September 8, 2022

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

Regarding: Notice of Exempt Modification – AT&T Site CT2168 / FA# 10035084
Address: 23 Wayne Road, Wallingford, CT 06492

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains a wireless telecommunications facility on an existing +/- 81' self-support tower at the above-referenced address, latitude 41.4627419, longitude -72.8418881. Said self-support tower is owned by Stephen B. Tripp and Marsha A. Tripp.

AT&T desires to modify its existing telecommunications facility by swapping six (6) antennas, swapping three (3) remote radio units (RRUS), removing three (3) remote radio units (RRUS), and swapping one (1) surge arrestor and accompanying feedlines, as more particularly detailed and described on the enclosed Construction Drawings prepared by Hudson Design Group, last revised August 26, 2022. The centerline height of the existing antennas is and will remain at 78 feet. This modification may include B2, B5, B17, B14, B29, B30, B66, & n77 hardware that is 4G(LTE) and/or 5GNR capable through remote software configuration and either or both services may be turned off at various times.

Please accept this letter as notification pursuant to R.C.S.A §16-50j-73 for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the following individuals: The Honorable William W. Dickinson, Jr., Mayor of the Town of Wallingford, as elected official, Amy Torre, Zoning Enforcement Officer of the Town of Wallingford, Kevin Pagini, Town Planner of the Town of Wallingford, Stephen B. Tripp and Marsha A. Tripp, as tower operator and property owner. We have reached out to the Building and Zoning Departments for the Town of Wallingford who conducted a search and could not locate the original tower approval.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require an extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the modified facility will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard. *Please see the RF emissions calculation for AT&T's modified facility enclosed herewith.*

5. The proposed modifications will not cause an ineligible change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading. *Please see the structural analysis dated August 11, 2022, and prepared by Hudson Design Group, enclosed herewith.*

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

Sincerely,

Evan Renwick

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

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

Cc: The Honorable William W. Dickinson, Jr., Mayor, Town of Wallingford, elected official
Amy Torre, Zoning Enforcement Officer, Town of Wallingford
Kevin Pagini, Town Planner, Town of Wallingford
Stephen B. Tripp and Marsha A. Tripp, as tower operator and property owner

EXHIBIT 1

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING SELF SUPPORT:
- NEW AT&T ANTENNAS: QD6616-7 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6449 B77D (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNAS: 800-10965 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 4).
- NEW AT&T RRUS: 4449 B5/B12 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS: 32 B2 (1900) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 2).
- EXISTING AT&T RRUS: 4478 B14 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 2).
- EXISTING AT&T RRUS: 4426 B66 (AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 2).
- EXISTING AT&T RRUS: 32 B30 (WCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 4).
- NEW AT&T SURGE ARRESTOR: DC9-48-60-24-8C-EV (TOTAL OF 1).
- NEW AT&T (1) 6 AWG DC POWER CABLES.
- NEW AT&T (1) 24 PAIR FIBER RUN.
- NEW AT&T (3) Y-CABLES.

ITEMS TO BE MOUNTED IN EQUIPMENT LOCATION:
- INSTALL (1) 6648 FRONTHAUL GATEWAY.
- INSTALL (4) -48V RECTIFIERS.
- INSTALL IDLE + XCEDE CABLE. FINAL=(1) 6601/(1) 5216 /(2) XMU03 ||(1) 6630 MIXED-MODE + IDLE//(1) 6648+IDLE XCEDE.

ITEMS TO BE REMOVED:
- EXISTING AT&T ANTENNA: 7770 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNA: OPA-65R-LCUU-H6 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNA: QS66512-2 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS: 11 B12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS: 4478 B5 (850) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T TMAS: TT19-08BP111-001 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T DIPLEXER: 782-10250 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T TRIPLEXER: TPX-070821 (TYP. OF 4 PER SECTOR, TOTAL OF 12).
- EXISTING AT&T DIPLEXER: DBCT108F1V92-1 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T SURGE ARRESTOR: DC SQUID ONLY (TOTAL OF 1).

ITEMS TO REMAIN:
- (3) ANTENNAS, (15) RRU'S, (2) SURGE ARRESTOR, (6) 1-5/8" COAX CABLES, (6) DC POWER & (2) FIBER.

SITE ADDRESS:	23 WAYNE ROAD WALLINGFORD, CT 06492
LATITUDE:	41.462742° N, 41° 27' 45.9" N
LONGITUDE:	72.841886° W, 72° 50' 30.8" W
TYPE OF SITE:	SELF SUPPORT TOWER / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	81'-0"±
RAD CENTER:	78'-0"±, 79'-10"± & 76'-1"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

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

SITE NUMBER: CTL02168

SITE NAME: MT TOM WALLINGFORD

FA CODE: 10035084

PACE ID: MRCTB055609, MRCTB053672, MRCTB053650, MRCTB055020, MRCTB056303, MRCTB056302, MRCTB062522

PROJECT: 5G NR RADIO, 5G NR 1SR CBAND, ANTENNA MODIFICATIONS, 4TXRX ANTENNA RETROFIT, BBU RECONFIGURATION 2022 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

START OUT GOING EAST ON ENTERPRISE DR TOWARD CAPITAL BLVD. TURN LEFT ONTO CAPITAL BLVD. TURN LEFT ONTO WEST ST. MERGE ONTO I-91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN. MERGE ONTO CT-15 S VIA EXIT 17 TOWARD E MAIN ST. TAKE EXIT 64 TOWARD WALLINGFORD. TURN LEFT ONTO QUINNIPIAC ST. QUINNIPIAC ST BECOMES S TURNPIKE RD. TURN RIGHT ONTO CHESHIRE RD. TAKE THE 3RD RIGHT ONTO WAYNE RD. 23 WAYNE RD, WALLINGFORD, CT 06492-3032, 23 WAYNE RD IS ON THE LEFT.

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: CTL02168
SITE NAME: MT TOM WALLINGFORD

23 WAYNE ROAD
WALLINGFORD, CT 06492
NEW HAVEN COUNTY

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

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

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

AT&T

TITLE SHEET
5G NR RADIO, 5G NR 1SR CBAND, ANTENNA MODIFICATIONS, 4TXRX ANTENNA RETROFIT, BBU RECONFIGURATION 2022 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL02168	T-1	1

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 CL	RADIATION CENTER LINE (ANTENNAS)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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

CENTERLINE COMMUNICATIONS
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WEST BRIDGEWATER, MA 02379

SITE NUMBER: CTL02168
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: PM

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

AT&T

GENERAL NOTES
~~NR RADIO, 5G NR 1SR CBAND, ANTENNA MODIFICATIONS, 4TXRX~~
ANTENNA RETROFIT, BBU RECONFIGURATION 2022 UPGRADE

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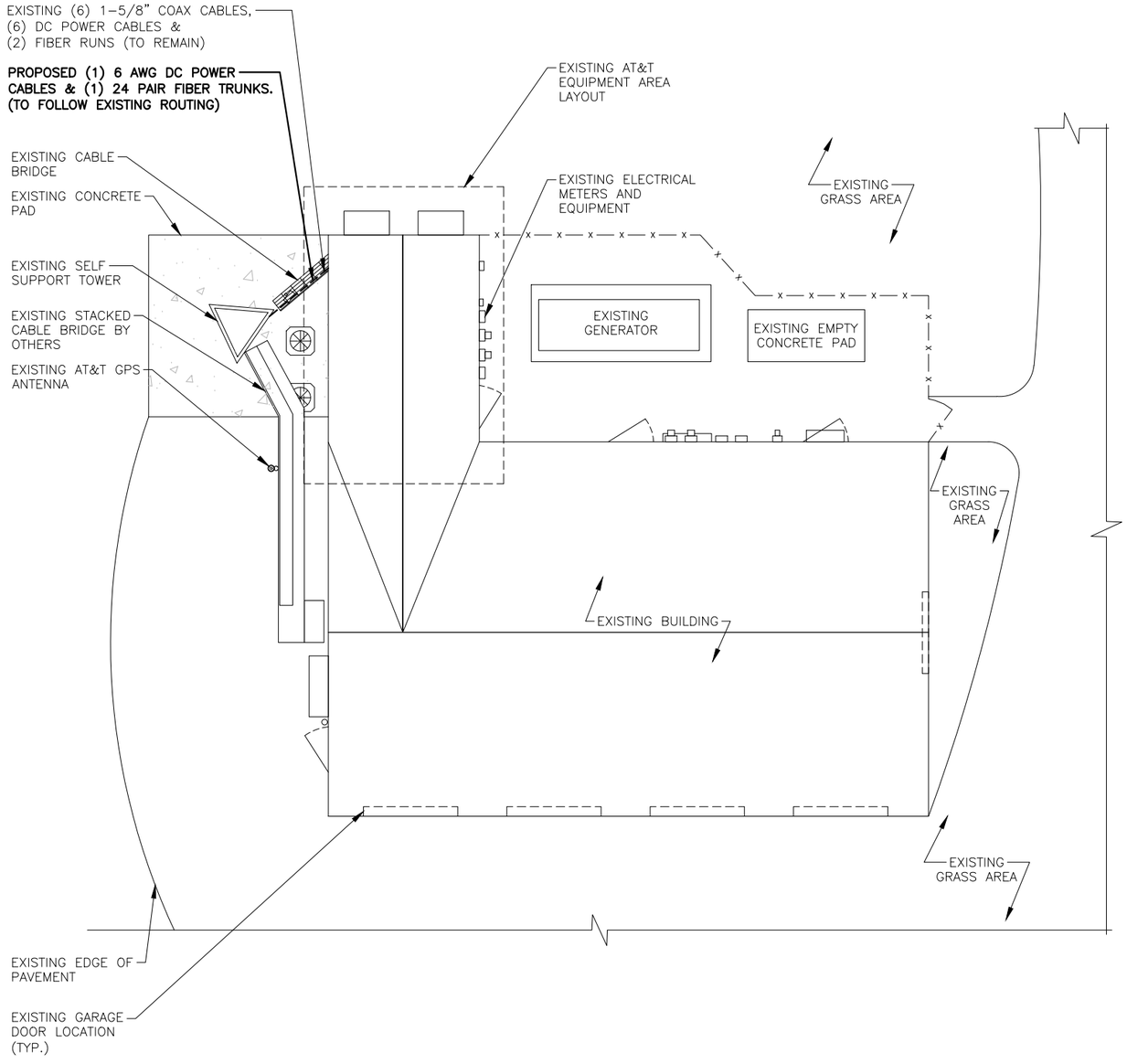

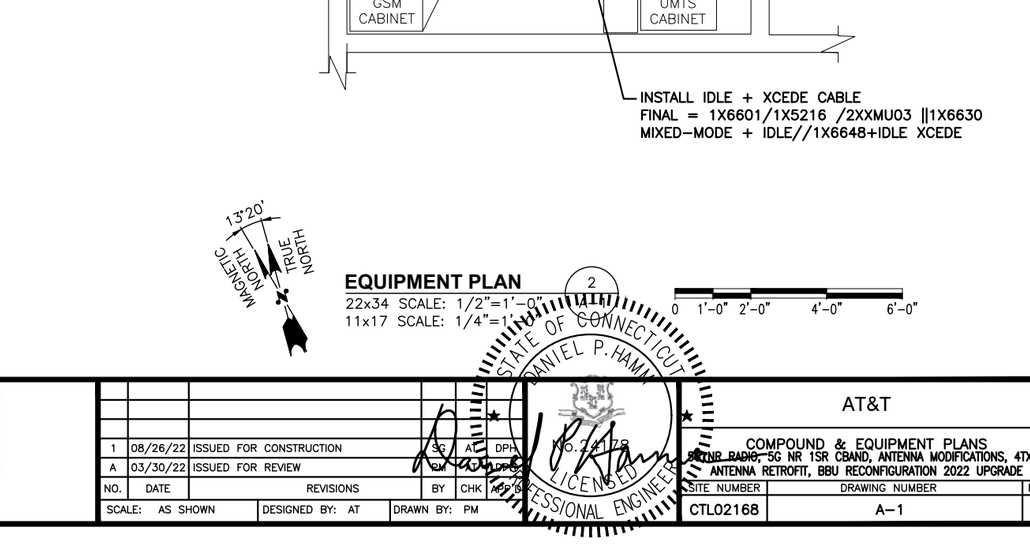

NOTE:

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

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: AUGUST 11, 2022, 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: MAY 04, 2022

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: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

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

HUDSON Design Group LLC
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STATE OF CONNECTICUT
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AT&T

COMPOUND & EQUIPMENT PLANS
NEW NR RADIO, 5G NR 1SR CBAND, ANTENNA MODIFICATIONS, 4TXRX ANTENNA RETROFIT, BBU RECONFIGURATION 2022 UPGRADE

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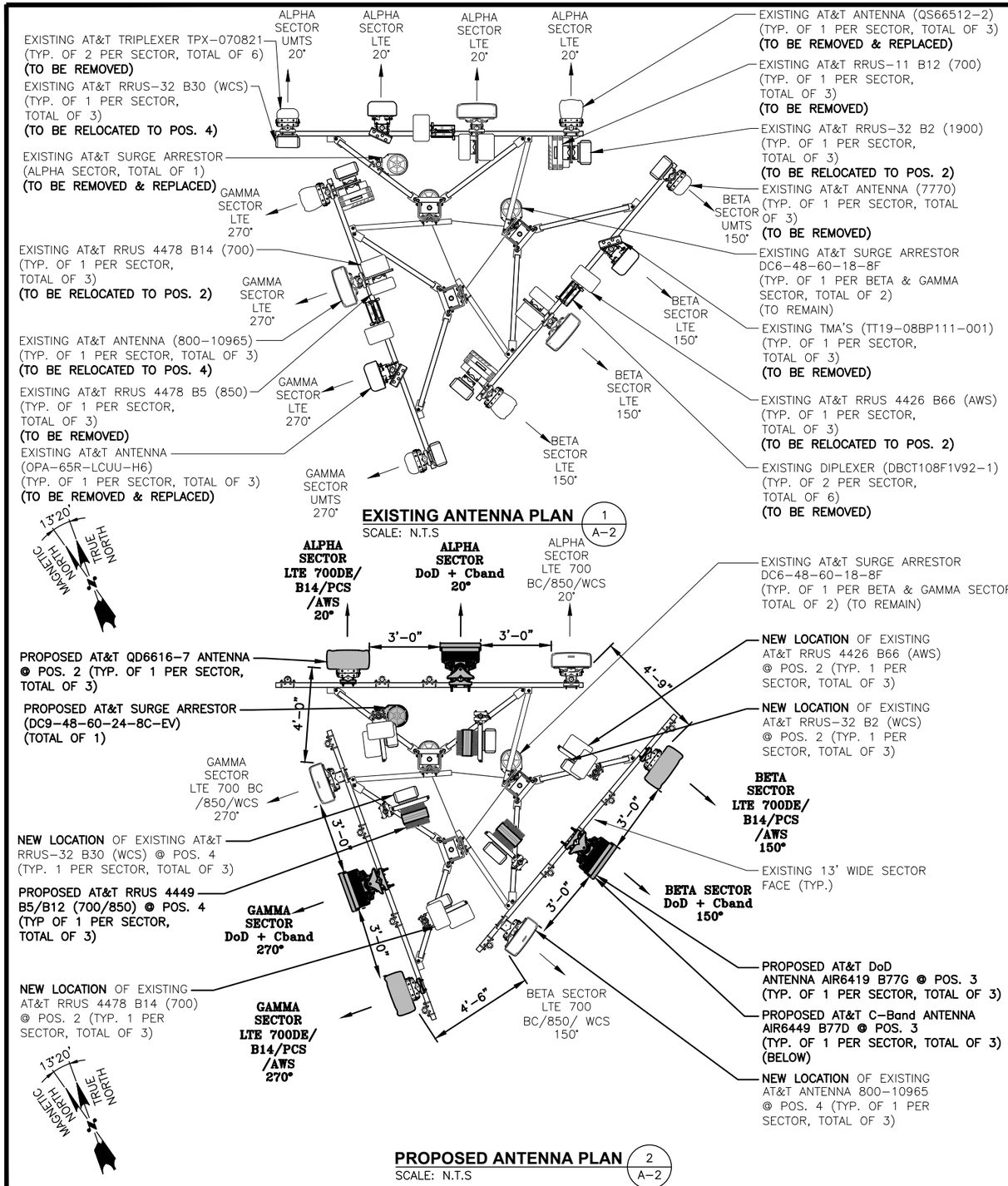

EXISTING ANTENNA PLAN

1 / A-2

SCALE: N.T.S

PROPOSED ANTENNA PLAN

2 / A-2

SCALE: N.T.S

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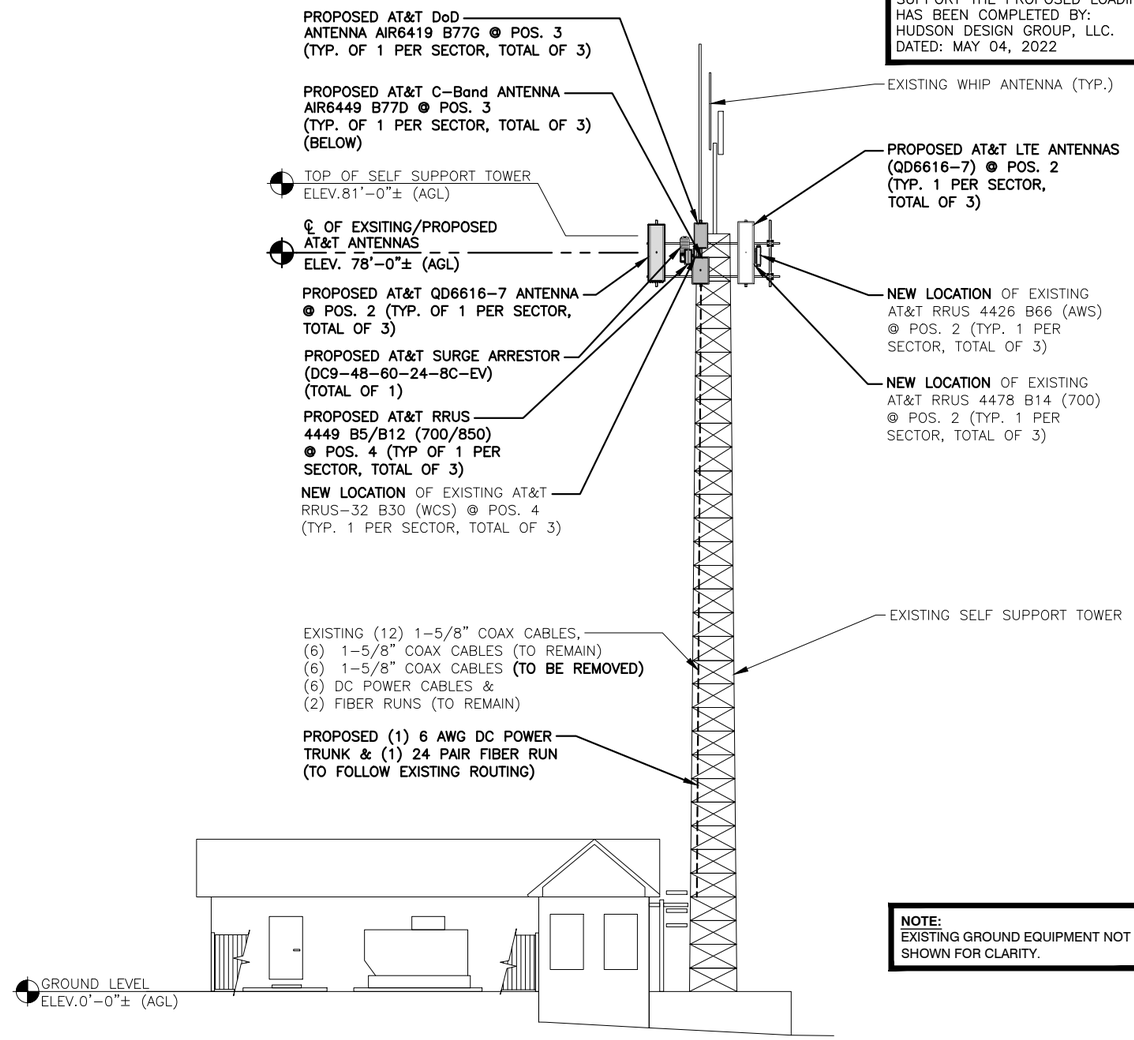

