



SAI Group
12 Industrial Way
Salem, NH 03079
603-421-0470

February 10, 2023

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

Notice of Exempt Modification – New Cingular Wireless PCS, LLC (AT&T) – CT1130
27 Siemon Company Drive, Watertown, CT 06795
N 41.60333333
W 73.11166667

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 135-foot level of the existing 140-foot smokestack at 27 Siemon Company Drive, Watertown, CT. The structure and property are owned by Siemon Realty Company. AT&T now intends to replace six (6) antennas and add three (3) antennas. The new antennas will be installed at the 135-foot level of the smokestack. This modification may include B2, B5, B17, B14, B29, B30, B66 & n77 hardware that is 4G (LTE) and/or 5G NR capable through remote software configuration and either or both services may be turned on or off at various times. As part of this modification, smokestack repairs will be completed per the attached Structural Analysis by ICC Commonwealth dated February 7, 2023.

AT&T Planned Modifications:

Remove:

- (6) Diplexers
- (6) TMAs
- (12) Coax Lines

Remove and Replace:

- (3) POWERWAVE Antennas (REMOVE) - (3) Ericsson AIR 6419 B77G Antennas (REPLACE)
- (3) CCI Antennas (REMOVE) - (3) Ericsson AIR 6449 B77D Antennas (REPLACE)
- (3) Ericsson RRUS-12 B2 (REMOVE) - (3) Ericsson 8843 B2/B66A RRU (REPLACE)

Install New:

- (3) CCI DMP65R-BU6EA-K Antennas
- (1) Ericsson 4478 B14 RRU
- (1) Raycap Surge Unit
- (2) DC Lines
- (1) Fiber Line

Existing to Remain:

- (3) QUINTEL 800-10965 Antennas
- (2) Ericsson 4478 B14 RRU
- (3) Ericsson 4415-B30 RRU
- (3) Ericsson 4449 B5/B12 RRU
- (2) Raycap Surge Units
- (4) DC Lines
- (2) Fiber Lines

AT&T's use of this facility was approved by the Watertown Planning and Zoning Commission on September 7, 2011. This approval included no condition(s) that could feasibly be violated by this modification, including total facility height or mounting restrictions. This modification therefore complies with the aforementioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 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 Jonathan Ramsay, Town Council Chair and Mark Massoud, Zoning Enforcement Officer for the Town of Watertown, as well as the property owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the 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 replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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).

Please feel free to call me at (860) 670-9068 with any questions regarding this matter. Thank you for your consideration.

Sincerely,

Mark Roberts

Mark Roberts
Consultant for SAI
Mark.Roberts@QCDevelopment.net

Attachments

Cc: Jonathan Ramsay - Elected Official
Mark Massoud – Zoning Enforcement Officer
Simon Realty Company - Property & Structure Owner

Exhibit A

Original Facility Approval



Town of Watertown Connecticut

Planning and Zoning, Zoning Board of Appeals,
Conservation Commission/Inland Wetland Agency
Watertown Municipal Center
61 Echo Lake Road
Watertown, CT 06795
Telephone: (860) 945-5266
Website: www.watertownct.org

Fax: (860) 945-4706

To: Planning and Zoning Commission

From: Ruth Mulcahy, Land Use Administrator

Date: September 7, 2011

Subject: AT & T Mobility, Siemon Smokestack, 76 Westbury Park Road, Watertown, Special Permit #315//Site Plan application for 3 smokestack mounted panel antennas 132' feet high and equipment cabinets in an equipment shelter in an I-G20F General Industrial District.

WHEREAS, the Town of Watertown Planning and Zoning Commission received a Special Permit #315/Site Plan application from AT & T Mobility, Siemon Realty Princeton Building Smokestack, 76 Westbury Park Road, Watertown on 9.08 acres for 3 smokestack mounted panel antennas 132' feet high and equipment cabinets in an existing equipment shelter in an I-G20F General Industrial District which includes Title Sheet 01, General Notes GN-1, Site Plan & Equipment Plan A-1, Antenna Layout and Elevation A-2 and Grounding, One-Line Diagram & Details G-1 dated 1/26/11 prepared by SAI Communications, 22 Keewaydin Drive, Salem, N.H. and

WHEREAS, the Commission held a public hearing on September 7, 2011;

IT IS THEREFORE RESOLVED the Watertown Planning and Zoning Commission **APPROVES** Special Permit #315/Site Plan application from AT & T Mobility, Siemon Smokestack, 76 Westbury Park Road, Watertown for 3 smokestack mounted panel antennas 132' feet high and equipment cabinets located in an equipment shelter in an I-G20F General Industrial District subject to the following conditions:

1. The equipment shall be painted to match the exterior of the building or structure.
2. All exterior lighting shall be full cut-off fixtures.
3. Prior to Town officials signing a final mylar map and two paper copies, the final map shall be submitted to the Land Use Office for review and approval by the Town Engineer and the Administrator of Land Use and are subject to review and approval by the Commission at the discretion of the Chairman or Commission.

Exhibit B

Property Card

27 SIEMON COMPANY DR

Location 27 SIEMON COMPANY DR

Mblu 110/ 78B/ 32/ /

Acct# 7322

Owner SIEMON REALTY COMPANY

PBN

Assessment \$4,576,200

Appraisal \$6,537,400

PID 7322

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2018	\$5,460,400	\$1,077,000	\$6,537,400
Assessment			
Valuation Year	Improvements	Land	Total
2018	\$3,822,300	\$753,900	\$4,576,200

Owner of Record

Owner SIEMON REALTY COMPANY
Co-Owner
Address 27 SIEMON COMPANY DR
 WATERTOWN, CT 06795

Sale Price \$0
Certificate
Book & Page 1358/ 124
Sale Date 12/27/2004

Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
SIEMON REALTY COMPANY	\$0		1358/ 124	12/27/2004
SIEMON COMPANY THE	\$0		363/ 199	

Building Information

Building 1 : Section 1

Year Built: 1900
Living Area: 182,765
Replacement Cost: \$18,307,911
Building Percent Good: 28
Replacement Cost Less Depreciation: \$5,126,200

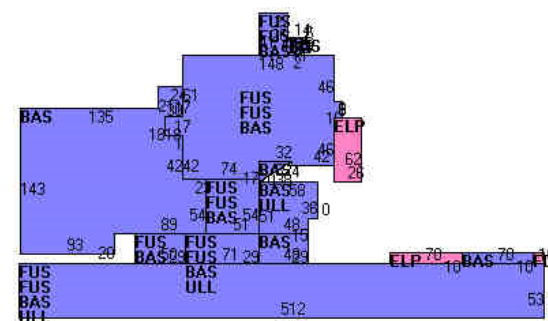
Building Attributes	
Field	Description
STYLE	Office Bldg
MODEL	Comm/Ind
Grade	C-
Stories:	3
Occupancy	91
Exterior Wall 1	Brick
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Floor 1	Hardwood
Interior Floor 2	Carpet
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Central
Bldg Use	Industrial MDL-94
Total Rooms	
Total Bedrms	None
Total Baths	0
Fixtures	
1st Floor Use:	400C
Heat/AC	Heat/AC Pkgs
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Ceil & Walls
Rooms/Prtns	Average

Building Photo



(<http://images.vgsi.com/photos/WatertownCTPhotos//00\00\28\69.JPG>)

Building Layout



(<http://images.vgsi.com/photos/WatertownCTPhotos//Sketch>)

Building Sub-Areas (sq ft)			Legend	
Code	Description	Gross Area	Living Area	
FUS	Upper Story, Finished	102,618	102,618	
BAS	First Floor	80,147	80,147	
ELP	Enclosed Loading Platform	2,312	0	
FOP	Porch, Open	100	0	
ULL	Unfinished Lower Level	32,003	0	
		217,180	182,765	

Wall Height	10
% Comn Wall	

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
SPR1	Sprinkler-Wet	214068 S.F.	\$48,000	1
ELV3	Elevator Com 2	1 UNITS	\$25,400	1
LDL1	Load Lv Power	3 UNITS	\$2,400	1
ELV4	Elevator Com 3	1 UNITS	\$27,200	1
ELV5	Elevator Com 4	2 UNITS	\$57,900	1

Land

Land Use

Use Code 400C
Description Industrial MDL-94
Zone IG20F
Neighborhood 120
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 9.08
Frontage
Depth
Assessed Value \$753,900
Appraised Value \$1,077,000

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	Asphalt Paving			160000 S.F.	\$160,000	1
LT1	Lights 1			5 UNITS	\$2,800	1
CAN1	Canopy			192 S.F.	\$1,500	1
LT2	Lights 2			6 UNITS	\$3,700	1
LT3	Lights 3			2 UNITS	\$1,300	1
OP	OpenPorchFrm			504 S.F.	\$4,000	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$4,923,000	\$1,077,000	\$6,000,000
2015	\$4,923,000	\$1,077,000	\$6,000,000
2014	\$7,590,000	\$1,077,000	\$8,667,000

Assessment			
Valuation Year	Improvements	Land	Total
2017	\$3,446,100	\$753,900	\$4,200,000
2015	\$3,446,100	\$753,900	\$4,200,000
2014	\$5,313,100	\$753,900	\$6,067,000



Town of Watertown			
Parcel: 7322 Acres: 9.08			
Name:	SIEMON REALTY COMPANY	Land Value:	1077000
Site:	27 SIEMON COMPANY DR	Improvement Value:	4441000
Sale:	\$0 on 2004-12-27 Reason= Qual=U	Accessory Value:	312700
Mail:	27 SIEMON COMPANY DR	Total Value:	6000000
	WATERTOWN, CT 06795		



The Town of Watertown makes every effort to produce the most accurate information possible. No warranties, expressed or implied, are provided for the data herein, its use or interpretation. The assessment information is from the last certified taxroll. All data is subject to change before the next certified taxroll.

Exhibit C

Construction Drawings

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 – SAI
 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 2021 WITH 2022 CT STATE BUILDING CODE AMENDMENTS
 ELECTRICAL CODE: 2020 NATIONAL ELECTRICAL CODE (NFPA 70-2020)**

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	RA	RADIATION CENTER LINE	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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

12 INDUSTRIAL WAY
SALEM, NH 03079

**SITE NUMBER: CT1130
 SITE NAME: WATERTOWN**

76 WESTBURY PARK ROAD
WATERTOWN, CT 06795
LITCHFIELD COUNTY

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

2 01/30/23 ISSUED FOR CONSTRUCTION		Y	HC	DPH	
1 07/21/22 ISSUED FOR CONSTRUCTION		Y	HC	DPH	
A 02/11/22 ISSUED FOR REVIEW		Y	HC	DPH	
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: HC	DRAWN BY: JP		

AT&T

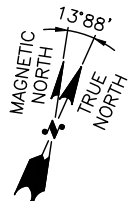
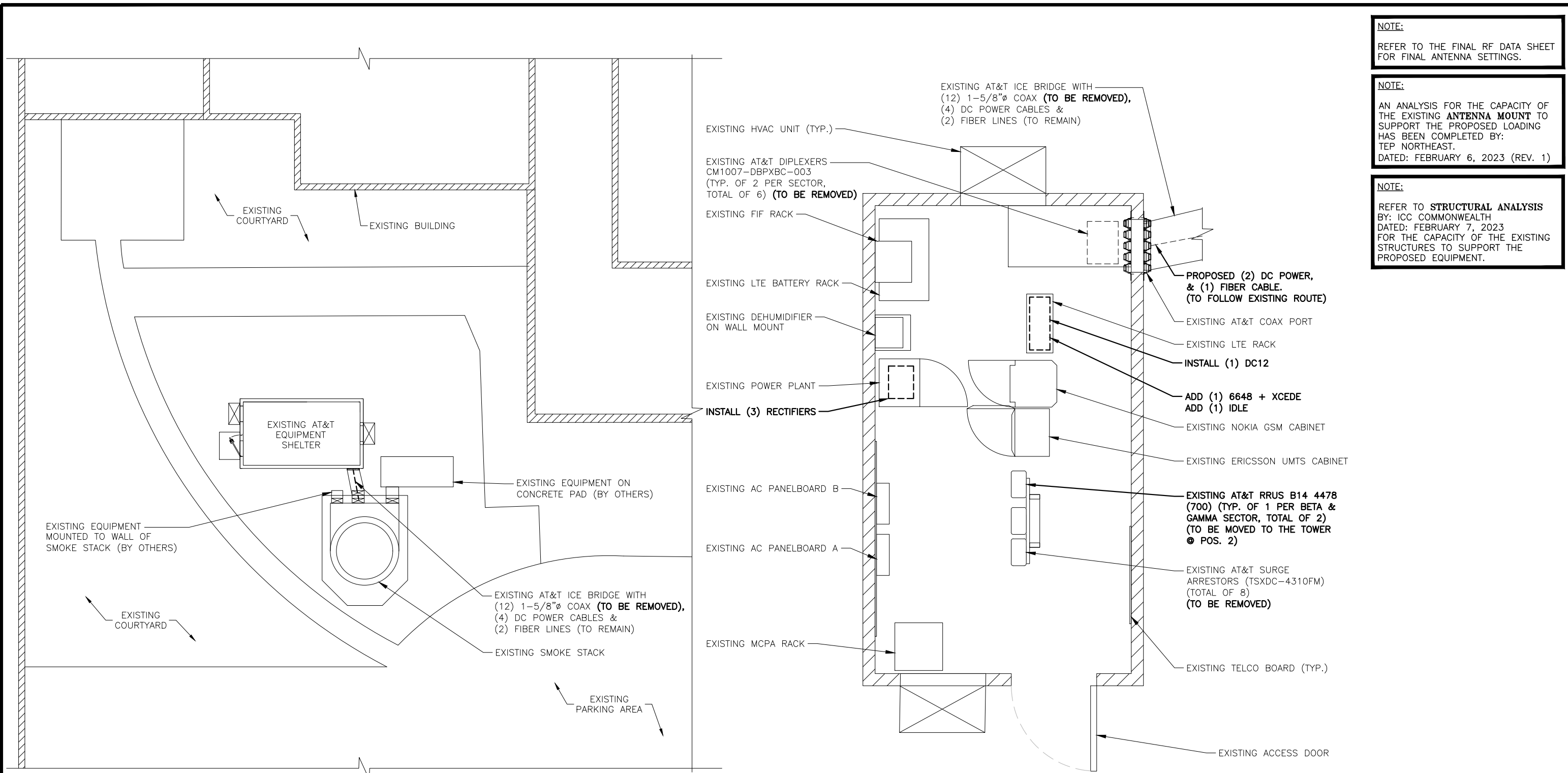
GENERAL NOTES
 5G NR 1SR CBAND, 4T4R RETROFIT, 5G NR SR

SITE NUMBER	DRAWING NUMBER	REV
CT1130	GN-1	2

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

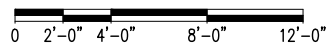
NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: TEP NORTHEAST. DATED: FEBRUARY 6, 2023 (REV. 1)

NOTE:
REFER TO **STRUCTURAL ANALYSIS** BY: ICC COMMONWEALTH DATED: FEBRUARY 7, 2023 FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



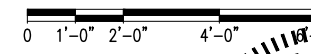
COMPOUND PLAN
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

1
A-1



EQUIPMENT PLAN
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

2
A-1



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

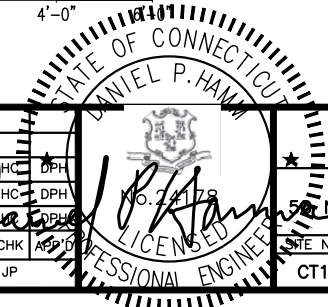
SAI
12 INDUSTRIAL WAY SALEM, NH 03079

SITE NUMBER: CT1130
SITE NAME: WATERTOWN
76 WESTBURY PARK ROAD WATERTOWN, CT 06795 LITCHFIELD COUNTY

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

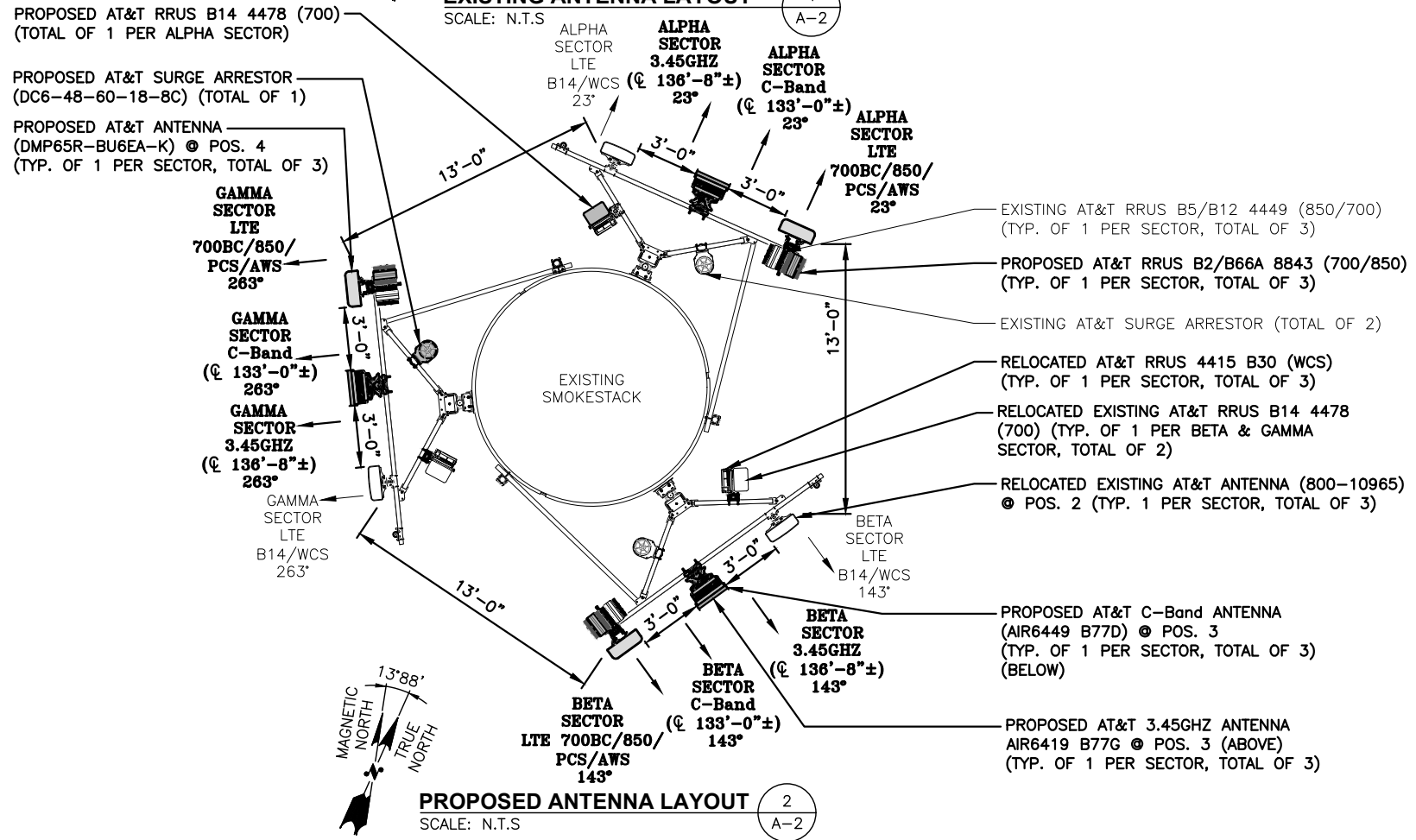
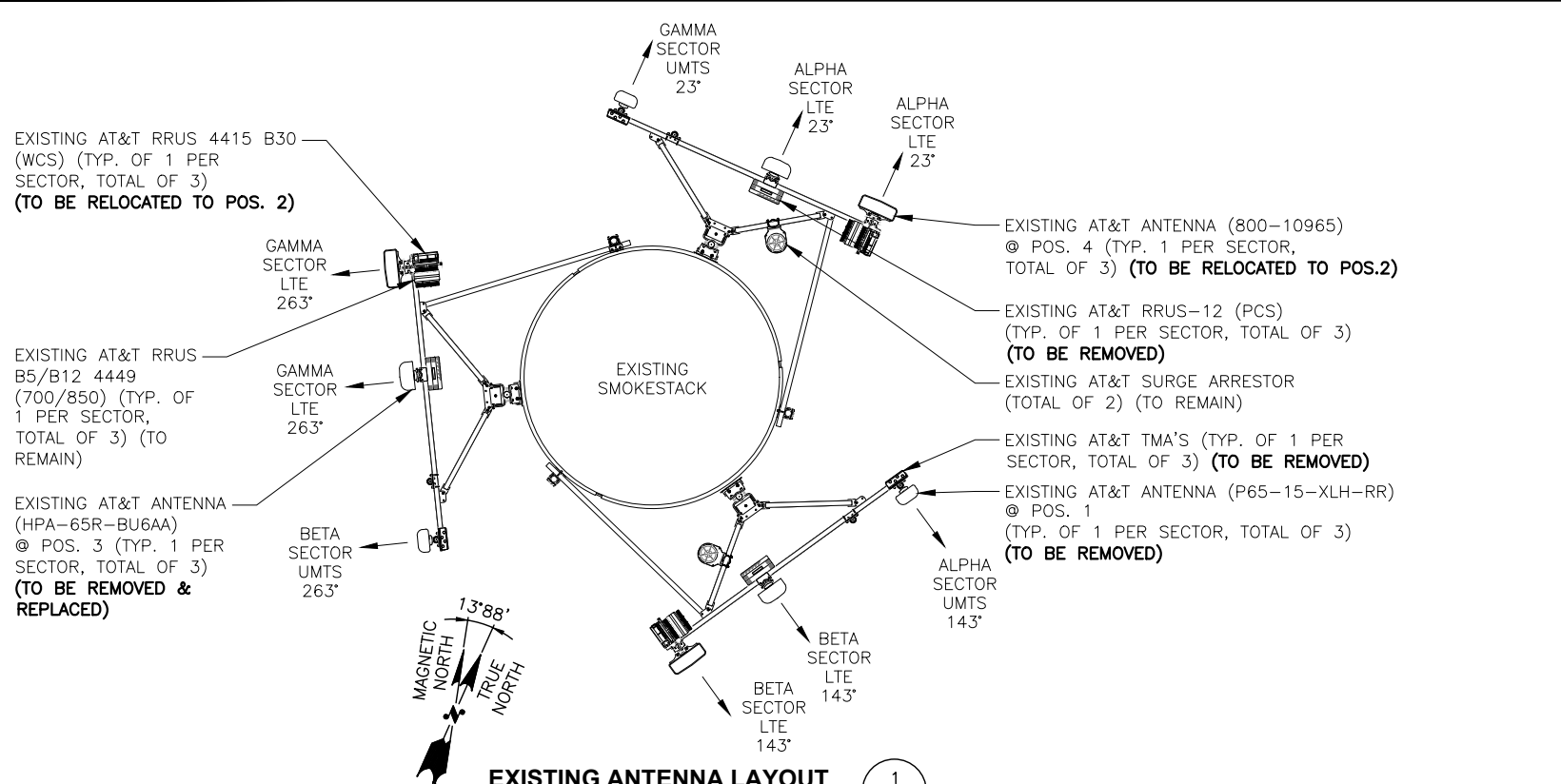
NO.	DATE	REVISIONS	BY	CHK	APP'D
2	01/30/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
1	07/21/22	ISSUED FOR CONSTRUCTION	YH	HC	DPH
A	02/11/22	ISSUED FOR REVIEW	YH	HC	DPH

SCALE: AS SHOWN DESIGNED BY: HC DRAWN BY: JP



AT&T
COMPOUND & EQUIPMENT PLANS
5G NR 15R CBAND, 4T4R RETROFIT, 5G NR SR

SITE NUMBER	DRAWING NUMBER	REV
CT1130	A-1	2



TOP OF EXISTING SMOKE STACK
ELEV. 140'-0"± (A.G.L.)

☐ OF PROPOSED & EXISTING AT&T ANTENNAS
ELEV. 135'-0"± (A.G.L.)

PROPOSED AT&T ANTENNA (DMP65R-BU6EA-K) @ POS. 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3)

PROPOSED AT&T 3.45GHZ ANTENNA AIR6419 B77G @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3)

PROPOSED AT&T C-BAND ANTENNA (AIR6449 B77D) @ POS. 3 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (BELOW)

☐ OF PROPOSED AT&T 3.45GHZ ANTENNAS
ELEV. = 136'-8"± (AGL)

☐ OF PROPOSED AT&T C-BAND ANTENNAS
ELEV. = 133'-0"± (AGL)

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

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: TEP NORTHEAST. DATED: FEBRUARY 6, 2023 (REV. 1)

CHIMNEY REPAIR NOTE:

- 1) RAKE OUT AND POINT ALL LOOSE AND OPEN MORTAR JOINTS ON THE EXTERIOR OF RADIAL SECTION OF THE CHIMNEY COLUMN. APPROXIMATELY 20% TO 25% IS REQUIRED.
- 2) REPLACE SPALLED BRICK FACES IN THE RADIAL SECTION OF THE CHIMNEY. APPROXIMATELY (12) TO (15) ARE REQUIRED.
- 3) RAKE OUT AND POINT ALL LOOSE AND OPEN MORTAR JOINTS THROUGHOUT THE COMMON BRICK PEDESTAL. APPROXIMATELY 10% TO 15% IS REQUIRED.
- 4) REMOVE AND REPLACE LOOSE BRICKWORK IN THE CORBEL SECTION OF THE PEDESTAL ON THE EAST SIDE.
- 5) PARTIAL REMOVAL AND REPLACE THE DETERIORATED SECTIONS OF THE CEMENT WATER TABLE AT THE TOP OF THE PEDESTAL.
- 6) CUT OUT AND POINT THE 8' TO 9' VERTICAL CRACK FOUND ON THE SOUTH SIDE OF THE PEDESTAL.
- 7) CUT OUT AND POINT THE VERTICAL CRACK ON THE WEST SIDE OF THE BRICK PEDESTAL.
- 8) REMOVE LOOSE AND DETERIORATED SPALLS WITHING EXTERIOR OF THE FOUNDATION AND REPAIR WITH SIKA TOP 123 PLUS. REPAIR REMAINING CRACKS WITH SIKA FLEX LLFC.
- 9) REPAIR AND REPLACE (2) BROKEN DOWNLEAD ANCHORS AND REATTACHED LIGHTNING PROTECTION DOWNLEAD ON THE EAST SIDE.
- 10) INSTALL NEW SELF-TAPING SCREWS TO HOLD DOWN THE ROOF ACCESS PANEL ON THE SIDE LIFTING.

- STRUCTURAL ANALYSIS OF THE SMOKESTACK HAS BEEN COMPLETED BY: INTERNATIONAL CHIMNEY CORP. DATED: FEBRUARY, 07, 2023.
- CHIMNEY REPAIR/REINFORCEMENT DETAILS TO BE DESIGN AND FURNISHED BY ICC. TO BE SUBMITTED UNDER SEPARATE COVER BY ICC.

EXISTING AT&T VERTICAL CABLE TRAY WITH (12) 1-5/8" COAX (TO BE REMOVED) (4) DC POWER CABLES & (2) FIBER LINES (TO REMAIN)

PROPOSED (2) DC POWER, & (1) FIBER CABLE. (TO FOLLOW EXISTING ROUTE)

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

GROUND LEVEL
ELEV. 0'-0"± (A.G.L.)

