June 29, 2022

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

Regarding: Notice of Exempt Modification – AT&T Site CT3461 / FA# 10578401
Address: 383 Middle Street, Bristol, CT 06010

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains a wireless telecommunications facility on an existing +/- 127' smokestack at the above-referenced address, latitude 41.6601400, longitude -72.9100000. Said smokestack is owned and operated by Bristol Sports Center LeaseCo, L.L.C.

AT&T desires to modify its existing telecommunications facility by swapping six (6) antennas, adding three (3) antennas, swapping three (3) remote radio units (RRUS), swapping one (1) surge arrestor and accompanying feedlines, and swapping mounts as more particularly detailed and described on the enclosed Construction Drawings prepared by Hudson Design Group, last revised June 22, 2022. The centerline height of the existing antennas is at 120 feet. Three (3) antennas (Alpha Sector) are to remain at 120 feet, while six (6) antennas (Beta and Gamma Sector) are being relocated to 110 feet. This modification may include B2, B5, B17, B14, B29, B30, B66, & n77 hardware that is 4G(LTE) and/or 5GNR capable through remote software configuration and either or both services may be turned off at various times.

Please accept this letter as notification pursuant to R.C.S.A §16-50j-73 for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the following individuals: The Honorable Jeffrey Caggiano, Mayor of the City of Bristol, as elected official, Ed Spyros, Zoning Enforcement Officer of the City of Bristol, Bob Flanagan, City Planner of the City of Bristol, and Bristol Sports Center LeaseCo, L.L.C., as tower operator and property owner. We have reached out to the Building and Zoning Departments for the City of Bristol 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 June 9, 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 Jeffrey Caggiano, Mayor, City of Bristol, elected official
Ed Spyros, Zoning Enforcement Officer, City of Bristol
Bob Flanagan, City Planner, City of Bristol
Bristol Sports Center LeaseCo, L.L.C., as tower operator and property owner

EXHIBIT 1

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING SMOKESTACK:
- NEW AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6449 B77D (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: QD8616-7 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- RELOCATED AT&T ANTENNAS: DMP65R-BU8DA (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- RELOCATED AT&T RRUS: 8843 B2/B66A (TO POS. 2)
- RELOCATED AT&T RRUS: E2 B29 (TO POS. 2)
- RELOCATED AT&T RRUS: 4449 B5/B12 (TO POS. 4)
- RELOCATED AT&T RRUS: 32 B30 (TO POS. 4)
- NEW AT&T RRUS: 4478 B14 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T SURGE ARRESTOR: DC9-48-60-24-PC16-EV (TOTAL OF 1).
- NEW AT&T SECTOR MOUNT (SITEPRO1 PART# VFA14-H10-2120) (TYP. OF 1 PER BETA & GAMMA SECTORS, TOTAL OF 2)
- INSTALL (1) 6 AWG DC TRUNK & (1) 24 PAIR FIBER TRUNK
- INSTALL (6) Y-CABLES (2 PER SECTOR)

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- INSTALL NEW FLX21 PURCELL (DECOM CRICKET CABINET).
- ADD 6648 + XCEDE IN PURCELL
- INSTALL (3) -48V RECTIFIERS FOR A TOTAL OF (10) RECTIFIERS INSIDE NESTURE 512 OD CABINET.

ITEMS TO BE REMOVED:
- EXISTING AT&T ANTENNAS: HPA-65R-BUU-H8 (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T SURGE ARRESTOR: DC6-48-60-18-8F (TOTAL OF 1)

ITEMS TO REMAIN:
- (3) ANTENNAS, (12) RRU'S, (2) SURGE ARRESTOR, (6) DC POWER & (2) FIBER.

SITE ADDRESS:	383 MIDDLE STREET BRISTOL, CT 06010
LATITUDE:	41.6601388° N, 41° 39' 36.5" N
LONGITUDE:	72.9146666° W, 72° 54' 52.8" W
TYPE OF SITE:	SMOKESTACK / INDOOR EQUIPMENT
STRUCTURE HEIGHT:	127'-0"±
RAD CENTER:	120'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	B
GN-1	GENERAL NOTES	B
A-1	COMPOUND & EQUIPMENT PLANS	B
A-2	ANTENNA LAYOUTS	B
A-3	ELEVATION	B
A-4	DETAILS	B
A-5	DETAILS	B
SN-1	STRUCTURAL NOTES	B
G-1	GROUNDING DETAILS	B
RF-1	RF PLUMBING DIAGRAM	B

SITE NUMBER: CTL03461

SITE NAME: BRISTOL MIDDLE STREET

FA CODE: 10578401

PACE ID: MRCTB055944, MRCTB055333, MRCTB054271, MRCTB053711, MRCTB053706, MRCTB056438

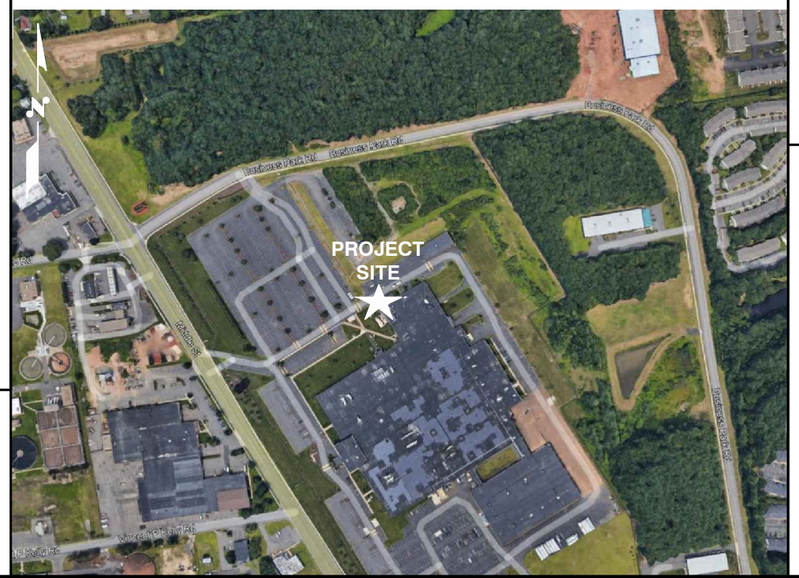
PROJECT: 5G NR 1SR CBAND, LTE NEXT CARRIER, LTE 7C, 5G NR RADIO, BBU RECONFIGURATION UPGRADE

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 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN.MERGE ONTO CT-9 N VIA EXIT 22N TOWARD NEW BRITAIN.MERGE ONTO CT-72 W VIA EXIT 28 ON THE LEFT TOWARD BRISTOL.STAY STRAIGHT TO GO ONTO PINE ST.TURN LEFT ONTO MIDDLE ST/CT-229.383 MIDDLE ST, BRISTOL, CT 06010-7465, 383 MIDDLE ST.



GENERAL NOTES

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

72 HOURS

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

UNDERGROUND SERVICE ALERT

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

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

SITE NUMBER: CTL03461
SITE NAME: BRISTOL MIDDLE STREET

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

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A	06/01/22	ISSUED FOR REVIEW	JS	DPH	DPH

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

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

AT&T

TITLE SHEET
5G NR 1SR CBAND, LTE NEXT CARRIER, LTE 7C, 5G NR RADIO, BBU RECONFIGURATION UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL03461	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 OF ANTENNAS	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

HUDSON Design Group LLC
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TEL: (978) 557-5553
FAX: (978) 336-5586

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

SITE NUMBER: CTL03461
SITE NAME: BRISTOL MIDDLE STREET

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

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

AT&T

GENERAL NOTES
5G NR 1SR CBAND, LTE NEXT CARRIER, LTE 7C, 5G NR RADIO, BBU RECONFIGURATION UPGRADE

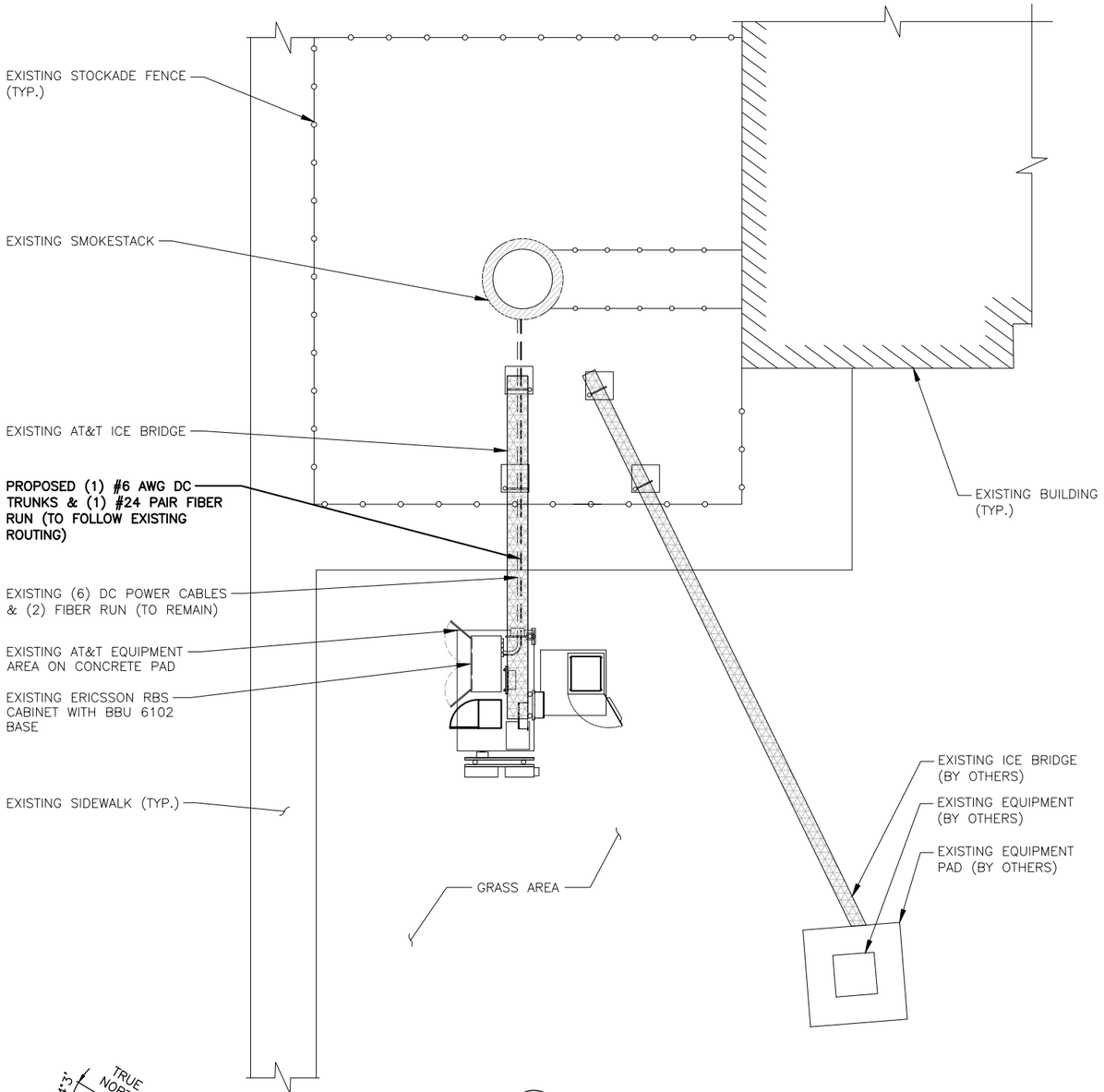
SITE NUMBER	DRAWING NUMBER	REV
CTL03461	GN-1	B

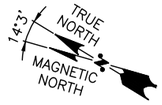
NOTE:

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

NOTE:

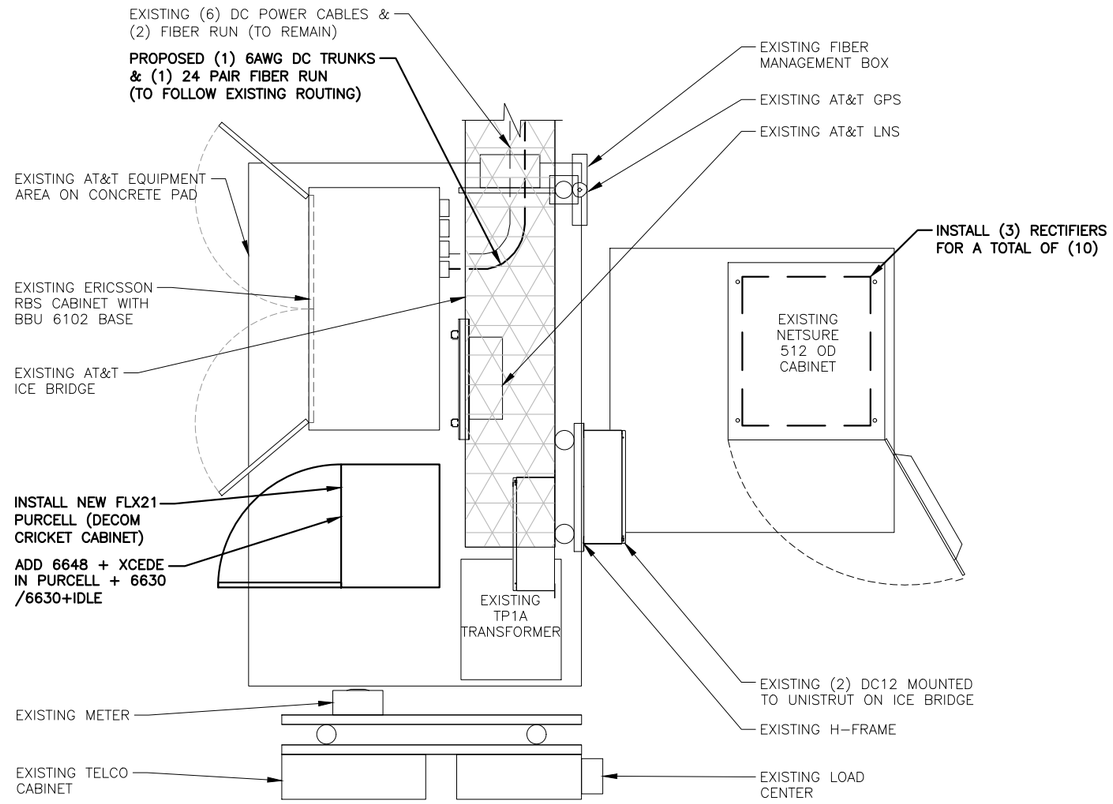
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

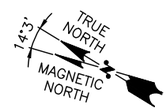




COMPOUND PLAN (1 / A–1)
22x34 SCALE: 3/16"=1'–0"
11x17 SCALE: 3/32"=1'–0"

0 2'–8" 5'–4" 10'–8" 16'–0"





EQUIPMENT PLAN (2 / A–1)
22x34 SCALE: 3/4"=1'–0"
11x17 SCALE: 3/8"=1'–0"

0 1'–4" 2'–8" 4'–0"

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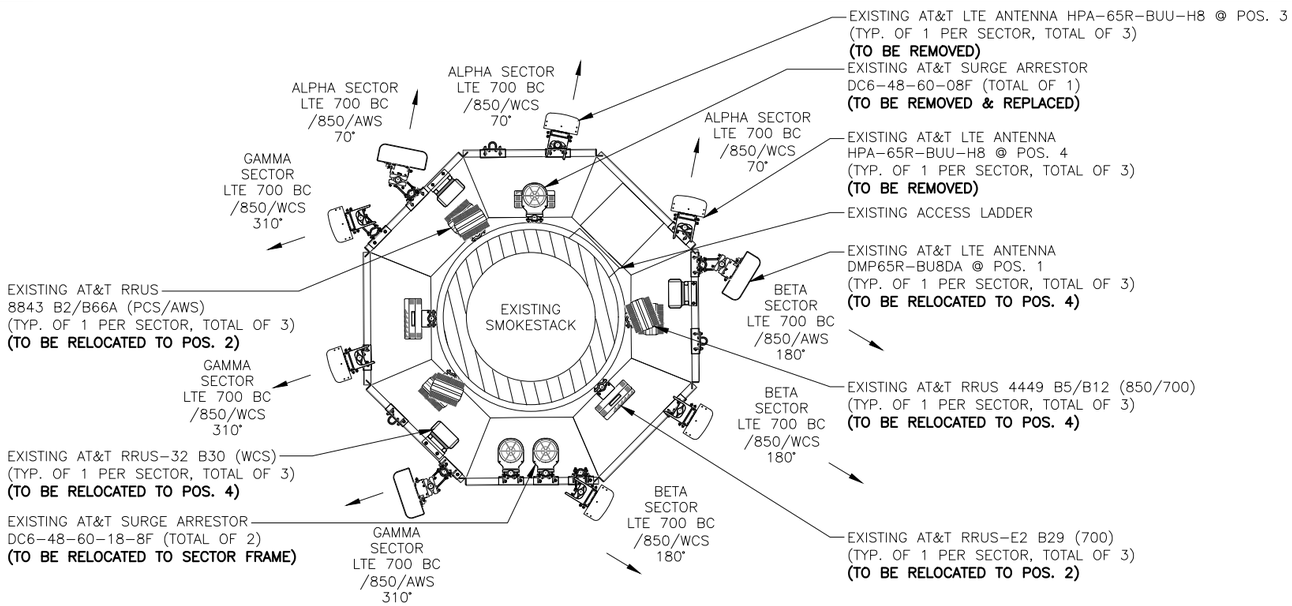
AT&T

COMPOUND & EQUIPMENT PLANS
5G NR ISR CBAND, LTE NEXT CARRIER, LTE 7C, 5G NR RADIO, BBU RECONFIGURATION UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL03461	A–1	B



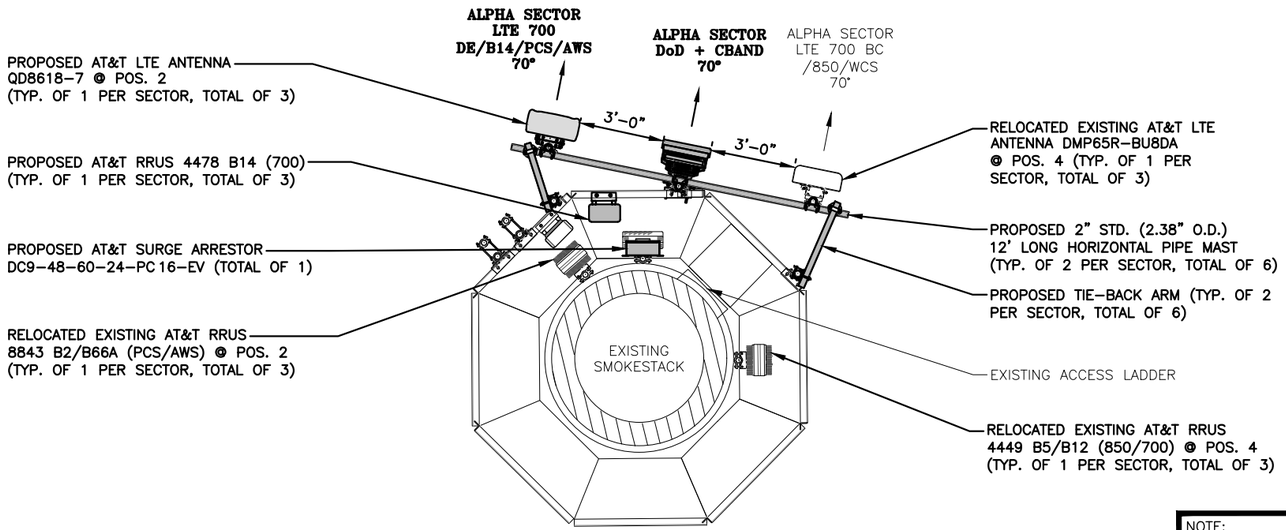
14.3° TRUE NORTH MAGNETIC NORTH

EXISTING ANTENNA LAYOUT (ALPHA SECTOR)