ELEVATION

3 / A-2

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

NOTE:
EXISTING GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

HUDSON Design Group LLC
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FAX: (978) 336-5586

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

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

SITE NUMBER: CTL02168
SITE NAME: MT TOM WALLINGFORD

23 WAYNE ROAD
WALLINGFORD, CT 06492
NEW HAVEN COUNTY

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	08/26/22	ISSUED FOR CONSTRUCTION	SG	AT	DPH
A	03/30/22	ISSUED FOR REVIEW	PM	AT	DPH

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

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

AT&T

ANTENNA LAYOUT PLANS & ELEVATION
4TNR RADIO, 5G NR 1SR CBAND, ANTENNA MODIFICATIONS, 4TXRX ANTENNA RETROFIT, BBU RECONFIGURATION 2022 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL02168	A-2	1

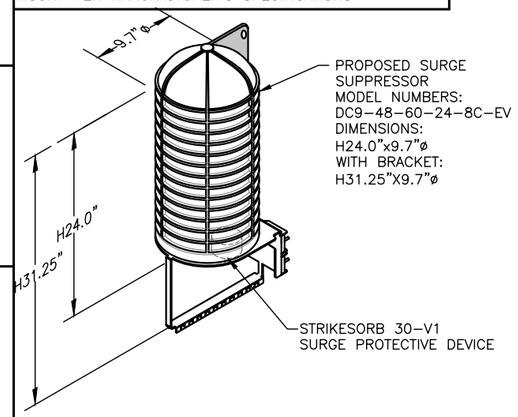
ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	–	–	–	–	–	–	–	–	–	–	(P) (1) RAYCAP DC9-48-60-24-8C-EV
A2	**PROPOSED**	**LTE 700DE/ B14/ PCS/AWS**	**QD6616-7**	**72"X22"X9.6"**	**78'-0"±**	**20°**	–	(E)(1)4478 B14 (700) (E)(1)RRUS-32 B2 (1900) (E)(1)4426 B66 (AWS) (E)(G)(1)RRUS E2 B29 (700)	– – – –	(E)(2) DC POWER & **(P)(1) 6AWG DC POWER,** **(P)(1)(Y-CABLE)** **(P)(1) 24 PAIR FIBER**	
A3	**PROPOSED**	**DoD C-BAND**	**AIR6419 B77G AIR6449 B77D**	**31.1"X16.1"X7.3" 30.4"X15.9"X8.1"**	**78'-0"±**	**20°**	–	–	–	–	
A4	EXSITING	LTE 700 BC/850/ WCS	80010965	78.7"X20"X6.9"	78'-0"±	20°	–	**(P)(1)4449 B5/B12 (850/700)** (E)(1)RRUS-32 B30 (WCS)	**17.9"x13.2"x10.4"** –	**(P)(1)(Y-CABLE)**	
B1	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8F
B2	**PROPOSED**	**LTE 700DE/ B14/ PCS/AWS**	**QD6616-7**	**72"X22"X9.6"**	**78'-0"±**	**150°**	–	(E)(1)4478 B14 (700) (E)(1)RRUS-32 B2 (1900) (E)(1)4426 B66 (AWS) (E)(G)(1)RRUS E2 B29 (700)	– – – –	(E)(2) DC POWER, (E)(1) FIBER **(P)(1)(Y-CABLE)**	
B3	**PROPOSED**	**DoD C-BAND**	**AIR6419 B77G AIR6449 B77D**	**31.1"X16.1"X7.3" 30.4"X15.9"X8.1"**	**78'-0"±**	**150°**	–	–	–	–	
B4	EXSITING	LTE 700 BC/850/ WCS	80010965	78.7"X20"X6.9"	78'-0"±	150°	–	**(P)(1)4449 B5/B12 (850/700)** (E)(1)RRUS-32 B30 (WCS)	**17.9"x13.2"x10.4"** –	**(P)(1)(Y-CABLE)**	
C1	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18-8F
C2	**PROPOSED**	**LTE 700DE/ B14/ PCS/AWS**	**QD6616-7**	**72"X22"X9.6"**	**78'-0"±**	**270°**	–	(E)(1)4478 B14 (700) (E)(1)RRUS-32 B2 (1900) (E)(1)4426 B66 (AWS) (E)(G)(1)RRUS E2 B29 (700)	– – – –	(E)(2) DC POWER, (E)(1) FIBER **(P)(1)(Y-CABLE)**	
C3	**PROPOSED**	**DoD C-BAND**	**AIR6419 B77G AIR6449 B77D**	**31.1"X16.1"X7.3" 30.4"X15.9"X8.1"**	**78'-0"±**	**270°**	–	–	–	–	
C4	EXSITING	LTE 700 BC/850/ WCS	80010965	78.7"X20"X6.9"	78'-0"±	270°	–	**(P)(1)4449 B5/B12 (850/700)** (E)(1)RRUS-32 B30 (WCS)	**17.9"x13.2"x10.4"** –	**(P)(1)(Y-CABLE)**	

RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
E(3)	4478 B14 (700)	18.1"x13.4"x8.3"
E(3)	RRUS-32 B2 (1900)	27.2"x12.1"x7.0"
E(3)	4426 B66 (AWS)	14.9"x13.2"x5.8"
E(3)	RRUS-E2 B29 (700)	20.4"x18.5"x7.5"
P(3)	**4449 B5/B12 (700)**	**17.9"x13.2"x10.4"**
E(3)	RRUS-32 B30 (WCS)	27.2"x12.1"x7.0"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

NOTE:

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

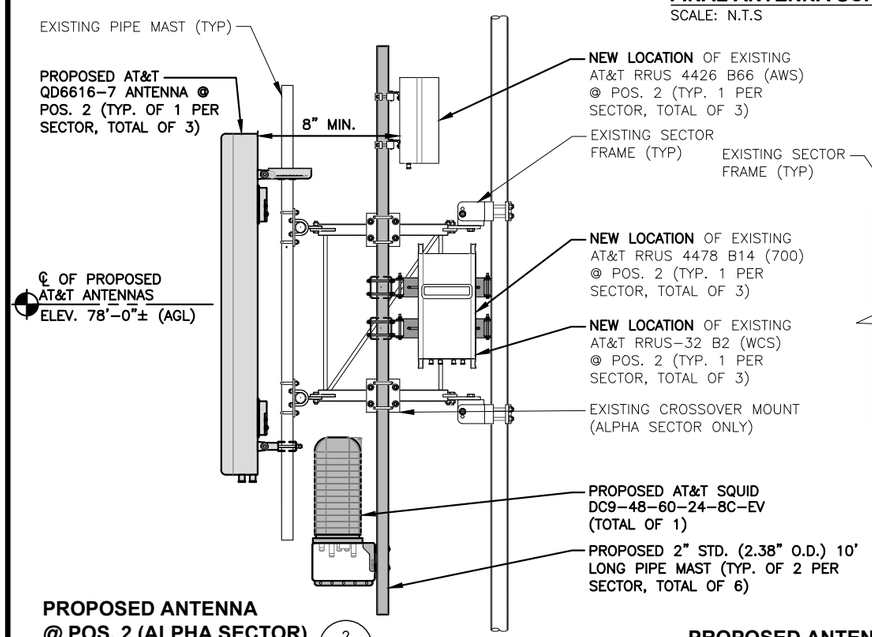
NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: AUGUST 11, 2022, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:

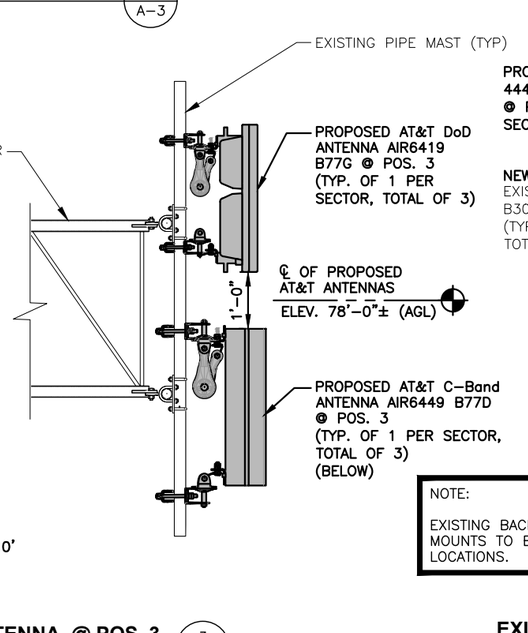
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: MAY 04, 2022

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



PROPOSED ANTENNA @ POS. 2 (ALPHA SECTOR) (2 / A-3)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

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

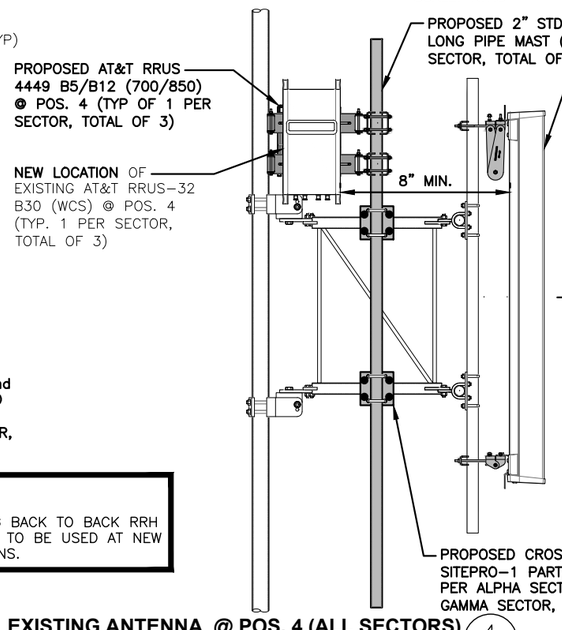


NOTE:

EXISTING BACK TO BACK RRH MOUNTS TO BE USED AT NEW LOCATIONS.

PROPOSED ANTENNA @ POS. 3 (3 / A-3)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

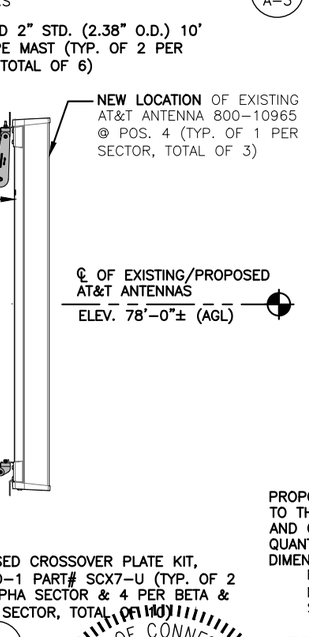
0 8" 1'-4" 2'-8" 4'-0"



EXISTING ANTENNA @ POS. 4 (ALL SECTORS) (4 / A-3)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

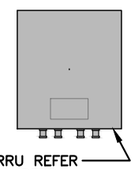
0 8" 1'-4" 2'-8" 4'-0"

DC SURGE SUPPRESSOR DETAIL (6 / A-3)
SCALE: N.T.S



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 (5 / A-3)
SCALE: N.T.S

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

SITE NUMBER: CTL02168
SITE NAME: MT TOM WALLINGFORD

23 WAYNE ROAD
WALLINGFORD, CT 06492
NEW HAVEN COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
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A	03/30/22	ISSUED FOR REVIEW	PM	AT	DPH

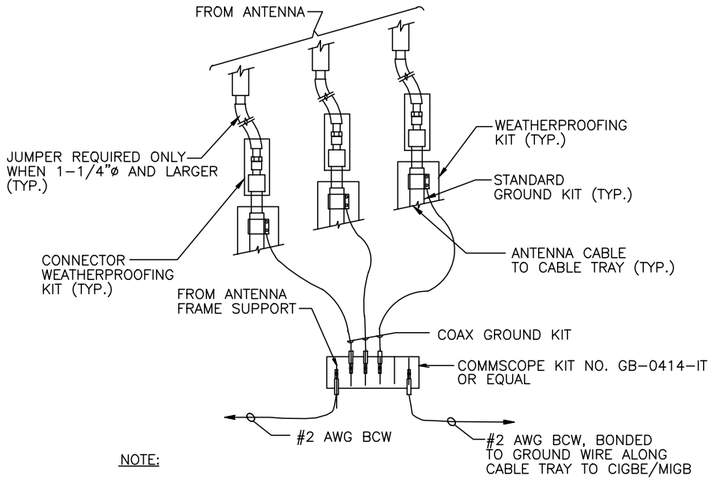
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: PM

STATE OF CONNECTICUT DANIEL R. HAMM No. 24178 LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
~~B2/NR RADIO, 5G NR 1SR CBAND~~, ANTENNA MODIFICATIONS, 4TXRX ANTENNA RETROFIT, BBU RECONFIGURATION 2022 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL02168	A-3	1

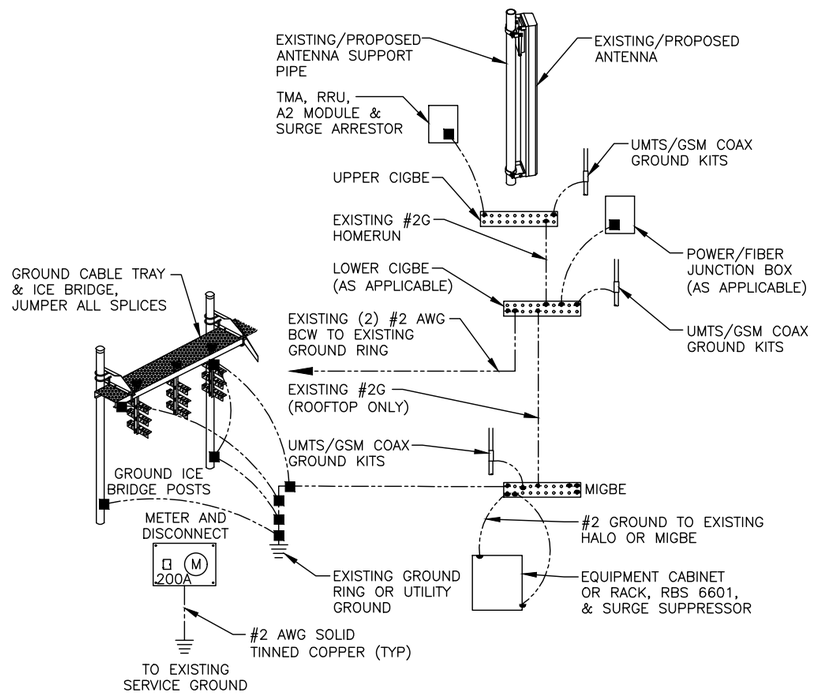


NOTE:

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

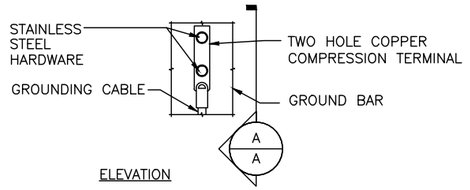
GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

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

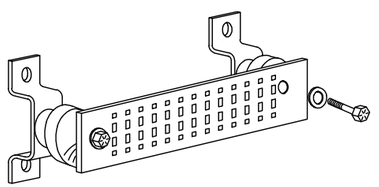
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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)

SCALE: N.T.S

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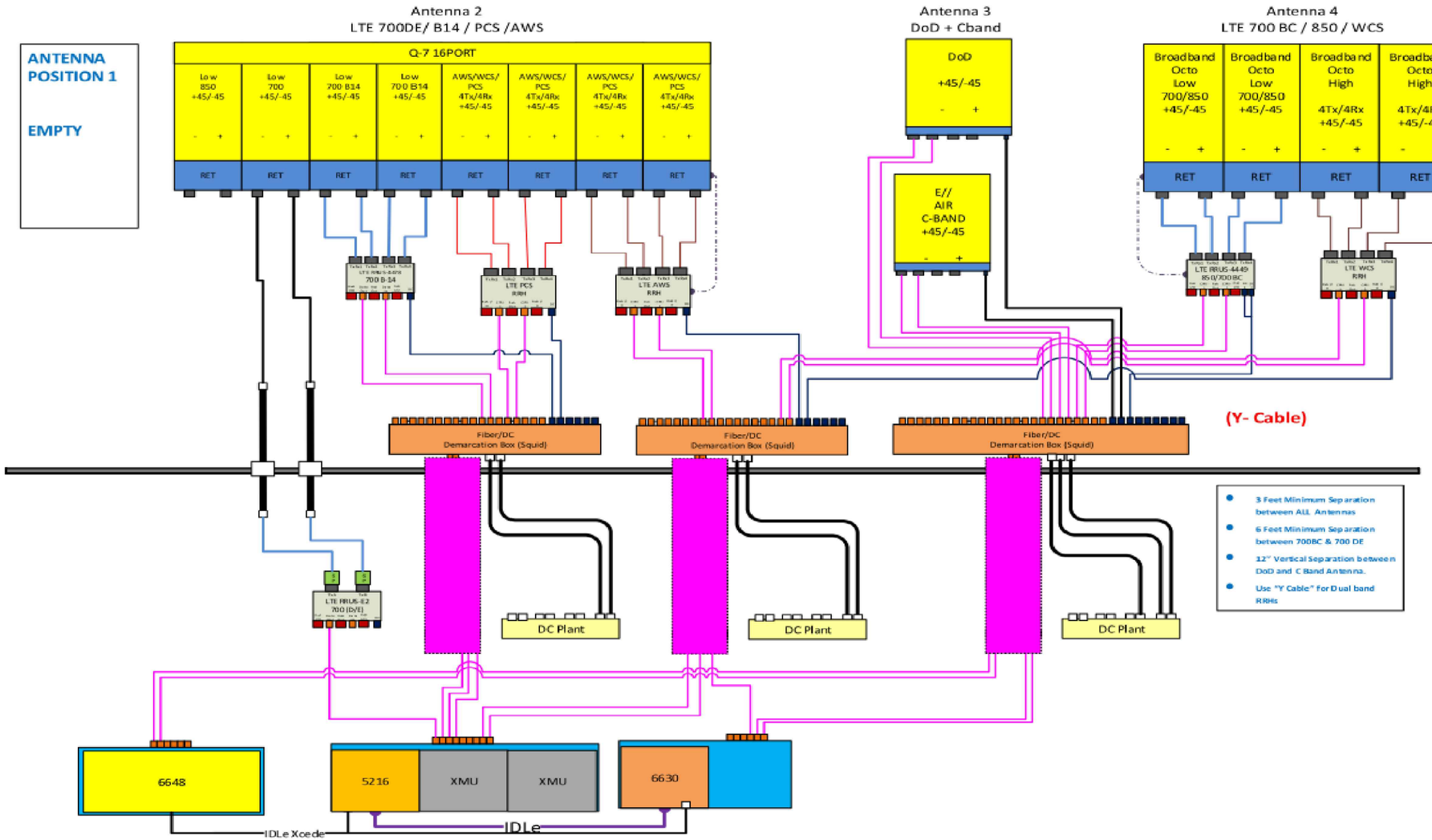
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: PM