ELEVATION
22x34 SCALE: 3/32"=1'
11x17 SCALE: 3/64"=1'

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

SAI
12 INDUSTRIAL WAY SALEM, NH 03079

SITE NUMBER: CT1130
SITE NAME: WATERTOWN
76 WESTBURY PARK ROAD WATERTOWN, CT 06795 LITCHFIELD COUNTY

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

2		01/30/23	ISSUED FOR CONSTRUCTION	Y	HC	DPH	
1		07/21/22	ISSUED FOR CONSTRUCTION	Y	HC	DPH	
A		02/11/22	ISSUED FOR REVIEW	Y	HC	DPH	
NO.	DATE	REVISIONS		BY	CHK	APP'D	
SCALE: AS SHOWN		DESIGNED BY: HC	DRAWN BY: JP				

AT&T
ANTENNA LAYOUTS & ELEVATION
5G NR 1SR CBAND, 4T4R RETROFIT, 5G NR SR

SITE NUMBER	DRAWING NUMBER	REV
CT1130	A-2	2

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA HEIGHT	ANTENNA TIP HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	-	-	-	-	-	-	-	-	-	-	-	-
A2	EXISTING	LTE B14/WCS	800-10965	78.7X20X6.9	135'-0"±	138'-3"±	23°	-	(P)(1) 4478 B14 (700) (E)(1) 4415 B30 (WCS)	18.1"x13.4"x8.3"	(E)(2) DC POWER & (1) FIBER	(E) (1) RAYCAP DC6-48-60-18-8F
A3	PROPOSED	3.45GHZ + CBAND	AIR6419 B77G + AIR6449 B77D (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	136'-8"± 133'-0"±	138'-0"± 134'-5"±	23°	-	-	-	-	(E) (1) RAYCAP DC6-48-60-18-8F
A4	PROPOSED	LTE 700BC/850/PCS/AWS	DMP65R-BU6EA-K	71.2X20.7X9.7	135'-0"±	138'-0"±	23°	-	(E)(1) 4449 B5/B12 (850/700) (P)(1) 8843 B2/B66A (PCS/AWS)	-	(P)(1) Y-CABLE	(E) (1) RAYCAP DC6-48-60-18-8F
B1	-	-	-	-	-	-	-	-	-	-	-	-
B2	EXISTING	LTE B14/WCS	800-10965	78.7X20X6.9	135'-0"±	138'-3"±	143°	-	(E)(1) 4478 B14 (700) (E)(1) 4415 B30 (WCS)	-	(E)(2) DC POWER & (1) FIBER	(E) (1) RAYCAP DC6-48-60-18-8F
B3	PROPOSED	3.45GHZ + CBAND	AIR6419 B77G + AIR6449 B77D (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	136'-8"± 133'-0"±	138'-0"± 134'-5"±	143°	-	-	-	-	(E) (1) RAYCAP DC6-48-60-18-8F
B4	PROPOSED	LTE 700BC/850/PCS/AWS	DMP65R-BU6EA-K	71.2X20.7X9.7	135'-0"±	138'-0"±	143°	-	(E)(1) 4449 B5/B12 (850/700) (P)(1) 8843 B2/B66A (PCS/AWS)	-	(P)(1) Y-CABLE	(E) (1) RAYCAP DC6-48-60-18-8F
C1	-	-	-	-	-	-	-	-	-	-	-	-
C2	EXISTING	LTE B14/WCS	800-10965	78.7X20X6.9	135'-0"±	138'-3"±	263°	-	(E)(1) 4478 B14 (700) (E)(1) 4415 B30 (WCS)	-	(P)(2) DC POWER & (1) FIBER	(P) (1) RAYCAP DC6-48-60-18-8F
C3	PROPOSED	3.45GHZ + CBAND	AIR6419 B77G + AIR6449 B77D (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	136'-8"± 133'-0"±	138'-0"± 134'-5"±	263°	-	-	-	-	(P) (1) RAYCAP DC6-48-60-18-8F
C4	PROPOSED	LTE 700BC/850/PCS/AWS	DMP65R-BU6EA-K	71.2X20.7X9.7	135'-0"±	138'-0"±	263°	-	(E)(1) 4449 B5/B12 (850/700) (P)(1) 8843 B2/B66A (PCS/AWS)	-	(P)(1) Y-CABLE	(P) (1) RAYCAP DC6-48-60-18-8F

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

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: TEP NORTHEAST. DATED: FEBRUARY 6, 2023 (REV. 1)

NOTE:
REFER TO STRUCTURAL ANALYSIS BY: ICC COMMONWEALTH DATED: FEBRUARY 7, 2023 FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

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

QUANTITY	MODEL	SIZE (L x W x D)
E(3)	4449 (850/700)	17.9"x13.2"x10.4"
P(3)	8843 (PCS/AWS)	14.9"x13.2"x10.9"
P(1) E(2)	4478 B14 (700)	18.1"x13.4"x8.3"
E(3)	4415	16.5"x13.4"x5.9"

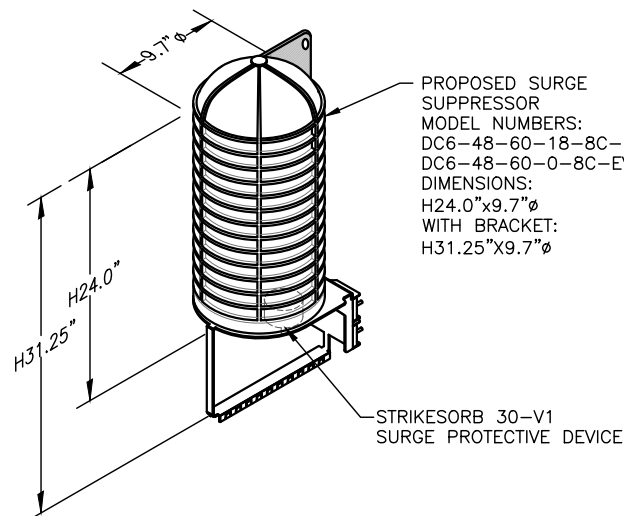
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

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

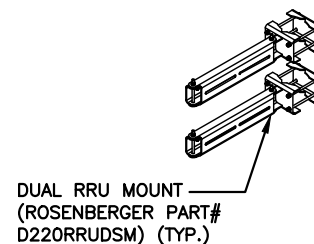
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

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

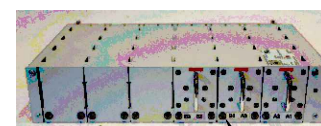


NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

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

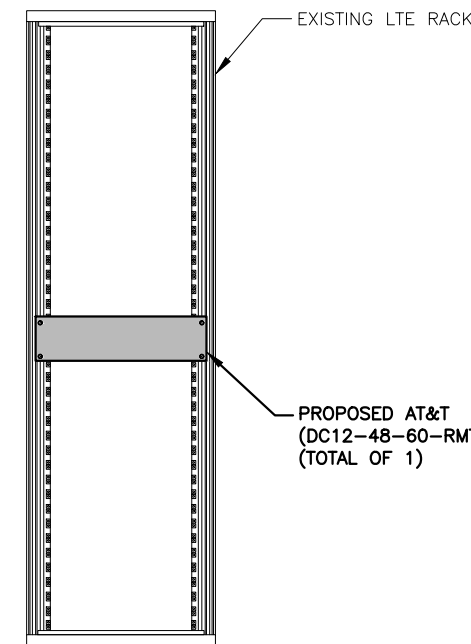


DUAL RRU MOUNT DETAIL 4
SCALE: N.T.S. A-3



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC12 DETAIL 5
SCALE: N.T.S. A-3



PROPOSED DC12 MOUNTING DETAIL 6
SCALE: N.T.S. A-3

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12 INDUSTRIAL WAY SALEM, NH 03079

SITE NUMBER: CT1130
SITE NAME: WATERTOWN

76 WESTBURY PARK ROAD WATERTOWN, CT 06795 LITCHFIELD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	01/30/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
1	07/21/22	ISSUED FOR CONSTRUCTION	YH	HC	DPH
A	02/11/22	ISSUED FOR REVIEW	YH	HC	DPH

SCALE: AS SHOWN DESIGNED BY: HC DRAWN BY: JP

PROFESSIONAL ENGINEER
DANIEL P. HAWK
STATE OF CONNECTICUT
LICENSED PROFESSIONAL ENGINEER
No. 241128

AT&T

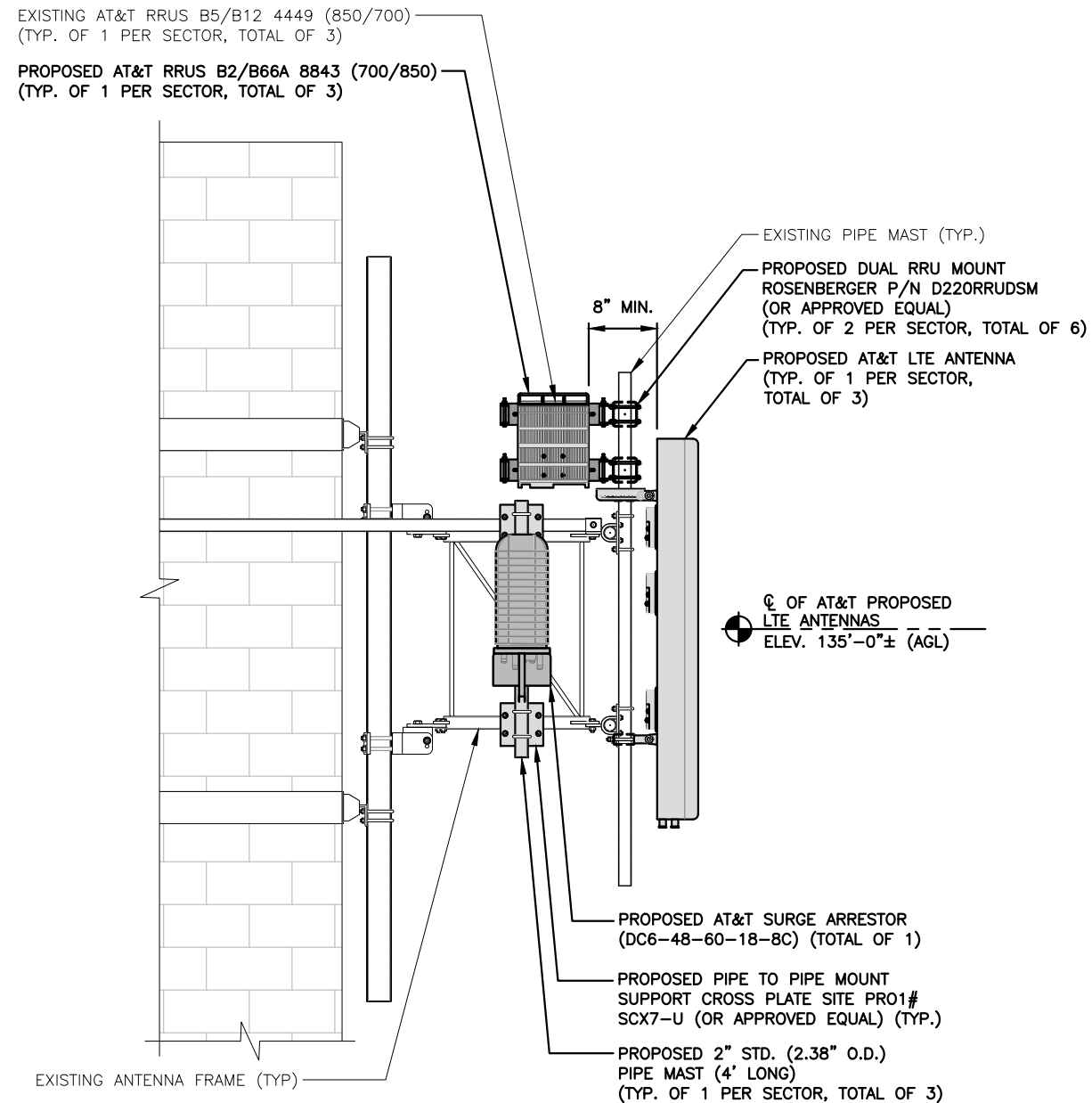
DETAILS
5G NR 1SR CBAND, 4T4R RETROFIT, 5G NR SR

SHEET NUMBER	DRAWING NUMBER	REV
CT1130	A-3	2

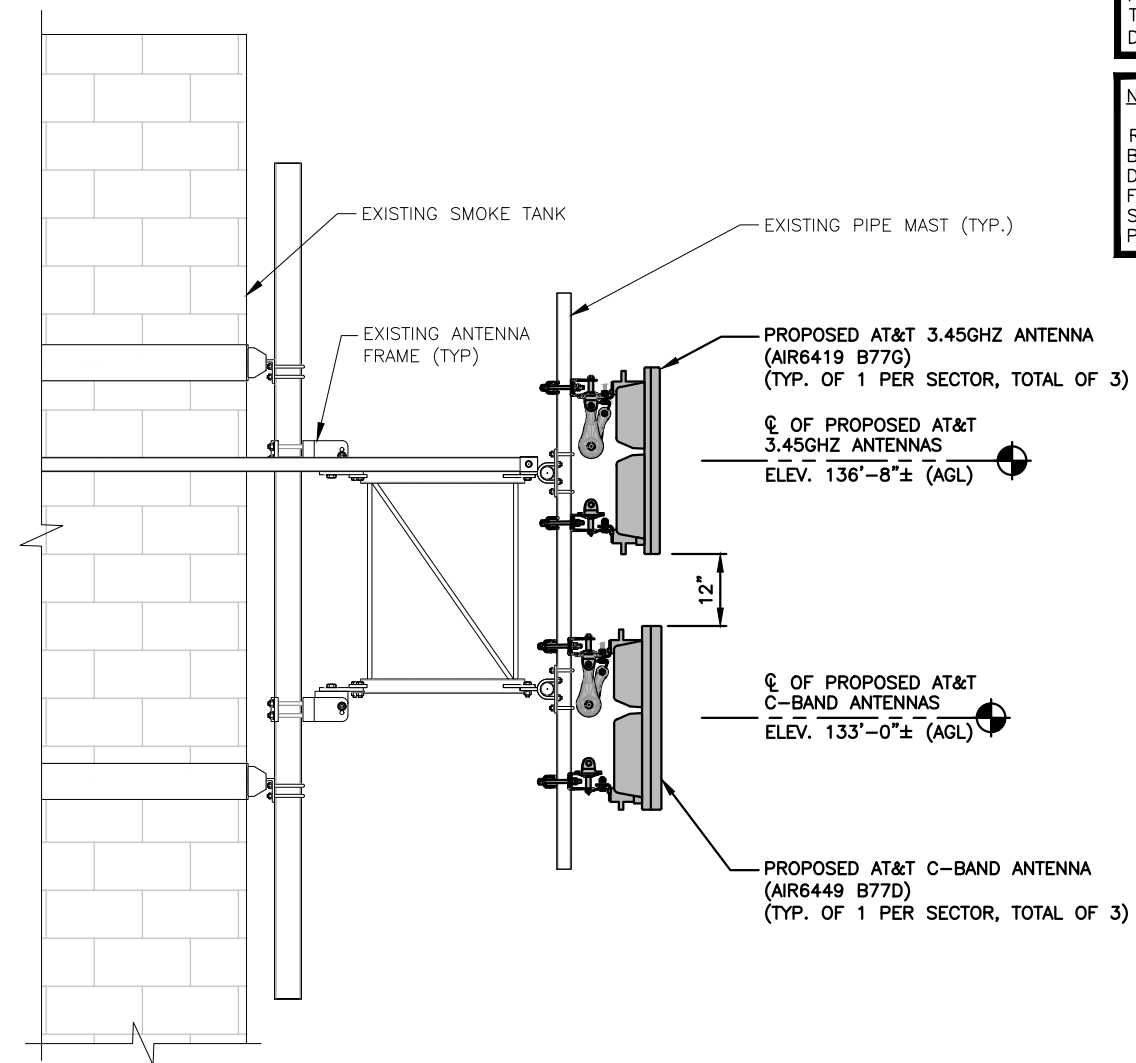
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
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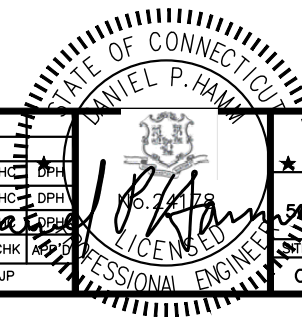
NOTE:
REFER TO STRUCTURAL ANALYSIS BY: ICC COMMONWEALTH DATED: FEBRUARY 7, 2023 FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



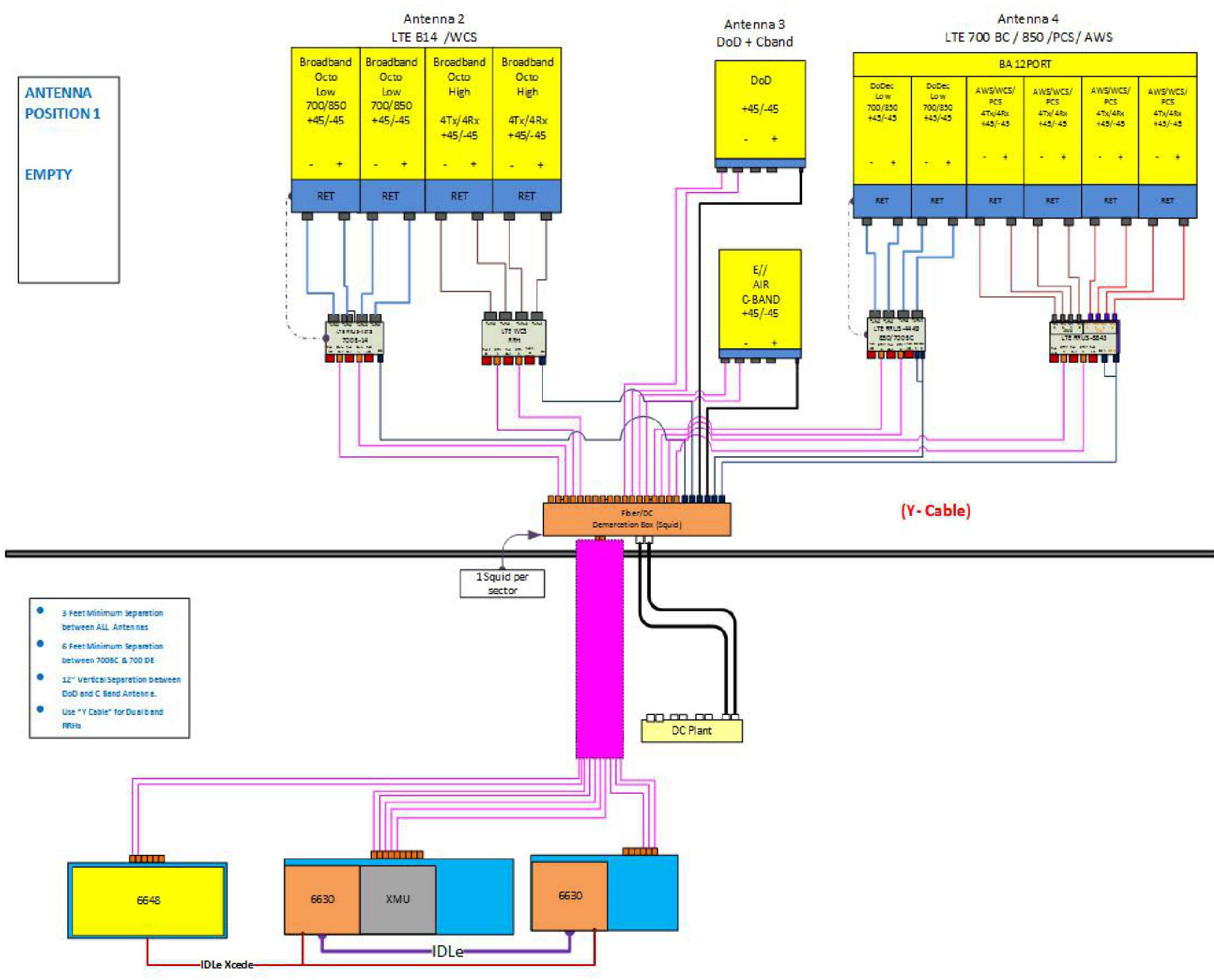
PROPOSED LTE ANTENNA MOUNTING DETAIL 1
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
A-4 0 8" 1'-4" 2'-8" 4'-0"



PROPOSED C-BAND ANTENNA MOUNTING DETAIL 2
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
A-4 0 8" 1'-4" 2'-8" 4'-0"



NOTE:
 REV: 1
 DATED: 12/16/2021
 RFDS ID: 4541281



ANTENNA POSITION 1
 EMPTY

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

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.

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	01/30/23	ISSUED FOR CONSTRUCTION	YH	HC	DPH
1	07/21/22	ISSUED FOR CONSTRUCTION	TR	HC	DPH
A	02/11/22	ISSUED FOR REVIEW	JP	HC	DPH

SCALE: AS SHOWN DESIGNED BY: HC DRAWN BY: JP

AT&T		
RF PLUMBING DIAGRAM		
5G NR 1SR CBAND, 4T4R RETROFIT, 5G NR SR		
SITE NUMBER	DRAWING NUMBER	REV
CT1130	RF-1	2

Exhibit D

Structural Analysis Report

**Chimney Design Calculations by ICC Commonwealth
795 Wurlitzer Drive, North Tonawanda, NY 14120**

Customer: TEP Northeast

ICC Project Number: 2248

Site: 76 Westbury Park Road | Watertown, CT 06795

Chimney Description: 140' Radial Brick Chimney

Summary:

The following is a structural analysis of a 140' radial brick chimney at site mentioned in title above. With the proposed AT&T cellular equipment modifications at the 135' elevation, it was found that the chimney shell is not overstressed. This analysis assumes the brick chimney is in good condition with sound brick and mortar throughout its height. Therefore, the chimney must have the repairs noted below to make the chimney usable for AT&T to install their proposed equipment. This analysis assumes all repairs required from list below have been completed and all antenna mounts have been designed by others. If repairs are ignored, this chimney will likely be overstressed structurally which may lead to further damage and possible chimney failure. The existing foundation was not analyzed and therefore is not a design responsibility of ICC Commonwealth.

Repairs required:

- 1) Rake out and point all loose and open mortar joints on the exterior of radial section of the chimney column. Approximately 20% to 25% is required.
- 2) Replace spalled brick faces in the radial section of the chimney. Approximately (12) to (15) are required.
- 3) Rake out and point all loose and open mortar joints throughout the common brick pedestal. Approximately 10% to 15% is required.
- 4) Remove and replace loose brickwork in the corbel section of the pedestal on the East side.
- 5) Partial removal and replace the deteriorated sections of the cement water table at the top of the pedestal.
- 6) Cut out and point the 8' to 9' vertical crack found on the South side of the pedestal.
- 7) Cut out and point the vertical crack on the West side of the brick pedestal.
- 8) Remove loose and deteriorated spalls withing exterior of the foundation and repair with Sika Top 123 Plus. Repair remaining cracks with Sika Flex 11FC.
- 9) Repair and replace (2) broken downlead anchors and reattached lightning protection downlead on the East side.
- 10) Install new self-taping screws to hold down the roof access panel on the side lifting.

Analysis Results

Approved – Structure can accommodate the proposed changes.
No repairs required.

Conditional Approval - Structure can accommodate the proposed changes.
Repairs required.

Not Approved - Structure cannot accommodate the proposed changes
without reinforcement.

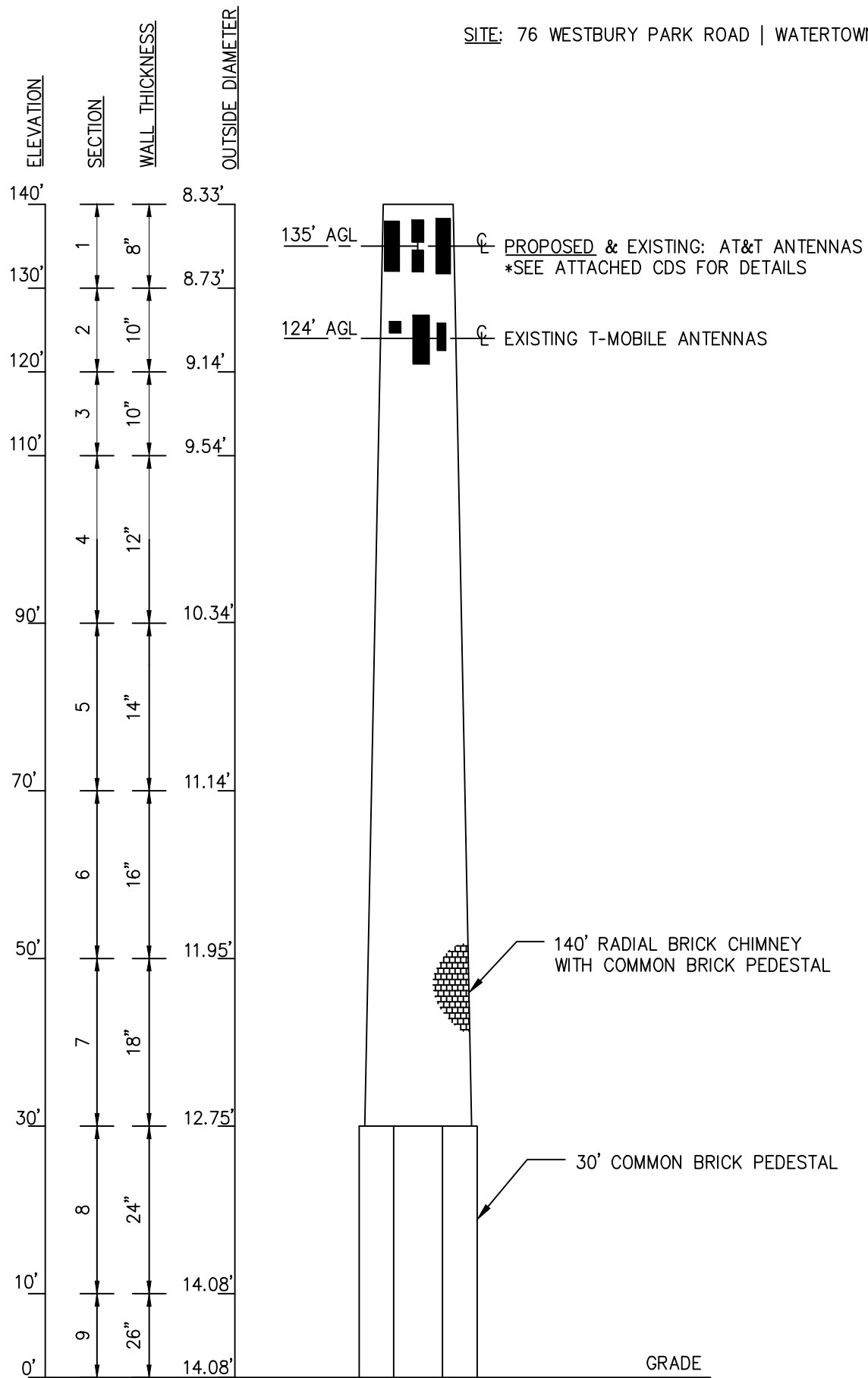
All repairs should be supervised under a qualified and experienced professional. If repairs are required and not performed and supervised by a licensed professional engineer, additional inspection is required.



John Dennon
02/07/2023

ICC JOB: 2248

SITE: 76 WESTBURY PARK ROAD | WATERTOWN, CT 06795



PROJECT INFORMATION

SCOPE OF WORK:

- ITEMS TO BE MOUNTED ON THE EXISTING SMOKESTACK:
- NEW AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3).
 - NEW AT&T ANTENNAS: AIR6449 B77 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
 - NEW AT&T ANTENNAS: DMP65R-BUGEA-K (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. 2).
 - NEW AT&T RRUS: 8843 B2/B66A (TYP. OF 1 PER SECTOR, TOTAL OF 3).
 - EXISTING AT&T RRUS: 4415 B30 (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 2).
 - NEW AT&T RRUS: 4478 B14 (700) (TOTAL OF 1 PER ALPHA SECTOR).
 - EXISTING AT&T RRUS: 4478 B14 (700) (TYP. OF 1 PER BETA & GAMMA SECTOR, TOTAL OF 2) (TO BE MOVED TO THE TOWER @ POS. 2).
 - NEW AT&T DC & FIBER SURGE ARRESTOR DC6-48-60-18-8C (TOTAL OF 1) WITH (2) AWG6DC DC TRUNK & (1) 18-PAIR FIBER LINE.
 - ADD (3) Y-CABLES.

- ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- ADD (1) 6648 + XCODE CABLE

- ITEMS TO BE REMOVED:
- EXISTING AT&T ANTENNAS: P65-15-XLH-RR (TYP. OF 1 PER SECTOR, TOTAL OF 3).
 - EXISTING AT&T ANTENNAS: HPA-65R-BUGA(TYP. OF 1 PER SECTOR, TOTAL OF 3).
 - EXISTING AT&T RRUS: RRUS-12 B2 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
 - EXISTING AT&T TMA'S: TT19-08BP111 (TYP. OF 1 PER SECTOR, TOTAL OF 6).
 - EXISTING AT&T DIPLEXER: CM1007-DBPXBC-003 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
 - EXISTING AT&T (12) COAX CABLES.

- ITEMS TO REMAIN:
- (3) ANTENNAS, (8) RRUS, (4) DC POWER & (2) FIBER.

