November 10, 2022

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

Regarding: Notice of Exempt Modification – AT&T Site CT5322 / FA# 10071101
Address: 63 Elm Street, Manchester, CT 06040

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains a wireless telecommunications facility on an existing +/- 200' smokestack at the above-referenced address, latitude 41.7676919, longitude -72.5313989. Said smokestack is operated by Clock Tower Mill Limited Partnership.

AT&T desires to modify its existing telecommunications facility by swapping six (6) antennas, adding three (3) antennas, swapping six (6) remote radio units (RRUS), and swapping three (3) surge arrestors and accompanying feedlines, as more particularly detailed and described on the enclosed Construction Drawings prepared by Hudson Design Group, last revised October 27, 2022. The centerline height of the existing antennas is and will remain at 175 and 165 feet. This modification may include B2, B5, B17, B14, B29, B30, B66, & n77 hardware that is 4G(LTE) and/or 5GNR capable through remote software configuration and either or both services may be turned off at various times.

Please accept this letter as notification pursuant to R.C.S.A §16-50j-73 for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the following individuals: The Honorable Jay Moran, Mayor of the Town of Manchester, as elected official, James Davis, Zoning Enforcement Officer of the Town of Manchester, Gary Anderson, Director Planning of the Town of Manchester, Clock Tower Mill Limited Partnership, as tower operator and property owner. We have reached out to the Building and Zoning Departments for the Town of Manchester who conducted a search and could not locate the original tower approval.

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

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

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

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

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

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

6. The existing structure and its foundation can support the proposed loading. *Please see the structural analysis dated May 13, 2022, and prepared by ICC Commonwealth, enclosed herewith.*

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

Sincerely,

Evan Renwick

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

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

Cc: The Honorable Jay Moran, Mayor, Town of Manchester, elected official
James Davis, Zoning Enforcement Officer, Town of Manchester
Gary Anderson, Director of Planning, Town of Manchester
Clock Tower Mill Limited Partnership, as tower operator and property owner

EXHIBIT 1

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING SMOKE STACK:
- NEW AT&T ANTENNAS: AIR6449 B77D (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3) (STACKED).
- NEW AT&T ANTENNAS: DMP65R-BU6DA (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRU'S: RRUS-2012 B29 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRU'S: 4449 B5/B12 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRU'S: RRUS-32 B30 (WCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 3).
- EXISTING AT&T RRU'S: 4415 B25 (PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 4).
- NEW AT&T SURGE ARRESTOR: DC9-48-60-24-8C-EV (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL AT&T (3) Y-CABLES.
- INSTALL (3) 6 AWG DC TRUNKS AND (3) 24 PAIR FIBER.

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- INSTALL (1) OUTDOOR DC12-48-60-0-25E MOUNTED ON EXISTING RAILING
- INSTALL (1) 6648 WITH XCEDE CABLE.
- FINAL CONFIG: 5216-XMU/6630-IDLE/6648 WITH XCEDE CABLE
- INSTALL (4) -48V RECTIFIERS IN EXISTING POWER PLANT
- INSTALL (1) NEW BATTERY CABINET WITH (2) STRINGS OF 170AH BATTERIES

ITEMS TO BE REMOVED:
- EXISTING AT&T ANTENNAS: 80010121 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNAS: QS66512-2 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRU'S: 4478 B5 (850) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRU'S: RRUS-11 B12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T SURGE ARRESTOR: DC6-48-60-18-8F (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T TMAS: LGP21401 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T DIPLEXERS: DBCT108F1V9202 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T (6) 1-5/8 COAX CABLES.
- EXISTING (3) 18 PAIR FIBER.

ITEMS TO REMAIN:
- (6) ANTENNAS, (12) RRU'S, (6) DC POWER.

SITE ADDRESS:	63 ELM STREET MANCHESTER, CT 06040
LATITUDE:	41.770556° N, 41° 46' 14" N
LONGITUDE:	72.527333° W, 72° 31' 38.4" W
TYPE OF SITE:	SMOKE STACK / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	200'-0"±
RAD CENTER:	175'-0"± (POS. 1 & 4) & 165'-0" (POS. 2 & 3)
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SITE NUMBER: CTL05322

SITE NAME: MANCHESTER SOUTH CENTRAL

FA CODE: 10071101

PACE ID: MRCTB062617,MRCTB054200,MRCTB057628,MRCTB057633, MRCTB052258,MRCTB051209,MRCTB051116,MRCTB050992

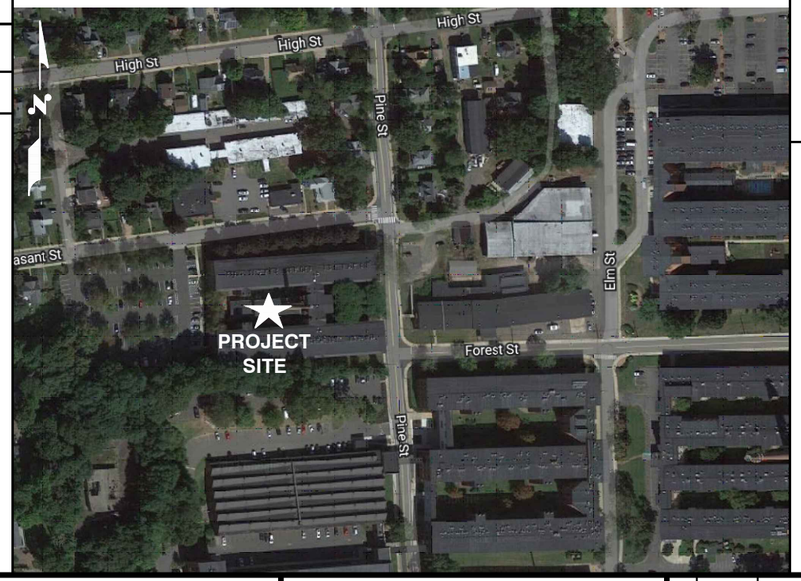
PROJECT: 5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 4T4R ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE

ISSUED FOR PERMITTING

VICINITY MAP

DIRECTIONS TO SITE:

START OUT GOING EAST ON ENTERPRISE DR TOWARD CAPITAL BLVD. TURN LEFT ONTO CAPITAL BLVD. TURN LEFT ONTO WEST ST. MERGE ONTO I-91 N VIA THE RAMP ON THE LEFT TOWARD HARTFORD. MERGE ONTO CT-15 N VIA EXIT 29 TOWARD BOSTON/E HARTFORD/I-84 E. CT-15 N BECOMES I-84 E/US-6 E. MERGE ONTO I-384 E VIA EXIT 59 TOWARD PROVIDENCE. TAKE EXIT 2 TOWARD KEENEY STREET. TURN LEFT ONTO WETHERELL ST. TAKE THE 1ST LEFT ONTO KEENEY ST. TURN RIGHT ONTO HARTFORD RD. OXFORD LIQUORS IS ON THE CORNER TURN LEFT ONTO ELM ST. ELM ST IS JUST PAST PINE ST. 63 ELM ST, MANCHESTER, CT 06040 IS ON THE RIGHT.



GENERAL NOTES

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

72 HOURS

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

UNDERGROUND SERVICE ALERT

TEP NORTHEAST
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

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

SITE NUMBER: CTL05322
SITE NAME: MANCHESTER SOUTH CENTRAL

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

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

AT&T

TITLE SHEET

5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 4T4R ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL05322	T-1	B

GROUNDING NOTES

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ABBREVIATIONS

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

TEP NORTHEAST
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

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

SITE NUMBER: CTL05322
SITE NAME: MANCHESTER SOUTH CENTRAL

63 ELM STREET
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HARTFORD COUNTY

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

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

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

AT&T

GENERAL NOTES

5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 4T4R ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
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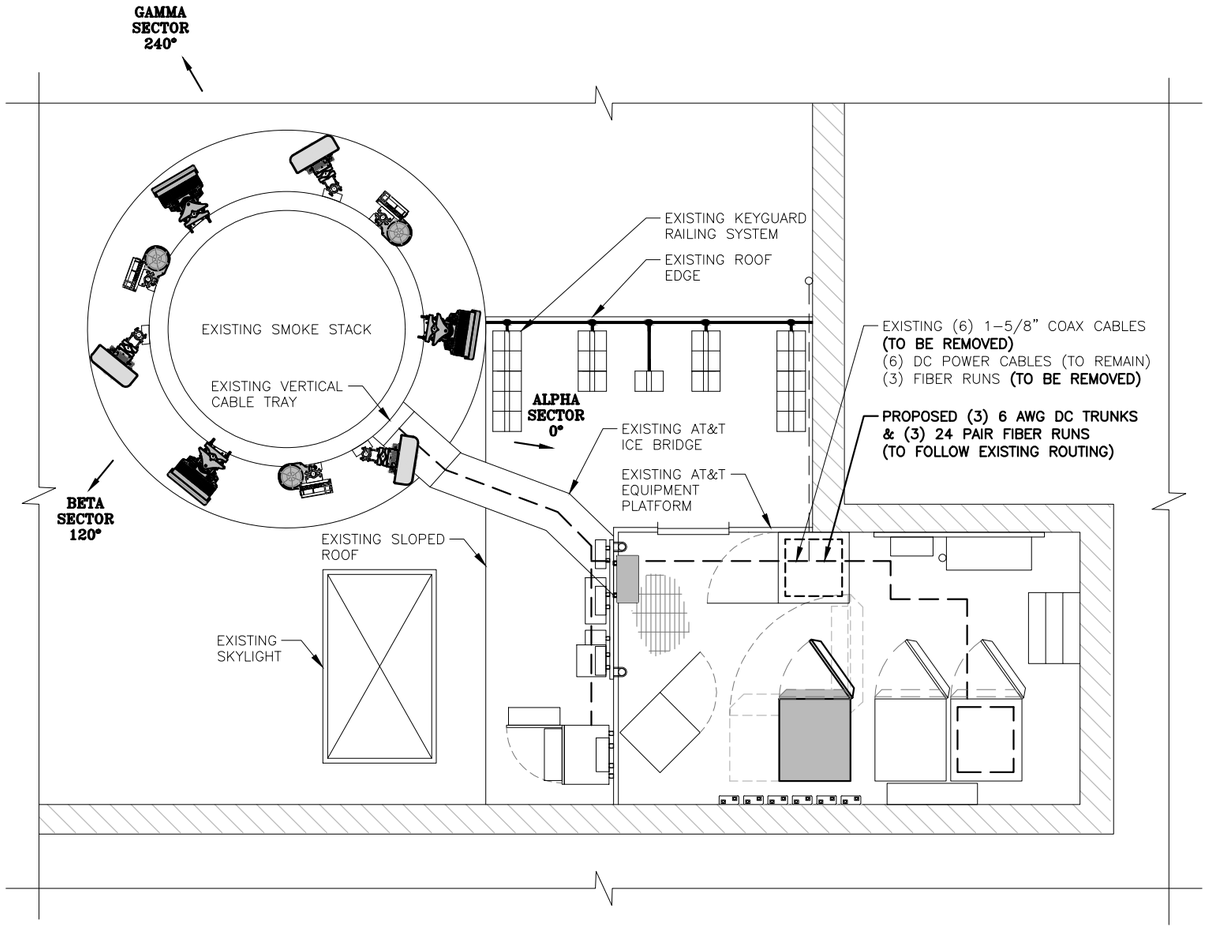
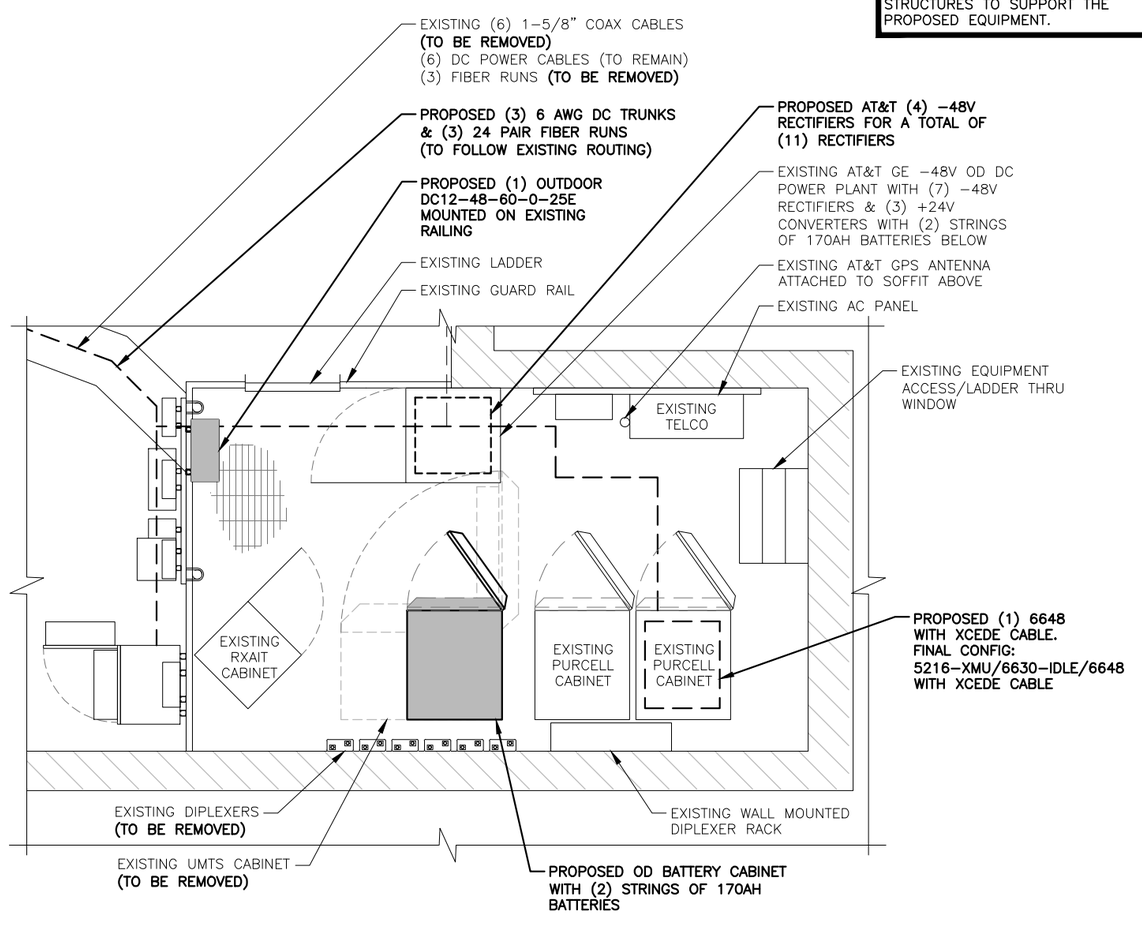
NOTE:

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

NOTE:

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





MAGNETIC NORTH 13°32' TRUE NORTH

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

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

MAGNETIC NORTH 13°32' TRUE NORTH

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

0 1'-4" 3'-0" 6'-0"

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SITE NUMBER: CTL05322
SITE NAME: MANCHESTER SOUTH CENTRAL

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

AT&T

COMPOUND & EQUIPMENT PLANS

5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 4T4R ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE

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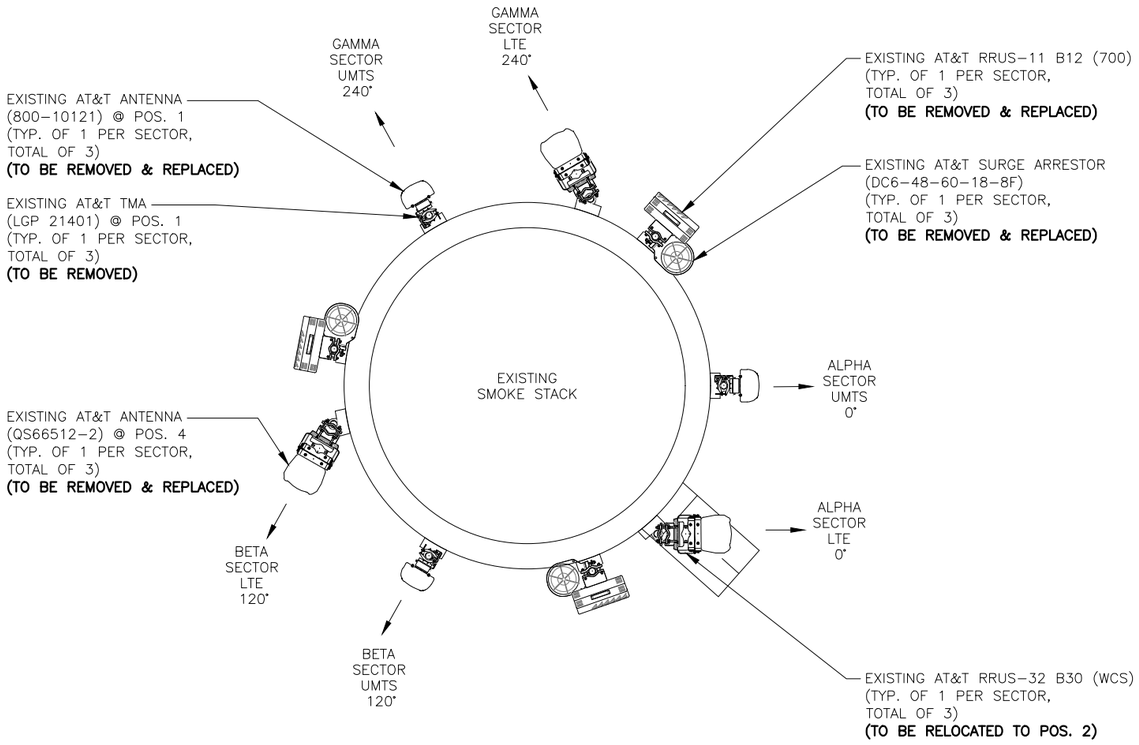

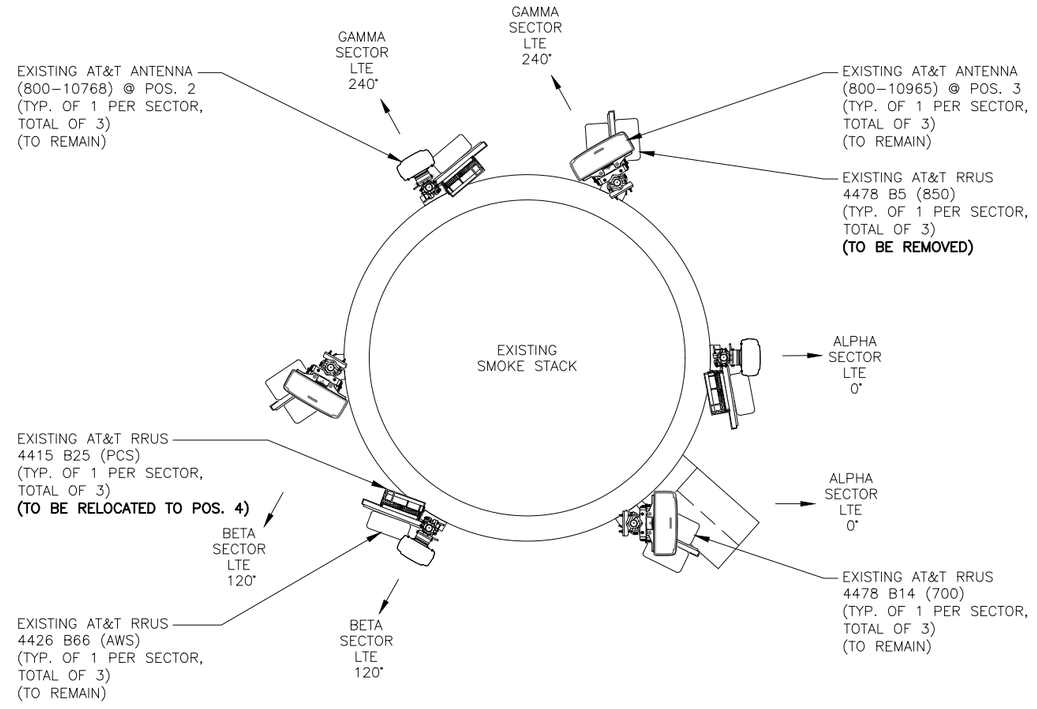

MAGNETIC NORTH 13°32' TRUE NORTH

EXISTING ANTENNA PLAN
(@ RAD = 175'-0"±)
SCALE: N.T.S

1
A-2

MAGNETIC NORTH 13°32' TRUE NORTH

EXISTING ANTENNA PLAN
(@ RAD = 165'-0"±)
SCALE: N.T.S

2
A-2

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

SITE NUMBER: CTL05322
SITE NAME: MANCHESTER SOUTH CENTRAL

63 ELM STREET
MANCHESTER, CT 06040
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
B	10/27/22	ISSUED FOR PERMITTING	AN	AZ	DPH
A	03/31/22	ISSUED FOR REVIEW	MR	AT	DPH

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

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

AT&T

EXISTING ANTENNA PLAN

5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 4T4R ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE

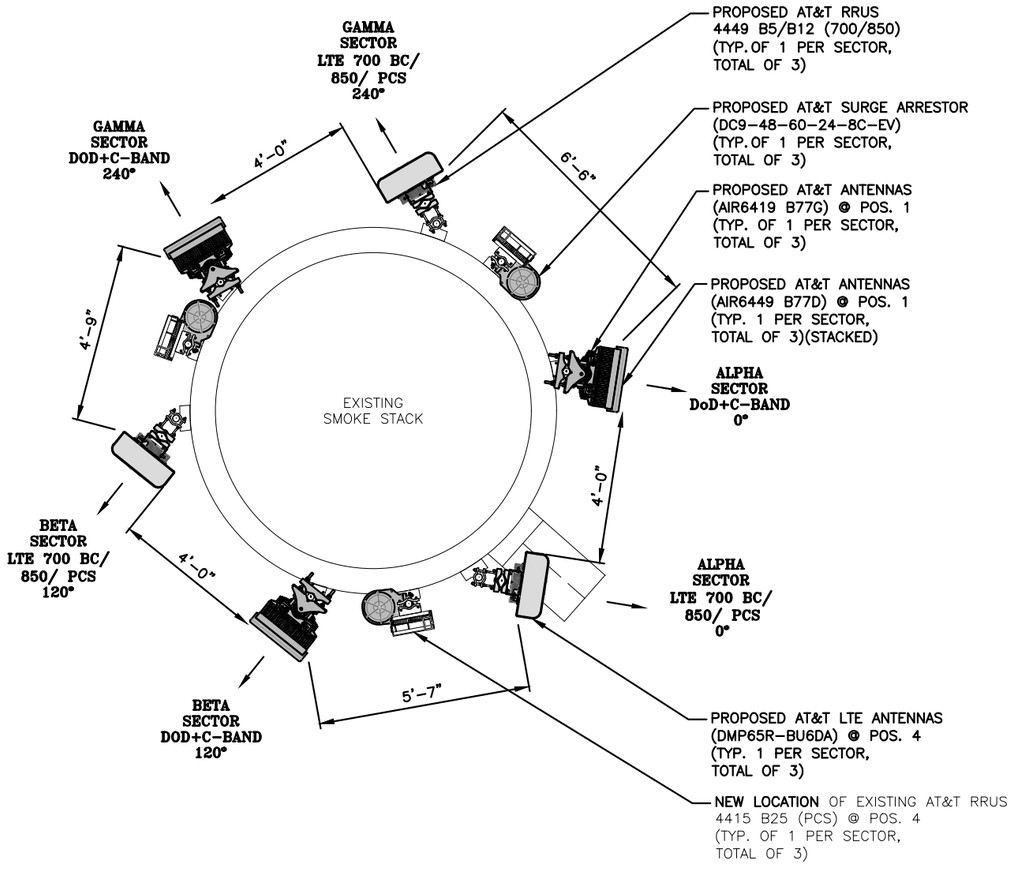
SITE NUMBER	DRAWING NUMBER	REV
CTL05322	A-2	B

NOTE:

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

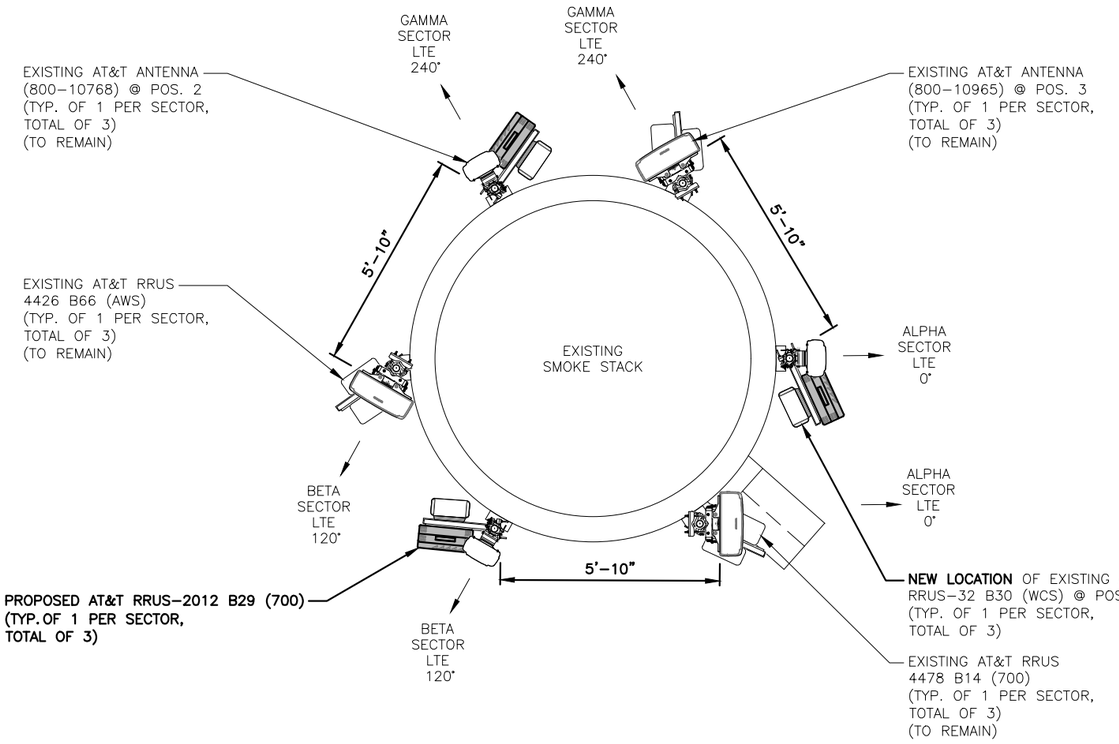
NOTE:

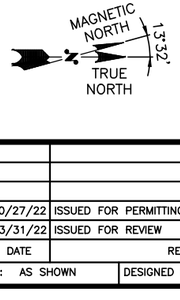
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED:
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



PROPOSED ANTENNA PLAN
(@ RAD = 175'-0"±)
SCALE: N.T.S

1
A-3





PROPOSED ANTENNA PLAN
(@ RAD = 165'-0"±)
SCALE: N.T.S

2
A-3

TEP NORTHEAST
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

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

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MANCHESTER, CT 06040
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at&t
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: MR

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

AT&T

PROPOSED ANTENNA PLAN

5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 4T4R ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL05322	A-3	B

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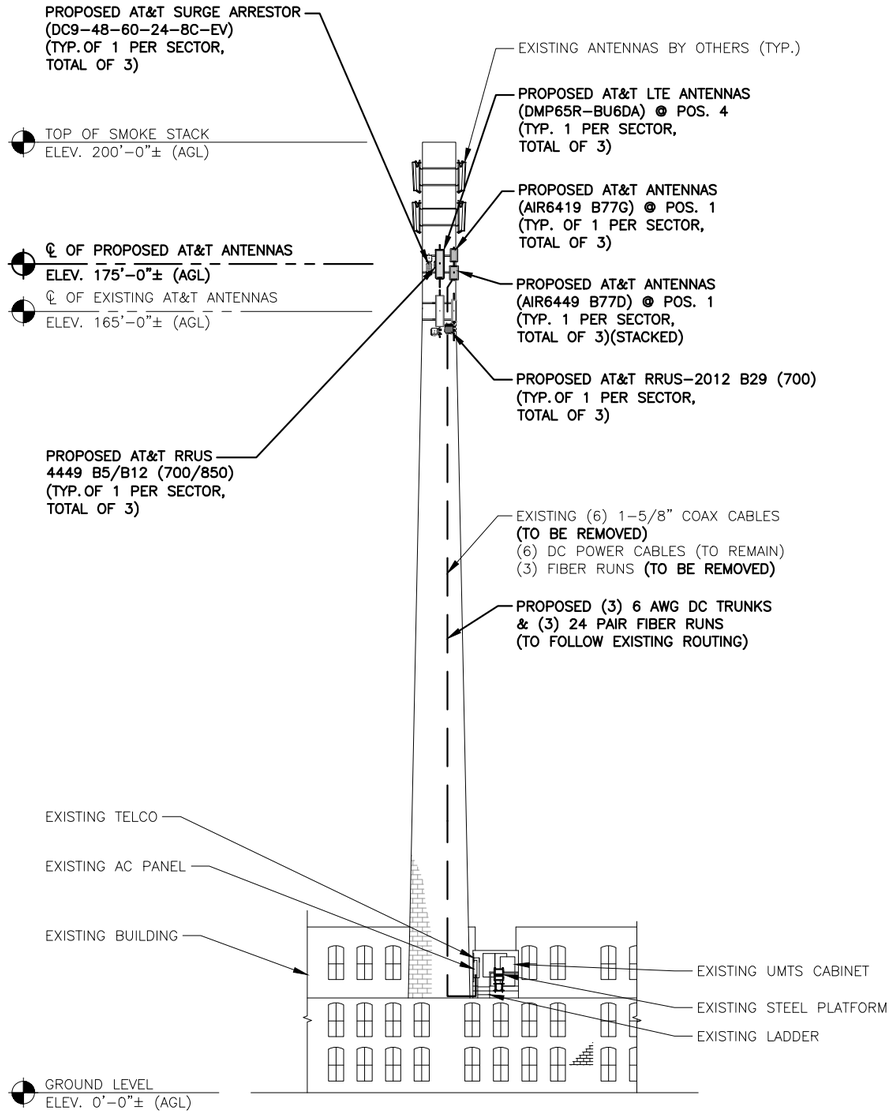