1 / A-2

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

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



14.3° TRUE NORTH MAGNETIC NORTH

PROPOSED ANTENNA LAYOUT (ALPHA SECTOR)

2 / A-2

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

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

NOTE:

EXISTING BETA & GAMMA SECTOR DMP ANTENNAS AND RADIOS TO BE RELOCATED ON VFA MOUNTS @ RAD CENTER 110'-0"

NOTE:

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

NOTE:

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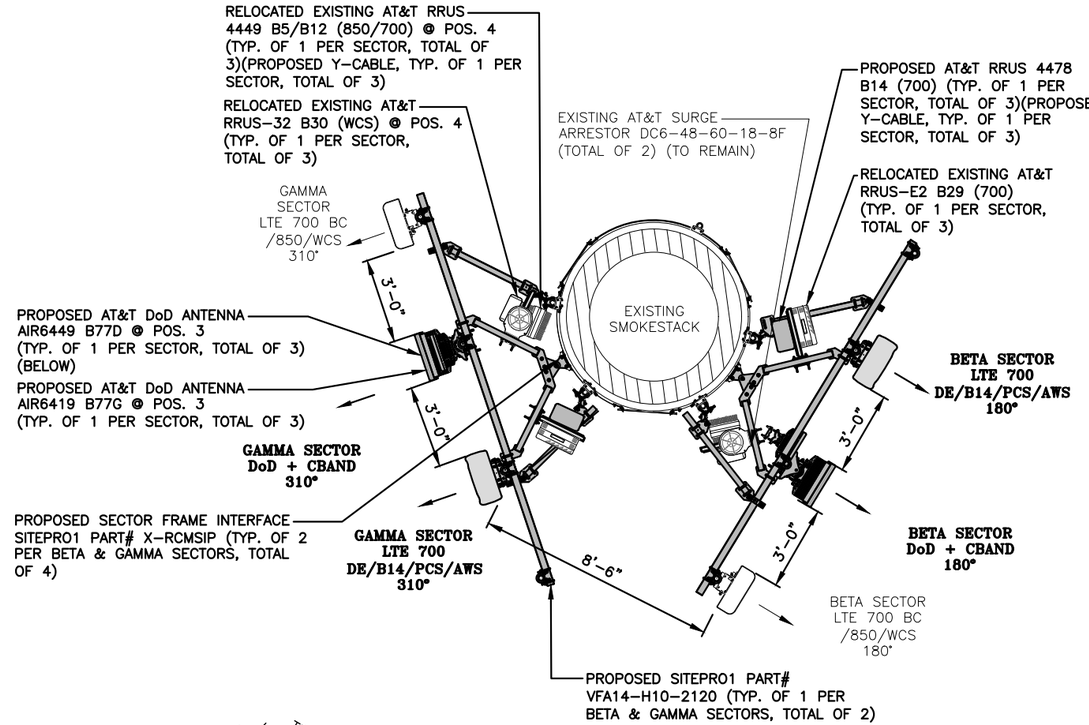
NOTE:

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



14.3° TRUE NORTH MAGNETIC NORTH

PROPOSED ANTENNA LAYOUT (BETA & GAMMA SECTORS)

3 / A-2

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

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

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

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

SITE NUMBER: CTL03461
SITE NAME: BRISTOL MIDDLE STREET

383 MIDDLE STREET
BRISTOL, CT 06010
HARTFORD COUNTY

NO.	DATE	REVISIONS	BY	CHK	APP
B	06/22/22	ISSUED FOR PERMITTING	SS	AT	DPH
A	06/01/22	ISSUED FOR REVIEW	SS	DPH	DPH

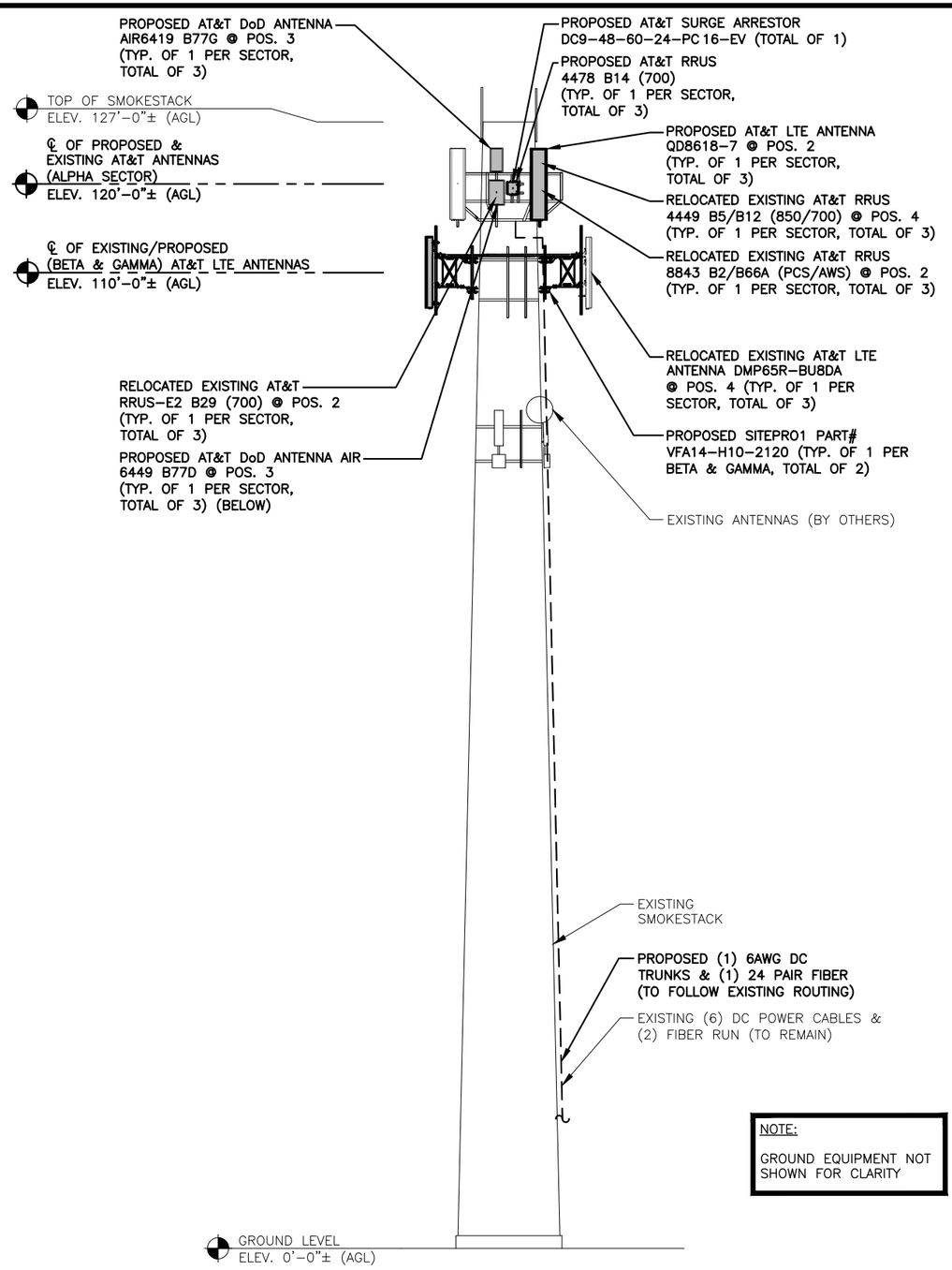
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: JS

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

AT&T

ANTENNA LAYOUTS
5G NR 1SR CBAND, LTE NEXT CARRIER, LTE 7C, 5G NR RADIO, BBU RECONFIGURATION UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL03461	A-2	B



NOTE:

GROUND EQUIPMENT NOT SHOWN FOR CLARITY

ELEVATION 1 A-3

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

0 4'-0" 8'-0" 16'-0" 24'-0"

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NOTE:

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NOTE:

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

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

AT&T

ELEVATION
5G NR 1SR CBAND, LTE NEXT CARRIER, LTE 7C, 5G NR RADIO, BBU RECONFIGURATION UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL03461	A-3	B

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	ANTENNA TIP HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EMPTY	–	–	–	–	–	–	–	–	–	–	(P)(1) DC9-48-60-24-PC 16-EV
A2	**PROPOSED**	LTE 700 BC/850/WCS	**QD8616-7**	**96"X22"X9.6"**	**120'-0"±**	**124'-0"**	70°	–	(E)(1) 8843 B2/B66A (E)(1) RRUS-E2 B29 **(P)(1) 4478 B14**	14.9"x13.2"x10.9" 20.4"x18.5"x7.5" **18.1"x13.4"x8.3"**	– – **(P)(1) Y-CABLE**	
A3	**PROPOSED**	LTE B-14/AWS	**AIR6419 B77G AIR6449 B77 (STACKED)**	**30.4"X15.9"X8.1**	**120'-0"±**	**124'-0"**	70°	–	–	–	(E)(2) DC CABLES **(P)(1) #6 AWG DC CABLES (P)(1) 24 PAIR FIBER**	
A4	**PROPOSED**	LTE 700 BC/850/PCS	**DMP65R-BU8DA**	**96X20.7X7.7**	**120'-0"±**	**124'-0"**	70°	–	(E)(1) 4449 B5/B12 (850/700) (E)(1) RRUS-32 B30	17.9"x13.2"x10.4" 27.2"x12.1"x7.0"	**(P)(1) Y-CABLE** –	
A1	EMPTY	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18
B2	**PROPOSED**	LTE 700 BC/850/WCS	**QD8616-7**	**96"X22"X9.6"**	**110'-0"±**	**114'-0"**	180°	–	(E)(1) 8843 B2/B66A (E)(1) RRUS-E2 B29 **(P)(1) 4478 B14**	14.9"x13.2"x10.9" 20.4"x18.5"x7.5" **18.1"x13.4"x8.3"**	–	
B3	**PROPOSED**	LTE B-14/AWS	**AIR6419 B77G AIR6449 B77 (STACKED)**	**30.4"X15.9"X8.1**	**110'-0"±**	**114'-0"**	180°	–	–	–	(E)(2) DC POWER & (E)(1) FIBER	
B4	**PROPOSED**	LTE 700 BC/850/PCS	**DMP65R-BU8DA**	**96X20.7X7.7**	**110'-0"±**	**114'-0"**	180°	–	(E)(1) 4449 B5/B12 (850/700) (E)(1) RRUS-32 B30	17.9"x13.2"x10.4" 27.2"x12.1"x7.0"	**(P)(1) Y-CABLE** –	
C1	EMPTY	–	–	–	–	–	–	–	–	–	–	(E) (1) RAYCAP DC6-48-60-18
C2	**PROPOSED**	LTE 700 BC/850/WCS	**QD8616-7**	**96"X22"X9.6"**	**110'-0"±**	**114'-0"**	310°	–	(E)(1) 8843 B2/B66A (E)(1) RRUS-E2 B29 **(P)(1) 4478 B14**	14.9"x13.2"x10.9" 20.4"x18.5"x7.5" **18.1"x13.4"x8.3"**	–	
C3	**PROPOSED**	LTE B-14/AWS	**AIR6419 B77G AIR6449 B77 (STACKED)**	**30.4"X15.9"X8.1**	**110'-0"±**	**114'-0"**	310°	–	–	–	(E)(2) DC POWER & (E)(1) FIBER	
C4	**PROPOSED**	LTE 700 BC/850/PCS	**DMP65R-BU8DA**	**96X20.7X7.7**	**110'-0"±**	**114'-0"**	310°	–	(E)(1) 4449 B5/B12 (850/700) (E)(1) RRUS-32 B30	17.9"x13.2"x10.4" 27.2"x12.1"x7.0"	**(P)(1) Y-CABLE** –	

NOTE:

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NOTE:

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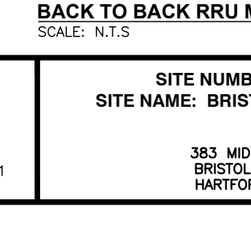
FINAL ANTENNA SCHEDULE (1 / A-4)

SCALE: N.T.S

RRU CHART		
QUANTITY	**MODEL**	**SIZE (L x W x D)**
P(3)	**4478 B14 (700)**	**18.1"x13.4"x8.3"**
E(3)	8843 B2/B66A (PCS/AWS)	14.9"x13.2"x10.9"
E(3)	RRUS-E2 B29 (700)	20.4"x18.5"x7.5"
E(3)	4449 B5/B12 (850/700)	17.9"x13.2"x10.4"
E(3)	RRUS-32 B30 (WCS)	27.2"x12.1"x7.0"
NOTE: MOUNT PER MANUFACTURER'S SPECIFICATIONS		

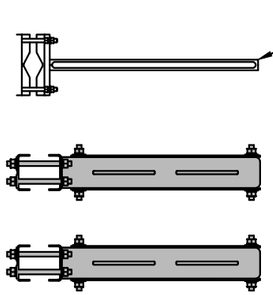


PROPOSED SURGE PROTECTOR MODEL NUMBER: DC9-48-60-24-PC16-EV
DIMENSIONS: H18.93"x15.92"x8.15"
WITH BRACKET: H18.93"x15.92"x9.64"

NOTE: MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (3 / A-4)

SCALE: N.T.S



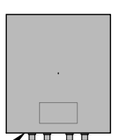
PROPOSED DUAL RRU MOUNT, ROSENBERGER PART #D220RRUDSM (TYP. OF 1 PER SECTOR, TOTAL OF 3)

BACK TO BACK RRU MOUNT DETAIL (4 / A-4)

SCALE: N.T.S

NOTE:

SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

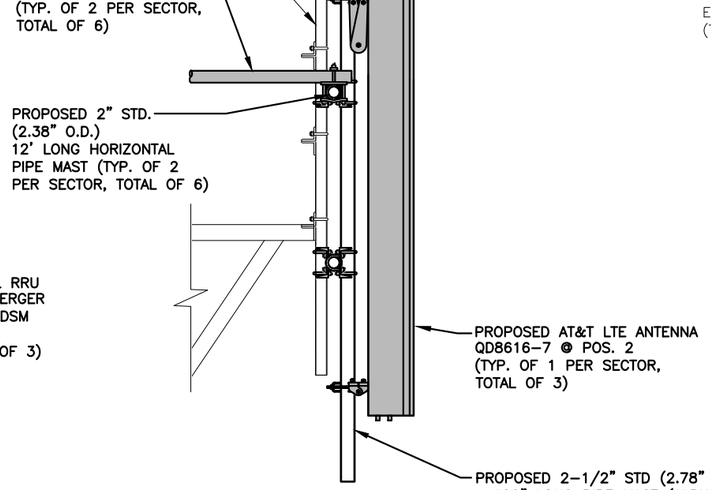


PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE: MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (2 / A-4)

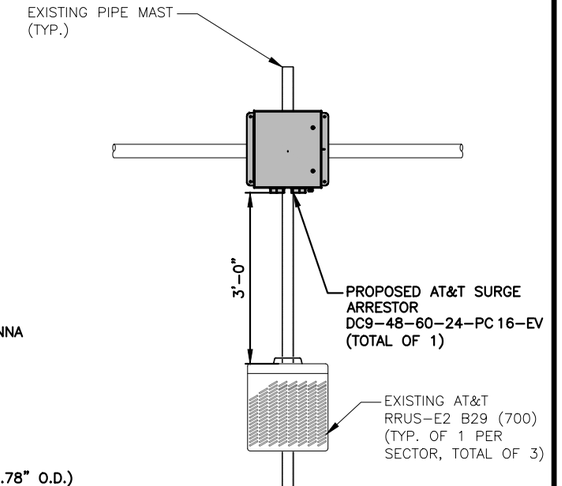
SCALE: N.T.S



PROPOSED POS. 2 MOUNTING DETAIL (ALPHA SECTOR) (5 / A-4)

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 (ALPHA SECTOR) (6 / A-4)

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
5G NR 1SR CBAND, LTE NEXT CARRIER, LTE 7C, 5G NR RADIO, BBU RECONFIGURATION UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL03461	A-4	B

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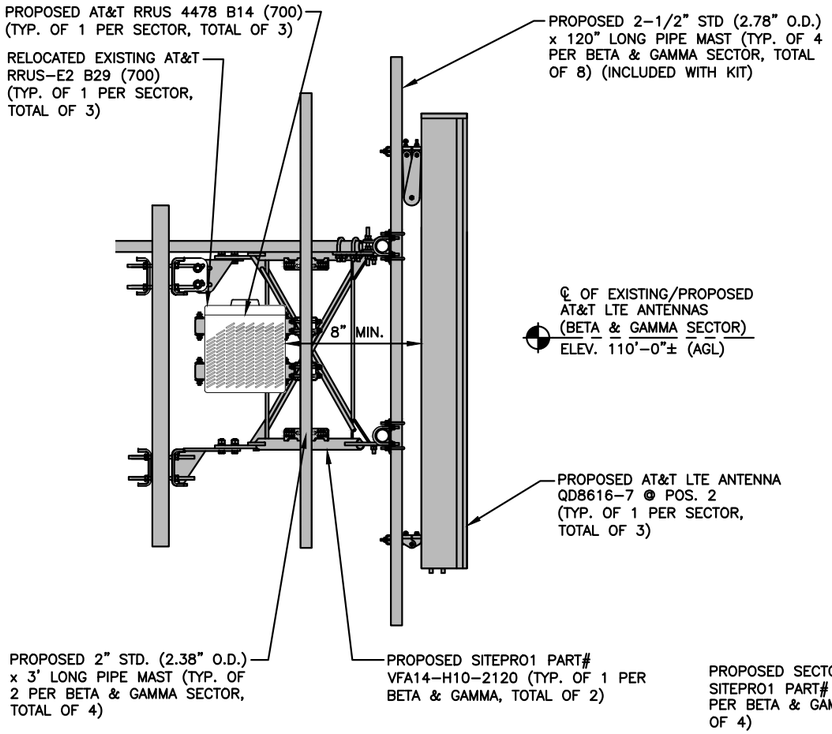
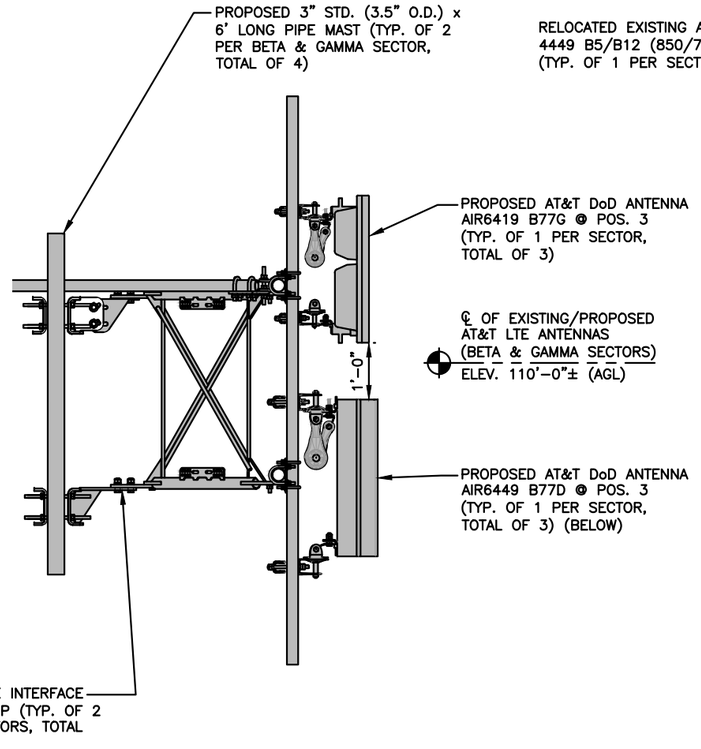