SITE ADDRESS: 76 WESTBURY PARK ROAD WATER TOWN, CT 06795
 LATITUDE: 41.6033250 N, 41° 36' 11.97" N
 LONGITUDE: 73.116661 W, 73° 06' 42.00" W
 TYPE OF SITE: SMOKESTACK / INDOOR EQUIPMENT
 STRUCTURE HEIGHT: 140'-0"±
 RAD CENTER: 135'-0"± LITE, 136'-8"± DOD, 133'-0"± C-BAND
 CURRENT USE: TELECOMMUNICATIONS FACILITY
 PROPOSED USE: TELECOMMUNICATIONS FACILITY

DRAWING INDEX

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



at&t

SITE NUMBER: CT1130

SITE NAME: WATERTOWN

FA CODE: 10035384

PAGE ID: MRCTB055444, MRCTB053352, MRCTB054358, MRCTB056234, MRCTB054363

PRELIMINARY DRAWINGS

PROJECT: 5G NR 1SR CBAND UPGRADE

VICINITY MAP



GENERAL NOTES

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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



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 TEL: (978) 557-5553
 FAX: (978) 336-5986

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 SALEM, NH 03079

SITE NUMBER: CT1130
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 WATERTOWN, CT 06795
 LITCHFIELD COUNTY

at&t
 500 ENTERPRISE DRIVE, SUITE 3A
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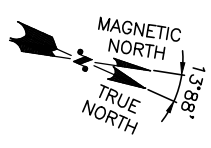
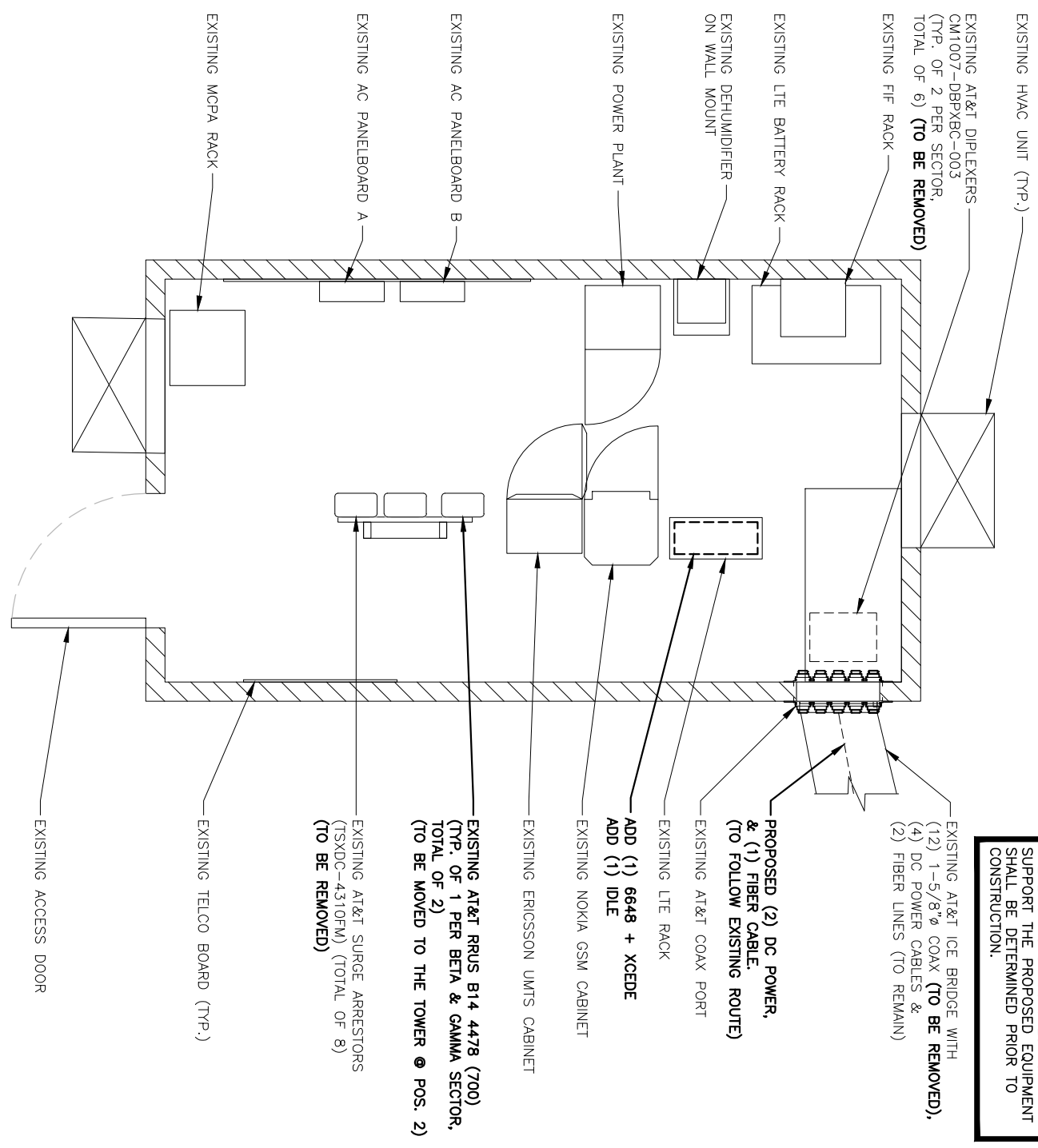
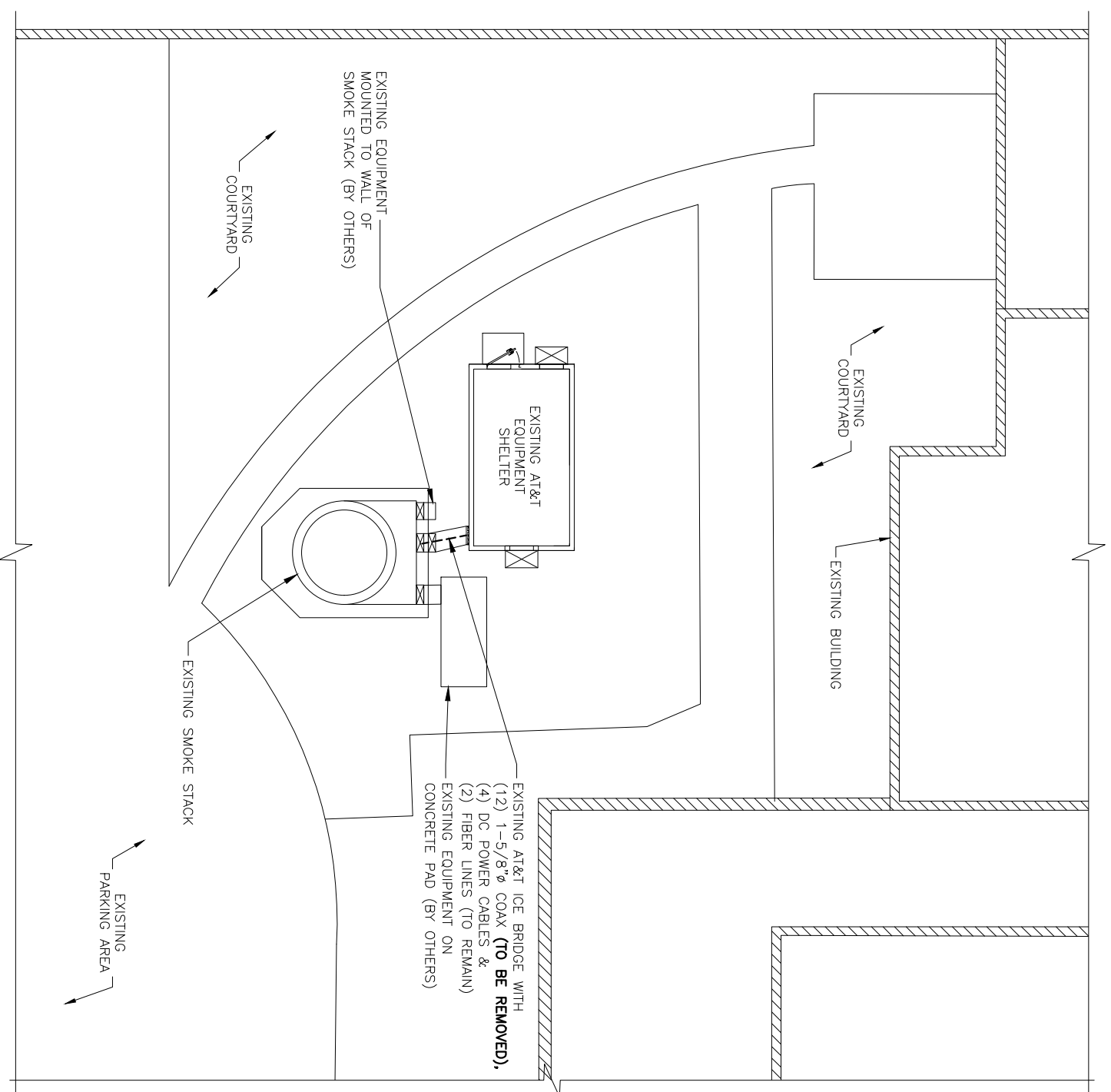
NO.	DATE	ISSUED FOR REVIEW	REVISIONS	BY	CHK	APP'D.
A	02/11/22			JP	HC	DPH

SCALE: AS SHOWN
 DESIGNED BY: HC
 DRAWN BY: JP

AT&T	
TITLE SHEET	REV
5G NR 1SR CBAND UPGRADE	
DRAWING NUMBER	
CT1130	A

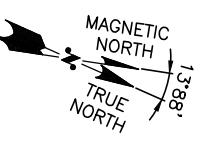
NOTE:
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NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.



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

1
A-1



EQUIPMENT PLAN
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

2
A-1



HG HUDSON
Design Group LLC
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DESIGNED BY: HC
DRAWN BY: JP

AT&T	
COMPOUND & EQUIPMENT PLANS	
SITE NUMBER	DRAWING NUMBER
CT1130	A-1
REV	REV
	A

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA H HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	-	-	-	-	-	-	-	-	-	-	-
A2	EXISTING	LTE B14/WCS	800-10965	78.7X20X6.9	135'-0"±	23°	-	(P)(1) 4478 B14 (700) (E)(1) 4415 B25 (PCS)	18.1"x13.4"x8.3"	(E)(2) DC POWER & (1) FIBER	(E) (1) RAYCAP DC6-48-60-18-8F
A3	PROPOSED	DOD + CBAND	AIR6419 B77G + AIR6449 B77 (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	136'-8"± 133'-0"±	23°	-	-	-	-	(E) (1) RAYCAP DC6-48-60-18-8F
A4	PROPOSED	LTE 700BC/850/PCS/AWS	DMP65R-BU6EA-K	71.2X20.7X9.7	135'-0"±	23°	-	(E)(1) 4449 B5/B12 (850/700) (P)(1) 8843 B2/B66A (PCS/AWS)	-	-	(E) (1) RAYCAP DC6-48-60-18-8F
B1	-	-	-	-	-	-	-	-	-	-	-
B2	EXISTING	LTE B14/WCS	800-10965	78.7X20X6.9	135'-0"±	143°	-	(E)(1) 4478 B14 (700) (E)(1) 4415 B25 (PCS)	-	(E)(2) DC POWER & (1) FIBER	-
B3	PROPOSED	DOD + CBAND	AIR6419 B77G + AIR6449 B77 (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	136'-8"± 133'-0"±	143°	-	-	-	-	(E) (1) RAYCAP DC6-48-60-18-8F
B4	PROPOSED	LTE 700BC/850/PCS/AWS	DMP65R-BU6EA-K	71.2X20.7X9.7	135'-0"±	143°	-	(E)(1) 4449 B5/B12 (850/700) (P)(1) 8843 B2/B66A (PCS/AWS)	-	-	(E) (1) RAYCAP DC6-48-60-18-8F
C1	-	-	-	-	-	-	-	-	-	-	-
C2	EXISTING	LTE B14/WCS	800-10965	78.7X20X6.9	135'-0"±	263°	-	(E)(1) 4478 B14 (700) (E)(1) 4415 B25 (PCS)	-	(P)(2) DC POWER & (1) FIBER	-
C3	PROPOSED	DOD + CBAND	AIR6419 B77G + AIR6449 B77 (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	136'-8"± 133'-0"±	263°	-	-	-	-	-
C4	PROPOSED	LTE 700BC/850/PCS/AWS	DMP65R-BU6EA-K	71.2X20.7X9.7	135'-0"±	263°	-	(E)(1) 4449 B5/B12 (850/700) (P)(1) 8843 B2/B66A (PCS/AWS)	-	-	(P) (1) RAYCAP DC6-48-60-18-8C

FINAL ANTENNA SCHEDULE

SCALE: N.T.S.

RRU CHART

QUANTITY	MODEL	SIZE (L x W x D)
E(3)	4449 (850/700)	17.9"x13.2"x10.4"
P(3)	8843 (PCS/AWS)	14.9"x13.2"x10.9"
P(1)	4478 B14 (700)	18.1"x13.4"x8.3"
E(3)	4415	16.5"x13.4"x5.9"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:
SEE RFDS FOR RRH
FREQUENCY AND
MODEL NUMBER

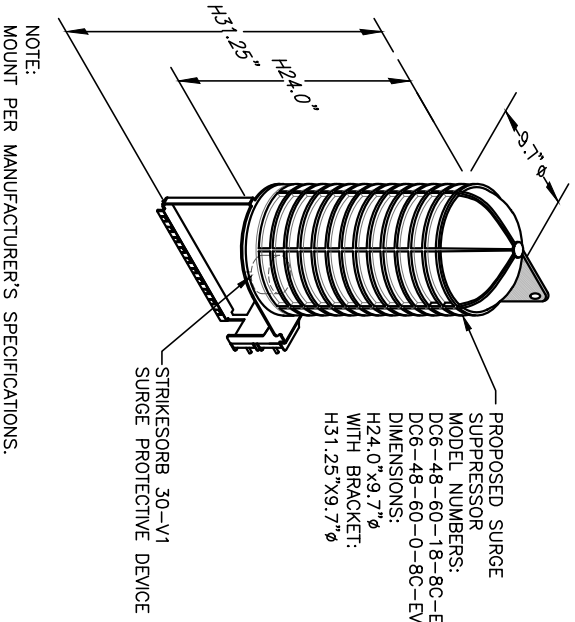


PROPOSED RRU REFER TO THE
FINAL RFDS AND CHART FOR
QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S
SPECIFICATIONS.

PROPOSED RRUS DETAIL

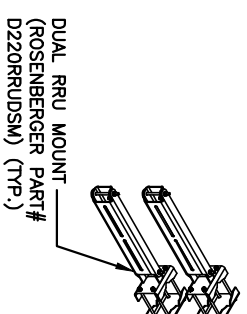
SCALE: N.T.S.



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL

SCALE: N.T.S.



DUAL RRU MOUNT DETAIL

SCALE: N.T.S.

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

NOTE:
HDG RECOMMENDS THE EXISTING
ANTENNA MOUNT BE MAPPED IN ITS
ENTIRETY & A MOUNT STRUCTURAL
ANALYSIS PERFORMED PRIOR TO THE
ANTENNA INSTALLATION.

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

HDG HUDSON
Design Group LLC
45 BECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5966

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1130
SITE NAME: WATERTOWN
76 WESTBURY PARK ROAD
WATERTOWN, CT 06795
LITCHFIELD COUNTY

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

NO.	DATE	ISSUED FOR REVIEW	REVISIONS	BY	CHK	APP'D.
A	02/11/22			JP	HC	DPH

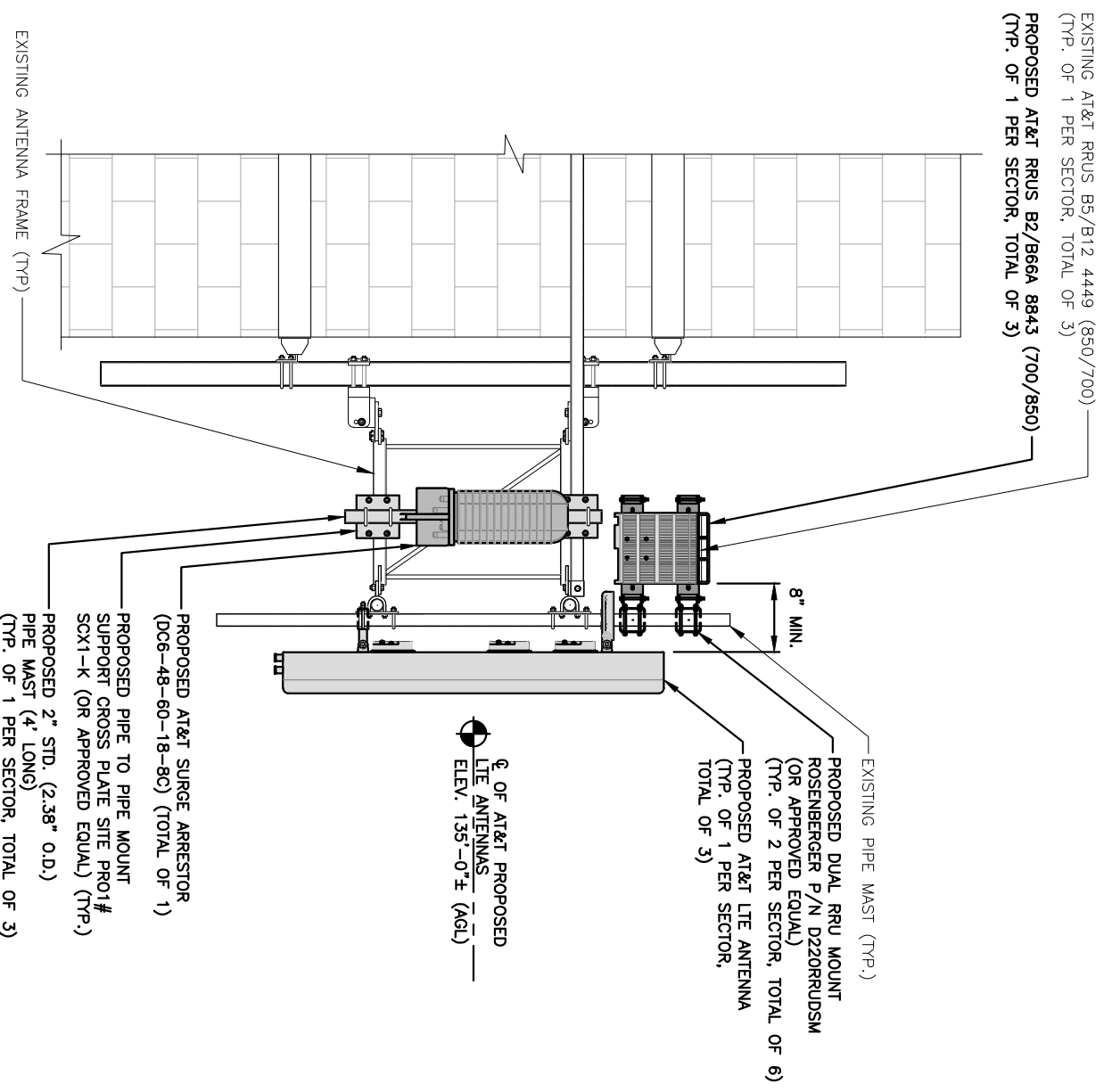
SCALE: AS SHOWN

AT&T
DETAILS
5G NR 15R CBAND UPGRADE
DRAWING NUMBER
CT1130
REV
A

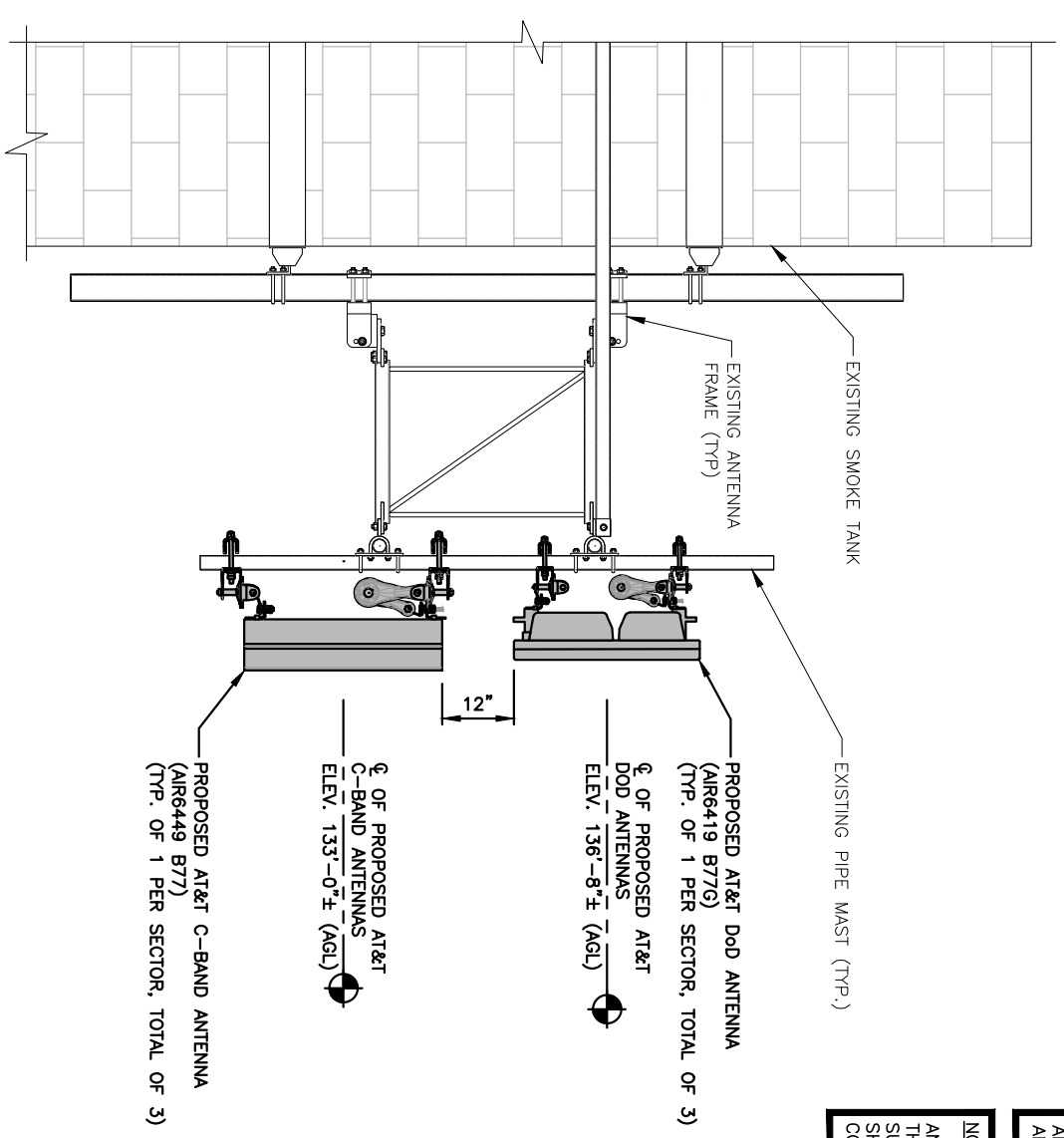
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
HDG RECOMMENDS THE EXISTING ANTENNA MOUNT BE MAPPED IN ITS ENTIRETY & A MOUNT STRUCTURAL ANALYSIS PERFORMED PRIOR TO THE ANTENNA INSTALLATION.

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



PROPOSED LTE ANTENNA MOUNTING DETAIL
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"



PROPOSED C-BAND ANTENNA MOUNTING DETAIL
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

HDG HUDSON
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45 BECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5986

SAI
12 INDUSTRIAL WAY
SALEM, NH 03079

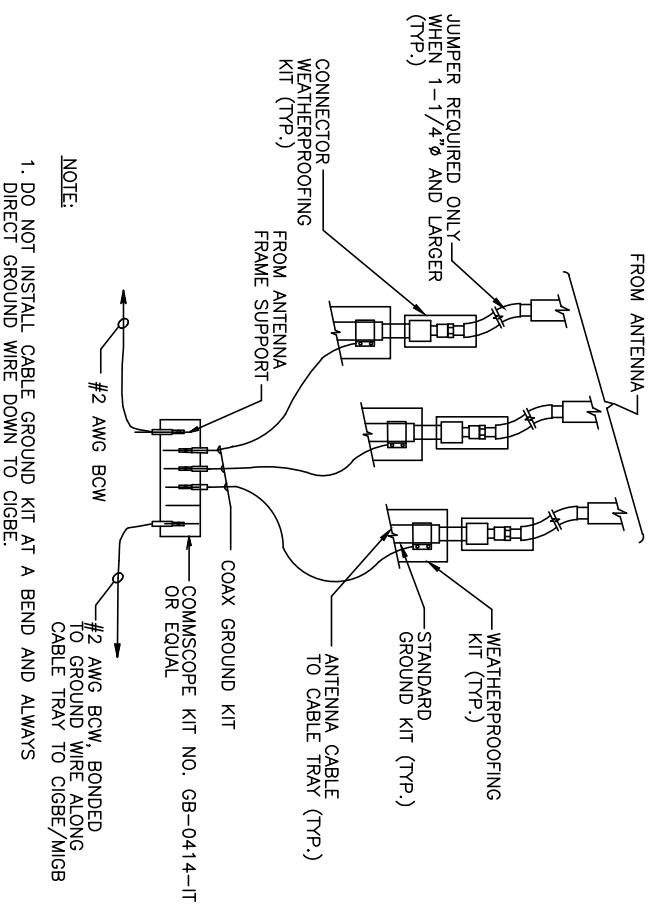
SITE NUMBER: CT11130
SITE NAME: WATERTOWN
76 WESTBURY PARK ROAD
WATERTOWN, CT 06795
LITCHFIELD COUNTY

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

NO.	DATE	ISSUED FOR REVIEW	REVISIONS	BY	CHK	APP'D.
A	02/11/22	ISSUED FOR REVIEW		JP	HC	DPH

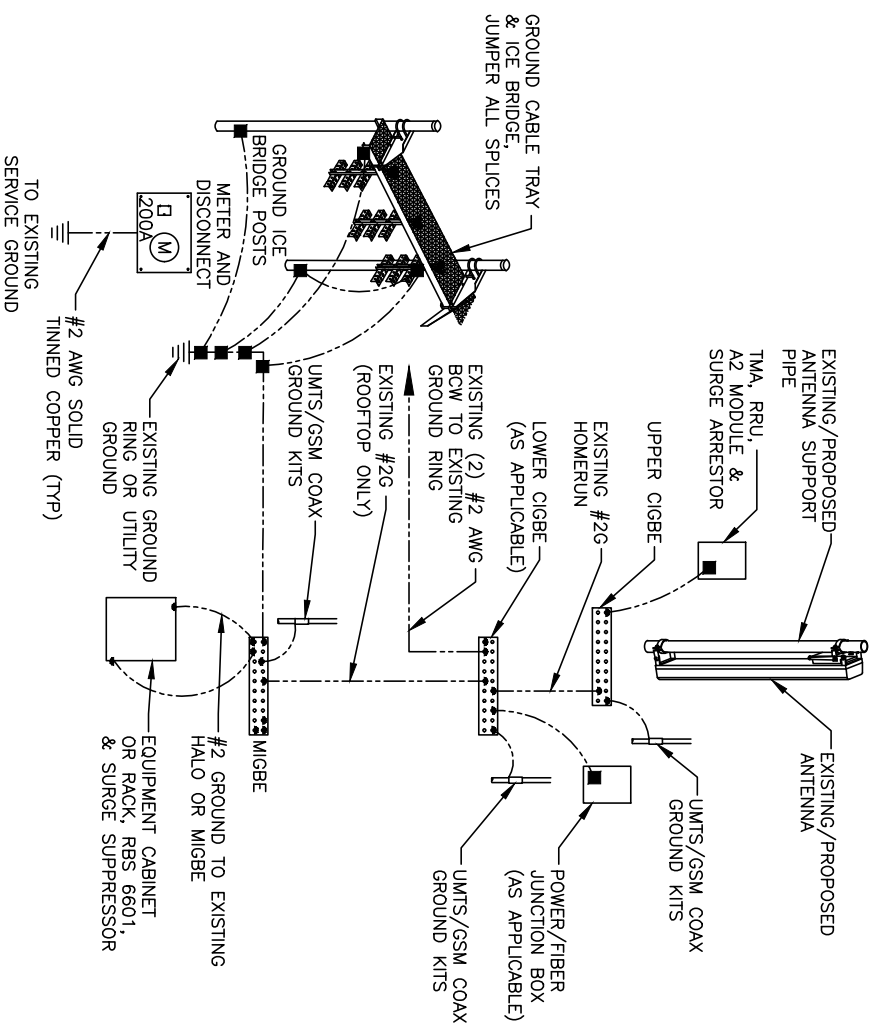
SCALE: AS SHOWN
DESIGNED BY: HC
DRAWN BY: JP

AT&T	
DETAILS	
SITE NUMBER	DRAWING NUMBER
CT11130	A-4
EG NR 1SR CBAND UPGRADE	
REV	BY
A	

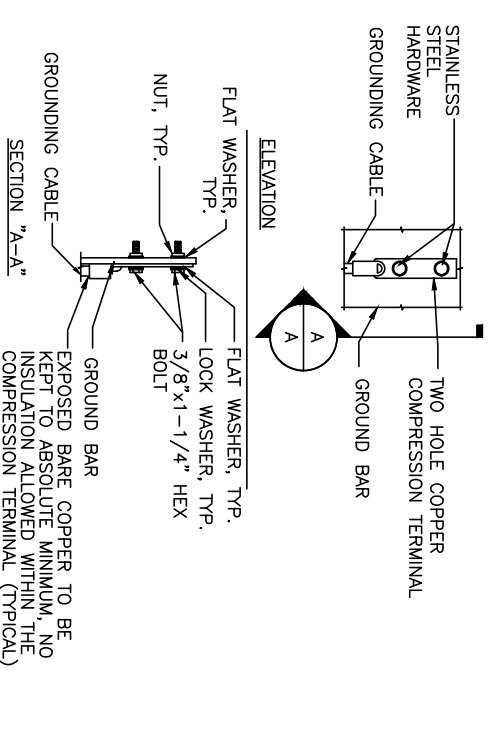


NOTE:
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

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



GROUNDING RISER DIAGRAM 2
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
SCALE: N.T.S.