ELEVATION 1 / A-4
22x34 SCALE: 1/16"=1'-0"
11x17 SCALE: 1/32"=1'-0"

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

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STATE OF CONNECTICUT
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ELEVATION

5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 4T4R ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL05322	A-4	B

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ COMBINER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	**PROPOSED**	**DOD+C-BAND**	**AIR 6419 B77G AIR 6449 B77D**	**31.1"X16.1X7.3" 30.4"X15.9"X8.1"**	**175'-0"±**	**0°**	–	–	–	–	(P) (1) RAYCAP DC9-48-60-24-8C-EV
A2	EXISTING	LTE 700DE/WCS	800-10768	75.2"X14.8"X6.7"	165'-0"±	0°	–	**(P)(1) RRUS-2012 B29 (700)** (E)(1) RRUS-32 B30 (WCS)	**20.4"x18.5"x7.5"** –	(E)(1) 8 AWG DC CABLE	
A3	EXISTING	LTE 700 B14/AWS	800-10965	78.7"X20"X6.9"	165'-0"±	0°	–	(E)(1) 4478 B14 (700) (E)(1) 4426 B66 (AWS)	–	(E)(1) 8 AWG DC CABLE	
A4	**PROPOSED**	**LTE 700 BC/850/PCS**	**DMP65R-BU6DA**	**71.2"X20.7"X7.7"**	**175'-0"±**	**0°**	–	**(P)(1) 4449 B5/B12 (850/700)** (E)(1) 4415 B25 (PCS)	**17.9"x13.2"x10.4"** –	**(P)(1) 6 AWG DC CABLES (P)(1) 24 PAIR FIBER (P)(1) Y-CABLE**	
B1	**PROPOSED**	**DOD+C-BAND**	**AIR 6419 B77G AIR 6449 B77D**	**31.1"X16.1X7.3" 30.4"X15.9"X8.1"**	**175'-0"±**	**120°**	–	–	–	–	(P) (1) RAYCAP DC9-48-60-24-8C-EV
B2	EXISTING	LTE 700DE/WCS	800-10768	75.2"X14.8"X6.7"	165'-0"±	120°	–	**(P)(1) RRUS-2012 B29 (700)** (E)(1) RRUS-32 B30 (WCS)	**20.4"x18.5"x7.5"** –	(E)(1) 8 AWG DC CABLE	
B3	EXISTING	LTE 700 B14/AWS	800-10965	78.7"X20"X6.9"	165'-0"±	120°	–	(E)(1) 4478 B14 (700) (E)(1) 4426 B66 (AWS)	–	(E)(1) 8 AWG DC CABLE	
B4	**PROPOSED**	**LTE 700 BC/850/PCS**	**DMP65R-BU6DA**	**71.2"X20.7"X7.7"**	**175'-0"±**	**120°**	–	**(P)(1) 4449 B5/B12 (850/700)** (E)(1) 4415 B25 (PCS)	**17.9"x13.2"x10.4"** –	**(P)(1) 6 AWG DC CABLES (P)(1) 24 PAIR FIBER (P)(1) Y-CABLE**	
C1	**PROPOSED**	**DOD+C-BAND**	**AIR 6419 B77G AIR 6449 B77D**	**31.1"X16.1X7.3" 30.4"X15.9"X8.1"**	**175'-0"±**	**240°**	–	–	–	–	(P) (1) RAYCAP DC9-48-60-24-8C-EV
C2	EXISTING	LTE 700DE/WCS	800-10768	75.2"X14.8"X6.7"	165'-0"±	240°	–	**(P)(1) RRUS-2012 B29 (700)** (E)(1) RRUS-32 B30 (WCS)	**20.4"x18.5"x7.5"** –	(E)(1) 8 AWG DC CABLE	
C3	EXISTING	LTE 700 B14/AWS	800-10965	78.7"X20"X6.9"	165'-0"±	240°	–	(E)(1) 4478 B14 (700) (E)(1) 4426 B66 (AWS)	–	(E)(1) 8 AWG DC CABLE	
C4	**PROPOSED**	**LTE 700 BC/850/PCS**	**DMP65R-BU6DA**	**71.2"X20.7"X7.7"**	**175'-0"±**	**240°**	–	**(P)(1) 4449 B5/B12 (850/700)** (E)(1) 4415 B25 (PCS)	**17.9"x13.2"x10.4"** –	**(P)(1) 6 AWG DC CABLES (P)(1) 24 PAIR FIBER (P)(1) Y-CABLE**	

NOTE:

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NOTE:

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RRU CHART

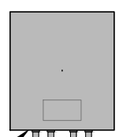
QUANTITY	MODEL	SIZE (L x W x D)
P(3)	**RRUS-2012 B29 (700)**	**20.4"x18.5"x7.5"**
P(3)	**4449 B5/B12 (850/700)**	**17.9"x13.2"x10.4"**
E(3)	RRUS-32 B30(WCS)	27.2"x12.1"x7.0"
E(3)	4478 B14 (700)	18.1"x13.4"x8.3"
E(3)	4426 B66 (AWS)	14.9"x13.2"x5.8"
E(3)	4415 B25 (PCS)	16.5"x13.4"x5.9"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

FINAL ANTENNA CONFIGURATION (1 / A-5)
SCALE: N.T.S

NOTE:

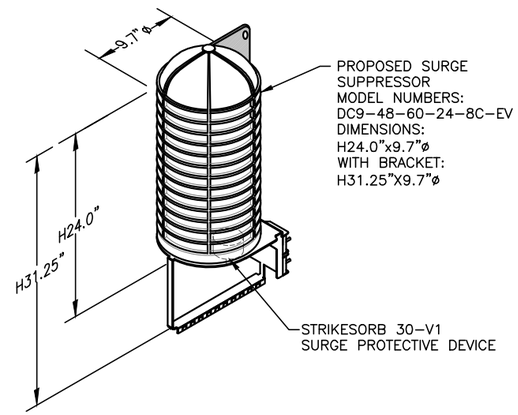
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



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

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (2 / A-5)
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (3 / A-5)
SCALE: N.T.S

TEP NORTHEAST
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

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

STATE OF CONNECTICUT — DANIEL P. LAMM — No. 24178 — LICENSED PROFESSIONAL ENGINEER — DATE: 10/27/22

AT&T

DETAILS

5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 4T4R ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
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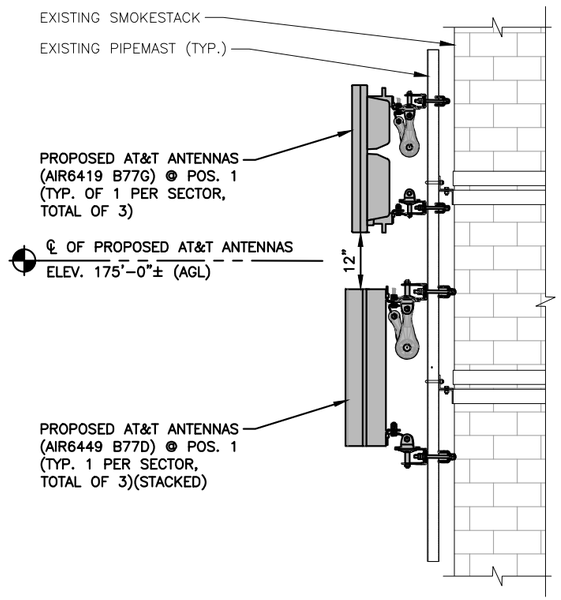
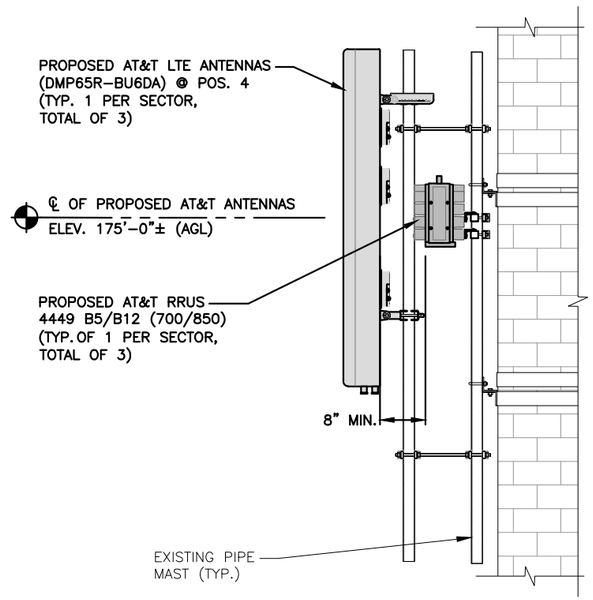


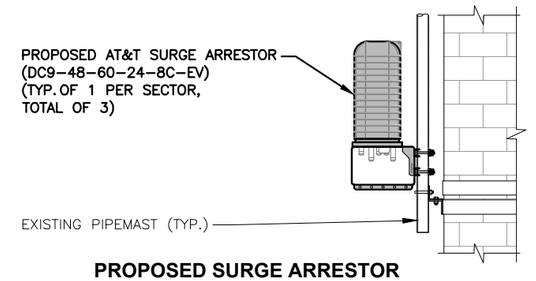
PROPOSED DoD + C-Band
ANTENNA MOUNTING DETAIL 1 / A-6

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0" 0 8" 1'-4" 2'-8" 4'-0"



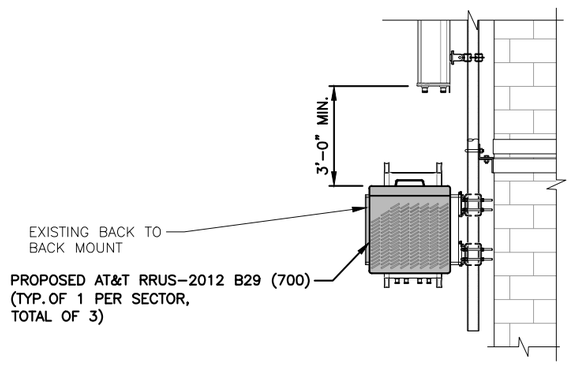
PROPOSED ANTENNA MOUNTING DETAIL 2 / A-6

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0" 0 8" 1'-4" 2'-8" 4'-0"



PROPOSED SURGE ARRESTOR
MOUNTING DETAIL 3 / A-6

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0" 0 8" 1'-4" 2'-8" 4'-0"



PROPOSED RRUS MOUNTING DETAIL 4 / A-6

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0" 0 8" 1'-4" 2'-8" 4'-0"

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

AT&T

DETAILS

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SITE NUMBER	DRAWING NUMBER	REV
CTL05322	A-6	B

STRUCTURAL NOTES:

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

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

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

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

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

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

NOTES:

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

NOTES:

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

SPECIAL INSPECTION CHECKLIST

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

TEP NORTHEAST
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

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

SITE NUMBER: CTL05322
SITE NAME: MANCHESTER SOUTH CENTRAL

63 ELM STREET
MANCHESTER, CT 06040
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
B	10/27/22	ISSUED FOR PERMITTING	AW	AZZ	DPH
A	03/31/22	ISSUED FOR REVIEW	MR	AT	DPH

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

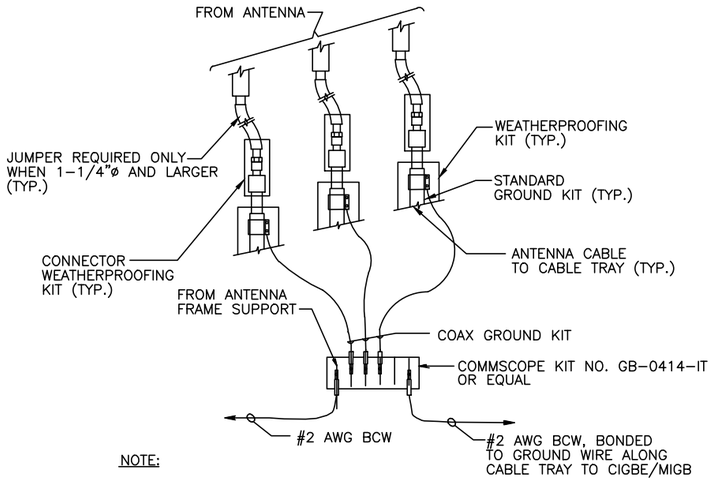
STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

STRUCTURAL NOTES

5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 4T4R ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL05322	SN-1	B



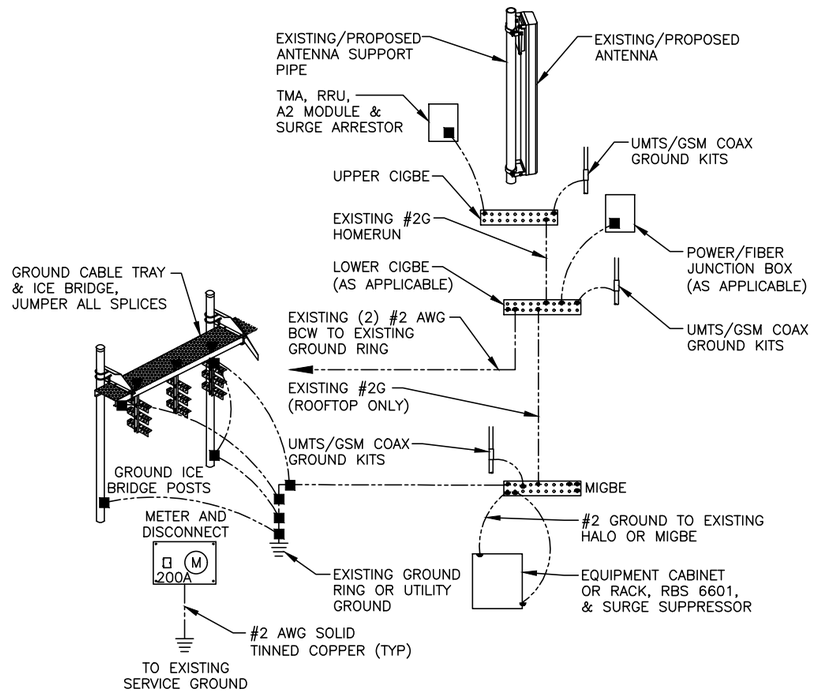
NOTE:

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

SCALE: N.T.S

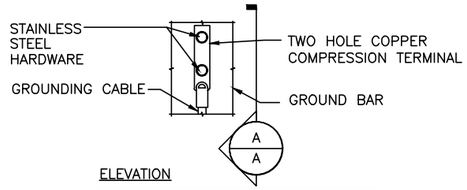
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



NOTES:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G-1

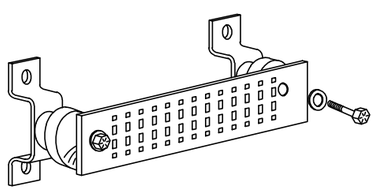
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL (AS REQUIRED)

SCALE: N.T.S

TEP NORTHEAST
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

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

SITE NUMBER: CTL05322
SITE NAME: MANCHESTER SOUTH CENTRAL

63 ELM STREET
MANCHESTER, CT 06040
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
B	10/27/22	ISSUED FOR PERMITTING	MR	AT	DPH
A	03/31/22	ISSUED FOR REVIEW	MR	AT	DPH

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

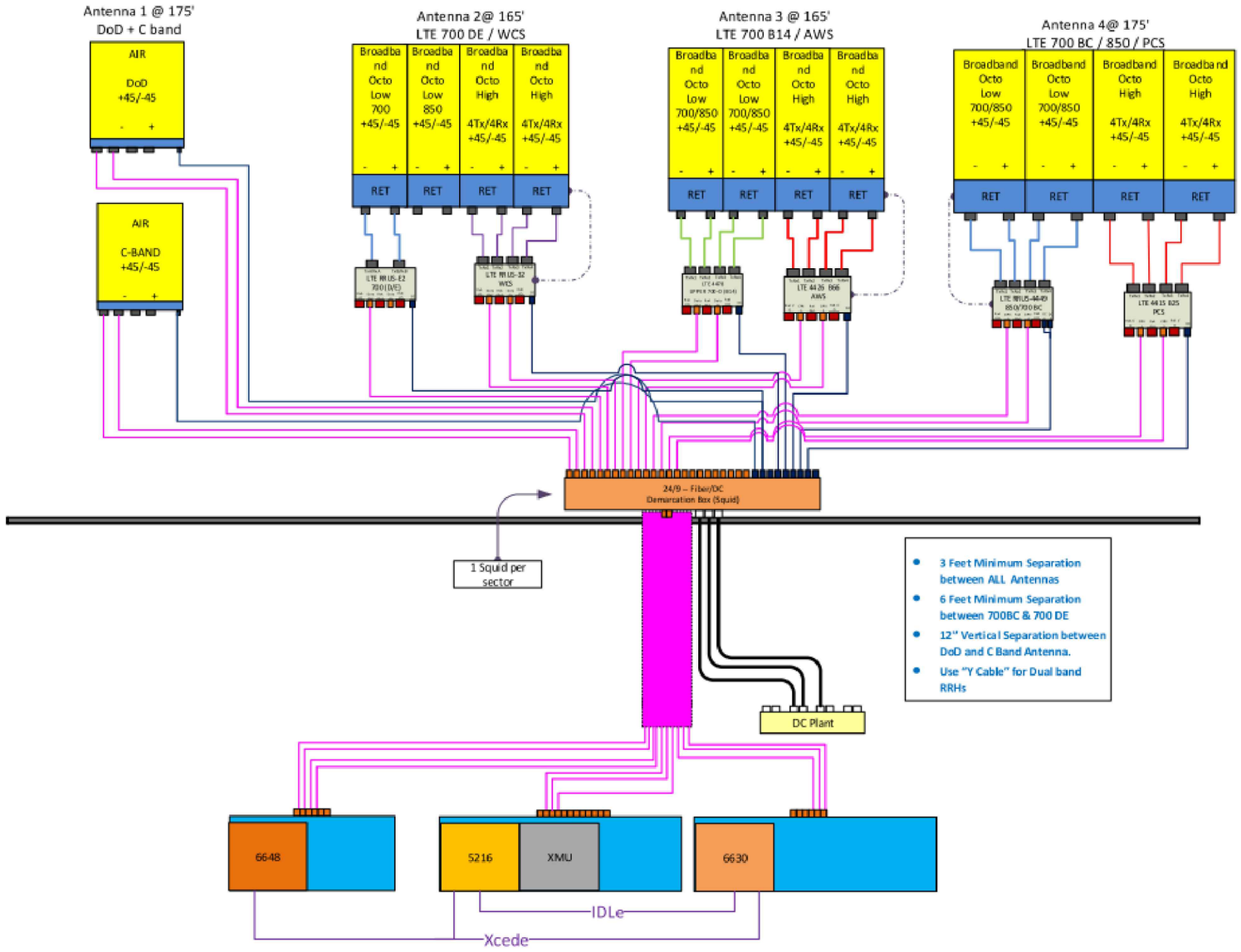
STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS

5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 4T4R ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL05322	G-1	B



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

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

NOTE:

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

TEP NORTHEAST
45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
TEL: (978) 557-5553

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

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NO.	DATE	REVISIONS	BY	CHK	APP'D
B	10/27/22	ISSUED FOR PERMITTING	KW	AT	DPH
A	03/31/22	ISSUED FOR REVIEW	MR	AT	DPH

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

AT&T

RF PLUMBING DIAGRAM
5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 4T4R ANTENNA RETROFIT, BBU RECONFIGURATION, LTE 7C ADD, 2022 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL05322	RF–1	B

EXHIBIT 2

63 ELM STREET

Location	63 ELM STREET	**Mblu**	79/ 1940/ 63/ /
Acct#	194000063	**Owner**	CLOCK TOWER MILL LIMITED PTNSP
Assessment	$9,285,700	**Appraisal**	$13,265,400
PID	4937	**Building Count**	2
DISTRICT	T	**CONCRETE**	

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$10,490,400	$2,775,000	$13,265,400

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2021	$7,343,200	$1,942,500	$9,285,700

Owner of Record

Owner	CLOCK TOWER MILL LIMITED PTNSP C/O KONOVER RESIDENT CORP	**Sale Price**	$0
		Certificate	C
Address	342 NORTH MAIN ST STE 200 W HARTFORD, CT 06117-2506	**Book & Page**	0920/0264
		Sale Date	10/18/1984

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
CLOCK TOWER MILL LIMITED PTNSP	$0	C	0920/0264	10/18/1984

Building Information

Building 1 : Section 1

Year Built:	1900
Living Area:	226,832
Replacement Cost:	$20,548,001

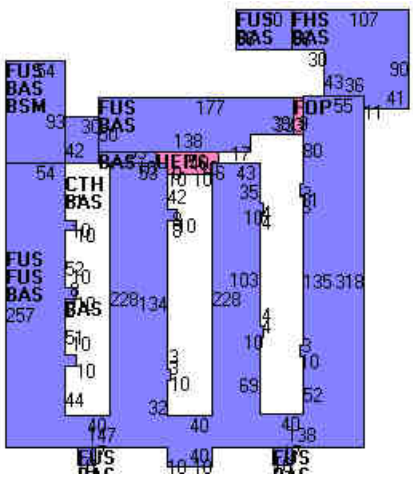
Replacement Cost
Less Depreciation: $9,863,000

Building Attributes	
Field	**Description**
Style:	Apartments
Model	Comm/Ind
Grade	Average +10
Stories:	3
Occupancy	185.00
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	T+G/Rubber
Interior Wall 1	Minim/Masonry
Interior Wall 2	Drywall/Sheetr
Interior Floor 1	Carpet
Interior Floor 2	Hardwood
Heating Fuel	Electric
Heating Type	Forced Air-Duc
AC Type	Heat Pump
Struct Class	
Bldg Use	Apartments 94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	800C
Heat/AC	Heat AC Split
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Ceiling & Wall
Rooms/Prtns	Average
Wall Height	9.00
% Comn Wall	0.00

Building Photo

(https://images.vgsi.com/photos2/ManchesterCTPhotos//\00\03\75\58.jpg)

Building Layout



(https://images.vgsi.com/photos2/ManchesterCTPhotos//Sketches/4937_4

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
FUS	Upper Story, Finished	137,219	137,219
BAS	First Floor	85,806	85,806
FHS	Half Story, Finished	7,614	3,807
BSM	Basement	5,022	0
CTH	CTH	1,260	0
FOP	Porch, Open	297	0
UEP	Porch, Enclosed, Unfinished	960	0
		238,178	226,832

Building 2 : Section 1

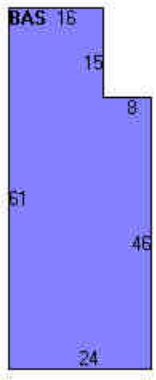
Year Built: 1900
Living Area: 1,344
Replacement Cost: $161,455
Replacement Cost
Less Depreciation: $85,600

Building Attributes : Bldg 2 of 2	
Field	**Description**
Style:	Health Club
Model	Comm/Ind
Grade	Below Average
Stories:	1
Occupancy	1.00
Exterior Wall 1	Brick/Masonry
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	T+G/Rubber
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	
Heating Fuel	Electric
Heating Type	Forced Air-Duc
AC Type	Heat Pump
Struct Class	
Bldg Use	Apartments 94
Total Rooms	
Total Bedrms	00
Total Baths	0
1st Floor Use:	800C
Heat/AC	None
Frame Type	Masonry
Baths/Plumbing	Average
Ceiling/Wall	Ceiling & Wall
Rooms/Prtns	Average
Wall Height	16.00
% Comn Wall	0.00

Building Photo

(https://images.vgsi.com/photos2/ManchesterCTPhotos//default.jpg)

Building Layout



(https://images.vgsi.com/photos2/ManchesterCTPhotos//Sketches/4937_1

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,344	1,344
		1,344	1,344

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
SPR1	Sprinklers-Wet	264427.00 S.F.	$190,400	1
ELV1	Elevator Passenger	3.00 UNITS	$57,600	1
ELV1	Elevator Passenger	2.00 UNITS	$38,400	1
MEZ2	Mezzanine-Fin	503.00 S.F.	$5,300	1

Land

Land

Land Use

Use Code	800C
Description	Apartments 94
Zone	H
Neighborhood	3000
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	6.8
Frontage	0
Depth	0
Assessed Value	$1,942,500
Appraised Value	$2,775,000

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	Paving Asphalt			170544.00 S.F.	$213,200	1
LT1	Lights 1Fix			19.00 UNITS	$10,900	1
SPL1	Pool Inground - Avg Quality			1120.00 S.F.	$25,200	1
LT2	Lights 2 Fix			1.00 UNITS	$800	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$5,286,400	$2,813,600	$8,100,000
2015	$3,173,400	$3,326,600	$6,500,000
2010	$4,270,800	$3,329,200	$7,600,000

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2020	$3,700,300	$1,969,700	$5,670,000
2015	$2,221,500	$2,328,500	$4,550,000
2010	$2,989,600	$2,330,400	$5,320,000

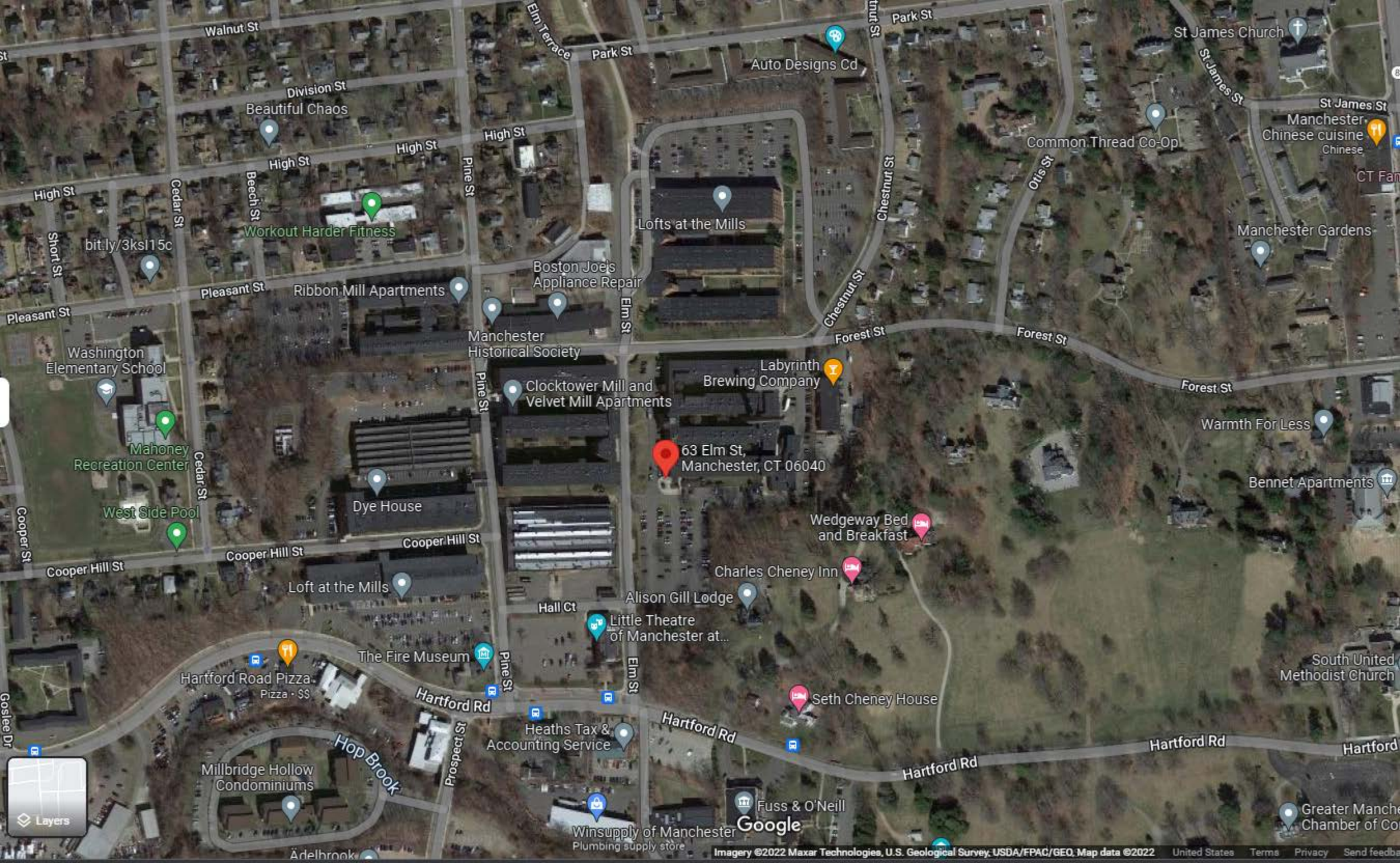

Walnut St
Elm Terrace
Park St
Auto Designs Cd
St James Church
St James St
Division St
Beautiful Chaos
High St
Pine St
Chestnut St
Common Thread Co-Op
Manchester Chinese cuisine
Chinese
Otis St
Cedar St
Beech St
Short St
Workout Harder Fitness
bit.ly/3ksl15c
Lofts at the Mills
Manchester Gardens
Boston Joels Appliance Repair
Ribbon Mill Apartments
Pleasant St
Elm St
Manchester Historical Society
Forest St
Washington Elementary School
Labyrinth Brewing Company
Clocktower Mill and Velvet Mill Apartments
Warmth For Less
63 Elm St, Manchester, CT 06040
Mahoney Recreation Center
Bennet Apartments
Dye House
West Side Pool
Cooper St
Cooper Hill St
Wedgeway Bed and Breakfast
Charles Cheney Inn
Loft at the Mills
Alison Gill Lodge
Hall Ct
Little Theatre of Manchester at...
The Fire Museum
South United Methodist Church
Hartford Road Pizza
Pizza · $$
Hartford Rd
Seth Cheney House
Heaths Tax & Accounting Service
Hop Brook
Prospect St
Millbridge Hollow Condominiums
Fuss & O'Neill
Winsupply of Manchester
Plumbing supply store
Greater Manche Chamber of Co
Layers
Google
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EXHIBIT 3

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

Customer: Hudson Design Group

ICC Project Number: 1783

Site: 63 Elm Street | Manchester, CT 06040

Chimney Description: 199'-7" Common Brick Chimney

Summary:

The following is a structural analysis of a 199'-7" common brick chimney. With the proposed AT&T cellular equipment modifications at the 175' and 165' elevations, it was found that the chimney shell is not overstressed. This analysis assumes all repairs required have been completed and all antenna mounts have been designed by others. The existing foundation was not analyzed and therefore is not a design responsibility of ICC Commonwealth.

