL OF FOOTING
Cement
Width 4' Depth 4'
Depth Below Grade 4'

MATERIAL OF FOUNDATION
Cement
Thickness:
Above Grade 4'
Below Grade 4'

MATERIAL OF CHIMNEY
N/A
Height / Flue Size / No. of Flues

MATERIAL OF PIERS
Distance Apart
Size of Footing

MEMBER	SIZE	MATERIAL OR SPECIES	LONGEST SPAN	CENTER
Sill				
Girder	120'			
Outside Stud	~~95~~ 0" Tower			
Bearing Stud				
1st Floor Joist				
2nd Floor Joist	Stainless - as per plans			
3rd Floor Joist	filed town off. bldg.			
4th Floor Joist				
Rafter	site is approx 854' above sea			
Ridge	level -			
Hip or Valley	Stayner Bros only is on old wood			
Headers	pole tower			
Sheathing				

FURTHER DETAILS Reed Const and a forestry Co are on subject tower at this time, tower is owned by Motorola Co. Huntress Electronics maintains.

Final OK - 10-8-80 CH

All work covered by this application has been authorized by the (owner) or (agent) of this property and will be done according to local code and regulations.

Date: 7/16/79 Applicant: William E Hathaway 6467766

CERTIFICATE OF USE AND OCCUPANCY

BOLTON, CONNECTICUT

No 1091

This is to certify that: Radio Towers at

LOCATION ZONE

Vernon Rd CARD NO.

STREET

MAP BLOCK LOT

under Permit No. 268 conforms substantially to the requirements of the Building Code, Sanitation Code and the Zone Ordinance of the Town of Bolton and is hereby approved for occupancy as indicated below.

Approved for occupancy. Radio Towers

Date. Oct 3 1972 Building Official

Notice: — If this certificate is lost or destroyed, a duplicate should be immediately obtained from the Department of Buildings.

Any change or extension of the use herein approved requires a new certificate of occupancy.

Copies of this certificate may be obtained at the Department of Buildings at a charge of seventy-five cents each.

EXHIBIT 7

UPS CampusShip: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

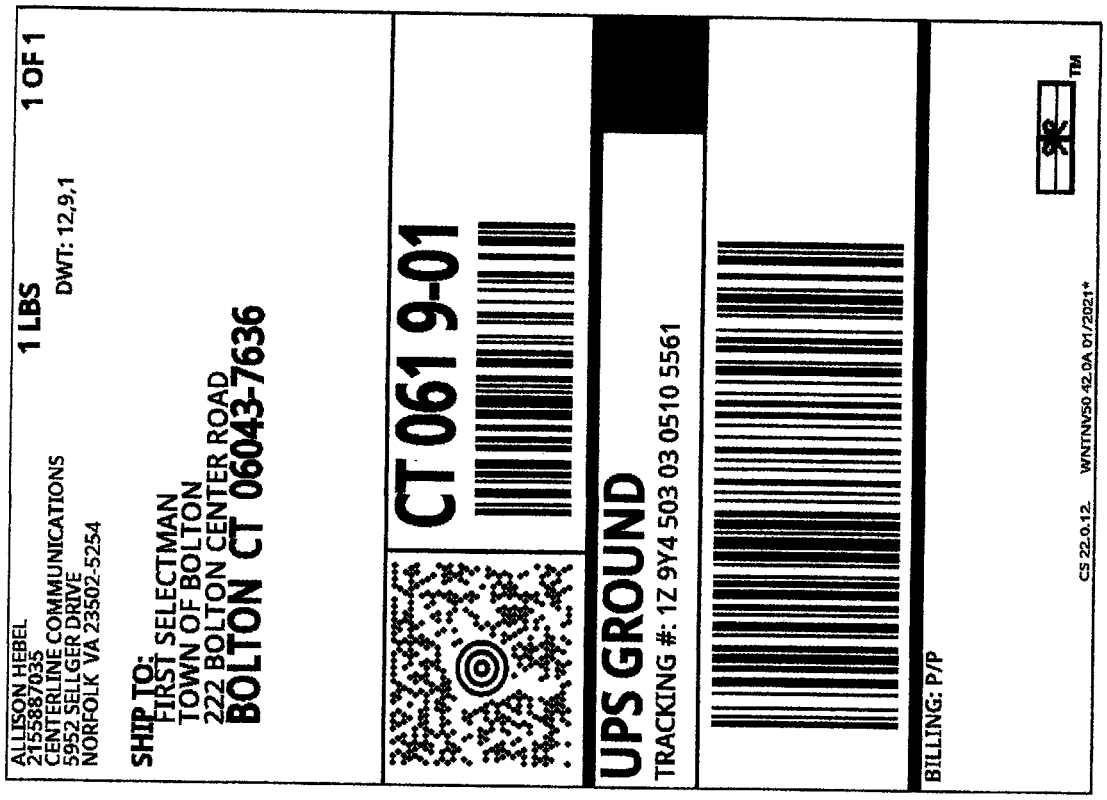
   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the Resources area of CampusShip and select UPS Locations.
   Schedule a same day or future day Pickup to have a UPS driver pickup all your CampusShip packages.
   Hand the package to any UPS driver in your area.