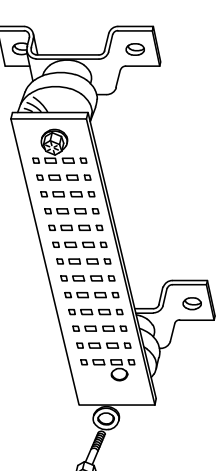
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" - SURGE PRODUCERS

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

SECTION "A" - SURGE ABSORBERS

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

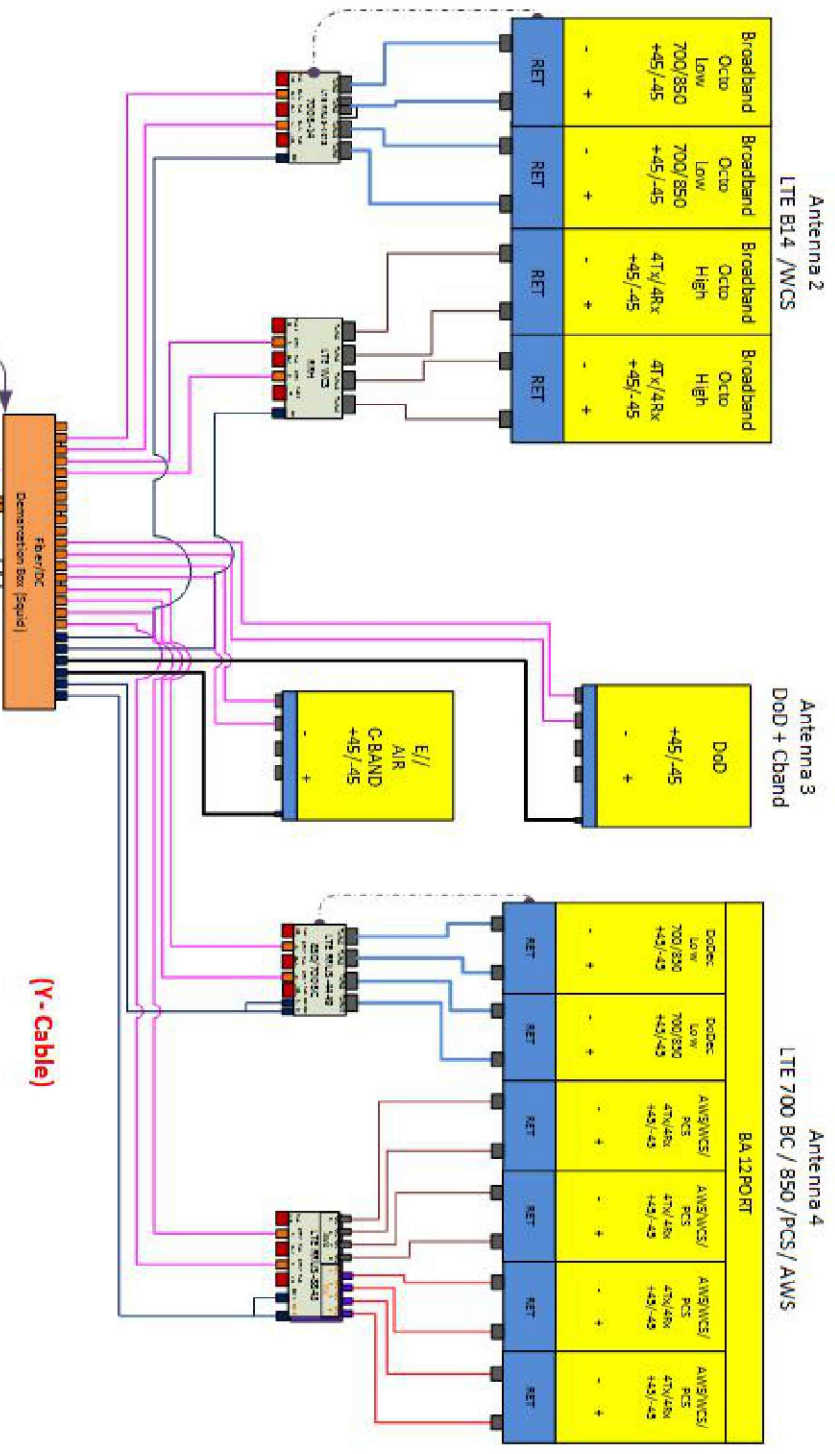


GROUND BAR - DETAIL (AS REQUIRED) 4
SCALE: N.T.S.

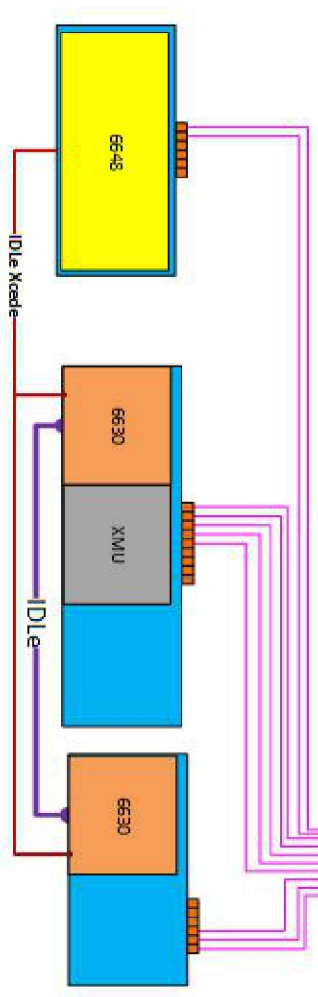
NO.	DATE	ISSUED FOR REVIEW	REVISIONS	BY	CHK	APP'D.
A	02/11/22	ISSUED FOR REVIEW		JP	HC	DPH
SCALE: AS SHOWN						
DESIGNED BY: HC			DRAWN BY: JP			

AT&T	
GROUNDING DETAILS	
SITE NUMBER	DRAWING NUMBER
CT1130	5G NR 1SR CBAND UPGRADE G-1
REV	
A	

ANTENNA POSITION 1
EMPTY



- 3 Feet/Minimum separation between ALL antennas
- 6 Feet/Minimum Separation between 700BC & 700 DR
- 12" Vertical Separation between DOD and C Band Antenna.
- Use "Y-Cable" for Dual Band RRHS



RF PLUMBING DIAGRAM
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.

HUG | **HUDSON**
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SG
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76 WESTBURY PARK ROAD
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at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	ISSUED FOR REVIEW	REVISIONS	BY	CHK	APP'D.
A	02/11/22	ISSUED FOR REVIEW		JP	HC	DPH

SCALE: AS SHOWN

AT&T
RF PLUMBING DIAGRAM
SG NR 1SR CBAND UPGRADE
DRAWING NUMBER: RF-1
SITE NUMBER: CT1130
REV: A

ATC Hazards by Location

Search Information

Address: 76 Westbury Park Rd, Watertown, CT 06795, USA

Coordinates: 41.6037641, -73.1117191

Elevation: 482 ft

Timestamp: 2022-06-03T19:20:02.757Z

Hazard Type: Wind



ASCE 7-16

MRI 10-Year 75 mph

MRI 25-Year 83 mph

MRI 50-Year 89 mph

MRI 100-Year 96 mph

Risk Category I 106 mph

Risk Category II 116 mph

Risk Category III 125 mph

Risk Category IV ⚠️ 129 mph

ASCE 7-10

MRI 10-Year 76 mph

MRI 25-Year 85 mph

MRI 50-Year 91 mph

MRI 100-Year 97 mph

Risk Category I 108 mph

Risk Category II 119 mph

Risk Category III-IV 127 mph

ASCE 7-05

ASCE 7-05 Wind Speed 98 mph

You are in a wind-borne debris region if you are also within 1 mile of the coastal mean high water line.

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher. NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

While the information presented on this website is believed to be correct, ATC and its sponsors and contributors assume no responsibility or liability for its accuracy. The material presented in the report should not be used or relied upon for any specific application without competent examination and verification of its accuracy, suitability and applicability by engineers or other licensed professionals. ATC does

Spreadsheet calculates wind pressures on sections of the chimney using Code ASCE 7-16 Wind Criteria

Height of chimney, h	140	ft	
Define risk category	II		Table 1.5-1
Define exposure factor	B		Section 26.7.3
Basic wind speed, V	116	mph	Attached Sheet, ASCE 7-16 wind properties
Gust factor, G	0.85		Section 26.11.1
Topographic factor, K_{zt}	1.0		Section 26.8.2
Directionality factor, K_d	1.0		Round chimney, Table 26.6-1
Ground elevation factor, K_e	1.0		Section 26.9
Wind pressure, q	29.28	psf	$q = 0.00256K_{zt}K_dK_eGV^2$ (Eq. 26.10-1)

SECTION	ΔH (ft)	K_z	C_f	(factored) C_f	F_{des} (psf)	$0.6 * F_{des}$ (psf)	Shape	
1	130-140	1.08	1.11	1.44	45.63	27.38	Round	Antenna
2	120-130	1.05	1.10	1.43	43.96	26.38	Round	Antenna
3	110-120	1.03	0.85	0.86	25.89	15.53	Round	
4	90-110	0.99	0.84	0.85	24.59	14.76	Round	
5	70-90	0.93	0.84	0.85	23.10	13.86	Round	
6	50-70	0.85	0.83	0.84	20.86	12.52	Round	
7	30-50	0.76	0.83	0.83	18.47	11.08	Round	
8	10-30	0.62	1.23	1.23	22.33	13.40	Octagon	
9	0-10	0.57	1.23	1.23	20.53	12.32	Octagon	

$$F_{des} = q * K_z * C_f$$

$F_{des} < 16$ psf, then use 16 psf for minimum wind pressure 27.1.5 and 28.3.4

$0.6 * F_{des}$ based on ASD Load Combination 2

Calculate K_z as mid-height elevation of section for exposure category using Table 26.10-1

Calculate C_f from Figure 29.4-1

Rough for standard brick, very rough at locations of equipment & antenna

30% increase in C_f at regions with antennas

Calculate Total Number of Stack Sections:

NoSections = Total number of stack sections being analyzed

$$\text{NoSections} := \begin{cases} \text{Mp} \leftarrow 0 \\ \text{for } r \in 1..35 \\ \quad \text{Mp}_r \leftarrow 1 \text{ if SectHgt}_r > 0 \\ \quad \text{Mp}_r \leftarrow 0 \text{ if SectHgt}_r \leq 0 \\ \text{Mp} \end{cases}$$

$$\sum \text{NoSections} = 9$$

$$\overset{ww}{N} := \sum \text{NoSections}$$

N = 9 (N is used in calculations below)

Calculate Dead Loads at Bottom of Each Stack Section:

DeadLoad = Total dead load at bottom of each *individual* stack section *all by itself*

$$\text{DeadLoad} := \begin{cases} \text{DL}_1 \leftarrow \text{SectWgt}_1 \\ \text{for } r \in 2..N \\ \quad \text{Mp} \leftarrow \text{DL}_{r-1} + \text{SectWgt}_r \\ \quad \text{DL}_r \leftarrow \text{Mp} \\ \text{DL} \end{cases}$$

$$\text{DeadLoad} = \begin{pmatrix} 20.096 \\ 45.973 \\ 72.697 \\ 140.135 \\ 224.346 \\ 327.005 \\ 449.716 \\ 639.52 \\ 740.913 \end{pmatrix} \text{ lb} \cdot 1000$$

Calculate Stress:

Fa = Axial load at bottom of each stack section. This includes all dead load above the bottom of the stack section, including the stack section itself plus all other stack sections above it.

$$Fa := \begin{cases} \text{for } r \in 1..N \\ Fa_r \leftarrow \frac{DeadLoad_r}{Area_r} \\ Fa \end{cases}$$

Fb = Bending stress due to wind at bottom of each stack section. This includes all wind load on the stack section itself plus the wind load on all stack sections above it.

$$Fb := \begin{cases} \text{for } r \in 1..N \\ Fb_r \leftarrow \frac{TotalSectionMoment_r}{SectionMod_r} \\ Fb \end{cases}$$

$$Fa = \begin{pmatrix} 8.264 \\ 14.681 \\ 22.148 \\ 33.165 \\ 42.621 \\ 51.064 \\ 58.909 \\ 58.496 \\ 63.432 \end{pmatrix} \cdot \frac{lb}{in^2}$$

$$Fb = \begin{pmatrix} 2.562 \\ 7.844 \\ 15.34 \\ 28.021 \\ 38.852 \\ 47.659 \\ 54.728 \\ 49.621 \\ 54.797 \end{pmatrix} \cdot \frac{lb}{in^2}$$

The weight of the antennas is negligible to the self weight of the chimney, therefore it is essentially no change to the seismic response of the structure due to this equipment.

Allowable stresses on the chimney using Code ACI 530-13/ASCE 5-13/TMS 402-13

Height of Chimney (h in feet) 140

f'_m (psi) 1,000

Sect.	Wall Thk. (in)	OD (ft)	ID (ft)	r (ft)	h/r	F_a (psi)	F_{bc} (psi)	f_a (psi)	f_{bc} (psi)	$(f_a/F_a) + (f_{bc}/F_{bc})$	f_{bt} (psi)	F_{bt} (psi)	f_{bt} / F_{bt}
1	8	8.73	7.40	2.86	48.94	219	333	8.26	2.56	0.045	-2.40	25	-0.10
2	10	9.14	7.47	2.95	47.43	221	333	14.68	7.84	0.090	-0.96	25	-0.04
3	10	9.54	7.87	3.09	45.27	224	333	22.15	15.34	0.145	2.05	25	0.08
4	12	10.34	8.34	3.32	42.16	227	333	33.17	28.02	0.230	8.12	25	0.32
5	14	11.14	8.81	3.55	39.43	230	333	42.62	38.85	0.302	13.28	25	0.53
6	16	11.95	9.28	3.78	37.01	233	333	51.06	47.66	0.363	17.02	25	0.68
7	18	12.75	9.75	4.01	34.89	234	333	58.91	54.73	0.416	19.38	25	0.78

For $h/r < 99$: $F_a = (1/4)f'_m [1 - (h/140r)]$

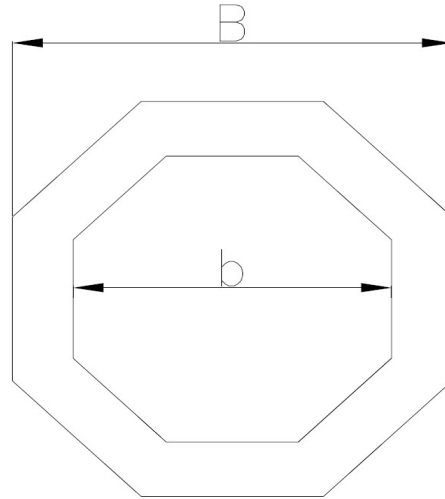
For $h/r > 99$: $F_a = (1/4)f'_m (70r/h)^2$

$F_{bc} = (1/3)f'_m$

$f_{bt} = (+)$ compressive, $(-)$ tensile = $f_{bc} - 0.6*f_a$

Octagonal Stresses

Chimney section	8
B	14.08 ft
b	10.08 ft
Unit Weight	125 pcf
Height	20 ft
Dead Load Above	449,716 lb
Moment	1,444,583 ft-lb



$A_{out} = 0.83 * B^2$	164.54 ft ²
$A_{in} = 0.83 * b^2$	84.33 ft ²
$A_{total} = A_{out} - A_{in} \text{ (ft}^2\text{)}$	80.21 ft ²

Moment of Inertia, $I = (A/12) * [B^2(1+2\cos^2(22.5))/4\cos^2(22.5)]$

I_{out}	2,156 ft ⁴
I_{in}	566 ft ⁴
$I_t = I_{out} - I_{in} \text{ (ft}^4\text{)}$	1,589 ft ⁴

Section Modulus, $S = I/c$ where $c = B / 2$

S	226 ft ³
---	---------------------

Weight of Pedestal	200,528 lbs	(Unit Weight * Height * Area)
Total Dead Load	650,244 lbs	(Weight of Pedestal + Dead Load Above)

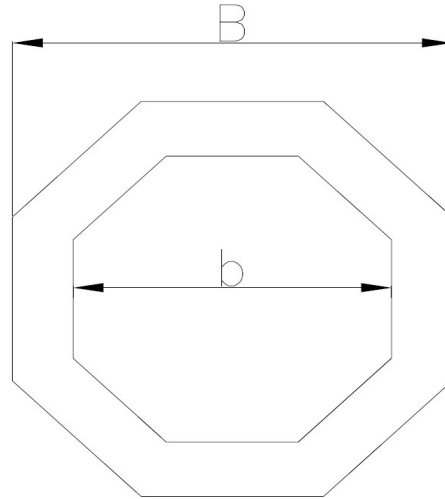
Axial, $f_a = DL / A$	56 psi	
Bending, $f_b = M / S$	44 psi	
$f_t = f_a - f_b$	11.860 psi	(+) tensile, (-) compression

Allowable tensile, F_a	40.0 psi
--------------------------	----------

Ratio: f_t / F_a	0.297	PASS	Must be < 1.0
--------------------	-------	------	---------------

Octagonal Stresses

Chimney section	9
B	14.08 ft
b	9.75 ft
Unit Weight	125 pcf
Height	10 ft
Dead Load Above	639,520 lb
Moment	1,666,801 ft-lb



$A_{out} = 0.83 * B^2$	164.54 ft ²
$A_{in} = 0.83 * b^2$	78.90 ft ²
$A_{total} = A_{out} - A_{in} \text{ (ft}^2\text{)}$	85.64 ft ²

Moment of Inertia, $I = (A/12) * [B^2(1+2\cos^2(22.5))/4\cos^2(22.5)]$

I_{out}	2,156 ft ⁴
I_{in}	496 ft ⁴
$I_t = I_{out} - I_{in} \text{ (ft}^4\text{)}$	1,660 ft ⁴

Section Modulus, $S = I/c$ where $c = B / 2$

S	236 ft ³
---	---------------------

Weight of Pedestal	107,053 lbs	(Unit Weight * Height * Area)
Total Dead Load	746,573 lbs	(Weight of Pedestal + Dead Load Above)

Axial, $f_a = DL / A$	61 psi	
Bending, $f_b = M / S$	49 psi	
$f_t = f_a - f_b$	11.445 psi	(+) tensile, (-) compression

Allowable tensile, F_a	40.0 psi
--------------------------	----------

Ratio: f_t / F_a	0.286	PASS	Must be < 1.0
--------------------	-------	------	---------------

Exhibit E

Mount Analysis

February 6, 2023 (Rev. 1)
March 3, 2022



SAI Communications
12 Industrial Way
Salem NH, 03079

RE: AT&T Site Number: CT1130
FA Number: 10035384
PACE Number: MRCTB056234
PT Number: 2051A11LES
TEP Site Number: 386942
AT&T Site Name: WATERTOWN
Site Address: 76 Westbury Park Road
Watertown, CT 06795

To Whom It May Concern:

TEP Northeast (TEP NE) has been authorized by SAI 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)
- (2) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) 4415 B25 RRH's (16.5"x13.4"x5.9" – Wt. = 46 lbs. /each)
- (3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)
- (2) DC6-48-60-18-8F Surge Arrestor (31.4"x10.2" Φ – Wt. = 29 lbs. /each)
- (3) DMP65R-BU6EA-K Antennas (71.2"x20.7"x9.7" – Wt. = 116 lbs. /each)
- (3) AIR6419 Antennas (31.1"x16.1"x7.3" – Wt. = 66 lbs. /each)
- (3) AIR6449 Antennas (30.6"x15.9"x10.6" – Wt. 82 lbs. /each)
- (1) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) 8843 B2/B66A RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)
- (1) DC6-48-60-18-8F Surge Arrestor (31.4"x10.2" Φ – Wt. = 29 lbs.)

*Proposed equipment shown in bold.

Mount fabrication drawings prepared by Sabre Industries Towers & Poles, P/N C10857001C, dated December 22, 2015 were used to perform this analysis. TEP NE conducted a ground audit of the existing AT&T antenna mounts on November 6, 2021.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2021 with 2022 Connecticut State Building Code, and AT&T Mount Technical Directive – R22.
- TEP NE 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 P of the Connecticut State Building Code, the max basic wind speed for this site is equal to 120 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.15 in was used for this analysis.
- TEP NE considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- TEP NE considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- TEP NE considers this site to have a spectral response acceleration parameter at short periods, S_s , of 0.189 and a spectral response acceleration parameter at a period of 1 second, S_1 , of 0.054.
- 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 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mounts are secured to the existing smokestack with threaded rods and steel bands tightened around the smokestack. TEP NE considers the threaded rods to be the governing connection member.

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	15	LC87	53%	PASS

Reference Documents:

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

This determination was based on the following limitations and assumptions:

1. TEP NE is not responsible for any modifications completed prior to and hereafter which TEP NE 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 mounts have been adequately secured to the smokestack 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. TEP NE performed a localized analysis on the mount itself and not on the supporting smokestack.

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

Respectfully Submitted,
TEP Northeast



Michael Cabral
Director



Daniel P. Hamm, PE
Vice President

FIELD PHOTOS:



FIELD PHOTOS (CONT.):





Wind & Ice
Calculations

Date: 1/31/2023
 Project Name: WATERTOWN
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 Designed By: RL Checked By: MSC



2.6.5.2 Velocity Pressure Coeff:

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

$K_z =$ 1.077
 $z =$ 135 (ft)
 $z_g =$ 1200 (ft)
 $\alpha =$ 7.0

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

Table 2-4

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

2.6.6.2 Topographic Factor:

Table 2-5

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

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

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

$K_{zt} =$ 1

$K_h =$ 1.0

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

$K_c =$ 0.9 (from Table 2-4)

$K_t =$ 0 (from Table 2-5)

$f =$ 0 (from Table 2-5)

Category = 1

$z =$ 135

$z_s =$ 480 (Mean elevation of base of structure above sea level)

$H =$ 0 (Ht. of the crest above surrounding terrain)

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

$K_e =$ 0.98 (from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness =

$t_i =$ 1.00 in

Importance Factor =

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

$K_{iz} =$ 1.15 (from Sec. 2.6.10)

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

$t_{iz} =$ 1.15 in

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2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

$G_h = 1.0$ Latticed Structures > 600 ft

$G_h = 0.85$ Latticed Structures 450 ft or less

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

$h =$ 140

$G_h =$ 0.85

2.6.9.2 Guyed Masts

$G_h =$ 0.85

2.6.9.3 Pole Structures

$G_h =$ 1.1

2.6.9 Appurtenances

$G_h =$ 1.0

2.6.9.4 Structures Supported on Other Structures

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

$G_h =$ 1.35

$G_h =$ 1.00

2.6.11.2 Design Wind Force on Appurtenances

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

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

$q_z =$	37.06
$q_{z(ice)} =$	6.43
$q_{z(30)} =$	2.32

$K_z =$	1.077 (from 2.6.5.2)
$K_{zt} =$	1.0 (from 2.6.6.2.1)
$K_s =$	1.0 (from 2.6.7)
$K_e =$	0.98 (from 2.6.8)
$K_d =$	0.95 (from Table 2-2)
$V_{max} =$	120 mph (Ultimate Wind Speed)
$V_{max(ice)} =$	50 mph
$V_{30} =$	30 mph

Table 2-2

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

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Determine Ca:

Table 2-9

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

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

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

Ice Thickness = 1.15 in Angle = 0 (deg) Equivalent Angle = 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
800-10965 Antenna	78.7	20.0	6.9	10.93	3.94	1.26	512	102	32
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.93	1.20	155	33	10
DMP65R-BU6EA-K Antenna	71.2	20.7	9.7	10.24	3.44	1.24	471	94	29
AIR6449 Antenna	30.6	15.9	10.6	3.38	1.92	1.20	150	32	9
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.90	1.20	52	13	3
4449 B5/B12 RRH (Side) (Shielded)	17.9	4.7	13.2	0.58	3.81	1.26	27	8	2
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.20	50	12	3
8843 B2/B66A RRH (Side) (Shielded)	14.9	5.5	13.2	0.56	2.73	1.21	25	7	2
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	2.62	1.21	32	9	2
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	46	12	3
DC6-48-60-18-8F Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	58	13	4
3/4" Round Bar	0.8	12.0	-	0.06	0.06	1.20	3		
2" Pipe	2.4	12.0	-	0.20	0.20	1.20	9		
3-1/2" Pipe	4.0	12.0	-	0.33	0.33	1.20	15		



WIND LOADS

Angle = 30 (deg)

Ice Thickness = 1.15 in.

Equivalent Angle = 210 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	512	216	438
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	155	75	135
DMP65R-BU6EA-K Antenna	71.2	20.7	9.7	10.24	4.80	3.44	7.34	1.24	1.41	471	251	416
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	150	102	138
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	52	73	57
4449 B5/B12 RRH (Side) (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	27	73	39
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	50	61	53
8843 B2/B66A RRH (Side) (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	25	61	34
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	32	69	41
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	46	75	54

WIND LOADS WITH ICE:

800-10965 Antenna	81.0	22.3	9.2	12.55	5.18	3.63	8.80	1.25	1.46	101	49	88
AIR6419 Antenna	33.4	18.4	9.6	4.27	2.23	1.82	3.48	1.20	1.24	33	18	29
DMP65R-BU6EA-K Antenna	73.5	23.0	12.0	11.74	6.13	3.20	6.12	1.23	1.36	93	54	83
AIR6449 Antenna	32.9	18.2	12.9	4.16	2.95	1.81	2.55	1.20	1.20	32	23	30
4449 B5/B12 RRH (Side)	20.2	11.7	15.5	1.64	2.17	1.73	1.30	1.20	1.20	13	17	14
4449 B5/B12 RRH (Side) (Shielded)	20.2	7.0	15.5	0.98	2.17	2.89	1.30	1.22	1.20	8	17	10
8843 B2/B66A RRH (Side)	17.2	13.2	15.5	1.58	1.85	1.30	1.11	1.20	1.20	12	14	13
8843 B2/B66A RRH (Side) (Shielded)	17.2	7.8	15.5	0.93	1.85	2.22	1.11	1.20	1.20	7	14	9
4415 B25 RRH (Side)	18.8	8.6	15.8	1.12	2.06	2.19	1.19	1.20	1.20	9	16	10
B14 4478 RRH (Side)	20.4	10.6	15.7	1.50	2.22	1.92	1.30	1.20	1.20	12	17	13

WIND LOADS AT 30 MPH:

800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	32	14	27
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	10	5	8
DMP65R-BU6EA-K Antenna	71.2	20.7	9.7	10.24	4.80	3.44	7.34	1.24	1.41	29	16	26
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	9
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4
4449 B5/B12 RRH (Side) (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	2
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3
8843 B2/B66A RRH (Side) (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	2
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	2	4	3
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3

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WIND LOADS

Angle = 60 (deg)

Ice Thickness = 1.15 in.