Repairs required:

- Rake out and point all open and loose mortar joints within the lower 130' section of the chimney column. 10%-15% pointing is required.
- There is a vertical stress crack that has been detected within the South Side of the chimney column. This crack begins at the 30' Elevation and continues up the column for up to 17 Courses of brickwork. This stress crack should be sealed with elastomeric sealant; Sikaflex 11FC or equal.
- There are numerous spalled bricks that can be seen within the base region of the chimney column. This area of deterioration is within the lower 20 courses of brickwork that spans from the north side of the column around to the south side of the column. Given the thickness redundancy of the column, we don't believe replacement of so many face bricks are warranted for structural reasons. However, brickwork in this area should be sealed with masonry sealant waterproofing to prevent rapid deterioration.

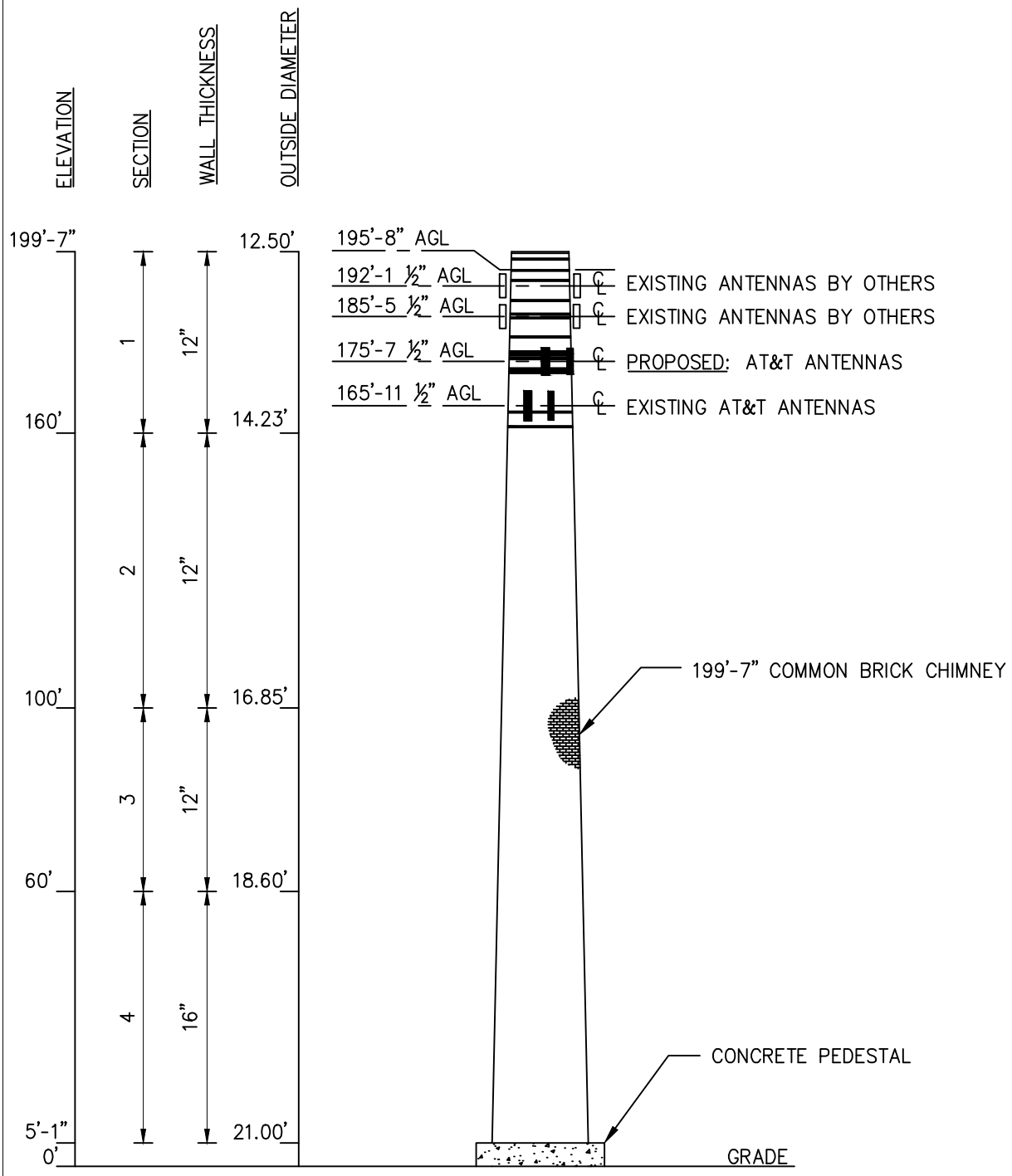
	STRUCTURAL ANALYSIS RESULTS
[ ]	Approved - Structure can accommodate the proposed changes. No repairs required
[X]	Conditional Approval - Structure can accommodate the proposed changes. Repairs required
[ ]	Not Approved - Structure cannot accommodate the proposed changes without reinforcement
	All repairs 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.

STATE OF CONNECTICUT
JOSEPH LATTA
35808
LICENSED
PROFESSIONAL ENGINEER
5/13/2022

Completed by: JWL
Date: 5/13/2022

ICC JOB: 1783

SITE: 63 ELM STREET | MANCHESTER, CT 06040



WEST ELEVATION

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING SMOCK STACK:
- NEW AT&T ANTENNAS: AIR6449 B77D (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3) (STACKED).
- NEW AT&T ANTENNAS: DMP65R-BU6DA (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRU'S: RRUS-E2 B29 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRU'S: 4449 B5/B12 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRU'S: RRUS-32 B30 (WCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 3).
- EXISTING AT&T RRU'S: 4415 B25 (PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO BE RELOCATED TO POS. 4).
- NEW AT&T SURGE ARRESTOR: DC9-48-60-24-8C-EV (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL AT&T (9) Y-CABLES.
- INSTALL (3) 6 AWG DC TRUNKS AND (3) 24 PAIR FIBER.

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- INSTALL (1) DC12-48-60-RM INSIDE EXISTING PURCELL CABINET
- INSTALL 6673 FRONT HALL GATEWAY TO EXISTING BASEBAND.
- FINAL BASEBAND = 5216-XMU/ 6630-IDLE/ 6673 FHG.

ITEMS TO BE REMOVED:
- EXISTING AT&T ANTENNAS: 80010121 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNAS: QS66512-2 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRU'S: 4478 B5 (850) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRU'S: RRUS-11 B12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T SURGE ARRESTOR: DC6-48-60-18-8F (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T TMAS: LGP21401 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T (6) 1-5/8 COAX CABLES.
- EXISTING (3) 18 PAIR FIBER.

ITEMS TO REMAIN:
- (6) ANTENNAS, (12) RRU'S, (3) DIPLEXERS, (6) DC POWER.

SITE ADDRESS:	63 ELM STREET MANCHESTER, CT 06040
LATITUDE:	41.76769° N, 41° 46' 3.69" N
LONGITUDE:	72.53139° W, 72° 31' 53.04" W
TYPE OF SITE:	SMOCK STACK / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	200'-9"±
RAD CENTER:	175'-0"± (POS. 1 & 4) & 165'-0" (POS. 2 & 3)
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	EXISTING ANTENNA PLAN	A
A-3	PROPOSED ANTENNA PLAN	A
A-4	ELEVATION	A
A-5	DETAILS	A
A-6	DETAILS	A
SN-1	STRUCTURAL NOTES	A
G-1	GROUNDING DETAILS	A
RF-1	RF PLUMBING DIAGRAM	A

SITE NUMBER: CT5322

SITE NAME: MANCHESTER SOUTH CENTRAL

FA CODE: 10071101

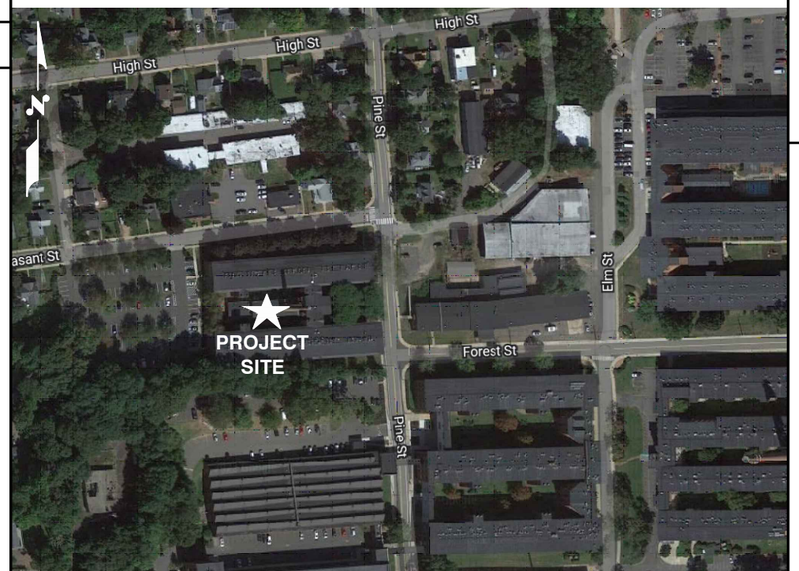
PACE ID: MRCTB062617,MRCTB054200,MRCTB057628,MRCTB057633, MRCTB052258,MRCTB051209,MRCTB051116,MRCTB050992

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

VICINITY MAP

DIRECTIONS TO SITE:

START OUT GOING EAST ON ENTERPRISE DR TOWARD CAPITAL BLVD. TURN LEFT ONTO CAPITAL BLVD. TURN LEFT ONTO WEST ST. MERGE ONTO I-91 N VIA THE RAMP ON THE LEFT TOWARD HARTFORD. MERGE ONTO CT-15 N VIA EXIT 29 TOWARD BOSTON/E HARTFORD/I-84 E. CT-15 N BECOMES I-84 E/US-6 E. MERGE ONTO I-384 E VIA EXIT 59 TOWARD PROVIDENCE. TAKE EXIT 2 TOWARD KEENEY STREET. TURN LEFT ONTO WETHERELL ST. TAKE THE 1ST LEFT ONTO KEENEY ST. TURN RIGHT ONTO HARTFORD RD. OXFORD LIQUORS IS ON THE CORNER TURN LEFT ONTO ELM ST. ELM ST IS JUST PAST PINE ST. 63 ELM ST, MANCHESTER, CT 06040 IS ON THE RIGHT.



GENERAL NOTES

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

72 HOURS

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WEST BRIDGEWATER, MA 02379

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SITE NAME: MANCHESTER SOUTH CENTRAL

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A	03/31/22	ISSUED FOR REVIEW	MR	AT	DPH

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

AT&T

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

SITE NUMBER	DRAWING NUMBER	REV
CT5322	T-1	A

GROUNDING NOTES

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ABBREVIATIONS

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

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SITE NUMBER: CT5322
SITE NAME: MANCHESTER SOUTH CENTRAL

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

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NOTE:

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

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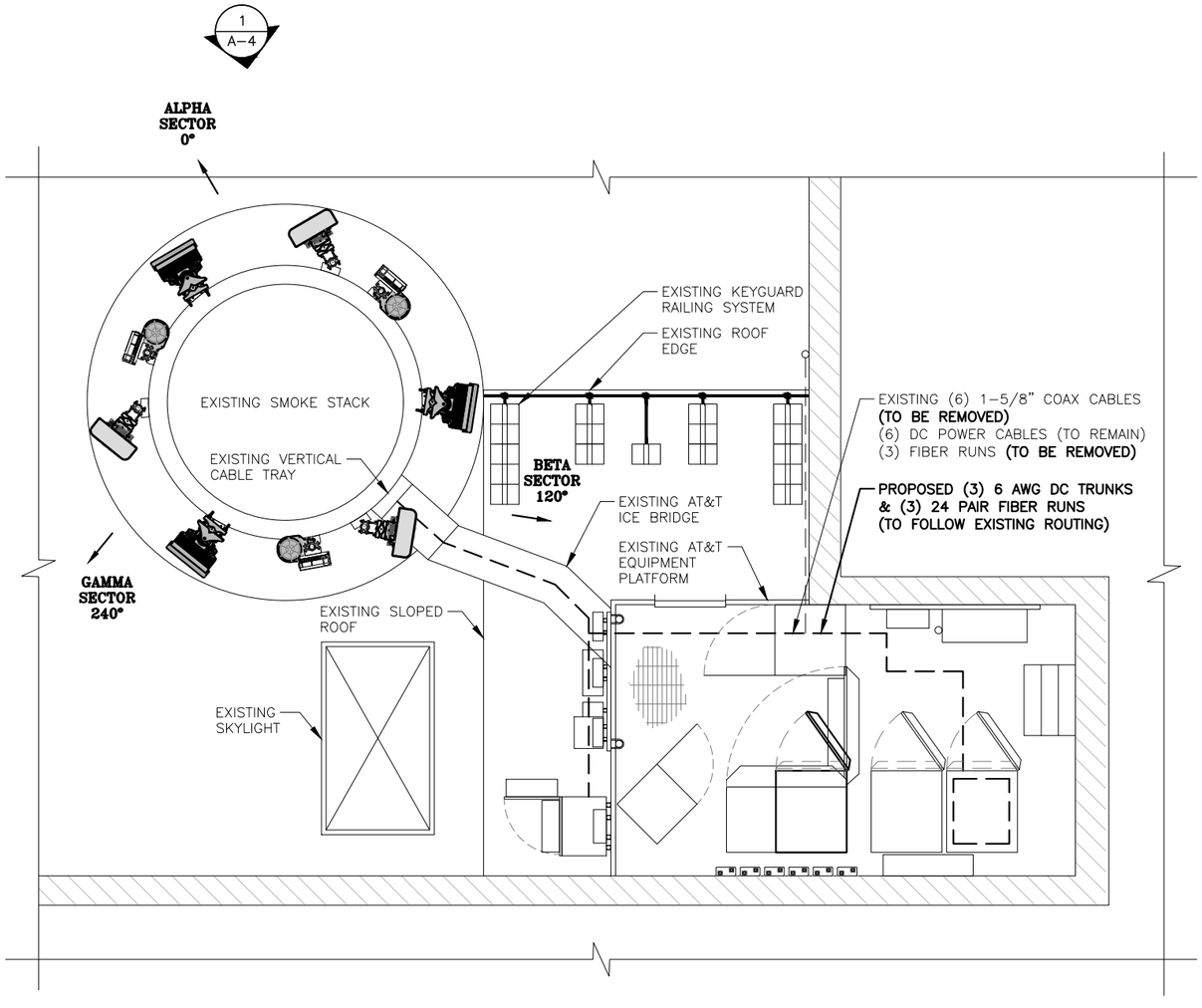
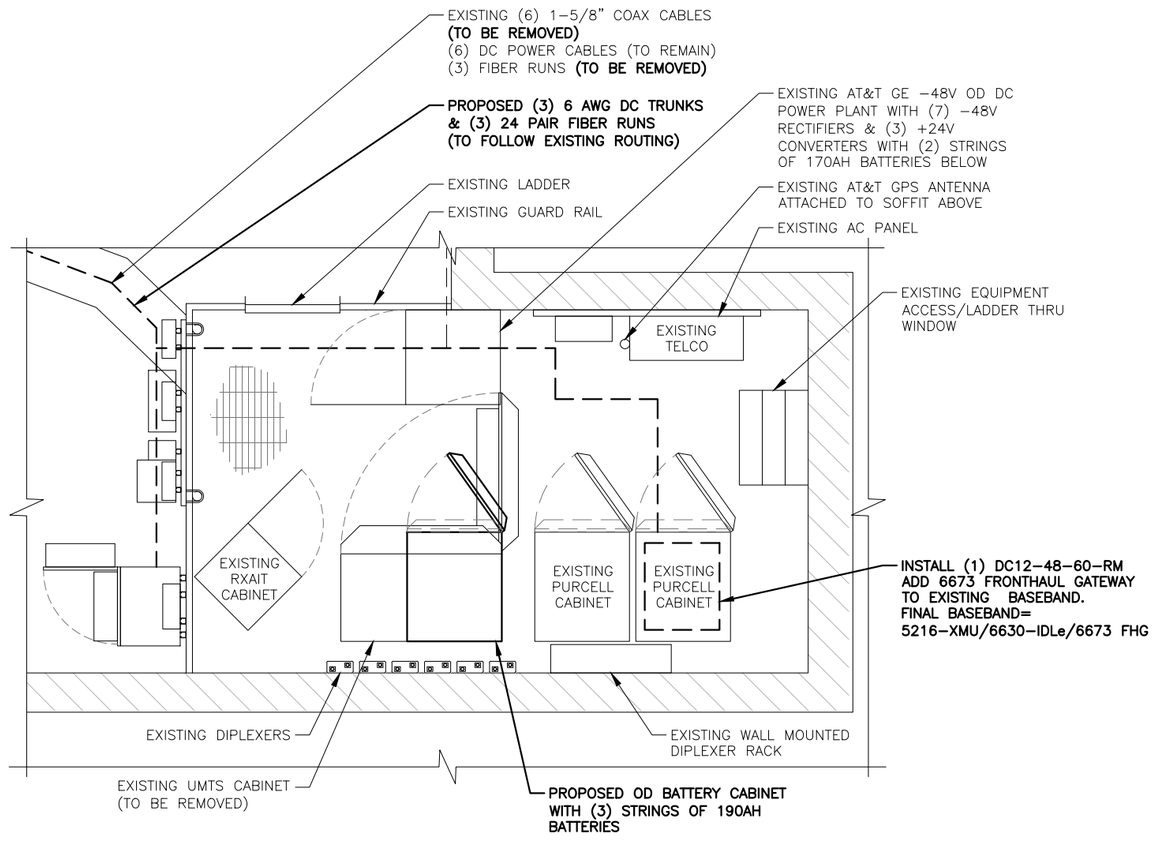
FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.





MAGNETIC NORTH 13°32' TRUE NORTH

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

0 2'–8" 5'–4" 10'–8" 16'–0"

MAGNETIC NORTH 13°32' TRUE NORTH

EQUIPMENT PLAN (2 / A–1)
22x34 SCALE: 1/2"=1'–0"
11x17 SCALE: 1/4"=1'–0"

0 1'–0" 2'–0" 4'–0" 6'–0"

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

SITE NUMBER	DRAWING NUMBER	REV
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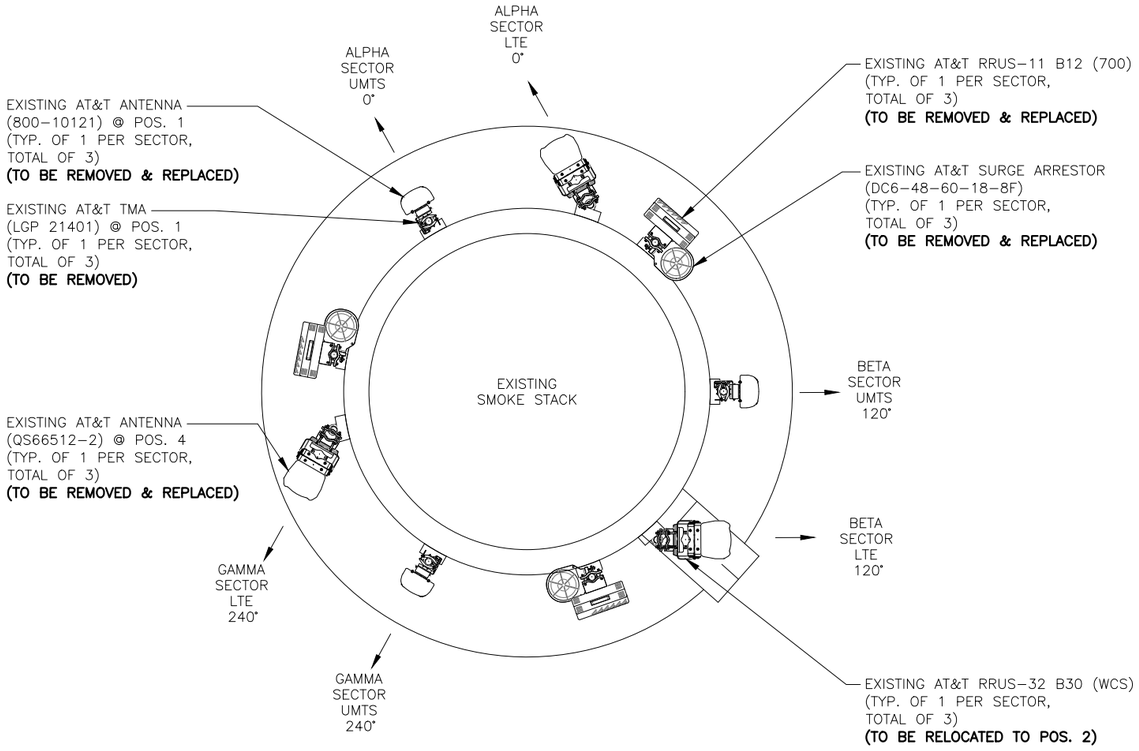
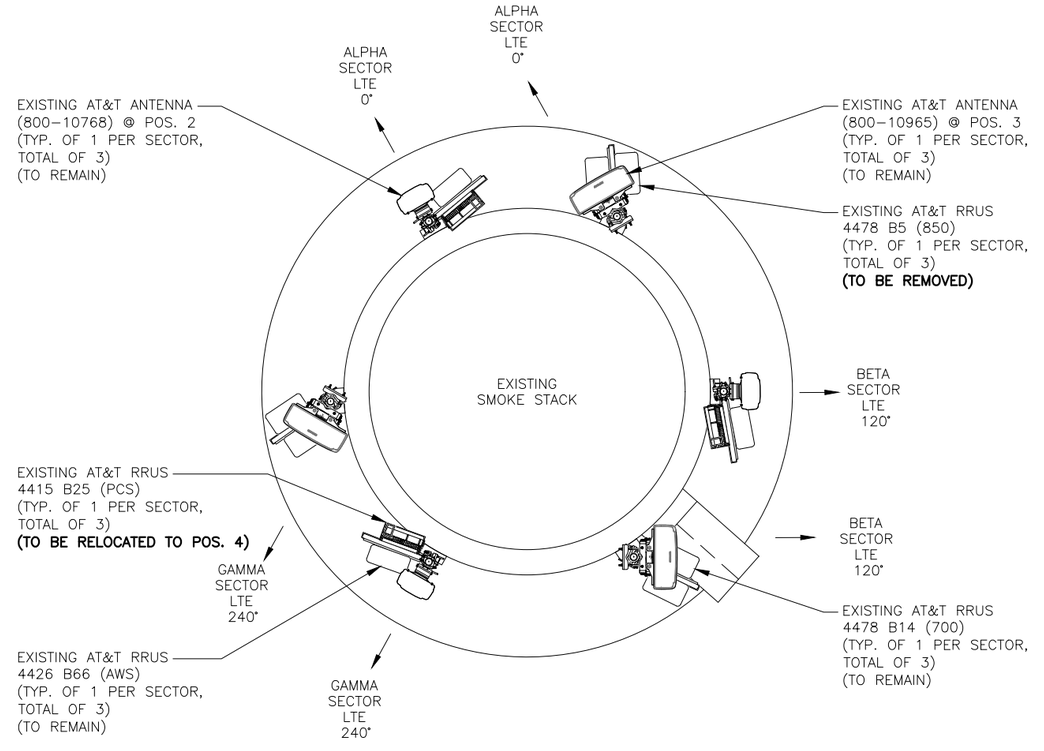


EXISTING ANTENNA PLAN
(@ RAD = 175'-0"±)
SCALE: N.T.S

1
A-2



EXISTING ANTENNA PLAN
(@ RAD = 165'-0"±)
SCALE: N.T.S

2
A-2

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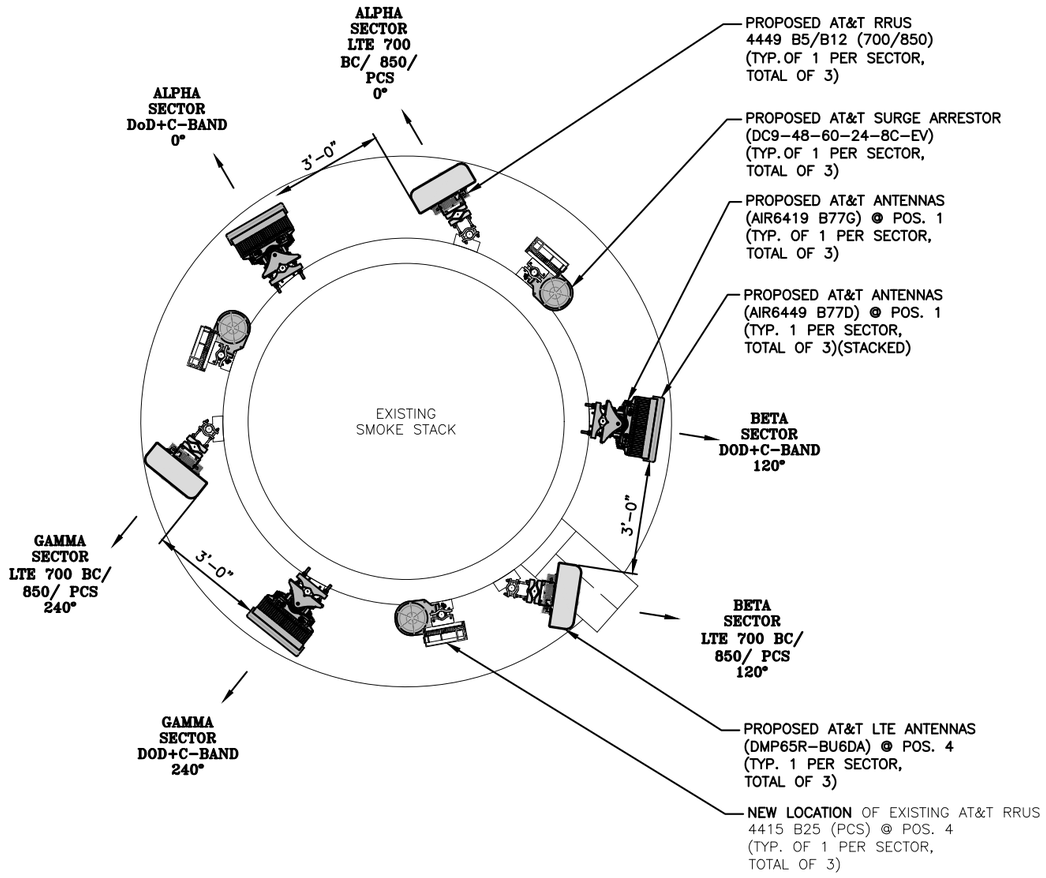
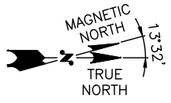
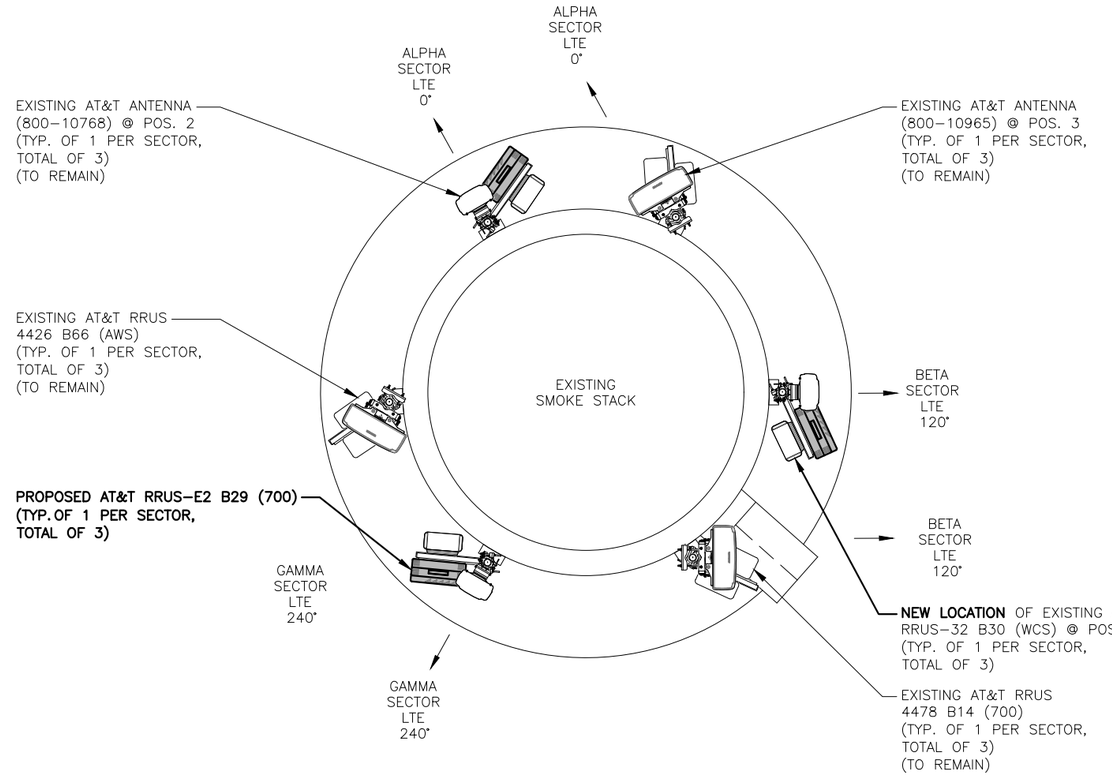
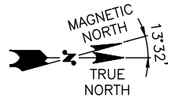