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

AT&T

GROUNDING DETAILS
~~5GNR RADIO~~, 5G NR 1SR CBAND, ANTENNA MODIFICATIONS, 4TXRX ANTENNA RETROFIT, BBU RECONFIGURATION 2022 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL02168	G-1	1



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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A	03/30/22	ISSUED FOR REVIEW	PM	AT	DPH

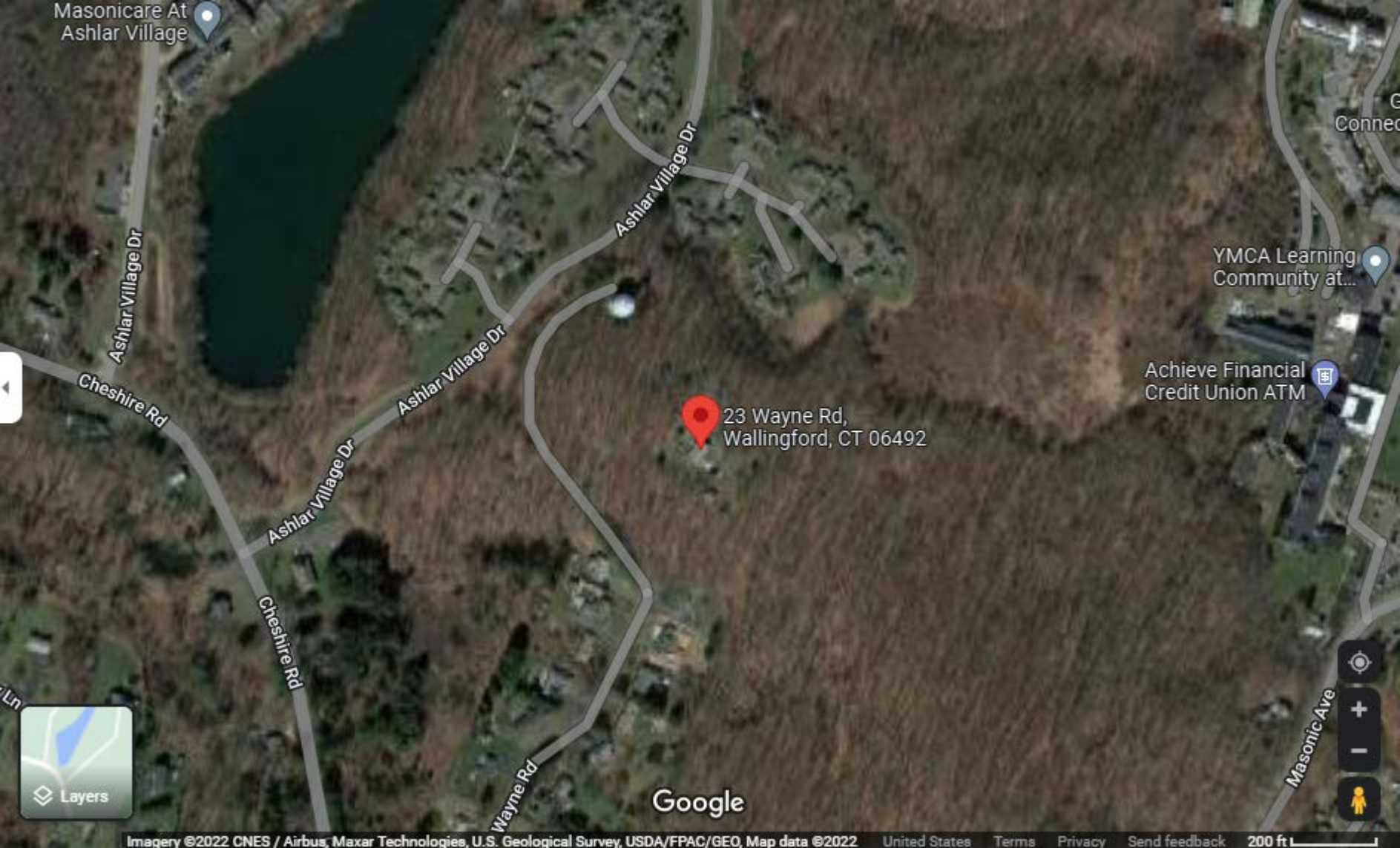
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: PM

AT&T

RF PLUMBING DIAGRAM
5G NR RADIO, 5G NR 1SR CBAND, ANTENNA MODIFICATIONS, 4TXRX ANTENNA RETROFIT, BBU RECONFIGURATION 2022 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL02168	RF–1	1

EXHIBIT 2


Masonicare At Ashlar Village
Ashlar Village Dr
Ashlar Village Dr
Ashlar Village Dr
Ashlar Village Dr
YMCA Learning Community at...
Achieve Financial Credit Union ATM
23 Wayne Rd, Wallingford, CT 06492
Cheshire Rd
Cheshire Rd
Wayne Rd
Masonic Ave
Layers
Google
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United States
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Privacy
Send feedback
200 ft

EXHIBIT 3

STRUCTURAL ANALYSIS REPORT

For

SITE NUMBER: CT2168
SITE NAME: MT TOM WALLINGFORD
FA CODE: 10035084

23 WAYNE ROAD
WALLINGFORD, CT 06492

Antennas Mounted to the Tower

Prepared for:

CENTERLINE COMMUNICATIONS

at&t

Dated: August 11, 2022

Prepared by:

HDG | HUDSON Design Group LLC

45 Beechwood Drive
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
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STATE OF CONNECTICUT
GI KAI WANG
No. 28220
LICENSED
PROFESSIONAL ENGINEER

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the 80' self-supporting tower supporting the proposed AT&T antennas located at elevation 78' 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 June 27, 2006, was available and obtained for our use. Tower mapping report prepared by ProVertic LLC, dated June 1, 2022, was provided to this office.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing tower 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 **68.2%** - (Leg at Tower Section T1 from EL.59.3' to EL.79.8' Controlling).

HUDSON Design Group LLC

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	(1) 4"x18' pipe	81'	Tower
	(2) Flash Beacon	88'	Pipe
	(1) 7' Omni	87.5'	Pipe
	(2) Flash Beacon	82'	Pipe
AT&T	(3) 800 10965 Antennas	78'	12' V - Frame
AT&T	(3) B14 4478	78'	12' V - Frame
AT&T	(3) RRUS-32 B2	78'	12' V - Frame
AT&T	(3) 4426 B66	78'	12' V - Frame
AT&T	(3) RRUS-E2 B29	78'	12' V - Frame
AT&T	(3) RRUS-32 B30	78'	12' V - Frame
AT&T	(2) DC6-48-60-18-8F	78'	12' V - Frame
AT&T	***(3) QD6616-7 Antennas***	78'	12' V - Frame
AT&T	***(3) AIR6419 B77G Antennas***	78'	12' V - Frame
AT&T	***(3) AIR6449 B77D Antennas***	78'	12' V - Frame
AT&T	***(3) 4449 B5/B12***	78'	12' V - Frame
AT&T	***(1) DC9-48-60-24-8C-EV***	78'	12' V - Frame

Proposed AT&T Appurtenances shown in Bold.

AT&T EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
AT&T	(6) 1 5/8" Cables	78'	Tower Leg
AT&T	(6) DC Power Cables	78'	Tower Leg
AT&T	(2) Fiber Cables	78'	Tower Leg
AT&T	***(1) DC Power Cable***	78'	Tower Leg
AT&T	***(1) Fiber Cable***	78'	Tower Leg

Proposed AT&T Coax Cables shown in Bold.

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Notes/Comments
Legs	**68.2 %**	59.33 – 79.75	PASS	**Controlling**
Diagonals	43.9 %	59.33 – 79.75	PASS	
Horizontals	17.3 %	39.33 – 59.33	PASS	
Secondary Horizontals	6.4 %	19.33 – 21.83	PASS	
Top Girts	22.7 %	21.83– 24.33	PASS	
Bottom Girts	25.4 %	39.33 – 59.33	PASS	
Foundation	62.8 %	--	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

   County: New Haven
   City/Town: Wallingford
   Wind Speed: 119 mph
   Risk Category: II
   Exposure Category: B
   Topographic Category: 1
   Crest Height: 0 ft.
   Ice Thickness: 1.0 inch

2. Approximate height above grade to proposed antennas: 78'

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.

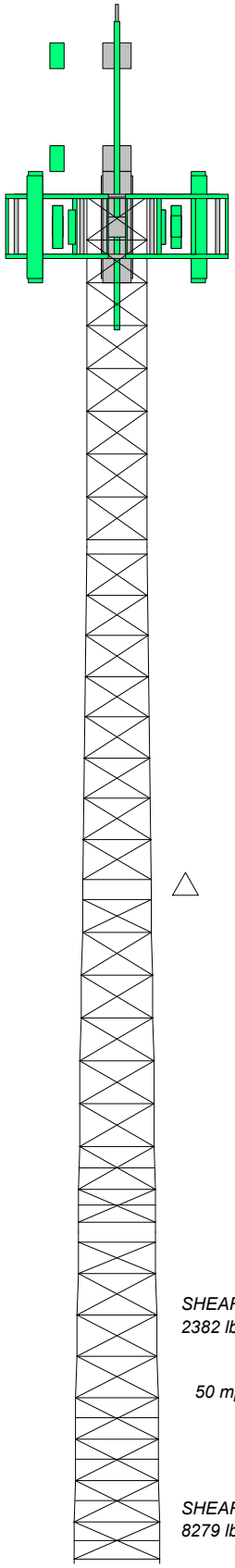
4. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

SUPPORT RECOMMENDATIONS:

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

HUDSON
Design Group LLC

TNX INPUT/OUTPUT



Section	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs				SR 2 1/2								SR 2 1/4					SR 2	SR 1 1/2
Leg Grade																	A572-50	
Diagonals												SR 7/8					SR 3/4	
Diagonal Grade																	A36	
Top Girts				SR 7/8				SR 1			SR 7/8				SR 1		SR 7/8	
Bottom Girts	SR 1				N.A.				SR 1				N.A.				SR 7/8	
Horizontals								N.A.									SR 7/8	
Sec. Horizontals		L2x2x1/4				N.A.			L2x2x1/4								N.A.	
Face Width (ft)	54.9375	4.8754	4.8125	4.754	4.6875	4.6254	4.5625	4.5	4.4375	4.3754	4.3125	4.254	4.1875	4.125	4.0625	4		3.5
# Panels @ (ft)	C	6 @ 2.41625						B	A	6 @ 2.5						A	8 @ 2.375	8 @ 2.50042
Weight (lb)	305.5	265.1	263.5	261.8	215.0	213.9	212.8	217.4	267.0	232.7	189.5	188.4	187.4	186.4	185.3	188.6	1284.4	872.1

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Flash Beacon	88	RRUS-32 B30	78
Flash Beacon	88	RRUS-32 B30	78
Omni 2"x7'	87.5	RRUS-32 B30	78
Flash Beacon	82	DC6-48-60-18-8F	78
Flash Beacon	82	DC6-48-60-18-8F	78
4"x18' pipe	81	Sabre 12' V-Boom	78
800 10965 w/ Mount Pipe (ATI - Existing)	78	Sabre 12' V-Boom	78
		Sabre 12' V-Boom	78
800 10965 w/ Mount Pipe	78	QD6616-7 w/mount pipe (ATI - propsoed)	78
800 10965 w/ Mount Pipe	78		
B14 4478	78	QD6616-7 w/mount pipe	78
B14 4478	78	QD6616-7 w/mount pipe	78
B14 4478	78	AIR6419 B77G w/mount pipe	78
RRUS-32 B2	78	AIR6419 B77G w/mount pipe	78
RRUS-32 B2	78	AIR6419 B77G w/mount pipe	78
RRUS-32 B2	78	AIR6449 B77D w/mount pipe	78
4426 B66	78	AIR6449 B77D w/mount pipe	78
4426 B66	78	AIR6449 B77D w/mount pipe	78
4426 B66	78	4449 B5/B12	78
RRUS-E2 B29	78	4449 B5/B12	78
RRUS-E2 B29	78	4449 B5/B12	78
RRUS-E2 B29	78	DC9-48-60-24-8C-EV	78

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	1 @ 1.91667	C	1 @ 2.16625
B	1 @ 1.83292		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 119 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 68.2%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 126595 lb
SHEAR: 4751 lb

UPLIFT: -118655 lb
SHEAR: 4708 lb

AXIAL 24211 lb
SHEAR 2382 lb *MOMENT 147438 lb-ft*
TORQUE 339 lb-ft
50 mph WIND - 1.0000 in ICE

AXIAL 13498 lb
SHEAR 8279 lb *MOMENT 530409 lb-ft*
TORQUE 1588 lb-ft
REACTIONS - 119 mph WIND

Hudson Design Group LLC
45 Beechwood Drive
North Andover, MA 01845
Phone: 978.557.5553
FAX: 978.336.5586

Job: **CT2168**			
Project: ***80 ft Self Supporting Tower***			
Client: AT&T	Drawn by: kw	App'd:	
Code: TIA-222-H	Date: 08/10/22	Scale: NTS	
Path: C:\CT2168\CT2168.eri	Dwg No. E-1		

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 79.75 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.50 ft at the top and 5.00 ft at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
Tower base elevation above sea level: 392.00 ft.
Basic wind speed of 119 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	79.75-59.33			3.50	1	20.42
T2	59.33-39.33			3.50	1	20.00
T3	39.33-36.83			4.00	1	2.50
T4	36.83-34.33			4.06	1	2.50
T5	34.33-31.83			4.13	1	2.50
T6	31.83-29.33			4.19	1	2.50
T7	29.33-26.83			4.25	1	2.50
T8	26.83-24.33			4.31	1	2.50
T9	24.33-21.83			4.38	1	2.50
T10	21.83-19.33			4.44	1	2.50
T11	19.33-16.91			4.50	1	2.42
T12	16.91-14.50			4.56	1	2.42
T13	14.50-12.08			4.63	1	2.42
T14	12.08-9.67			4.69	1	2.42
T15	9.67-7.25			4.75	1	2.42
T16	7.25-4.83			4.81	1	2.42
T17	4.83-2.42			4.88	1	2.42
T18	2.42-0.00			4.94	1	2.42

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	79.75-59.33	2.50	X Brace	No	Yes	0.0000	5.0000
T2	59.33-39.33	2.38	X Brace	No	Yes	5.0000	7.0000
T3	39.33-36.83	1.92	X Brace	No	No	7.0000	0.0000
T4	36.83-34.33	2.50	X Brace	No	No	0.0000	0.0000
T5	34.33-31.83	2.50	X Brace	No	No	0.0000	0.0000
T6	31.83-29.33	2.50	X Brace	No	No	0.0000	0.0000
T7	29.33-26.83	2.50	X Brace	No	No	0.0000	0.0000
T8	26.83-24.33	2.50	X Brace	No	No	0.0000	0.0000
T9	24.33-21.83	2.50	X Brace	No	Yes	0.0000	0.0000
T10	21.83-19.33	1.92	X Brace	No	Yes	0.0000	7.0000
T11	19.33-16.91	1.83	X Brace	No	No	7.0000	0.0000
T12	16.91-14.50	2.42	X Brace	No	No	0.0000	0.0000
T13	14.50-12.08	2.42	X Brace	No	No	0.0000	0.0000
T14	12.08-9.67	2.42	X Brace	No	No	0.0000	0.0000
T15	9.67-7.25	2.42	X Brace	No	Yes	0.0000	0.0000
T16	7.25-4.83	2.42	X Brace	No	Yes	0.0000	0.0000
T17	4.83-2.42	2.42	X Brace	No	Yes	0.0000	0.0000
T18	2.42-0.00	2.17	X Brace	No	Yes	0.0000	3.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 79.75-59.33	Solid Round	1 1/2	A572-50 (50 ksi)	Solid Round	3/4	A36 (36 ksi)
T2 59.33-39.33	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T3 39.33-36.83	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T4 36.83-34.33	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T5 34.33-31.83	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T6 31.83-29.33	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T7 29.33-26.83	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T8 26.83-24.33	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T9 24.33-21.83	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T10 21.83-19.33	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T11 19.33-16.91	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T12 16.91-14.50	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T13 14.50-12.08	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T14 12.08-9.67	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T15 9.67-7.25	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T16 7.25-4.83	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T17 4.83-2.42	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T18 2.42-0.00	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 79.75-59.33	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T2 59.33-39.33	Solid Round	7/8	A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T3 39.33-36.83	Solid Round	1	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T4 36.83-34.33	Solid Round	7/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T5 34.33-31.83	Solid Round	7/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T6 31.83-29.33	Solid Round	7/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T7 29.33-26.83	Solid Round	7/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T8 26.83-24.33	Solid Round	7/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T9 24.33-21.83	Solid Round	7/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T10 21.83-19.33	Solid Round	7/8	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T11 19.33-16.91	Solid Round	1	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T12 16.91-14.50	Solid Round	7/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T13 14.50-12.08	Solid Round	7/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T14 12.08-9.67	Solid Round	7/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T15 9.67-7.25	Solid Round	7/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T16 7.25-4.83	Solid Round	7/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T17 4.83-2.42	Solid Round	7/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T18 2.42-0.00	Solid Round	7/8	A36 (36 ksi)	Solid Round	1	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 79.75-59.33	None	Solid Round		A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T2 59.33-39.33	None	Solid Round		A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T9 24.33-21.83	Equal Angle	L2x2x1/4	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T10 21.83-19.33	Equal Angle	L2x2x1/4	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T15 9.67-7.25	Equal Angle	L2x2x1/4	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T16 7.25-4.83	Equal Angle	L2x2x1/4	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T17 4.83-2.42	Equal Angle	L2x2x1/4	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T18 2.42-0.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Equal Angle		A36 (36 ksi)

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1/2	C	No	No	Ar (CaAa)	79.75 - 6.00	-2.0000	0.3	1	1	0.0000	0.5800		0.25
7/8	C	No	No	Ar (CaAa)	79.75 - 6.00	-4.0000	0.35	1	1	0.0000	1.1100		0.54
1/2 ******	C	No	No	Ar (CaAa)	79.75 - 6.00	-6.0000	0.4	1	1	0.0000	0.5800		0.25
1 5/8 (AT&T - existing)	B	No	No	Ar (CaAa)	78.00 - 6.00	0.0000	-0.4	6	3	0.0000	1.9800		1.04
FB-L98B-002	B	No	No	Ar (CaAa)	78.00 - 6.00	0.0000	-0.1	2	2	0.0000	0.4000		0.25
DC Power Cable ******	B	No	No	Ar (CaAa)	78.00 - 6.00	0.0000	0	6	3	0.0000	0.8200		0.58
FB-L98B-002 (AT&T - proposed)	B	No	No	Ar (CaAa)	78.00 - 6.00	0.0000	0.1	1	1	0.0000	0.4000		0.25
DC Power Cable ******	B	No	No	Ar (CaAa)	78.00 - 6.00	0.0000	0.2	1	1	0.0000	0.8200		0.58