Equivalent Angle = 240 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs) (side)	Force (lbs) (angle)
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	512	216	290
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	155	75	95
DMP65R-BU6EA-K Antenna	71.2	20.7	9.7	10.24	4.80	3.44	7.34	1.24	1.41	471	251	306
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	150	102	114
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	52	73	68
4449 B5/B12 RRH (Side) (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	39	73	64
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	50	61	58
8843 B2/B66A RRH (Side) (Shielded)	14.9	8.2	13.2	0.85	1.37	1.82	1.13	1.20	1.20	38	61	55
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	32	69	60
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	46	75	68

WIND LOADS WITH ICE:

800-10965 Antenna	81.0	22.3	9.2	12.55	5.18	3.63	8.80	1.25	1.46	101	49	62
AIR6419 Antenna	33.4	18.4	9.6	4.27	2.23	1.82	3.48	1.20	1.24	33	18	22
DMP65R-BU6EA-K Antenna	73.5	23.0	12.0	11.74	6.13	3.20	6.12	1.23	1.36	93	54	63
AIR6449 Antenna	32.9	18.2	12.9	4.16	2.95	1.81	2.55	1.20	1.20	32	23	25
4449 B5/B12 RRH (Side)	20.2	11.7	15.5	1.64	2.17	1.73	1.30	1.20	1.20	13	17	16
4449 B5/B12 RRH (Side) (Shielded)	20.2	7.0	15.5	0.98	2.17	2.89	1.30	1.22	1.20	8	17	15
8843 B2/B66A RRH (Side)	17.2	13.2	15.5	1.58	1.85	1.30	1.11	1.20	1.20	12	14	14
8843 B2/B66A RRH (Side) (Shielded)	17.2	7.8	15.5	0.93	1.85	2.22	1.11	1.20	1.20	7	14	13
4415 B25 RRH (Side)	18.8	8.6	15.8	1.12	2.06	2.19	1.19	1.20	1.20	9	16	14
B14 4478 RRH (Side)	20.4	10.6	15.7	1.50	2.22	1.92	1.30	1.20	1.20	12	17	16

WIND LOADS AT 30 MPH:

800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	32	14	18
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	10	5	6
DMP65R-BU6EA-K Antenna	71.2	20.7	9.7	10.24	4.80	3.44	7.34	1.24	1.41	29	16	19
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	7
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4
4449 B5/B12 RRH (Side) (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	4
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4
8843 B2/B66A RRH (Side) (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	3
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	2	4	4
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4

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 Designed By: RL Checked By: MSC



WIND LOADS

Angle = 90 (deg) Ice Thickness = 1.15 in. Equivalent Angle = 270 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs) (side)	Force (lbs) (angle)
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	512	216	216
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	155	75	75
DMP65R-BU6EA-K Antenna	71.2	20.7	9.7	10.24	4.80	3.44	7.34	1.24	1.41	471	251	251
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	150	102	102
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	52	73	73
4449 B5/B12 RRH (Side) (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	27	73	73
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	50	61	61
8843 B2/B66A RRH (Side) (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	25	61	61
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	32	69	69
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	46	75	75

WIND LOADS WITH ICE:

800-10965 Antenna	81.0	22.3	9.2	12.55	5.18	3.63	8.80	1.25	1.46	101	49	49
AIR6419 Antenna	33.4	18.4	9.6	4.27	2.23	1.82	3.48	1.20	1.24	33	18	18
DMP65R-BU6EA-K Antenna	73.5	23.0	12.0	11.74	6.13	3.20	6.12	1.23	1.36	93	54	54
AIR6449 Antenna	32.9	18.2	12.9	4.16	2.95	1.81	2.55	1.20	1.20	32	23	23
4449 B5/B12 RRH (Side)	20.2	11.7	15.5	1.64	2.17	1.73	1.30	1.20	1.20	13	17	17
4449 B5/B12 RRH (Side) (Shielded)	20.2	7.0	15.5	0.98	2.17	2.89	1.30	1.22	1.20	8	17	17
8843 B2/B66A RRH (Side)	17.2	13.2	15.5	1.58	1.85	1.30	1.11	1.20	1.20	12	14	14
8843 B2/B66A RRH (Side) (Shielded)	17.2	7.8	15.5	0.93	1.85	2.22	1.11	1.20	1.20	7	14	14
4415 B25 RRH (Side)	18.8	8.6	15.8	1.12	2.06	2.19	1.19	1.20	1.20	9	16	16
B14 4478 RRH (Side)	20.4	10.6	15.7	1.50	2.22	1.92	1.30	1.20	1.20	12	17	17

WIND LOADS AT 30 MPH:

800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	32	14	14
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	10	5	5
DMP65R-BU6EA-K Antenna	71.2	20.7	9.7	10.24	4.80	3.44	7.34	1.24	1.41	29	16	16
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	6
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	5
4449 B5/B12 RRH (Side) (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	5
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4
8843 B2/B66A RRH (Side) (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	4
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	2	4	4
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5

Date: 1/31/2023
 Project Name: WATERTOWN
 Project No.: CT1130
 Designed By: RL Checked By: MSC



WIND LOADS

Angle = 120 (deg) Ice Thickness = 1.15 in. Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	512	216	290
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	155	75	95
DMP65R-BU6EA-K Antenna	71.2	20.7	9.7	10.24	4.80	3.44	7.34	1.24	1.41	471	251	306
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	150	102	114
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	52	73	68
4449 B5/B12 RRH (Side) (Shielded)	17.9	7.1	13.2	0.88	1.64	2.54	1.36	1.20	1.20	39	73	64
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	50	61	58
8843 B2/B66A RRH (Side) (Shielded)	14.9	8.2	13.2	0.85	1.37	1.82	1.13	1.20	1.20	38	61	55
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	32	69	60
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	46	75	68

WIND LOADS WITH ICE:

800-10965 Antenna	81.0	22.3	9.2	12.55	5.18	3.63	8.80	1.25	1.46	101	49	62
AIR6419 Antenna	33.4	18.4	9.6	4.27	2.23	1.82	3.48	1.20	1.24	33	18	22
DMP65R-BU6EA-K Antenna	73.5	23.0	12.0	11.74	6.13	3.20	6.12	1.23	1.36	93	54	63
AIR6449 Antenna	32.9	18.2	12.9	4.16	2.95	1.81	2.55	1.20	1.20	32	23	25
4449 B5/B12 RRH (Side)	20.2	11.7	15.5	1.64	2.17	1.73	1.30	1.20	1.20	13	17	16
4449 B5/B12 RRH (Side) (Shielded)	20.2	7.0	15.5	0.98	2.17	2.89	1.30	1.22	1.20	8	17	15
8843 B2/B66A RRH (Side)	17.2	13.2	15.5	1.58	1.85	1.30	1.11	1.20	1.20	12	14	14
8843 B2/B66A RRH (Side) (Shielded)	17.2	7.8	15.5	0.93	1.85	2.22	1.11	1.20	1.20	7	14	13
4415 B25 RRH (Side)	18.8	8.6	15.8	1.12	2.06	2.19	1.19	1.20	1.20	9	16	14
B14 4478 RRH (Side)	20.4	10.6	15.7	1.50	2.22	1.92	1.30	1.20	1.20	12	17	16

WIND LOADS AT 30 MPH:

800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	32	14	18
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	10	5	6
DMP65R-BU6EA-K Antenna	71.2	20.7	9.7	10.24	4.80	3.44	7.34	1.24	1.41	29	16	19
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	7
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4
4449 B5/B12 RRH (Side) (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	4
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4
8843 B2/B66A RRH (Side) (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	3
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	2	4	4
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4

Date: 1/31/2023
 Project Name: WATERTOWN
 Project No.: CT1130
 Designed By: RL Checked By: MSC



WIND LOADS

Angle = 150 (deg) Ice Thickness = 1.15 in. Equivalent Angle = 330 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs) (angle)
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	512	216	438
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	155	75	135
DMP65R-BU6EA-K Antenna	71.2	20.7	9.7	10.24	4.80	3.44	7.34	1.24	1.41	471	251	416
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	150	102	138
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	52	73	57
4449 B5/B12 RRH (Side) (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	27	73	39
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	50	61	53
8843 B2/B66A RRH (Side) (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	25	61	34
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	32	69	41
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	46	75	54

WIND LOADS WITH ICE:

800-10965 Antenna	81.0	22.3	9.2	12.55	5.18	3.63	8.80	1.25	1.46	101	49	88
AIR6419 Antenna	33.4	18.4	9.6	4.27	2.23	1.82	3.48	1.20	1.24	33	18	29
DMP65R-BU6EA-K Antenna	73.5	23.0	12.0	11.74	6.13	3.20	6.12	1.23	1.36	93	54	83
AIR6449 Antenna	32.9	18.2	12.9	4.16	2.95	1.81	2.55	1.20	1.20	32	23	30
4449 B5/B12 RRH (Side)	20.2	11.7	15.5	1.64	2.17	1.73	1.30	1.20	1.20	13	17	14
4449 B5/B12 RRH (Side) (Shielded)	20.2	7.0	15.5	0.98	2.17	2.89	1.30	1.22	1.20	8	17	10
8843 B2/B66A RRH (Side)	17.2	13.2	15.5	1.58	1.85	1.30	1.11	1.20	1.20	12	14	13
8843 B2/B66A RRH (Side) (Shielded)	17.2	7.8	15.5	0.93	1.85	2.22	1.11	1.20	1.20	7	14	9
4415 B25 RRH (Side)	18.8	8.6	15.8	1.12	2.06	2.19	1.19	1.20	1.20	9	16	10
B14 4478 RRH (Side)	20.4	10.6	15.7	1.50	2.22	1.92	1.30	1.20	1.20	12	17	13

WIND LOADS AT 30 MPH:

800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	32	14	27
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	10	5	8
DMP65R-BU6EA-K Antenna	71.2	20.7	9.7	10.24	4.80	3.44	7.34	1.24	1.41	29	16	26
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	9
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4
4449 B5/B12 RRH (Side) (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	5	2
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3
8843 B2/B66A RRH (Side) (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	2	4	2
4415 B25 RRH (Side)	16.5	6.3	13.5	0.72	1.55	2.62	1.22	1.21	1.20	2	4	3
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3

Date: 1/31/2023
 Project Name: MA2945
 Project No.: BECKET MA HRR
 Designed By: RL Checked By: MSC



ICE WEIGHT CALCULATIONS

Thickness of ice: 1.15 in.
 Density of ice: 56 pcf

800-10965 Antenna

Weight of ice based on total radial SF area:
 Height (in): 78.7
 Width (in): 20.0
 Depth (in): 6.9
 Total weight of ice on object: 206 lbs
 Weight of object: 109.0 lbs
Combined weight of ice and object: 315 lbs

AIR6419 Antenna

Weight of ice based on total radial SF area:
 Height (in): 31.1
 Width (in): 16.1
 Depth (in): 7.3
 Total weight of ice on object: 69 lbs
 Weight of object: 66.0 lbs
Combined weight of ice and object: 135 lbs

DMP65R-BU6EA-K Antenna

Weight of ice based on total radial SF area:
 Height (in): 71.2
 Width (in): 20.7
 Depth (in): 9.7
 Total weight of ice on object: 200 lbs
 Weight of object: 116.0 lbs
Combined weight of ice and object: 316 lbs

AIR6449 Antenna

Weight of ice based on total radial SF area:
 Height (in): 30.6
 Width (in): 15.9
 Depth (in): 10.6
 Total weight of ice on object: 73 lbs
 Weight of object: 82.0 lbs
Combined weight of ice and object: 155 lbs

4449 B5/B12 RRH

Weight of ice based on total radial SF area:
 Height (in): 17.9
 Width (in): 13.2
 Depth (in): 9.4
 Total weight of ice on object: 36 lbs
 Weight of object: 73.0 lbs
Combined weight of ice and object: 109 lbs

8843 B2/B66A RRH

Weight of ice based on total radial SF area:
 Height (in): 14.9
 Width (in): 13.2
 Depth (in): 10.9
 Total weight of ice on object: 32 lbs
 Weight of object: 72.0 lbs
Combined weight of ice and object: 104 lbs

4415 B25 RRH

Weight of ice based on total radial SF area:
 Height (in): 16.5
 Width (in): 13.5
 Depth (in): 6.3
 Total weight of ice on object: 31 lbs
 Weight of object: 50.0 lbs
Combined weight of ice and object: 81 lbs

B14 4478 RRH

Weight of ice based on total radial SF area:
 Height (in): 18.1
 Width (in): 13.4
 Depth (in): 8.3
 Total weight of ice on object: 36 lbs
 Weight of object: 60.0 lbs
Combined weight of ice and object: 96 lbs

DC6-48-60-18-8F Surge Arrestor

Weight of ice based on total radial SF area:
 Depth (in): 31.4
 Diameter(in): 10.2
 Total weight of ice on object: 42 lbs
 Weight of object: 29 lbs
Combined weight of ice and object: 71 lbs

3/4" Round Bar

Per foot weight of ice:
 diameter (in): 0.75
Per foot weight of ice on object: 3 plf

2" Pipe

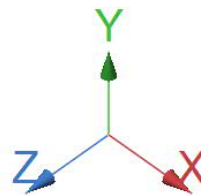
Per foot weight of ice:
 diameter (in): 2.38
Per foot weight of ice on object: 5 plf

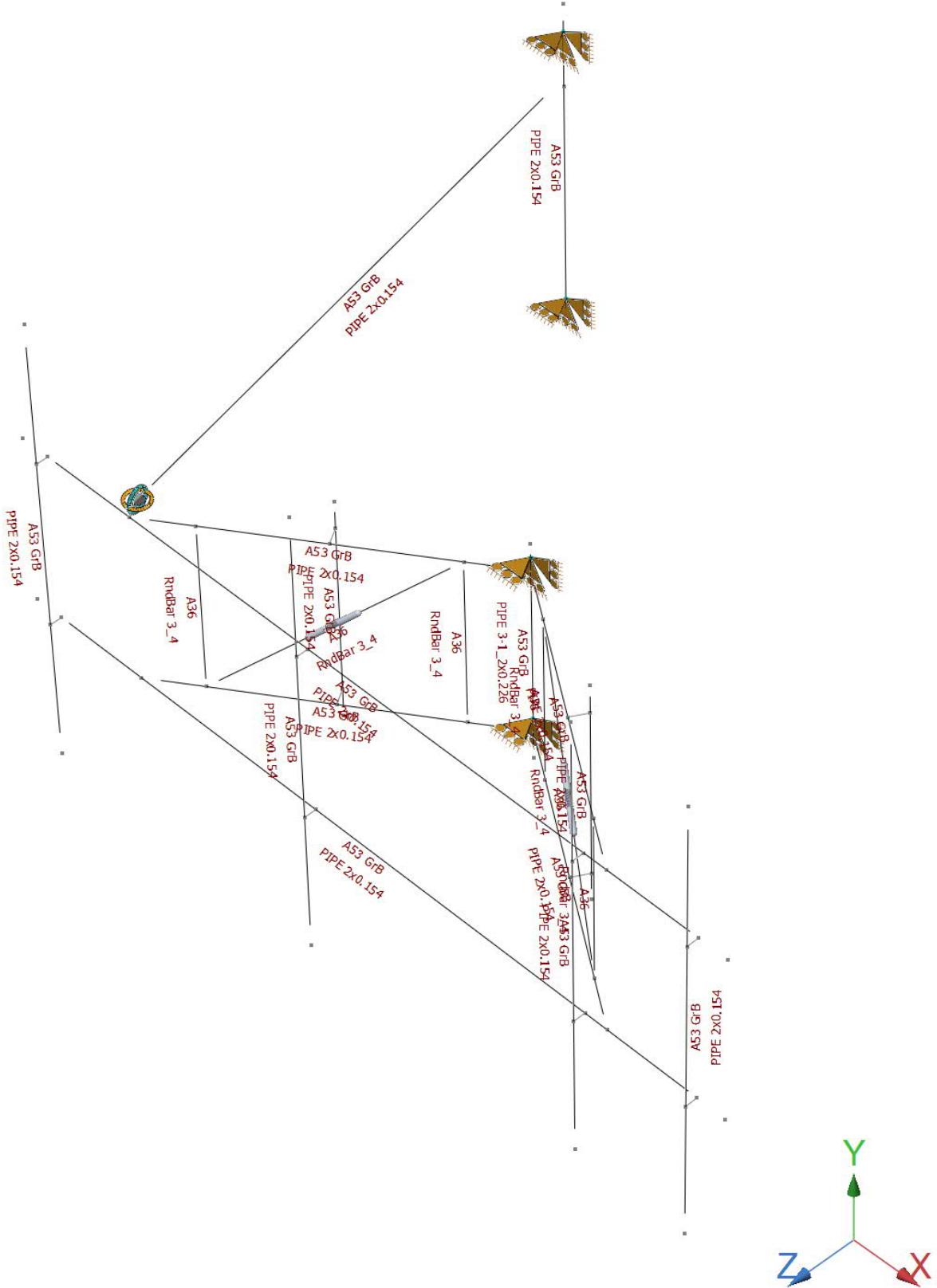
3-1/2" Pipe

Per foot weight of ice:
 diameter (in): 4
Per foot weight of ice on object: 7 plf



Mount Calculations
(Existing Conditions)

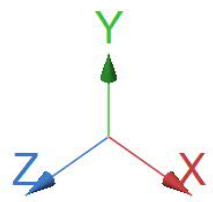
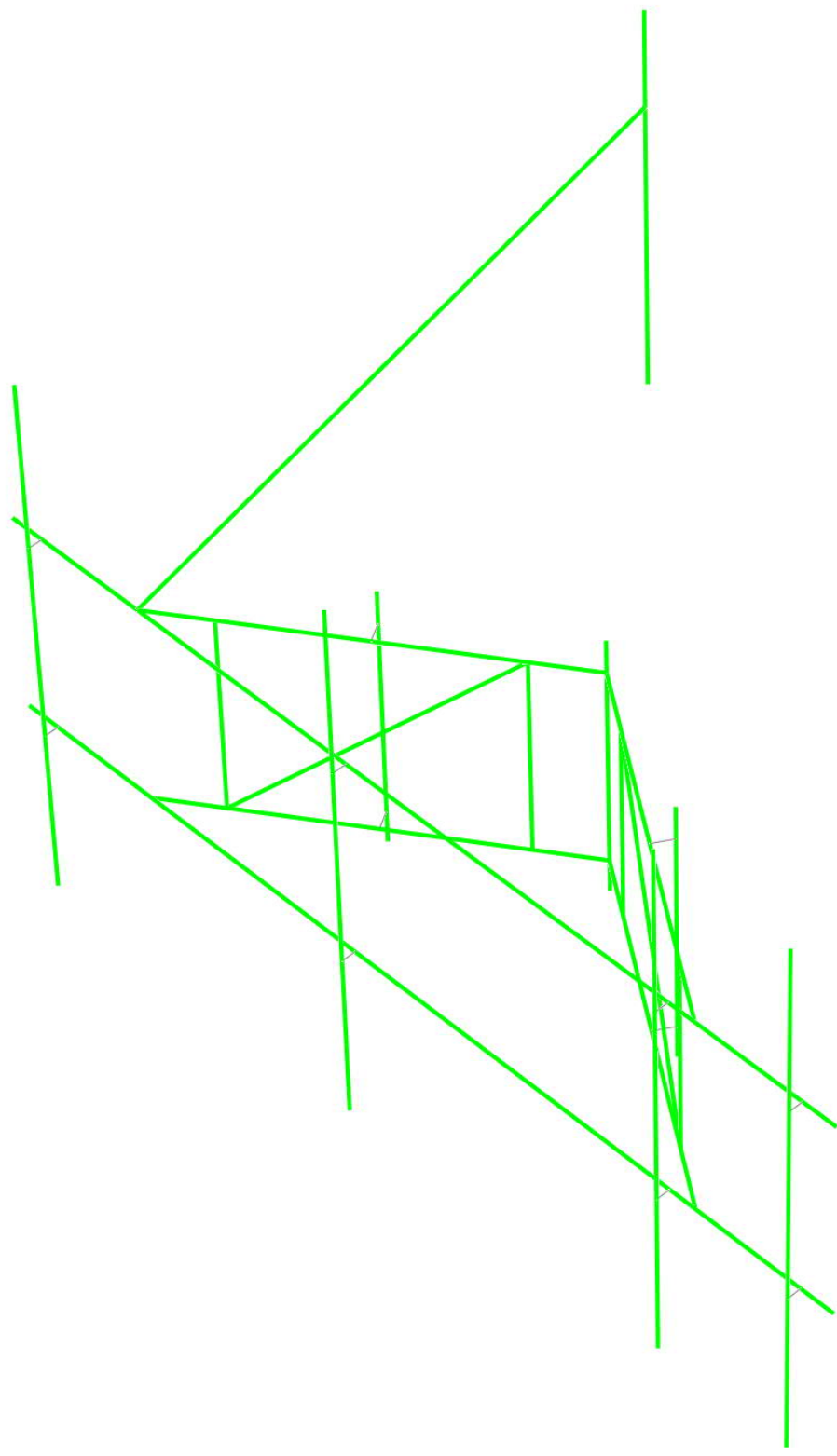


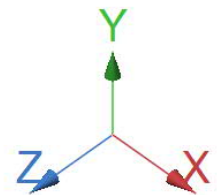
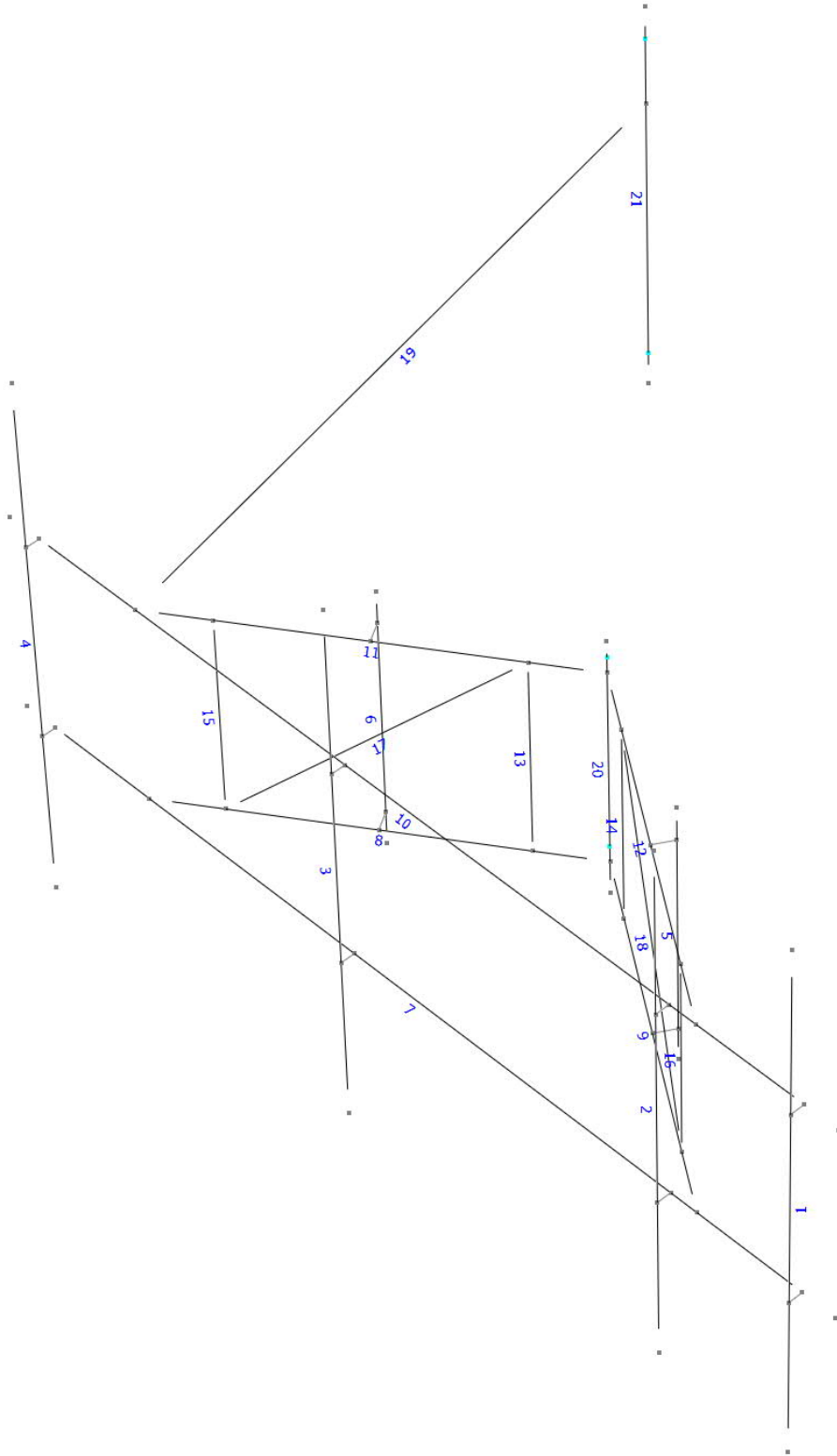




Design status

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





Current Date: 1/31/2023 10:59 AM
 Units system: English

Load data

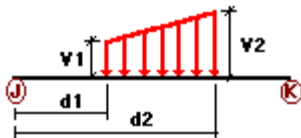
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
W10	WL ICE 0deg	No	WIND
W130	WL ICE 30deg	No	WIND
W160	WL ICE 60deg	No	WIND
W190	WL ICE 90deg	No	WIND
W1120	WL ICE 120deg	No	WIND
W1150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load Right End of Mount	No	LL
LL3	250 lb Live Load Left End of Mount	No	LL
LLa1	500 lb Live Load Antenna 1	No	LL
LLa2	500 lb Live Load Antenna 2	No	LL
LLa3	500 lb Live Load Antenna 3	No	LL
LLa4	500 lb Live Load Antenna 4	No	LL

Distributed force on members

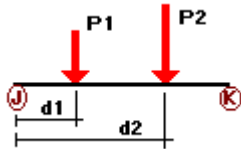


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	11	z	-0.009	0.00	0.00	No	0.00	No
	1	z	-0.009	0.00	0.00	No	0.00	No
	19	z	-0.009	0.00	0.00	No	0.00	No
	5	z	-0.009	0.00	0.00	No	0.00	No
	6	z	-0.009	0.00	0.00	No	0.00	No
	21	z	-0.009	0.00	0.00	No	0.00	No
	7	z	-0.009	0.00	0.00	No	0.00	No
	8	z	-0.009	0.00	0.00	No	0.00	No
	9	z	-0.009	0.00	0.00	No	0.00	No
	10	z	-0.009	0.00	0.00	No	0.00	No
	12	z	-0.009	0.00	0.00	No	0.00	No
	20	z	-0.015	0.00	0.00	No	0.00	No
	13	z	-0.003	0.00	0.00	No	0.00	No
	14	z	-0.003	0.00	0.00	No	0.00	No
	15	z	-0.003	0.00	0.00	No	0.00	No
	16	z	-0.003	0.00	0.00	No	0.00	No
	17	z	-0.003	0.00	0.00	No	0.00	No
	18	z	-0.003	0.00	0.00	No	0.00	No
W30	11	z	-0.009	0.00	0.00	No	0.00	No
	1	z	-0.009	0.00	0.00	No	0.00	No
	19	z	-0.009	0.00	0.00	No	0.00	No
	5	z	-0.009	0.00	0.00	No	0.00	No
	6	z	-0.009	0.00	0.00	No	0.00	No
	21	z	-0.009	0.00	0.00	No	0.00	No
	7	z	-0.009	0.00	0.00	No	0.00	No
	8	z	-0.009	0.00	0.00	No	0.00	No
	9	z	-0.009	0.00	0.00	No	0.00	No
	10	z	-0.009	0.00	0.00	No	0.00	No
	12	z	-0.009	0.00	0.00	No	0.00	No
	20	z	-0.015	0.00	0.00	No	0.00	No
	13	z	-0.003	0.00	0.00	No	0.00	No
	14	z	-0.003	0.00	0.00	No	0.00	No
	15	z	-0.003	0.00	0.00	No	0.00	No
	16	z	-0.003	0.00	0.00	No	0.00	No
	17	z	-0.003	0.00	0.00	No	0.00	No
	18	z	-0.003	0.00	0.00	No	0.00	No
W60	11	x	-0.009	0.00	0.00	No	0.00	No
	1	x	-0.009	0.00	0.00	No	0.00	No
	2	x	-0.009	0.00	0.00	No	0.00	No
	3	x	-0.009	0.00	0.00	No	0.00	No
	4	x	-0.009	0.00	0.00	No	0.00	No
	19	x	-0.009	0.00	0.00	No	0.00	No
	5	x	-0.009	0.00	0.00	No	0.00	No
	6	x	-0.009	0.00	0.00	No	0.00	No
	21	x	-0.009	0.00	0.00	No	0.00	No
	7	x	-0.009	0.00	0.00	No	0.00	No
	8	x	-0.009	0.00	0.00	No	0.00	No
	9	x	-0.009	0.00	0.00	No	0.00	No
	10	x	-0.009	0.00	0.00	No	0.00	No
	12	x	-0.009	0.00	0.00	No	0.00	No
	20	x	-0.015	0.00	0.00	No	0.00	No
	13	x	-0.003	0.00	0.00	No	0.00	No
	14	x	-0.003	0.00	0.00	No	0.00	No
	15	x	-0.003	0.00	0.00	No	0.00	No
16	x	-0.003	0.00	0.00	No	0.00	No	
17	x	-0.003	0.00	0.00	No	0.00	No	
18	x	-0.003	0.00	0.00	No	0.00	No	
W90	11	x	-0.009	0.00	0.00	No	0.00	No
	1	x	-0.009	0.00	0.00	No	0.00	No
	2	x	-0.009	0.00	0.00	No	0.00	No

	3	x	-0.009	0.00	0.00	No	0.00	No
	4	x	-0.009	0.00	0.00	No	0.00	No
	19	x	-0.009	0.00	0.00	No	0.00	No
	5	x	-0.009	0.00	0.00	No	0.00	No
	6	x	-0.009	0.00	0.00	No	0.00	No
	21	x	-0.009	0.00	0.00	No	0.00	No
	8	x	-0.009	0.00	0.00	No	0.00	No
	9	x	-0.009	0.00	0.00	No	0.00	No
	12	x	-0.009	0.00	0.00	No	0.00	No
	20	x	-0.015	0.00	0.00	No	0.00	No
	13	x	-0.003	0.00	0.00	No	0.00	No
	14	x	-0.003	0.00	0.00	No	0.00	No
	15	x	-0.003	0.00	0.00	No	0.00	No
	16	x	-0.003	0.00	0.00	No	0.00	No
	17	x	-0.003	0.00	0.00	No	0.00	No
W120	18	x	-0.003	0.00	0.00	No	0.00	No
	11	x	-0.009	0.00	0.00	No	0.00	No
	1	x	-0.009	0.00	0.00	No	0.00	No
	2	x	-0.009	0.00	0.00	No	0.00	No
	3	x	-0.009	0.00	0.00	No	0.00	No
	4	x	-0.009	0.00	0.00	No	0.00	No
	19	x	-0.009	0.00	0.00	No	0.00	No
	5	x	-0.009	0.00	0.00	No	0.00	No
	6	x	-0.009	0.00	0.00	No	0.00	No
	21	x	-0.009	0.00	0.00	No	0.00	No
	7	x	-0.009	0.00	0.00	No	0.00	No
	8	x	-0.009	0.00	0.00	No	0.00	No
	9	x	-0.009	0.00	0.00	No	0.00	No
	10	x	-0.009	0.00	0.00	No	0.00	No
	12	x	-0.009	0.00	0.00	No	0.00	No
	20	x	-0.015	0.00	0.00	No	0.00	No
	13	x	-0.003	0.00	0.00	No	0.00	No
	14	x	-0.003	0.00	0.00	No	0.00	No
	15	x	-0.003	0.00	0.00	No	0.00	No
	16	x	-0.003	0.00	0.00	No	0.00	No
	17	x	-0.003	0.00	0.00	No	0.00	No
W150	18	x	-0.003	0.00	0.00	No	0.00	No
	11	z	0.009	0.00	0.00	No	0.00	No
	1	z	0.009	0.00	0.00	No	0.00	No
	2	z	0.009	0.00	0.00	No	0.00	No
	3	z	0.009	0.00	0.00	No	0.00	No
	4	z	0.009	0.00	0.00	No	0.00	No
	19	z	0.009	0.00	0.00	No	0.00	No
	5	z	0.009	0.00	0.00	No	0.00	No
	6	z	0.009	0.00	0.00	No	0.00	No
	21	z	0.009	0.00	0.00	No	0.00	No
	7	z	0.009	0.00	0.00	No	0.00	No
	8	z	0.009	0.00	0.00	No	0.00	No
	9	z	0.009	0.00	0.00	No	0.00	No
	10	z	0.009	0.00	0.00	No	0.00	No
	12	z	0.009	0.00	0.00	No	0.00	No
	20	z	0.015	0.00	0.00	No	0.00	No
	13	z	0.003	0.00	0.00	No	0.00	No
	14	z	0.003	0.00	0.00	No	0.00	No
	15	z	0.003	0.00	0.00	No	0.00	No
	16	z	0.003	0.00	0.00	No	0.00	No
	17	z	0.003	0.00	0.00	No	0.00	No
	18	z	0.003	0.00	0.00	No	0.00	No
Di	11	y	-0.005	0.00	0.00	No	0.00	No
	1	y	-0.005	0.00	0.00	No	0.00	No