PROPOSED ANTENNA PLAN
(@ RAD = 175'-0"±)
SCALE: N.T.S

1
A-3





PROPOSED ANTENNA PLAN
(@ RAD = 165'-0"±)
SCALE: N.T.S

2
A-3

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PROPOSED ANTENNA PLAN
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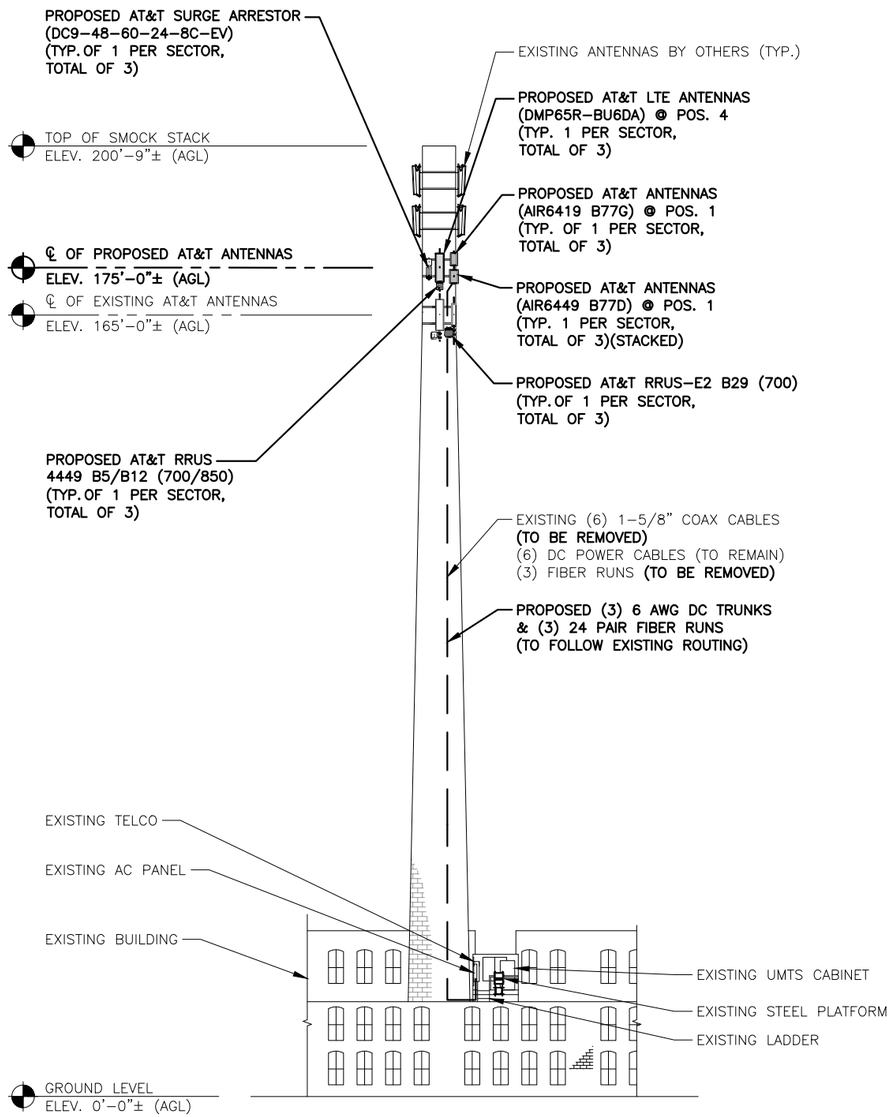

ELEVATION 1 A-4
22x34 SCALE: 1/16"=1'-0"
11x17 SCALE: 1/32"=1'-0"

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

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ELEVATION
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CT5322	A-4	A

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ COMBINER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	**PROPOSED**	**DOD+C-BAND**	**AIR 6419 B77G AIR 6449 B77D**	**31.1"X16.1X7.3" 30.4"X15.9"X8.1"**	**175'-0"±**	**0°**	–	–	–	–	(P) (1) RAYCAP DC9-48-60-24-8C-EV
A2	EXISTING	LTE 700DE/WCS	800-10768	75.2"X14.8"X6.7"	165'-0"±	0°	–	**(P)(1) RRUS-E2 B29 (700)** (E)(1) RRUS-32 B30 (WCS)	**20.4"x18.5"x7.5"** –	(E)(1) 8 AWG DC CABLE **(P)(1) Y-CABLE**	
A3	EXISTING	LTE 700 B14/AWS	800-10965	78.7"X20"X6.9"	165'-0"±	0°	–	(E)(1) 4478 B14 (700) (E)(1) 4426 B66 (AWS)	–	(E)(1) 8 AWG DC CABLE **(P)(1) Y-CABLE**	
A4	**PROPOSED**	**LTE 700 BC/850/PCS**	**DMP65R-BU6DA**	**71.2"X20.7"X7.7"**	**175'-0"±**	**0°**	–	**(P)(1) 4449 B5/B12 (850/700)** (E)(1) 4415 B25 (PCS)	**17.9"x13.2"x10.4"** –	**(P)(1) 6 AWG DC CABLES (P)(1) 24 PAIR FIBER (P)(1) Y-CABLE**	
B1	**PROPOSED**	**DOD+C-BAND**	**AIR 6419 B77G AIR 6449 B77D**	**31.1"X16.1X7.3" 30.4"X15.9"X8.1"**	**175'-0"±**	**120°**	–	–	–	–	(P) (1) RAYCAP DC9-48-60-24-8C-EV
B2	EXISTING	LTE 700DE/WCS	800-10768	75.2"X14.8"X6.7"	165'-0"±	120°	–	**(P)(1) RRUS-E2 B29 (700)** (E)(1) RRUS-32 B30 (WCS)	**20.4"x18.5"x7.5"** –	(E)(1) 8 AWG DC CABLE **(P)(1) Y-CABLE**	
B3	EXISTING	LTE 700 B14/AWS	800-10965	78.7"X20"X6.9"	165'-0"±	120°	–	(E)(1) 4478 B14 (700) (E)(1) 4426 B66 (AWS)	–	(E)(1) 8 AWG DC CABLE **(P)(1) Y-CABLE**	
B4	**PROPOSED**	**LTE 700 BC/850/PCS**	**DMP65R-BU6DA**	**71.2"X20.7"X7.7"**	**175'-0"±**	**120°**	–	**(P)(1) 4449 B5/B12 (850/700)** (E)(1) 4415 B25 (PCS)	**17.9"x13.2"x10.4"** –	**(P)(1) 6 AWG DC CABLES (P)(1) 24 PAIR FIBER (P)(1) Y-CABLE**	
C1	**PROPOSED**	**DOD+C-BAND**	**AIR 6419 B77G AIR 6449 B77D**	**31.1"X16.1X7.3" 30.4"X15.9"X8.1"**	**175'-0"±**	**240°**	–	–	–	–	(P) (1) RAYCAP DC9-48-60-24-8C-EV
C2	EXISTING	LTE 700DE/WCS	800-10768	75.2"X14.8"X6.7"	165'-0"±	240°	–	**(P)(1) RRUS-E2 B29 (700)** (E)(1) RRUS-32 B30 (WCS)	**20.4"x18.5"x7.5"** –	(E)(1) 8 AWG DC CABLE **(P)(1) Y-CABLE**	
C3	EXISTING	LTE 700 B14/AWS	800-10965	78.7"X20"X6.9"	165'-0"±	240°	–	(E)(1) 4478 B14 (700) (E)(1) 4426 B66 (AWS)	–	(E)(1) 8 AWG DC CABLE **(P)(1) Y-CABLE**	
C4	**PROPOSED**	**LTE 700 BC/850/PCS**	**DMP65R-BU6DA**	**71.2"X20.7"X7.7"**	**175'-0"±**	**240°**	–	**(P)(1) 4449 B5/B12 (850/700)** (E)(1) 4415 B25 (PCS)	**17.9"x13.2"x10.4"** –	**(P)(1) 6 AWG DC CABLES (P)(1) 24 PAIR FIBER (P)(1) Y-CABLE**	

NOTE:

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

NOTE:

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

RRU CHART

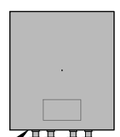
QUANTITY	MODEL	SIZE (L x W x D)
P(3)	**RRUS-E2 B29 (700)**	**20.4"x18.5"x7.5"**
P(3)	**4449 B5/B12 (850/700)**	**17.9"x13.2"x10.4"**
E(3)	RRUS-32 B30(WCS)	27.2"x12.1"x7.0"
E(3)	4478 B14 (700)	18.1"x13.4"x8.3"
E(3)	4426 B66 (AWS)	14.9"x13.2"x5.8"
E(3)	4415 B25 (PCS)	16.5"x13.4"x5.9"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

FINAL ANTENNA CONFIGURATION (1 / A-5)
SCALE: N.T.S

NOTE:

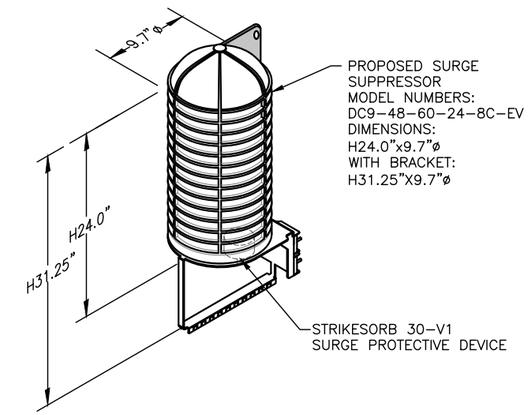
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



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

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (2 / A-5)
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (3 / A-5)
SCALE: N.T.S

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CENTERLINE COMMUNICATIONS
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WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT5322
SITE NAME: MANCHESTER SOUTH CENTRAL

63 ELM STREET
MANCHESTER, CT 06040
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	03/31/22	ISSUED FOR REVIEW	MR	AT	DPH

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

AT&T

DETAILS
5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 2022 UPGRADE

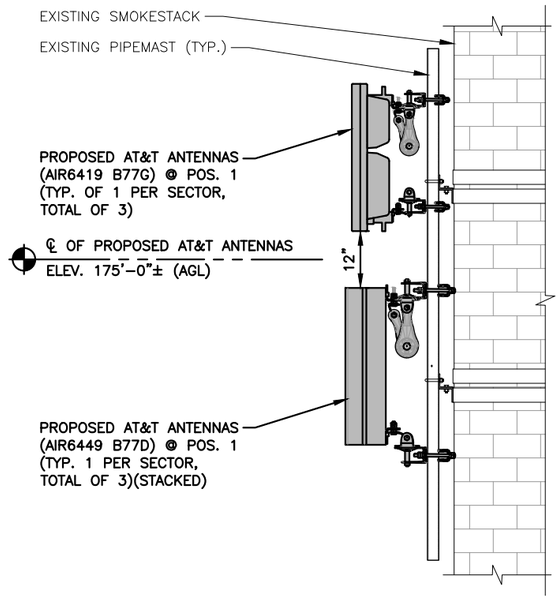
SITE NUMBER	DRAWING NUMBER	REV
CT5322	A-5	A

NOTE:

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

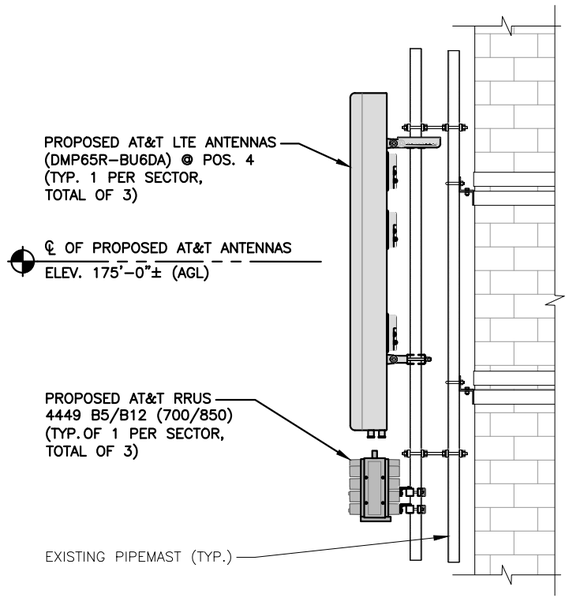
NOTE:

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



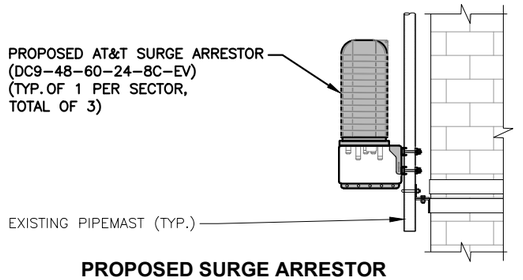
PROPOSED DoD + C-Band
ANTENNA MOUNTING DETAIL 1 A-6

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0" 0 8" 1'-4" 2'-8" 4'-0"



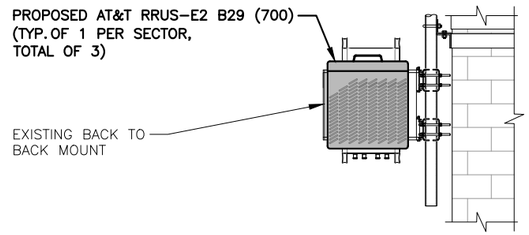
PROPOSED ANTENNA MOUNTING DETAIL 2 A-6

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0" 0 8" 1'-4" 2'-8" 4'-0"



PROPOSED SURGE ARRESTOR
MOUNTING DETAIL 3 A-6

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0" 0 8" 1'-4" 2'-8" 4'-0"



PROPOSED RRUS MOUNTING DETAIL 4 A-6

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0" 0 8" 1'-4" 2'-8" 4'-0"

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DETAILS
5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 2022 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT5322	A-6	A

STRUCTURAL NOTES:

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

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

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

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

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

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

NOTES:

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

NOTES:

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

SPECIAL INSPECTION CHECKLIST

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

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A	03/31/22	ISSUED FOR REVIEW	MR	AT	DPH

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

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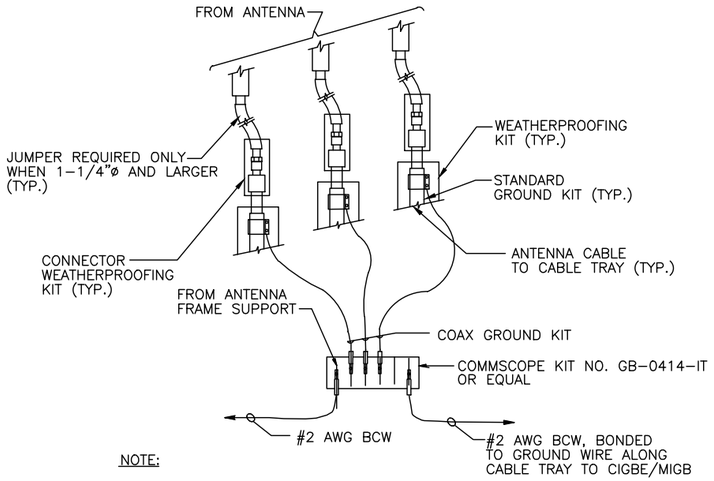
STRUCTURAL NOTES
5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 2022 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT5322	SN-1	A



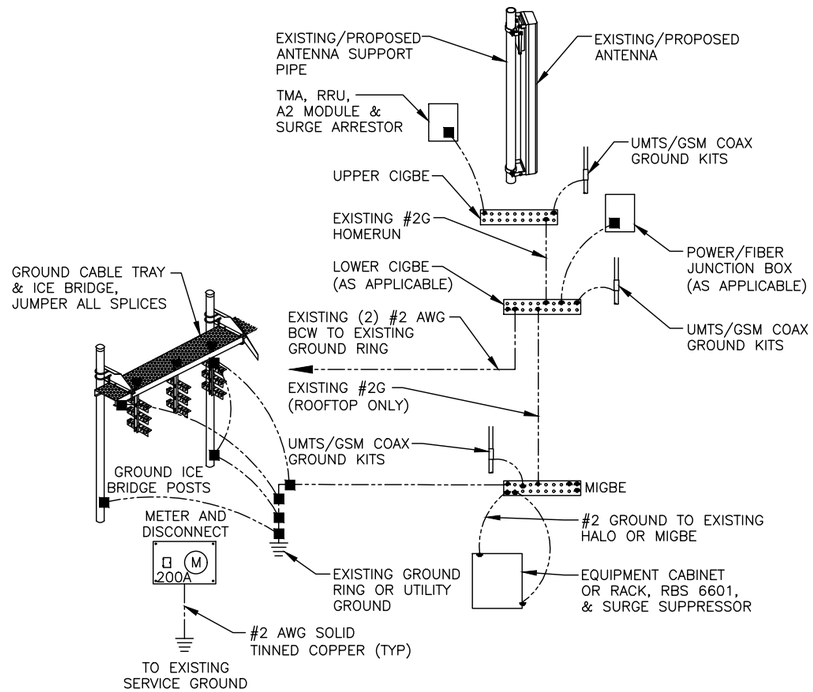
NOTE:

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

SCALE: N.T.S

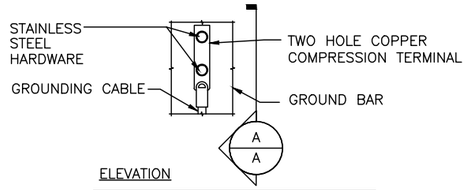
1 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G-1



NOTES:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G-1

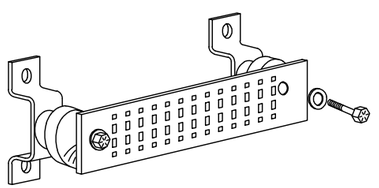
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL (AS REQUIRED)

SCALE: N.T.S

4 / G-1

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

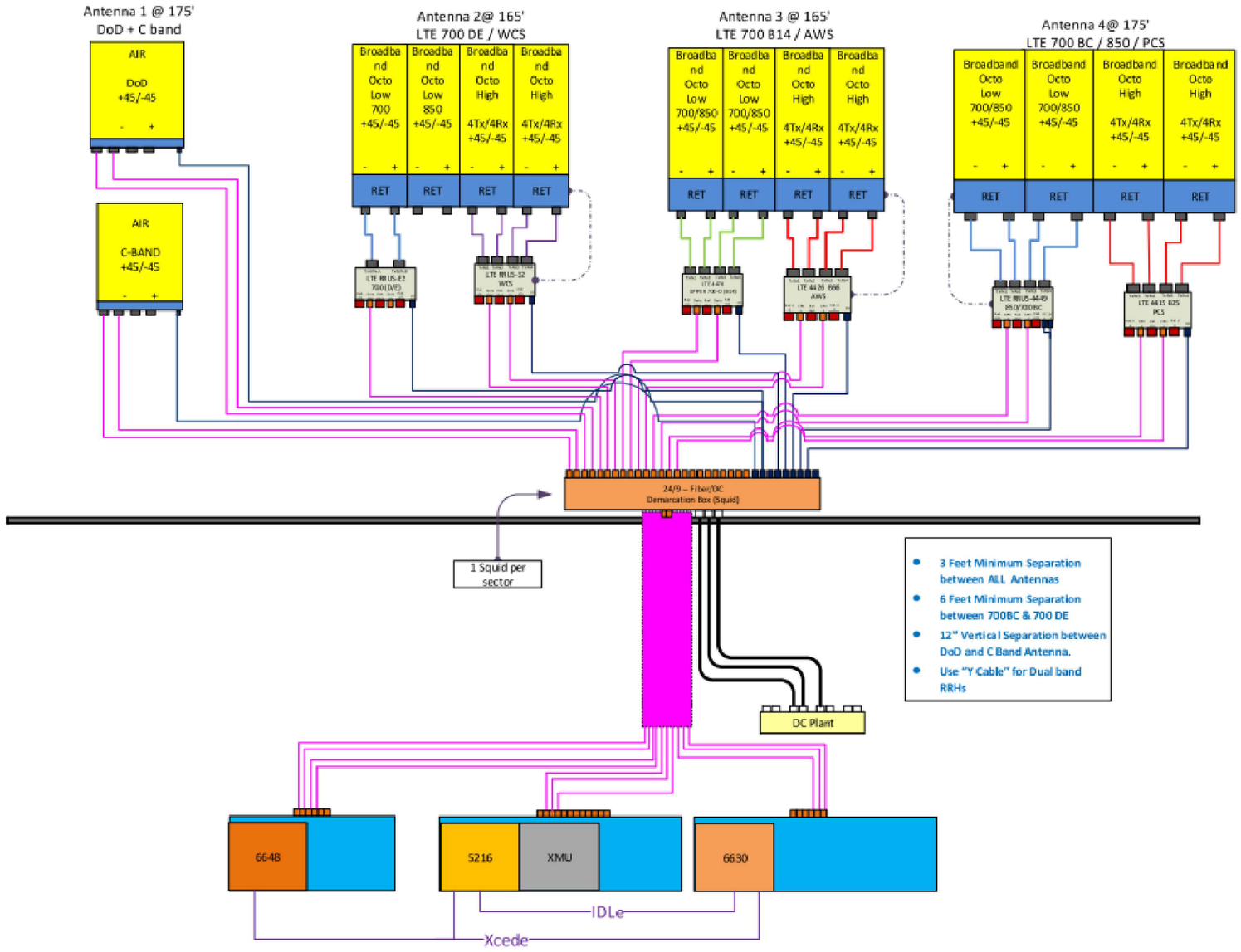
NO.	DATE	REVISIONS	BY	CHK	APP'D
A	03/31/22	ISSUED FOR REVIEW	MR	AT	DPH

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

AT&T

GROUNDING DETAILS
5G NR 1SR CBAND, 5G NR RADIO, ANTENNA MODIFICATIONS, 4TXRX SOFTWARE RETROFIT, 2022 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT5322	G-1	A



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

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

NOTE:

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

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

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

SITE NUMBER: CT5322
SITE NAME: MANCHESTER SOUTH CENTRAL

63 ELM STREET
MANCHESTER, CT 06040
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	03/31/22	ISSUED FOR REVIEW	MR	AT	DPH

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

AT&T

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

SITE NUMBER	DRAWING NUMBER	REV
CT5322	RF–1	A

THIS SPREADSHEET CALCULATES THE WIND PRESSURES ON VARIOUS SECTIONS OF THE CHIMNEY:

USING ASCE 7-16 WIND CRITERIA

INPUT =	

Height of Chimney (h in ft)	199.583	
Define Risk Category	II	(Table 1.5-1)
Define Exposure Factor	B	(Section 26.7.3)
Basic Wind Speed (in mph)	118	(See Attached Sheet)

G	0.85	(Section 26.11)
K_{zt}	1.0	(Section 26.8.2)
K_d	1.0	(Section 26.6)
K_e	1.0	(Section 26.9)

$q_z = 0.00256K_zK_{zt}K_dK_eV^2$ (Equation 26.10-1)

$p = q_zGC_f$ (Equation 29.4-1)

$q = 0.00256K_{zt}K_dK_eGV^2$ =	30.30	psf	Based on Equation 26.10-1

USE LOAD COMBINATIONS:

5) D + 0.6W

SECTION	Shape	ΔH (ft)	K_z	C_f	Factored C_f	F_{des} (psf)	$0.6F_{des}$ (psf)	
1	Round	199.583-160	1.17	1.10	1.375	48.74	29.25	Increase C_f by 25%
2	Round	160-100	1.07	0.84	0.84	27.23	16.34	
3	Round	100-60	0.93	0.83	0.83	23.39	16.00	
4	Round	60-5.083	0.72	0.82	0.82	17.89	16.00	

$F_{des} = q*K_z*C_f$ Based on Equation 29.4-1

Calculate K_z using Table 29.3-1 Taken as mid-height elevation of section

Calculate C_f from Table 29.5-1 Rough for standard brick, very rough for locations of equipment

Factored C_f takes into account increased area due appurtenances such as antennas or platforms

if $0.6F_{des} < 16$ psf, then use

16 psf for minimum wind pressure

Input Stack Profile Data:

Starting from top of stack and working downward, enter data for each stack section to be analyzed:

$$TopOD := \begin{pmatrix} 150 \\ 170.76 \\ 202.2 \\ 223.2 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} in \quad BtmOD := \begin{pmatrix} 170.76 \\ 202.2 \\ 223.2 \\ 252 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} in \quad WallThk := \begin{pmatrix} 12 \\ 12 \\ 12 \\ 16 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} in \quad SectHgt := \begin{pmatrix} 552 \\ 720 \\ 480 \\ 659 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} in$$

Input Wind Load and Unit Weight Data:

Starting from top of stack and working downward, enter data for each stack section to be analyzed:

$$DesignWindLoad := \begin{pmatrix} 29.25 \\ 16.34 \\ 16.00 \\ 16.00 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \frac{lb}{ft^2} \quad WindCoefficient := \begin{pmatrix} 1 \\ 1 \\ 1 \\ 1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \quad UnitWeight := \begin{pmatrix} 130 \\ 125 \\ 125 \\ 125 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \frac{lb}{ft^3}$$

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.

$$Fa := \left| \begin{array}{l} \text{for } r \in 1 .. N \\ \quad Fa_r \leftarrow \dfrac{DeadLoad_r}{Area_r} \\ Fa \end{array} \right.$$

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.

$$Fb := \left| \begin{array}{l} \text{for } r \in 1 .. N \\ \quad Fb_r \leftarrow \dfrac{TotalSectionMoment_r}{SectionMod_r} \\ Fb \end{array} \right.$$

$$Fa = \begin{pmatrix} 38.813 \\ 80.176 \\ 105.2 \\ 115.37 \end{pmatrix} \cdot \frac{lb}{in^2} \qquad Fb = \begin{pmatrix} 22.345 \\ 72.658 \\ 105.399 \\ 117.183 \end{pmatrix} \cdot \frac{lb}{in^2}$$

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.

The following is a spreadsheet that calculates the allowable stresses on the chimney using Code ACI 530-13/ASCE 5-13/TMS 402-13

Input =
Pass =
Fail =

Height of Chimney (h in feet)	199.583

f_m' (psi)	1000

Section	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	12	14.23	12.23	4.69	42.55	226.91	333	38.813	22.345	0.238	-16.468	40	-0.41
2	12	16.85	14.85	5.61	35.54	233.88	333	80.176	72.658	0.561	-7.518	40	-0.19
3	12	18.60	16.60	6.23	32.02	236.92	333	105.2	105.399	0.761	0.199	40	0.00
4	16	21.00	18.33	6.97	28.64	239.54	333	115.37	117.183	0.834	1.813	40	0.05

For $h/r < 99$: $F_a = (1/4)f_m'[1 - (h/140r)^2]$

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

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

Hazards by Location

Search Information

Address: 63 Elm St, Manchester, CT 06040, USA

Coordinates: 41.7666263, -72.5283711

Elevation: 198 ft

Timestamp: 2022-05-11T14:54:40.866Z

Hazard Type: Wind

ASCE 7-16

MRI 10-Year	75 mph
MRI 25-Year	83 mph
MRI 50-Year	90 mph
MRI 100-Year	97 mph
Risk Category I	108 mph
Risk Category II	118 mph
Risk Category III	127 mph
Risk Category IV	⚠ 132 mph

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

ASCE 7-10

MRI 10-Year	77 mph
MRI 25-Year	87 mph
MRI 50-Year	93 mph
MRI 100-Year	100 mph
Risk Category I	114 mph
Risk Category II	124 mph
Risk Category III-IV	⚠ 133 mph

If the structure under consideration is a healthcare facility and you are also within 1 mile of the coastal mean high water line, you are in a wind-borne debris region. If other occupancy, use the Risk Category II basic wind speed contours to determine if you are in a wind-borne debris region.

ASCE 7-05

ASCE 7-05 Wind Speed	100 mph

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.

EXHIBIT 4

May 2, 2022

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

RE:		
	Site Number:	CT5322
	FA Number:	10071101
	PACE Number:	MRCTB050992
	PT Number:	2051A0Z79T
	Site Name:	MANCHESTER SOUTH CENTRAL
	Site Address:	63 Elm Street Manchester, CT 06040

To Whom It May Concern:

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

- (3) 800-10768 Antennas (75.2"x14.8"x6.7"– Wt. = 77 lbs. /each)
- (3) 800-10965 Antennas (78.7"x20.0"x6.9"– Wt. = 109 lbs. /each)
- (3) 4415 B25 RRH's (16.5"x13.4"x5.9" – Wt. = 46 lbs. /each)
- (3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) 4426 B66 RRH's (14.9"x13.2"x5.8" – Wt. = 49 lbs. /each)
- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- **(3) AIR6449 Antennas (30.4"x15.9"x10.6" – Wt. = 82 lbs. /each)**
- **(3) AIR6419 Antennas (31.1"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) DMP65R-BU6DA Antennas (71.2"x20.7"x7.7" – Wt. = 80 lbs. /each)**
- **(3) RRUS-E2 B29 RRH's (20.4"x18.5"x7.5" – Wt. = 53 lbs. /each)**
- **(3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)**
- **(3) DC9-48-60-24-8C-EV Surge Arrestors (31.4"x10.2"Ø – Wt. = 29 lbs. /each)**

**Proposed equipment shown in bold.*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG conducted a ground audit of the existing AT&T antenna mounts on March 23, 2021. Previous HDG construction drawings dated August 14, 2012 were used in this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R16.

- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 125 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.5 in. An escalated ice thickness of 1.77 in was used for this analysis.

- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.

- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.

- HDG considers this site to have a spectral response acceleration parameter at short periods, SS, of 0.178 and a spectral response acceleration parameter at a period of 1 second, S1, of 0.064.