PROPOSED POS. 2
MOUNTING DETAIL
(BETA & GAMMA SECTOR) (1 / A-5)

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

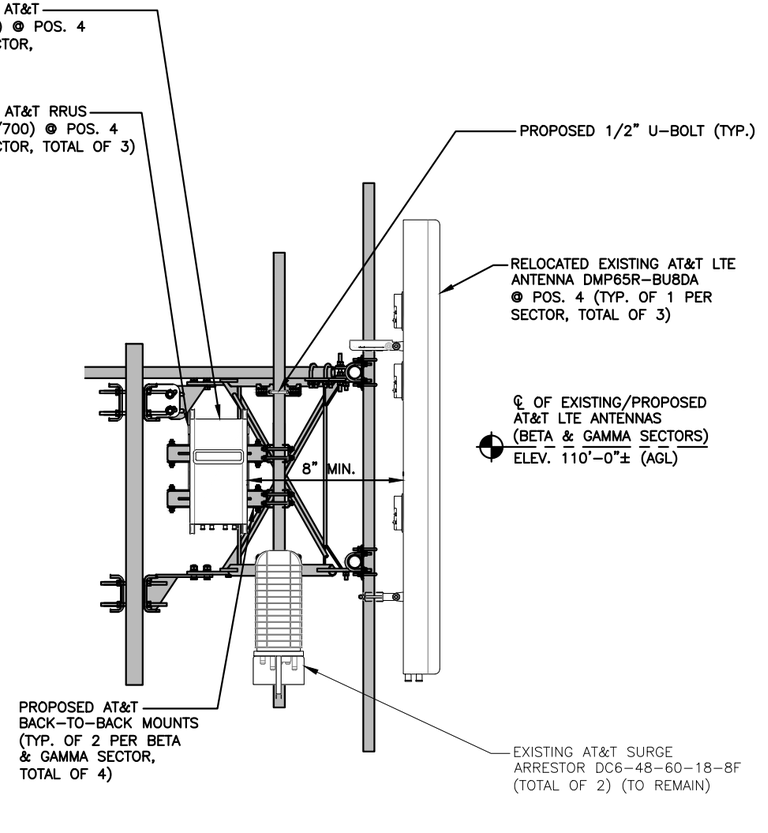
0 8" 1'-4" 2'-8" 4'-0"



PROPOSED POS. 3
MOUNTING DETAIL
(BETA & GAMMA SECTOR) (2 / A-5)

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

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



PROPOSED POS. 4
MOUNTING DETAIL
(BETA & GAMMA SECTOR) (3 / A-5)

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

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

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

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

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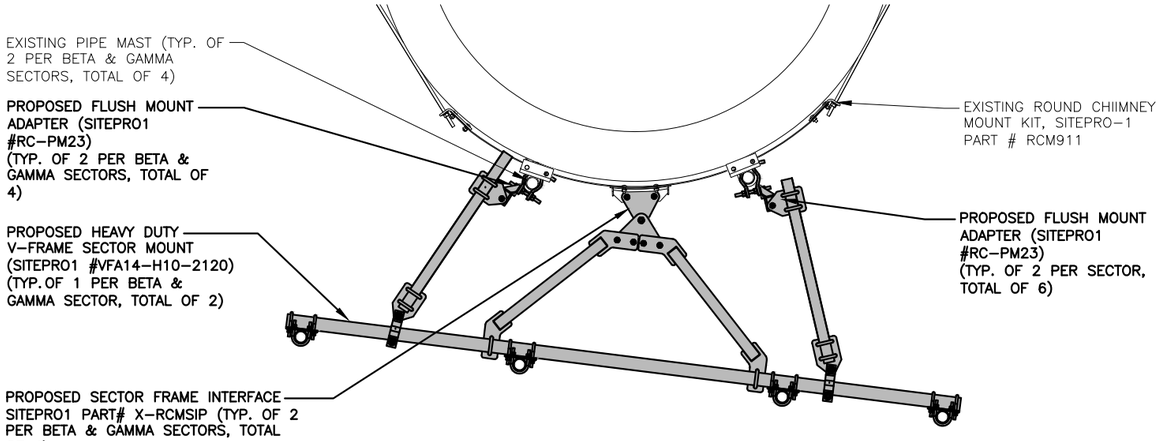
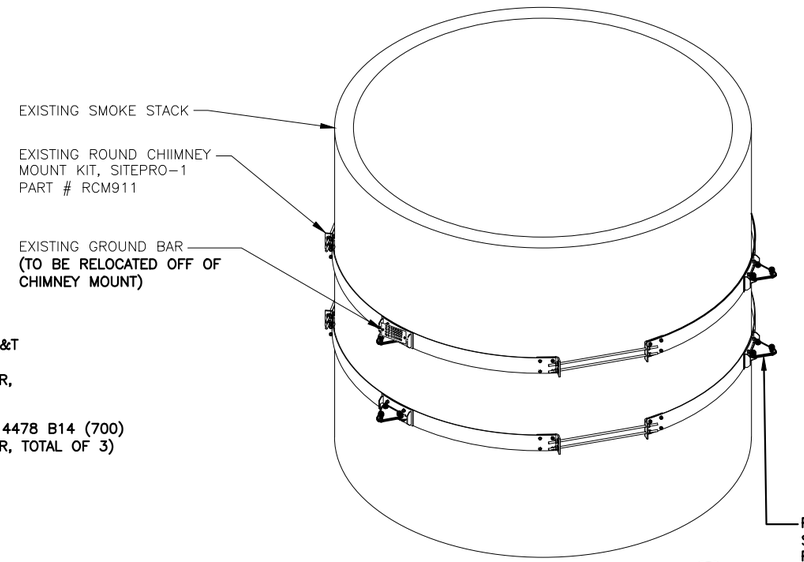
ANTENNA & EQUIPMENT MOUNTING DETAILS
5G NR 1SR CBAND, LTE NEXT CARRIER, LTE 7C, 5G NR RADIO, BBU RECONFIGURATION UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL03461	A-5	B



PROPOSED MOUNT PLAN (1 / A-6)
SCALE: N.T.S



ROUND STEEL BAND DETAIL (2 / A-6)
SCALE: N.T.S

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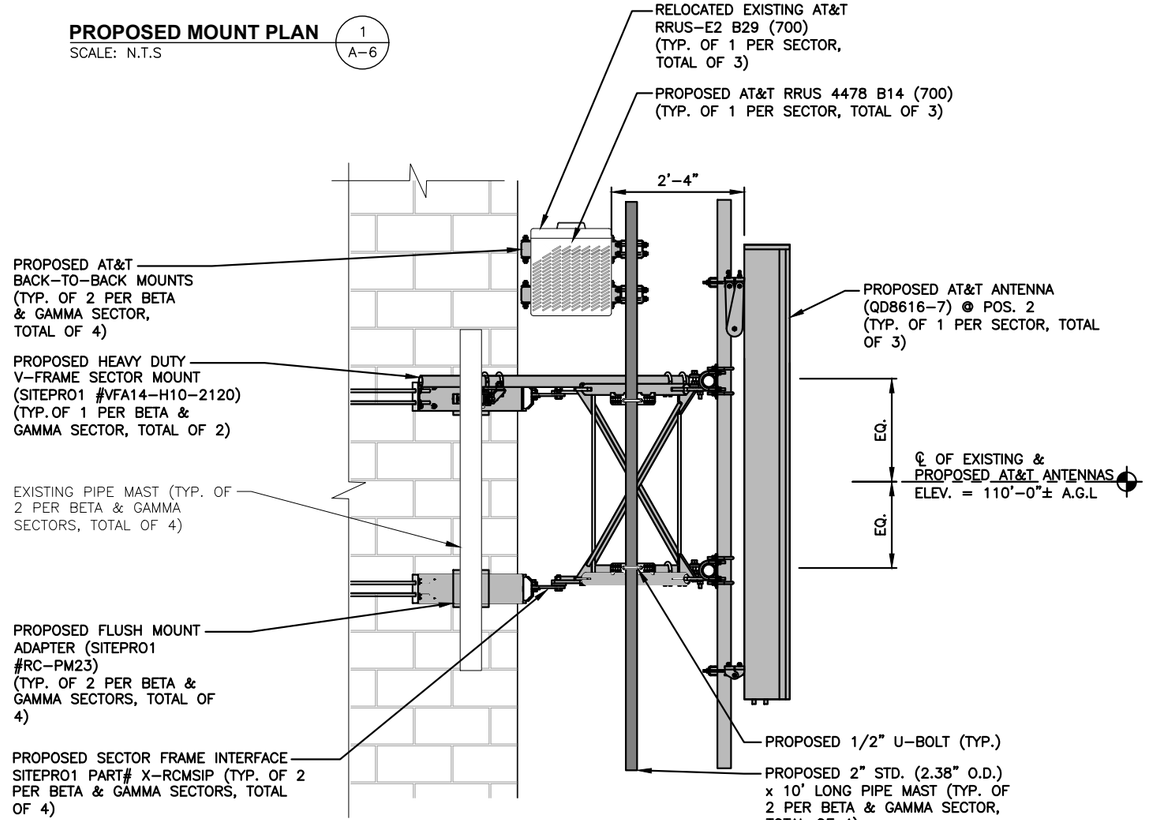

PROPOSED MOUNTING DETAIL (BETA & GAMMA SECTOR) (3 / A-6)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

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

AT&T

DETAILS
5G NR 1SR CBAND, LTE NEXT CARRIER, LTE 7C, 5G NR RADIO, BBU RECONFIGURATION UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL03461	S-2	B

STRUCTURAL NOTES:

1. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G 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.

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
N/A	PACKING SLIPS [3]
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
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:	

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.

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.

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: CTL03461
SITE NAME: BRISTOL MIDDLE STREET

383 MIDDLE STREET
BRISTOL, CT 06010
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
B	06/22/22	ISSUED FOR PERMITTING	JS	AT	DPH
A	06/01/22	ISSUED FOR REVIEW	JS	AT	DPH

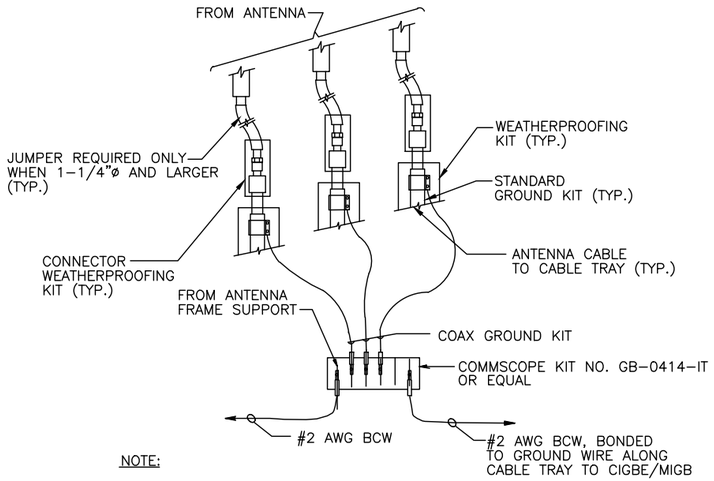
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: JS

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

AT&T

DETAILS
5G NR 1SR CBAND, LTE NEXT CARRIER, LTE 7C, 5G NR RADIO, BBU RECONFIGURATION UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL03461	SN-1	B

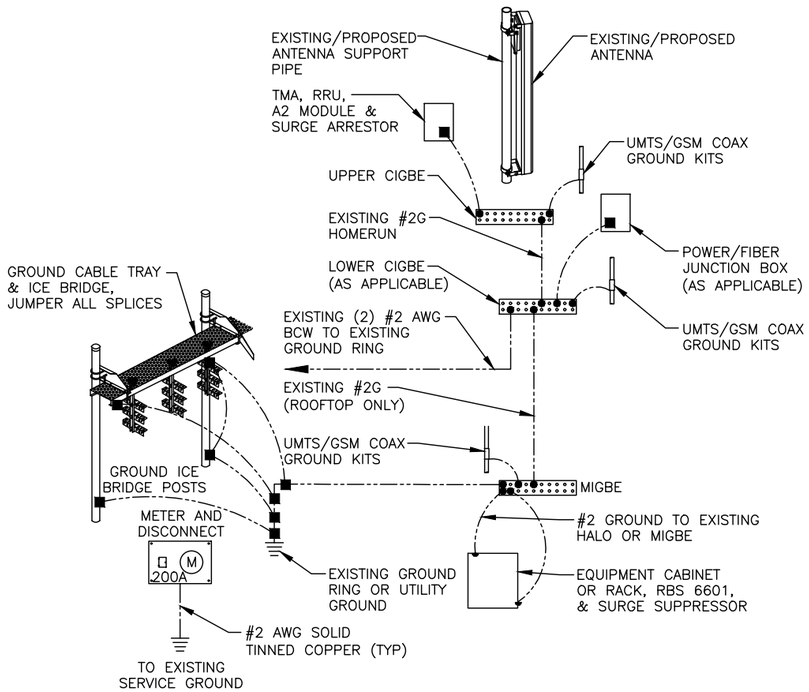


NOTE:

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

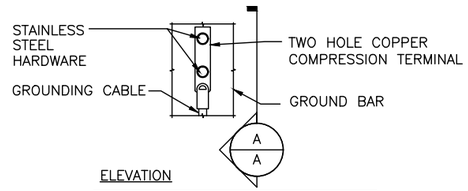
GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

SCALE: N.T.S



GROUNDING RISER DIAGRAM (2 / G-1)

SCALE: N.T.S



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

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

SCALE: N.T.S

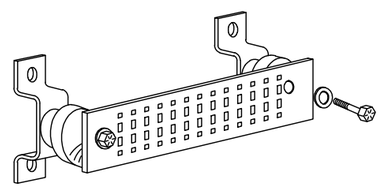
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL (AS REQUIRED) (4)

SCALE: N.T.S

HUDSON Design Group LLC
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CENTERLINE COMMUNICATIONS
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WEST BRIDGEWATER, MA 02379

SITE NUMBER: CTL03461
SITE NAME: BRISTOL MIDDLE STREET

383 MIDDLE STREET
BRISTOL, CT 06010
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
B	06/22/22	ISSUED FOR PERMITTING	SG	AT	DPH
A	06/01/22	ISSUED FOR REVIEW	JS	DPH	DPH

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

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

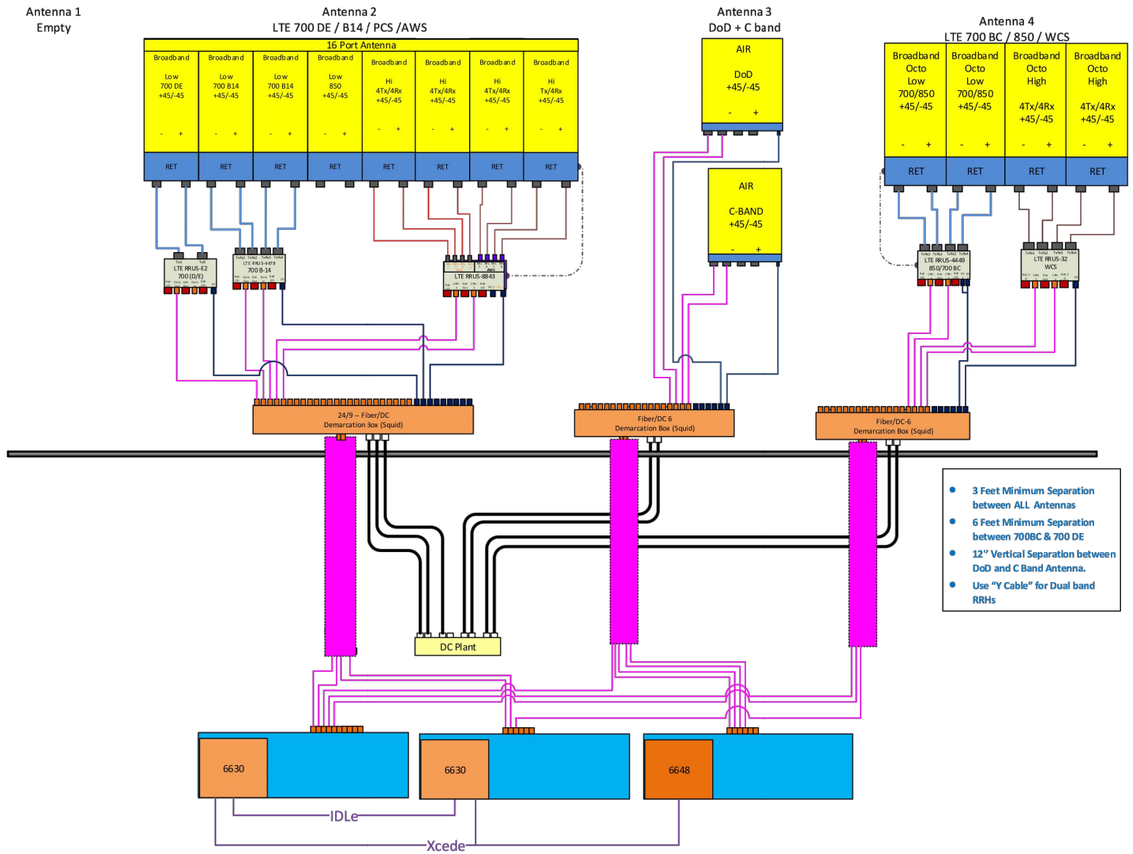
AT&T

GROUNDING DETAILS
5G NR 1SR CBAND, LTE NEXT CARRIER, LTE 7C, 5G NR RADIO, BBU RECONFIGURATION UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL03461	G-1	B

NOTE:

REV: 1
DATED: 02/28/2022
RFDS ID: 4788768



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.
3. RFDS USED FOR REFERENCE.