2	y	-0.005	0.00	0.00	No	0.00	No
3	y	-0.005	0.00	0.00	No	0.00	No
4	y	-0.005	0.00	0.00	No	0.00	No
19	y	-0.005	0.00	0.00	No	0.00	No
5	y	-0.005	0.00	0.00	No	0.00	No
6	y	-0.005	0.00	0.00	No	0.00	No
21	y	-0.005	0.00	0.00	No	0.00	No
7	y	-0.005	0.00	0.00	No	0.00	No
8	y	-0.005	0.00	0.00	No	0.00	No
9	y	-0.005	0.00	0.00	No	0.00	No
10	y	-0.005	0.00	0.00	No	0.00	No
12	y	-0.005	0.00	0.00	No	0.00	No
20	y	-0.007	0.00	0.00	No	0.00	No
13	y	-0.003	0.00	0.00	No	0.00	No
14	y	-0.003	0.00	0.00	No	0.00	No
15	y	-0.003	0.00	0.00	No	0.00	No
16	y	-0.003	0.00	0.00	No	0.00	No
17	y	-0.003	0.00	0.00	No	0.00	No
18	y	-0.003	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%	
D	2	y	-0.055	1.25	No	
		y	-0.055	6.75	No	
	3	y	-0.033	1.25	No	
		y	-0.033	3.00	No	
		y	-0.041	5.00	No	
		y	-0.041	6.75	No	
		y	-0.041	6.75	No	
	4	y	-0.058	1.25	No	
		y	-0.058	6.75	No	
		y	-0.073	1.00	No	
		y	-0.072	1.00	No	
	5	y	-0.05	50.00	Yes	
		y	-0.06	50.00	Yes	
	6	y	-0.029	50.00	Yes	
		y	-0.029	50.00	Yes	
	Wo	2	z	-0.257	1.25	No
			z	-0.257	6.75	No
		3	z	-0.078	1.25	No
z			-0.078	3.00	No	
z			-0.076	5.00	No	
4		z	-0.076	6.75	No	
		z	-0.237	1.25	No	
		z	-0.237	6.75	No	
		z	-0.027	1.00	No	
5		z	-0.025	1.00	No	
		z	-0.031	50.00	Yes	
		z	-0.047	50.00	Yes	
6		z	-0.058	50.00	Yes	
		z	-0.058	50.00	Yes	

W30	2	3	-0.22	1.25	No
		3	-0.22	6.75	No
	3	3	-0.068	1.25	No
		3	-0.068	3.00	No
		3	-0.07	5.00	No
	4	3	-0.07	6.75	No
3		-0.209	1.25	No	
3		-0.209	6.75	No	
W60	5	3	-0.039	1.00	No
		3	-0.054	50.00	Yes
		3	-0.058	50.00	Yes
	2	3	-0.146	1.25	No
		3	-0.146	6.75	No
		3	-0.048	1.25	No
W90	3	3	-0.048	3.00	No
		3	-0.058	5.00	No
		3	-0.058	6.75	No
	4	3	-0.154	1.25	No
		3	-0.154	6.75	No
		3	-0.065	1.00	No
W120	5	3	-0.068	50.00	Yes
		3	-0.058	50.00	Yes
	2	x	-0.109	1.25	No
		x	-0.109	6.75	No
		x	-0.038	1.25	No
	W150	3	x	-0.038	3.00
x			-0.051	5.00	No
x			-0.051	6.75	No
4		x	-0.051	6.75	No
		x	-0.126	1.25	No
		x	-0.126	6.75	No
W180	5	x	-0.073	1.00	No
		x	-0.075	50.00	Yes
		x	-0.058	50.00	Yes
	2	2	-0.146	1.25	No
		2	-0.146	6.75	No
		2	-0.048	1.25	No
W210	3	2	-0.048	3.00	No
		2	-0.058	5.00	No
		2	-0.058	6.75	No
	4	2	-0.058	6.75	No
		2	-0.154	1.25	No
		2	-0.154	6.75	No
W240	5	2	-0.065	1.00	No
		2	-0.068	50.00	Yes
		2	-0.058	50.00	Yes
	2	2	-0.22	1.25	No
		2	-0.22	6.75	No
		2	-0.068	1.25	No
W270	3	2	-0.068	3.00	No
		2	-0.068	5.00	No
		2	-0.07	6.75	No
	4	2	-0.07	6.75	No
		2	-0.209	1.25	No
		2	-0.209	6.75	No
W300	5	2	-0.039	1.00	No
		2	-0.054	50.00	Yes
		2	-0.058	50.00	Yes
	2	y	-0.103	1.25	No
		y	-0.103	6.75	No
		y	-0.034	1.25	No
Di	3	y	-0.034	3.00	No
		y	-0.034	5.00	No
		y	-0.037	5.00	No

		y	-0.037	6.75	No
	4	y	-0.10	1.25	No
		y	-0.10	6.75	No
		y	-0.036	1.00	No
		y	-0.032	1.00	No
	5	y	-0.031	50.00	Yes
		y	-0.036	50.00	Yes
	6	y	-0.042	50.00	Yes
	14	y	-0.031	1.50	No
W10	2	z	-0.052	1.25	No
		z	-0.052	6.75	No
	3	z	-0.017	1.25	No
		z	-0.017	3.00	No
		z	-0.017	5.00	No
		z	-0.017	6.75	No
	4	z	-0.048	1.25	No
		z	-0.048	6.75	No
		z	-0.008	1.00	No
		z	-0.007	1.00	No
	5	z	-0.008	50.00	Yes
		z	-0.012	50.00	Yes
	6	z	-0.013	50.00	Yes
W130	2	3	-0.045	1.25	No
		3	-0.045	6.75	No
	3	3	-0.015	1.25	No
		3	-0.015	3.00	No
		3	-0.015	5.00	No
		3	-0.015	6.75	No
	4	3	-0.042	1.25	No
		3	-0.042	6.75	No
		3	-0.009	1.00	No
	5	3	-0.013	50.00	Yes
	6	3	-0.013	50.00	Yes
W160	2	3	-0.031	1.25	No
		3	-0.031	6.75	No
	3	3	-0.011	1.25	No
		3	-0.011	3.00	No
		3	-0.013	5.00	No
		3	-0.013	6.75	No
	4	3	-0.032	1.25	No
		3	-0.032	6.75	No
		3	-0.015	1.00	No
	5	3	-0.016	50.00	Yes
	6	3	-0.013	50.00	Yes
W190	2	x	-0.025	1.25	No
		x	-0.025	6.75	No
	3	x	-0.009	1.25	No
		x	-0.009	3.00	No
		x	-0.012	5.00	No
		x	-0.012	6.75	No
	4	x	-0.027	1.25	No
		x	-0.027	6.75	No
		x	-0.017	1.00	No
	5	x	-0.017	50.00	Yes
	6	x	-0.013	50.00	Yes
W1120	2	2	-0.031	1.25	No
		2	-0.031	6.75	No
	3	2	-0.011	1.25	No
		2	-0.011	3.00	No
		2	-0.013	5.00	No

		2	-0.013	6.75	No
	4	2	-0.032	1.25	No
		2	-0.032	6.75	No
		2	-0.015	1.00	No
	5	2	-0.016	50.00	Yes
	6	2	-0.013	50.00	Yes
W1150	2	2	-0.045	1.25	No
		2	-0.045	6.75	No
	3	2	-0.015	1.25	No
		2	-0.015	3.00	No
		2	-0.015	5.00	No
		2	-0.015	6.75	No
	4	2	-0.042	1.25	No
		2	-0.042	6.75	No
		2	-0.009	1.00	No
	5	2	-0.013	50.00	Yes
	6	2	-0.013	50.00	Yes
WLO	2	z	-0.017	1.25	No
		z	-0.017	6.75	No
	3	z	-0.005	1.25	No
		z	-0.005	3.00	No
		z	-0.005	5.00	No
		z	-0.005	6.75	No
	4	z	-0.015	1.25	No
		z	-0.015	6.75	No
		z	-0.002	1.00	No
		z	-0.002	1.00	No
	5	z	-0.002	50.00	Yes
		z	-0.003	50.00	Yes
	6	z	-0.004	50.00	Yes
WL30	2	3	-0.014	1.25	No
		3	-0.014	6.75	No
	3	3	-0.005	1.25	No
		3	-0.005	3.00	No
		3	-0.005	5.00	No
		3	-0.005	6.75	No
	4	3	-0.014	1.25	No
		3	-0.014	6.75	No
		3	-0.002	1.00	No
	5	3	-0.003	50.00	Yes
	6	3	-0.004	50.00	Yes
WL60	2	3	-0.01	1.25	No
		3	-0.01	6.75	No
	3	3	-0.003	1.25	No
		3	-0.003	3.00	No
		3	-0.004	5.00	No
		3	-0.004	6.75	No
	4	3	-0.01	1.25	No
		3	-0.01	6.75	No
		3	-0.004	1.00	No
	5	3	-0.004	50.00	Yes
	6	3	-0.004	50.00	Yes
WL90	2	x	-0.007	1.25	No
		x	-0.007	6.75	No
	3	x	-0.003	1.25	No
		x	-0.003	3.00	No
		x	-0.004	5.00	No
		x	-0.004	6.75	No
	4	x	-0.008	1.25	No
		x	-0.008	6.75	No

		x	-0.005	1.00	No
	5	x	-0.005	50.00	Yes
	6	x	-0.004	50.00	Yes
WL120	2	2	-0.01	1.25	No
		2	-0.01	6.75	No
	3	2	-0.003	1.25	No
		2	-0.003	3.00	No
		2	-0.004	5.00	No
		2	-0.004	6.75	No
	4	2	-0.01	1.25	No
		2	-0.01	6.75	No
		2	-0.004	1.00	No
	5	2	-0.004	50.00	Yes
	6	2	-0.004	50.00	Yes
WL150	2	2	-0.014	1.25	No
		2	-0.014	6.75	No
	3	2	-0.005	1.25	No
		2	-0.005	3.00	No
		2	-0.005	5.00	No
		2	-0.005	6.75	No
	4	2	-0.014	1.25	No
		2	-0.014	6.75	No
		2	-0.002	1.00	No
	5	2	-0.003	50.00	Yes
	6	2	-0.004	50.00	Yes
LL1	10	y	-0.25	6.50	No
LL2	10	y	-0.25	13.00	No
LL3	10	y	-0.25	0.00	No
LLa1	1	y	-0.50	50.00	Yes
LLa2	2	y	-0.50	50.00	Yes
LLa3	3	y	-0.50	50.00	Yes
LLa4	4	y	-0.50	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
W10	WL ICE 0deg	No	0.00	0.00	0.00
W130	WL ICE 30deg	No	0.00	0.00	0.00
W160	WL ICE 60deg	No	0.00	0.00	0.00
W190	WL ICE 90deg	No	0.00	0.00	0.00
W1120	WL ICE 120deg	No	0.00	0.00	0.00
W1150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00

WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load Right End of Mount	No	0.00	0.00	0.00
LL3	250 lb Live Load Left End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
W10	0.00	0.00	0.00
W130	0.00	0.00	0.00
W160	0.00	0.00	0.00
W190	0.00	0.00	0.00
W1120	0.00	0.00	0.00
W1150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

Current Date: 1/31/2023 11:00 AM

Units system: English

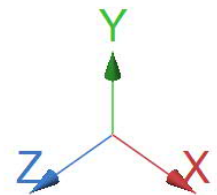
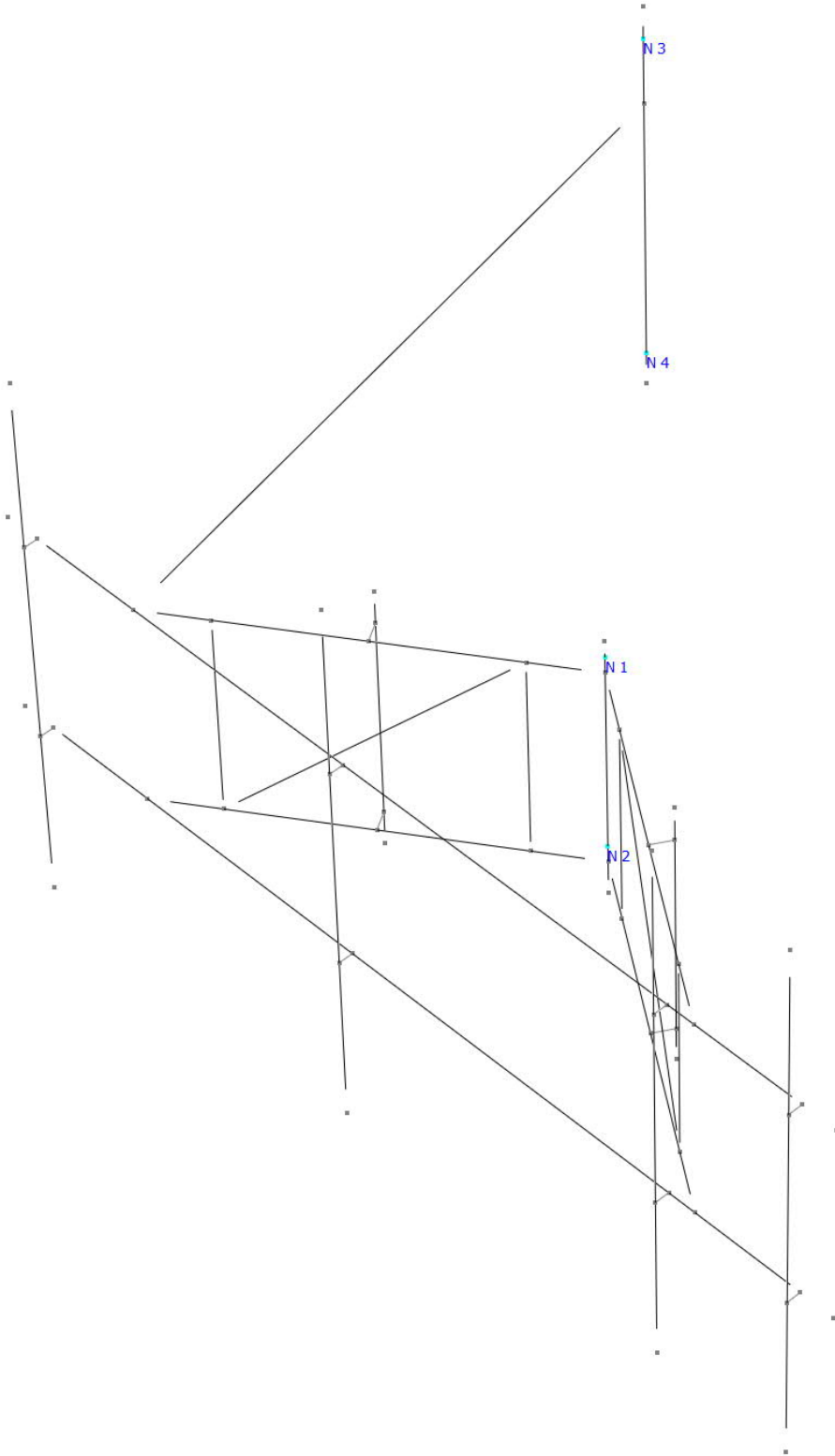
Steel Code Check

Report: Summary - Group by member**Load conditions to be included in design :**

LC1=1.2D+W_o
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-W_o
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+W_o
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-W_o
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+D_i+W₁₀
LC26=1.2D+D_i+W₁₃₀
LC27=1.2D+D_i+W₁₆₀
LC28=1.2D+D_i+W₁₉₀
LC29=1.2D+D_i+W₁₂₀
LC30=1.2D+D_i+W₁₅₀
LC31=1.2D+D_i-W₁₀
LC32=1.2D+D_i-W₁₃₀
LC33=1.2D+D_i-W₁₆₀
LC34=1.2D+D_i-W₁₉₀
LC35=1.2D+D_i-W₁₂₀
LC36=1.2D+D_i-W₁₅₀
LC37=1.2D+1.6LL1
LC38=1.2D+1.6LL2
LC39=1.2D+1.6LL3
LC40=1.2D+W_{L0}+1.6LLa1
LC41=1.2D+W_{L30}+1.6LLa1
LC42=1.2D+W_{L60}+1.6LLa1
LC43=1.2D+W_{L90}+1.6LLa1
LC44=1.2D+W_{L120}+1.6LLa1
LC45=1.2D+W_{L150}+1.6LLa1
LC46=1.2D-W_{L0}+1.6LLa1
LC47=1.2D-W_{L30}+1.6LLa1
LC48=1.2D-W_{L60}+1.6LLa1
LC49=1.2D-W_{L90}+1.6LLa1
LC50=1.2D-W_{L120}+1.6LLa1
LC51=1.2D-W_{L150}+1.6LLa1
LC52=1.2D+W_{L0}+1.6LLa2
LC53=1.2D+W_{L30}+1.6LLa2

LC54=1.2D+WL60+1.6LLa2
 LC55=1.2D+WL90+1.6LLa2
 LC56=1.2D+WL120+1.6LLa2
 LC57=1.2D+WL150+1.6LLa2
 LC58=1.2D-WL0+1.6LLa2
 LC59=1.2D-WL30+1.6LLa2
 LC60=1.2D-WL60+1.6LLa2
 LC61=1.2D-WL90+1.6LLa2
 LC62=1.2D-WL120+1.6LLa2
 LC63=1.2D-WL150+1.6LLa2
 LC64=1.2D+WL0+1.6LLa3
 LC65=1.2D+WL30+1.6LLa3
 LC66=1.2D+WL60+1.6LLa3
 LC67=1.2D+WL90+1.6LLa3
 LC68=1.2D+WL120+1.6LLa3
 LC69=1.2D+WL150+1.6LLa3
 LC70=1.2D-WL0+1.6LLa3
 LC71=1.2D-WL30+1.6LLa3
 LC72=1.2D-WL60+1.6LLa3
 LC73=1.2D-WL90+1.6LLa3
 LC74=1.2D-WL120+1.6LLa3
 LC75=1.2D-WL150+1.6LLa3
 LC76=1.2D+WL0+1.6LLa4
 LC77=1.2D+WL30+1.6LLa4
 LC78=1.2D+WL60+1.6LLa4
 LC79=1.2D+WL90+1.6LLa4
 LC80=1.2D+WL120+1.6LLa4
 LC81=1.2D+WL150+1.6LLa4
 LC82=1.2D-WL0+1.6LLa4
 LC83=1.2D-WL30+1.6LLa4
 LC84=1.2D-WL60+1.6LLa4
 LC85=1.2D-WL90+1.6LLa4
 LC86=1.2D-WL120+1.6LLa4
 LC87=1.2D-WL150+1.6LLa4

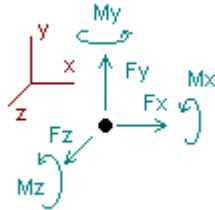
Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2x0.154	1	LC47 at 31.25%	0.26	OK	
		2	LC7 at 68.75%	0.24	OK	
		3	LC9 at 31.25%	0.20	OK	
		4	LC79 at 31.25%	0.40	OK	
		19	LC3 at 56.25%	0.16	OK	
		5	LC4 at 50.00%	0.04	OK	
		6	LC70 at 12.50%	0.04	OK	
		21	LC9 at 23.44%	0.47	OK	
		7	LC75 at 41.96%	0.37	OK	
		8	LC76 at 17.19%	0.35	OK	
		9	LC46 at 17.19%	0.25	OK	
		10	LC70 at 41.96%	0.38	OK	
		11	LC83 at 100.00%	0.45	OK	
		12	LC41 at 100.00%	0.41	OK	
	PIPE 3-1_2x0.226	20	LC87 at 81.25%	0.14	OK	
	RndBar 3_4	13	LC83 at 100.00%	0.24	OK	
		14	LC49 at 100.00%	0.16	OK	
		15	LC87 at 100.00%	0.53	OK	
		16	LC40 at 0.00%	0.37	OK	
		17	LC83 at 100.00%	0.33	OK	
		18	LC41 at 0.00%	0.17	OK	



Current Date: 2/3/2023 3:07 PM
 Units system: English

Analysis result

Reactions



Direction of positive forces and moments

Node	Forces [Kip]			Moments [Kip*ft]		
	FX	FY	FZ	MX	MY	MZ
Condition LC1=1.2D+W0						
1	-0.42420	0.47157	2.27815	0.00000	0.00000	0.00000
2	0.38361	0.79105	-0.32052	0.00000	0.00000	0.00000
3	0.03577	0.02966	0.19316	0.00000	0.00000	0.00000
4	0.00482	0.01654	0.06368	0.00000	0.00000	0.00000
SUM	0.00000	1.30882	2.21447	0.00000	0.00000	0.00000
Condition LC2=1.2D+W30						
1	0.06545	0.45322	1.96554	0.00000	0.00000	0.00000
2	0.70712	0.81634	-1.03861	0.00000	0.00000	0.00000
3	0.11749	0.02411	0.58634	0.00000	0.00000	0.00000
4	0.01857	0.01516	0.12584	0.00000	0.00000	0.00000
SUM	0.90863	1.30882	1.63911	0.00000	0.00000	0.00000
Condition LC3=1.2D+W60						
1	0.27670	0.43762	1.44985	0.00000	0.00000	0.00000
2	0.88043	0.83464	-1.61191	0.00000	0.00000	0.00000
3	0.22288	0.02195	0.74198	0.00000	0.00000	0.00000
4	0.05885	0.01462	0.12930	0.00000	0.00000	0.00000
SUM	1.43886	1.30882	0.70923	0.00000	0.00000	0.00000
Condition LC4=1.2D+W90						
1	0.34440	0.44632	1.07464	0.00000	0.00000	0.00000
2	0.97899	0.82441	-1.84339	0.00000	0.00000	0.00000
3	0.20428	0.02317	0.65358	0.00000	0.00000	0.00000
4	0.05596	0.01492	0.11517	0.00000	0.00000	0.00000
SUM	1.58363	1.30882	0.00000	0.00000	0.00000	0.00000

Condition LC5=1.2D+W120						
1	0.28700	0.46488	0.70136	0.00000	0.00000	0.00000
2	0.94447	0.80207	-1.92721	0.00000	0.00000	0.00000
3	0.15873	0.02620	0.43605	0.00000	0.00000	0.00000
4	0.04866	0.01568	0.08057	0.00000	0.00000	0.00000

SUM	1.43886	1.30882	-0.70923	0.00000	0.00000	0.00000
Condition LC6=1.2D+W150						
1	0.07536	0.47293	0.06420	0.00000	0.00000	0.00000
2	0.74871	0.79110	-2.25887	0.00000	0.00000	0.00000
3	0.07237	0.02853	0.30093	0.00000	0.00000	0.00000
4	0.01219	0.01626	0.03864	0.00000	0.00000	0.00000

SUM	0.90863	1.30882	-1.85511	0.00000	0.00000	0.00000
Condition LC7=1.2D-W0						
1	-0.41006	0.50472	-0.10912	0.00000	0.00000	0.00000
2	0.45051	0.75005	-1.84930	0.00000	0.00000	0.00000
3	-0.03501	0.03594	-0.21373	0.00000	0.00000	0.00000
4	-0.00543	0.01811	-0.04233	0.00000	0.00000	0.00000

SUM	0.00000	1.30882	-2.21447	0.00000	0.00000	0.00000
Condition LC8=1.2D-W30						
1	-0.89940	0.52278	0.20372	0.00000	0.00000	0.00000
2	0.12685	0.72471	-1.13181	0.00000	0.00000	0.00000
3	-0.11702	0.04176	-0.60730	0.00000	0.00000	0.00000
4	-0.01906	0.01957	-0.10371	0.00000	0.00000	0.00000

SUM	-0.90863	1.30882	-1.63911	0.00000	0.00000	0.00000
Condition LC9=1.2D-W60						
1	-1.11026	0.53836	0.71933	0.00000	0.00000	0.00000
2	-0.04653	0.70616	-0.55742	0.00000	0.00000	0.00000
3	-0.22281	0.04414	-0.76438	0.00000	0.00000	0.00000
4	-0.05926	0.02016	-0.10676	0.00000	0.00000	0.00000

SUM	-1.43886	1.30882	-0.70923	0.00000	0.00000	0.00000
Condition LC10=1.2D-W90						
1	-1.17815	0.52987	1.09452	0.00000	0.00000	0.00000
2	-0.14468	0.71629	-0.32454	0.00000	0.00000	0.00000
3	-0.20434	0.04282	-0.67686	0.00000	0.00000	0.00000
4	-0.05646	0.01984	-0.09312	0.00000	0.00000	0.00000

SUM	-1.58363	1.30882	0.00000	0.00000	0.00000	0.00000
Condition LC11=1.2D-W120						
1	-1.12107	0.51151	1.46775	0.00000	0.00000	0.00000
2	-0.10996	0.73872	-0.24050	0.00000	0.00000	0.00000
3	-0.15855	0.03958	-0.45890	0.00000	0.00000	0.00000
4	-0.04927	0.01902	-0.05912	0.00000	0.00000	0.00000

SUM	-1.43886	1.30882	0.70923	0.00000	0.00000	0.00000

Condition LC12=1.2D-W150

1	-0.90968	0.50353	2.10502	0.00000	0.00000	0.00000
2	0.08614	0.74969	0.09170	0.00000	0.00000	0.00000
3	-0.07223	0.03717	-0.32410	0.00000	0.00000	0.00000
4	-0.01286	0.01842	-0.01751	0.00000	0.00000	0.00000

SUM	-0.90863	1.30882	1.85511	0.00000	0.00000	0.00000
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Condition LC13=0.9D+W0

1	-0.31983	0.34978	2.00702	0.00000	0.00000	0.00000
2	0.27924	0.59815	-0.04939	0.00000	0.00000	0.00000
3	0.03569	0.02147	0.19580	0.00000	0.00000	0.00000
4	0.00490	0.01222	0.06104	0.00000	0.00000	0.00000

SUM	0.00000	0.98162	2.21447	0.00000	0.00000	0.00000
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Condition LC14=0.9D+W30

1	0.17000	0.33141	1.69450	0.00000	0.00000	0.00000
2	0.60257	0.62342	-0.76751	0.00000	0.00000	0.00000
3	0.11741	0.01595	0.58893	0.00000	0.00000	0.00000
4	0.01865	0.01084	0.12319	0.00000	0.00000	0.00000

SUM	0.90863	0.98162	1.63911	0.00000	0.00000	0.00000
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Condition LC15=0.9D+W60

1	0.38134	0.31577	1.17892	0.00000	0.00000	0.00000
2	0.77579	0.64174	-1.34090	0.00000	0.00000	0.00000
3	0.22280	0.01381	0.74456	0.00000	0.00000	0.00000
4	0.05893	0.01030	0.12665	0.00000	0.00000	0.00000

SUM	1.43886	0.98162	0.70923	0.00000	0.00000	0.00000
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Condition LC16=0.9D+W90

1	0.44899	0.32447	0.80368	0.00000	0.00000	0.00000
2	0.87441	0.63152	-1.57237	0.00000	0.00000	0.00000
3	0.20420	0.01502	0.65616	0.00000	0.00000	0.00000
4	0.05604	0.01060	0.11253	0.00000	0.00000	0.00000

SUM	1.58363	0.98162	0.00000	0.00000	0.00000	0.00000
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Condition LC17=0.9D+W120

1	0.39148	0.34302	0.43034	0.00000	0.00000	0.00000
2	0.83999	0.60921	-1.65615	0.00000	0.00000	0.00000
3	0.15865	0.01803	0.43865	0.00000	0.00000	0.00000
4	0.04874	0.01136	0.07793	0.00000	0.00000	0.00000

SUM	1.43886	0.98162	-0.70923	0.00000	0.00000	0.00000
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Condition LC18=0.9D+W150

1	0.17982	0.35102	-0.20676	0.00000	0.00000	0.00000
2	0.64425	0.59830	-1.98788	0.00000	0.00000	0.00000
3	0.07229	0.02036	0.30354	0.00000	0.00000	0.00000
4	0.01227	0.01194	0.03599	0.00000	0.00000	0.00000