- The existing mounts are secured to the existing smokestack with steel bands and threaded rods. HDG 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	2	LC1	40%	**PASS**

This determination was based on the following limitations and assumptions:

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

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

Respectfully Submitted,
Hudson Design Group LLC

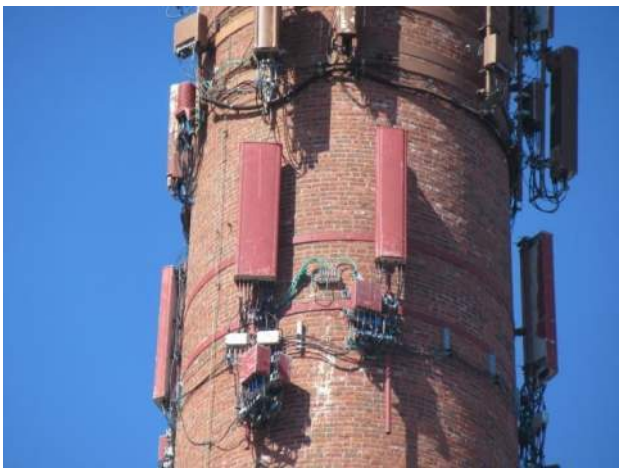
Michael Cabral
Vice President

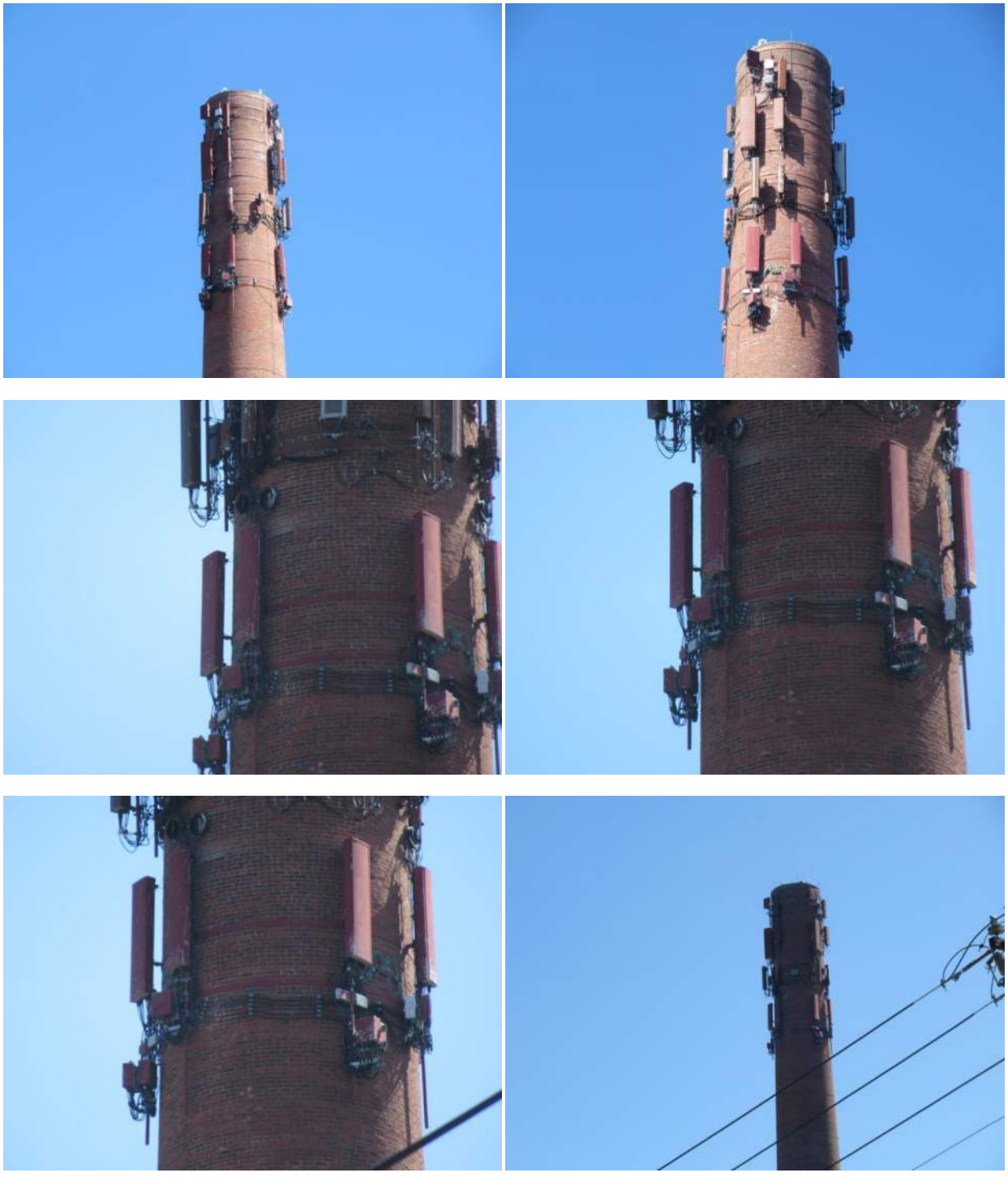
Daniel P. Hamm, PE
Principal

FIELD PHOTOS:







HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 4-30-2022
Project Name: MANCHESTER SOUTH CENTRAL
Project No.: CT5322
Designed By: SR **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

	z=	175 (ft)
	z_g=	1200 (ft)
K_z= 1.160	α=	7.0

Kzmin ≤ Kz ≤ 2.01

Table 2-4

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

2.6.6.2 Topographic Factor:

Table 2-5

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

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

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

K_{zt}= 1

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

Category=	1

	K_h=	1
	K_c=	0.9 (from Table 2-4)
	K_t=	0 (from Table 2-5)
	f=	0 (from Table 2-5)
	z=	175
	z_s=	206 (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=	0.99 (from 2.6.8)

2.6.10 Design Ice Thickness

Max Ice Thickness =	t_i =	1.50 in
Importance Factor =	I=	1.0 (from Table 2-3)
	K_{iz} =	1.18 (from Sec. 2.6.10)

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

t_{iz} = 1.77 in

Date: 4-30-2022
Project Name: MANCHESTER SOUTH CENTRAL
Project No.: CT5322
Designed By: SR Checked By: MSC

HUDSON Design Group LLC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

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

h=	200.75	G_h=	0.85
2.6.9.2 Guyed Masts		G_h=	0.85
2.6.9.3 Pole Structures		G_h=	1.1
2.6.9 Appurtenances		G_h=	1.0

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

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

2.6.11.2 Design Wind Force on Appurtenances

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

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

		K_z=	1.160	(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=	0.99	(from 2.6.8)
q_z=	**43.74**	K_d=	0.95	(from Table 2-2)
$q_{z\ (ice)}$=	**7.00**	V_{max}=	125	mph (Ultimate Wind Speed)
$q_{z\ (30)}$=	**2.52**	$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

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

Date: 4-30-2022
Project Name: MANCHESTER SOUTH CENTRAL
Project No.: CT5322
Designed By: SR Checked By: MSC

HUDSON Design Group LLC

Determine Ca:

Table 2-9

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

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

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

Ice Thickness = **1.77** 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)
AIR6449 Antenna	30.4	15.9	10.6	3.36	1.91	1.20	176	38	10
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.93	1.20	182	40	11
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.44	1.24	556	109	32
800-10768 Antenna	75.2	14.8	6.7	7.73	5.08	1.31	444	92	26
800-10965 Antenna	78.7	20.0	6.9	10.93	3.94	1.26	604	119	35
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.36	1.20	86	21	5
4415 B25 RRH	16.5	13.4	5.9	1.54	1.23	1.20	81	20	5
4478 B14 RRH	18.1	13.4	8.3	1.68	1.35	1.20	88	21	5
4426 B66 RRH	14.9	13.2	5.8	1.37	1.13	1.20	72	18	4
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.10	1.20	138	31	8
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	2.25	1.20	120	28	7
DC9-48-60-24-8C-EV Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	68	16	4
2" Pipe	2.4	12.0		0.20	0.20	1.20	10		

Date: 4-30-2022
Project Name: MANCHESTER SOUTH CENTRAL
Project No.: CT5322
Designed By: SR Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.77	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)	Force (lbs)	Force (lbs)
AIR6449 Antenna	30.4	15.9	10.6	3.36	2.24	1.91	2.87	1.20	1.22	176	119	162
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	182	88	159
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	556	246	478
800-10768 Antenna	75.2	14.8	6.7	7.73	3.50	5.08	11.22	1.31	1.54	444	236	392
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	604	255	517
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	86	61	80
4415 B25 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	81	36	69
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	88	55	80
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	72	32	62
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	138	56	117
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	120	73	108

WIND LOADS WITH ICE:

AIR6449 Antenna	33.9	19.4	14.1	4.58	3.33	1.75	2.40	1.20	1.20	38	28	36
AIR6419 Antenna	34.6	19.6	10.8	4.73	2.61	1.76	3.19	1.20	1.23	40	22	35
DMP65R-BU6DA Antenna	74.7	24.2	11.2	12.58	5.84	3.08	6.65	1.23	1.38	108	57	95
800-10768 Antenna	78.7	18.3	10.2	10.03	5.60	4.29	7.69	1.28	1.42	90	56	81
800-10965 Antenna	82.2	23.5	10.4	13.45	5.97	3.49	7.87	1.24	1.43	117	60	103
B5/B12 4449 RRH	21.4	16.7	12.9	2.49	1.93	1.28	1.66	1.20	1.20	21	16	20
4415 B25 RRH	20.0	16.9	9.4	2.36	1.31	1.18	2.12	1.20	1.20	20	11	18
4478 B14 RRH	21.6	16.9	11.8	2.55	1.78	1.28	1.83	1.20	1.20	21	15	20
4426 B66 RRH	18.4	16.7	9.3	2.14	1.20	1.10	1.97	1.20	1.20	18	10	16
RRUS-E2 B29 RRH	23.9	22.0	11.0	3.67	1.84	1.09	2.17	1.20	1.20	31	15	27
RRUS-32 B30 RRH	30.7	15.6	10.5	3.34	2.25	1.97	2.92	1.20	1.22	28	19	26

WIND LOADS AT 30 MPH:

AIR6449 Antenna	30.4	15.9	10.6	3.36	2.24	1.91	2.87	1.20	1.22	10	7	9
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	11	5	9
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	32	14	28
800-10768 Antenna	75.2	14.8	6.7	7.73	3.50	5.08	11.22	1.31	1.54	26	14	23
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	35	15	30
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	5	4	5
4415 B25 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	4
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	5
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	4	2	4
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	7
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	7	4	6

Date: 4-30-2022
Project Name: MANCHESTER SOUTH CENTRAL
Project No.: CT5322
Designed By: SR Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.77	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)	Force (lbs)
AIR6449 Antenna	30.4	15.9	10.6	3.36	2.24	1.91	2.87	1.20	1.22	176	119	133
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	182	88	112
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	556	246	323
800-10768 Antenna	75.2	14.8	6.7	7.73	3.50	5.08	11.22	1.31	1.54	444	236	288
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	604	255	342
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	86	61	68
4415 B25 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	81	36	47
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	88	55	63
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	72	32	42
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	138	56	77
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	120	73	85

WIND LOADS WITH ICE:

AIR6449 Antenna	33.9	19.4	14.1	4.58	3.33	1.75	2.40	1.20	1.20	38	28	31
AIR6419 Antenna	34.6	19.6	10.8	4.73	2.61	1.76	3.19	1.20	1.23	40	22	27
DMP65R-BU6DA Antenna	74.7	24.2	11.2	12.58	5.84	3.08	6.65	1.23	1.38	108	57	69
800-10768 Antenna	78.7	18.3	10.2	10.03	5.60	4.29	7.69	1.28	1.42	90	56	64
800-10965 Antenna	82.2	23.5	10.4	13.45	5.97	3.49	7.87	1.24	1.43	117	60	74
B5/B12 4449 RRH	21.4	16.7	12.9	2.49	1.93	1.28	1.66	1.20	1.20	21	16	17
4415 B25 RRH	20.0	16.9	9.4	2.36	1.31	1.18	2.12	1.20	1.20	20	11	13
4478 B14 RRH	21.6	16.9	11.8	2.55	1.78	1.28	1.83	1.20	1.20	21	15	17
4426 B66 RRH	18.4	16.7	9.3	2.14	1.20	1.10	1.97	1.20	1.20	18	10	12
RRUS-E2 B29 RRH	23.9	22.0	11.0	3.67	1.84	1.09	2.17	1.20	1.20	31	15	19
RRUS-32 B30 RRH	30.7	15.6	10.5	3.34	2.25	1.97	2.92	1.20	1.22	28	19	21

WIND LOADS AT 30 MPH:

AIR6449 Antenna	30.4	15.9	10.6	3.36	2.24	1.91	2.87	1.20	1.22	10	7	8
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	11	5	6
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	32	14	19
800-10768 Antenna	75.2	14.8	6.7	7.73	3.50	5.08	11.22	1.31	1.54	26	14	17
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	35	15	20
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	5	4	4
4415 B25 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	3
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	4	2	2
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	4
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	7	4	5

Date: 4-30-2022
Project Name: MANCHESTER SOUTH CENTRAL
Project No.: CT5322
Designed By: SR Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.77	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)	Force (lbs)
AIR6449 Antenna	30.4	15.9	10.6	3.36	2.24	1.91	2.87	1.20	1.22	176	119	119
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	182	88	88
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	556	246	246
800-10768 Antenna	75.2	14.8	6.7	7.73	3.50	5.08	11.22	1.31	1.54	444	236	236
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	604	255	255
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	86	61	61
4415 B25 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	81	36	36
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	88	55	55
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	72	32	32
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	138	56	56
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	120	73	73

WIND LOADS WITH ICE:

AIR6449 Antenna	33.9	19.4	14.1	4.58	3.33	1.75	2.40	1.20	1.20	38	28	28
AIR6419 Antenna	34.6	19.6	10.8	4.73	2.61	1.76	3.19	1.20	1.23	40	22	22
DMP65R-BU6DA Antenna	74.7	24.2	11.2	12.58	5.84	3.08	6.65	1.23	1.38	108	57	57
800-10768 Antenna	78.7	18.3	10.2	10.03	5.60	4.29	7.69	1.28	1.42	90	56	56
800-10965 Antenna	82.2	23.5	10.4	13.45	5.97	3.49	7.87	1.24	1.43	117	60	60
B5/B12 4449 RRH	21.4	16.7	12.9	2.49	1.93	1.28	1.66	1.20	1.20	21	16	16
4415 B25 RRH	20.0	16.9	9.4	2.36	1.31	1.18	2.12	1.20	1.20	20	11	11
4478 B14 RRH	21.6	16.9	11.8	2.55	1.78	1.28	1.83	1.20	1.20	21	15	15
4426 B66 RRH	18.4	16.7	9.3	2.14	1.20	1.10	1.97	1.20	1.20	18	10	10
RRUS-E2 B29 RRH	23.9	22.0	11.0	3.67	1.84	1.09	2.17	1.20	1.20	31	15	15
RRUS-32 B30 RRH	30.7	15.6	10.5	3.34	2.25	1.97	2.92	1.20	1.22	28	19	19

WIND LOADS AT 30 MPH:

AIR6449 Antenna	30.4	15.9	10.6	3.36	2.24	1.91	2.87	1.20	1.22	10	7	7
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	11	5	5
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	32	14	14
800-10768 Antenna	75.2	14.8	6.7	7.73	3.50	5.08	11.22	1.31	1.54	26	14	14
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	35	15	15
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	5	4	4
4415 B25 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	2
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	4	2	2
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	3
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	7	4	4

Date: 4-30-2022
Project Name: MANCHESTER SOUTH CENTRAL
Project No.: CT5322
Designed By: SR Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.77	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)	Force (lbs)	Force (lbs)
AIR6449 Antenna	30.4	15.9	10.6	3.36	2.24	1.91	2.87	1.20	1.22	176	119	133
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	182	88	112
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	556	246	323
800-10768 Antenna	75.2	14.8	6.7	7.73	3.50	5.08	11.22	1.31	1.54	444	236	288
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	604	255	342
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	86	61	68
4415 B25 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	81	36	47
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	88	55	63
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	72	32	42
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	138	56	77
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	120	73	85
WIND LOADS WITH ICE:												
AIR6449 Antenna	33.9	19.4	14.1	4.58	3.33	1.75	2.40	1.20	1.20	38	28	31
AIR6419 Antenna	34.6	19.6	10.8	4.73	2.61	1.76	3.19	1.20	1.23	40	22	27
DMP65R-BU6DA Antenna	74.7	24.2	11.2	12.58	5.84	3.08	6.65	1.23	1.38	108	57	69
800-10768 Antenna	78.7	18.3	10.2	10.03	5.60	4.29	7.69	1.28	1.42	90	56	64
800-10965 Antenna	82.2	23.5	10.4	13.45	5.97	3.49	7.87	1.24	1.43	117	60	74
B5/B12 4449 RRH	21.4	16.7	12.9	2.49	1.93	1.28	1.66	1.20	1.20	21	16	17
4415 B25 RRH	20.0	16.9	9.4	2.36	1.31	1.18	2.12	1.20	1.20	20	11	13
4478 B14 RRH	21.6	16.9	11.8	2.55	1.78	1.28	1.83	1.20	1.20	21	15	17
4426 B66 RRH	18.4	16.7	9.3	2.14	1.20	1.10	1.97	1.20	1.20	18	10	12
RRUS-E2 B29 RRH	23.9	22.0	11.0	3.67	1.84	1.09	2.17	1.20	1.20	31	15	19
RRUS-32 B30 RRH	30.7	15.6	10.5	3.34	2.25	1.97	2.92	1.20	1.22	28	19	21
WIND LOADS AT 30 MPH:												
AIR6449 Antenna	30.4	15.9	10.6	3.36	2.24	1.91	2.87	1.20	1.22	10	7	8
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	11	5	6
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	32	14	19
800-10768 Antenna	75.2	14.8	6.7	7.73	3.50	5.08	11.22	1.31	1.54	26	14	17
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	35	15	20
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	5	4	4
4415 B25 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	3
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	4	2	2
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	4
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	7	4	5

Date: 4-30-2022
Project Name: MANCHESTER SOUTH CENTRAL
Project No.: CT5322
Designed By: SR Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.77	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)
AIR6449 Antenna	30.4	15.9	10.6	3.36	2.24	1.91	2.87	1.20	1.22	176	119	162
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	182	88	159
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	556	246	478
800-10768 Antenna	75.2	14.8	6.7	7.73	3.50	5.08	11.22	1.31	1.54	444	236	392
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	604	255	517
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	86	61	80
4415 B25 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	81	36	69
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	88	55	80
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	72	32	62
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	138	56	117
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	120	73	108
WIND LOADS WITH ICE:												
AIR6449 Antenna	33.9	19.4	14.1	4.58	3.33	1.75	2.40	1.20	1.20	38	28	36
AIR6419 Antenna	34.6	19.6	10.8	4.73	2.61	1.76	3.19	1.20	1.23	40	22	35
DMP65R-BU6DA Antenna	74.7	24.2	11.2	12.58	5.84	3.08	6.65	1.23	1.38	108	57	95
800-10768 Antenna	78.7	18.3	10.2	10.03	5.60	4.29	7.69	1.28	1.42	90	56	81
800-10965 Antenna	82.2	23.5	10.4	13.45	5.97	3.49	7.87	1.24	1.43	117	60	103
B5/B12 4449 RRH	21.4	16.7	12.9	2.49	1.93	1.28	1.66	1.20	1.20	21	16	20
4415 B25 RRH	20.0	16.9	9.4	2.36	1.31	1.18	2.12	1.20	1.20	20	11	18
4478 B14 RRH	21.6	16.9	11.8	2.55	1.78	1.28	1.83	1.20	1.20	21	15	20
4426 B66 RRH	18.4	16.7	9.3	2.14	1.20	1.10	1.97	1.20	1.20	18	10	16
RRUS-E2 B29 RRH	23.9	22.0	11.0	3.67	1.84	1.09	2.17	1.20	1.20	31	15	27
RRUS-32 B30 RRH	30.7	15.6	10.5	3.34	2.25	1.97	2.92	1.20	1.22	28	19	26
WIND LOADS AT 30 MPH:												
AIR6449 Antenna	30.4	15.9	10.6	3.36	2.24	1.91	2.87	1.20	1.22	10	7	9
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	11	5	9
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	32	14	28
800-10768 Antenna	75.2	14.8	6.7	7.73	3.50	5.08	11.22	1.31	1.54	26	14	23
800-10965 Antenna	78.7	20.0	6.9	10.93	3.77	3.94	11.41	1.26	1.55	35	15	30
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	5	4	5
4415 B25 RRH	16.5	13.4	5.9	1.54	0.68	1.23	2.80	1.20	1.21	5	2	4
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	5
4426 B66 RRH	14.9	13.2	5.8	1.37	0.60	1.13	2.57	1.20	1.20	4	2	4
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	8	3	7
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	7	4	6

Date: 5/2/2022
Project Name: MANCHESTER SOUTH CENTRAL
Project No.: CT5322
Designed By: SR **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.77 in.
Density of ice: 56 pcf

AIR6449 Antenna

Weight of ice based on total radial SF area:

Height (in):	30.4	
Width (in):	15.9	
Depth (in):	10.6	
Total weight of ice on object:		114
Weight of object:	82.0	
Combined weight of ice and object:		196 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:		109
Weight of object:	66.0	
Combined weight of ice and object:		175 lbs

DMP65R-BU6DA Antenna

Weight of ice based on total radial SF area:

Height (in):	71.2	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		306
Weight of object:	80.0	
Combined weight of ice and object:		386 lbs

800-10768 Antenna

Weight of ice based on total radial SF area:

Height (in):	75.2	
Width (in):	14.8	
Depth (in):	6.7	
Total weight of ice on object:		244
Weight of object:	77.0	
Combined weight of ice and object:		321 lbs

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:		325
Weight of object:	109.0	
Combined weight of ice and object:		434 lbs

4449 B5/B12 RRH

Weight of ice based on total radial SF area:

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

4415 B25 RRH

Weight of ice based on total radial SF area:

Height (in):	16.5	
Width (in):	13.4	
Depth (in):	5.9	
Total weight of ice on object:		49
Weight of object:	46.0	
Combined weight of ice and object:		95 lbs

4478 B14 RRH

Weight of ice based on total radial SF area:

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

4426 B66 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	5.8	
Total weight of ice on object:		43
Weight of object:	49.0	
Combined weight of ice and object:		92 lbs

RRUS-E2 B29 RRH

Weight of ice based on total radial SF area:

Height (in):	20.4	
Width (in):	18.5	
Depth (in):	7.5	
Total weight of ice on object:		80
Weight of object:	53.0	
Combined weight of ice and object:		133 lbs

RRUS-32 B30 RRH

Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		77
Weight of object:	60.0	
Combined weight of ice and object:		137 lbs

DC9-48-60-24-8C-EV 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:		68
Weight of object:	29	
Combined weight of ice and object:		97 lbs

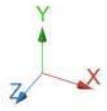
2" Pipe

Per foot weight of ice:

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

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)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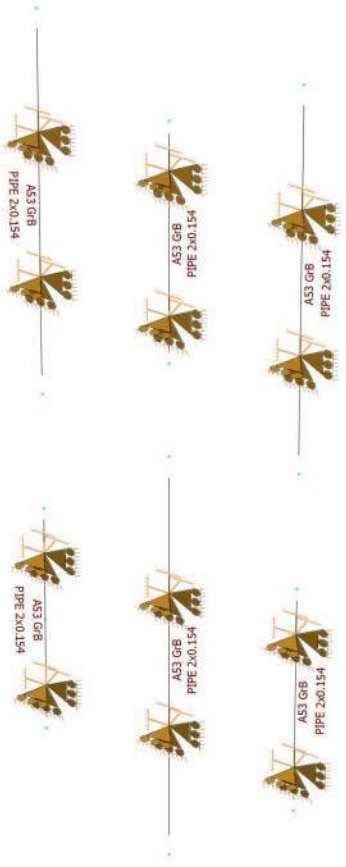
Z
X


A53 GrB
PIPE 2x0.154
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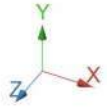
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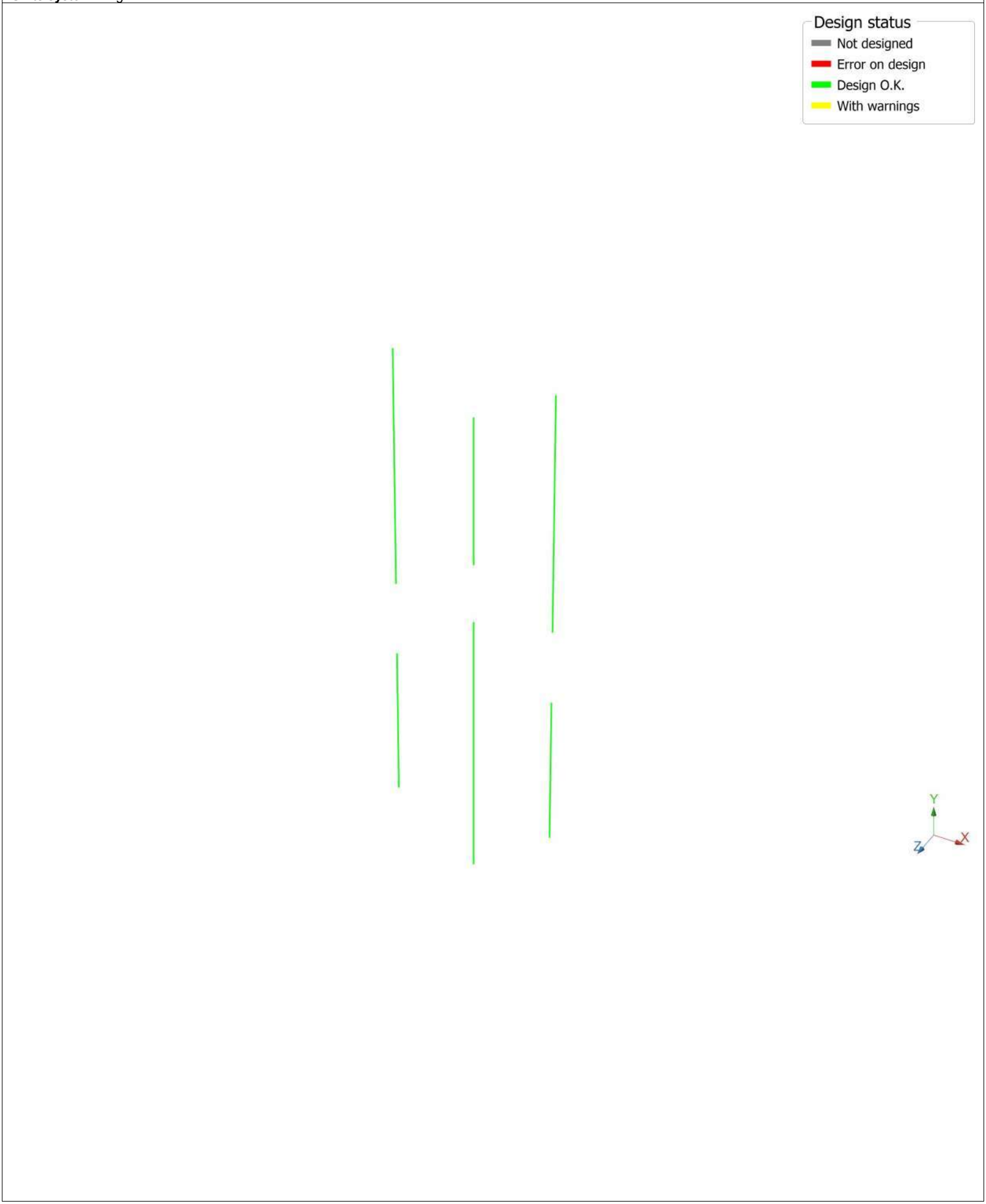
Current Date: 5/2/2022 10:37 AM
Units system: English



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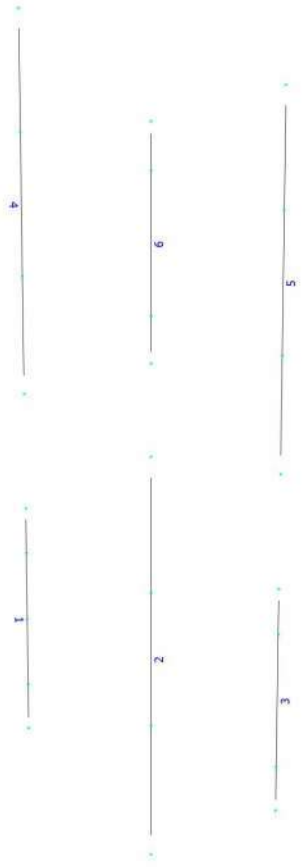
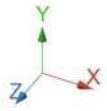




Current Date: 5/2/2022 10:37 AM
Units system: English

Load data

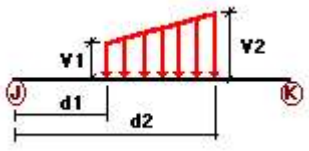
GLOSSARY

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
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND

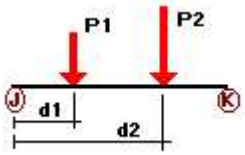
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
W60	1	x	-0.01	0.00	0.00	No	0.00	No
	2	x	-0.01	0.00	0.00	No	0.00	No
	3	x	-0.01	0.00	0.00	No	0.00	No
	4	x	-0.01	0.00	0.00	No	0.00	No
	6	x	-0.01	0.00	0.00	No	0.00	No
	5	x	-0.01	0.00	0.00	No	0.00	No
W90	1	x	-0.01	0.00	0.00	No	0.00	No
	2	x	-0.01	0.00	0.00	No	0.00	No
	3	x	-0.01	0.00	0.00	No	0.00	No
	4	x	-0.01	0.00	0.00	No	0.00	No