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
4"x18' pipe	A	None		0.0000	81.00	No Ice	7.39	7.39	205.00
						1/2" Ice	10.17	10.17	262.16
						1" Ice	12.04	12.04	330.93
Flash Beacon	A	From Leg	2.00 0.00	0.0000	88.00	No Ice 1/2" Ice	3.00 3.21	1.50 1.66	20.00 45.57
			0.00			1" Ice	3.44	1.83	74.44
Flash Beacon	C	From Leg	2.00 0.00	0.0000	88.00	No Ice 1/2" Ice	3.00 3.21	1.50 1.66	20.00 45.57
			0.00			1" Ice	3.44	1.83	74.44
Omni 2"x7'	A	From Leg	1.00 0.00	0.0000	87.50	No Ice 1/2" Ice	1.40 2.13	1.40 2.13	30.00 40.92
			0.00			1" Ice	2.68	2.68	56.47
Flash Beacon	A	From Leg	2.00 0.00	0.0000	82.00	No Ice 1/2" Ice	3.00 3.21	1.50 1.66	20.00 45.57
			0.00			1" Ice	3.44	1.83	74.44
Flash Beacon	C	From Leg	2.00 0.00	0.0000	82.00	No Ice 1/2" Ice	3.00 3.21	1.50 1.66	20.00 45.57
			0.00			1" Ice	3.44	1.83	74.44
******									
800 10965 w/ Mount Pipe (AT&T - Existing)	A	From Leg	3.50 0.00	0.0000	78.00	No Ice 1/2" Ice	13.92 14.50	7.50 8.71	134.55 229.58
			0.00			1" Ice	15.07	9.65	333.52
800 10965 w/ Mount Pipe	B	From Leg	3.50 0.00	0.0000	78.00	No Ice 1/2" Ice	13.92 14.50	7.50 8.71	134.55 229.58
			0.00			1" Ice	15.07	9.65	333.52
800 10965 w/ Mount Pipe	C	From Leg	3.50 0.00	0.0000	78.00	No Ice 1/2" Ice	13.92 14.50	7.50 8.71	134.55 229.58
			0.00			1" Ice	15.07	9.65	333.52
B14 4478	A	From Leg	2.00 0.00	0.0000	78.00	No Ice 1/2" Ice	1.65 1.81	0.93 1.05	60.00 74.37
			0.00			1" Ice	1.98	1.19	91.23
B14 4478	B	From Leg	2.00 0.00	0.0000	78.00	No Ice 1/2" Ice	1.65 1.81	0.93 1.05	60.00 74.37
			0.00			1" Ice	1.98	1.19	91.23
B14 4478	C	From Leg	2.00 0.00	0.0000	78.00	No Ice 1/2" Ice	1.65 1.81	0.93 1.05	60.00 74.37
			0.00			1" Ice	1.98	1.19	91.23
RRUS-32 B2	A	From Leg	2.00 0.00	0.0000	78.00	No Ice 1/2" Ice	3.31 3.56	2.42 2.64	77.00 104.93
			0.00			1" Ice	3.81	2.86	136.47
RRUS-32 B2	B	From Leg	2.00 0.00	0.0000	78.00	No Ice 1/2" Ice	3.31 3.56	2.42 2.64	77.00 104.93
			0.00			1" Ice	3.81	2.86	136.47
RRUS-32 B2	C	From Leg	2.00 0.00	0.0000	78.00	No Ice 1/2" Ice	3.31 3.56	2.42 2.64	77.00 104.93
			0.00			1" Ice	3.81	2.86	136.47
4426 B66	A	From Leg	2.00 0.00	0.0000	78.00	No Ice 1/2" Ice	1.64 1.80	0.72 0.84	49.00 61.79
			0.00			1" Ice	1.97	0.96	76.97
4426 B66	B	From Leg	2.00 0.00	0.0000	78.00	No Ice 1/2" Ice	1.64 1.80	0.72 0.84	49.00 61.79
			0.00			1" Ice	1.97	0.96	76.97

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
4426 B66	C	From Leg	2.00		0.0000	78.00	No Ice	1.64	0.72	49.00
			0.00				1/2" Ice	1.80	0.84	61.79
			0.00				1" Ice	1.97	0.96	76.97
RRUS-E2 B29	A	From Leg	2.00		0.0000	78.00	No Ice	3.31	2.42	77.00
			0.00				1/2" Ice	3.56	2.64	104.93
			0.00				1" Ice	3.81	2.86	136.47
RRUS-E2 B29	B	From Leg	2.00		0.0000	78.00	No Ice	3.31	2.42	77.00
			0.00				1/2" Ice	3.56	2.64	104.93
			0.00				1" Ice	3.81	2.86	136.47
RRUS-E2 B29	C	From Leg	2.00		0.0000	78.00	No Ice	3.31	2.42	77.00
			0.00				1/2" Ice	3.56	2.64	104.93
			0.00				1" Ice	3.81	2.86	136.47
RRUS-32 B30	A	From Leg	2.00		0.0000	78.00	No Ice	2.74	1.67	60.00
			0.00				1/2" Ice	2.96	1.86	81.11
			0.00				1" Ice	3.19	2.05	105.42
RRUS-32 B30	B	From Leg	2.00		0.0000	78.00	No Ice	2.74	1.67	60.00
			0.00				1/2" Ice	2.96	1.86	81.11
			0.00				1" Ice	3.19	2.05	105.42
RRUS-32 B30	C	From Leg	2.00		0.0000	78.00	No Ice	2.74	1.67	60.00
			0.00				1/2" Ice	2.96	1.86	81.11
			0.00				1" Ice	3.19	2.05	105.42
DC6-48-60-18-8F	B	From Leg	1.00		0.0000	78.00	No Ice	0.79	0.79	20.00
			0.00				1/2" Ice	1.27	1.27	35.12
			0.00				1" Ice	1.45	1.45	52.57
DC6-48-60-18-8F	C	From Leg	1.00		0.0000	78.00	No Ice	0.79	0.79	20.00
			0.00				1/2" Ice	1.27	1.27	35.12
			0.00				1" Ice	1.45	1.45	52.57
Sabre 12' V-Boom	A	From Leg	2.00		0.0000	78.00	No Ice	15.40	14.00	558.00
			0.00				1/2" Ice	21.30	20.81	741.00
			0.00				1" Ice	27.20	27.62	924.00
Sabre 12' V-Boom	B	From Leg	2.00		0.0000	78.00	No Ice	15.40	14.00	558.00
			0.00				1/2" Ice	21.30	20.81	741.00
			0.00				1" Ice	27.20	27.62	924.00
Sabre 12' V-Boom	C	From Leg	2.00		0.0000	78.00	No Ice	15.40	14.00	558.00
			0.00				1/2" Ice	21.30	20.81	741.00
			0.00				1" Ice	27.20	27.62	924.00
******										
QD6616-7 w/mount pipe (AT&T - propsoed)	A	From Leg	3.50		0.0000	78.00	No Ice	13.82	8.46	100.55
			0.00				1/2" Ice	14.43	9.66	203.01
			0.00				1" Ice	15.00	10.55	314.26
QD6616-7 w/mount pipe	B	From Leg	3.50		0.0000	78.00	No Ice	13.82	8.46	100.55
			0.00				1/2" Ice	14.43	9.66	203.01
			0.00				1" Ice	15.00	10.55	314.26
QD6616-7 w/mount pipe	C	From Leg	3.50		0.0000	78.00	No Ice	13.82	8.46	100.55
			0.00				1/2" Ice	14.43	9.66	203.01
			0.00				1" Ice	15.00	10.55	314.26
AIR6419 B77G w/mount pipe	A	From Leg	3.50		0.0000	78.00	No Ice	4.48	2.88	109.60
			0.00				1/2" Ice	4.83	3.34	149.47
			0.00				1" Ice	5.19	3.81	194.34
AIR6419 B77G w/mount pipe	B	From Leg	3.50		0.0000	78.00	No Ice	4.48	2.88	109.60
			0.00				1/2" Ice	4.83	3.34	149.47
			0.00				1" Ice	5.19	3.81	194.34
AIR6419 B77G w/mount pipe	C	From Leg	3.50		0.0000	78.00	No Ice	4.48	2.88	109.60
			0.00				1/2" Ice	4.83	3.34	149.47
			0.00				1" Ice	5.19	3.81	194.34
AIR6449 B77D w/mount pipe	A	From Leg	3.50		0.0000	78.00	No Ice	4.35	3.01	117.60
			0.00				1/2" Ice	4.70	3.47	157.89

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	5.06	3.94	203.17
AIR6449 B77D w/mount pipe	B	From Leg	3.50	0.0000	78.00	No Ice	4.35	3.01	117.60
			0.00			1/2" Ice	4.70	3.47	157.89
			0.00			1" Ice	5.06	3.94	203.17
AIR6449 B77D w/mount pipe	C	From Leg	3.50	0.0000	78.00	No Ice	4.35	3.01	117.60
			0.00			1/2" Ice	4.70	3.47	157.89
			0.00			1" Ice	5.06	3.94	203.17
4449 B5/B12	A	From Leg	2.00	0.0000	78.00	No Ice	1.97	1.55	73.00
			0.00			1/2" Ice	2.15	1.71	92.52
			0.00			1" Ice	2.33	1.88	114.92
4449 B5/B12	B	From Leg	2.00	0.0000	78.00	No Ice	1.97	1.55	73.00
			0.00			1/2" Ice	2.15	1.71	92.52
			0.00			1" Ice	2.33	1.88	114.92
4449 B5/B12	C	From Leg	2.00	0.0000	78.00	No Ice	1.97	1.55	73.00
			0.00			1/2" Ice	2.15	1.71	92.52
			0.00			1" Ice	2.33	1.88	114.92
DC9-48-60-24-8C-EV	B	From Leg	1.00	0.0000	78.00	No Ice	0.81	0.81	33.00
			0.00			1/2" Ice	1.30	1.30	48.38
			0.00			1" Ice	1.48	1.48	66.11
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Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp

Comb. No.	Description
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	18	126594.78	4028.82	-2518.18
	Max. H_x	18	126594.78	4028.82	-2518.18
	Max. H_z	29	-25909.50	-5913.46	3450.22
	Min. Vert	7	-118655.13	-3985.05	2507.69
	Min. H_x	29	-25909.50	-5913.46	3450.22
	Min. H_z	18	126594.78	4028.82	-2518.18
Leg B	Max. Vert	10	124249.61	-3944.31	-2415.41
	Max. H_x	37	-25262.50	5895.94	3431.58
	Max. H_z	37	-25262.50	5895.94	3431.58
	Min. Vert	23	-116000.51	3893.02	2393.18
	Min. H_x	10	124249.61	-3944.31	-2415.41
	Min. H_z	10	124249.61	-3944.31	-2415.41
Leg A	Max. Vert	2	124625.41	-17.76	4626.41
	Max. H_x	21	3608.21	966.69	73.77
	Max. H_z	2	124625.41	-17.76	4626.41
	Min. Vert	15	-115719.35	21.61	-4565.68
	Min. H_x	9	3608.06	-965.45	73.73
	Min. H_z	33	-24325.15	2.56	-6813.80

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	11247.94	-0.00	-0.00	-1106.52	-372.10	0.00
1.2 Dead+1.0 Wind 0 deg - No	13497.53	0.00	-8034.48	-520161.84	-451.60	-169.64

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Ice 0.9 Dead+1.0 Wind 0 deg - No Ice	10123.15	0.00	-8034.48	-518113.73	-337.42	-170.69
1.2 Dead+1.0 Wind 30 deg - No Ice	13497.53	4086.24	-7077.58	-456899.95	-263464.70	-858.86
0.9 Dead+1.0 Wind 30 deg - No Ice	10123.15	4086.24	-7077.58	-455064.16	-262486.78	-857.92
1.2 Dead+1.0 Wind 60 deg - No Ice	13497.53	7135.08	-4119.44	-266021.56	-458875.08	-1498.44
0.9 Dead+1.0 Wind 60 deg - No Ice	10123.15	7135.08	-4119.44	-264813.59	-457257.38	-1495.69
1.2 Dead+1.0 Wind 90 deg - No Ice	13497.53	8172.49	-0.00	-1351.93	-526480.36	-1587.75
0.9 Dead+1.0 Wind 90 deg - No Ice	10123.15	8172.49	-0.00	-1011.84	-524638.90	-1583.95
1.2 Dead+1.0 Wind 120 deg - No Ice	13497.53	6958.06	4017.24	258058.65	-449761.91	-1063.48
0.9 Dead+1.0 Wind 120 deg - No Ice	10123.15	6958.06	4017.24	257544.83	-448168.54	-1059.67
1.2 Dead+1.0 Wind 150 deg - No Ice	13497.53	3958.47	6856.26	444310.90	-257753.23	-404.78
0.9 Dead+1.0 Wind 150 deg - No Ice	10123.15	3958.47	6856.26	443181.01	-256790.31	-401.97
1.2 Dead+1.0 Wind 180 deg - No Ice	13497.53	0.00	7994.24	517058.25	-451.18	173.64
0.9 Dead+1.0 Wind 180 deg - No Ice	10123.15	0.00	7994.24	515690.97	-337.11	174.69
1.2 Dead+1.0 Wind 210 deg - No Ice	13497.53	-4086.24	7077.58	454204.90	262564.30	858.89
0.9 Dead+1.0 Wind 210 deg - No Ice	10123.15	-4086.24	7077.58	453049.47	261814.63	857.94
1.2 Dead+1.0 Wind 240 deg - No Ice	13497.53	-7169.92	4139.56	263525.43	458331.55	1497.82
0.9 Dead+1.0 Wind 240 deg - No Ice	10123.15	-7169.92	4139.56	262997.59	456941.69	1495.06
1.2 Dead+1.0 Wind 270 deg - No Ice	13497.53	-8172.49	-0.00	-1352.80	525576.38	1587.76
0.9 Dead+1.0 Wind 270 deg - No Ice	10123.15	-8172.49	-0.00	-1012.49	523963.02	1583.96
1.2 Dead+1.0 Wind 300 deg - No Ice	13497.53	-6923.22	-3997.12	-260552.23	448498.94	1064.75
0.9 Dead+1.0 Wind 300 deg - No Ice	10123.15	-6923.22	-3997.12	-259358.13	447134.00	1060.93
1.2 Dead+1.0 Wind 330 deg - No Ice	13497.53	-3958.47	-6856.27	-447004.45	256848.30	404.77
0.9 Dead+1.0 Wind 330 deg - No Ice	10123.15	-3958.47	-6856.26	-445194.07	256113.54	401.97
1.2 Dead+1.0 Ice+1.0 Temp	24210.53	-0.00	0.00	-2972.55	-534.06	-0.01
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	24210.53	0.00	-2340.17	-146366.08	-540.29	-11.44
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	24210.53	1181.88	-2047.07	-128202.68	-72815.84	-165.75
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	24210.53	2057.86	-1188.11	-75597.46	-126252.18	-306.20
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	24210.53	2363.75	-0.00	-3017.85	-145092.12	-338.91
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	24210.53	2026.64	1170.08	68656.66	-124684.09	-251.11
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	24210.53	1161.15	2011.17	120551.53	-71883.20	-121.04
1.2 Dead+1.0 Wind 180	24210.53	-0.00	2334.77	140275.89	-540.35	13.02

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
deg+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	24210.53	-1181.88	2047.07	122167.30	71736.10	165.74
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	24210.53	-2062.54	1190.81	69589.38	125220.03	305.48
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	24210.53	-2363.75	-0.00	-3017.72	144011.63	338.89
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	24210.53	-2021.97	-1167.38	-74664.67	123555.74	251.97
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	24210.53	-1161.15	-2011.17	-126586.76	70802.42	121.03
Dead+Wind 0 deg - Service	11247.94	0.00	-2052.42	-133530.34	-375.90	-39.48
Dead+Wind 30 deg - Service	11247.94	1043.75	-1807.83	-117375.71	-67496.17	-211.89
Dead+Wind 60 deg - Service	11247.94	1822.45	-1052.19	-68661.02	-117360.54	-373.70
Dead+Wind 90 deg - Service	11247.94	2087.50	-0.00	-1119.73	-134617.02	-396.68
Dead+Wind 120 deg - Service	11247.94	1777.45	1026.21	65085.64	-115047.21	-265.97
Dead+Wind 150 deg - Service	11247.94	1011.27	1751.57	112624.63	-66046.57	-102.54
Dead+Wind 180 deg - Service	11247.94	-0.00	2042.19	131186.28	-376.06	41.21
Dead+Wind 210 deg - Service	11247.94	-1043.75	1807.83	115136.07	66745.02	211.90
Dead+Wind 240 deg - Service	11247.94	-1831.31	1057.31	66473.39	116699.77	372.80
Dead+Wind 270 deg - Service	11247.94	-2087.50	-0.00	-1119.91	133865.09	396.67
Dead+Wind 300 deg - Service	11247.94	-1768.59	-1021.10	-67272.95	114204.38	266.79
Dead+Wind 330 deg - Service	11247.94	-1011.27	-1751.57	-114864.24	65294.24	102.54

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-11247.94	-0.00	0.00	11247.94	0.00	0.000%
2	-0.00	-13497.53	-8034.48	-0.00	13497.53	8034.48	0.000%
3	-0.00	-10123.15	-8034.48	-0.00	10123.15	8034.48	0.000%
4	4086.24	-13497.53	-7077.58	-4086.24	13497.53	7077.58	0.000%
5	4086.24	-10123.15	-7077.58	-4086.24	10123.15	7077.58	0.000%
6	7135.08	-13497.53	-4119.44	-7135.08	13497.53	4119.44	0.000%
7	7135.08	-10123.15	-4119.44	-7135.08	10123.15	4119.44	0.000%
8	8172.49	-13497.53	-0.00	-8172.49	13497.53	0.00	0.000%
9	8172.49	-10123.15	-0.00	-8172.49	10123.15	0.00	0.000%
10	6958.06	-13497.53	4017.24	-6958.06	13497.53	-4017.24	0.000%
11	6958.06	-10123.15	4017.24	-6958.06	10123.15	-4017.24	0.000%
12	3958.47	-13497.53	6856.27	-3958.47	13497.53	-6856.26	0.000%
13	3958.47	-10123.15	6856.27	-3958.47	10123.15	-6856.26	0.000%
14	-0.00	-13497.53	7994.24	-0.00	13497.53	-7994.24	0.000%
15	-0.00	-10123.15	7994.24	-0.00	10123.15	-7994.24	0.000%
16	-4086.24	-13497.53	7077.58	4086.24	13497.53	-7077.58	0.000%
17	-4086.24	-10123.15	7077.58	4086.24	10123.15	-7077.58	0.000%
18	-7169.92	-13497.53	4139.56	7169.92	13497.53	-4139.56	0.000%
19	-7169.92	-10123.15	4139.56	7169.92	10123.15	-4139.56	0.000%
20	-8172.49	-13497.53	-0.00	8172.49	13497.53	0.00	0.000%
21	-8172.49	-10123.15	-0.00	8172.49	10123.15	0.00	0.000%
22	-6923.22	-13497.53	-3997.12	6923.22	13497.53	3997.12	0.000%
23	-6923.22	-10123.15	-3997.12	6923.22	10123.15	3997.12	0.000%
24	-3958.47	-13497.53	-6856.27	3958.47	13497.53	6856.27	0.000%
25	-3958.47	-10123.15	-6856.27	3958.47	10123.15	6856.26	0.000%
26	-0.00	-24210.53	-0.00	0.00	24210.53	-0.00	0.000%
27	0.00	-24210.53	-2340.17	-0.00	24210.53	2340.17	0.000%
28	1181.88	-24210.53	-2047.07	-1181.88	24210.53	2047.07	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
29	2057.86	-24210.53	-1188.11	-2057.86	24210.53	1188.11	0.000%
30	2363.75	-24210.53	-0.00	-2363.75	24210.53	0.00	0.000%
31	2026.64	-24210.53	1170.08	-2026.64	24210.53	-1170.08	0.000%
32	1161.15	-24210.53	2011.17	-1161.15	24210.53	-2011.17	0.000%
33	-0.00	-24210.53	2334.77	0.00	24210.53	-2334.77	0.000%
34	-1181.88	-24210.53	2047.07	1181.88	24210.53	-2047.07	0.000%
35	-2062.54	-24210.53	1190.81	2062.54	24210.53	-1190.81	0.000%
36	-2363.75	-24210.53	-0.00	2363.75	24210.53	0.00	0.000%
37	-2021.97	-24210.53	-1167.38	2021.97	24210.53	1167.38	0.000%
38	-1161.15	-24210.53	-2011.17	1161.15	24210.53	2011.17	0.000%
39	-0.00	-11247.94	-2052.42	-0.00	11247.94	2052.42	0.000%
40	1043.75	-11247.94	-1807.83	-1043.75	11247.94	1807.83	0.000%
41	1822.45	-11247.94	-1052.19	-1822.45	11247.94	1052.19	0.000%
42	2087.50	-11247.94	0.00	-2087.50	11247.94	0.00	0.000%
43	1777.45	-11247.94	1026.21	-1777.45	11247.94	-1026.21	0.000%
44	1011.27	-11247.94	1751.57	-1011.27	11247.94	-1751.57	0.000%
45	-0.00	-11247.94	2042.19	0.00	11247.94	-2042.19	0.000%
46	-1043.75	-11247.94	1807.83	1043.75	11247.94	-1807.83	0.000%
47	-1831.31	-11247.94	1057.31	1831.31	11247.94	-1057.31	0.000%
48	-2087.50	-11247.94	-0.00	2087.50	11247.94	0.00	0.000%
49	-1768.59	-11247.94	-1021.10	1768.59	11247.94	1021.10	0.000%
50	-1011.27	-11247.94	-1751.57	1011.27	11247.94	1751.57	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	79.75 - 59.33	2.808	41	0.2856	0.0308
T2	59.33 - 39.33	1.619	41	0.2386	0.0233
T3	39.33 - 36.83	0.730	41	0.1633	0.0153
T4	36.83 - 34.33	0.637	41	0.1541	0.0131
T5	34.33 - 31.83	0.557	41	0.1443	0.0124
T6	31.83 - 29.33	0.482	41	0.1342	0.0117
T7	29.33 - 26.83	0.412	41	0.1237	0.0111
T8	26.83 - 24.33	0.348	41	0.1129	0.0103
T9	24.33 - 21.83	0.290	41	0.1018	0.0096
T10	21.83 - 19.33	0.238	41	0.0905	0.0089
T11	19.33 - 16.9138	0.186	41	0.0790	0.0071
T12	16.9138 - 14.4975	0.141	41	0.0698	0.0053
T13	14.4975 - 12.0813	0.106	41	0.0603	0.0046
T14	12.0813 - 9.665	0.076	41	0.0506	0.0039
T15	9.665 - 7.24875	0.051	41	0.0408	0.0032
T16	7.24875 - 4.8325	0.031	41	0.0308	0.0024
T17	4.8325 - 2.41625	0.016	41	0.0207	0.0017
T18	2.41625 - 0	0.006	47	0.0104	0.0009