NOTE:

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

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SITE NUMBER: CTL03461
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NO.	DATE	REVISIONS	BY	CHK	APP'D
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: JS

AT&T

RF PLUMBING DIAGRAM
5G NR 1SR CBAND, LTE NEXT CARRIER, LTE 7C, 5G NR RADIO, BBU RECONFIGURATION UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CTL03461	RF–1	B

EXHIBIT 2

City of Bristol, CT

Property Listing Report

Map Block Lot	03-35	Building #	1	PID	2398	Account	0172553

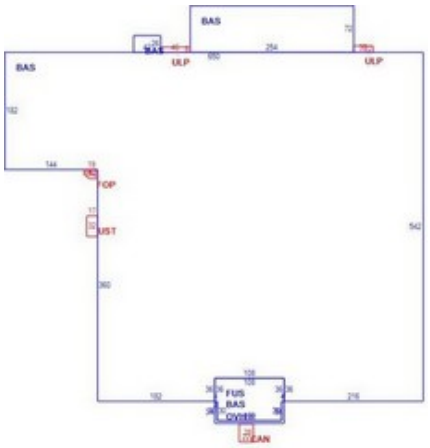
Property Information

Property Location	383 MIDDLE ST
Owner	BRISTOL SPORTS CENTER DST
Co-Owner	C/O INLAND PRIVATE CAPITAL CORPORATION
Mailing Address	PO BOX 3666 OAK BROOK IL 60522
Land Use	343 Prof Bldg
Land Class	C
Zoning Code	IP-1
Census Tract	04054.02

Neighborhood	110
Acreage	36.9
Utilities	All Public
Lot Setting/Desc	Level
Book / Page	1956/0246
Additional Info	

Photo

Sketch



Primary Construction Details

Year Built	1961
Building Desc.	Off Bldg
Building Style	Office Bldg
Building Grade	NA
Stories	1
Occupancy	3.00
Exterior Walls	Brick/Masonry
Exterior Walls 2	Concr/Cinder
Roof Style	Flat
Roof Cover	T+G/Rubber
Interior Walls	Drywall/Sheetr
Interior Walls 2	Minim/Masonry
Interior Floors 1	Carpet
Interior Floors 2	Concr-Finished

Heating Fuel	Electric
Heating Type	Forced Air-Duc
AC Type	03
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	0
Fin Bsmt Quality	0
Bsmt Gar	0
Fireplaces	0

(*Industrial / Commercial Details)

Building Use	Comm/Ind
Building Condition	VG
Sprinkler %	NA
Heat / AC	Heat/AC Pkgs
Frame Type	Masonry
Baths / Plumbing	Average
Ceiling / Wall	Sus-Ceil & WL
Rooms / Prtns	Average
Wall Height	10.00
First Floor Use	NA
Foundation	NA

Report Created On 2/22/2022

City of Bristol, CT

Property Listing Report

Map Block Lot	03-35	Building #	1	PID	2398	Account	0172553

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	28353600	19847520
Extras	544000	380800
Improvements		
Outbuildings	965600	675920
Land	6276700	4393690
Total	36139900	25297930

Outbuilding and Extra Features

Type	Description
Fence 6'	5500 L.F.
Load Lvr Man.	2 Units
Overhead Door	2 Units
Paving Asph.	520300 S.F.
Sprinklers	330400 S.F.
PreCastConcCel	200 S.F.
Light (1fixt)	38 UNITS
Light (2 fixt)	20 UNITS
Light (3 fixt)	1 UNITS
Elevator	1 Units

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	322840	322840
Canopy	616	0
Porch, Open	249	0
Upper Story, Finished	6888	6888
Overhang	672	672
Loading Platform, Uncovered	668	0
Utility, Storage, Unfinished	544	0
Total Area	332477	330400

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
BRISTOL SPORTS CENTER DST	1956/0246	2013-12-13	42175000
WE 383 MIDDLE STREET LLC	1443/0496	2002-10-01	6750000
PACSCI MOTION CONTROL INC	1330/0834	2000-07-14	0
WARNER ELECTRIC INC	1320/0883	2000-04-06	0
WARNER ELECTRIC INC	1318/0268	2000-03-07	0
DANA CORPORATION	1263/0836	1998-09-25	0
DANA CORP	1171/0407	1995-12-19	0

Report Created On 2/22/2022

City of Bristol, CT

Property Listing Report

Map Block Lot	03-35	Building #	2	PID	2398	Account	0172553

Photo

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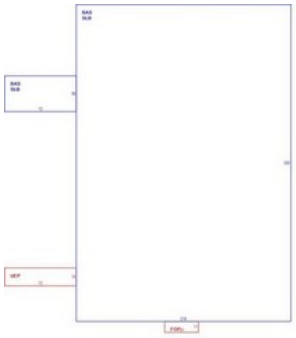

Primary Construction Details

Year Built	1974
Building Desc.	Comm/Ind
Building Style	Office/Warehs
Building Grade	NA
Stories	1
Occupancy	1.00
Exterior Walls	Brick/Masonry
Exterior Walls 2	Concr/Cinder
Roof Style	Flat
Roof Cover	T+G/Rubber
Interior Walls	Minim/Masonry
Interior Walls 2	NA
Interior Floors 1	Inlaid Sht Gds
Interior Floors 2	Carpet

Heating Fuel	Propane Gas
Heating Type	Forced Air-Duc
AC Type	03
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	0
Fin Bsmt Quality	0
Bsmt Gar	0
Fireplaces	0

(*Industrial / Commercial Details)

Building Use	Comm Whse
Building Condition	G
Sprinkler %	NA
Heat / AC	Heat/AC Pkgs
Frame Type	Masonry
Baths / Plumbing	Average
Ceiling / Wall	None
Rooms / Prtns	Average
Wall Height	16.00
First Floor Use	NA
Foundation	NA

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	71712	71712
Porch, Open	374	0
Slab	71712	0
Porch, Enclosed, Unfinished	1296	0

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	145094	71712

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City of Bristol, CT

Property Listing Report | Map Block Lot 03-35 | Building # 3 | PID 2398 | Account 0172553

Photo

Sketch

Primary Construction Details

Year Built	1961
Building Desc.	Comm/Ind
Building Style	Light Indust
Building Grade	NA
Stories	1
Occupancy	1.00
Exterior Walls	Brick/Masonry
Exterior Walls 2	Concr/Cinder
Roof Style	Flat
Roof Cover	T+G/Rubber
Interior Walls	Minim/Masonry
Interior Walls 2	NA
Interior Floors 1	Concr-Finished
Interior Floors 2	

Heating Fuel	Oil
Heating Type	Hot Air-no Duc
AC Type	01
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	0
Fin Bsmt Quality	0
Bsmt Gar	0
Fireplaces	0

(*Industrial / Commercial Details)

Building Use	Industrial
Building Condition	A
Sprinkler %	NA
Heat / AC	None
Frame Type	Masonry
Baths / Plumbing	Average
Ceiling / Wall	None
Rooms / Prtns	Average
Wall Height	16.00
First Floor Use	NA
Foundation	NA

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	6000	6000
Slab	6000	0

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	12000	6000

Report Created On 2/22/2022

City of Bristol, CT

Property Listing Report

Map Block Lot	03-35	Building #	4	PID	2398	Account	0172553

Photo

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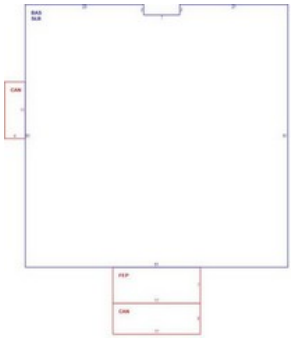


Primary Construction Details

Year Built	2004
Building Desc.	Comm/Ind
Building Style	Branch Bank
Building Grade	NA
Stories	1
Occupancy	1.00
Exterior Walls	Brick Veneer
Exterior Walls 2	NA
Roof Style	Gable
Roof Cover	Asphalt Shingl
Interior Walls	Drywall/Sheetr
Interior Walls 2	NA
Interior Floors 1	Carpet
Interior Floors 2	Ceram Clay Til

Heating Fuel	Propane Gas
Heating Type	Forced Air-Duc
AC Type	03
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	0
Fin Bsmt Quality	0
Bsmt Gar	0
Fireplaces	0

(*Industrial / Commercial Details)

Building Use	Bank Bldg
Building Condition	G
Sprinkler %	NA
Heat / AC	Heat/AC Pkgs
Frame Type	Steel
Baths / Plumbing	Average
Ceiling / Wall	Sus-Ceil & WL
Rooms / Prtns	Average
Wall Height	10.00
First Floor Use	NA
Foundation	NA

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	2587	2587
Canopy	146	0
Porch, Enclosed	119	0
Slab	2587	0

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	5439	2587

Report Created On 2/22/2022

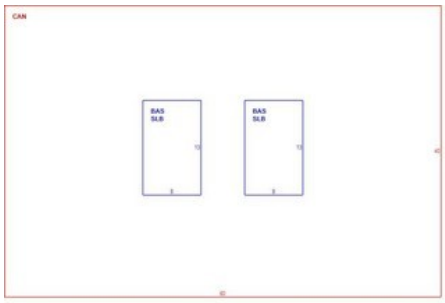
City of Bristol, CT

Property Listing Report

Map Block Lot	03-35	Building #	5	PID	2398	Account	0172553

Photo

Sketch



Primary Construction Details

Year Built	2018
Building Desc.	Comm/Ind
Building Style	Ind Office
Building Grade	NA
Stories	1
Occupancy	1.00
Exterior Walls	Pre-finsh Metl
Exterior Walls 2	NA
Roof Style	Flat
Roof Cover	Metal/Tin
Interior Walls	Minim/Masonry
Interior Walls 2	NA
Interior Floors 1	Carpet
Interior Floors 2	

Heating Fuel	Electric
Heating Type	Hot Air-no Duc
AC Type	04
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	0
Fin Bsmt Quality	0
Bsmt Gar	0
Fireplaces	0

(*Industrial / Commercial Details)

Building Use	Othr Outdr
Building Condition	A
Sprinkler %	NA
Heat / AC	Heat/AC Pkgs
Frame Type	Steel
Baths / Plumbing	None
Ceiling / Wall	Susp-Ceil Only
Rooms / Prtns	Light
Wall Height	8.00
First Floor Use	NA
Foundation	NA

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	208	208
Canopy	2400	0
Slab	208	0

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	2816	208

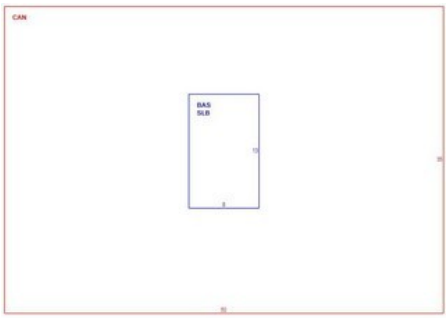
Report Created On 2/22/2022

City of Bristol, CT

Property Listing Report | Map Block Lot 03-35 | Building # 6 | PID 2398 | Account 0172553

Photo

Sketch



Primary Construction Details

Year Built	2018
Building Desc.	Comm/Ind
Building Style	Ind Office
Building Grade	NA
Stories	1
Occupancy	1.00
Exterior Walls	Pre-finsh Metl
Exterior Walls 2	NA
Roof Style	Flat
Roof Cover	Metal/Tin
Interior Walls	Minim/Masonry
Interior Walls 2	NA
Interior Floors 1	Carpet
Interior Floors 2	

Heating Fuel	Electric
Heating Type	Hot Air-no Duc
AC Type	04
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	0
Fin Bsmt Quality	0
Bsmt Gar	0
Fireplaces	0

(*Industrial / Commercial Details)

Building Use	Othr Outdr
Building Condition	A
Sprinkler %	NA
Heat / AC	Heat/AC Pkgs
Frame Type	Steel
Baths / Plumbing	None
Ceiling / Wall	Susp-Ceil Only
Rooms / Prtns	Light
Wall Height	8.00
First Floor Use	NA
Foundation	NA

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	104	104
Canopy	1750	0
Slab	104	0

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	1958	104

Report Created On 2/22/2022

FAIRVIEW AVENUE
DEWEY AVENUE
HOBSON AVENUE
MCKINLEY AVENUE
NNYDALE AVENUE
MAURICE STREET
RNIE AVENUE
ARMAND ROAD
SALLADIN ROAD
ROLLINSON ROAD
LILLIAN ROAD
DRIVE
LAKE AVENUE
BATTISTO ROAD
VINCENT P. KELLY ROAD
CROSS STREET
CENTURY DRIVE
229
WEST GATE LANE
SYLVIA
BAYBERRY DRIVE
SURREY DRIVE
WOODRIDGE ROAD
MIDDLE STREET
QUERING LANE
BUSINESS PARK DRIVE
FOREST GLEN ACCESS
EMMETT STREET
PINE BROOK TERRACE
COMMERCE DRIVE
REDSTONE HILL ROAD
BRODERICK ROAD

383 MIDDLE ST

MBL : 03-35_0172553
Unique ID : 2398
Owner : BRISTOL SPORTS CENTER DST
Acres : 36.9
Zoning : IP-1

Details | Quick Map | Summary Card | VISION | BirdsEye Photo

Generate Mailing List: 100 Ft: Submit

EXHIBIT 3

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

Customer: Hudson Design Group

ICC Project Number: 1947

Site: 383 Middle Street | Bristol, CT 06010

Chimney Description: 127'-8" Radial Brick Chimney

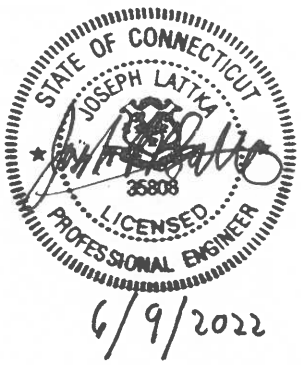
Summary:

The following is a structural analysis on a 127'-8" radial brick chimney. With the proposed AT&T cellular equipment modifications at the 111' and 120' 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: **NONE**

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

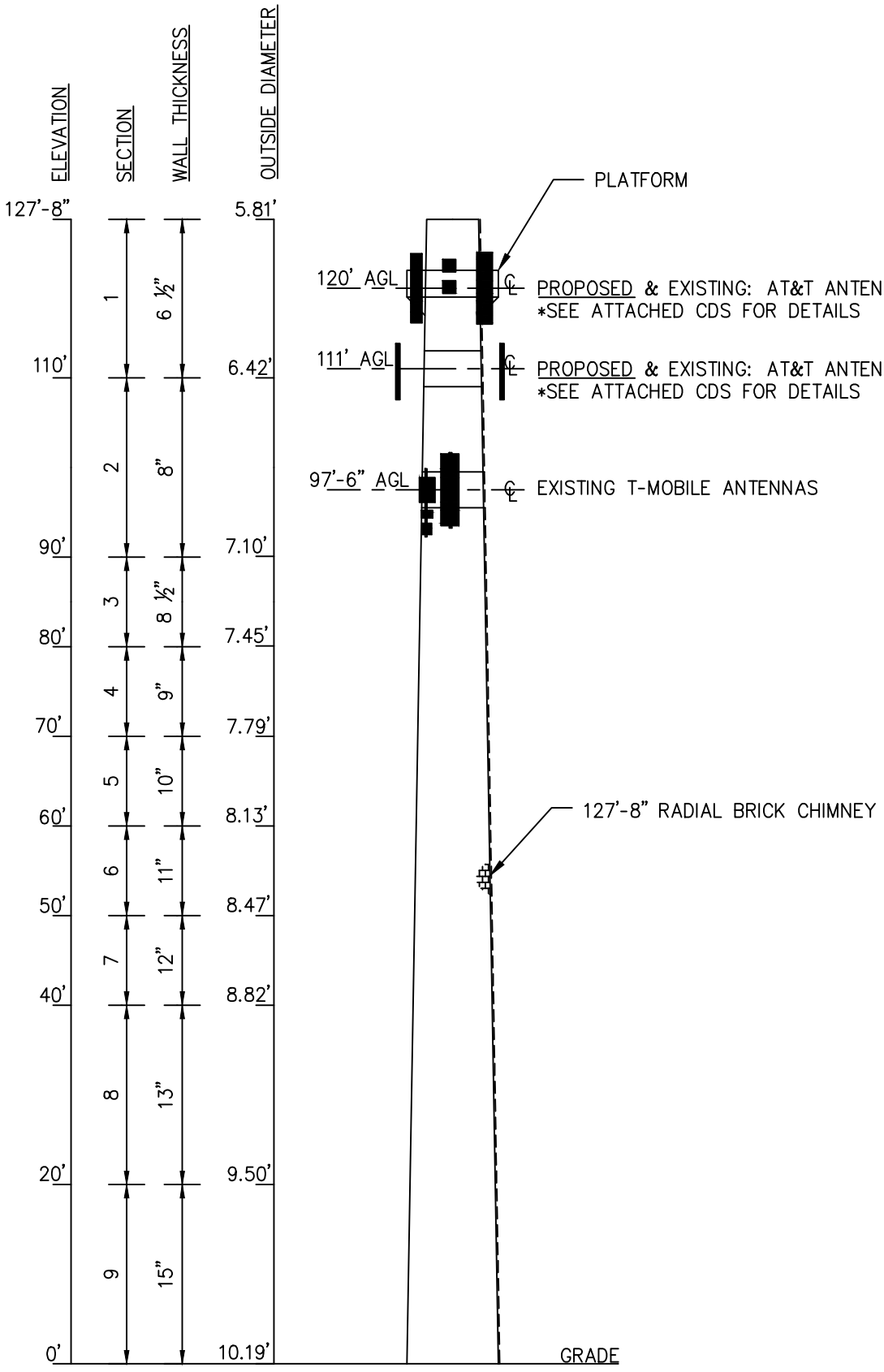
All repairs should be supervised under a qualified and experienced professional.
If repairs are required and not performed and supervised by a licensed professional engineer, additional inspection and information are required.

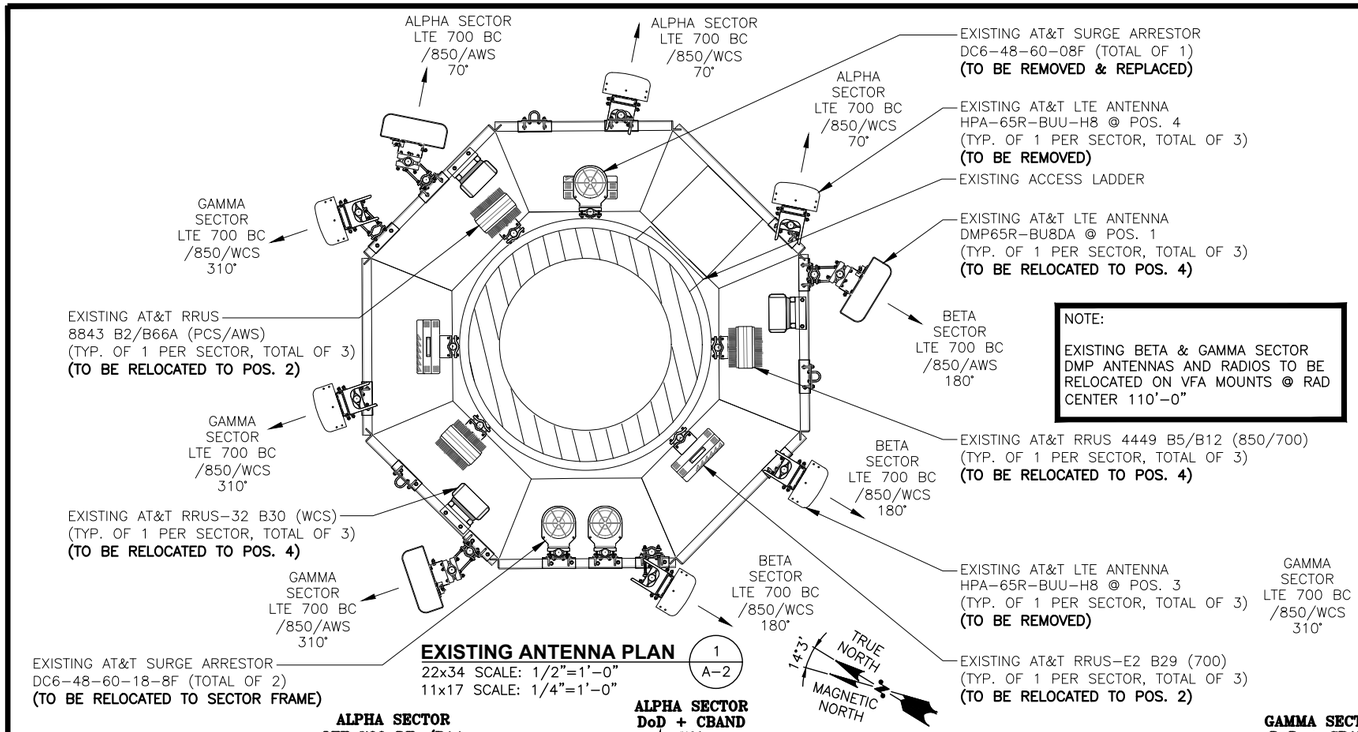


6/9/2022

Completed by: JWL
Date: 6/9/2022

ICC JOB: 1947
SITE: 383 MIDDLE STREET | BRISTOL, CT 06010



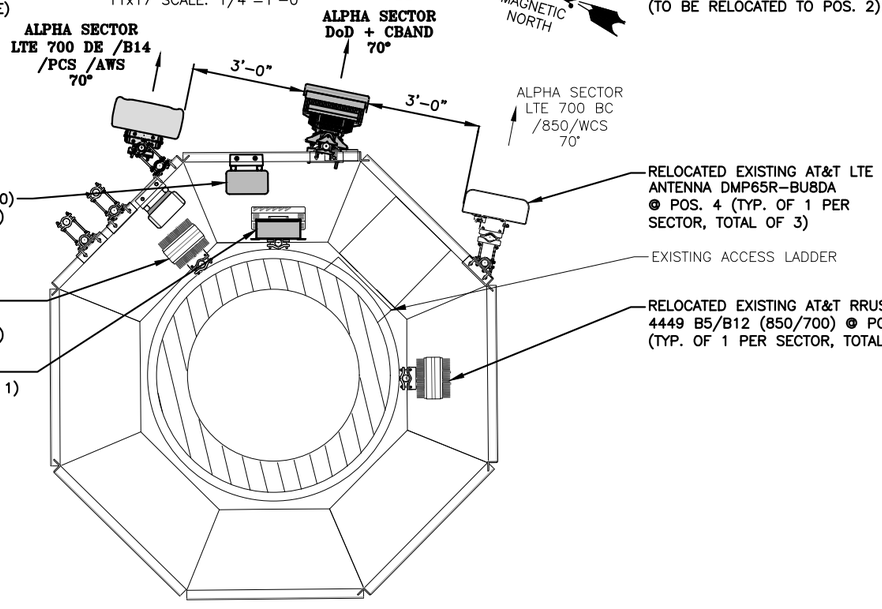


EXISTING ANTENNA PLAN (1 / A-2)