	6	x	-0.01	0.00	0.00	No	0.00	No
	5	x	-0.01	0.00	0.00	No	0.00	No
W120	1	x	-0.01	0.00	0.00	No	0.00	No
	2	x	-0.01	0.00	0.00	No	0.00	No
	3	x	-0.01	0.00	0.00	No	0.00	No
	4	x	-0.01	0.00	0.00	No	0.00	No
	6	x	-0.01	0.00	0.00	No	0.00	No
	5	x	-0.01	0.00	0.00	No	0.00	No
Di	1	y	-0.009	0.00	0.00	No	0.00	No
	2	y	-0.009	0.00	0.00	No	0.00	No
	3	y	-0.009	0.00	0.00	No	0.00	No
	4	y	-0.009	0.00	0.00	No	0.00	No
	6	y	-0.009	0.00	0.00	No	0.00	No
	5	y	-0.009	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	1	y	-0.053	30.00	Yes
		y	-0.029	60.00	Yes
	2	y	-0.04	10.00	Yes
		y	-0.04	70.00	Yes
		y	-0.073	85.00	Yes
	3	y	-0.041	10.00	Yes
		y	-0.041	40.00	Yes
		y	-0.033	60.00	Yes
		y	-0.033	90.00	Yes
	4	y	-0.055	10.00	Yes
		y	-0.055	80.00	Yes
		y	-0.06	30.00	Yes
		y	-0.049	60.00	Yes
	6	y	-0.06	50.00	Yes
	5	y	-0.039	10.00	Yes
		y	-0.039	80.00	Yes
		y	-0.046	30.00	Yes
Wo	1	z	-0.138	30.00	Yes
		z	-0.068	60.00	Yes
	2	z	-0.278	10.00	Yes
		z	-0.278	70.00	Yes
		z	-0.086	85.00	Yes
	3	z	-0.088	10.00	Yes
		z	-0.088	40.00	Yes
		z	-0.091	60.00	Yes
		z	-0.091	90.00	Yes
	4	z	-0.303	10.00	Yes
		z	-0.303	80.00	Yes
		z	-0.088	30.00	Yes
		z	-0.072	60.00	Yes
	6	z	-0.12	50.00	Yes

	5	z	-0.222	10.00	Yes
		z	-0.222	80.00	Yes
		z	-0.081	30.00	Yes
W30	1	3	-0.117	30.00	Yes
		3	-0.068	60.00	Yes
	2	3	-0.239	10.00	Yes
		3	-0.239	70.00	Yes
		3	-0.08	85.00	Yes
	3	3	-0.081	10.00	Yes
		3	-0.081	40.00	Yes
		3	-0.08	60.00	Yes
		3	-0.08	90.00	Yes
	4	3	-0.259	10.00	Yes
		3	-0.259	80.00	Yes
		3	-0.08	30.00	Yes
		3	-0.062	60.00	Yes
	6	3	-0.108	50.00	Yes
	5	3	-0.196	10.00	Yes
		3	-0.196	80.00	Yes
		3	-0.069	30.00	Yes
W60	1	3	-0.077	30.00	Yes
		3	-0.068	60.00	Yes
	2	3	-0.162	10.00	Yes
		3	-0.162	70.00	Yes
		3	-0.068	85.00	Yes
	3	3	-0.067	10.00	Yes
		3	-0.067	40.00	Yes
		3	-0.056	60.00	Yes
		3	-0.056	90.00	Yes
	4	3	-0.171	10.00	Yes
		3	-0.171	80.00	Yes
		3	-0.063	30.00	Yes
		3	-0.042	60.00	Yes
	6	3	-0.085	50.00	Yes
	5	3	-0.144	10.00	Yes
		3	-0.144	80.00	Yes
		3	-0.047	30.00	Yes
W90	1	x	-0.056	30.00	Yes
		x	-0.068	60.00	Yes
	2	x	-0.123	10.00	Yes
		x	-0.123	70.00	Yes
		x	-0.061	85.00	Yes
	3	x	-0.06	10.00	Yes
		x	-0.06	40.00	Yes
		x	-0.044	60.00	Yes
		x	-0.044	90.00	Yes
	4	x	-0.128	10.00	Yes
		x	-0.128	80.00	Yes
		x	-0.055	30.00	Yes
		x	-0.032	60.00	Yes
	6	x	-0.073	50.00	Yes
	5	x	-0.118	10.00	Yes
		x	-0.118	80.00	Yes
		x	-0.036	30.00	Yes
W120	1	2	-0.077	30.00	Yes
		2	-0.068	60.00	Yes
	2	2	-0.162	10.00	Yes
		2	-0.162	70.00	Yes
		2	-0.068	85.00	Yes
	3	2	-0.067	10.00	Yes

		2	-0.067	40.00	Yes
		2	-0.056	60.00	Yes
		2	-0.056	90.00	Yes
	4	2	-0.171	10.00	Yes
		2	-0.171	80.00	Yes
		2	-0.063	30.00	Yes
		2	-0.042	60.00	Yes
			0.00	60.00	No
	6	2	-0.085	50.00	Yes
	5	2	-0.144	10.00	Yes
		2	-0.144	80.00	Yes
		2	-0.047	30.00	Yes
W150	1	2	-0.117	30.00	Yes
		2	-0.068	60.00	Yes
	2	2	-0.239	10.00	Yes
		2	-0.239	70.00	Yes
		2	-0.08	85.00	Yes
	3	2	-0.081	10.00	Yes
		2	-0.081	40.00	Yes
		2	-0.08	60.00	Yes
		2	-0.08	90.00	Yes
	4	2	-0.259	10.00	Yes
		2	-0.259	80.00	Yes
		2	-0.08	30.00	Yes
		2	-0.062	60.00	Yes
	6	2	-0.108	50.00	Yes
	5	2	-0.196	10.00	Yes
		2	-0.196	80.00	Yes
		2	-0.069	30.00	Yes
Di	1	y	-0.08	30.00	Yes
		y	-0.068	60.00	Yes
	2	y	-0.153	10.00	Yes
		y	-0.153	70.00	Yes
		y	-0.058	85.00	Yes
	3	y	-0.057	10.00	Yes
		y	-0.057	40.00	Yes
		y	-0.055	60.00	Yes
		y	-0.055	90.00	Yes
	4	y	-0.163	10.00	Yes
		y	-0.163	80.00	Yes
		y	-0.057	30.00	Yes
		y	-0.043	60.00	Yes
	6	y	-0.077	50.00	Yes
	5	y	-0.122	10.00	Yes
		y	-0.122	80.00	Yes
		y	-0.049	30.00	Yes
WI0	1	z	-0.031	30.00	Yes
		z	-0.016	60.00	Yes
	2	z	-0.055	10.00	Yes
		z	-0.055	70.00	Yes
		z	-0.021	85.00	Yes
	3	z	-0.019	10.00	Yes
		z	-0.019	40.00	Yes
		z	-0.02	60.00	Yes
		z	-0.02	90.00	Yes
	4	z	-0.059	10.00	Yes
		z	-0.059	80.00	Yes
		z	-0.021	30.00	Yes
		z	-0.018	60.00	Yes
	6	z	-0.028	50.00	Yes

	5	z	-0.046	10.00	Yes
		z	-0.046	80.00	Yes
		z	-0.02	30.00	Yes
WI30	1	3	-0.027	30.00	Yes
		3	-0.016	60.00	Yes
	2	3	-0.048	10.00	Yes
		3	-0.048	70.00	Yes
		3	-0.02	85.00	Yes
	3	3	-0.018	10.00	Yes
		3	-0.018	40.00	Yes
		3	-0.018	60.00	Yes
		3	-0.018	90.00	Yes
	4	3	-0.051	10.00	Yes
		3	-0.051	80.00	Yes
		3	-0.02	30.00	Yes
		3	-0.016	60.00	Yes
	6	3	-0.026	50.00	Yes
	5	3	-0.041	10.00	Yes
		3	-0.041	80.00	Yes
		3	-0.018	30.00	Yes
WI60	1	3	-0.019	30.00	Yes
		3	-0.016	60.00	Yes
	2	3	-0.035	10.00	Yes
		3	-0.035	70.00	Yes
		3	-0.017	85.00	Yes
	3	3	-0.015	10.00	Yes
		3	-0.015	40.00	Yes
		3	-0.014	60.00	Yes
		3	-0.014	90.00	Yes
	4	3	-0.037	10.00	Yes
		3	-0.037	80.00	Yes
		3	-0.017	30.00	Yes
		3	-0.012	60.00	Yes
	6	3	-0.021	50.00	Yes
	5	3	-0.032	10.00	Yes
		3	-0.032	80.00	Yes
		3	-0.013	30.00	Yes
WI90	1	x	-0.015	30.00	Yes
		x	-0.016	60.00	Yes
	2	x	-0.028	10.00	Yes
		x	-0.028	70.00	Yes
		x	-0.016	85.00	Yes
	3	x	-0.014	10.00	Yes
		x	-0.014	40.00	Yes
		x	-0.011	60.00	Yes
		x	-0.011	90.00	Yes
	4	x	-0.03	10.00	Yes
		x	-0.03	80.00	Yes
		x	-0.015	30.00	Yes
		x	-0.01	60.00	Yes
	6	x	-0.019	50.00	Yes
	5	x	-0.028	10.00	Yes
		x	-0.028	80.00	Yes
		x	-0.011	30.00	Yes
WI120	1	2	-0.019	30.00	Yes
		2	-0.016	60.00	Yes
	2	2	-0.035	10.00	Yes
		2	-0.035	70.00	Yes
		2	-0.017	85.00	Yes
	3	2	-0.015	10.00	Yes

		2	-0.015	40.00	Yes
		2	-0.014	60.00	Yes
		2	-0.014	90.00	Yes
	4	2	-0.037	10.00	Yes
		2	-0.037	80.00	Yes
		2	-0.017	30.00	Yes
		2	-0.012	60.00	Yes
	6	2	-0.021	50.00	Yes
	5	2	-0.032	10.00	Yes
		2	-0.032	80.00	Yes
		2	-0.013	30.00	Yes
WI150	1	2	-0.027	30.00	Yes
		2	-0.016	60.00	Yes
	2	2	-0.048	10.00	Yes
		2	-0.048	70.00	Yes
		2	-0.02	85.00	Yes
	3	2	-0.018	10.00	Yes
		2	-0.018	40.00	Yes
		2	-0.018	60.00	Yes
		2	-0.018	90.00	Yes
	4	2	-0.051	10.00	Yes
		2	-0.051	80.00	Yes
		2	-0.02	30.00	Yes
		2	-0.016	60.00	Yes
	6	2	-0.026	50.00	Yes
	5	2	-0.041	10.00	Yes
		2	-0.041	80.00	Yes
		2	-0.018	30.00	Yes
WL0	1	z	-0.008	30.00	Yes
		z	-0.004	60.00	Yes
	2	z	-0.016	10.00	Yes
		z	-0.016	70.00	Yes
		z	-0.005	85.00	Yes
	3	z	-0.005	10.00	Yes
		z	-0.005	40.00	Yes
		z	-0.006	60.00	Yes
		z	-0.006	90.00	Yes
	4	z	-0.017	10.00	Yes
		z	-0.017	80.00	Yes
		z	-0.005	30.00	Yes
		z	-0.004	60.00	Yes
	6	z	-0.007	50.00	Yes
	5	z	-0.013	10.00	Yes
		z	-0.013	80.00	Yes
		z	-0.005	30.00	Yes
WL30	1	3	-0.007	30.00	Yes
		3	-0.004	60.00	Yes
	2	3	-0.014	10.00	Yes
		3	-0.014	70.00	Yes
		3	-0.005	85.00	Yes
	3	3	-0.005	10.00	Yes
		3	-0.005	40.00	Yes
		3	-0.005	60.00	Yes
		3	-0.005	90.00	Yes
	4	3	-0.015	10.00	Yes
		3	-0.015	80.00	Yes
		3	-0.005	30.00	Yes
		3	-0.004	60.00	Yes
	6	3	-0.006	50.00	Yes
	5	3	-0.011	10.00	Yes

		3	-0.011	80.00	Yes
		3	-0.004	30.00	Yes
WL60	1	3	-0.004	30.00	Yes
		3	-0.004	60.00	Yes
	2	3	-0.009	10.00	Yes
		3	-0.009	70.00	Yes
		3	-0.004	85.00	Yes
	3	3	-0.004	10.00	Yes
		3	-0.004	40.00	Yes
		3	-0.003	60.00	Yes
		3	-0.003	90.00	Yes
	4	3	-0.01	10.00	Yes
		3	-0.01	80.00	Yes
		3	-0.004	30.00	Yes
		3	-0.002	60.00	Yes
	6	3	-0.005	50.00	Yes
	5	3	-0.008	10.00	Yes
		3	-0.008	80.00	Yes
		3	-0.003	30.00	Yes
WL90	1	x	-0.003	30.00	Yes
		x	-0.004	60.00	Yes
	2	x	-0.007	10.00	Yes
		x	-0.007	70.00	Yes
		x	-0.004	85.00	Yes
	3	x	-0.004	10.00	Yes
		x	-0.004	40.00	Yes
		x	-0.003	60.00	Yes
		x	-0.003	90.00	Yes
	4	x	-0.007	10.00	Yes
		x	-0.007	80.00	Yes
		x	-0.003	30.00	Yes
		x	-0.002	60.00	Yes
	6	x	-0.004	50.00	Yes
	5	x	-0.007	10.00	Yes
		x	-0.007	80.00	Yes
		x	-0.002	30.00	Yes
WL120	1	2	-0.004	30.00	Yes
		2	-0.004	60.00	Yes
	2	2	-0.009	10.00	Yes
		2	-0.009	70.00	Yes
		2	-0.004	85.00	Yes
	3	2	-0.004	10.00	Yes
		2	-0.004	40.00	Yes
		2	-0.003	60.00	Yes
		2	-0.003	90.00	Yes
	4	2	-0.01	10.00	Yes
		2	-0.01	80.00	Yes
		2	-0.004	30.00	Yes
		2	-0.002	60.00	Yes
	6	2	-0.005	50.00	Yes
	5	2	-0.008	10.00	Yes
		2	-0.008	80.00	Yes
		2	-0.003	30.00	Yes
WL150	1	2	-0.007	30.00	Yes
		2	-0.004	60.00	Yes
	2	2	-0.014	10.00	Yes
		2	-0.014	70.00	Yes
		2	-0.005	85.00	Yes
	3	2	-0.005	10.00	Yes
		2	-0.005	40.00	Yes

	2	-0.005	60.00	Yes
	2	-0.005	90.00	Yes
4	2	-0.015	10.00	Yes
	2	-0.015	80.00	Yes
	2	-0.005	30.00	Yes
	2	-0.004	60.00	Yes
6	2	-0.006	50.00	Yes
5	2	-0.011	10.00	Yes
	2	-0.011	80.00	Yes
	2	-0.004	30.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00

WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00

Current Date: 5/2/2022 10:37 AM
Units system: English

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D
LC40=1.2D+WL0
LC41=1.2D+WL30
LC42=1.2D+WL60
LC43=1.2D+WL90
LC44=1.2D+WL120
LC45=1.2D+WL150
LC46=1.2D-WL0
LC47=1.2D-WL30
LC48=1.2D-WL60
LC49=1.2D-WL90
LC50=1.2D-WL120
LC51=1.2D-WL150

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2x0.154	**1**	LC1 at 20.31%	0.05	OK	
		2	LC1 at 31.25%	**0.40**	**OK**	
		3	LC1 at 79.17%	0.04	OK	
		4	LC1 at 29.17%	0.35	OK	
		6	LC1 at 50.00%	0.03	OK	
		5	LC1 at 29.17%	0.26	OK	

Current Date: 5/2/2022 10:38 AM
Units system: English

Geometry data

GLOSSARY

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

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	0.00	0
2	0.00	2.50	0.00	0
3	0.00	-2.50	0.00	0
4	2.50	4.50	0.00	0
5	2.50	-4.50	0.00	0
6	5.00	2.50	0.00	0
7	5.00	-2.50	0.00	0
8	0.00	1.50	0.00	0
9	0.00	-1.50	0.00	0
10	2.50	1.50	0.00	0
11	2.50	-1.50	0.00	0
12	5.00	1.50	0.00	0
13	5.00	-1.50	0.00	0
15	0.00	13.00	0.00	0
16	0.00	5.00	0.00	0
17	0.00	10.50	0.00	0
18	0.00	7.50	0.00	0
19	5.00	13.00	0.00	0
20	5.00	5.00	0.00	0
21	5.00	10.50	0.00	0
22	5.00	7.50	0.00	0
23	2.50	11.50	0.00	0
24	2.50	6.50	0.00	0

25	2.50	10.50	0.00	0
26	2.50	7.50	0.00	0

Restraints

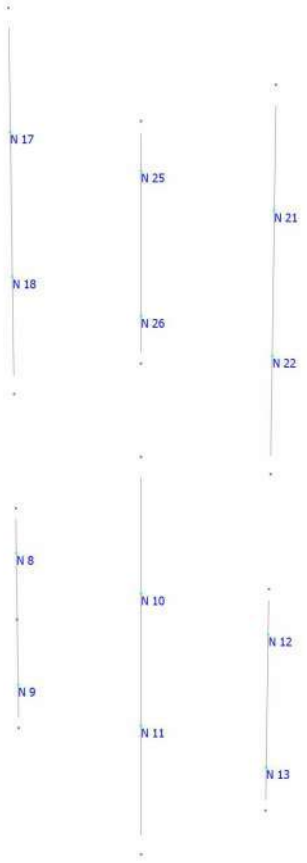
Node	TX	TY	TZ	RX	RY	RZ
8	1	1	1	1	1	1
9	1	1	1	1	1	1
10	1	1	1	1	1	1
11	1	1	1	1	1	1
12	1	1	1	1	1	1
13	1	1	1	1	1	1
17	1	1	1	1	1	1
18	1	1	1	1	1	1
21	1	1	1	1	1	1
22	1	1	1	1	1	1
25	1	1	1	1	1	1
26	1	1	1	1	1	1

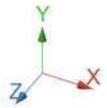
Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	2	3		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
2	4	5		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
3	6	7		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
4	15	16		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
6	23	24		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
5	19	20		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
1	315.00	0	0.00	0.00	0.00
2	315.00	0	0.00	0.00	0.00
3	315.00	0	0.00	0.00	0.00
4	315.00	0	0.00	0.00	0.00
6	315.00	0	0.00	0.00	0.00
5	315.00	0	0.00	0.00	0.00

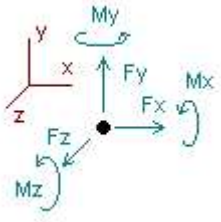

N 17
N 25
N 21
N 18
N 26
N 22
N 8
N 10
N 12
N 9
N 11
N 13


Y
Z
X

Current Date: 5/2/2022 10:38 AM
Units system: English

Analysis result

Reactions



Direction of positive forces and moments

	Forces [Kip]			Moments [Kip*ft]		
Node	**FX**	**FY**	**FZ**	**MX**	**MY**	**MZ**
Condition **LC1=1.2D+Wo**						
8	0.00000	0.07474	0.14541	-0.06302	0.00000	0.00000
9	0.00000	0.04394	0.06059	0.03981	0.00000	0.00000
10	0.00000	0.06626	0.27800	0.58425	0.00000	0.00000
11	0.00000	0.15386	0.36400	-0.22515	0.00000	0.00000
12	0.00000	0.10534	0.17678	-0.01533	0.00000	0.00000
13	0.00000	0.09254	0.18122	0.01450	0.00000	0.00000
17	0.00000	0.16795	0.40093	0.51524	0.00000	0.00000
18	0.00000	0.12731	0.36507	-0.24301	0.00000	0.00000
21	0.00000	0.11823	0.30300	0.38570	0.00000	0.00000
22	0.00000	0.06303	0.22200	-0.19977	0.00000	0.00000
25	0.00000	0.04614	0.06000	-0.04500	0.00000	0.00000
26	0.00000	0.04614	0.06000	0.04500	0.00000	0.00000
SUM	0.00000	1.10551	2.61700	0.79322	0.00000	0.00000
Condition **LC2=1.2D+W30**						
8	0.08909	0.07474	0.08909	-0.03944	0.00000	0.03944
9	0.04172	0.04394	0.04172	0.02708	0.00000	-0.02708
10	0.16900	0.06626	0.16900	0.35517	0.00000	-0.35517
11	0.22557	0.15386	0.22557	-0.14394	0.00000	0.14394
12	0.11437	0.10534	0.11437	-0.00939	0.00000	0.00939
13	0.11332	0.09254	0.11332	0.00959	0.00000	-0.00959
17	0.24576	0.16795	0.24576	0.31172	0.00000	-0.31172
18	0.22093	0.12731	0.22093	-0.14675	0.00000	0.14675
21	0.18738	0.11823	0.18738	0.24061	0.00000	-0.24061
22	0.13859	0.06303	0.13859	-0.12471	0.00000	0.12471
25	0.03818	0.04614	0.03818	-0.02864	0.00000	0.02864
26	0.03818	0.04614	0.03818	0.02864	0.00000	-0.02864
SUM	1.62210	1.10551	1.62210	0.47994	0.00000	-0.47994
Condition **LC3=1.2D+W60**						
8	0.08795	0.07474	0.06295	-0.02969	0.00000	0.03219
9	0.06458	0.04394	0.03958	0.02505	0.00000	-0.02755
10	0.15955	0.06626	0.11455	0.24074	0.00000	-0.27827
11	0.20763	0.15386	0.16263	-0.11362	0.00000	0.15107
12	0.11774	0.10534	0.09274	-0.00617	0.00000	0.00867
13	0.10621	0.09254	0.08121	0.00833	0.00000	-0.01083
17	0.20956	0.16795	0.16956	0.20644	0.00000	-0.23021

18	0.18652	0.12731	0.14652	-0.09658	0.00000	0.12032
21	0.17506	0.11823	0.13506	0.17651	0.00000	-0.20028
22	0.14182	0.06303	0.10182	-0.09163	0.00000	0.11537
25	0.05505	0.04614	0.03005	-0.02254	0.00000	0.02504
26	0.05505	0.04614	0.03005	0.02254	0.00000	-0.02504
SUM	1.56673	1.10551	1.16673	0.31939	0.00000	-0.31952

Condition **LC4=1.2D+W90**

8	0.09461	0.07474	0.00000	0.00000	0.00000	0.03725
9	0.07939	0.04394	0.00000	0.00000	0.00000	-0.03642
10	0.16800	0.06626	0.00000	0.00000	0.00000	-0.29603
11	0.22900	0.15386	0.00000	0.00000	0.00000	0.17490
12	0.14085	0.10534	0.00000	0.00000	0.00000	0.00894
13	0.11715	0.09254	0.00000	0.00000	0.00000	-0.01339
17	0.22741	0.16795	0.00000	0.00000	0.00000	-0.24302
18	0.19559	0.12731	0.00000	0.00000	0.00000	0.12575
21	0.19400	0.11823	0.00000	0.00000	0.00000	-0.22807
22	0.15800	0.06303	0.00000	0.00000	0.00000	0.12992
25	0.06150	0.04614	0.00000	0.00000	0.00000	0.02987
26	0.06150	0.04614	0.00000	0.00000	0.00000	-0.02988
SUM	1.72700	1.10551	0.00000	0.00000	0.00000	-0.34016

Condition **LC5=1.2D+W120**

8	0.08795	0.07474	-0.06295	0.02969	0.00000	0.03219
9	0.06458	0.04394	-0.03958	-0.02505	0.00000	-0.02755
10	0.15955	0.06626	-0.11455	-0.24074	0.00000	-0.27827
11	0.20763	0.15386	-0.16263	0.11362	0.00000	0.15107
12	0.11774	0.10534	-0.09274	0.00617	0.00000	0.00867
13	0.10621	0.09254	-0.08121	-0.00833	0.00000	-0.01083
17	0.20956	0.16795	-0.16956	-0.20644	0.00000	-0.23021
18	0.18652	0.12731	-0.14652	0.09658	0.00000	0.12032
21	0.17506	0.11823	-0.13506	-0.17651	0.00000	-0.20028
22	0.14182	0.06303	-0.10182	0.09163	0.00000	0.11537
25	0.05505	0.04614	-0.03005	0.02254	0.00000	0.02504
26	0.05505	0.04614	-0.03005	-0.02254	0.00000	-0.02504
SUM	1.56673	1.10551	-1.16673	-0.31939	0.00000	-0.31952

Condition **LC6=1.2D+W150**

8	0.08909	0.07474	-0.08909	0.03944	0.00000	0.03944
9	0.04172	0.04394	-0.04172	-0.02708	0.00000	-0.02708
10	0.16900	0.06626	-0.16900	-0.35517	0.00000	-0.35517
11	0.22557	0.15386	-0.22557	0.14394	0.00000	0.14394
12	0.11437	0.10534	-0.11437	0.00939	0.00000	0.00939
13	0.11332	0.09254	-0.11332	-0.00959	0.00000	-0.00959
17	0.24576	0.16795	-0.24576	-0.31172	0.00000	-0.31172
18	0.22093	0.12731	-0.22093	0.14675	0.00000	0.14675
21	0.18738	0.11823	-0.18738	-0.24061	0.00000	-0.24061
22	0.13859	0.06303	-0.13859	0.12471	0.00000	0.12471
25	0.03818	0.04614	-0.03818	0.02864	0.00000	0.02864
26	0.03818	0.04614	-0.03818	-0.02864	0.00000	-0.02864
SUM	1.62210	1.10551	-1.62210	-0.47994	0.00000	-0.47994

Condition **LC7=1.2D-Wo**

8	0.00000	0.07474	-0.14541	0.06302	0.00000	0.00000
9	0.00000	0.04394	-0.06059	-0.03981	0.00000	0.00000
10	0.00000	0.06626	-0.27800	-0.58425	0.00000	0.00000
11	0.00000	0.15386	-0.36400	0.22515	0.00000	0.00000
12	0.00000	0.10534	-0.17678	0.01533	0.00000	0.00000
13	0.00000	0.09254	-0.18122	-0.01450	0.00000	0.00000
17	0.00000	0.16795	-0.40093	-0.51524	0.00000	0.00000
18	0.00000	0.12731	-0.36507	0.24301	0.00000	0.00000
21	0.00000	0.11823	-0.30300	-0.38570	0.00000	0.00000
22	0.00000	0.06303	-0.22200	0.19977	0.00000	0.00000
25	0.00000	0.04614	-0.06000	0.04500	0.00000	0.00000
26	0.00000	0.04614	-0.06000	-0.04500	0.00000	0.00000
SUM	0.00000	1.10551	-2.61700	-0.79322	0.00000	0.00000

Condition **LC8=1.2D-W30**

8	-0.08909	0.07474	-0.08909	0.03944	0.00000	-0.03944
9	-0.04172	0.04394	-0.04172	-0.02708	0.00000	0.02708
10	-0.16900	0.06626	-0.16900	-0.35517	0.00000	0.35517
11	-0.22557	0.15386	-0.22557	0.14394	0.00000	-0.14394
12	-0.11437	0.10534	-0.11437	0.00939	0.00000	-0.00939
13	-0.11332	0.09254	-0.11332	-0.00959	0.00000	0.00959
17	-0.24576	0.16795	-0.24576	-0.31172	0.00000	0.31172
18	-0.22093	0.12731	-0.22093	0.14675	0.00000	-0.14675
21	-0.18738	0.11823	-0.18738	-0.24061	0.00000	0.24061
22	-0.13859	0.06303	-0.13859	0.12471	0.00000	-0.12471
25	-0.03818	0.04614	-0.03818	0.02864	0.00000	-0.02864
26	-0.03818	0.04614	-0.03818	-0.02864	0.00000	0.02864
SUM	-1.62210	1.10551	-1.62210	-0.47994	0.00000	0.47994

Condition **LC9=1.2D-W60**

8	-0.08795	0.07474	-0.06295	0.02969	0.00000	-0.03219
9	-0.06458	0.04394	-0.03958	-0.02505	0.00000	0.02755
10	-0.15955	0.06626	-0.11455	-0.24074	0.00000	0.27827
11	-0.20763	0.15386	-0.16263	0.11362	0.00000	-0.15107
12	-0.11774	0.10534	-0.09274	0.00617	0.00000	-0.00867
13	-0.10621	0.09254	-0.08121	-0.00833	0.00000	0.01083
17	-0.20956	0.16795	-0.16956	-0.20644	0.00000	0.23021
18	-0.18652	0.12731	-0.14652	0.09658	0.00000	-0.12032
21	-0.17506	0.11823	-0.13506	-0.17651	0.00000	0.20028
22	-0.14182	0.06303	-0.10182	0.09163	0.00000	-0.11537
25	-0.05505	0.04614	-0.03005	0.02254	0.00000	-0.02504
26	-0.05505	0.04614	-0.03005	-0.02254	0.00000	0.02504
SUM	-1.56673	1.10551	-1.16673	-0.31939	0.00000	0.31952

Condition **LC10=1.2D-W90**

8	-0.09461	0.07474	0.00000	0.00000	0.00000	-0.03725
9	-0.07939	0.04394	0.00000	0.00000	0.00000	0.03642
10	-0.16800	0.06626	0.00000	0.00000	0.00000	0.29603
11	-0.22900	0.15386	0.00000	0.00000	0.00000	-0.17490
12	-0.14085	0.10534	0.00000	0.00000	0.00000	-0.00894
13	-0.11715	0.09254	0.00000	0.00000	0.00000	0.01339
17	-0.22741	0.16795	0.00000	0.00000	0.00000	0.24302
18	-0.19559	0.12731	0.00000	0.00000	0.00000	-0.12575
21	-0.19400	0.11823	0.00000	0.00000	0.00000	0.22807
22	-0.15800	0.06303	0.00000	0.00000	0.00000	-0.12992
25	-0.06150	0.04614	0.00000	0.00000	0.00000	-0.02987