SUM	0.90863	0.98162	-1.85511	0.00000	0.00000	0.00000
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Condition LC19=0.9D-Wo						
1	-0.30582	0.38281	-0.38019	0.00000	0.00000	0.00000
2	0.34627	0.55730	-1.57824	0.00000	0.00000	0.00000
3	-0.03509	0.02773	-0.21107	0.00000	0.00000	0.00000
4	-0.00536	0.01378	-0.04497	0.00000	0.00000	0.00000

SUM	0.00000	0.98162	-2.21447	0.00000	0.00000	0.00000
Condition LC20=0.9D-W30						
1	-0.79535	0.40088	-0.06744	0.00000	0.00000	0.00000
2	0.02279	0.53199	-0.86072	0.00000	0.00000	0.00000
3	-0.11710	0.03352	-0.60460	0.00000	0.00000	0.00000
4	-0.01898	0.01523	-0.10635	0.00000	0.00000	0.00000

SUM	-0.90863	0.98162	-1.63911	0.00000	0.00000	0.00000
Condition LC21=0.9D-W60						
1	-1.00629	0.41650	0.44807	0.00000	0.00000	0.00000
2	-0.15050	0.51342	-0.28624	0.00000	0.00000	0.00000
3	-0.22289	0.03588	-0.76166	0.00000	0.00000	0.00000
4	-0.05918	0.01582	-0.10940	0.00000	0.00000	0.00000

SUM	-1.43886	0.98162	-0.70923	0.00000	0.00000	0.00000
Condition LC22=0.9D-W90						
1	-1.07413	0.40802	0.82328	0.00000	0.00000	0.00000
2	-0.24871	0.52353	-0.05338	0.00000	0.00000	0.00000
3	-0.20442	0.03458	-0.67414	0.00000	0.00000	0.00000
4	-0.05638	0.01549	-0.09576	0.00000	0.00000	0.00000

SUM	-1.58363	0.98162	0.00000	0.00000	0.00000	0.00000
Condition LC23=0.9D-W120						
1	-1.01696	0.38966	1.19656	0.00000	0.00000	0.00000
2	-0.21409	0.54593	0.03063	0.00000	0.00000	0.00000
3	-0.15863	0.03135	-0.45619	0.00000	0.00000	0.00000
4	-0.04918	0.01468	-0.06176	0.00000	0.00000	0.00000

SUM	-1.43886	0.98162	0.70923	0.00000	0.00000	0.00000
Condition LC24=0.9D-W150						
1	-0.80554	0.38174	1.83377	0.00000	0.00000	0.00000
2	-0.01800	0.55685	0.36290	0.00000	0.00000	0.00000
3	-0.07231	0.02895	-0.32141	0.00000	0.00000	0.00000
4	-0.01277	0.01408	-0.02016	0.00000	0.00000	0.00000

SUM	-0.90863	0.98162	1.85511	0.00000	0.00000	0.00000
Condition LC25=1.2D+Di+WIO						
1	-0.72623	0.87675	2.17340	0.00000	0.00000	0.00000
2	0.71365	1.41644	-1.91732	0.00000	0.00000	0.00000
3	0.01075	0.05713	0.02912	0.00000	0.00000	0.00000
4	0.00183	0.02341	0.03080	0.00000	0.00000	0.00000

SUM	0.00000	2.37372	0.31600	0.00000	0.00000	0.00000

Condition LC26=1.2D+Di+WI30						
1	-0.62471	0.87269	2.10745	0.00000	0.00000	0.00000
2	0.78340	1.42192	-2.06743	0.00000	0.00000	0.00000
3	0.02696	0.05599	0.10712	0.00000	0.00000	0.00000
4	0.00456	0.02313	0.04307	0.00000	0.00000	0.00000

SUM	0.19021	2.37372	0.19021	0.00000	0.00000	0.00000
Condition LC27=1.2D+Di+WI60						
1	-0.64744	0.87496	2.08422	0.00000	0.00000	0.00000
2	0.77480	1.41930	-2.05772	0.00000	0.00000	0.00000
3	0.02291	0.05627	0.08764	0.00000	0.00000	0.00000
4	0.00387	0.02320	0.04000	0.00000	0.00000	0.00000

SUM	0.15415	2.37372	0.15415	0.00000	0.00000	0.00000
Condition LC28=1.2D+Di+WI90						
1	-0.62869	0.87634	2.00339	0.00000	0.00000	0.00000
2	0.79837	1.41766	-2.11452	0.00000	0.00000	0.00000
3	0.01990	0.05648	0.07339	0.00000	0.00000	0.00000
4	0.00342	0.02325	0.03774	0.00000	0.00000	0.00000

SUM	0.19300	2.37372	0.00000	0.00000	0.00000	0.00000
Condition LC29=1.2D+Di+WI120						
1	-0.64510	0.88029	1.92312	0.00000	0.00000	0.00000
2	0.78822	1.41279	-2.12983	0.00000	0.00000	0.00000
3	0.00929	0.05722	0.02279	0.00000	0.00000	0.00000
4	0.00174	0.02343	0.02977	0.00000	0.00000	0.00000

SUM	0.15415	2.37372	-0.15415	0.00000	0.00000	0.00000
Condition LC30=1.2D+Di+WI150						
1	-0.62245	0.88056	1.89926	0.00000	0.00000	0.00000
2	0.79638	1.41291	-2.16705	0.00000	0.00000	0.00000
3	0.01379	0.05690	0.04442	0.00000	0.00000	0.00000
4	0.00249	0.02335	0.03316	0.00000	0.00000	0.00000

SUM	0.19021	2.37372	-0.19021	0.00000	0.00000	0.00000
Condition LC31=1.2D+Di-WI0						
1	-0.72253	0.88823	1.83641	0.00000	0.00000	0.00000
2	0.73513	1.40306	-2.09239	0.00000	0.00000	0.00000
3	-0.01103	0.05864	-0.07448	0.00000	0.00000	0.00000
4	-0.00157	0.02379	0.01447	0.00000	0.00000	0.00000

SUM	0.00000	2.37372	-0.31600	0.00000	0.00000	0.00000
Condition LC32=1.2D+Di-WI30						
1	-0.82404	0.89228	1.90237	0.00000	0.00000	0.00000
2	0.66538	1.39757	-1.94227	0.00000	0.00000	0.00000
3	-0.02727	0.05979	-0.15254	0.00000	0.00000	0.00000
4	-0.00429	0.02408	0.00223	0.00000	0.00000	0.00000

SUM	-0.19021	2.37372	-0.19021	0.00000	0.00000	0.00000

Condition LC33=1.2D+Di-WI60						
1	-0.80131	0.89002	1.92559	0.00000	0.00000	0.00000
2	0.67398	1.40019	-1.95196	0.00000	0.00000	0.00000
3	-0.02322	0.05951	-0.13306	0.00000	0.00000	0.00000
4	-0.00361	0.02401	0.00529	0.00000	0.00000	0.00000

SUM	-0.15415	2.37372	-0.15415	0.00000	0.00000	0.00000
Condition LC34=1.2D+Di-WI90						
1	-0.82006	0.88864	2.00643	0.00000	0.00000	0.00000
2	0.65042	1.40183	-1.89512	0.00000	0.00000	0.00000
3	-0.02021	0.05930	-0.11884	0.00000	0.00000	0.00000
4	-0.00316	0.02395	0.00753	0.00000	0.00000	0.00000

SUM	-0.19300	2.37372	0.00000	0.00000	0.00000	0.00000
Condition LC35=1.2D+Di-WI120						
1	-0.80366	0.88470	2.08669	0.00000	0.00000	0.00000
2	0.66058	1.40670	-1.87982	0.00000	0.00000	0.00000
3	-0.00959	0.05855	-0.06821	0.00000	0.00000	0.00000
4	-0.00148	0.02377	0.01549	0.00000	0.00000	0.00000

SUM	-0.15415	2.37372	0.15415	0.00000	0.00000	0.00000
Condition LC36=1.2D+Di-WI150						
1	-0.82631	0.88443	2.11056	0.00000	0.00000	0.00000
2	0.65243	1.40658	-1.84258	0.00000	0.00000	0.00000
3	-0.01410	0.05887	-0.08987	0.00000	0.00000	0.00000
4	-0.00223	0.02385	0.01210	0.00000	0.00000	0.00000

SUM	-0.19021	2.37372	0.19021	0.00000	0.00000	0.00000
Condition LC37=1.2D+1.6LL1						
1	-0.42000	0.63255	1.48504	0.00000	0.00000	0.00000
2	0.42001	1.02610	-1.48503	0.00000	0.00000	0.00000
3	-0.00143	0.03284	-0.01035	0.00000	0.00000	0.00000
4	0.00142	0.01734	0.01034	0.00000	0.00000	0.00000

SUM	0.00000	1.70882	0.00000	0.00000	0.00000	0.00000
Condition LC38=1.2D+1.6LL2						
1	0.44897	0.62904	1.48463	0.00000	0.00000	0.00000
2	-0.44902	1.02973	-1.48485	0.00000	0.00000	0.00000
3	0.00026	0.03274	-0.01026	0.00000	0.00000	0.00000
4	-0.00021	0.01732	0.01048	0.00000	0.00000	0.00000

SUM	0.00000	1.70882	0.00000	0.00000	0.00000	0.00000
Condition LC39=1.2D+1.6LL3						
1	-1.27512	0.62611	1.48189	0.00000	0.00000	0.00000
2	1.27517	1.03177	-1.48166	0.00000	0.00000	0.00000
3	0.00444	0.03345	-0.01336	0.00000	0.00000	0.00000
4	-0.00448	0.01749	0.01314	0.00000	0.00000	0.00000

SUM	0.00000	1.70882	0.00000	0.00000	0.00000	0.00000

Condition LC40=1.2D+WL0+1.6LLa1						
1	1.18138	0.76084	1.99083	0.00000	0.00000	0.00000
2	-1.18503	1.29822	-1.91120	0.00000	0.00000	0.00000
3	0.00338	0.03251	0.00461	0.00000	0.00000	0.00000
4	0.00027	0.01726	0.01276	0.00000	0.00000	0.00000

SUM	0.00000	2.10882	0.09700	0.00000	0.00000	0.00000
Condition LC41=1.2D+WL30+1.6LLa1						
1	1.21394	0.75940	1.97159	0.00000	0.00000	0.00000
2	-1.16420	1.30016	-1.96089	0.00000	0.00000	0.00000
3	0.00914	0.03211	0.03229	0.00000	0.00000	0.00000
4	0.00123	0.01716	0.01711	0.00000	0.00000	0.00000

SUM	0.06010	2.10882	0.06010	0.00000	0.00000	0.00000
Condition LC42=1.2D+WL60+1.6LLa1						
1	1.20593	0.76033	1.96331	0.00000	0.00000	0.00000
2	-1.16741	1.29906	-1.95546	0.00000	0.00000	0.00000
3	0.00723	0.03224	0.02315	0.00000	0.00000	0.00000
4	0.00092	0.01719	0.01567	0.00000	0.00000	0.00000

SUM	0.04667	2.10882	0.04667	0.00000	0.00000	0.00000
Condition LC43=1.2D+WL90+1.6LLa1						
1	1.21088	0.76087	1.93807	0.00000	0.00000	0.00000
2	-1.15997	1.29844	-1.97182	0.00000	0.00000	0.00000
3	0.00631	0.03230	0.01877	0.00000	0.00000	0.00000
4	0.00077	0.01721	0.01498	0.00000	0.00000	0.00000

SUM	0.05800	2.10882	0.00000	0.00000	0.00000	0.00000
Condition LC44=1.2D+WL120+1.6LLa1						
1	1.20660	0.76224	1.91295	0.00000	0.00000	0.00000
2	-1.16347	1.29681	-1.97647	0.00000	0.00000	0.00000
3	0.00325	0.03251	0.00417	0.00000	0.00000	0.00000
4	0.00029	0.01726	0.01268	0.00000	0.00000	0.00000

SUM	0.04667	2.10882	-0.04667	0.00000	0.00000	0.00000
Condition LC45=1.2D+WL150+1.6LLa1						
1	1.21473	0.76238	1.90451	0.00000	0.00000	0.00000
2	-1.15965	1.29679	-1.98855	0.00000	0.00000	0.00000
3	0.00452	0.03242	0.01030	0.00000	0.00000	0.00000
4	0.00050	0.01724	0.01364	0.00000	0.00000	0.00000

SUM	0.06010	2.10882	-0.06010	0.00000	0.00000	0.00000
Condition LC46=1.2D-WL0+1.6LLa1						
1	1.18242	0.76467	1.88595	0.00000	0.00000	0.00000
2	-1.17890	1.29386	-1.96618	0.00000	0.00000	0.00000
3	-0.00282	0.03293	-0.02487	0.00000	0.00000	0.00000
4	-0.00070	0.01736	0.00811	0.00000	0.00000	0.00000

SUM	0.00000	2.10882	-0.09700	0.00000	0.00000	0.00000

Condition **LC47=1.2D-WL30+1.6LLa1**

1	1.14987	0.76611	1.90518	0.00000	0.00000	0.00000
2	-1.19973	1.29192	-1.91649	0.00000	0.00000	0.00000
3	-0.00858	0.03333	-0.05256	0.00000	0.00000	0.00000
4	-0.00166	0.01746	0.00376	0.00000	0.00000	0.00000
SUM	-0.06010	2.10882	-0.06010	0.00000	0.00000	0.00000

Condition **LC48=1.2D-WL60+1.6LLa1**

1	1.15788	0.76518	1.91347	0.00000	0.00000	0.00000
2	-1.19652	1.29301	-1.92192	0.00000	0.00000	0.00000
3	-0.00668	0.03320	-0.04342	0.00000	0.00000	0.00000
4	-0.00135	0.01743	0.00520	0.00000	0.00000	0.00000
SUM	-0.04667	2.10882	-0.04667	0.00000	0.00000	0.00000

Condition **LC49=1.2D-WL90+1.6LLa1**

1	1.15292	0.76464	1.93870	0.00000	0.00000	0.00000
2	-1.20396	1.29364	-1.90555	0.00000	0.00000	0.00000
3	-0.00575	0.03314	-0.03904	0.00000	0.00000	0.00000
4	-0.00121	0.01741	0.00589	0.00000	0.00000	0.00000
SUM	-0.05800	2.10882	0.00000	0.00000	0.00000	0.00000

Condition **LC50=1.2D-WL120+1.6LLa1**

1	1.15720	0.76327	1.96382	0.00000	0.00000	0.00000
2	-1.20045	1.29527	-1.90090	0.00000	0.00000	0.00000
3	-0.00269	0.03293	-0.02444	0.00000	0.00000	0.00000
4	-0.00072	0.01736	0.00819	0.00000	0.00000	0.00000
SUM	-0.04667	2.10882	0.04667	0.00000	0.00000	0.00000

Condition **LC51=1.2D-WL150+1.6LLa1**

1	1.14907	0.76313	1.97226	0.00000	0.00000	0.00000
2	-1.20427	1.29529	-1.88882	0.00000	0.00000	0.00000
3	-0.00397	0.03302	-0.03057	0.00000	0.00000	0.00000
4	-0.00093	0.01738	0.00723	0.00000	0.00000	0.00000
SUM	-0.06010	2.10882	0.06010	0.00000	0.00000	0.00000

Condition **LC52=1.2D+WL0+1.6LLa2**

1	0.64880	0.76574	1.99002	0.00000	0.00000	0.00000
2	-0.65235	1.29324	-1.90993	0.00000	0.00000	0.00000
3	0.00321	0.03257	0.00409	0.00000	0.00000	0.00000
4	0.00034	0.01727	0.01282	0.00000	0.00000	0.00000
SUM	0.00000	2.10882	0.09700	0.00000	0.00000	0.00000

Condition **LC53=1.2D+WL30+1.6LLa2**

1	0.68136	0.76431	1.97075	0.00000	0.00000	0.00000
2	-0.63153	1.29517	-1.95958	0.00000	0.00000	0.00000
3	0.00897	0.03217	0.03176	0.00000	0.00000	0.00000
4	0.00130	0.01717	0.01717	0.00000	0.00000	0.00000
SUM	0.06010	2.10882	0.06010	0.00000	0.00000	0.00000

Condition **LC54=1.2D+WL60+1.6LLa2**

1	0.67335	0.76524	1.96248	0.00000	0.00000	0.00000
2	-0.63473	1.29408	-1.95417	0.00000	0.00000	0.00000
3	0.00707	0.03230	0.02263	0.00000	0.00000	0.00000
4	0.00098	0.01720	0.01573	0.00000	0.00000	0.00000

 SUM 0.04667 2.10882 0.04667 0.00000 0.00000 0.00000

Condition **LC55=1.2D+WL90+1.6LLa2**

1	0.67830	0.76578	1.93725	0.00000	0.00000	0.00000
2	-0.62730	1.29347	-1.97056	0.00000	0.00000	0.00000
3	0.00615	0.03236	0.01827	0.00000	0.00000	0.00000
4	0.00084	0.01722	0.01504	0.00000	0.00000	0.00000

 SUM 0.05800 2.10882 0.00000 0.00000 0.00000 0.00000

Condition **LC56=1.2D+WL120+1.6LLa2**

1	0.67402	0.76714	1.91215	0.00000	0.00000	0.00000
2	-0.63080	1.29184	-1.97525	0.00000	0.00000	0.00000
3	0.00309	0.03257	0.00369	0.00000	0.00000	0.00000
4	0.00036	0.01727	0.01274	0.00000	0.00000	0.00000

 SUM 0.04667 2.10882 -0.04667 0.00000 0.00000 0.00000

Condition **LC57=1.2D+WL150+1.6LLa2**

1	0.68215	0.76728	1.90371	0.00000	0.00000	0.00000
2	-0.62699	1.29182	-1.98733	0.00000	0.00000	0.00000
3	0.00436	0.03248	0.00982	0.00000	0.00000	0.00000
4	0.00057	0.01725	0.01370	0.00000	0.00000	0.00000

 SUM 0.06010 2.10882 -0.06010 0.00000 0.00000 0.00000

Condition **LC58=1.2D-WL0+1.6LLa2**

1	0.64982	0.76955	1.88519	0.00000	0.00000	0.00000
2	-0.64622	1.28891	-1.96504	0.00000	0.00000	0.00000
3	-0.00297	0.03299	-0.02532	0.00000	0.00000	0.00000
4	-0.00063	0.01738	0.00818	0.00000	0.00000	0.00000

 SUM 0.00000 2.10882 -0.09700 0.00000 0.00000 0.00000

Condition **LC59=1.2D-WL30+1.6LLa2**

1	0.61725	0.77098	1.90446	0.00000	0.00000	0.00000
2	-0.66703	1.28697	-1.91539	0.00000	0.00000	0.00000
3	-0.00873	0.03339	-0.05300	0.00000	0.00000	0.00000
4	-0.00159	0.01748	0.00383	0.00000	0.00000	0.00000

 SUM -0.06010 2.10882 -0.06010 0.00000 0.00000 0.00000

Condition **LC60=1.2D-WL60+1.6LLa2**

1	0.62527	0.77006	1.91273	0.00000	0.00000	0.00000
2	-0.66383	1.28806	-1.92080	0.00000	0.00000	0.00000
3	-0.00683	0.03326	-0.04387	0.00000	0.00000	0.00000
4	-0.00127	0.01744	0.00527	0.00000	0.00000	0.00000

 SUM -0.04667 2.10882 -0.04667 0.00000 0.00000 0.00000

Condition **LC61=1.2D-WL90+1.6LLa2**

1	0.62031	0.76952	1.93796	0.00000	0.00000	0.00000
2	-0.67127	1.28868	-1.90440	0.00000	0.00000	0.00000
3	-0.00591	0.03320	-0.03951	0.00000	0.00000	0.00000
4	-0.00113	0.01743	0.00596	0.00000	0.00000	0.00000

SUM	-0.05800	2.10882	0.00000	0.00000	0.00000	0.00000
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Condition **LC62=1.2D-WL120+1.6LLa2**

1	0.62459	0.76815	1.96305	0.00000	0.00000	0.00000
2	-0.66776	1.29031	-1.89971	0.00000	0.00000	0.00000
3	-0.00285	0.03298	-0.02493	0.00000	0.00000	0.00000
4	-0.00065	0.01738	0.00825	0.00000	0.00000	0.00000

SUM	-0.04667	2.10882	0.04667	0.00000	0.00000	0.00000
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Condition **LC63=1.2D-WL150+1.6LLa2**

1	0.61646	0.76802	1.97150	0.00000	0.00000	0.00000
2	-0.67158	1.29033	-1.88764	0.00000	0.00000	0.00000
3	-0.00412	0.03307	-0.03106	0.00000	0.00000	0.00000
4	-0.00086	0.01740	0.00729	0.00000	0.00000	0.00000

SUM	-0.06010	2.10882	0.06010	0.00000	0.00000	0.00000
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Condition **LC64=1.2D+WL0+1.6LLa3**

1	-0.69041	0.77085	1.99106	0.00000	0.00000	0.00000
2	0.68684	1.28785	-1.91105	0.00000	0.00000	0.00000
3	-0.00046	0.03279	0.00434	0.00000	0.00000	0.00000
4	0.00403	0.01733	0.01265	0.00000	0.00000	0.00000

SUM	0.00000	2.10882	0.09700	0.00000	0.00000	0.00000
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Condition **LC65=1.2D+WL30+1.6LLa3**

1	-0.65781	0.76946	1.97169	0.00000	0.00000	0.00000
2	0.70763	1.28975	-1.96057	0.00000	0.00000	0.00000
3	0.00529	0.03239	0.03198	0.00000	0.00000	0.00000
4	0.00500	0.01723	0.01699	0.00000	0.00000	0.00000

SUM	0.06010	2.10882	0.06010	0.00000	0.00000	0.00000
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Condition **LC66=1.2D+WL60+1.6LLa3**

1	-0.66584	0.77037	1.96346	0.00000	0.00000	0.00000
2	0.70444	1.28867	-1.95520	0.00000	0.00000	0.00000
3	0.00339	0.03252	0.02286	0.00000	0.00000	0.00000
4	0.00468	0.01726	0.01556	0.00000	0.00000	0.00000

SUM	0.04667	2.10882	0.04667	0.00000	0.00000	0.00000
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Condition **LC67=1.2D+WL90+1.6LLa3**

1	-0.66086	0.77090	1.93824	0.00000	0.00000	0.00000
2	0.71186	1.28806	-1.97160	0.00000	0.00000	0.00000
3	0.00246	0.03259	0.01849	0.00000	0.00000	0.00000
4	0.00454	0.01728	0.01487	0.00000	0.00000	0.00000

SUM	0.05800	2.10882	0.00000	0.00000	0.00000	0.00000
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Condition **LC68=1.2D+WL120+1.6LLa3**

1	-0.66516	0.77225	1.91318	0.00000	0.00000	0.00000
2	0.70837	1.28645	-1.97633	0.00000	0.00000	0.00000
3	-0.00060	0.03280	0.00390	0.00000	0.00000	0.00000
4	0.00406	0.01733	0.01257	0.00000	0.00000	0.00000

 SUM 0.04667 2.10882 -0.04667 0.00000 0.00000 0.00000

Condition **LC69=1.2D+WL150+1.6LLa3**

1	-0.65702	0.77239	1.90472	0.00000	0.00000	0.00000
2	0.71218	1.28642	-1.98837	0.00000	0.00000	0.00000
3	0.00067	0.03271	0.01003	0.00000	0.00000	0.00000
4	0.00427	0.01731	0.01353	0.00000	0.00000	0.00000

 SUM 0.06010 2.10882 -0.06010 0.00000 0.00000 0.00000

Condition **LC70=1.2D-WL0+1.6LLa3**

1	-0.68938	0.77462	1.88632	0.00000	0.00000	0.00000
2	0.69297	1.28355	-1.96623	0.00000	0.00000	0.00000
3	-0.00666	0.03322	-0.02510	0.00000	0.00000	0.00000
4	0.00307	0.01744	0.00801	0.00000	0.00000	0.00000

 SUM 0.00000 2.10882 -0.09700 0.00000 0.00000 0.00000

Condition **LC71=1.2D-WL30+1.6LLa3**

1	-0.72198	0.77601	1.90569	0.00000	0.00000	0.00000
2	0.67218	1.28165	-1.91672	0.00000	0.00000	0.00000
3	-0.01241	0.03362	-0.05275	0.00000	0.00000	0.00000
4	0.00210	0.01754	0.00367	0.00000	0.00000	0.00000

 SUM -0.06010 2.10882 -0.06010 0.00000 0.00000 0.00000

Condition **LC72=1.2D-WL60+1.6LLa3**

1	-0.71396	0.77510	1.91393	0.00000	0.00000	0.00000
2	0.67538	1.28273	-1.92207	0.00000	0.00000	0.00000
3	-0.01051	0.03349	-0.04362	0.00000	0.00000	0.00000
4	0.00242	0.01750	0.00510	0.00000	0.00000	0.00000

 SUM -0.04667 2.10882 -0.04667 0.00000 0.00000 0.00000

Condition **LC73=1.2D-WL90+1.6LLa3**

1	-0.71893	0.77457	1.93914	0.00000	0.00000	0.00000
2	0.66795	1.28334	-1.90568	0.00000	0.00000	0.00000
3	-0.00959	0.03343	-0.03926	0.00000	0.00000	0.00000
4	0.00256	0.01749	0.00579	0.00000	0.00000	0.00000

 SUM -0.05800 2.10882 0.00000 0.00000 0.00000 0.00000

Condition **LC74=1.2D-WL120+1.6LLa3**

1	-0.71463	0.77322	1.96420	0.00000	0.00000	0.00000
2	0.67145	1.28495	-1.90095	0.00000	0.00000	0.00000
3	-0.00653	0.03321	-0.02467	0.00000	0.00000	0.00000
4	0.00304	0.01743	0.00809	0.00000	0.00000	0.00000

 SUM -0.04667 2.10882 0.04667 0.00000 0.00000 0.00000

Condition **LC75=1.2D-WL150+1.6LLa3**

1	-0.72278	0.77308	1.97267	0.00000	0.00000	0.00000
2	0.66764	1.28498	-1.88890	0.00000	0.00000	0.00000
3	-0.00780	0.03330	-0.03079	0.00000	0.00000	0.00000
4	0.00283	0.01746	0.00713	0.00000	0.00000	0.00000
SUM	-0.06010	2.10882	0.06010	0.00000	0.00000	0.00000

Condition **LC76=1.2D+WL0+1.6LLa4**

1	-2.00129	0.75978	1.98580	0.00000	0.00000	0.00000
2	1.99775	1.29753	-1.90563	0.00000	0.00000	0.00000
3	0.01092	0.03391	-0.00112	0.00000	0.00000	0.00000
4	-0.00739	0.01761	0.01795	0.00000	0.00000	0.00000
SUM	0.00000	2.10882	0.09700	0.00000	0.00000	0.00000

Condition **LC77=1.2D+WL30+1.6LLa4**

1	-1.96871	0.75845	1.96625	0.00000	0.00000	0.00000
2	2.01856	1.29938	-1.95503	0.00000	0.00000	0.00000
3	0.01668	0.03349	0.02659	0.00000	0.00000	0.00000
4	-0.00643	0.01750	0.02230	0.00000	0.00000	0.00000
SUM	0.06010	2.10882	0.06010	0.00000	0.00000	0.00000

Condition **LC78=1.2D+WL60+1.6LLa4**

1	-1.97672	0.75934	1.95806	0.00000	0.00000	0.00000
2	2.01535	1.29832	-1.94969	0.00000	0.00000	0.00000
3	0.01478	0.03363	0.01744	0.00000	0.00000	0.00000
4	-0.00675	0.01754	0.02086	0.00000	0.00000	0.00000
SUM	0.04667	2.10882	0.04667	0.00000	0.00000	0.00000

Condition **LC79=1.2D+WL90+1.6LLa4**

1	-1.97174	0.75986	1.93281	0.00000	0.00000	0.00000
2	2.02277	1.29771	-1.96607	0.00000	0.00000	0.00000
3	0.01386	0.03369	0.01308	0.00000	0.00000	0.00000
4	-0.00689	0.01755	0.02017	0.00000	0.00000	0.00000
SUM	0.05800	2.10882	0.00000	0.00000	0.00000	0.00000

Condition **LC80=1.2D+WL120+1.6LLa4**

1	-1.97602	0.76119	1.90777	0.00000	0.00000	0.00000
2	2.01925	1.29611	-1.97081	0.00000	0.00000	0.00000
3	0.01081	0.03391	-0.00150	0.00000	0.00000	0.00000
4	-0.00737	0.01761	0.01787	0.00000	0.00000	0.00000
SUM	0.04667	2.10882	-0.04667	0.00000	0.00000	0.00000

Condition **LC81=1.2D+WL150+1.6LLa4**

1	-1.96789	0.76135	1.89926	0.00000	0.00000	0.00000
2	2.02307	1.29607	-1.98283	0.00000	0.00000	0.00000
3	0.01208	0.03382	0.00463	0.00000	0.00000	0.00000
4	-0.00716	0.01758	0.01883	0.00000	0.00000	0.00000
SUM	0.06010	2.10882	-0.06010	0.00000	0.00000	0.00000

Condition LC82=1.2D-WL0+1.6LLa4						
1	-2.00022	0.76350	1.88099	0.00000	0.00000	0.00000
2	2.00383	1.29325	-1.96077	0.00000	0.00000	0.00000
3	0.00474	0.03435	-0.03053	0.00000	0.00000	0.00000
4	-0.00836	0.01772	0.01331	0.00000	0.00000	0.00000