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
88.00	Flash Beacon	41	2.808	0.2856	0.0308	51623

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
87.50	Omni 2"x7'	41	2.808	0.2856	0.0308	51623
82.00	Flash Beacon	41	2.808	0.2856	0.0308	51623
81.00	4"x18' pipe	41	2.808	0.2856	0.0308	51623
78.00	800 10965 w/ Mount Pipe	41	2.701	0.2823	0.0300	51623

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	79.75 - 59.33	Leg	1 1/2	1	-33943.40	49795.40	68.2	Pass
T2	59.33 - 39.33	Leg	2	79	-67456.90	111473.00	60.5	Pass
T3	39.33 - 36.83	Leg	2 1/4	157	-71992.60	158331.00	45.5	Pass
T4	36.83 - 34.33	Leg	2 1/4	169	-75852.70	145320.00	52.2	Pass
T5	34.33 - 31.83	Leg	2 1/4	181	-79489.30	145320.00	54.7	Pass
T6	31.83 - 29.33	Leg	2 1/4	193	-83270.20	145320.00	57.3	Pass
T7	29.33 - 26.83	Leg	2 1/4	205	-86956.80	145320.00	59.8	Pass
T8	26.83 - 24.33	Leg	2 1/4	217	-90636.30	145320.00	62.4	Pass
T9	24.33 - 21.83	Leg	2 1/4	229	-94073.80	169731.00	55.4	Pass
T10	21.83 - 19.33	Leg	2 1/4	244	-100077.00	176909.00	56.6	Pass
T11	19.33 - 16.9138	Leg	2 1/2	262	-101608.00	201765.00	50.4	Pass
T12	16.9138 - 14.4975	Leg	2 1/2	274	-104934.00	188723.00	55.6	Pass
T13	14.4975 - 12.0813	Leg	2 1/2	286	-108192.00	188723.00	57.3	Pass
T14	12.0813 - 9.665	Leg	2 1/2	298	-111535.00	188723.00	59.1	Pass
T15	9.665 - 7.24875	Leg	2 1/2	310	-114706.00	212260.00	54.0	Pass
T16	7.24875 - 4.8325	Leg	2 1/2	325	-117972.00	212262.00	55.6	Pass
T17	4.8325 - 2.41625	Leg	2 1/2	340	-121235.00	212263.00	57.1	Pass
T18	2.41625 - 0	Leg	2 1/2	355	-124326.00	213939.00	58.1	Pass
T1	79.75 - 59.33	Diagonal	3/4	15	-2966.06	6753.13	43.9	Pass
T2	59.33 - 39.33	Diagonal	7/8	156	-3146.56	10844.00	29.0	Pass
T3	39.33 - 36.83	Diagonal	7/8	168	-3064.80	10631.20	28.8	Pass
T4	36.83 - 34.33	Diagonal	7/8	180	-2210.71	9841.95	22.5	Pass
T5	34.33 - 31.83	Diagonal	7/8	192	-2434.16	9684.41	25.1	Pass
T6	31.83 - 29.33	Diagonal	7/8	204	-2388.96	9527.07	25.1	Pass
T7	29.33 - 26.83	Diagonal	7/8	216	-2399.91	9369.99	25.6	Pass
T8	26.83 - 24.33	Diagonal	7/8	228	-2415.27	9213.24	26.2	Pass
T9	24.33 - 21.83	Diagonal	7/8	240	-2660.96	9056.90	29.4	Pass
T10	21.83 - 19.33	Diagonal	7/8	258	-3474.59	9655.79	36.0	Pass
T11	19.33 - 16.9138	Diagonal	7/8	273	-2893.42	9603.49	30.1	Pass
T12	16.9138 - 14.4975	Diagonal	7/8	285	-2187.03	8763.46	25.0	Pass
T13	14.4975 - 12.0813	Diagonal	7/8	297	-2325.20	8606.93	27.0	Pass
T14	12.0813 - 9.665	Diagonal	7/8	309	-2336.62	8451.12	27.6	Pass
T15	9.665 - 7.24875	Diagonal	7/8	321	-2561.21	8296.09	30.9	Pass
T16	7.24875 - 4.8325	Diagonal	7/8	336	-2599.91	8141.90	31.9	Pass
T17	4.8325 - 2.41625	Diagonal	7/8	351	-2594.36	7988.60	32.5	Pass
T18	2.41625 - 0	Diagonal	7/8	369	-3036.34	8126.47	37.4	Pass
T1	79.75 - 59.33	Horizontal	7/8	26	-856.78	8047.06	10.6	Pass
T2	59.33 - 39.33	Horizontal	7/8	104	-1163.36	6729.46	17.3	Pass
T9	24.33 - 21.83	Secondary Horizontal	L2x2x1/4	241	-358.93	22815.50	1.6	Pass
T10	21.83 - 19.33	Secondary Horizontal	L2x2x1/4	261	-1460.03	22697.70	6.4	Pass
T15	9.665 - 7.24875	Secondary Horizontal	L2x2x1/4	324	-449.26	22050.00	2.0	Pass
T16	7.24875 - 4.8325	Secondary Horizontal	L2x2x1/4	337	-561.69	21912.20	2.6	Pass
T17	4.8325 - 2.41625	Secondary Horizontal	L2x2x1/4	352	-567.29	21773.60	2.6	Pass
T18	2.41625 - 0	Secondary Horizontal	L2x2x1/4	372	-1121.79	21641.40	5.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	79.75 - 59.33	Top Girt	7/8	4	-119.17	8047.06	1.5	Pass
T2	59.33 - 39.33	Top Girt	7/8	83	-533.39	8179.29	6.5	Pass
T3	39.33 - 36.83	Top Girt	1	161	-573.16	10655.70	5.4	Pass
T4	36.83 - 34.33	Top Girt	7/8	173	-1327.92	6135.36	21.6	Pass
T5	34.33 - 31.83	Top Girt	7/8	185	-982.74	5942.13	16.5	Pass
T6	31.83 - 29.33	Top Girt	7/8	197	-1110.89	5757.89	19.3	Pass
T7	29.33 - 26.83	Top Girt	7/8	209	-1105.67	5582.09	19.8	Pass
T8	26.83 - 24.33	Top Girt	7/8	221	-1144.21	5414.21	21.1	Pass
T9	24.33 - 21.83	Top Girt	7/8	233	-1194.46	5253.80	22.7	Pass
T10	21.83 - 19.33	Top Girt	7/8	248	-678.79	5100.42	13.3	Pass
T11	19.33 - 16.9138	Top Girt	1	266	-399.12	8473.26	4.7	Pass
T12	16.9138 - 14.4975	Top Girt	7/8	278	-1074.59	4859.30	22.1	Pass
T13	14.4975 - 12.0813	Top Girt	7/8	290	-888.91	4722.74	18.8	Pass
T14	12.0813 - 9.665	Top Girt	7/8	302	-961.00	4591.86	20.9	Pass
T15	9.665 - 7.24875	Top Girt	7/8	314	-892.86	4466.35	20.0	Pass
T16	7.24875 - 4.8325	Top Girt	7/8	329	-788.28	4345.92	18.1	Pass
T17	4.8325 - 2.41625	Top Girt	7/8	344	-818.74	4230.29	19.4	Pass
T18	2.41625 - 0	Top Girt	7/8	359	-769.88	4119.21	18.7	Pass
T1	79.75 - 59.33	Bottom Girt	7/8	8	-1537.47	8047.06	19.1	Pass
T2	59.33 - 39.33	Bottom Girt	7/8	86	-1606.11	6317.44	25.4	Pass
T10	21.83 - 19.33	Bottom Girt	1	251	-1226.97	8508.15	14.4	Pass
T18	2.41625 - 0	Bottom Girt	1	362	3466.30	25446.90	13.6	Pass
							Summary	
						Leg (T1)	68.2	Pass
						Diagonal (T1)	43.9	Pass
						Horizontal (T2)	17.3	Pass
						Secondary Horizontal (T10)	6.4	Pass
						Top Girt (T9)	22.7	Pass
						Bottom Girt (T2)	25.4	Pass
						RATING =	**68.2**	**Pass**

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ADDITIONAL CALCULATIONS

SITE NUMBER: CT2168 8/11/2022
SITE NAME: MT TOM WALLINGFORD
FA CODE: 10035084

Tower Reactions

Axial Load $P := 13.5 \cdot kip$
Shear $H := 8.3 \cdot kip$
Moment $M := 530.4 \cdot ft \cdot kip$

Foundation Information

Depth of Pad $D := 4.5 \cdot ft$
Width of Pad $W := 14.0 \cdot ft$
Length of Pad $L := 14.0 \cdot ft$
Thickness of Pad $T := 4.5 \cdot ft$
Pier Diameter $P_{dia} := 0.0 \cdot ft$
Pier Extend above Grade $E := 0.0 \cdot ft$

Material Property

Rebar Tensile $F_Y := 60 \cdot ksi$
Concrete Strength $f'_c := 3000 \cdot psi$
Unit Weight of Concrete $r_{conc} := 150 \cdot pcf$
Concrete Clear Cover $C_{cov} := 3 \cdot in$

Soil Property

Unit Weight of Soil $r_{soil} := 100 \cdot pcf$
Friction Angle $\varphi := 30°$
Ultimate Bearing $B_{ult} := 10 \cdot ksf$
Base Sliding $\mu := 0.35$
Ground Water Below Grade $G_{water} := 10 \cdot ft$
$\phi_s := 0.75$

$$FS\_Overturning := \frac{Resisting\_Moment}{Overturning\_Moment} \qquad FS\_Overturning = 1.593$$

$Rating\_Overturning = 62.8\%$

$$FS\_Sliding := \frac{\mu \cdot \phi_s \cdot (P + 1.2 \cdot Total\_Weight)}{H} \qquad FS\_Sliding = 5.448$$

$Rating\_Sliding = 18.4\%$

$$FS\_Bearing := \frac{\phi_s \cdot B_{ult}}{Bearing\_Pressure} \qquad FS\_Bearing = 3.387$$

$Rating\_Bearing = 29.5\%$

EXHIBIT 4

May 4, 2022

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

RE:		
	Site Number:	CT2168
	FA Number:	10035084
	PACE Number:	MRCTB062522
	PT Number:	2051A149JN
	Site Name:	MT TOM WALLINGFORD
	Site Address:	23 Wayne Road Wallingford, CT 06492

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) 800-10965 Antennas (78.7"x20.0"x6.9" – Wt. = 109 lbs. /each)
- (3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) RRUS-32 B2 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (3) 4426 B66 RRH's (14.9"x13.2"x5.8" – Wt. = 49 lbs. /each)
- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (2) DC6-48-60-18-8F Surge Arrestors (31.4"x10.2"Ø – Wt. = 29 lbs. /each)
- **(3) QD6616-7 Antennas (72.0"x22.0"x9.6" – Wt. = 130 lbs. /each)**
- **(3) AIR6449 Antennas (30.6"x15.9"x10.6" – Wt. = 82 lbs. /each)**
- **(3) AIR6419 Antennas (31.1"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)**
- **(1) DC9-48-60-24-8C-EV Surge Arrestor (31.4"x10.2" Ø – Wt. = 29 lbs.)**

**Proposed equipment shown in bold*

Mount fabrication drawings prepared by Sabre Industries Towers and Poles, P/N C10857001C, dated December 22, 2015, and SitePro1, P/N MM01, dated May 10, 2010, were used to perform this analysis. HDG conducted a ground audit of the existing antenna mounts on January 17, 2022.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R16.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed 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 1.00 in. An escalated ice thickness of 1.09 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 3; tower is located at the upper half of a hill.
- HDG considers this site to have a spectral response acceleration parameter at short periods, S_S, of 0.183 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.063.
- The mount has been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 1.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing self supporting tower with threaded rods and steel plates tightened around the tower leg. HDG considers the threaded rods as the governing connection members

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

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing Mount Rating	6	LC8	35%	**PASS**

Reference Documents:

- Fabrication drawings prepared by Sabre Industries Tower and Poles, P/N C10857001C, dated December 22, 2015.
- Fabrication drawings prepared by SitePro1 P/N MM01, dated May 10, 2010.

This determination was based on the following limitations and assumptions:

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

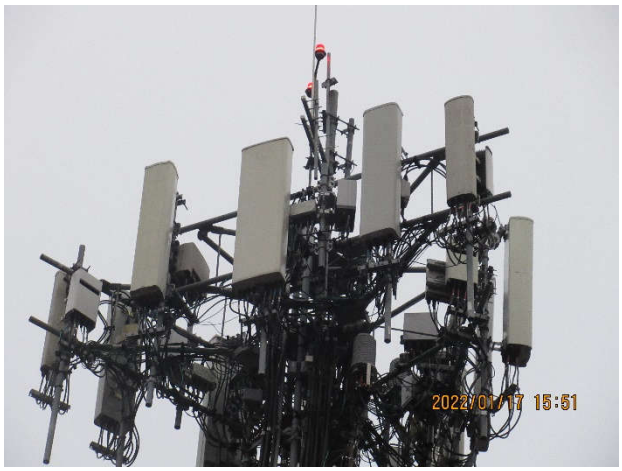
Please feel free to contact our office should you have any questions.

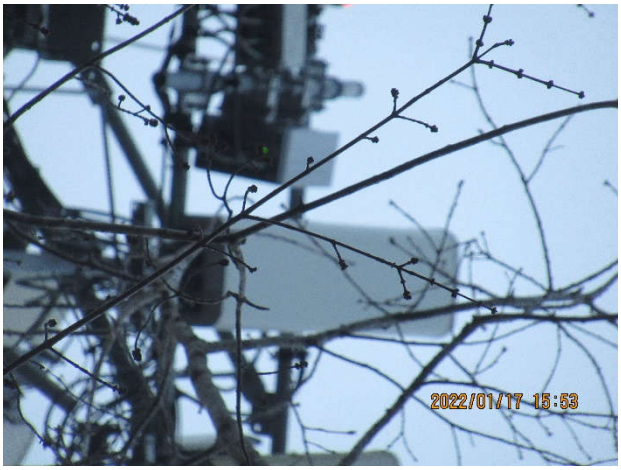
Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:

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Wind & Ice
Calculations

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

Site Code/Name		CT2168 - MT TOM WALLINGFORD		
State		Connecticut		
County		New Haven		*Reference*
Structure Class		II		*Table 2-1*
Exposure Category		C		*Section 2.6.5.1.2*
Topographic Category		3 - Kzt = 1.37		*Section 2.6.6.2.1*
Mean Elevation of base of structure	z_s	391.57	ft	*ASCE7-16 Hazards*
Height Above Ground	z	78	ft	

Wind Parameters				
Basic wind speed	V	125	mph	*Appendix N of Connecticut Building Code*
Wind direction probability factor	K_d	0.95		*Section 16.6*
Gust effect factor	G_h	1		*Section 16.6*
Velocity Pressure (Ka = 0.9)		55.49	psf	*Section 2.6.11.6*

Wind & Ice Parameters				
Base windspeed in conjunction with ice, V_i		50	mph	*ASCE7-16 Hazards Tool*
Base Ice thickness	t_i	1.00	in	*ASCE7-16 Hazards Tool*
Ice Velocity Pressure (Ka = 0.9)	q_{ice}	8.88	psf	*Section 2.6.11.6*
Design Ice Thickness	t_{iz}	1.22	in	*Section 2.6.10*

Seismic Parameters				
Site Soil Class		D - Default		*Table 2-10*
Seismic Design Category		B		*ASCE7-16 Hazards Tool*
Spectral Response at Short Periods	S_s	0.183		*Appendix N of Connecticut Building Code*
Spectral Response at 1sec	S_1	0.063		*Appendix N of Connecticut Building Code*
Long Period Transition Period	T_L	6		*ASCE7-16 Hazards Tool*
Seismic Importance Factor	I_s	1		*Table 2-3*
Response modification coefficient	R	2		*Section 16.7*
Short-Period Site Coefficient	F_a	1.6		*Table 2-11*
Design Spectral Response at Short Periods	S_{DS}	0.195		*Section 2.7.5*
Seismic Response Coefficient	C_s	0.098		*Section 2.7.7.1*