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

NOTE:

EXISTING BETA & GAMMA SECTOR DMP ANTENNAS AND RADIOS TO BE RELOCATED ON VFA MOUNTS @ RAD CENTER 110'-0"



PROPOSED ANTENNA PLAN ALPHA SECTOR RAD CENTER 120' (2 / A-2)

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

14°3' TRUE NORTH MAGNETIC NORTH

NOTE:

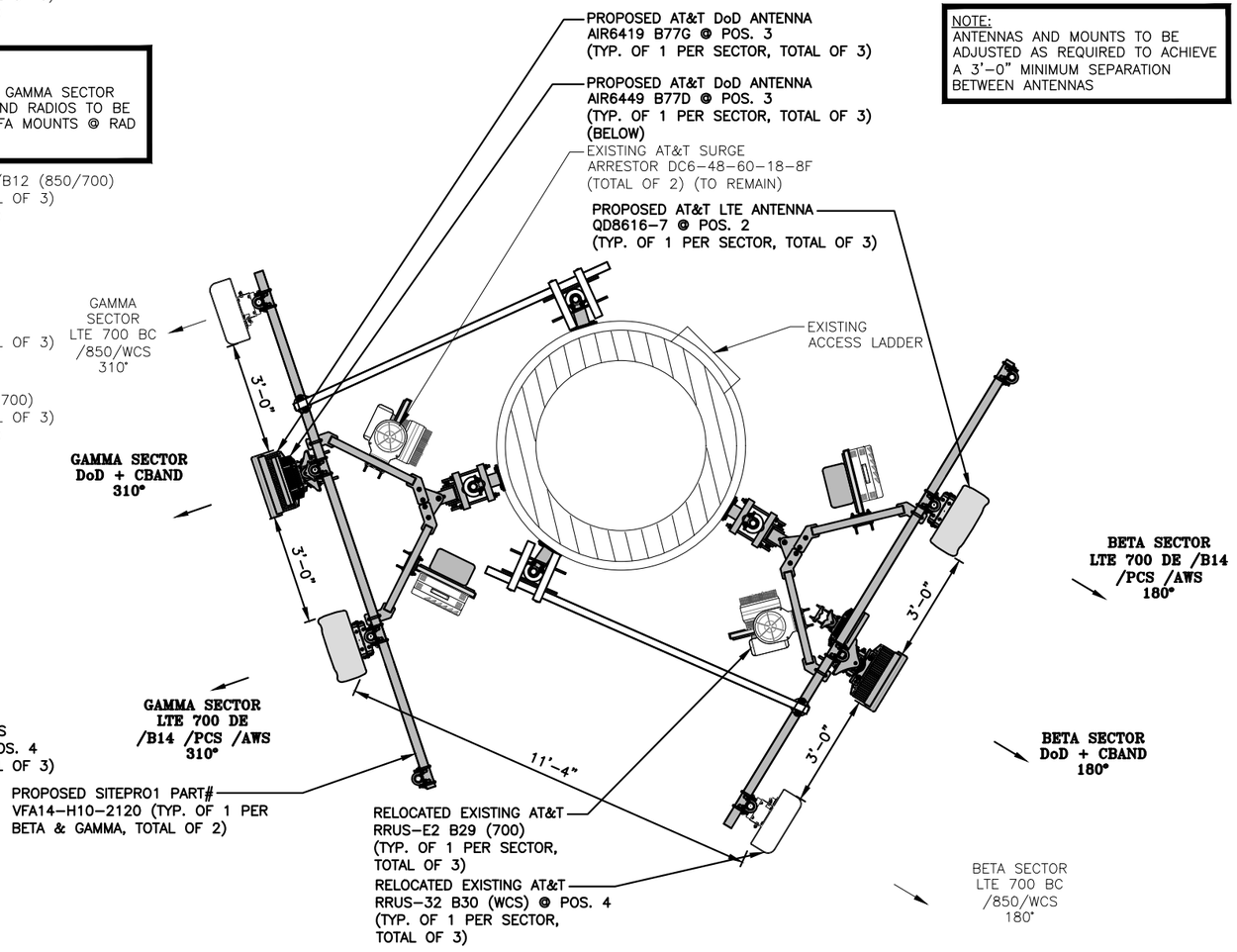
REFER TO THE FINAL/APPROVED RFDS V1.0 DATED: 02/28/2022 FOR FINAL ANTENNA SETTINGS.

NOTE:

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

NOTE:

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



PROPOSED BETA & GAMMA RAD CENTER 110'-0" (3 / A-2)

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

14°3' TRUE NORTH MAGNETIC NORTH

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: CT3461
SITE NAME: BRISTOL MIDDLE STREET

383 MIDDLE STREET
BRISTOL, CT 06010
HARTFORD COUNTY

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

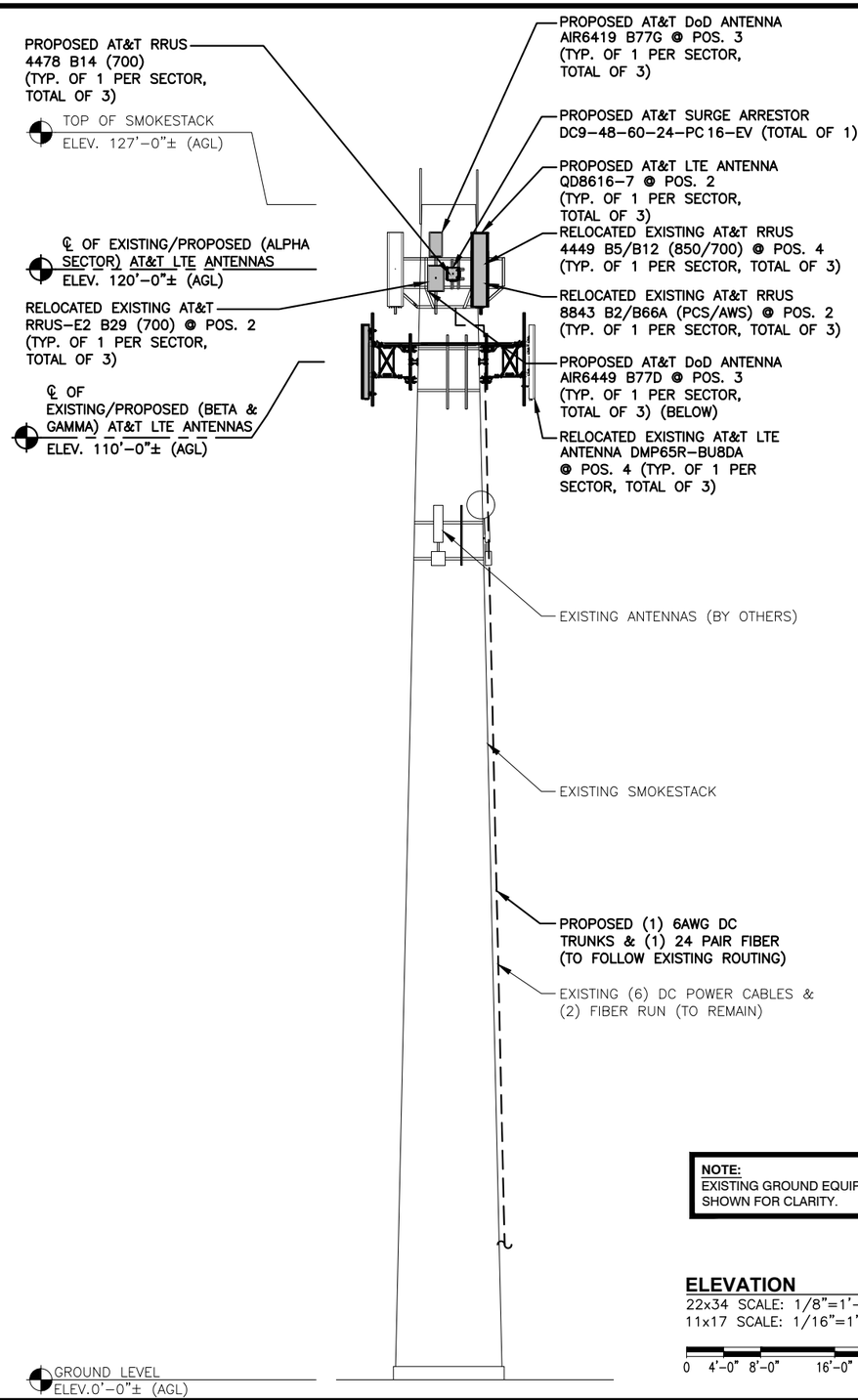
NO.	DATE	REVISIONS	BY	CHK	APP'D
A	03/03/22	ISSUED FOR REVIEW	SS	AT	DPH

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

AT&T

ANTENNA LAYOUTS & ELEVATION
5G NR 1SR CBAND, LTE NEXT CARRIER, LTE 7C, 5G NR RADIO, BBU RECONFIGURATION

SITE NUMBER	DRAWING NUMBER	REV
CT3461	SK-1	A



NOTE:
EXISTING GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

ELEVATION 3

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

0 4'-0" 8'-0" 16'-0" 24'-0"

NOTE:
REFER TO THE FINAL/APPROVED RFDS V1.0 DATED: 02/28/2022 FOR FINAL ANTENNA SETTINGS.

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

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

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383 MIDDLE STREET
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ROCKY HILL, CT 06067

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

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

AT&T

ANTENNA LAYOUTS & ELEVATION
5G NR 1SR CBAND, LTE NEXT
CARRIER, LTE 7C, 5G NR
RADIO, BBU RECONFIGURATION

SITE NUMBER	DRAWING NUMBER	REV
CT3461	SK-2	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)	127.67	
Define Risk Category	II	(Table 1.5-1)
Define Exposure Factor	B	(Section 26.7.3)
Basic Wind Speed (in mph)	117	(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)

$q = 0.00256K_{zt}K_dK_eGV^2$ =	29.79	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	127.67-110	1.04	1.17	1.35	41.68	25.01	Increase C_f by 15%
2	Round	110-90	0.99	1.14	1.31	38.66	23.20	Increase C_f by 15%
3	Round	90-80	0.94	0.86	0.86	24.08	14.45	
4	Round	80-70	0.91	0.86	0.86	23.31	13.99	
5	Round	70-60	0.87	0.85	0.85	22.03	13.22	
6	Round	60-50	0.83	0.85	0.85	21.01	12.61	
7	Round	50-40	0.79	0.84	0.84	19.77	11.86	
8	Round	40-20	0.70	0.84	0.84	17.51	10.51	
9	Round	20-0	0.57	0.83	0.83	14.09	10.00	

$F_{des} = q*K_z*C_f$ 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 $0.6F_{des} < 10$ psf, then use

10 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:

$$TopOD := \begin{pmatrix} 69.72 \\ 77.04 \\ 85.20 \\ 89.40 \\ 93.48 \\ 97.56 \\ 101.64 \\ 105.84 \\ 114 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} in \qquad BtmOD := \begin{pmatrix} 77.04 \\ 85.20 \\ 89.40 \\ 93.48 \\ 97.56 \\ 101.64 \\ 105.84 \\ 114 \\ 122.28 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} in \qquad WallThk := \begin{pmatrix} 6.5 \\ 8 \\ 8.5 \\ 9 \\ 10 \\ 11 \\ 12 \\ 13 \\ 15 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} in \qquad SectHgt := \begin{pmatrix} 212 \\ 240 \\ 120 \\ 120 \\ 120 \\ 120 \\ 120 \\ 240 \\ 240 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} in$$

Input Wind Load and Unit Weight Data:

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

$$\text{DesignWindLoad} := \begin{pmatrix} 25.01 \\ 23.20 \\ 14.45 \\ 13.99 \\ 13.22 \\ 12.61 \\ 11.86 \\ 10.51 \\ 10.00 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \frac{\text{lb}}{\text{ft}^2} \quad \text{WindCoefficient} := \begin{pmatrix} 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \quad \text{UnitWeight} := \begin{pmatrix} 128 \\ 124 \\ 120 \\ 120 \\ 120 \\ 120 \\ 120 \\ 120 \\ 120 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix} \frac{\text{lb}}{\text{ft}^3}$$

Calculate Total Number of Stack Sections:

NoSections = Total number of stack sections being analyzed

```
NoSections := | Mp ← 0
              | for r ∈ 1..35
              |     Mp_r ← 1  if SectHgt_r > 0
              |     Mp_r ← 0  if SectHgt_r ≤ 0
              | Mp
```

$\sum NoSections = 9$

$N := \sum NoSections$

$N = 9$ (**N** is used in calculations below)

Calculate Dead Loads at Bottom of Each Stack Section:

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

```
DeadLoad := | DL_1 ← SectWgt_1
            | for r ∈ 2..N
            |     Mp ← DL_(r−1) + SectWgt_r
            |     DL_r ← Mp
            | DL
```

$$DeadLoad = \begin{pmatrix} 21.447 \\ 53.096 \\ 70.631 \\ 90.056 \\ 112.445 \\ 137.96 \\ 166.781 \\ 232.752 \\ 313.758 \end{pmatrix} lb \cdot 1000$$

Calculate Total Bending Moments Due To Wind Load:

TotalSectionMoment = Sum of each row in "EachMoment" matrix. First row is total moment at bottom of stack Section No. 1 (top of stack). Second row is total moment at bottom of stack Section No. 2, and so on.

$$\begin{aligned}&\text{TotalSectionMoment} := \left|\begin{array}{l}\text{for } r \in 1..N \\ \quad \left|\begin{array}{l}Mp \leftarrow \left(\text{EachMoment}^{T}\right)^{\langle r \rangle} \\ Tm_r \leftarrow \sum Mp\end{array}\right. \\ Tm\end{array}\right.\end{aligned}$$

$$\text{TotalSectionMoment} = \begin{pmatrix}23.867\\109.27\\172.912\\247.139\\331.959\\427.273\\532.947\\773.802\\1053.601\end{pmatrix} \text{ft}\cdot\text{lb}\cdot 1000$$

Calculate Cross Sectional Area:

Area = Cross sectional area at bottom of *each* stack section

$$\overrightarrow{Area := [(BtmOD - WallThk)\cdot\pi\cdot WallThk]}$$

Calculate Section Modulus:

SectionMod = Section modulus at bottom of each stack section

$$Od := BtmOD$$

$$Id := BtmOD - 2\cdot WallThk$$

$$S := \left| \begin{array}{l} \text{for } r \in 1..35 \\ \quad M_r \leftarrow \dfrac{\pi\cdot\left[\left(Od_r\right)^4 - \left(Id_r\right)^4\right]}{32\cdot Od_r} \\ M \end{array} \right.$$

$$SectionMod := S$$

$Area =$

	1
1	1440.452
2	1940.248
3	2160.316
4	2388.616
5	2750.779
6	3132.294
7	3537.685
8	4124.911
9	5055.451
10	0
11	0
12	0
13	0
14	0
15	0
16	...

$\cdot in^2$

$SectionMod =$

	1
1	23456.615
2	34295.015
3	39974.67
4	46108.041
5	54747.384
6	64228.425
7	74787.616
8	93805.545
9	121280.366
10	0
11	0
12	0
13	0
14	0
15	0
16	...

$\cdot in^3$

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.

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

$$Fa = \begin{pmatrix} 14.889 \\ 27.366 \\ 32.695 \\ 37.702 \\ 40.878 \\ 44.044 \\ 47.144 \\ 56.426 \\ 62.063 \end{pmatrix} \cdot \frac{lb}{in^2} \qquad Fb = \begin{pmatrix} 12.21 \\ 38.234 \\ 51.906 \\ 64.32 \\ 72.762 \\ 79.829 \\ 85.514 \\ 98.988 \\ 104.248 \end{pmatrix} \cdot \frac{lb}{in^2}$$

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)	127.67

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	6.5	6.42	5.34	2.09	61.17	202.27	333	14.889	12.21	0.1103	-2.679	25	-0.107
2	8	7.10	5.77	2.29	55.83	210.24	333	27.366	38.234	0.2450	10.868	25	0.435
3	8.5	7.45	6.03	2.40	53.27	213.80	333	32.695	51.906	0.3088	19.211	25	0.768
4	9	7.79	6.29	2.50	51.00	216.82	333	37.702	64.32	0.3670	26.618	25	1.065
5	10	8.13	6.46	2.60	49.17	219.16	333	40.878	72.762	0.4050	31.884	25	1.275
6	11	8.47	6.64	2.69	47.46	221.27	333	44.044	79.829	0.4388	35.785	25	1.431
7	12	8.82	6.82	2.79	45.80	223.24	333	47.144	85.514	0.4680	38.370	25	1.535
8	13	9.50	7.33	3.00	42.55	226.90	333	56.426	98.988	0.5459	42.562	25	1.702
9	15	10.19	7.69	3.19	40.00	229.59	333	62.063	104.248	0.5834	42.185	25	1.687

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

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

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

Check using a no tension design

No Tension Design - Cracked Section 4

Using "Structural Engineering Handbook" by Gaylord & Gaylord 3rd Edition

Input =	

Area (in^2)	2388.616
Section Modulus (in^3)	46108.041
Weight (lb)	90056
Moment (ft-lb)	247139

OD (ft)	7.79
Thickness (ft)	0.75
OR (ft)	3.895
R_0/R	0.807

Eccentricity (ft)	2.7443
e/R	0.7046

e = M/W

Find k_1 from Figure 14

k_1	3.5

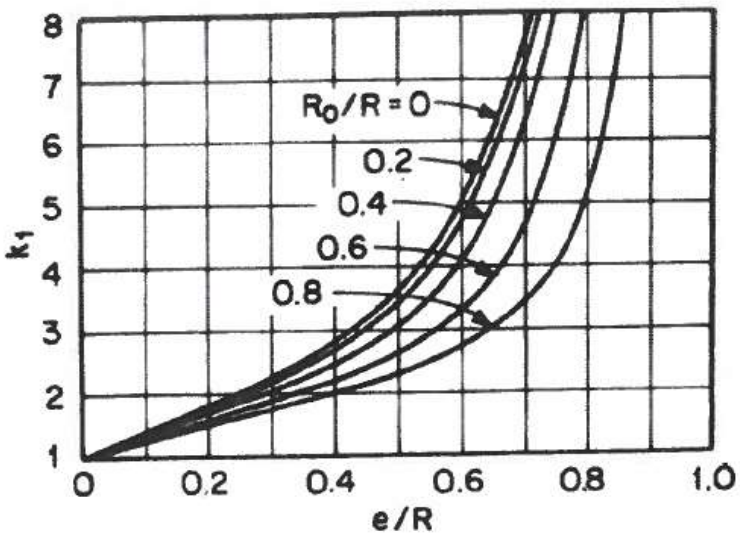
F_c (psi)	131.958

$F_c = (W/A)*k_1$

F_{bc} (psi)	333

F_c/F_{bc}	0.396	PASS

$FOS_{overturning}$	1.419



No Tension Design - Cracked Section 5

Using "Structural Engineering Handbook" by Gaylord & Gaylord 3rd Edition

Input =	

Area (in^2)	2750.779
Section Modulus (in^3)	54747.384
Weight (lb)	112445
Moment (ft-lb)	331959