UPS Access Point™
CVS STORE # 3521
471 N MILITARY HWY
NORFOLK ,VA 23502

UPS Access Point™
ADVANCE AUTO PARTS STORE 7464
5741 E VIRGINIA BEACH BLVD
NORFOLK ,VA 23502

UPS Access Point™
CVS STORE # 6403
6678 E VIRGINIA BEACH BLVD
NORFOLK ,VA 23502

FOLD HERE



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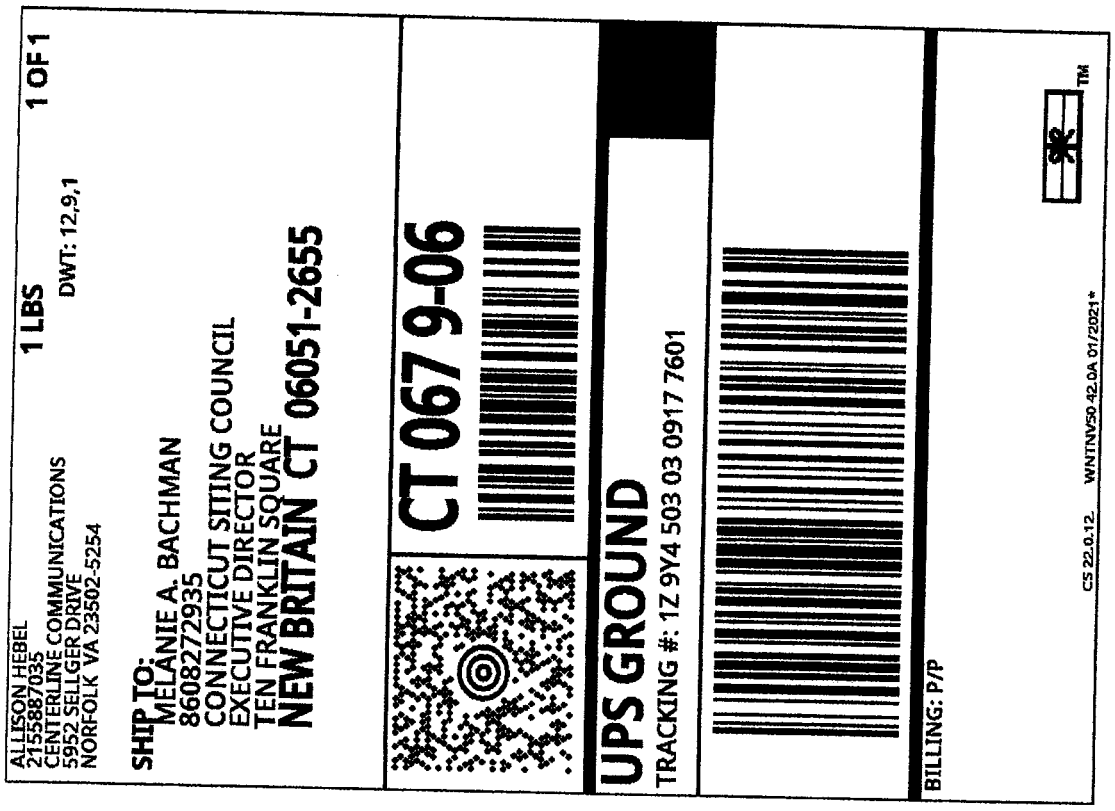

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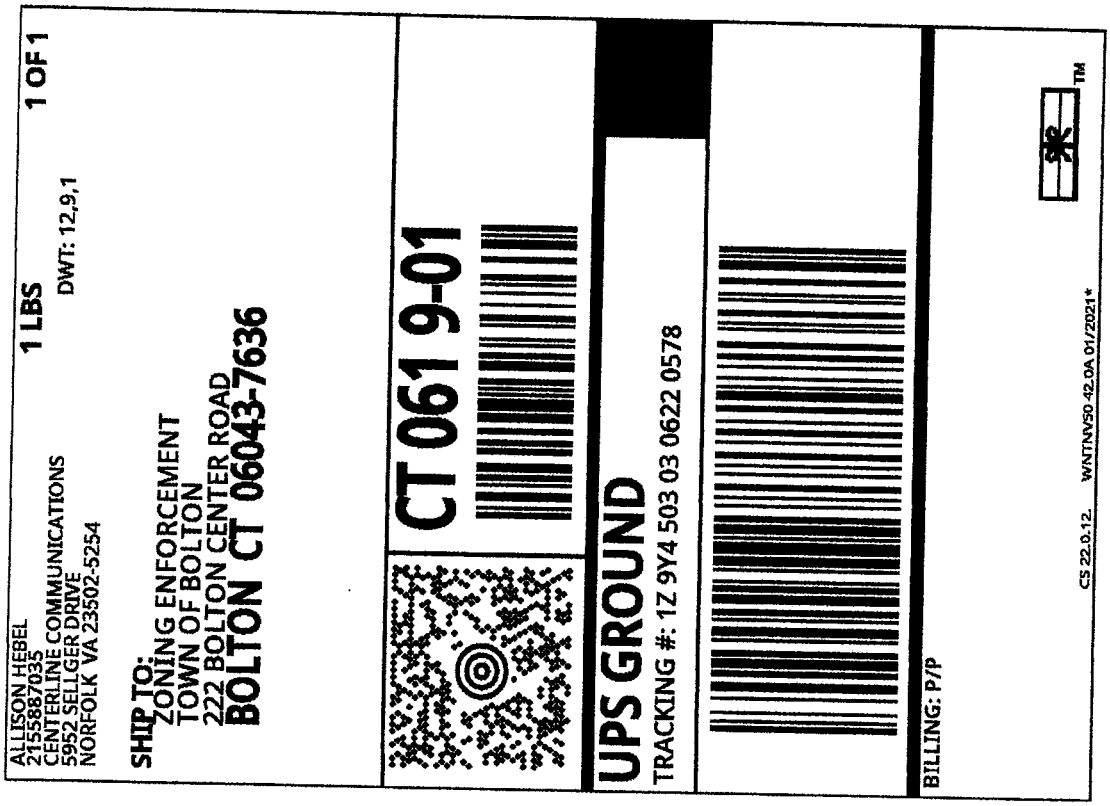

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