ALPHA SECTOR

Appurtenance properties						Wind		Ice	Seismic
Manufacturer	Model	L [in]	W [in]	D [in]	Weight [lbs]	0^o [lbs]	90^o [lbs]	IceWeight [lbs]	E_H [lbs]
Quintel	QD6616-7	72.0	22.0	9.6	130.0	753.4	377.3	228.8	12.7
Ericsson	AIR6449 + AIR 6419 Stacked	61.7	16.1	10.6	148.0	482.0	339.6	159.7	14.4
Kathrein	80010965	78.7	20.0	6.9	109.0	766.5	323.7	221.5	10.6
Ericsson	4478 B14	18.1	13.4	8.3	60.0	69.5	112.1	40.6	5.9
Ericsson	RRUS-32 B2	27.2	12.1	7.0	60.0	92.6	152.2	53.5	5.9
Ericsson	4426 B66	14.9	13.2	5.8	49.0	90.9	40.1	31.2	4.8
Ericsson	4449 B5/B12	17.9	13.2	9.4	73.0	77.8	109.3	41.3	7.1
Ericsson	RRUS-32 B30	27.2	12.1	7.0	60.0	92.6	152.2	53.5	5.9
Raycap	DC6-48-60-18-8F	31.4	10.2	10.2	29.0	151.3	151.3	63.2	2.8

BETA SECTOR

Appurtenance properties						Wind		Ice	Seismic
Manufacturer	Model	L [in]	W [in]	D [in]	Weight [lbs]	0^o [lbs]	90^o [lbs]	IceWeight [lbs]	E_H [lbs]
Quintel	QD6616-7	72.0	22.0	9.6	130.0	471.3	659.3	228.8	12.7
Ericsson	AIR6449 + AIR 6419 Stacked	61.7	16.1	10.6	148.0	375.2	446.4	159.7	14.4
Kathrein	80010965	78.7	20.0	6.9	109.0	434.4	655.8	221.5	10.6
Ericsson	4478 B14	18.1	13.4	8.3	60.0	101.5	80.1	40.6	5.9
Ericsson	RRUS-32 B2	27.2	12.1	7.0	60.0	137.3	107.5	53.5	5.9
Ericsson	4426 B66	14.9	13.2	5.8	49.0	52.8	78.2	31.2	4.8
Ericsson	4449 B5/B12	17.9	13.2	9.4	73.0	101.4	85.7	41.3	7.1
Ericsson	RRUS-32 B30	27.2	12.1	7.0	60.0	137.3	107.5	53.5	5.9
Raycap	DC6-48-60-18-8F	31.4	10.2	10.2	29.0	151.3	151.3	63.2	2.8

GAMMA SECTOR

Appurtenance properties						Wind		Ice	Seismic
Manufacturer	Model	L [in]	W [in]	D [in]	Weight [lbs]	0^o [lbs]	90^o [lbs]	IceWeight [lbs]	E_H [lbs]
Quintel	QD6616-7	72.0	22.0	9.6	130.0	471.3	659.3	228.8	12.7
Ericsson	AIR6449 + AIR 6419 Stacked	61.7	16.1	10.6	148.0	375.2	446.4	159.7	14.4
Kathrein	80010965	78.7	20.0	6.9	109.0	434.4	655.8	221.5	10.6
Ericsson	4478 B14	18.1	13.4	8.3	60.0	101.5	80.1	40.6	5.9
Ericsson	RRUS-32 B2	27.2	12.1	7.0	60.0	137.3	107.5	53.5	5.9
Ericsson	4426 B66	14.9	13.2	5.8	49.0	52.8	78.2	31.2	4.8
Ericsson	4449 B5/B12	17.9	13.2	9.4	73.0	101.4	85.7	41.3	7.1
Ericsson	RRUS-32 B30	27.2	12.1	7.0	60.0	137.3	107.5	53.5	5.9
Raycap	DC9-48-60-24-8C-EV	31.4	10.2	10.2	29.0	151.3	151.3	63.2	2.8

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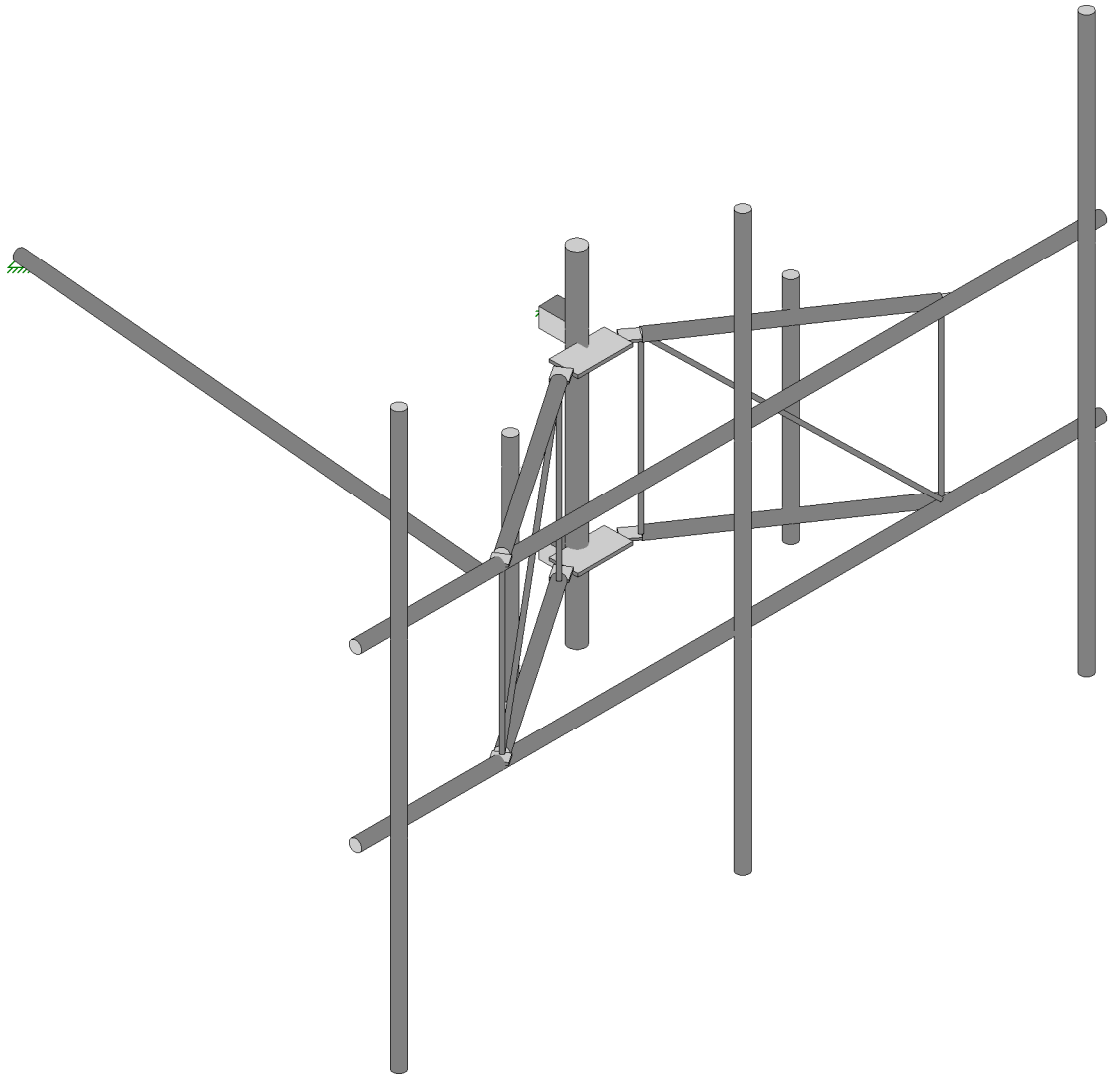
Mount Calculations
(Existing Conditions)



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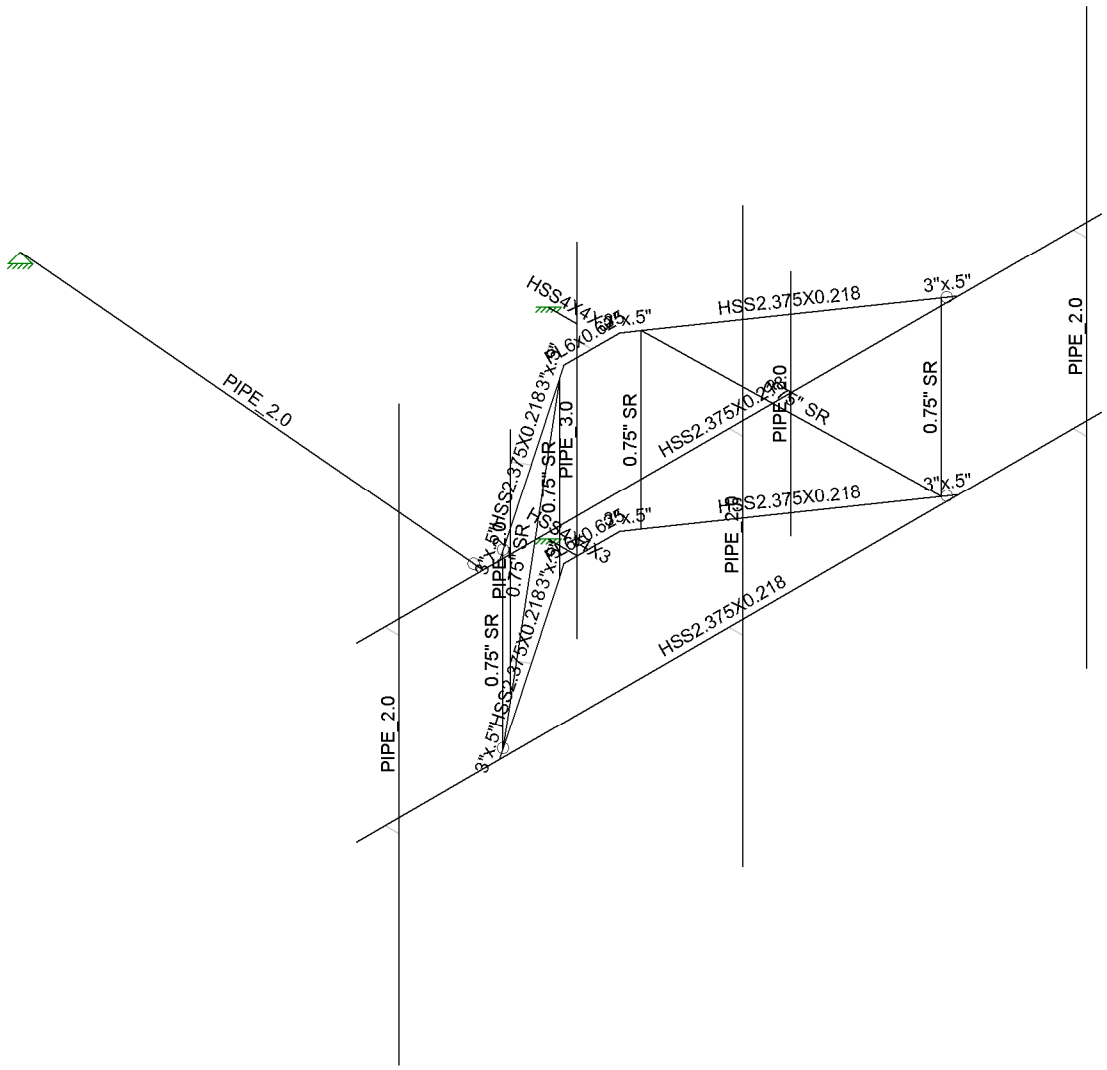

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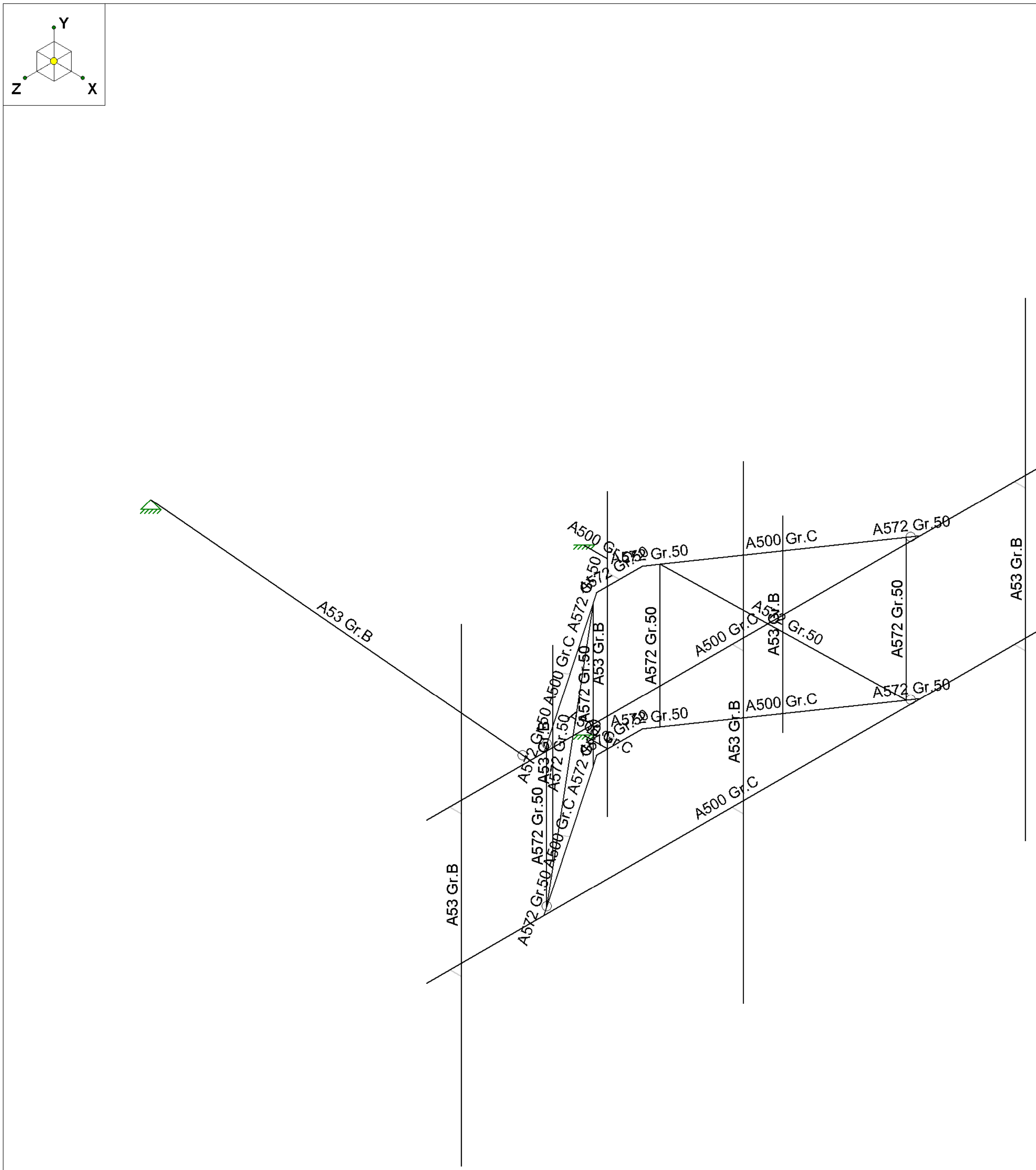

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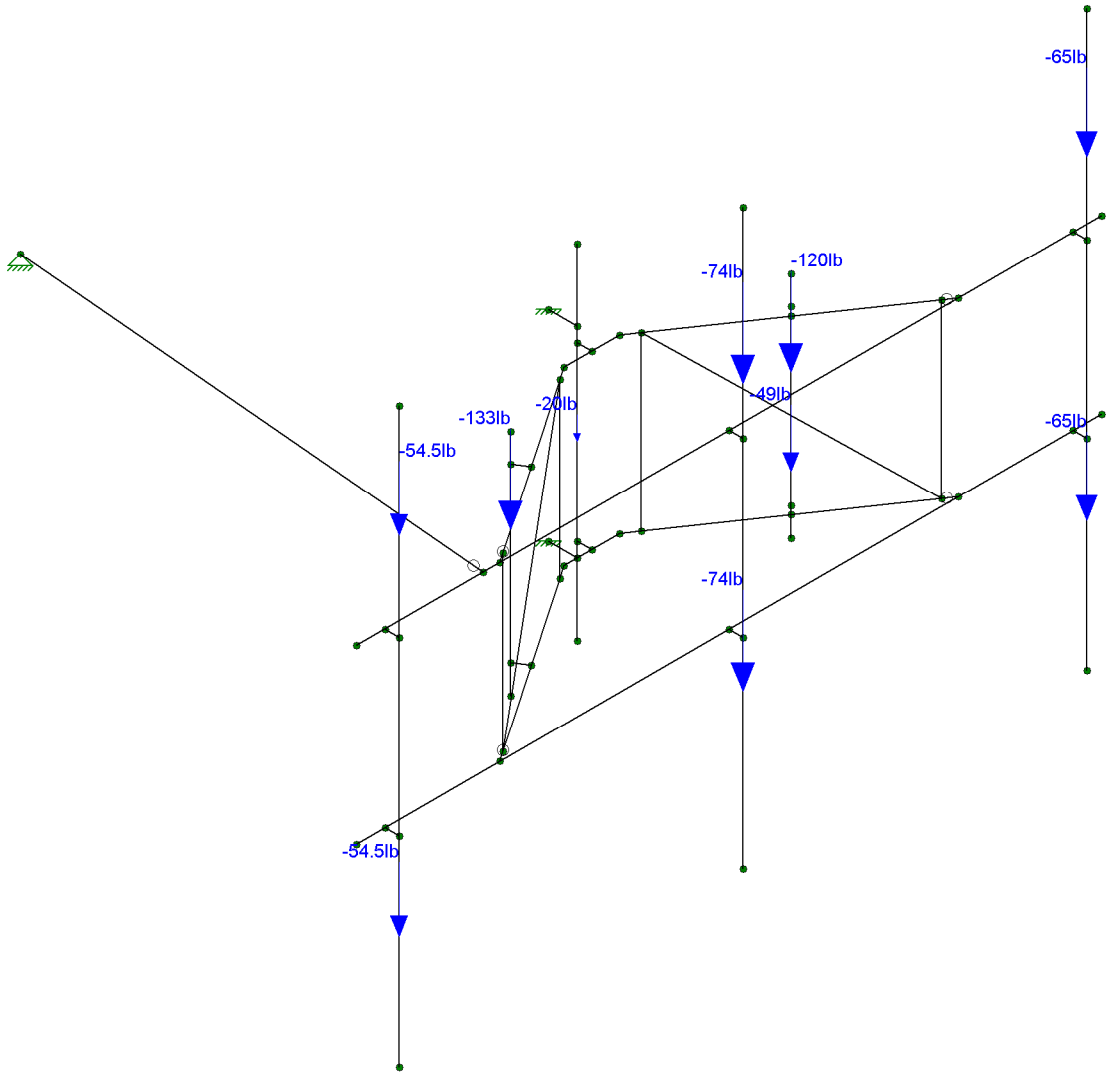