OD (ft)	8.13
Thickness (ft)	0.8333
OR (ft)	4.065
R_0/R	0.795

Eccentricity (ft)	2.9522
e/R	0.7262

e = M/W

Find k_1 from Figure 14

k_1	3.5

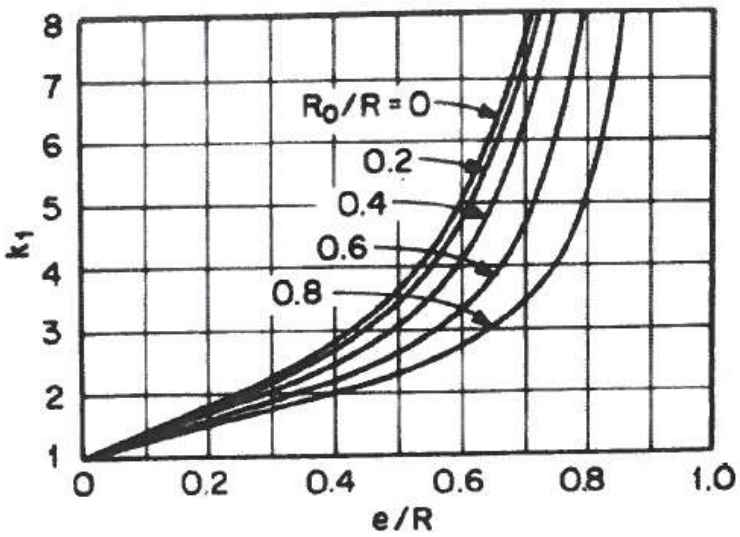
F_c (psi)	143.071

$F_c = (W/A)*k_1$

F_{bc} (psi)	333

F_c/F_{bc}	0.430	PASS

$FOS_{overturning}$	1.377



No Tension Design - Cracked Section 6

Using "Structural Engineering Handbook" by Gaylord & Gaylord 3rd Edition

Input =	

Area (in^2)	3132.294
Section Modulus (in^3)	64228.425
Weight (lb)	137960
Moment (ft-lb)	427273

OD (ft)	8.47
Thickness (ft)	0.9167
OR (ft)	4.235
R_0/R	0.784

Eccentricity (ft)	3.0971
e/R	0.7313

e = M/W

Find k_1 from Figure 14

k_1	4.1

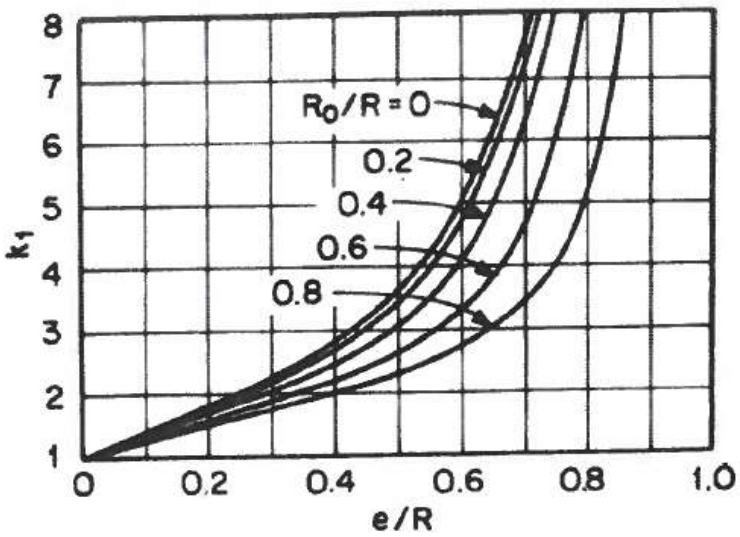
F_c (psi)	180.582

$F_c = (W/A)*k_1$

F_{bc} (psi)	333

F_c/F_{bc}	0.542	PASS

$FOS_{overturning}$	1.367



No Tension Design - Cracked Section 7

Using "Structural Engineering Handbook" by Gaylord & Gaylord 3rd Edition

Input =	

Area (in^2)	3537.685
Section Modulus (in^3)	74787.616
Weight (lb)	166781
Moment (ft-lb)	532947

OD (ft)	8.82
Thickness (ft)	1
OR (ft)	4.41
R_0/R	0.773

Eccentricity (ft)	3.1955
e/R	0.7246

e = M/W

Find k_1 from Figure 14

k_1	4.1

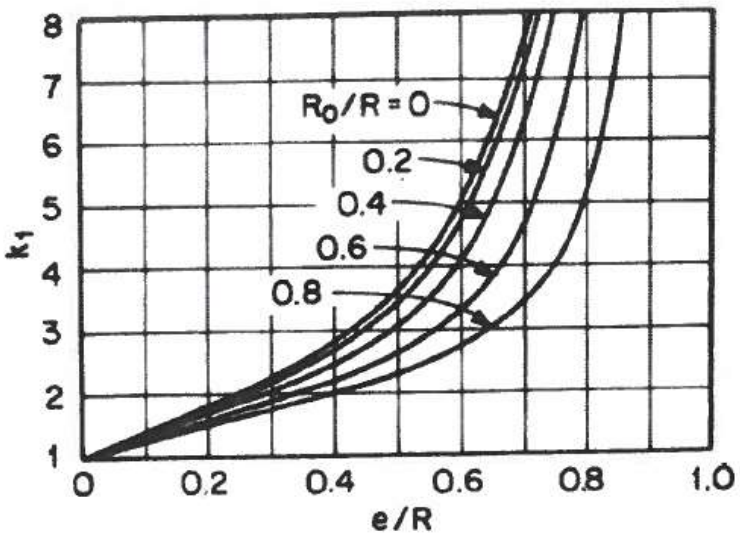
F_c (psi)	193.291

$F_c = (W/A)*k_1$

F_{bc} (psi)	333

F_c/F_{bc}	0.580	PASS

$FOS_{overturning}$	1.380



No Tension Design - Cracked Section 8

Using "Structural Engineering Handbook" by Gaylord & Gaylord 3rd Edition

Input =	

Area (in^2)	4124.911
Section Modulus (in^3)	93805.545
Weight (lb)	232752
Moment (ft-lb)	773802

OD (ft)	9.5
Thickness (ft)	1.083
OR (ft)	4.75
R_0/R	0.772

Eccentricity (ft)	3.3246
e/R	0.6999

e = M/W

Find k_1 from Figure 14

k_1	3.8

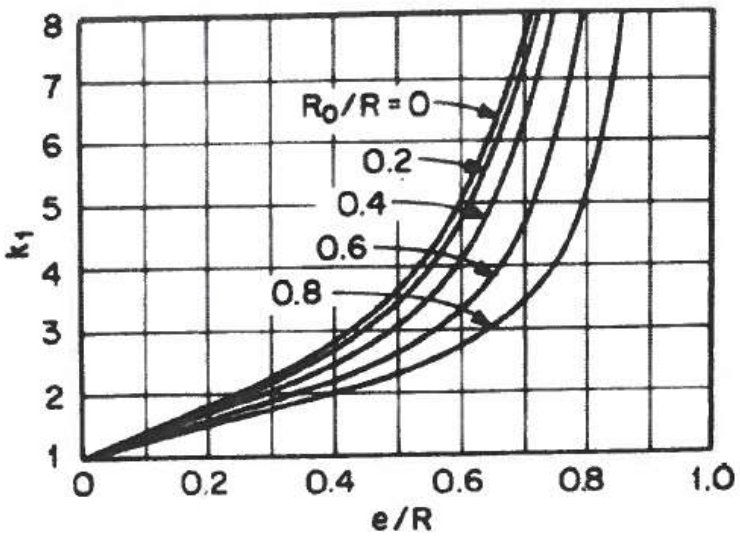
F_c (psi)	214.419

$F_c = (W/A)*k_1$

F_{bc} (psi)	333

F_c/F_{bc}	0.644	PASS

$FOS_{overturning}$	1.429



No Tension Design - Cracked Section 9

Using "Structural Engineering Handbook" by Gaylord & Gaylord 3rd Edition

Input =	

Area (in^2)	5055.451
Section Modulus (in^3)	121280.366
Weight (lb)	313758
Moment (ft-lb)	1053601

OD (ft)	10.19
Thickness (ft)	1.25
OR (ft)	5.095
R_0/R	0.755

Eccentricity (ft)	3.3580
e/R	0.6591

e = M/W

Find k_1 from Figure 14

k_1	4

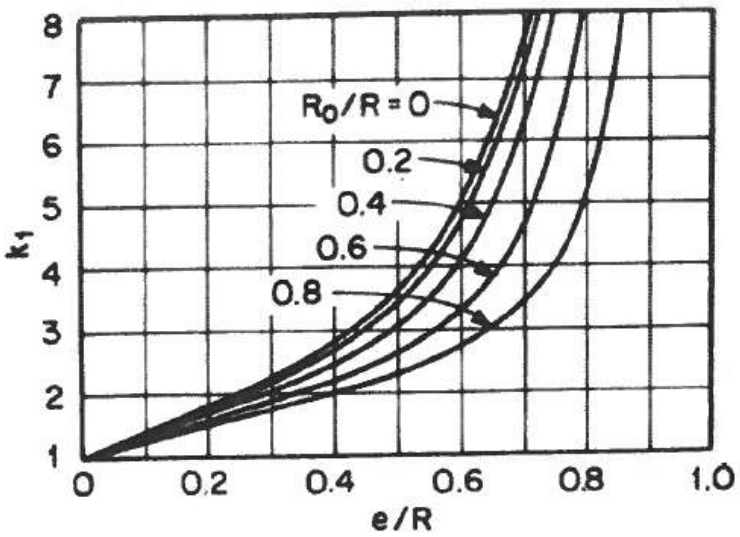
F_c (psi)	248.253

$F_c = (W/A)*k_1$

F_{bc} (psi)	333

F_c/F_{bc}	0.746	PASS

$FOS_{overturning}$	1.517



Hazards by Location

Search Information

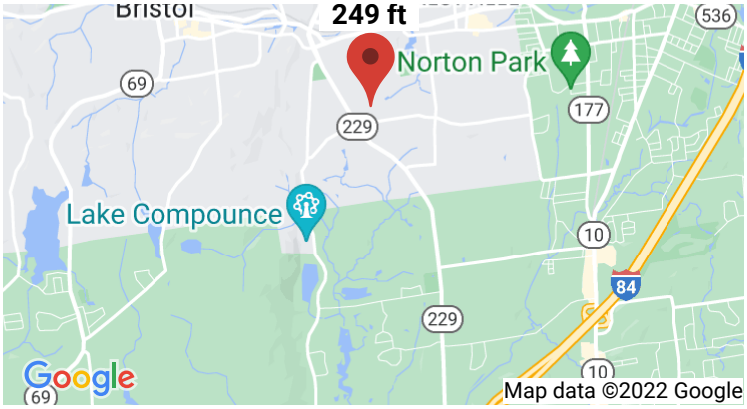
Address: 383 Middle St, Bristol, CT 06010, USA

Coordinates: 41.658307, -72.91265059999999

Elevation: 249 ft

Timestamp: 2022-06-06T17:17:30.677Z

Hazard Type: Wind



ASCE 7-16

MRI 10-Year	75 mph
MRI 25-Year	83 mph
MRI 50-Year	89 mph
MRI 100-Year	96 mph
Risk Category I	107 mph
Risk Category II	117 mph
Risk Category III	126 mph
Risk Category IV	⚠ 130 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	76 mph
MRI 25-Year	86 mph
MRI 50-Year	92 mph
MRI 100-Year	98 mph
Risk Category I	110 mph
Risk Category II	121 mph
Risk Category III-IV	⚠ 130 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	99 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

June 7, 2022

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

RE:		
	Site Number:	CT3461
	FA Number:	10578401
	PACE Number:	MRCTB055944
	PT Number:	2051A11LVJ
	Site Name:	BRISTOL MIDDLE STREET
	Site Address:	383 Middle Street Bristol, CT 06010

To Whom It May Concern:

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

- (3) DMP65R-BU8DA Antennas (96.0"x20.7"x7.7" – Wt. = 119 lbs. /each)
- (3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)
- (3) RRUS-E2 B29 RRH's (20.4"x18.5"x7.5" – Wt. = 53 lbs. /each)
- (3) B5/B12 4449 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)
- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (2) DC6-48-60-18-8F Surge Arrestors (24.0"x9.7"Ø – Wt. = 33 lbs.)
- **(3) QD8616-7 Antennas (96.0"x22.0"x9.6" – Wt. = 150 lbs. /each)**
- **(3) AIR6449 Antennas (30.4"x15.9"x8.1" – Wt. = 82 lbs. /each)**
- **(3) AIR6419 Antennas (31.1"x16.1"x7.3" – Wt. = 66 lbs. each)**
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(1) DC9-48-60-24-PC16-EV Surge Arrestor (19.0"x15.9"x8.2" – Wt. = 35 lbs. /each)**

**Proposed equipment shown in bold.*

A previous Mount Analysis report preapared by Centerline Communications dated September 24, 2020 was used to perform this analysis. Mount fabrication drawings prepared by SitePro1 P/N VFA14-H10-2120, dated December 7, 2020 were used to perform this analysis. HDG conducted a ground audit of the existing antenna mounts on January 6, 2022.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R16.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 120 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 1.71 in was used for this analysis.
- HDG considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- HDG considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- HDG considers this site to have a spectral response acceleration parameter at short periods, S_S, of 0.185 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.064.
- The mount has been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 1.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing and proposed mounts are secured to the existing smokestack with threaded rods and steel bands tightened around the smokestack. HDG considers the threaded rods as the governing connection members.

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

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing Alpha Sector Mount Rating	63	LC1	42%	**PASS**
Proposed Beta & Gamma Sector Mount Rating	9	LC30	65%	**PASS**

Reference Documents:

- Fabrication drawings prepared by SitePro1 P/N VFA14-H10-2120, dated December 7, 2020.

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing and proposed 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 conditions assessment of the existing smokestack was not a part of the scope of work.

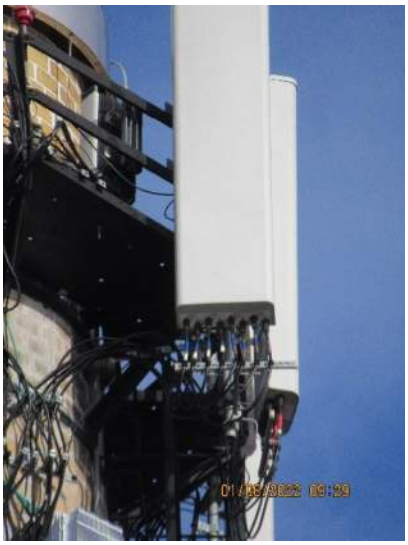
Please feel free to contact our office should you have any questions.

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: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

z=	120	(ft)
z_g=	1200	(ft)
α=	7.0	
K_z=	**1.041**	

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

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**	
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=	120	
z_s=	258	(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)

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

Category= **1**

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} = 1.14 (from Sec. 2.6.10)

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

t_{iz} = 1.71 in

Date: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM 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=	127	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=	1.041	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**36.12**	K_e=	0.99	(from 2.6.8)
$q_{z\ (ice)}$=	**6.27**	K_d=	0.95	(from Table 2-2)
$q_{z\ (30)}$=	**2.26**	V_{max}=	120	mph (Ultimate Wind Speed)
		$V_{max\ (ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, 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: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM 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 = **1.71** 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)
QD8616-7 Antenna	96.0	22.0	9.6	14.67	4.36	1.28	**680**	**141**	**42**
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.91	1.20	**145**	**34**	**9**
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.93	1.20	**151**	**35**	**9**
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	4.64	1.30	**646**	**135**	**40**
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.20	**59**	**16**	**4**
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.10	1.20	**114**	**27**	**7**
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.72	1.21	**46**	**14**	**3**
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.36	1.20	**71**	**19**	**4**
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.90	1.20	**51**	**14**	**3**
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	2.25	1.20	**99**	**25**	**6**
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	3.89	1.26	**60**	**18**	**4**
B14 4478 RRH	18.1	13.4	8.3	1.68	1.35	1.20	**73**	**19**	**5**
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	**45**	**13**	**3**

Date: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM **Checked By:** MSC

HUDSON Design Group LLC

DC9-48-60-24-PC16-EV Surge Arrestor	19.0	15.9	8.2	2.10	1.19	0.70	**53**	**13**	**3**
DC6-48-60-18-8F Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	**41**	**11**	**3**
L 3x3 Angle	3.0	12.0	-	0.25	0.25	1.25	**11**		
PL 11-1/4x5/8	0.6	12.0	-	0.05	0.05	2.00	**4**		
PL 3-1/2x5/8	0.6	12.0	-	0.05	0.05	2.00	**4**		
2-1/2" Pipe	2.9	12.0	-	0.24	0.24	1.20	**10**		
2" Pipe	2.4	12.0	-	0.20	0.20	1.20	**9**		
3/4" Round Bar	0.8	12.0	-	0.06	0.06	1.20	**3**		
5/8" Round Bar	0.6	12.0	-	0.05	0.05	1.20	**2**		
Unistrut	1.7	12.0	-	0.14	0.14	1.20	**6**		

Date: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle = 30 (deg) | Ice Thickness = 1.71 in. | Equivalent Angle = 210 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	680	347	596
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	145	78	129
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	151	73	131
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	646	293	557
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	59	49	57
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	114	46	97
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	46	114	63
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	71	51	66
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	51	71	56
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	99	60	89
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	60	99	70
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	73	45	66
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	45	73	52

WIND LOADS WITH ICE:

QD8616-7 Antenna	99.4	25.4	13.0	17.54	8.98	3.91	7.64	1.26	1.42	139	80	124
AIR6449 Antenna	33.8	19.3	11.5	4.54	2.70	1.75	2.94	1.20	1.22	34	21	31
AIR6419 Antenna	34.5	19.5	10.7	4.68	2.57	1.77	3.22	1.20	1.23	35	20	31
DMP65R-BU8DA Antenna	99.4	24.1	11.1	16.65	7.67	4.12	8.95	1.27	1.46	133	70	117
B2/B66A 8843 RRH	18.3	16.6	14.3	2.11	1.82	1.10	1.28	1.20	1.20	16	14	15
RRUS-E2 B29 RRH	23.8	21.9	10.9	3.62	1.80	1.09	2.18	1.20	1.20	27	14	24
RRUS-E2 B29 RRH (Side)	23.8	10.9	21.9	1.80	3.62	2.18	1.09	1.20	1.20	14	27	17
B5/B12 4449 RRH	21.3	16.6	12.8	2.46	1.90	1.28	1.66	1.20	1.20	19	14	17
B5/B12 4449 RRH (Side)	21.3	12.8	16.6	1.90	2.46	1.66	1.28	1.20	1.20	14	19	15
RRUS-32 B30 RRH	30.6	15.5	10.4	3.30	2.21	1.97	2.94	1.20	1.22	25	17	23
RRUS-32 B30 RRH (Side)	30.6	10.4	15.5	2.21	3.30	2.94	1.97	1.22	1.20	17	25	19
B14 4478 RRH	21.5	16.8	11.7	2.51	1.75	1.28	1.84	1.20	1.20	19	13	17
B14 4478 RRH (Side)	21.5	11.7	16.8	1.75	2.51	1.84	1.28	1.20	1.20	13	19	15