SUM	0.00000	2.10882	-0.09700	0.00000	0.00000	0.00000
Condition LC83=1.2D-WL30+1.6LLa4						
1	-2.03279	0.76483	1.90054	0.00000	0.00000	0.00000
2	1.98302	1.29141	-1.91137	0.00000	0.00000	0.00000
3	-0.00102	0.03477	-0.05824	0.00000	0.00000	0.00000
4	-0.00932	0.01782	0.00897	0.00000	0.00000	0.00000

SUM	-0.06010	2.10882	-0.06010	0.00000	0.00000	0.00000
Condition LC84=1.2D-WL60+1.6LLa4						
1	-2.02479	0.76395	1.90873	0.00000	0.00000	0.00000
2	1.98624	1.29246	-1.91670	0.00000	0.00000	0.00000
3	0.00088	0.03463	-0.04910	0.00000	0.00000	0.00000
4	-0.00900	0.01779	0.01040	0.00000	0.00000	0.00000

SUM	-0.04667	2.10882	-0.04667	0.00000	0.00000	0.00000
Condition LC85=1.2D-WL90+1.6LLa4						
1	-2.02976	0.76342	1.93397	0.00000	0.00000	0.00000
2	1.97882	1.29307	-1.90032	0.00000	0.00000	0.00000
3	0.00180	0.03456	-0.04474	0.00000	0.00000	0.00000
4	-0.00886	0.01777	0.01109	0.00000	0.00000	0.00000

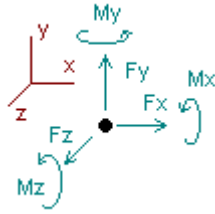
SUM	-0.05800	2.10882	0.00000	0.00000	0.00000	0.00000
Condition LC86=1.2D-WL120+1.6LLa4						
1	-2.02549	0.76209	1.95902	0.00000	0.00000	0.00000
2	1.98234	1.29467	-1.89558	0.00000	0.00000	0.00000
3	0.00486	0.03434	-0.03015	0.00000	0.00000	0.00000
4	-0.00838	0.01772	0.01339	0.00000	0.00000	0.00000

SUM	-0.04667	2.10882	0.04667	0.00000	0.00000	0.00000
Condition LC87=1.2D-WL150+1.6LLa4						
1	-2.03362	0.76194	1.96753	0.00000	0.00000	0.00000
2	1.97852	1.29471	-1.88356	0.00000	0.00000	0.00000
3	0.00359	0.03444	-0.03629	0.00000	0.00000	0.00000
4	-0.00859	0.01774	0.01243	0.00000	0.00000	0.00000

SUM	-0.06010	2.10882	0.06010	0.00000	0.00000	0.00000

Envelope for nodal reactions

Note.- I_c is the controlling load condition



Direction of positive forces and moments

Envelope of nodal reactions for :

- LC1=1.2D+W_o
- LC2=1.2D+W₃₀
- LC3=1.2D+W₆₀
- LC4=1.2D+W₉₀
- LC5=1.2D+W₁₂₀
- LC6=1.2D+W₁₅₀
- LC7=1.2D-W_o
- LC8=1.2D-W₃₀
- LC9=1.2D-W₆₀
- LC10=1.2D-W₉₀
- LC11=1.2D-W₁₂₀
- LC12=1.2D-W₁₅₀
- LC13=0.9D+W_o
- LC14=0.9D+W₃₀
- LC15=0.9D+W₆₀
- LC16=0.9D+W₉₀
- LC17=0.9D+W₁₂₀
- LC18=0.9D+W₁₅₀
- LC19=0.9D-W_o
- LC20=0.9D-W₃₀
- LC21=0.9D-W₆₀
- LC22=0.9D-W₉₀
- LC23=0.9D-W₁₂₀
- LC24=0.9D-W₁₅₀
- LC25=1.2D+D_i+W₁₀
- LC26=1.2D+D_i+W₁₃₀
- LC27=1.2D+D_i+W₁₆₀
- LC28=1.2D+D_i+W₁₉₀
- LC29=1.2D+D_i+W₁₁₂₀
- LC30=1.2D+D_i+W₁₁₅₀
- LC31=1.2D+D_i-W₁₀
- LC32=1.2D+D_i-W₁₃₀
- LC33=1.2D+D_i-W₁₆₀
- LC34=1.2D+D_i-W₁₉₀
- LC35=1.2D+D_i-W₁₁₂₀
- LC36=1.2D+D_i-W₁₁₅₀
- LC37=1.2D+1.6LL₁
- LC38=1.2D+1.6LL₂
- LC39=1.2D+1.6LL₃
- LC40=1.2D+W_{L0}+1.6LLa₁
- LC41=1.2D+W_{L30}+1.6LLa₁
- LC42=1.2D+W_{L60}+1.6LLa₁
- LC43=1.2D+W_{L90}+1.6LLa₁
- LC44=1.2D+W_{L120}+1.6LLa₁
- LC45=1.2D+W_{L150}+1.6LLa₁
- LC46=1.2D-W_{L0}+1.6LLa₁
- LC47=1.2D-W_{L30}+1.6LLa₁
- LC48=1.2D-W_{L60}+1.6LLa₁
- LC49=1.2D-W_{L90}+1.6LLa₁
- LC50=1.2D-W_{L120}+1.6LLa₁
- LC51=1.2D-W_{L150}+1.6LLa₁

LC52=1.2D+WL0+1.6LLa2
 LC53=1.2D+WL30+1.6LLa2
 LC54=1.2D+WL60+1.6LLa2
 LC55=1.2D+WL90+1.6LLa2
 LC56=1.2D+WL120+1.6LLa2
 LC57=1.2D+WL150+1.6LLa2
 LC58=1.2D-WL0+1.6LLa2
 LC59=1.2D-WL30+1.6LLa2
 LC60=1.2D-WL60+1.6LLa2
 LC61=1.2D-WL90+1.6LLa2
 LC62=1.2D-WL120+1.6LLa2
 LC63=1.2D-WL150+1.6LLa2
 LC64=1.2D+WL0+1.6LLa3
 LC65=1.2D+WL30+1.6LLa3
 LC66=1.2D+WL60+1.6LLa3
 LC67=1.2D+WL90+1.6LLa3
 LC68=1.2D+WL120+1.6LLa3
 LC69=1.2D+WL150+1.6LLa3
 LC70=1.2D-WL0+1.6LLa3
 LC71=1.2D-WL30+1.6LLa3
 LC72=1.2D-WL60+1.6LLa3
 LC73=1.2D-WL90+1.6LLa3
 LC74=1.2D-WL120+1.6LLa3
 LC75=1.2D-WL150+1.6LLa3
 LC76=1.2D+WL0+1.6LLa4
 LC77=1.2D+WL30+1.6LLa4
 LC78=1.2D+WL60+1.6LLa4
 LC79=1.2D+WL90+1.6LLa4
 LC80=1.2D+WL120+1.6LLa4
 LC81=1.2D+WL150+1.6LLa4
 LC82=1.2D-WL0+1.6LLa4
 LC83=1.2D-WL30+1.6LLa4
 LC84=1.2D-WL60+1.6LLa4
 LC85=1.2D-WL90+1.6LLa4
 LC86=1.2D-WL120+1.6LLa4
 LC87=1.2D-WL150+1.6LLa4

Node	Forces						Moments						
		Fx	lc	Fy	lc	Fz	lc	Mx	lc	My	lc	Mz	lc
		[Kip]		[Kip]		[Kip]		[Kip*ft]		[Kip*ft]		[Kip*ft]	
1	Max	1.215	LC45	0.892	LC32	2.278	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-2.034	LC87	0.316	LC15	-0.380	LC19	0.00000	LC1	0.00000	LC1	0.00000	LC1
2	Max	2.023	LC81	1.422	LC26	0.363	LC24	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-1.204	LC51	0.513	LC21	-2.259	LC6	0.00000	LC1	0.00000	LC1	0.00000	LC1
3	Max	0.223	LC3	0.060	LC32	0.745	LC15	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.223	LC21	0.014	LC15	-0.764	LC9	0.00000	LC1	0.00000	LC1	0.00000	LC1
4	Max	0.059	LC15	0.024	LC32	0.129	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.059	LC9	0.010	LC15	-0.109	LC21	0.00000	LC1	0.00000	LC1	0.00000	LC1



Connection Check

Date: 2/6/2023
 Project Name: WATERTOWN
 Project No.: CT1130
 Designed By: RL Checked By: MSC



Check Capacity of Existing Steel Tension Bands at Elevation 135'-0" AGL

The lateral support of the appurtenances and RRH's is assumed to be taken by the steel banding system clamped to the smokestack with steel plates and threaded rods.

Tension Band Material	=	STEEL	
Structure Material	=	BRICK	
Coefficient of Static Friction, μ_s	=	0.30	
Diameter of Structure	=	7.50 ft	(Assumed)
Circumference of Structure	=	23.56 ft	
Design Factor of Safety	=	1.5	

Calculate Total Weight of Appurtenances:

Item	DL (lbs/plf)	IL (lbs/plf)	Length (ft.)	Qty.	Total (lbs.)
Panel Antenna	109	206	--	3	945.0
Panel Antenna	66	69	--	3	405.0
Panel Antenna	116	200	--	3	948.0
Panel Antenna	82	73	--	3	465.0
RRH	73	36	--	3	327.0
RRH	72	32	--	3	312.0
RRH	50	31	--	3	243.0
RRH	60	36	--	3	288.0
Surge Arrestor	29	42	--	3	213.0
3/4" Round Bar	1.77	3	21	1	101.6
2" Std. Pipe	3.66	5	104	1	896.5
3-1/2" Std. Pipe	9.12	7	4	1	64.5
Miscellaneous	100	100	--	1	100.0

Total Appurtenance Weight, P_A = 5308.5 lbs

Calculate Weight of Tension Band:

Depth, d_b	=	6 in
Thickness, t_b	=	1/4 in
Density of Tension Band, ρ	=	0.2836 lb/in ³
Linear Weight of Tension Band, w_b	=	5.10 lb/ft
Number of Tension Bands	=	2

Calculate Net Linear Gravity Load

Total Appurtenance Weight, P_A	=	5308.5 lbs
Total Tension Band Weight, P_B	=	240.53 lbs
Net (Factored) Gravity Load, P_{GL}	=	8323.61 lbs
Linear Gravity Load per Band*, w_{GL}	=	176.63 plf
Coefficient of Static Friction, μ_s	=	0.30
Linear Normal Force per Band, F_N	=	588.77 plf

* Load distribution is assumed to be constant between tension bands.

Date: 2/6/2023
Project Name: WATERTOWN
Project No.: CT1130
Designed By: RL Checked By: MSC



Check Capacity of Existing Steel Tension Bands: (cont)

Reference: AISC Steel Construction Manual 9th Edition (ASD)

Calculate Required Tension Force

Linear Normal Force per Band, F_N = 588.77 plf
Diameter of Structure = 7.50 ft
Number of Connection Knuckles = 8
Required Tension Force per Knuckle, T_{REQ} = 828 lbs

Check Tensile Capacity of Threaded Rods

Required Tension Force per Knuckle, T_{REQ} = 828 lbs
Number of Bolts per Knuckle = 2
Required Tensile Load per Bolt = 414 lbs
Threaded Rod = A36 5/8" Threaded Rod
Allowable Tensile Load per Bolt, F_{tall} = 6100 lbs.

414 lbs < 6100 lbs Therefore, OK !

Check Bending Stress on Tension Band

Required Tension Force, T_{REQ} = 0.828 kips
Cross-sectional Area, A_B = 1.500 in²
Max Bending Stress, f_{MAX} = 0.552 ksi
Yield Stress, f_Y = 36 ksi
Allowable Bending Stress, f_{ALLOW} = 21.6 ksi

0.552 ksi < 21.6 ksi Therefore, OK !

Date: 2/6/2023
 Project Name: WATERTOWN
 Project No.: CT1130
 Designed By: RL Checked By: MSC



CHECK CONNECTION CAPACITY (Worst Case)

Reference: AISC Steel Construction Manual 9th Edition (ASD)

Check Tensile Capacity of Threaded Rods

Threaded Rod	=	A36 5/8"	Threaded Rod
Allowable Tensile Load per Bolt, F_{tall}	=	6100.0	lbs.

Calculate Required Tension Force

Wind Load @ 0 degree	=	2237.3	lbs.	(See Windload Output)
Wind Load @ 60 degree	=	1471.6	lbs.	(See Windload Output)

Total Wind Load	=	5180.4	lbs.
Number of Bands	=	2	
Total Tension Per Band	=	2590.2	lbs.

Check Tensile Capacity of Threaded Rods

Number of Connection Knuckles	=	8.0	
Number of Bolts per Knuckle	=	2.0	
Required Tensile Load per Bolt	=	161.9	lbs.

162 lbs	<	6100 lbs
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Therefore, OK !

Exhibit F

Power Density/RF Emissions Report



Radio Frequency Exposure Theoretical Study

Prepared For:

AT&T Mobility



Site Name: Watertown
FA#: 10035384
Site ID: CT1130
Address: 76 Westbury Park Road, Watertown, CT 06795

Prepared by: **SAI Group**
12 Industrial Way
Salem, NH 03079
(603) 421-0470

Date of Report: January 25, 2023

Statement of Compliance

AT&T's proposed antenna installation along with other existing antennas is calculated to be within 6.02% of FCC Standard for General Public/Uncontrolled Maximum Permissible Exposure (MPE).



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4	Conclusion	6
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1 General Summary

SAI Group was contracted by AT&T Mobility to conduct a Radio Frequency (RF) Analysis for a wireless facility located at 76 Westbury Park Road, Watertown, CT to determine whether the radio facility is in compliance with Federal Communications Commission (FCC) regulations and standards regarding RF exposure.

RF exposure is calculated in accordance with FCC's suggested prediction methods.

2 Site Compliance Summary

Compliance Summary (General Public Limit)	
Site Compliance	Yes
Maximum Calculated %MPE at 0-6' Ground Level (Cumulative)	6.02% at about 359ft South-East from smokestack.

3 RF Design Specifications

Table below shows the technical data used for the calculation of cumulative %MPE results.

Ant ID	Operator	Antenna Make	Antenna Model	Type	TX Freq (MHz)	Az (Deg)	Ant Gain (dBd)	Total ERP (Watts)	Z Rad Center (ft)
1	AT&T	KATHREIN	800-10965	Panel	700	23	12.05	2565	135.00
1	AT&T	KATHREIN	800-10965	Panel	2300	23	15.75	3758	135.00
2	AT&T	ERICSSON	AIR6419	Panel	3500	23	23.45	23990	136.67
3	AT&T	ERICSSON	AIR6449	Panel	3700	23	23.5	24268	133.00
4	AT&T	CCI	DMP65R-BU6EA	Panel	700	23	11.75	1197	135.00
4	AT&T	CCI	DMP65R-BU6EA	Panel	1900	23	15.55	1436	135.00
4	AT&T	CCI	DMP65R-BU6EA	Panel	1900	23	15.55	1436	135.00
4	AT&T	CCI	DMP65R-BU6EA	Panel	850	23	11.95	1000	135.00
4	AT&T	CCI	DMP65R-BU6EA	Panel	2100	23	15.95	3148	135.00
4	AT&T	CCI	DMP65R-BU6EA	Panel	1900	23	15.45	2806	135.00
4	AT&T	CCI	DMP65R-BU6EA	Panel	2100	23	15.95	3148	135.00
5	AT&T	KATHREIN	800-10965	Panel	700	143	12.05	2565	135.00
5	AT&T	KATHREIN	800-10965	Panel	2300	143	15.75	3758	135.00
6	AT&T	ERICSSON	AIR6419	Panel	3500	143	23.45	23990	136.67
7	AT&T	ERICSSON	AIR6449	Panel	3700	143	23.5	24268	133.00
8	AT&T	CCI	DMP65R-BU6EA	Panel	700	143	11.75	1197	135.00
8	AT&T	CCI	DMP65R-BU6EA	Panel	1900	143	15.55	1436	135.00
8	AT&T	CCI	DMP65R-BU6EA	Panel	1900	143	15.55	1436	135.00
8	AT&T	CCI	DMP65R-BU6EA	Panel	850	143	11.95	1000	135.00
8	AT&T	CCI	DMP65R-BU6EA	Panel	2100	143	15.95	3148	135.00
8	AT&T	CCI	DMP65R-BU6EA	Panel	1900	143	15.45	2806	135.00
8	AT&T	CCI	DMP65R-BU6EA	Panel	2100	143	15.95	3148	135.00
9	AT&T	KATHREIN	800-10965	Panel	700	263	12.05	2565	135.00
9	AT&T	KATHREIN	800-10965	Panel	2300	263	15.75	3758	135.00
10	AT&T	ERICSSON	AIR6419	Panel	3500	263	23.45	23990	136.67
11	AT&T	ERICSSON	AIR6449	Panel	3700	263	23.5	24268	133.00
12	AT&T	CCI	DMP65R-BU6EA	Panel	700	263	11.75	1197	135.00
12	AT&T	CCI	DMP65R-BU6EA	Panel	1900	263	15.55	1436	135.00
12	AT&T	CCI	DMP65R-BU6EA	Panel	1900	263	15.55	1436	135.00
12	AT&T	CCI	DMP65R-BU6EA	Panel	850	263	11.95	1000	135.00
12	AT&T	CCI	DMP65R-BU6EA	Panel	2100	263	15.95	3148	135.00
12	AT&T	CCI	DMP65R-BU6EA	Panel	1900	263	15.45	2806	135.00
12	AT&T	CCI	DMP65R-BU6EA	Panel	2100	263	15.95	3148	135.00
13	T-Mobile	ERICSSON	AIR 32	Panel	2100	60	15.75	4510	124.00
13	T-Mobile	ERICSSON	AIR 32	Panel	1900	60	15.55	2154	124.00
13	T-Mobile	ERICSSON	AIR 32	Panel	1900	60	15.55	2154	124.00
14	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	700	60	13.17	1660	124.00
14	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	600	60	13.09	815	124.00
14	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	600	60	13.09	815	124.00
14	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	1900	60	15.29	2705	124.00
14	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	2100	60	17.32	4316	124.00
15	T-Mobile	ERICSSON	AIR6449	Panel	2500	60	22.35	20615	124.00
15	T-Mobile	ERICSSON	AIR6449	Panel	2500	60	22.35	20615	124.00
16	T-Mobile	ERICSSON	AIR 32	Panel	2100	180	15.75	4510	124.00
16	T-Mobile	ERICSSON	AIR 32	Panel	1900	180	15.55	2154	124.00
16	T-Mobile	ERICSSON	AIR 32	Panel	1900	180	15.55	2154	124.00
17	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	700	180	13.17	1660	124.00
17	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	600	180	13.09	815	124.00
17	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	600	180	13.09	815	124.00
17	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	1900	180	15.29	2705	124.00
17	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	2100	180	17.32	4316	124.00



18	T-Mobile	ERICSSON	AIR6449	Panel	2500	180	22.35	20615	124.00
18	T-Mobile	ERICSSON	AIR6449	Panel	2500	180	22.35	20615	124.00
19	T-Mobile	ERICSSON	AIR 32	Panel	2100	300	15.75	4510	124.00
19	T-Mobile	ERICSSON	AIR 32	Panel	1900	300	15.55	2154	124.00
19	T-Mobile	ERICSSON	AIR 32	Panel	1900	300	15.55	2154	124.00
20	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	700	300	13.17	1660	124.00
20	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	600	300	13.09	815	124.00
20	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	600	300	13.09	815	124.00
20	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	1900	300	15.29	2705	124.00
20	T-Mobile	RFS	APXVAARR24 43-U-NA20	Panel	2100	300	17.32	4316	124.00
21	T-Mobile	ERICSSON	AIR6449	Panel	2500	300	22.35	20615	124.00
21	T-Mobile	ERICSSON	AIR6449	Panel	2500	300	22.35	20615	124.00

NOTE: The Z value indicates the distance of radiation center of the antenna height above the ground site level unless otherwise indicated. Effective Radiated Power (ERP) is provided by the operator or calculated based on SAI Group experience. SAI Group has assumed transmission parameters for “Unknown” RF emitters based on either similar installations found at other radio communications sites or from the latest data available for the site. “Generic” antenna models have been used where existing antenna part numbers or radiation patterns are not available. The frequencies presented in this table may have been assumed in order to represent the approximate band of operation and to support a worst-case calculation of power density

4 Conclusion

I certify to the best of my knowledge that the statements contained in this report are true and accurate. The theoretical computations contained are based on FCC recommended methods, with industry standard assumptions & formulas, and complies with FCC mandated Maximum Permissible RF Exposure requirements.

A comprehensive field survey was not performed prior to the generation of this report. If questions arise regarding the calculations herein, SAI Group recommends that a comprehensive field survey be performed to resolve any disputes.



Sanket Joshi
RF Engineer
SAI Group

January 25, 2023

Date



Matthew Smelcer
RF Engineering Manager

January 25, 2023

Date

Appendix A – FCC Rules and Regulations

In 1996, the Federal Communication Commission (FCC) adopted procedures and guidelines for evaluating of the effects of RF exposure. This guideline from the FCC Office of Engineering and Technology is Bulletin 65 (“OET Bulletin 65”), *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*, Edition 97-01, published August 1997. Since 1996 the FCC periodically reviews these rules and regulations as per their congressional mandate.

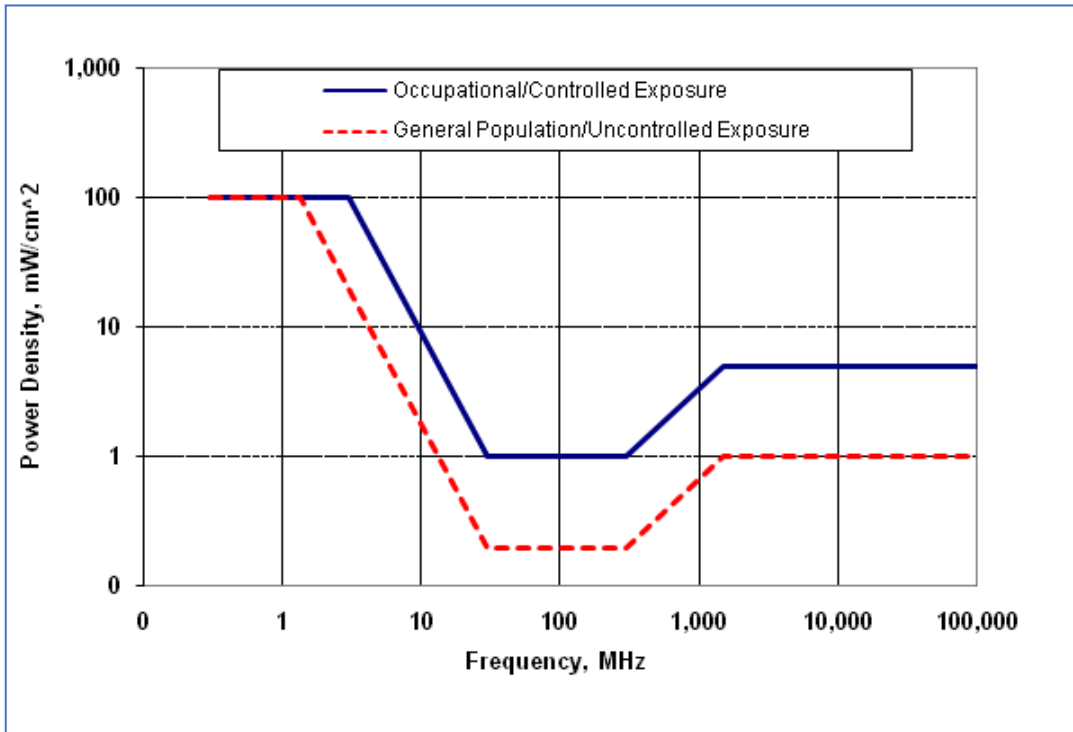
Maximum Permissible Exposure (MPE) limits utilized in this analysis are outlined in the following Tables and diagram:

Table 1. MPE Limits for General Population/ Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time for E ² , H ² , or S (Minutes)
0.3 – 1.34	614	1.63	(100)*	30
1.34 -30	824/f	2.19/f	(180/f ²)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	--	--	f/1500	30
1500– 100,000	--	--	1.0	30
f = frequency in MHz		* = Plane wave equivalent power density		

General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can’t exercise control over their exposure. A site is evaluated with General Public limits if there is no access controls or no RF warning signage present.

Table 2. MPE Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time for E ² , H ² , or S (Minutes)
0.3 – 3.0	614	1.63	(100)*	6
3.0 – 30	1842/f	4.89/f	(900/f ²)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	--	--	f/300	6
1500– 100,000	--	--	5.0	6
f = frequency in MHz		* = Plane wave equivalent power density		

Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where such occupational/controlled limits apply provided he or she is made aware of the potential for exposure. Typical criteria to remediate controlled environment are restricted access to the areas where antennas are located along with appropriate RF warning signage. A site with Controlled environment is evaluated with Occupational limits.



Maximum Permissible Exposures. Occupational/Controlled and General Population/Uncontrolled MPE's are functions of frequency.

Appendix B – Calculations Methodology and Assumptions

SAI Group has performed theoretical analysis using Waterford Consultants' RoofMaster™ 2020 Version 30.5.26.2022 which uses a cylindrical model for very conservative power density calculations within the near field of the antenna where the antenna pattern has not truly formed yet. The Cylindrical Model is used to determine the spatially averaged power density in the near field directly in front of an antenna. In order to implement this model in all directions, the calculations utilize the antenna manufacturer horizontal pattern data. Additionally, the model also incorporates factors that reduce the power density by inverse square of horizontal and vertical distances beyond the near field region.

RoofMaster™ uses far field model to calculate the spatial peak power density. The RoofMaster™ implementation of this model incorporated manufacturer's horizontal and vertical pattern data to determine the power density in all directions.

The calculations are based on worst-case assumptions that, all antennas are always operating at full power.

The site has been modeled with these assumptions to show the maximum RF energy density. Areas modeled with exposure greater than 100% of the General Public MPE level may not actually occur, but are shown as a prediction that could be realized.

Appendix C – Informative References

The following references can be followed for further information about RF Health and Safety.

FCC Radio Frequency Safety

<http://www.fcc.gov/encyclopedia/radio-frequency-safety>

FCC OET Bulletin 56

https://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet56/oet56e4.pdf

FCC OET Bulletin 65

https://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65.pdf

National Council on Radiation Protection and Measurements (NCRP)

<http://www.ncrponline.org>

American National Standards Institute (ANSI)

<http://www.ansi.org>

Environmental Protection Agency (EPA)

<https://www3.epa.gov/radtown/wireless-technology.html>

National Institutes of Health (NIH)

<http://www.niehs.nih.gov/health/topics/agents/emf/>

Occupational Safety and Health Agency (OSHA)


<http://www.osha.gov/SLTC/radiofrequencyradiation/>

International Commission on Non-Ionizing Radiation Protection (ICNIRP)

<http://www.icnirp.org/>

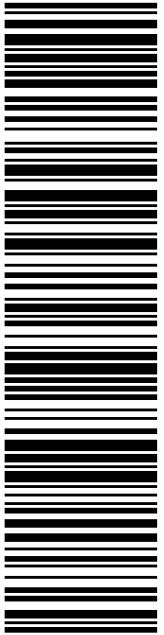
Exhibit G

Recipient Mailings



MR. JONATHAN RAMSAY
TOWN OF WATERTOWN
CC: MARK MASSOUD, ZEO
61 ECHO LAKE RD
WATERTOWN CT 06795-2638

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QC DEVELOPMENT Expected Delivery Date: 02/15/23
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 AUSTIN TX 78731-4257

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Click-N-Ship® Label Record

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Trans. #: 582423580	Priority Mail® Postage: \$9.65
Print Date: 02/10/2023	Total: \$9.65
Ship Date: 02/11/2023	
Expected Delivery Date: 02/15/2023	

From: QC DEVELOPMENT
 5900 BALCONES DR STE 8148
 AUSTIN TX 78731-4257

To: MR. JONATHAN RAMSAY
 TOWN OF WATERTOWN
 CC: MARK MASSOUD, ZEO
 61 ECHO LAKE RD
 WATERTOWN CT 06795-2638

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



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February
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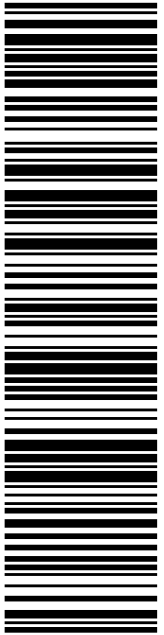
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WINOOSKI, VT 05404

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SIEMON REALTY COMPANY
ATTN. MR. KEVIN GOKEY
27 SIEMON COMPANY DR
WATERTOWN CT 06795-2654

P

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Trans. #:	582423580	Priority Mail® Postage:	\$9.65
Print Date:	02/10/2023	Total:	\$9.65
Ship Date:	02/11/2023		
Expected Delivery Date:	02/15/2023		

From: QC DEVELOPMENT
5900 BALCONES DR STE 8148
AUSTIN TX 78731-4257

To: SIEMON REALTY COMPANY
ATTN. MR. KEVIN GOKEY
27 SIEMON COMPANY DR
WATERTOWN CT 06795-2654

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