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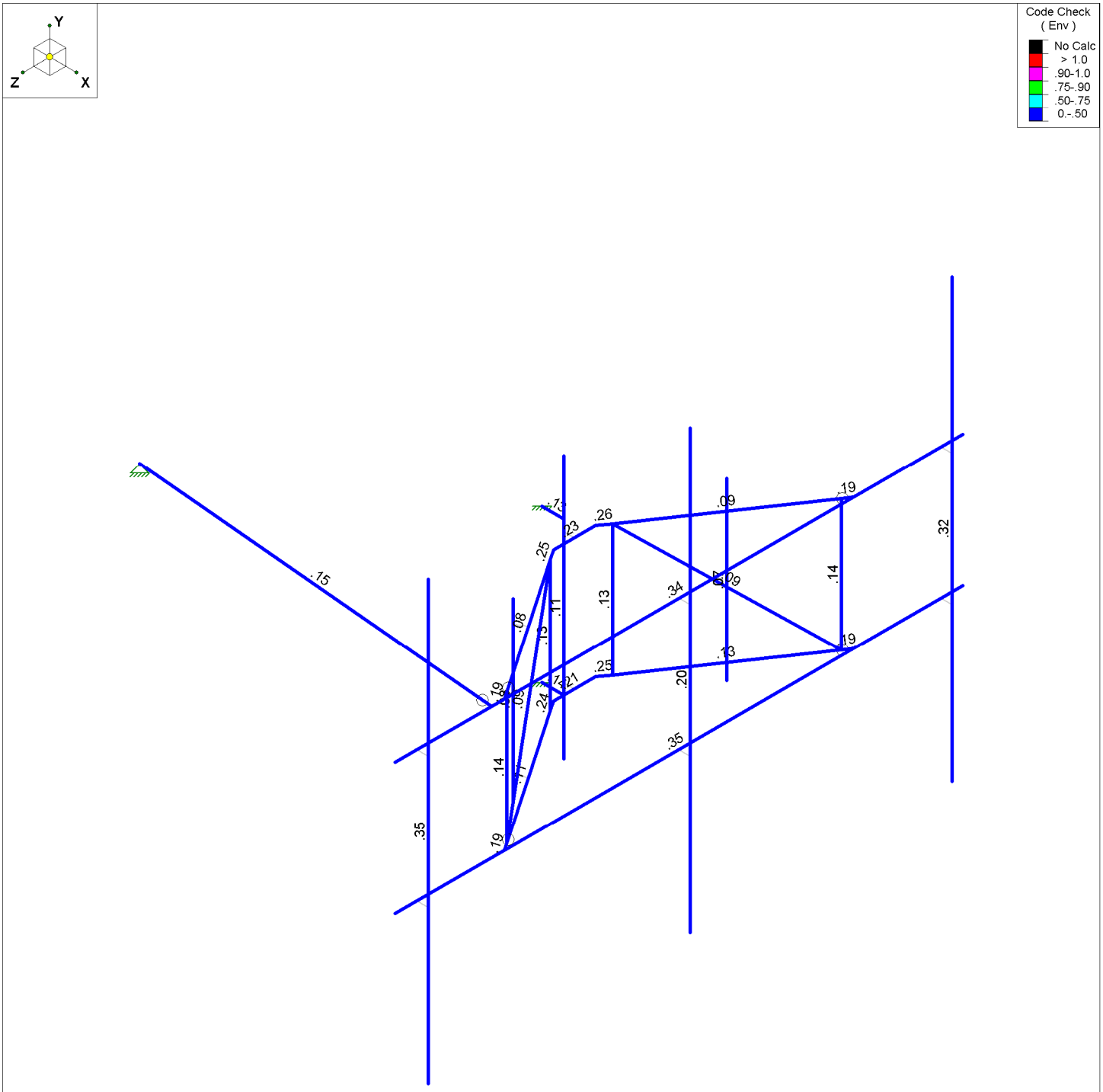

Member Code Checks Displayed (Enveloped)
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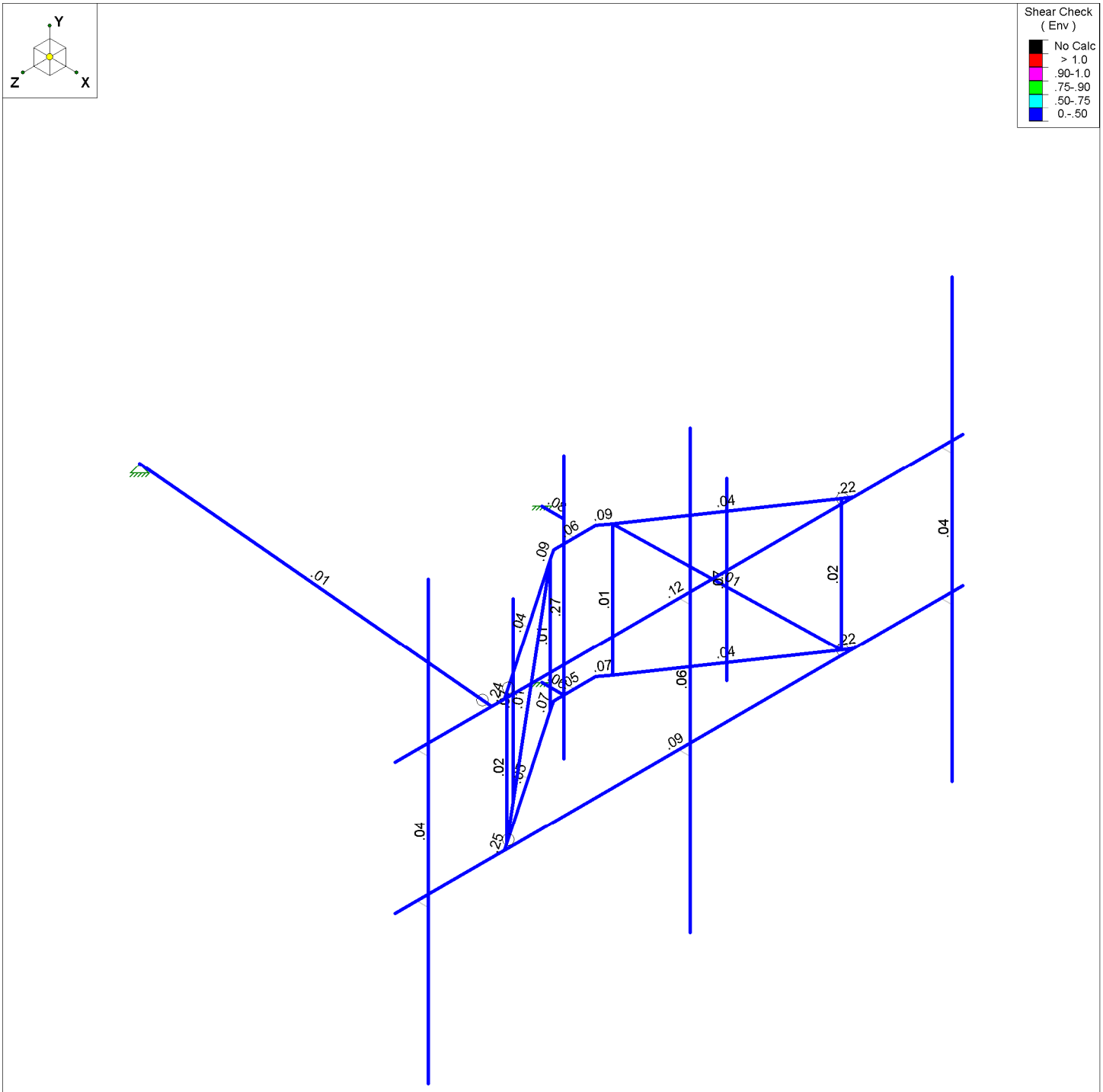

Member Shear Checks Displayed (Enveloped)
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(Global) Model Settings

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

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

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

(Global) Model Settings, Continued

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

Hot Rolled Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mount Pipes	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
2	Stabilizer	PIPE_2.0	HBrace	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
3	Bracing	0.75" SR	VBrace	BAR	A572 Gr.50	Typical	.442	.016	.016	.031
4	Standoff Arm	HSS2.375X0.2..	Beam	Pipe	A500 Gr.C	Typical	1.39	.824	.824	1.65
5	Frame Rail	HSS2.375X0.2..	Beam	Pipe	A500 Gr.C	Typical	1.39	.824	.824	1.65
6	Plate	3"x.5"	Beam	RECT	A572 Gr.50	Typical	1.5	.031	1.125	.112
7	Connection Plate	PL6x0.625	Beam	RECT	A572 Gr.50	Typical	3.75	.122	11.25	.456
8	PIPE_3.0	PIPE_3.0	None	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
9	HSS4X4X3	HSS4X4X3	None	None	A500 Gr.C	Typical	2.58	6.21	6.21	10

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N36						
2	N37						
3	N44	Reaction	Reaction	Reaction			
4	N57						

Joint Boundary Conditions (Continued)

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
5	N58						
6	N59						
7	N60						
8	N61	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
9	N62	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N3	N6			Standoff Arm	Beam	Pipe	A500 Gr.C	Typical
2	M2	N4	N5			Standoff Arm	Beam	Pipe	A500 Gr.C	Typical
3	M3	N6	N5			Bracing	VBrace	BAR	A572 Gr.50	Typical
4	M4	N3	N4			Bracing	VBrace	BAR	A572 Gr.50	Typical
5	M5	N4	N6			Bracing	VBrace	BAR	A572 Gr.50	Typical
6	M6	N12	N10			Frame Rail	Beam	Pipe	A500 Gr.C	Typical
7	M7	N11	N9			Frame Rail	Beam	Pipe	A500 Gr.C	Typical
8	M8	N16	N15			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
9	M9	N5	N17		90	Plate	Beam	RECT	A572 Gr.50	Typical
10	M10	N6	N18		90	Plate	Beam	RECT	A572 Gr.50	Typical
11	M11	N2	N4		90	Plate	Beam	RECT	A572 Gr.50	Typical
12	M12	N1	N3		90	Plate	Beam	RECT	A572 Gr.50	Typical
13	M13	N19	N22			Standoff Arm	Beam	Pipe	A500 Gr.C	Typical
14	M14	N20	N21			Standoff Arm	Beam	Pipe	A500 Gr.C	Typical
15	M15	N22	N21			Bracing	VBrace	BAR	A572 Gr.50	Typical
16	M16	N19	N20			Bracing	VBrace	BAR	A572 Gr.50	Typical
17	M17	N20	N22			Bracing	VBrace	BAR	A572 Gr.50	Typical
18	M18	N21	N23		90	Plate	Beam	RECT	A572 Gr.50	Typical
19	M19	N22	N24		90	Plate	Beam	RECT	A572 Gr.50	Typical
20	M20	N8	N20		90	Plate	Beam	RECT	A572 Gr.50	Typical
21	M21	N7	N19		90	Plate	Beam	RECT	A572 Gr.50	Typical
22	M22	N29	N28			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
23	M23	N33	N32			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
24	M24	N8	N2		90	Connection Pl...	Beam	RECT	A572 Gr.50	Typical
25	M25	N7	N1		90	Connection Pl...	Beam	RECT	A572 Gr.50	Typical
26	M26	N34	N36			RIGID	None	None	RIGID	Typical
27	M27	N35	N37			RIGID	None	None	RIGID	Typical
28	M28	N25	N44			Stabilizer	HBrace	Pipe	A53 Gr.B	Typical
29	M29	N39	N41			RIGID	None	None	RIGID	Typical
30	M30	N38	N40			RIGID	None	None	RIGID	Typical
31	M31	N42	N43			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
32	M32	N49	N30			RIGID	None	None	RIGID	Typical
33	M33	N50	N31			RIGID	None	None	RIGID	Typical
34	M34	N45	N13			RIGID	None	None	RIGID	Typical
35	M35	N46	N14			RIGID	None	None	RIGID	Typical
36	M36	N47	N26			RIGID	None	None	RIGID	Typical
37	M37	N48	N27			RIGID	None	None	RIGID	Typical
38	M38	N52	N51			RIGID	None	None	RIGID	Typical
39	M39	N54	N53			RIGID	None	None	RIGID	Typical
40	M40	N55	N56			Mount Pipes	Column	Pipe	A53 Gr.B	Typical
41	M41	N57	N58			PIPE_3.0	None	None	A53 Gr.B	Typical
42	M42	N60	N62			HSS4X4X3	None	None	A500 Gr.C	Typical
43	M43	N59	N61			HSS4X4X3	None	None	A500 Gr.C	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes				None
2	M2						Yes				None
3	M3						Yes	** NA **			None
4	M4						Yes	** NA **			None
5	M5						Yes	** NA **			None
6	M6						Yes				None
7	M7						Yes				None
8	M8						Yes	** NA **			None
9	M9		BenPIN				Yes				None
10	M10		BenPIN				Yes				None
11	M11						Yes				None
12	M12						Yes				None
13	M13						Yes				None
14	M14						Yes				None
15	M15						Yes	** NA **			None
16	M16						Yes	** NA **			None
17	M17						Yes	** NA **			None
18	M18		BenPIN				Yes				None
19	M19		BenPIN				Yes				None
20	M20						Yes				None
21	M21						Yes				None
22	M22						Yes	** NA **			None
23	M23						Yes	** NA **			None
24	M24						Yes				None
25	M25						Yes				None
26	M26						Yes	** NA **			None
27	M27						Yes	** NA **			None
28	M28	BenPIN					Yes	** NA **			None
29	M29						Yes	** NA **			None
30	M30						Yes	** NA **			None
31	M31						Yes	** NA **			None
32	M32						Yes	** NA **			None
33	M33						Yes	** NA **			None
34	M34						Yes	** NA **			None
35	M35						Yes	** NA **			None
36	M36						Yes	** NA **			None
37	M37						Yes	** NA **			None
38	M38						Yes	** NA **			None
39	M39						Yes	** NA **			None
40	M40						Yes	** NA **			None
41	M41						Yes	** NA **			None
42	M42						Yes	** NA **			None
43	M43						Yes	** NA **			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Standoff Arm	45.25			Lbyy						Lateral
2	M2	Standoff Arm	45.25			Lbyy						Lateral
3	M3	Bracing	36						.7	.7		Lateral
4	M4	Bracing	36						.7	.7		Lateral
5	M5	Bracing	57.824						.7	.7		Lateral
6	M6	Frame Rail	156	96		Lbyy						Lateral
7	M7	Frame Rail	156	96		Lbyy						Lateral
8	M8	Mount Pipes	120									Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
9	M9	Plate	2.5			Lbyy						Lateral
10	M10	Plate	2.5			Lbyy						Lateral
11	M11	Plate	3.312			Lbyy						Lateral
12	M12	Plate	3.312			Lbyy						Lateral
13	M13	Standoff Arm	45.25			Lbyy						Lateral
14	M14	Standoff Arm	45.25			Lbyy						Lateral
15	M15	Bracing	36						.7	.7		Lateral
16	M16	Bracing	36						.7	.7		Lateral
17	M17	Bracing	57.824						.7	.7		Lateral
18	M18	Plate	2.5			Lbyy						Lateral
19	M19	Plate	2.5			Lbyy						Lateral
20	M20	Plate	3.313			Lbyy						Lateral
21	M21	Plate	3.313			Lbyy						Lateral
22	M22	Mount Pipes	120									Lateral
23	M23	Mount Pipes	120									Lateral
24	M24	Connection ...	11.562									Lateral
25	M25	Connection ...	11.562									Lateral
26	M28	Stabilizer	120.655									Lateral
27	M31	Mount Pipes	48									Lateral
28	M40	Mount Pipes	48									Lateral
29	M41	PIPE_3.0	72									Lateral
30	M42	HSS4X4X3	6			Lbyy						Lateral
31	M43	HSS4X4X3	6			Lbyy						Lateral

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Self We	DL		-1.1						
2	We	DL					12			
3	Ice We	DL					12	19		
4	W0	WL					12	19		
5	W30	WL					24	38		
6	W60	WL					24	38		
7	W90	WL					12	19		
8	W120	WL					24	38		
9	W150	WL					24	38		
10	W0 + Ice	WL					12	19		
11	W30 + Ice	WL					24	38		
12	W60 + Ice	WL					24	38		
13	W90 + Ice	WL					12	19		
14	W120 + Ice	WL					24	38		
15	W150 + Ice	WL					24	38		
16	500lbs LM 1	LL				1				
17	500lbs LM 2	LL				1				
18	500lbs LM 3	LL				1				
19	500lbs LM 4	LL								
20	250lbs LV 5	LL				1				
21	250lbs LV 6	LL				1				
22	E0	EL	-.1				12			
23	E90	EL			.1		12			

Load Combinations

	Description	S...	P...	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	Dead	Yes	Y		1	1.4	2	1.4	0		0													
2	Dead + Wind 0	Yes	Y		1	1.2	2	1.2	4	1	0													
3	Dead + Wind 30	Yes	Y		1	1.2	2	1.2	5	1	0													
4	Dead + Wind 60	Yes	Y		1	1.2	2	1.2	6	1	0													
5	Dead + Wind 90	Yes	Y		1	1.2	2	1.2	7	1	0													
6	Dead + Wind 120	Yes	Y		1	1.2	2	1.2	8	1	0													
7	Dead + Wind 150	Yes	Y		1	1.2	2	1.2	9	1	0													
8	Dead + Wind 180	Yes	Y		1	1.2	2	1.2	4	-1	0													
9	Dead + Wind 210	Yes	Y		1	1.2	2	1.2	5	-1	0													
10	Dead + Wind 240	Yes	Y		1	1.2	2	1.2	6	-1	0													
11	Dead + Wind 270	Yes	Y		1	1.2	2	1.2	7	-1	0													
12	Dead + Wind 300	Yes	Y		1	1.2	2	1.2	8	-1	0													
13	Dead + Wind 330	Yes	Y		1	1.2	2	1.2	9	-1	0													
14	Dead + Ice + Wind Ice 0	Yes	Y		1	1.2	2	1.2	10	1	3	1												
15	Dead + Ice + Wind Ice 30	Yes	Y		1	1.2	2	1.2	11	1	3	1												
16	Dead + Ice + Wind Ice 60	Yes	Y		1	1.2	2	1.2	12	1	3	1												
17	Dead + Ice + Wind Ice 90	Yes	Y		1	1.2	2	1.2	13	1	3	1												
18	Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	14	1	3	1												
19	Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	15	1	3	1												
20	Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	10	-1	3	1												
21	Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	11	-1	3	1												
22	Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	12	-1	3	1												
23	Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	13	-1	3	1												
24	Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	14	-1	3	1												
25	Dead + Ice + Wind Ice ...	Yes	Y		1	1.2	2	1.2	15	-1	3	1												
26	Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	4	.058												
27	Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	5	.058												
28	Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	6	.058												
29	Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	7	.058												
30	Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	8	.058												
31	Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	9	.058												
32	Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	4	-.0...												
33	Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	5	-.0...												
34	Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	6	-.0...												
35	Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	7	-.0...												
36	Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	8	-.0...												
37	Dead + LM5001 + Wred...	Yes	Y		1	1.2	2	1.2	16	1.5	9	-.0...												
38	Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	4	.058												
39	Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	5	.058												
40	Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	6	.058												
41	Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	7	.058												
42	Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	8	.058												
43	Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	9	.058												
44	Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	4	-.0...												
45	Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	5	-.0...												
46	Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	6	-.0...												
47	Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	7	-.0...												
48	Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	8	-.0...												
49	Dead + LM5002 + Wred...	Yes	Y		1	1.2	2	1.2	17	1.5	9	-.0...												
50	Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	4	.058												
51	Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	5	.058												
52	Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	6	.058												
53	Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	7	.058												
54	Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	8	.058												
55	Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	9	.058												
56	Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	4	-.0...												
57	Dead + LM5003 + Wred...	Yes	Y		1	1.2	2	1.2	18	1.5	5	-.0...												