WIND LOADS AT 30 MPH:

QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	42	22	37
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	9	5	8
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	9	5	8
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	40	18	35
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	4
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	7	3	6
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	3	7	4
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	4	3	4
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	6
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	4
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3

Date: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.71	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	680	347	430
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	145	78	95
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	151	73	92
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	646	293	381
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	59	49	51
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	114	46	63
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	46	114	97
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	71	51	56
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	51	71	66
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	99	60	70
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	60	99	89
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	73	45	52
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	45	73	66

WIND LOADS WITH ICE:

QD8616-7 Antenna	99.4	25.4	13.0	17.54	8.98	3.91	7.64	1.26	1.42	139	80	95
AIR6449 Antenna	33.8	19.3	11.5	4.54	2.70	1.75	2.94	1.20	1.22	34	21	24
AIR6419 Antenna	34.5	19.5	10.7	4.68	2.57	1.77	3.22	1.20	1.23	35	20	24
DMP65R-BU8DA Antenna	99.4	24.1	11.1	16.65	7.67	4.12	8.95	1.27	1.46	133	70	86
B2/B66A 8843 RRH	18.3	16.6	14.3	2.11	1.82	1.10	1.28	1.20	1.20	16	14	14
RRUS-E2 B29 RRH	23.8	21.9	10.9	3.62	1.80	1.09	2.18	1.20	1.20	27	14	17
RRUS-E2 B29 RRH (Side)	23.8	10.9	21.9	1.80	3.62	2.18	1.09	1.20	1.20	14	27	24
B5/B12 4449 RRH	21.3	16.6	12.8	2.46	1.90	1.28	1.66	1.20	1.20	19	14	15
B5/B12 4449 RRH (Side)	21.3	12.8	16.6	1.90	2.46	1.66	1.28	1.20	1.20	14	19	17
RRUS-32 B30 RRH	30.6	15.5	10.4	3.30	2.21	1.97	2.94	1.20	1.22	25	17	19
RRUS-32 B30 RRH (Side)	30.6	10.4	15.5	2.21	3.30	2.94	1.97	1.22	1.20	17	25	23
B14 4478 RRH	21.5	16.8	11.7	2.51	1.75	1.28	1.84	1.20	1.20	19	13	15
B14 4478 RRH (Side)	21.5	11.7	16.8	1.75	2.51	1.84	1.28	1.20	1.20	13	19	17

WIND LOADS AT 30 MPH:

QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	42	22	27
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	9	5	6
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	9	5	6
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	40	18	24
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	3
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	7	3	4
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	3	7	6
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	4	3	3
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4

Date: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.71	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	680	347	347
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	145	78	78
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	151	73	73
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	646	293	293
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	59	49	49
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	114	46	46
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	46	114	114
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	71	51	51
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	51	71	71
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	99	60	60
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	60	99	99
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	73	45	45
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	45	73	73

WIND LOADS WITH ICE:

QD8616-7 Antenna	99.4	25.4	13.0	17.54	8.98	3.91	7.64	1.26	1.42	139	80	80
AIR6449 Antenna	33.8	19.3	11.5	4.54	2.70	1.75	2.94	1.20	1.22	34	21	21
AIR6419 Antenna	34.5	19.5	10.7	4.68	2.57	1.77	3.22	1.20	1.23	35	20	20
DMP65R-BU8DA Antenna	99.4	24.1	11.1	16.65	7.67	4.12	8.95	1.27	1.46	133	70	70
B2/B66A 8843 RRH	18.3	16.6	14.3	2.11	1.82	1.10	1.28	1.20	1.20	16	14	14
RRUS-E2 B29 RRH	23.8	21.9	10.9	3.62	1.80	1.09	2.18	1.20	1.20	27	14	14
RRUS-E2 B29 RRH (Side)	23.8	10.9	21.9	1.80	3.62	2.18	1.09	1.20	1.20	14	27	27
B5/B12 4449 RRH	21.3	16.6	12.8	2.46	1.90	1.28	1.66	1.20	1.20	19	14	14
B5/B12 4449 RRH (Side)	21.3	12.8	16.6	1.90	2.46	1.66	1.28	1.20	1.20	14	19	19
RRUS-32 B30 RRH	30.6	15.5	10.4	3.30	2.21	1.97	2.94	1.20	1.22	25	17	17
RRUS-32 B30 RRH (Side)	30.6	10.4	15.5	2.21	3.30	2.94	1.97	1.22	1.20	17	25	25
B14 4478 RRH	21.5	16.8	11.7	2.51	1.75	1.28	1.84	1.20	1.20	19	13	13
B14 4478 RRH (Side)	21.5	11.7	16.8	1.75	2.51	1.84	1.28	1.20	1.20	13	19	19

WIND LOADS AT 30 MPH:

QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	42	22	22
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	9	5	5
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	9	5	5
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	40	18	18
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	3
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	7	3	3
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	3	7	7
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	4	3	3
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5

Date: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.71	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	680	347	430
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	145	78	95
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	151	73	92
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	646	293	381
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	59	49	51
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	114	46	63
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	46	114	97
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	71	51	56
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	51	71	66
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	99	60	70
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	60	99	89
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	73	45	52
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	45	73	66

WIND LOADS WITH ICE:

QD8616-7 Antenna	99.4	25.4	13.0	17.54	8.98	3.91	7.64	1.26	1.42	139	80	95
AIR6449 Antenna	33.8	19.3	11.5	4.54	2.70	1.75	2.94	1.20	1.22	34	21	24
AIR6419 Antenna	34.5	19.5	10.7	4.68	2.57	1.77	3.22	1.20	1.23	35	20	24
DMP65R-BU8DA Antenna	99.4	24.1	11.1	16.65	7.67	4.12	8.95	1.27	1.46	133	70	86
B2/B66A 8843 RRH	18.3	16.6	14.3	2.11	1.82	1.10	1.28	1.20	1.20	16	14	14
RRUS-E2 B29 RRH	23.8	21.9	10.9	3.62	1.80	1.09	2.18	1.20	1.20	27	14	17
RRUS-E2 B29 RRH (Side)	23.8	10.9	21.9	1.80	3.62	2.18	1.09	1.20	1.20	14	27	24
B5/B12 4449 RRH	21.3	16.6	12.8	2.46	1.90	1.28	1.66	1.20	1.20	19	14	15
B5/B12 4449 RRH (Side)	21.3	12.8	16.6	1.90	2.46	1.66	1.28	1.20	1.20	14	19	17
RRUS-32 B30 RRH	30.6	15.5	10.4	3.30	2.21	1.97	2.94	1.20	1.22	25	17	19
RRUS-32 B30 RRH (Side)	30.6	10.4	15.5	2.21	3.30	2.94	1.97	1.22	1.20	17	25	23
B14 4478 RRH	21.5	16.8	11.7	2.51	1.75	1.28	1.84	1.20	1.20	19	13	15
B14 4478 RRH (Side)	21.5	11.7	16.8	1.75	2.51	1.84	1.28	1.20	1.20	13	19	17

WIND LOADS AT 30 MPH:

QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	42	22	27
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	9	5	6
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	9	5	6
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	40	18	24
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	3
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	7	3	4
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	3	7	6
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	4	3	3
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	4
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	6
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4

Date: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.71	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	680	347	596
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	145	78	129
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	151	73	131
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	646	293	557
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	59	49	57
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	114	46	97
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	46	114	63
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	71	51	66
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	51	71	56
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	99	60	89
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	60	99	70
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	73	45	66
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	45	73	52

WIND LOADS WITH ICE:

QD8616-7 Antenna	99.4	25.4	13.0	17.54	8.98	3.91	7.64	1.26	1.42	139	80	124
AIR6449 Antenna	33.8	19.3	11.5	4.54	2.70	1.75	2.94	1.20	1.22	34	21	31
AIR6419 Antenna	34.5	19.5	10.7	4.68	2.57	1.77	3.22	1.20	1.23	35	20	31
DMP65R-BU8DA Antenna	99.4	24.1	11.1	16.65	7.67	4.12	8.95	1.27	1.46	133	70	117
B2/B66A 8843 RRH	18.3	16.6	14.3	2.11	1.82	1.10	1.28	1.20	1.20	16	14	15
RRUS-E2 B29 RRH	23.8	21.9	10.9	3.62	1.80	1.09	2.18	1.20	1.20	27	14	24
RRUS-E2 B29 RRH (Side)	23.8	10.9	21.9	1.80	3.62	2.18	1.09	1.20	1.20	14	27	17
B5/B12 4449 RRH	21.3	16.6	12.8	2.46	1.90	1.28	1.66	1.20	1.20	19	14	17
B5/B12 4449 RRH (Side)	21.3	12.8	16.6	1.90	2.46	1.66	1.28	1.20	1.20	14	19	15
RRUS-32 B30 RRH	30.6	15.5	10.4	3.30	2.21	1.97	2.94	1.20	1.22	25	17	23
RRUS-32 B30 RRH (Side)	30.6	10.4	15.5	2.21	3.30	2.94	1.97	1.22	1.20	17	25	19
B14 4478 RRH	21.5	16.8	11.7	2.51	1.75	1.28	1.84	1.20	1.20	19	13	17
B14 4478 RRH (Side)	21.5	11.7	16.8	1.75	2.51	1.84	1.28	1.20	1.20	13	19	15

WIND LOADS AT 30 MPH:

QD8616-7 Antenna	96.0	22.0	9.6	14.67	6.40	4.36	10.00	1.28	1.50	42	22	37
AIR6449 Antenna	30.4	15.9	8.1	3.36	1.71	1.91	3.75	1.20	1.26	9	5	8
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	9	5	8
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	40	18	35
B2/B66A 8843 RRH	14.9	13.2	10.9	1.37	1.13	1.13	1.37	1.20	1.20	4	3	4
RRUS-E2 B29 RRH	20.4	18.5	7.5	2.62	1.06	1.10	2.72	1.20	1.21	7	3	6
RRUS-E2 B29 RRH (Side)	20.4	7.5	18.5	1.06	2.62	2.72	1.10	1.21	1.20	3	7	4
B5/B12 4449 RRH	17.9	13.2	9.4	1.64	1.17	1.36	1.90	1.20	1.20	4	3	4
B5/B12 4449 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
RRUS-32 B30 RRH	27.2	12.1	7.0	2.29	1.32	2.25	3.89	1.20	1.26	6	4	6
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	6	4
B14 4478 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
B14 4478 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3

Date: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.71 in.
Density of ice: 56 pcf

QD8616-7 Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	22.0	
Depth (in):	9.6	
Total weight of ice on object:		430 lbs
Weight of object:	150.0	lbs
Combined weight of ice and object:		580 lbs

AIR6449 Antenna

Weight of ice based on total radial SF area:

Height (in):	30.4	
Width (in):	15.9	
Depth (in):	8.1	
Total weight of ice on object:		103 lbs
Weight of object:	82.0	lbs
Combined weight of ice and object:		185 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:		105 lbs
Weight of object:	66.0	lbs
Combined weight of ice and object:		171 lbs

DMP65R-BU8DA Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		398 lbs
Weight of object:	119.0	lbs
Combined weight of ice and object:		517 lbs

B2/B66A 8843 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	10.9	
Total weight of ice on object:		49 lbs
Weight of object:	72.0	lbs
Combined weight of ice and object:		121 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:		77 lbs
Weight of object:	53.0	lbs
Combined weight of ice and object:		130 lbs

B5/B12 4449 RRH

Weight of ice based on total radial SF area:

Height (in):	17.9	
Width (in):	13.2	
Depth (in):	9.4	
Total weight of ice on object:		56 lbs
Weight of object:	73.0	lbs
Combined weight of ice and object:		129 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:		74 lbs
Weight of object:	60.0	lbs
Combined weight of ice and object:		134 lbs

B14 4478 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		55 lbs
Weight of object:	60.0	lbs
Combined weight of ice and object:		115 lbs

DC9-48-60-24-PC16-EV Surge Arrestor

Weight of ice based on total radial SF area:

Height (in):	19.0	
Width (in):	15.9	
Depth (in):	8.2	
Total weight of ice on object:		65 lbs
Weight of object:	35.0	lbs
Combined weight of ice and object:		100 lbs

Date: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM **Checked By:** MSC

HUDSON Design Group LLC

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

Weight of ice based on total radial SF area:

Depth (in):	24.0	
Diameter(in):	9.7	
Total weight of ice on object:		48 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		81 lbs

L 3x3 Angles

Weight of ice based on total radial SF area:

Height (in):	3	
Width (in):	3	
Per foot weight of ice on object:		12 plf

PL 11-1/4x5/8

Weight of ice based on total radial SF area:

Height (in):	11.25	
Width (in):	0.625	
Per foot weight of ice on object:		27 plf

PL 3-1/2x5/8

Weight of ice based on total radial SF area:

Height (in):	3.5	
Width (in):	0.625	
Per foot weight of ice on object:		11 plf

2-1/2" pipe

Per foot weight of ice:

diameter (in):	2.88	
Per foot weight of ice on object:		10 plf

2" pipe

Per foot weight of ice:

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

3/4" Round Bar

Per foot weight of ice:

diameter (in):	0.75	
Per foot weight of ice on object:		5 plf

5/8" Round Bar

Per foot weight of ice:

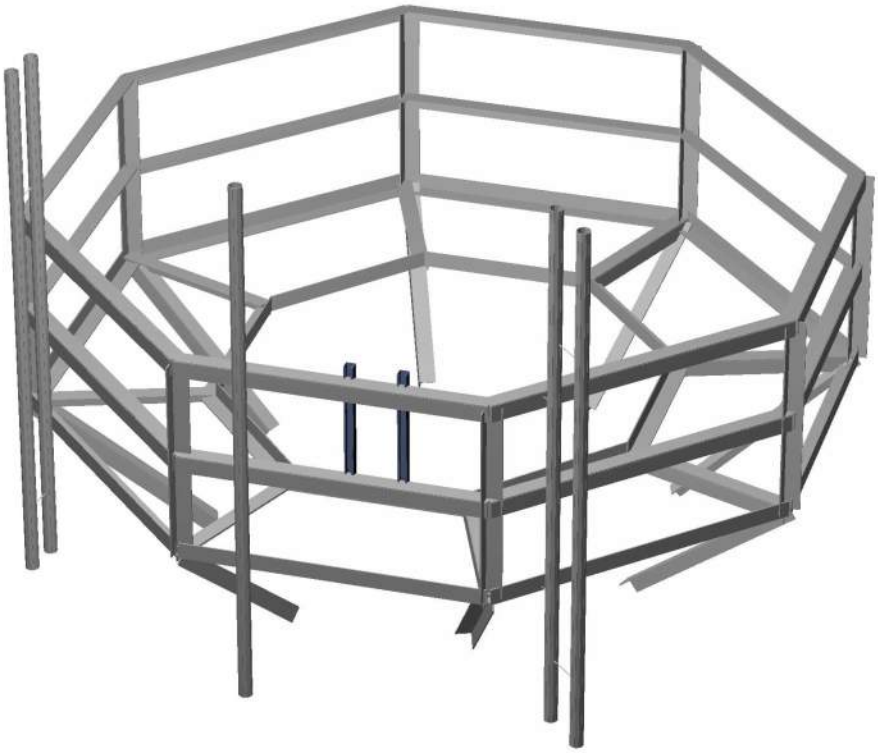
diameter (in):	0.625	
Per foot weight of ice on object:		5 plf

Unistrut

Per foot weight of ice:

diameter (in):	1.66	
Per foot weight of ice on object:		7 plf

Alpha Sector
Calculations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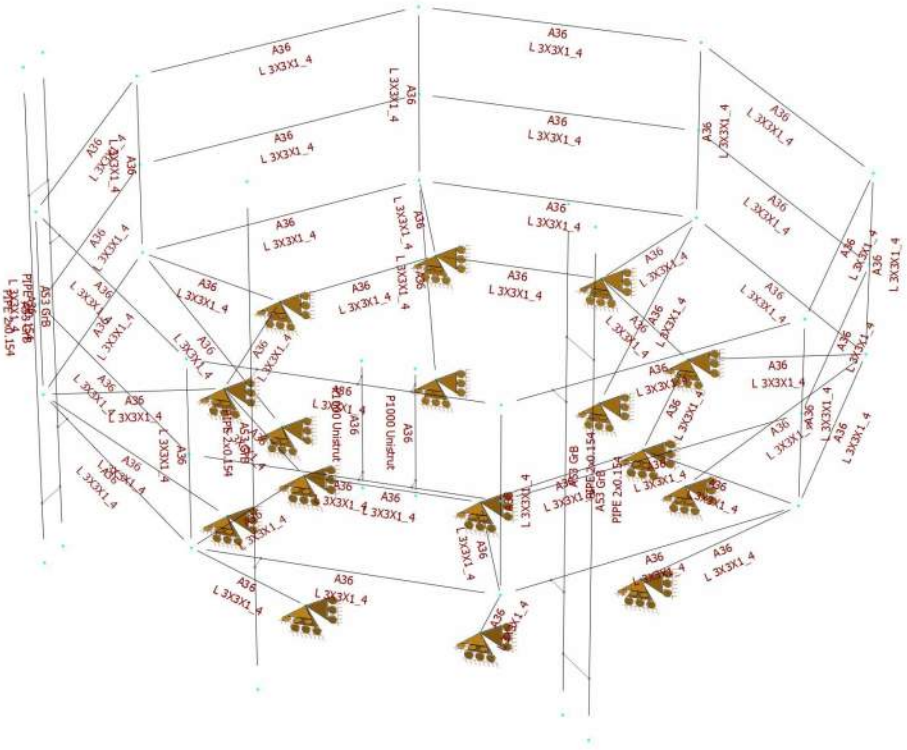
X
Z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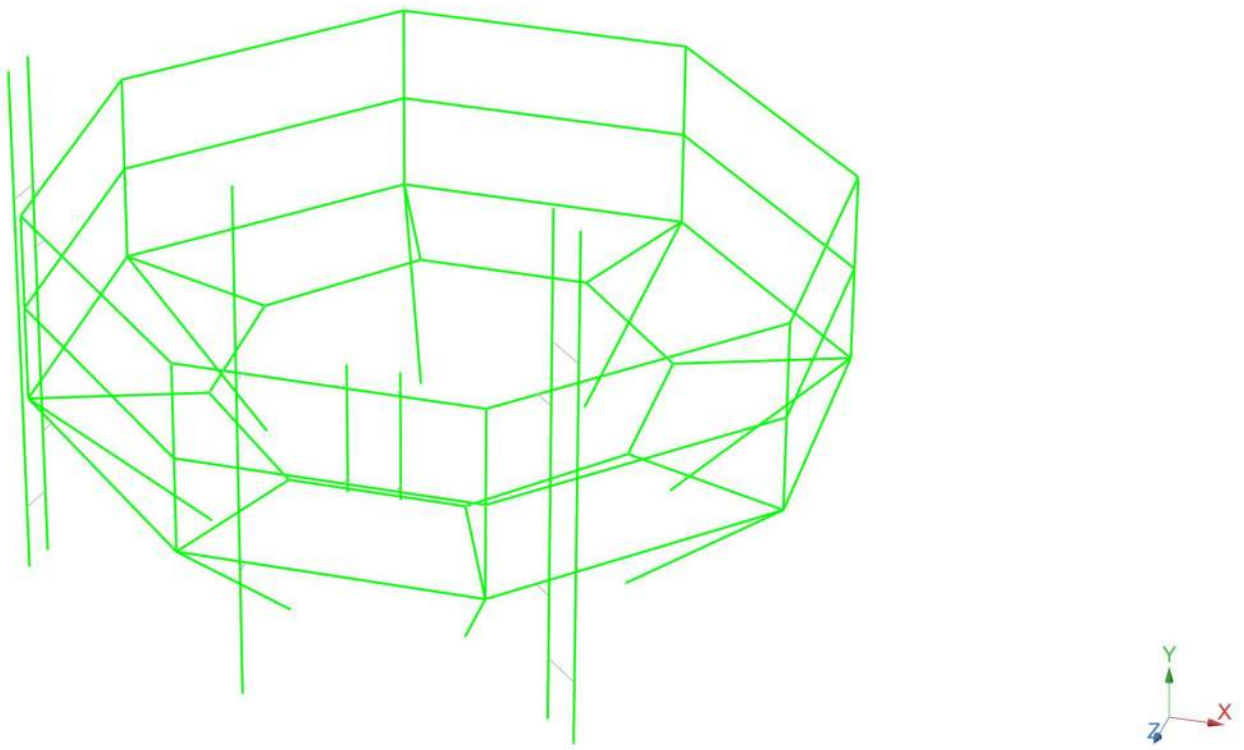
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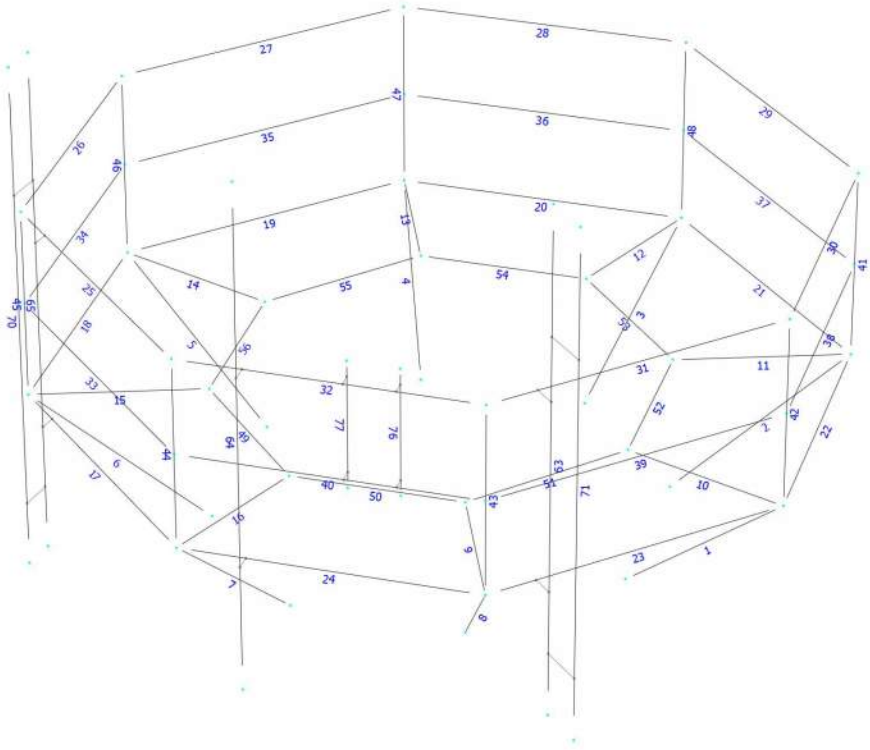
Not designed
Error on design
Design O.K.
With warnings
Y
X
Z