26	-0.06150	0.04614	0.00000	0.00000	0.00000	0.02988
SUM	-1.72700	1.10551	0.00000	0.00000	0.00000	0.34016

Condition **LC11=1.2D-W120**

8	-0.08795	0.07474	0.06295	-0.02969	0.00000	-0.03219
9	-0.06458	0.04394	0.03958	0.02505	0.00000	0.02755
10	-0.15955	0.06626	0.11455	0.24074	0.00000	0.27827
11	-0.20763	0.15386	0.16263	-0.11362	0.00000	-0.15107
12	-0.11774	0.10534	0.09274	-0.00617	0.00000	-0.00867
13	-0.10621	0.09254	0.08121	0.00833	0.00000	0.01083
17	-0.20956	0.16795	0.16956	0.20644	0.00000	0.23021
18	-0.18652	0.12731	0.14652	-0.09658	0.00000	-0.12032
21	-0.17506	0.11823	0.13506	0.17651	0.00000	0.20028
22	-0.14182	0.06303	0.10182	-0.09163	0.00000	-0.11537
25	-0.05505	0.04614	0.03005	-0.02254	0.00000	-0.02504
26	-0.05505	0.04614	0.03005	0.02254	0.00000	0.02504
SUM	-1.56673	1.10551	1.16673	0.31939	0.00000	0.31952

Condition **LC12=1.2D-W150**

8	-0.08909	0.07474	0.08909	-0.03944	0.00000	-0.03944
9	-0.04172	0.04394	0.04172	0.02708	0.00000	0.02708
10	-0.16900	0.06626	0.16900	0.35517	0.00000	0.35517
11	-0.22557	0.15386	0.22557	-0.14394	0.00000	-0.14394
12	-0.11437	0.10534	0.11437	-0.00939	0.00000	-0.00939
13	-0.11332	0.09254	0.11332	0.00959	0.00000	0.00959
17	-0.24576	0.16795	0.24576	0.31172	0.00000	0.31172
18	-0.22093	0.12731	0.22093	-0.14675	0.00000	-0.14675
21	-0.18738	0.11823	0.18738	0.24061	0.00000	0.24061
22	-0.13859	0.06303	0.13859	-0.12471	0.00000	-0.12471
25	-0.03818	0.04614	0.03818	-0.02864	0.00000	-0.02864
26	-0.03818	0.04614	0.03818	0.02864	0.00000	0.02864
SUM	-1.62210	1.10551	1.62210	0.47994	0.00000	0.47994

Condition **LC13=0.9D+Wo**

8	0.00000	0.05606	0.14541	-0.06302	0.00000	0.00000
9	0.00000	0.03296	0.06059	0.03981	0.00000	0.00000
10	0.00000	0.04970	0.27800	0.58414	0.00000	0.00000
11	0.00000	0.11540	0.36400	-0.22519	0.00000	0.00000
12	0.00000	0.07901	0.17678	-0.01533	0.00000	0.00000
13	0.00000	0.06941	0.18122	0.01450	0.00000	0.00000
17	0.00000	0.12596	0.40093	0.51515	0.00000	0.00000
18	0.00000	0.09548	0.36507	-0.24303	0.00000	0.00000
21	0.00000	0.08867	0.30300	0.38565	0.00000	0.00000
22	0.00000	0.04727	0.22200	-0.19977	0.00000	0.00000
25	0.00000	0.03461	0.06000	-0.04500	0.00000	0.00000
26	0.00000	0.03461	0.06000	0.04500	0.00000	0.00000
SUM	0.00000	0.82914	2.61700	0.79291	0.00000	0.00000

Condition **LC14=0.9D+W30**

8	0.08909	0.05606	0.08909	-0.03944	0.00000	0.03944
9	0.04172	0.03296	0.04172	0.02708	0.00000	-0.02708
10	0.16900	0.04970	0.16900	0.35510	0.00000	-0.35510
11	0.22557	0.11540	0.22557	-0.14396	0.00000	0.14396
12	0.11437	0.07901	0.11437	-0.00939	0.00000	0.00939
13	0.11332	0.06941	0.11332	0.00959	0.00000	-0.00959
17	0.24576	0.12596	0.24576	0.31167	0.00000	-0.31167
18	0.22093	0.09548	0.22093	-0.14676	0.00000	0.14676
21	0.18738	0.08867	0.18738	0.24058	0.00000	-0.24058
22	0.13859	0.04727	0.13859	-0.12472	0.00000	0.12472
25	0.03818	0.03461	0.03818	-0.02864	0.00000	0.02864
26	0.03818	0.03461	0.03818	0.02864	0.00000	-0.02864
SUM	1.62210	0.82914	1.62210	0.47975	0.00000	-0.47975

Condition **LC15=0.9D+W60**

8	0.08795	0.05606	0.06295	-0.02969	0.00000	0.03219
9	0.06458	0.03296	0.03958	0.02505	0.00000	-0.02755
10	0.15955	0.04970	0.11455	0.24070	0.00000	-0.27822
11	0.20763	0.11540	0.16263	-0.11364	0.00000	0.15110
12	0.11774	0.07901	0.09274	-0.00617	0.00000	0.00867
13	0.10621	0.06941	0.08121	0.00833	0.00000	-0.01083
17	0.20956	0.12596	0.16956	0.20640	0.00000	-0.23017
18	0.18652	0.09548	0.14652	-0.09659	0.00000	0.12033
21	0.17506	0.08867	0.13506	0.17649	0.00000	-0.20025
22	0.14182	0.04727	0.10182	-0.09163	0.00000	0.11537
25	0.05505	0.03461	0.03005	-0.02254	0.00000	0.02504
26	0.05505	0.03461	0.03005	0.02254	0.00000	-0.02504
SUM	1.56673	0.82914	1.16673	0.31925	0.00000	-0.31935

Condition **LC16=0.9D+W90**

8	0.09461	0.05606	0.00000	0.00000	0.00000	0.03725
9	0.07939	0.03296	0.00000	0.00000	0.00000	-0.03642
10	0.16800	0.04970	0.00000	0.00000	0.00000	-0.29597
11	0.22900	0.11540	0.00000	0.00000	0.00000	0.17494
12	0.14085	0.07901	0.00000	0.00000	0.00000	0.00894
13	0.11715	0.06941	0.00000	0.00000	0.00000	-0.01339
17	0.22741	0.12596	0.00000	0.00000	0.00000	-0.24297
18	0.19559	0.09548	0.00000	0.00000	0.00000	0.12576
21	0.19400	0.08867	0.00000	0.00000	0.00000	-0.22804
22	0.15800	0.04727	0.00000	0.00000	0.00000	0.12993
25	0.06150	0.03461	0.00000	0.00000	0.00000	0.02987
26	0.06150	0.03461	0.00000	0.00000	0.00000	-0.02988
SUM	1.72700	0.82914	0.00000	0.00000	0.00000	-0.33997

Condition **LC17=0.9D+W120**

8	0.08795	0.05606	-0.06295	0.02969	0.00000	0.03219
9	0.06458	0.03296	-0.03958	-0.02505	0.00000	-0.02755
10	0.15955	0.04970	-0.11455	-0.24070	0.00000	-0.27822
11	0.20763	0.11540	-0.16263	0.11364	0.00000	0.15110
12	0.11774	0.07901	-0.09274	0.00617	0.00000	0.00867
13	0.10621	0.06941	-0.08121	-0.00833	0.00000	-0.01083
17	0.20956	0.12596	-0.16956	-0.20640	0.00000	-0.23017
18	0.18652	0.09548	-0.14652	0.09659	0.00000	0.12033
21	0.17506	0.08867	-0.13506	-0.17649	0.00000	-0.20025
22	0.14182	0.04727	-0.10182	0.09163	0.00000	0.11537
25	0.05505	0.03461	-0.03005	0.02254	0.00000	0.02504

26	0.05505	0.03461	-0.03005	-0.02254	0.00000	-0.02504
SUM	1.56673	0.82914	-1.16673	-0.31925	0.00000	-0.31935

Condition **LC18=0.9D+W150**

8	0.08909	0.05606	-0.08909	0.03944	0.00000	0.03944
9	0.04172	0.03296	-0.04172	-0.02708	0.00000	-0.02708
10	0.16900	0.04970	-0.16900	-0.35510	0.00000	-0.35510
11	0.22557	0.11540	-0.22557	0.14396	0.00000	0.14396
12	0.11437	0.07901	-0.11437	0.00939	0.00000	0.00939
13	0.11332	0.06941	-0.11332	-0.00959	0.00000	-0.00959
17	0.24576	0.12596	-0.24576	-0.31167	0.00000	-0.31167
18	0.22093	0.09548	-0.22093	0.14676	0.00000	0.14676
21	0.18738	0.08867	-0.18738	-0.24058	0.00000	-0.24058
22	0.13859	0.04727	-0.13859	0.12472	0.00000	0.12472
25	0.03818	0.03461	-0.03818	0.02864	0.00000	0.02864
26	0.03818	0.03461	-0.03818	-0.02864	0.00000	-0.02864
SUM	1.62210	0.82914	-1.62210	-0.47975	0.00000	-0.47975

Condition **LC19=0.9D-Wo**

8	0.00000	0.05606	-0.14541	0.06302	0.00000	0.00000
9	0.00000	0.03296	-0.06059	-0.03981	0.00000	0.00000
10	0.00000	0.04970	-0.27800	-0.58414	0.00000	0.00000
11	0.00000	0.11540	-0.36400	0.22519	0.00000	0.00000
12	0.00000	0.07901	-0.17678	0.01533	0.00000	0.00000
13	0.00000	0.06941	-0.18122	-0.01450	0.00000	0.00000
17	0.00000	0.12596	-0.40093	-0.51515	0.00000	0.00000
18	0.00000	0.09548	-0.36507	0.24303	0.00000	0.00000
21	0.00000	0.08867	-0.30300	-0.38565	0.00000	0.00000
22	0.00000	0.04727	-0.22200	0.19977	0.00000	0.00000
25	0.00000	0.03461	-0.06000	0.04500	0.00000	0.00000
26	0.00000	0.03461	-0.06000	-0.04500	0.00000	0.00000
SUM	0.00000	0.82914	-2.61700	-0.79291	0.00000	0.00000

Condition **LC20=0.9D-W30**

8	-0.08909	0.05606	-0.08909	0.03944	0.00000	-0.03944
9	-0.04172	0.03296	-0.04172	-0.02708	0.00000	0.02708
10	-0.16900	0.04970	-0.16900	-0.35510	0.00000	0.35510
11	-0.22557	0.11540	-0.22557	0.14396	0.00000	-0.14396
12	-0.11437	0.07901	-0.11437	0.00939	0.00000	-0.00939
13	-0.11332	0.06941	-0.11332	-0.00959	0.00000	0.00959
17	-0.24576	0.12596	-0.24576	-0.31167	0.00000	0.31167
18	-0.22093	0.09548	-0.22093	0.14676	0.00000	-0.14676
21	-0.18738	0.08867	-0.18738	-0.24058	0.00000	0.24058
22	-0.13859	0.04727	-0.13859	0.12472	0.00000	-0.12472
25	-0.03818	0.03461	-0.03818	0.02864	0.00000	-0.02864
26	-0.03818	0.03461	-0.03818	-0.02864	0.00000	0.02864
SUM	-1.62210	0.82914	-1.62210	-0.47975	0.00000	0.47975

Condition **LC21=0.9D-W60**

8	-0.08795	0.05606	-0.06295	0.02969	0.00000	-0.03219
9	-0.06458	0.03296	-0.03958	-0.02505	0.00000	0.02755
10	-0.15955	0.04970	-0.11455	-0.24070	0.00000	0.27822
11	-0.20763	0.11540	-0.16263	0.11364	0.00000	-0.15110
12	-0.11774	0.07901	-0.09274	0.00617	0.00000	-0.00867
13	-0.10621	0.06941	-0.08121	-0.00833	0.00000	0.01083
17	-0.20956	0.12596	-0.16956	-0.20640	0.00000	0.23017
18	-0.18652	0.09548	-0.14652	0.09659	0.00000	-0.12033
21	-0.17506	0.08867	-0.13506	-0.17649	0.00000	0.20025
22	-0.14182	0.04727	-0.10182	0.09163	0.00000	-0.11537
25	-0.05505	0.03461	-0.03005	0.02254	0.00000	-0.02504
26	-0.05505	0.03461	-0.03005	-0.02254	0.00000	0.02504
SUM	-1.56673	0.82914	-1.16673	-0.31925	0.00000	0.31935

Condition **LC22=0.9D-W90**

8	-0.09461	0.05606	0.00000	0.00000	0.00000	-0.03725
9	-0.07939	0.03296	0.00000	0.00000	0.00000	0.03642
10	-0.16800	0.04970	0.00000	0.00000	0.00000	0.29597
11	-0.22900	0.11540	0.00000	0.00000	0.00000	-0.17494
12	-0.14085	0.07901	0.00000	0.00000	0.00000	-0.00894
13	-0.11715	0.06941	0.00000	0.00000	0.00000	0.01339
17	-0.22741	0.12596	0.00000	0.00000	0.00000	0.24297
18	-0.19559	0.09548	0.00000	0.00000	0.00000	-0.12576
21	-0.19400	0.08867	0.00000	0.00000	0.00000	0.22804
22	-0.15800	0.04727	0.00000	0.00000	0.00000	-0.12993
25	-0.06150	0.03461	0.00000	0.00000	0.00000	-0.02987
26	-0.06150	0.03461	0.00000	0.00000	0.00000	0.02988
SUM	-1.72700	0.82914	0.00000	0.00000	0.00000	0.33997

Condition **LC23=0.9D-W120**

8	-0.08795	0.05606	0.06295	-0.02969	0.00000	-0.03219
9	-0.06458	0.03296	0.03958	0.02505	0.00000	0.02755
10	-0.15955	0.04970	0.11455	0.24070	0.00000	0.27822
11	-0.20763	0.11540	0.16263	-0.11364	0.00000	-0.15110
12	-0.11774	0.07901	0.09274	-0.00617	0.00000	-0.00867
13	-0.10621	0.06941	0.08121	0.00833	0.00000	0.01083
17	-0.20956	0.12596	0.16956	0.20640	0.00000	0.23017
18	-0.18652	0.09548	0.14652	-0.09659	0.00000	-0.12033
21	-0.17506	0.08867	0.13506	0.17649	0.00000	0.20025
22	-0.14182	0.04727	0.10182	-0.09163	0.00000	-0.11537
25	-0.05505	0.03461	0.03005	-0.02254	0.00000	-0.02504
26	-0.05505	0.03461	0.03005	0.02254	0.00000	0.02504
SUM	-1.56673	0.82914	1.16673	0.31925	0.00000	0.31935

Condition **LC24=0.9D-W150**

8	-0.08909	0.05606	0.08909	-0.03944	0.00000	-0.03944
9	-0.04172	0.03296	0.04172	0.02708	0.00000	0.02708
10	-0.16900	0.04970	0.16900	0.35510	0.00000	0.35510
11	-0.22557	0.11540	0.22557	-0.14396	0.00000	-0.14396
12	-0.11437	0.07901	0.11437	-0.00939	0.00000	-0.00939
13	-0.11332	0.06941	0.11332	0.00959	0.00000	0.00959
17	-0.24576	0.12596	0.24576	0.31167	0.00000	0.31167
18	-0.22093	0.09548	0.22093	-0.14676	0.00000	-0.14676
21	-0.18738	0.08867	0.18738	0.24058	0.00000	0.24058
22	-0.13859	0.04727	0.13859	-0.12472	0.00000	-0.12472
25	-0.03818	0.03461	0.03818	-0.02864	0.00000	-0.02864

26	-0.03818	0.03461	0.03818	0.02864	0.00000	0.02864
SUM	-1.62210	0.82914	1.62210	0.47975	0.00000	0.47975

Condition **LC25=1.2D+Di+WI0**

8	0.00000	0.16408	0.03285	-0.01432	0.00000	0.00000
9	0.00000	0.10261	0.01415	0.00926	0.00000	0.00000
10	0.00000	0.21926	0.05500	0.11583	0.00000	0.00000
11	0.00000	0.36486	0.07600	-0.05108	0.00000	0.00000
12	0.00000	0.21868	0.03826	-0.00339	0.00000	0.00000
13	0.00000	0.20321	0.03974	0.00311	0.00000	0.00000
17	0.00000	0.39798	0.08248	0.10037	0.00000	0.00000
18	0.00000	0.32328	0.07452	-0.04566	0.00000	0.00000
21	0.00000	0.28923	0.06600	0.08033	0.00000	0.00000
22	0.00000	0.18503	0.04600	-0.04138	0.00000	0.00000
25	0.00000	0.08464	0.01400	-0.01050	0.00000	0.00000
26	0.00000	0.08464	0.01400	0.01050	0.00000	0.00000
SUM	0.00000	2.63751	0.55300	0.15307	0.00000	0.00000

Condition **LC26=1.2D+Di+WI30**

8	0.02062	0.16408	0.02062	-0.00915	0.00000	0.00915
9	0.00979	0.10261	0.00979	0.00635	0.00000	-0.00635
10	0.03394	0.21926	0.03394	0.07148	0.00000	-0.07148
11	0.04808	0.36486	0.04808	-0.03347	0.00000	0.03347
12	0.02546	0.21868	0.02546	-0.00212	0.00000	0.00212
13	0.02546	0.20321	0.02546	0.00212	0.00000	-0.00212
17	0.05177	0.39798	0.05177	0.06144	0.00000	-0.06144
18	0.04582	0.32328	0.04582	-0.02778	0.00000	0.02778
21	0.04172	0.28923	0.04172	0.05064	0.00000	-0.05064
22	0.02899	0.18503	0.02899	-0.02608	0.00000	0.02608
25	0.00919	0.08464	0.00919	-0.00689	0.00000	0.00689
26	0.00919	0.08464	0.00919	0.00689	0.00000	-0.00689
SUM	0.35002	2.63751	0.35002	0.09342	0.00000	-0.09342

Condition **LC27=1.2D+Di+WI60**

8	0.01539	0.16408	0.01539	-0.00720	0.00000	0.00720
9	0.00936	0.10261	0.00936	0.00594	0.00000	-0.00594
10	0.02475	0.21926	0.02475	0.05212	0.00000	-0.05212
11	0.03677	0.36486	0.03677	-0.02722	0.00000	0.02722
12	0.02103	0.21868	0.02103	-0.00161	0.00000	0.00161
13	0.01998	0.20321	0.01998	0.00181	0.00000	-0.00181
17	0.03935	0.39798	0.03935	0.04471	0.00000	-0.04471
18	0.03348	0.32328	0.03348	-0.02004	0.00000	0.02004
21	0.03182	0.28923	0.03182	0.03945	0.00000	-0.03945
22	0.02263	0.18503	0.02263	-0.02035	0.00000	0.02035
25	0.00742	0.08464	0.00742	-0.00557	0.00000	0.00557
26	0.00742	0.08464	0.00742	0.00557	0.00000	-0.00557
SUM	0.26941	2.63751	0.26941	0.06760	0.00000	-0.06760

Condition **LC28=1.2D+Di+WI90**

8	0.01807	0.16408	0.00000	0.00000	0.00000	0.00881
9	0.01293	0.10261	0.00000	0.00000	0.00000	-0.00811
10	0.02800	0.21926	0.00000	0.00000	0.00000	-0.05897
11	0.04400	0.36486	0.00000	0.00000	0.00000	0.03475
12	0.02722	0.21868	0.00000	0.00000	0.00000	0.00167
13	0.02278	0.20321	0.00000	0.00000	0.00000	-0.00250
17	0.04638	0.39798	0.00000	0.00000	0.00000	-0.05136
18	0.03862	0.32328	0.00000	0.00000	0.00000	0.02287
21	0.03900	0.28923	0.00000	0.00000	0.00000	-0.04878
22	0.02800	0.18503	0.00000	0.00000	0.00000	0.02519
25	0.00950	0.08464	0.00000	0.00000	0.00000	0.00713
26	0.00950	0.08464	0.00000	0.00000	0.00000	-0.00713
SUM	0.32400	2.63751	0.00000	0.00000	0.00000	-0.07644

Condition **LC29=1.2D+Di+WI120**

8	0.01539	0.16408	-0.01539	0.00720	0.00000	0.00720
9	0.00936	0.10261	-0.00936	-0.00594	0.00000	-0.00594
10	0.02475	0.21926	-0.02475	-0.05212	0.00000	-0.05212
11	0.03677	0.36486	-0.03677	0.02722	0.00000	0.02722
12	0.02103	0.21868	-0.02103	0.00161	0.00000	0.00161
13	0.01998	0.20321	-0.01998	-0.00181	0.00000	-0.00181
17	0.03935	0.39798	-0.03935	-0.04471	0.00000	-0.04471
18	0.03348	0.32328	-0.03348	0.02004	0.00000	0.02004
21	0.03182	0.28923	-0.03182	-0.03945	0.00000	-0.03945
22	0.02263	0.18503	-0.02263	0.02035	0.00000	0.02035
25	0.00742	0.08464	-0.00742	0.00557	0.00000	0.00557
26	0.00742	0.08464	-0.00742	-0.00557	0.00000	-0.00557
SUM	0.26941	2.63751	-0.26941	-0.06760	0.00000	-0.06760

Condition **LC30=1.2D+Di+WI150**

8	0.02062	0.16408	-0.02062	0.00915	0.00000	0.00915
9	0.00979	0.10261	-0.00979	-0.00635	0.00000	-0.00635
10	0.03394	0.21926	-0.03394	-0.07148	0.00000	-0.07148
11	0.04808	0.36486	-0.04808	0.03347	0.00000	0.03347
12	0.02546	0.21868	-0.02546	0.00212	0.00000	0.00212
13	0.02546	0.20321	-0.02546	-0.00212	0.00000	-0.00212
17	0.05177	0.39798	-0.05177	-0.06144	0.00000	-0.06144
18	0.04582	0.32328	-0.04582	0.02778	0.00000	0.02778
21	0.04172	0.28923	-0.04172	-0.05064	0.00000	-0.05064
22	0.02899	0.18503	-0.02899	0.02608	0.00000	0.02608
25	0.00919	0.08464	-0.00919	0.00689	0.00000	0.00689
26	0.00919	0.08464	-0.00919	-0.00689	0.00000	-0.00689
SUM	0.35002	2.63751	-0.35002	-0.09342	0.00000	-0.09342

Condition **LC31=1.2D+Di-WI0**

8	0.00000	0.16408	-0.03285	0.01432	0.00000	0.00000
9	0.00000	0.10261	-0.01415	-0.00926	0.00000	0.00000
10	0.00000	0.21926	-0.05500	-0.11583	0.00000	0.00000
11	0.00000	0.36486	-0.07600	0.05108	0.00000	0.00000
12	0.00000	0.21868	-0.03826	0.00339	0.00000	0.00000
13	0.00000	0.20321	-0.03974	-0.00311	0.00000	0.00000
17	0.00000	0.39798	-0.08248	-0.10037	0.00000	0.00000
18	0.00000	0.32328	-0.07452	0.04566	0.00000	0.00000
21	0.00000	0.28923	-0.06600	-0.08033	0.00000	0.00000
22	0.00000	0.18503	-0.04600	0.04138	0.00000	0.00000
25	0.00000	0.08464	-0.01400	0.01050	0.00000	0.00000

26	0.00000	0.08464	-0.01400	-0.01050	0.00000	0.00000
SUM	0.00000	2.63751	-0.55300	-0.15307	0.00000	0.00000

Condition **LC32=1.2D+Di-WI30**

8	-0.02062	0.16408	-0.02062	0.00915	0.00000	-0.00915
9	-0.00979	0.10261	-0.00979	-0.00635	0.00000	0.00635
10	-0.03394	0.21926	-0.03394	-0.07148	0.00000	0.07148
11	-0.04808	0.36486	-0.04808	0.03347	0.00000	-0.03347
12	-0.02546	0.21868	-0.02546	0.00212	0.00000	-0.00212
13	-0.02546	0.20321	-0.02546	-0.00212	0.00000	0.00212
17	-0.05177	0.39798	-0.05177	-0.06144	0.00000	0.06144
18	-0.04582	0.32328	-0.04582	0.02778	0.00000	-0.02778
21	-0.04172	0.28923	-0.04172	-0.05064	0.00000	0.05064
22	-0.02899	0.18503	-0.02899	0.02608	0.00000	-0.02608
25	-0.00919	0.08464	-0.00919	0.00689	0.00000	-0.00689
26	-0.00919	0.08464	-0.00919	-0.00689	0.00000	0.00689
SUM	-0.35002	2.63751	-0.35002	-0.09342	0.00000	0.09342

Condition **LC33=1.2D+Di-WI60**

8	-0.01539	0.16408	-0.01539	0.00720	0.00000	-0.00720
9	-0.00936	0.10261	-0.00936	-0.00594	0.00000	0.00594
10	-0.02475	0.21926	-0.02475	-0.05212	0.00000	0.05212
11	-0.03677	0.36486	-0.03677	0.02722	0.00000	-0.02722
12	-0.02103	0.21868	-0.02103	0.00161	0.00000	-0.00161
13	-0.01998	0.20321	-0.01998	-0.00181	0.00000	0.00181
17	-0.03935	0.39798	-0.03935	-0.04471	0.00000	0.04471
18	-0.03348	0.32328	-0.03348	0.02004	0.00000	-0.02004
21	-0.03182	0.28923	-0.03182	-0.03945	0.00000	0.03945
22	-0.02263	0.18503	-0.02263	0.02035	0.00000	-0.02035
25	-0.00742	0.08464	-0.00742	0.00557	0.00000	-0.00557
26	-0.00742	0.08464	-0.00742	-0.00557	0.00000	0.00557
SUM	-0.26941	2.63751	-0.26941	-0.06760	0.00000	0.06760

Condition **LC34=1.2D+Di-WI90**

8	-0.01807	0.16408	0.00000	0.00000	0.00000	-0.00881
9	-0.01293	0.10261	0.00000	0.00000	0.00000	0.00811
10	-0.02800	0.21926	0.00000	0.00000	0.00000	0.05897
11	-0.04400	0.36486	0.00000	0.00000	0.00000	-0.03475
12	-0.02722	0.21868	0.00000	0.00000	0.00000	-0.00167
13	-0.02278	0.20321	0.00000	0.00000	0.00000	0.00250
17	-0.04638	0.39798	0.00000	0.00000	0.00000	0.05136
18	-0.03862	0.32328	0.00000	0.00000	0.00000	-0.02287
21	-0.03900	0.28923	0.00000	0.00000	0.00000	0.04878
22	-0.02800	0.18503	0.00000	0.00000	0.00000	-0.02519
25	-0.00950	0.08464	0.00000	0.00000	0.00000	-0.00713
26	-0.00950	0.08464	0.00000	0.00000	0.00000	0.00713
SUM	-0.32400	2.63751	0.00000	0.00000	0.00000	0.07644

Condition **LC35=1.2D+Di-WI120**

8	-0.01539	0.16408	0.01539	-0.00720	0.00000	-0.00720
9	-0.00936	0.10261	0.00936	0.00594	0.00000	0.00594
10	-0.02475	0.21926	0.02475	0.05212	0.00000	0.05212
11	-0.03677	0.36486	0.03677	-0.02722	0.00000	-0.02722
12	-0.02103	0.21868	0.02103	-0.00161	0.00000	-0.00161
13	-0.01998	0.20321	0.01998	0.00181	0.00000	0.00181
17	-0.03935	0.39798	0.03935	0.04471	0.00000	0.04471
18	-0.03348	0.32328	0.03348	-0.02004	0.00000	-0.02004
21	-0.03182	0.28923	0.03182	0.03945	0.00000	0.03945
22	-0.02263	0.18503	0.02263	-0.02035	0.00000	-0.02035
25	-0.00742	0.08464	0.00742	-0.00557	0.00000	-0.00557
26	-0.00742	0.08464	0.00742	0.00557	0.00000	0.00557
SUM	-0.26941	2.63751	0.26941	0.06760	0.00000	0.06760

Condition **LC36=1.2D+Di-WI150**

8	-0.02062	0.16408	0.02062	-0.00915	0.00000	-0.00915
9	-0.00979	0.10261	0.00979	0.00635	0.00000	0.00635
10	-0.03394	0.21926	0.03394	0.07148	0.00000	0.07148
11	-0.04808	0.36486	0.04808	-0.03347	0.00000	-0.03347
12	-0.02546	0.21868	0.02546	-0.00212	0.00000	-0.00212
13	-0.02546	0.20321	0.02546	0.00212	0.00000	0.00212
17	-0.05177	0.39798	0.05177	0.06144	0.00000	0.06144
18	-0.04582	0.32328	0.04582	-0.02778	0.00000	-0.02778
21	-0.04172	0.28923	0.04172	0.05064	0.00000	0.05064
22	-0.02899	0.18503	0.02899	-0.02608	0.00000	-0.02608
25	-0.00919	0.08464	0.00919	-0.00689	0.00000	-0.00689
26	-0.00919	0.08464	0.00919	0.00689	0.00000	0.00689
SUM	-0.35002	2.63751	0.35002	0.09342	0.00000	0.09342

Condition **LC37=1.2D**

8	0.00000	0.07474	0.00000	0.00000	0.00000	0.00000
9	0.00000	0.04394	0.00000	0.00000	0.00000	0.00000
10	0.00000	0.06626	0.00000	0.00000	0.00000	0.00000
11	0.00000	0.15386	0.00000	0.00000	0.00000	0.00000
12	0.00000	0.10534	0.00000	0.00000	0.00000	0.00000
13	0.00000	0.09254	0.00000	0.00000	0.00000	0.00000
17	0.00000	0.16795	0.00000	0.00000	0.00000	0.00000
18	0.00000	0.12731	0.00000	0.00000	0.00000	0.00000
21	0.00000	0.11823	0.00000	0.00000	0.00000	0.00000
22	0.00000	0.06303	0.00000	0.00000	0.00000	0.00000
25	0.00000	0.04614	0.00000	0.00000	0.00000	0.00000
26	0.00000	0.04614	0.00000	0.00000	0.00000	0.00000
SUM	0.00000	1.10551	0.00000	0.00000	0.00000	0.00000