Load Combinations (Continued)

	Description	S...	P...	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
58	Dead + LM5003 + Wred..	Yes	Y		1	1.2	2	1.2	18	1.5	6	-.0...												
59	Dead + LM5003 + Wred..	Yes	Y		1	1.2	2	1.2	18	1.5	7	-.0...												
60	Dead + LM5003 + Wred..	Yes	Y		1	1.2	2	1.2	18	1.5	8	-.0...												
61	Dead + LM5003 + Wred..	Yes	Y		1	1.2	2	1.2	18	1.5	9	-.0...												
62	Dead + LM5004 + Wred..	Yes	Y		1	1.2	2	1.2	19	1.5	4	.058												
63	Dead + LM5004 + Wred..	Yes	Y		1	1.2	2	1.2	19	1.5	5	.058												
64	Dead + LM5004 + Wred..	Yes	Y		1	1.2	2	1.2	19	1.5	6	.058												
65	Dead + LM5004 + Wred..	Yes	Y		1	1.2	2	1.2	19	1.5	7	.058												
66	Dead + LM5004 + Wred..	Yes	Y		1	1.2	2	1.2	19	1.5	8	.058												
67	Dead + LM5004 + Wred..	Yes	Y		1	1.2	2	1.2	19	1.5	9	.058												
68	Dead + LM5004 + Wred..	Yes	Y		1	1.2	2	1.2	19	1.5	4	-.0...												
69	Dead + LM5004 + Wred..	Yes	Y		1	1.2	2	1.2	19	1.5	5	-.0...												
70	Dead + LM5004 + Wred..	Yes	Y		1	1.2	2	1.2	19	1.5	6	-.0...												
71	Dead + LM5004 + Wred..	Yes	Y		1	1.2	2	1.2	19	1.5	7	-.0...												
72	Dead + LM5004 + Wred..	Yes	Y		1	1.2	2	1.2	19	1.5	8	-.0...												
73	Dead + LM5004 + Wred..	Yes	Y		1	1.2	2	1.2	19	1.5	9	-.0...												
74	Dead + LV2505	Yes	Y		1	1.2	2	1.2	20	1.5	0													
75	Dead + LV2506	Yes	Y		1	1.2	2	1.2	21	1.5	0													
76	Service 60mph Wind 0	Yes	Y		1	1	2	1	4	.23	0													
77	(1.2 + 0.2SDS)Dead + 1..	Yes	Y		1	1.2..	2	1.2..	22	1	23													
78	(1.2 + 0.2SDS)Dead + 1..	Yes	Y		1	1.2..	2	1.2..	22	.866	23	.5												
79	(1.2 + 0.2SDS)Dead + 1..	Yes	Y		1	1.2..	2	1.2..	22	.5	23	.866												
80	(1.2 + 0.2SDS)Dead + 1..	Yes	Y		1	1.2..	2	1.2..	22		23	1												
81	(1.2 + 0.2SDS)Dead + 1..	Yes	Y		1	1.2..	2	1.2..	22	-.5	23	.866												
82	(1.2 + 0.2SDS)Dead + 1..	Yes	Y		1	1.2..	2	1.2..	22	-.8...	23	.5												
83	(1.2 + 0.2SDS)Dead + 1..	Yes	Y		1	1.2..	2	1.2..	22	-1	23													
84	(1.2 + 0.2SDS)Dead + 1..	Yes	Y		1	1.2..	2	1.2..	22	-.8...	23	-.5												
85	(1.2 + 0.2SDS)Dead + 1..	Yes	Y		1	1.2..	2	1.2..	22	-.5	23	-.8...												
86	(1.2 + 0.2SDS)Dead + 1..	Yes	Y		1	1.2..	2	1.2..	22		23	-1												
87	(1.2 + 0.2SDS)Dead + 1..	Yes	Y		1	1.2..	2	1.2..	22	.5	23	-.8...												
88	(1.2 + 0.2SDS)Dead + 1..	Yes	Y		1	1.2..	2	1.2..	22	.866	23	-.5												

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-in]	LC	MY [k-in]	LC	MZ [k-in]	LC
1	N44	max	1276.15	4	149.565	4	177.753	6	0	88	0	88	0	88
2		min	-1269.16	10	-102.401	10	-175.836	12	0	1	0	1	0	1
3	N61	max	2697.921	2	1566.04	25	1333.977	59	2.498	11	17.256	6	7.402	21
4		min	-904.639	8	256.145	7	-1423.6	29	-2.469	5	-16.808	12	1.54	3
5	N62	max	1330.312	13	1558.748	20	1482.019	11	4.044	5	11.909	6	7.99	25
6		min	-3125.228	7	315.934	2	-1394.915	5	-3.999	11	-12.52	12	.751	7
7	Totals:	max	3686.933	2	2960.608	19	2583.974	11						
8		min	-3686.931	8	1252.942	76	-2583.974	5						

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

	Member	Shape	Code ...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [...	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	M6	HSS2.375X0...	.353	125.125	8	.087	29.25		3	7649.232	57546	39.744	39.744	1...	H1-1b
2	M23	PIPE_2.0	.347	41.25	8	.045	41.25		8	9836.597	32130	22.459	22.459	1...	H1-1b
3	M7	HSS2.375X0...	.343	125.125	8	.125	29.25		7	7649.232	57546	39.744	39.744	1...	H1-1b
4	M22	PIPE_2.0	.321	42.5	34	.044	41.25		8	9836.597	32130	22.459	22.459	4...	H1-1b
5	M11	3"x.5"	.259	3.312	26	.092	0	y	12	64929.826	67500	8.46	50.625	1...	H1-1b
6	M20	3"x.5"	.248	3.313	56	.091	0	y	5	64929.826	67500	8.46	50.625	1...	H1-1b
7	M12	3"x.5"	.248	3.312	30	.071	0	y	25	64929.826	67500	8.46	50.625	1...	H1-1b
8	M21	3"x.5"	.244	3.313	60	.069	0	y	15	64929.826	67500	8.46	50.625	1...	H1-1b
9	M24	PL6x0.625	.226	5.781	31	.058	0	y	7	124976.9...	168750	26.367	253.125	1...	H1-1b

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

	Member	Shape	Code ...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [...	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn
10	M25	PL6x0.625	.211	5.781	27	.055	5.781	y	14	124976.9...	168750	26.367	253.125	1...	H1-1b
11	M8	PIPE_2.0	.199	42.5	7	.060	42.5		6	9836.597	32130	22.459	22.459	1...	H1-1b
12	M10	3"x.5"	.192	0	33	.219	0	y	2	66023.816	67500	8.46	50.625	1...	H1-1b
13	M18	3"x.5"	.192	0	61	.239	0	y	8	66023.816	67500	8.46	50.625	1...	H1-1b
14	M9	3"x.5"	.189	0	27	.222	0	y	8	66023.816	67500	8.46	50.625	1...	H1-1b
15	M19	3"x.5"	.188	0	55	.250	0	y	2	66023.816	67500	8.46	50.625	1...	H1-1b
16	M28	PIPE_2.0	.152	60.328	5	.007	120.6...		5	9730.011	32130	22.459	22.459	1...	H1-1b
17	M43	HSS4X4X3	.141	6	12	.064	0	z	5	106704.5...	106812	151.938	151.938	2...	H1-1b
18	M3	0.75" SR	.139	0	27	.021	36		12	5525.431	19880.37	2.982	2.982	2...	H1-1b*
19	M15	0.75" SR	.138	0	60	.022	36		4	5525.431	19880.37	2.982	2.982	1...	H1-1b*
20	M4	0.75" SR	.131	0	28	.005	0		4	5525.431	19880.37	2.982	2.982	2...	H1-1b*
21	M1	HSS2.375X0...	.130	0	13	.039	45.25		13	45615.157	57546	39.744	39.744	1...	H1-1b
22	M42	HSS4X4X3	.129	6	12	.081	0	z	11	106704.5...	106812	151.938	151.938	1...	H1-1b
23	M16	0.75" SR	.128	0	60	.005	0		12	5525.431	19880.37	2.982	2.982	2...	H1-1b*
24	M13	HSS2.375X0...	.113	0	12	.047	22.625		3	45615.157	57546	39.744	39.744	1...	H1-1b
25	M41	PIPE_3.0	.107	15	7	.275	57		13	53775.839	65205	68.985	68.985	2...	H1-1b
26	M17	0.75" SR	.095	57.824	23	.013	57.824		13	2141.715	19880.37	2.982	2.982	1...	H1-1b
27	M5	0.75" SR	.094	57.824	17	.010	57.824		4	2141.715	19880.37	2.982	2.982	1...	H1-1b
28	M2	HSS2.375X0...	.088	0	13	.041	45.25		8	45615.157	57546	39.744	39.744	1...	H1-1b
29	M14	HSS2.375X0...	.078	22.625	13	.044	45.25		8	45615.157	57546	39.744	39.744	1...	H1-1b
30	M40	PIPE_2.0	.076	18	11	.074	6		4	26521.424	32130	22.459	22.459	1...	H1-1b
31	M31	PIPE_2.0	.074	18	5	.072	6		12	26521.424	32130	22.459	22.459	1...	H1-1b

HUDSON
Design Group LLC

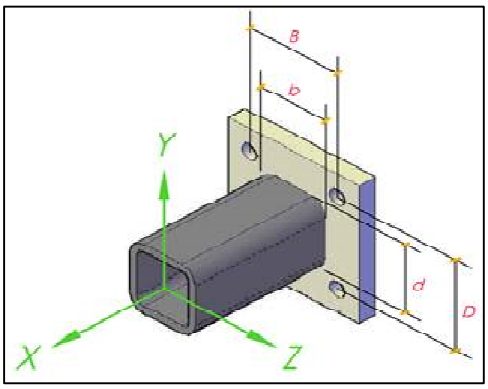
Connection Check

SITE DETAILS

Site Name/Code	CT2168 - MT TOM WALLINGFORD
Date	05/04/2022
Engineer	PS

CONNECTION PARAMETERS

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



Connection Sketch/Photo

FLANGE LOADS

Loadcase #		**12**	
Bending Moment	Mzz	**3.41**	*kips-in*
Bending Moment	Myy	**16.81**	*kips-in*
Torsional Moment	Mxx	**2.37**	*kips-in*
Shear Force	Vy	**1.10**	*kips*
Shear Force	Vz	**1.23**	*kips*
Axial Force	Px	**1.69**	*kips*

BOLT CHECK

Bolt Tension Capacity

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

ϕR_{nt}= **20.3** *kips*

Bolt Shear Capacity

$\phi R_{nv} = 0.75 * 0.625 * 0.8 * Fub * Ab * Rb$

ϕR_{nv}= **13.8** *kips*

Maximum Bolt Tension

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

T_{ub}= **2.11** *kips*

Maximum Bolt Shear

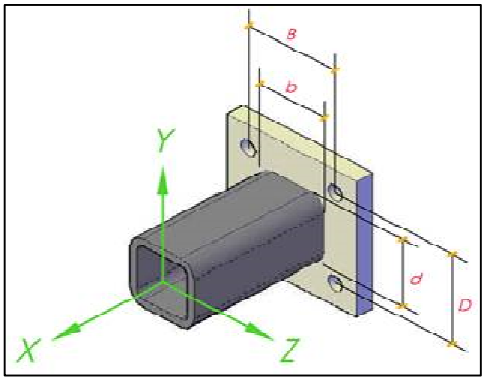
$V_{ub} = \text{sqrt}\left((V_x/4)^2 + (V_y/4)^2\right) + F_{Myy}$

V_{ub}= **0.55** *kips*

Tension Ratio:	**10.4%**	**%**	**Shear Ratio:**	**4.0%**	**%**
	PASS			PASS	
$(T_{ub} / \phi R_{nt})^2 + (V_{ub} / \phi R_{nv})^2 < 1.0$	**OK**		Ratio	**1.2%**	PASS

WELD CHECK

Filler Metal F_{EXX}	**70**	ksi	Are stiffners present? **No**
Weld Thk.	**0.1875**	in	
Base metal F_u	**58**	ksi	
Type of section	**HSS**		
Length of Section [b]	**4.0**	in	
Length of Section [d]	**4.0**	in	
I_{total}	**16.00**	in	
I_p	**85.33**	in^3	
S_z	**21.33**	in^2	
S_y	**21.33**	in^2	
R_{ux}	1.05	kips/in	
R_{uy}	0.12	kips/in	
R_{uz}	0.13	kips/in	
R_u	1.07	kips/in	
Allowable Weld Stress	**4.18**	kips/in	**25.6%** PASS



Connection Sketch

EXHIBIT 5

Radio Frequency Exposure Analysis Report

August 24, 2022

Centerline on behalf of AT&T

AT&T Site Name: MT TOM WALLINGFORD
Site Number: CTL02168
FA#: 10035084
USID: 4563

Site Address: 23 WAYNE ROAD, WALLINGFORD, CT 06492

Michael Fischer, P.E.
Registered Professional Engineer (Electrical)
Connecticut License Number 33928
Expires January 31, 2023

Signed 24 August 2022

Site Compliance Summary

AT&T Compliance Status:	Compliant
Cumulative Calculated Power Density (Ground Level):	9.03871 µW/cm^2
Cumulative General Population % MPE (Ground Level):	0.904%

August 24, 2022

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

RF Exposure Analysis for Site: **MT TOM WALLINGFORD**

Centerline Communications, LLC ("Centerline") was contracted to analyze the proposed AT&T facility at **23 WAYNE ROAD, WALLINGFORD, CT 06492** for the purpose of determining whether the predictive exposure from the proposed facility is within specified federal limits.

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

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

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

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

Calculation Methodology

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

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

Data & Results

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

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

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

Maximum Calculated Cumulative Power Density (Location: approximately 700' southeast of site)

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density ($\mu W/cm^2$)	General Population MPE Limit ($\mu W/cm^2$)	General Population % MPE
AT&T A 1	QUINTEL QD6616-7 V1	700	11.93	78.00	4.00	30.00	1871.85	0.00000	466.67	0.00000
AT&T A 1	QUINTEL QD6616-7 V1	1900	15.11	78.00	4.00	30.00	3888.22	0.00000	1000.00	0.00000
AT&T A 1	QUINTEL QD6616-7 V1	2100	15.50	78.00	4.00	45.00	6386.94	0.00001	1000.00	0.00000
AT&T A 1	QUINTEL QD6616-7 V1	700	11.93	78.00	2.00	30.00	935.93	0.00000	466.67	0.00000
AT&T A 2	ERICSSON AIR6449	3700	23.55	76.50	1.00	108.40	24548.74	0.05491	1000.00	0.00549
AT&T A 3	ERICSSON AIR6419	3450	23.55	79.50	1.00	108.40	24548.74	0.04548	1000.00	0.00455
AT&T A 4	KATHREIN 80010965	700	11.85	78.00	4.00	30.00	1837.30	0.00001	466.67	0.00000
AT&T A 4	KATHREIN 80010965	850	13.55	78.00	4.00	30.00	2717.57	0.00000	566.67	0.00000
AT&T A 4	KATHREIN 80010965	2300	15.75	78.00	4.00	18.00	2706.03	0.00000	1000.00	0.00000
AT&T B 5	QUINTEL QD6616-7 V1	700	11.93	78.00	4.00	30.00	1871.85	0.00037	466.67	0.00008
AT&T B 5	QUINTEL QD6616-7 V1	1900	15.11	78.00	4.00	30.00	3888.22	0.00032	1000.00	0.00003
AT&T B 5	QUINTEL QD6616-7 V1	2100	15.50	78.00	4.00	45.00	6386.94	0.00501	1000.00	0.00050
AT&T B 5	QUINTEL QD6616-7 V1	700	11.93	78.00	2.00	30.00	935.93	0.00018	466.67	0.00004
AT&T B 6	ERICSSON AIR6449	3700	23.55	76.50	1.00	108.40	24548.74	4.87148	1000.00	0.48715
AT&T B 7	ERICSSON AIR6419	3450	23.55	79.50	1.00	108.40	24548.74	4.03434	1000.00	0.40343
AT&T B 8	KATHREIN 80010965	700	11.85	78.00	4.00	30.00	1837.30	0.00096	466.67	0.00021
AT&T B 8	KATHREIN 80010965	850	13.55	78.00	4.00	30.00	2717.57	0.00095	566.67	0.00017
AT&T B 8	KATHREIN 80010965	2300	15.75	78.00	4.00	18.00	2706.03	0.00021	1000.00	0.00002
AT&T C 9	QUINTEL QD6616-7 V1	700	11.93	78.00	4.00	30.00	1871.85	0.00000	466.67	0.00000
AT&T C 9	QUINTEL QD6616-7 V1	1900	15.11	78.00	4.00	30.00	3888.22	0.00000	1000.00	0.00000
AT&T C 9	QUINTEL QD6616-7 V1	2100	15.50	78.00	4.00	45.00	6386.94	0.00000	1000.00	0.00000
AT&T C 9	QUINTEL QD6616-7 V1	700	11.93	78.00	2.00	30.00	935.93	0.00000	466.67	0.00000
AT&T C 10	ERICSSON AIR6449	3700	23.55	76.50	1.00	108.40	24548.74	0.01339	1000.00	0.00134
AT&T C 11	ERICSSON AIR6419	3450	23.55	79.50	1.00	108.40	24548.74	0.01109	1000.00	0.00111
AT&T C 12	KATHREIN 80010965	700	11.85	78.00	4.00	30.00	1837.30	0.00000	466.67	0.00000
AT&T C 12	KATHREIN 80010965	850	13.55	78.00	4.00	30.00	2717.57	0.00000	566.67	0.00000
AT&T C 12	KATHREIN 80010965	2300	15.75	78.00	4.00	18.00	2706.03	0.00000	1000.00	0.00000
Unknown A 13	GENERIC OMNI 3FT	850	2.60	91.00	1.00	55.00	100.08	0.00001	566.67	0.00000
Unknown A 14	GENERIC OMNI 5FT	850	5.96	93.00	1.00	25.00	98.61	0.00000	566.67	0.00000
							Cumulative Power Density:	**9.03871 $\mu W/cm^2$**	**Cumulative % MPE:**	**0.90412%**

Summary

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

Katrina Styx
RF EME Technical Writer
Centerline Communications, LLC

EXHIBIT 6

Proof of Delivery

Dear Customer,

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

Tracking Number

1Z9Y45030323670121

Weight

1.00 LBS

Service

UPS Ground

Shipped / Billed On

08/18/2022

Delivered On

09/09/2022 1:39 P.M.

Delivered To

45 S MAIN ST
310
WALLINGFORD, CT, 06492, US

Received By

MEILE

Left At

Front Desk

Reference Number(s)

CT2168- CSC_MAYOR

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

Sincerely,

UPS

Tracking results provided by UPS: 09/12/2022 1:37 P.M. EST

Proof of Delivery

Dear Customer,

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

Tracking Number

1Z9Y45030303308444

Weight

1.00 LBS

Service

UPS Ground

Shipped / Billed On

08/18/2022

Delivered On

09/09/2022 1:38 P.M.

Delivered To

45 S MAIN ST
G40
WALLINGFORD, CT, 06492, US

Received By

SMITH

Left At

Front Desk

Reference Number(s)

CT2168-CSC_ZEO

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

Sincerely,

UPS

Tracking results provided by UPS: 09/12/2022 1:45 P.M. EST

Proof of Delivery

Dear Customer,

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

Tracking Number
1Z9Y45030334845734

Weight
1.00 LBS

Service

UPS Ground

Shipped / Billed On
08/18/2022

Delivered On

09/09/2022 1:38 P.M.

Delivered To

45 S MAIN ST
G40
WALLINGFORD, CT, 06492, US

Received By

SMITH

Left At
Front Desk

Reference Number(s)
CT2168-CSC_TOWN PLANNER

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

Sincerely,

UPS

Tracking results provided by UPS: 09/12/2022 1:42 P.M. EST

Proof of Delivery

Dear Customer,

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

Tracking Number

1Z9Y45030334314343

Weight

1.00 LBS

Service

UPS Ground

Shipped / Billed On

08/18/2022

Delivered On

09/09/2022 1:33 P.M.

Delivered To

23 WAYNE RD
WALLINGFORD, CT, 06492, US

Left At

Front Door

Reference Number(s)

CT2168-CSC_STEPHEN TRIPP

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

Sincerely,

UPS

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