Condition **LC40=1.2D+WL0**

8	0.00000	0.07474	0.00844	-0.00367	0.00000	0.00000
9	0.00000	0.04394	0.00356	0.00233	0.00000	0.00000
10	0.00000	0.06626	0.01600	0.03363	0.00000	0.00000
11	0.00000	0.15386	0.02100	-0.01304	0.00000	0.00000
12	0.00000	0.10534	0.01026	-0.00106	0.00000	0.00000
13	0.00000	0.09254	0.01174	0.00078	0.00000	0.00000
17	0.00000	0.16795	0.02255	0.02892	0.00000	0.00000
18	0.00000	0.12731	0.02045	-0.01365	0.00000	0.00000
21	0.00000	0.11823	0.01800	0.02261	0.00000	0.00000
22	0.00000	0.06303	0.01300	-0.01170	0.00000	0.00000
25	0.00000	0.04614	0.00350	-0.00263	0.00000	0.00000

26	0.00000	0.04614	0.00350	0.00263	0.00000	0.00000
SUM	0.00000	1.10551	0.15200	0.04516	0.00000	0.00000

Condition **LC41=1.2D+WL30**

8	0.00532	0.07474	0.00532	-0.00235	0.00000	0.00235
9	0.00246	0.04394	0.00246	0.00160	0.00000	-0.00160
10	0.00990	0.06626	0.00990	0.02080	0.00000	-0.02080
11	0.01344	0.15386	0.01344	-0.00880	0.00000	0.00880
12	0.00707	0.10534	0.00707	-0.00059	0.00000	0.00059
13	0.00707	0.09254	0.00707	0.00059	0.00000	-0.00059
17	0.01453	0.16795	0.01453	0.01804	0.00000	-0.01804
18	0.01304	0.12731	0.01304	-0.00838	0.00000	0.00838
21	0.01061	0.11823	0.01061	0.01351	0.00000	-0.01351
22	0.00778	0.06303	0.00778	-0.00700	0.00000	0.00700
25	0.00212	0.04614	0.00212	-0.00159	0.00000	0.00159
26	0.00212	0.04614	0.00212	0.00159	0.00000	-0.00159
SUM	0.09546	1.10551	0.09546	0.02743	0.00000	-0.02743

Condition **LC42=1.2D+WL60**

8	0.00336	0.07474	0.00336	-0.00162	0.00000	0.00162
9	0.00230	0.04394	0.00230	0.00145	0.00000	-0.00145
10	0.00636	0.06626	0.00636	0.01337	0.00000	-0.01337
11	0.00919	0.15386	0.00919	-0.00657	0.00000	0.00657
12	0.00547	0.10534	0.00547	-0.00031	0.00000	0.00031
13	0.00443	0.09254	0.00443	0.00051	0.00000	-0.00051
17	0.01009	0.16795	0.01009	0.01213	0.00000	-0.01213
18	0.00829	0.12731	0.00829	-0.00578	0.00000	0.00578
21	0.00778	0.11823	0.00778	0.00983	0.00000	-0.00983
22	0.00566	0.06303	0.00566	-0.00509	0.00000	0.00509
25	0.00177	0.04614	0.00177	-0.00133	0.00000	0.00133
26	0.00177	0.04614	0.00177	0.00133	0.00000	-0.00133
SUM	0.06647	1.10551	0.06647	0.01793	0.00000	-0.01793

Condition **LC43=1.2D+WL90**

8	0.00382	0.07474	0.00000	0.00000	0.00000	0.00194
9	0.00318	0.04394	0.00000	0.00000	0.00000	-0.00197
10	0.00700	0.06626	0.00000	0.00000	0.00000	-0.01471
11	0.01100	0.15386	0.00000	0.00000	0.00000	0.00869
12	0.00774	0.10534	0.00000	0.00000	0.00000	0.00044
13	0.00626	0.09254	0.00000	0.00000	0.00000	-0.00072
17	0.01028	0.16795	0.00000	0.00000	0.00000	-0.01196
18	0.00872	0.12731	0.00000	0.00000	0.00000	0.00548
21	0.00900	0.11823	0.00000	0.00000	0.00000	-0.01211
22	0.00700	0.06303	0.00000	0.00000	0.00000	0.00630
25	0.00200	0.04614	0.00000	0.00000	0.00000	0.00150
26	0.00200	0.04614	0.00000	0.00000	0.00000	-0.00150
SUM	0.07800	1.10551	0.00000	0.00000	0.00000	-0.01862

Condition **LC44=1.2D+WL120**

8	0.00336	0.07474	-0.00336	0.00162	0.00000	0.00162
9	0.00230	0.04394	-0.00230	-0.00145	0.00000	-0.00145
10	0.00636	0.06626	-0.00636	-0.01337	0.00000	-0.01337
11	0.00919	0.15386	-0.00919	0.00657	0.00000	0.00657
12	0.00547	0.10534	-0.00547	0.00031	0.00000	0.00031
13	0.00443	0.09254	-0.00443	-0.00051	0.00000	-0.00051
17	0.01009	0.16795	-0.01009	-0.01213	0.00000	-0.01213
18	0.00829	0.12731	-0.00829	0.00578	0.00000	0.00578
21	0.00778	0.11823	-0.00778	-0.00983	0.00000	-0.00983
22	0.00566	0.06303	-0.00566	0.00509	0.00000	0.00509
25	0.00177	0.04614	-0.00177	0.00133	0.00000	0.00133
26	0.00177	0.04614	-0.00177	-0.00133	0.00000	-0.00133
SUM	0.06647	1.10551	-0.06647	-0.01793	0.00000	-0.01793

Condition **LC45=1.2D+WL150**

8	0.00532	0.07474	-0.00532	0.00235	0.00000	0.00235
9	0.00246	0.04394	-0.00246	-0.00160	0.00000	-0.00160
10	0.00990	0.06626	-0.00990	-0.02080	0.00000	-0.02080
11	0.01344	0.15386	-0.01344	0.00880	0.00000	0.00880
12	0.00707	0.10534	-0.00707	0.00059	0.00000	0.00059
13	0.00707	0.09254	-0.00707	-0.00059	0.00000	-0.00059
17	0.01453	0.16795	-0.01453	-0.01804	0.00000	-0.01804
18	0.01304	0.12731	-0.01304	0.00838	0.00000	0.00838
21	0.01061	0.11823	-0.01061	-0.01351	0.00000	-0.01351
22	0.00778	0.06303	-0.00778	0.00700	0.00000	0.00700
25	0.00212	0.04614	-0.00212	0.00159	0.00000	0.00159
26	0.00212	0.04614	-0.00212	-0.00159	0.00000	-0.00159
SUM	0.09546	1.10551	-0.09546	-0.02743	0.00000	-0.02743

Condition **LC46=1.2D-WL0**

8	0.00000	0.07474	-0.00844	0.00367	0.00000	0.00000
9	0.00000	0.04394	-0.00356	-0.00233	0.00000	0.00000
10	0.00000	0.06626	-0.01600	-0.03363	0.00000	0.00000
11	0.00000	0.15386	-0.02100	0.01304	0.00000	0.00000
12	0.00000	0.10534	-0.01026	0.00106	0.00000	0.00000
13	0.00000	0.09254	-0.01174	-0.00078	0.00000	0.00000
17	0.00000	0.16795	-0.02255	-0.02892	0.00000	0.00000
18	0.00000	0.12731	-0.02045	0.01365	0.00000	0.00000
21	0.00000	0.11823	-0.01800	-0.02261	0.00000	0.00000
22	0.00000	0.06303	-0.01300	0.01170	0.00000	0.00000
25	0.00000	0.04614	-0.00350	0.00263	0.00000	0.00000
26	0.00000	0.04614	-0.00350	-0.00263	0.00000	0.00000
SUM	0.00000	1.10551	-0.15200	-0.04516	0.00000	0.00000

Condition **LC47=1.2D-WL30**

8	-0.00532	0.07474	-0.00532	0.00235	0.00000	-0.00235
9	-0.00246	0.04394	-0.00246	-0.00160	0.00000	0.00160
10	-0.00990	0.06626	-0.00990	-0.02080	0.00000	0.02080
11	-0.01344	0.15386	-0.01344	0.00880	0.00000	-0.00880
12	-0.00707	0.10534	-0.00707	0.00059	0.00000	-0.00059
13	-0.00707	0.09254	-0.00707	-0.00059	0.00000	0.00059
17	-0.01453	0.16795	-0.01453	-0.01804	0.00000	0.01804
18	-0.01304	0.12731	-0.01304	0.00838	0.00000	-0.00838
21	-0.01061	0.11823	-0.01061	-0.01351	0.00000	0.01351
22	-0.00778	0.06303	-0.00778	0.00700	0.00000	-0.00700
25	-0.00212	0.04614	-0.00212	0.00159	0.00000	-0.00159

26	-0.00212	0.04614	-0.00212	-0.00159	0.00000	0.00159
SUM	-0.09546	1.10551	-0.09546	-0.02743	0.00000	0.02743

Condition **LC48=1.2D-WL60**

8	-0.00336	0.07474	-0.00336	0.00162	0.00000	-0.00162
9	-0.00230	0.04394	-0.00230	-0.00145	0.00000	0.00145
10	-0.00636	0.06626	-0.00636	-0.01337	0.00000	0.01337
11	-0.00919	0.15386	-0.00919	0.00657	0.00000	-0.00657
12	-0.00547	0.10534	-0.00547	0.00031	0.00000	-0.00031
13	-0.00443	0.09254	-0.00443	-0.00051	0.00000	0.00051
17	-0.01009	0.16795	-0.01009	-0.01213	0.00000	0.01213
18	-0.00829	0.12731	-0.00829	0.00578	0.00000	-0.00578
21	-0.00778	0.11823	-0.00778	-0.00983	0.00000	0.00983
22	-0.00566	0.06303	-0.00566	0.00509	0.00000	-0.00509
25	-0.00177	0.04614	-0.00177	0.00133	0.00000	-0.00133
26	-0.00177	0.04614	-0.00177	-0.00133	0.00000	0.00133
SUM	-0.06647	1.10551	-0.06647	-0.01793	0.00000	0.01793

Condition **LC49=1.2D-WL90**

8	-0.00382	0.07474	0.00000	0.00000	0.00000	-0.00194
9	-0.00318	0.04394	0.00000	0.00000	0.00000	0.00197
10	-0.00700	0.06626	0.00000	0.00000	0.00000	0.01471
11	-0.01100	0.15386	0.00000	0.00000	0.00000	-0.00869
12	-0.00774	0.10534	0.00000	0.00000	0.00000	-0.00044
13	-0.00626	0.09254	0.00000	0.00000	0.00000	0.00072
17	-0.01028	0.16795	0.00000	0.00000	0.00000	0.01196
18	-0.00872	0.12731	0.00000	0.00000	0.00000	-0.00548
21	-0.00900	0.11823	0.00000	0.00000	0.00000	0.01211
22	-0.00700	0.06303	0.00000	0.00000	0.00000	-0.00630
25	-0.00200	0.04614	0.00000	0.00000	0.00000	-0.00150
26	-0.00200	0.04614	0.00000	0.00000	0.00000	0.00150
SUM	-0.07800	1.10551	0.00000	0.00000	0.00000	0.01862

Condition **LC50=1.2D-WL120**

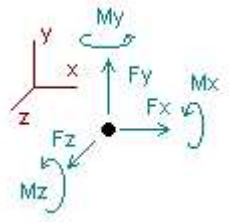
8	-0.00336	0.07474	0.00336	-0.00162	0.00000	-0.00162
9	-0.00230	0.04394	0.00230	0.00145	0.00000	0.00145
10	-0.00636	0.06626	0.00636	0.01337	0.00000	0.01337
11	-0.00919	0.15386	0.00919	-0.00657	0.00000	-0.00657
12	-0.00547	0.10534	0.00547	-0.00031	0.00000	-0.00031
13	-0.00443	0.09254	0.00443	0.00051	0.00000	0.00051
17	-0.01009	0.16795	0.01009	0.01213	0.00000	0.01213
18	-0.00829	0.12731	0.00829	-0.00578	0.00000	-0.00578
21	-0.00778	0.11823	0.00778	0.00983	0.00000	0.00983
22	-0.00566	0.06303	0.00566	-0.00509	0.00000	-0.00509
25	-0.00177	0.04614	0.00177	-0.00133	0.00000	-0.00133
26	-0.00177	0.04614	0.00177	0.00133	0.00000	0.00133
SUM	-0.06647	1.10551	0.06647	0.01793	0.00000	0.01793

Condition **LC51=1.2D-WL150**

8	-0.00532	0.07474	0.00532	-0.00235	0.00000	-0.00235
9	-0.00246	0.04394	0.00246	0.00160	0.00000	0.00160
10	-0.00990	0.06626	0.00990	0.02080	0.00000	0.02080
11	-0.01344	0.15386	0.01344	-0.00880	0.00000	-0.00880
12	-0.00707	0.10534	0.00707	-0.00059	0.00000	-0.00059
13	-0.00707	0.09254	0.00707	0.00059	0.00000	0.00059
17	-0.01453	0.16795	0.01453	0.01804	0.00000	0.01804
18	-0.01304	0.12731	0.01304	-0.00838	0.00000	-0.00838
21	-0.01061	0.11823	0.01061	0.01351	0.00000	0.01351
22	-0.00778	0.06303	0.00778	-0.00700	0.00000	-0.00700
25	-0.00212	0.04614	0.00212	-0.00159	0.00000	-0.00159
26	-0.00212	0.04614	0.00212	0.00159	0.00000	0.00159
SUM	-0.09546	1.10551	0.09546	0.02743	0.00000	0.02743

Envelope for nodal reactions

Note.- **Ic** is the controlling load condition



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60

LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D
LC40=1.2D+WL0
LC41=1.2D+WL30
LC42=1.2D+WL60
LC43=1.2D+WL90
LC44=1.2D+WL120
LC45=1.2D+WL150
LC46=1.2D-WL0
LC47=1.2D-WL30
LC48=1.2D-WL60
LC49=1.2D-WL90
LC50=1.2D-WL120
LC51=1.2D-WL150

		Forces						Moments					
Node		**Fx** [Kip]	**lc**	**Fy** [Kip]	**lc**	**Fz** [Kip]	**lc**	**Mx** [Kip*ft]	**lc**	**My** [Kip*ft]	**lc**	**Mz** [Kip*ft]	**lc**
8	Max	0.095	LC4	0.164	LC25	0.145	LC1	0.06302	LC7	0.00000	LC1	0.03944	LC2
	Min	-0.095	LC10	0.056	LC13	-0.145	LC7	-0.06302	LC1	0.00000	LC1	-0.03944	LC8
9	Max	0.079	LC16	0.103	LC25	0.061	LC13	0.03981	LC13	0.00000	LC1	0.03642	LC22
	Min	-0.079	LC22	0.033	LC13	-0.061	LC19	-0.03981	LC19	0.00000	LC1	-0.03642	LC16
10	Max	0.169	LC2	0.219	LC25	0.278	LC1	0.58425	LC1	0.00000	LC1	0.35517	LC8
	Min	-0.169	LC8	0.050	LC13	-0.278	LC7	-0.58425	LC7	0.00000	LC1	-0.35517	LC2
11	Max	0.229	LC4	0.365	LC25	0.364	LC1	0.22519	LC19	0.00000	LC1	0.17494	LC16
	Min	-0.229	LC10	0.115	LC13	-0.364	LC7	-0.22519	LC13	0.00000	LC1	-0.17494	LC22
12	Max	0.141	LC4	0.219	LC25	0.177	LC1	0.01533	LC19	0.00000	LC1	0.00939	LC14
	Min	-0.141	LC10	0.079	LC13	-0.177	LC7	-0.01533	LC13	0.00000	LC1	-0.00939	LC20
13	Max	0.117	LC4	0.203	LC25	0.181	LC1	0.01450	LC1	0.00000	LC1	0.01339	LC10
	Min	-0.117	LC10	0.069	LC13	-0.181	LC7	-0.01450	LC7	0.00000	LC1	-0.01339	LC4
17	Max	0.246	LC18	0.398	LC25	0.401	LC1	0.51524	LC1	0.00000	LC1	0.31172	LC8
	Min	-0.246	LC24	0.126	LC13	-0.401	LC7	-0.51524	LC7	0.00000	LC1	-0.31172	LC2
18	Max	0.221	LC2	0.323	LC25	0.365	LC1	0.24303	LC19	0.00000	LC1	0.14676	LC14
	Min	-0.221	LC8	0.095	LC13	-0.365	LC7	-0.24303	LC13	0.00000	LC1	-0.14676	LC20
21	Max	0.194	LC4	0.289	LC25	0.303	LC1	0.38570	LC1	0.00000	LC1	0.24061	LC8
	Min	-0.194	LC10	0.089	LC13	-0.303	LC7	-0.38570	LC7	0.00000	LC1	-0.24061	LC2
22	Max	0.158	LC16	0.185	LC25	0.222	LC1	0.19977	LC19	0.00000	LC1	0.12993	LC16
	Min	-0.158	LC22	0.047	LC13	-0.222	LC7	-0.19977	LC13	0.00000	LC1	-0.12993	LC22
25	Max	0.062	LC4	0.085	LC25	0.060	LC1	0.04500	LC7	0.00000	LC1	0.02987	LC16
	Min	-0.062	LC10	0.035	LC13	-0.060	LC7	-0.04500	LC1	0.00000	LC1	-0.02987	LC22
26	Max	0.062	LC4	0.085	LC25	0.060	LC1	0.04500	LC1	0.00000	LC1	0.02988	LC10
	Min	-0.062	LC10	0.035	LC13	-0.060	LC7	-0.04500	LC7	0.00000	LC1	-0.02988	LC4

Date: 5-2-2022
Project Name: MANCHESTER SOUTH CENTRAL
Project No.: CT5322
Designed By: SR **Checked By:** MSC

HUDSON Design Group LLC

Forces on Steel Tension Bands:

Lateral Forces:

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

***(2 steel bands are installed; therefore, the weight and ice load of equipment is assumed to be divided by 2.**

Item	Weight (lbs.)	Qty.	Total (lbs.)
AIR6449 Antenna	196	3	588
AIR6419 Antenna	175	3	525
DMP65R-BU6DA Antenna	386	3	1158
4415 B25 RRH	95	3	285
4449 B5/B12 RRH	131	3	393
Surge Arrestor	97	3	291
Mount Pipe	101	9	911.52
Miscellaneous	100	-	100
		Total =	4251.52 lbs.

Amount of Bands = 2

Tension per Band = 2125.76 lbs.

Linear Load per Band= 64.42 plf

Calculate Approximate Weight of 1/4" Thick Band:

Weight of Steel	490	lb/ft^3
Width	0.29	ft.
Thickness	0.02083	ft.

Total Weight per Band= 3.0 plf

Date: 5-2-2022
Project Name: MANCHESTER SOUTH CENTRAL
Project No.: CT5322
Designed By: SR Checked By: MSC

HUDSON Design Group LLC

Total Gravity Force per Band=

64.42 lbs.
3.0 plf

Total = 67.4 plf

CHECK FRICTION FORCES

Friction Equation = $F_s = \mu_s N$

Force of static friction	**F_s =**	67.4	plf
Coefficient of static friction	**μ_s =**	0.7	(steel on brick)
Force required on band	**N =**	96.3	
	Factor of Safety =	1.5	
Force required on band	**N_T =**	144.4	plf

Date: 5-2-2022
Project Name: MANCHESTER SOUTH CENTRAL
Project No.: CT5322
Designed By: SR **Checked By:** MSC

HUDSON Design Group LLC

CHECK CONNECTION CAPACITY (Worst Case)

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

Bolt Type =	Threaded Rod	
Bolt Diameter =	1/2	in.
Steel Grade =	A36	

Allowable Tensile Load =

F_{Tall} = 4271 lbs.

Allowable Shear Load =

F_{Vall}= 2562 lbs.

Tension Forces

Gravity load of Equipment = 144.4 plf

Circumference of Smokestack = 33.0 ft

Total Tension = 4765 lbs.

No. of Knuckle Supports =	3
No. of Bolts / Support =	2

Tension Design Load /Bolts =

f_t= 794.20 lbs. < 4271 lbs. **Therefore, OK !**

EXHIBIT 5

Radio Frequency Exposure Analysis Report

October 11, 2022

Centerline on behalf of AT&T

AT&T Site Name: MANCHESTER SOUTH CENTRAL
AT&T Site Number: CT5322
FA#: 10071101
USID: 25947

Site Address: 63 ELM STREET, MANCHESTER, CT 06040

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

Signed 11 October 2022

Site Compliance Summary

AT&T Compliance Status:	Compliant
Cumulative Calculated Power Density (Ground Level):	1.36014 µW/cm^2
Cumulative General Population % MPE (Ground Level):	0.16015%

October 11, 2022

Centerline
Attn: Michael Gentile, Associate Project Manager
750 W Center St, Suite 301
West Bridgewater, MA 02379

RF Exposure Analysis for Site: **MANCHESTER SOUTH CENTRAL**

Centerline Communications, LLC ("Centerline") was contracted to analyze the proposed AT&T facility at **63 ELM STREET, MANCHESTER, CT 06040** for the purpose of determining whether the predictive exposure from the proposed facility is within specified federal limits.

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

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

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

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

Calculation Methodology

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

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

Data & Results

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

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

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

Maximum Calculated Cumulative Power Density @ Ground Level (Location: approximately 10' north of site)

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density ($\mu W/cm^2$)	General Population MPE Limit ($\mu W/cm^2$)	General Population % MPE
AT&T A 1	ERICSSON AIR6449	3700	23.55	173.50	1.00	108.40	24548.74	0.47257	1000.00	0.04726
AT&T A 2	ERICSSON AIR6419	3450	23.55	176.50	1.00	108.40	24548.74	0.45738	1000.00	0.04574
AT&T A 3	KATHREIN 80010768	700	12.45	165.00	2.00	30.00	1054.75	0.02176	466.67	0.00466
AT&T A 3	KATHREIN 80010768	2300	15.58	165.00	4.00	18.00	2602.15	0.02488	1000.00	0.00249
AT&T A 4	KATHREIN 80010965	700	11.85	165.00	4.00	30.00	1837.30	0.04098	466.67	0.00878
AT&T A 4	KATHREIN 80010965	2100	16.55	165.00	4.00	45.00	8133.41	0.07152	1000.00	0.00715
AT&T A 5	CCI DMP65R-BU6D	700	11.35	175.00	4.00	30.00	1637.50	0.04284	466.67	0.00918
AT&T A 5	CCI DMP65R-BU6D	850	11.35	175.00	4.00	30.00	1637.50	0.03759	566.67	0.00663
AT&T A 5	CCI DMP65R-BU6D	1900	14.95	175.00	4.00	30.00	3751.30	0.03693	1000.00	0.00369
AT&T B 6	ERICSSON AIR6449	3700	23.55	173.50	1.00	108.40	24548.74	0.00361	1000.00	0.00036
AT&T B 7	ERICSSON AIR6419	3450	23.55	176.50	1.00	108.40	24548.74	0.00349	1000.00	0.00035
AT&T B 8	KATHREIN 80010768	700	12.45	165.00	2.00	30.00	1054.75	0.00005	466.67	0.00001
AT&T B 8	KATHREIN 80010768	2300	15.58	165.00	4.00	18.00	2602.15	0.00009	1000.00	0.00001
AT&T B 9	KATHREIN 80010965	700	12.15	165.00	4.00	30.00	1968.71	0.00011	466.67	0.00002
AT&T B 9	KATHREIN 80010965	2100	16.55	165.00	4.00	45.00	8133.41	0.00008	1000.00	0.00001
AT&T B 10	CCI DMP65R-BU6D	700	11.75	175.00	4.00	30.00	1795.48	0.00007	466.67	0.00002
AT&T B 10	CCI DMP65R-BU6D	850	11.35	175.00	4.00	30.00	1637.50	0.00005	566.67	0.00001
AT&T B 10	CCI DMP65R-BU6D	1900	14.95	175.00	4.00	30.00	3751.30	0.00016	1000.00	0.00002
AT&T C 11	ERICSSON AIR6449	3700	23.55	173.50	1.00	108.40	24548.74	0.00361	1000.00	0.00036
AT&T C 12	ERICSSON AIR6419	3450	23.55	176.50	1.00	108.40	24548.74	0.00349	1000.00	0.00035
AT&T C 13	KATHREIN 80010768	700	12.45	165.00	2.00	30.00	1054.75	0.00006	466.67	0.00001
AT&T C 13	KATHREIN 80010768	2300	15.58	165.00	4.00	18.00	2602.15	0.00014	1000.00	0.00001
AT&T C 14	KATHREIN 80010965	700	11.85	165.00	4.00	30.00	1837.30	0.00014	466.67	0.00003
AT&T C 14	KATHREIN 80010965	2100	16.55	165.00	4.00	45.00	8133.41	0.00004	1000.00	0.00000
AT&T C 15	CCI DMP65R-BU6D	700	11.25	175.00	4.00	30.00	1600.23	0.00008	466.67	0.00002
AT&T C 15	CCI DMP65R-BU6D	850	11.35	175.00	4.00	30.00	1637.50	0.00002	566.67	0.00000
AT&T C 15	CCI DMP65R-BU6D	1900	14.95	175.00	4.00	30.00	3751.30	0.00001	1000.00	0.00000
T-Mobile A 16	GENERIC PANEL 6FT	1900	15.84	193.50	2.00	60.00	4604.49	0.03223	1000.00	0.00322
T-Mobile A 17	GENERIC PANEL 6FT	600	12.33	185.00	2.00	60.00	2052.02	0.03434	400.00	0.00858
T-Mobile A 17	GENERIC PANEL 6FT	700	12.33	185.00	2.00	60.00	2052.02	0.03434	466.67	0.00736
T-Mobile A 18	GENERIC PANEL 6FT	2100	16.39	185.00	2.00	60.00	5226.14	0.03696	1000.00	0.00370
T-Mobile B 19	GENERIC PANEL 6FT	1900	15.84	193.50	2.00	60.00	4604.49	0.00001	1000.00	0.00000
T-Mobile B 20	GENERIC PANEL 6FT	600	12.33	185.00	2.00	60.00	2052.02	0.00015	400.00	0.00004
T-Mobile B 20	GENERIC PANEL 6FT	700	12.33	185.00	2.00	60.00	2052.02	0.00015	466.67	0.00003
T-Mobile B 21	GENERIC PANEL 6FT	2100	16.39	185.00	2.00	60.00	5226.14	0.00001	1000.00	0.00000

Antenna ID	Make / Model	Frequency Band (MHz)	Antenna Gain (dBd)	Antenna Centerline (ft)	Channel Count	TX Power/ Channel (watts)	ERP (watts)	Calculated Power Density ($\mu W/cm^2$)	General Population MPE Limit ($\mu W/cm^2$)	General Population % MPE
T-Mobile C 22	GENERIC PANEL 6FT	1900	15.84	193.50	2.00	60.00	4604.49	0.00005	1000.00	0.00001
T-Mobile C 23	GENERIC PANEL 6FT	600	12.33	185.00	2.00	60.00	2052.02	0.00007	400.00	0.00002
T-Mobile C 23	GENERIC PANEL 6FT	700	12.33	185.00	2.00	60.00	2052.02	0.00007	466.67	0.00002
T-Mobile C 24	GENERIC PANEL 6FT	2100	16.39	185.00	2.00	60.00	5226.14	0.00003	1000.00	0.00000
							Cumulative Power Density:	**1.36014 $\mu W/cm^2$**	**Cumulative % MPE:**	**0.16015%**

Summary

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

Katrina Styx
RF EME Technical Writer
Centerline Communications, LLC

EXHIBIT 6

Proof of Delivery

Dear Customer,

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

Tracking Number

1Z9Y45030317787491

Weight

1.00 LBS

Service

UPS Ground

Shipped / Billed On

10/26/2022

Delivered On

11/11/2022 1:04 P.M.

Delivered To

342 N MAIN ST
WEST HARTFORD, CT, 06117, US

Received By

MARYLIN

Left At

Inside Delivery

Reference Number(s)

CT5322-CSC_CLOCK TOWER MILL

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

Sincerely,

UPS

Tracking results provided by UPS: 11/14/2022 9:54 A.M. EST

Your shipment from

CENTERLINE SITE ACQUISITION

Estimated delivery

Today, November 14 by 7:00 P.M.

- Label Created
- On the Way
- **Out for Delivery**
- Delivery

Ship To

LINCOLN CENTER PLANNING DEPARTMENT
GARY ANDERSON- DIRECTOR OF PLANNING
494 MAIN STREET
2ND FLOOR, PO BOX 191
MANCHESTER, CT 060404102 US

Get Updates > | Change My Delivery | View Details

UPS CampusShip®

Shipping Tracking Business Solutions Support

Your shipment from

CENTERLINE SITE ACQUISITION

Estimated delivery

Today, November 14 between 9:45 A.M. - 12:45 P.M.

- Label Created
- On the Way
- **Out for Delivery**
- Delivery

Ship To

MANCHESTER BOARD OF DIRECTORS
JAY MORAN, MAYOR
41 CENTER STREET
MANCHESTER, CT 060405067 US

Get Updates > Change My Delivery View Details

UPS CampusShip®

Shipping Tracking Business Solutions Support

Your shipment from

CENTERLINE SITE ACQUISITION

Estimated delivery

Today, November 14 by 7:00 P.M.

- Label Created
- On the Way
- **Out for Delivery**
- Delivery

Ship To

BUILDING DEPARTMENT
JAMES DAVIS, ZEO
494 MAIN STREET
MANCHESTER, CT 060404102 US

Get Updates > Change My Delivery View Details