Y
X
Z

Current Date: 6/7/2022 11:08 AM
Units system: English

Load data

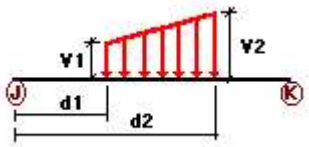
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND

Distributed force on members



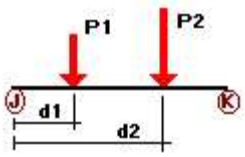
Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	9	y	-0.01	-0.01	0.00	No	100.00	Yes
	10	y	-0.01	-0.01	0.00	No	100.00	Yes
	11	y	-0.01	-0.01	0.00	No	100.00	Yes
	12	y	-0.01	-0.01	0.00	No	100.00	Yes
	13	y	-0.01	-0.01	0.00	No	100.00	Yes
	14	y	-0.01	-0.01	0.00	No	100.00	Yes
	15	y	-0.01	-0.01	0.00	No	100.00	Yes
	16	y	-0.01	-0.01	0.00	No	100.00	Yes
W0	1	z	-0.011	-0.011	0.00	No	100.00	Yes
	2	z	-0.011	-0.011	0.00	No	100.00	Yes
	3	z	-0.011	-0.011	0.00	No	100.00	Yes
	4	z	-0.011	-0.011	0.00	No	100.00	Yes
	5	z	-0.011	-0.011	0.00	No	100.00	Yes
	6	z	-0.011	-0.011	0.00	No	100.00	Yes
	7	z	-0.011	-0.011	0.00	No	100.00	Yes
	8	z	-0.011	-0.011	0.00	No	100.00	Yes
	9	z	-0.011	-0.011	0.00	No	100.00	Yes
	10	z	-0.011	-0.011	0.00	No	100.00	Yes
	11	z	-0.011	-0.011	0.00	No	100.00	Yes
	12	z	-0.011	-0.011	0.00	No	100.00	Yes
	13	z	-0.011	-0.011	0.00	No	100.00	Yes
	14	z	-0.011	-0.011	0.00	No	100.00	Yes

	15	z	-0.011	-0.011	0.00	No	100.00	Yes
	16	z	-0.011	-0.011	0.00	No	100.00	Yes
	17	z	-0.011	-0.011	0.00	No	100.00	Yes
	18	z	-0.011	-0.011	0.00	No	100.00	Yes
	19	z	-0.011	-0.011	0.00	No	100.00	Yes
	20	z	-0.011	-0.011	0.00	No	100.00	Yes
	21	z	-0.011	-0.011	0.00	No	100.00	Yes
	22	z	-0.011	-0.011	0.00	No	100.00	Yes
	23	z	-0.011	-0.011	0.00	No	100.00	Yes
	24	z	-0.011	-0.011	0.00	No	100.00	Yes
	25	z	-0.011	-0.011	0.00	No	100.00	Yes
	26	z	-0.011	-0.011	0.00	No	100.00	Yes
	27	z	-0.011	-0.011	0.00	No	100.00	Yes
	28	z	-0.011	-0.011	0.00	No	100.00	Yes
	29	z	-0.011	-0.011	0.00	No	100.00	Yes
	30	z	-0.011	-0.011	0.00	No	100.00	Yes
	31	z	-0.011	-0.011	0.00	No	100.00	Yes
	32	z	-0.011	-0.011	0.00	No	100.00	Yes
	33	z	-0.011	-0.011	0.00	No	100.00	Yes
	34	z	-0.011	-0.011	0.00	No	100.00	Yes
	35	z	-0.011	-0.011	0.00	No	100.00	Yes
	36	z	-0.011	-0.011	0.00	No	100.00	Yes
	37	z	-0.011	-0.011	0.00	No	100.00	Yes
	38	z	-0.011	-0.011	0.00	No	100.00	Yes
	39	z	-0.011	-0.011	0.00	No	100.00	Yes
	40	z	-0.011	-0.011	0.00	No	100.00	Yes
	41	z	-0.011	-0.011	0.00	No	100.00	Yes
	42	z	-0.011	-0.011	0.00	No	100.00	Yes
	43	z	-0.011	-0.011	0.00	No	100.00	Yes
	44	z	-0.011	-0.011	0.00	No	100.00	Yes
	45	z	-0.011	-0.011	0.00	No	100.00	Yes
	46	z	-0.011	-0.011	0.00	No	100.00	Yes
	47	z	-0.011	-0.011	0.00	No	100.00	Yes
	48	z	-0.011	-0.011	0.00	No	100.00	Yes
	49	z	-0.011	-0.011	0.00	No	100.00	Yes
	50	z	-0.011	-0.011	0.00	No	100.00	Yes
	51	z	-0.011	-0.011	0.00	No	100.00	Yes
	52	z	-0.011	-0.011	0.00	No	100.00	Yes
	53	z	-0.011	-0.011	0.00	No	100.00	Yes
	54	z	-0.011	-0.011	0.00	No	100.00	Yes
	55	z	-0.011	-0.011	0.00	No	100.00	Yes
	56	z	-0.011	-0.011	0.00	No	100.00	Yes
	76	z	-0.006	-0.006	0.00	No	100.00	Yes
	77	z	-0.006	-0.006	0.00	No	100.00	Yes
W30	1	x	-0.011	-0.011	0.00	No	100.00	Yes
	2	x	-0.011	-0.011	0.00	No	100.00	Yes
	3	x	-0.011	-0.011	0.00	No	100.00	Yes
	4	x	-0.011	-0.011	0.00	No	100.00	Yes
	5	x	-0.011	-0.011	0.00	No	100.00	Yes
	6	x	-0.011	-0.011	0.00	No	100.00	Yes
	7	x	-0.011	-0.011	0.00	No	100.00	Yes
	8	x	-0.011	-0.011	0.00	No	100.00	Yes
	9	x	-0.011	-0.011	0.00	No	100.00	Yes
	10	x	-0.011	-0.011	0.00	No	100.00	Yes
	11	x	-0.011	-0.011	0.00	No	100.00	Yes
	12	x	-0.011	-0.011	0.00	No	100.00	Yes
	13	x	-0.011	-0.011	0.00	No	100.00	Yes
	14	x	-0.011	-0.011	0.00	No	100.00	Yes
	15	x	-0.011	-0.011	0.00	No	100.00	Yes
	16	x	-0.011	-0.011	0.00	No	100.00	Yes

	17	x	-0.011	-0.011	0.00	No	100.00	Yes
	18	x	-0.011	-0.011	0.00	No	100.00	Yes
	19	x	-0.011	-0.011	0.00	No	100.00	Yes
	20	x	-0.011	-0.011	0.00	No	100.00	Yes
	21	x	-0.011	-0.011	0.00	No	100.00	Yes
	22	x	-0.011	-0.011	0.00	No	100.00	Yes
	23	x	-0.011	-0.011	0.00	No	100.00	Yes
	24	x	-0.011	-0.011	0.00	No	100.00	Yes
	25	x	-0.011	-0.011	0.00	No	100.00	Yes
	26	x	-0.011	-0.011	0.00	No	100.00	Yes
	27	x	-0.011	-0.011	0.00	No	100.00	Yes
	28	x	-0.011	-0.011	0.00	No	100.00	Yes
	29	x	-0.011	-0.011	0.00	No	100.00	Yes
	30	x	-0.011	-0.011	0.00	No	100.00	Yes
	31	x	-0.011	-0.011	0.00	No	100.00	Yes
	32	x	-0.011	-0.011	0.00	No	100.00	Yes
	33	x	-0.011	-0.011	0.00	No	100.00	Yes
	34	x	-0.011	-0.011	0.00	No	100.00	Yes
	35	x	-0.011	-0.011	0.00	No	100.00	Yes
	36	x	-0.011	-0.011	0.00	No	100.00	Yes
	37	x	-0.011	-0.011	0.00	No	100.00	Yes
	38	x	-0.011	-0.011	0.00	No	100.00	Yes
	39	x	-0.011	-0.011	0.00	No	100.00	Yes
	40	x	-0.011	-0.011	0.00	No	100.00	Yes
	41	x	-0.011	-0.011	0.00	No	100.00	Yes
	42	x	-0.011	-0.011	0.00	No	100.00	Yes
	43	x	-0.011	-0.011	0.00	No	100.00	Yes
	44	x	-0.011	-0.011	0.00	No	100.00	Yes
	45	x	-0.011	-0.011	0.00	No	100.00	Yes
	46	x	-0.011	-0.011	0.00	No	100.00	Yes
	47	x	-0.011	-0.011	0.00	No	100.00	Yes
	48	x	-0.011	-0.011	0.00	No	100.00	Yes
	49	x	-0.011	-0.011	0.00	No	100.00	Yes
	50	x	-0.011	-0.011	0.00	No	100.00	Yes
	51	x	-0.011	-0.011	0.00	No	100.00	Yes
	52	x	-0.011	-0.011	0.00	No	100.00	Yes
	53	x	-0.011	-0.011	0.00	No	100.00	Yes
	54	x	-0.011	-0.011	0.00	No	100.00	Yes
	55	x	-0.011	-0.011	0.00	No	100.00	Yes
	56	x	-0.011	-0.011	0.00	No	100.00	Yes
	63	x	-0.009	-0.009	0.00	No	100.00	Yes
	64	x	-0.009	-0.009	0.00	No	100.00	Yes
	65	x	-0.009	-0.009	0.00	No	100.00	Yes
	70	x	-0.009	-0.009	0.00	No	100.00	Yes
	71	x	-0.009	-0.009	0.00	No	100.00	Yes
	76	x	-0.006	-0.006	0.00	No	100.00	Yes
	77	x	-0.006	-0.006	0.00	No	100.00	Yes
Di	1	y	-0.012	-0.012	0.00	No	100.00	Yes
	2	y	-0.012	-0.012	0.00	No	100.00	Yes
	3	y	-0.012	-0.012	0.00	No	100.00	Yes
	4	y	-0.012	-0.012	0.00	No	100.00	Yes
	5	y	-0.012	-0.012	0.00	No	100.00	Yes
	6	y	-0.012	-0.012	0.00	No	100.00	Yes
	7	y	-0.012	-0.012	0.00	No	100.00	Yes
	8	y	-0.012	-0.012	0.00	No	100.00	Yes
	9	y	-0.012	-0.012	0.00	No	100.00	Yes
	10	y	-0.012	-0.012	0.00	No	100.00	Yes
	11	y	-0.012	-0.012	0.00	No	100.00	Yes
	12	y	-0.012	-0.012	0.00	No	100.00	Yes
	13	y	-0.012	-0.012	0.00	No	100.00	Yes

14	y	-0.012	-0.012	0.00	No	100.00	Yes
15	y	-0.012	-0.012	0.00	No	100.00	Yes
16	y	-0.012	-0.012	0.00	No	100.00	Yes
17	y	-0.012	-0.012	0.00	No	100.00	Yes
18	y	-0.012	-0.012	0.00	No	100.00	Yes
19	y	-0.012	-0.012	0.00	No	100.00	Yes
20	y	-0.012	-0.012	0.00	No	100.00	Yes
21	y	-0.012	-0.012	0.00	No	100.00	Yes
22	y	-0.012	-0.012	0.00	No	100.00	Yes
23	y	-0.012	-0.012	0.00	No	100.00	Yes
24	y	-0.012	-0.012	0.00	No	100.00	Yes
25	y	-0.012	-0.012	0.00	No	100.00	Yes
26	y	-0.012	-0.012	0.00	No	100.00	Yes
27	y	-0.012	-0.012	0.00	No	100.00	Yes
28	y	-0.012	-0.012	0.00	No	100.00	Yes
29	y	-0.012	-0.012	0.00	No	100.00	Yes
30	y	-0.012	-0.012	0.00	No	100.00	Yes
31	y	-0.012	-0.012	0.00	No	100.00	Yes
32	y	-0.012	-0.012	0.00	No	100.00	Yes
33	y	-0.012	-0.012	0.00	No	100.00	Yes
34	y	-0.012	-0.012	0.00	No	100.00	Yes
35	y	-0.012	-0.012	0.00	No	100.00	Yes
36	y	-0.012	-0.012	0.00	No	100.00	Yes
37	y	-0.012	-0.012	0.00	No	100.00	Yes
38	y	-0.012	-0.012	0.00	No	100.00	Yes
39	y	-0.012	-0.012	0.00	No	100.00	Yes
40	y	-0.012	-0.012	0.00	No	100.00	Yes
41	y	-0.012	-0.012	0.00	No	100.00	Yes
42	y	-0.012	-0.012	0.00	No	100.00	Yes
43	y	-0.012	-0.012	0.00	No	100.00	Yes
44	y	-0.012	-0.012	0.00	No	100.00	Yes
45	y	-0.012	-0.012	0.00	No	100.00	Yes
46	y	-0.012	-0.012	0.00	No	100.00	Yes
47	y	-0.012	-0.012	0.00	No	100.00	Yes
48	y	-0.012	-0.012	0.00	No	100.00	Yes
49	y	-0.012	-0.012	0.00	No	100.00	Yes
50	y	-0.012	-0.012	0.00	No	100.00	Yes
51	y	-0.012	-0.012	0.00	No	100.00	Yes
52	y	-0.012	-0.012	0.00	No	100.00	Yes
53	y	-0.012	-0.012	0.00	No	100.00	Yes
54	y	-0.012	-0.012	0.00	No	100.00	Yes
55	y	-0.012	-0.012	0.00	No	100.00	Yes
56	y	-0.012	-0.012	0.00	No	100.00	Yes
63	y	-0.009	-0.009	0.00	No	100.00	Yes
64	y	-0.009	-0.009	0.00	No	100.00	Yes
65	y	-0.009	-0.009	0.00	No	100.00	Yes
70	y	-0.009	-0.009	0.00	No	100.00	Yes
71	y	-0.009	-0.009	0.00	No	100.00	Yes
76	y	-0.007	-0.007	0.00	No	100.00	Yes
77	y	-0.007	-0.007	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	64	y	-0.033	1.50	No
		y	-0.033	3.50	No
		y	-0.041	4.50	No
		y	-0.041	6.50	No
	70	y	-0.06	0.50	No
		y	-0.06	7.50	No
	71	y	-0.075	0.50	No
		y	-0.075	7.50	No
	76	y	-0.03	1.00	No
	77	y	-0.03	1.00	No
W0	64	z	-0.076	1.50	No
		z	-0.076	3.50	No
		z	-0.073	4.50	No
		z	-0.073	6.50	No
	70	z	-0.323	0.50	No
		z	-0.323	7.50	No
	71	z	-0.34	0.50	No
		z	-0.34	7.50	No
	76	z	-0.037	1.00	No
	77	z	-0.037	1.00	No
W30	64	x	-0.037	1.50	No
		x	-0.037	3.50	No
		x	-0.039	4.50	No
		x	-0.039	6.50	No
	70	x	-0.147	0.50	No
		x	-0.147	7.50	No
	71	x	-0.174	0.50	No
		x	-0.174	7.50	No
	76	x	-0.023	1.00	No
	77	x	-0.023	1.00	No
Di	64	y	-0.053	1.50	No
		y	-0.053	3.50	No
		y	-0.052	4.50	No
		y	-0.052	6.50	No
	70	y	-0.199	0.50	No
		y	-0.199	7.50	No
	71	y	-0.215	0.50	No
		y	-0.215	7.50	No
	76	y	-0.028	1.00	No
	77	y	-0.028	1.00	No
Wi0	64	z	-0.018	1.50	No
		z	-0.018	3.50	No
		z	-0.017	4.50	No
		z	-0.017	6.50	No
	70	z	-0.068	0.50	No
		z	-0.068	7.50	No
	71	z	-0.071	0.50	No
		z	-0.071	7.50	No
	76	z	-0.01	1.00	No
	77	z	-0.01	1.00	No
Wi30	64	x	-0.01	1.50	No
		x	-0.01	3.50	No
		x	-0.011	4.50	No
		x	-0.011	6.50	No

	70	x	-0.035	0.50	No
		x	-0.035	7.50	No
	71	x	-0.04	0.50	No
		x	-0.04	7.50	No
	76	x	-0.007	1.00	No
	77	x	-0.007	1.00	No
WL0	64	z	-0.005	1.50	No
		z	-0.005	3.50	No
		z	-0.005	4.50	No
		z	-0.005	6.50	No
	70	z	-0.02	0.50	No
		z	-0.02	7.50	No
	71	z	-0.021	0.50	No
		z	-0.021	7.50	No
	76	z	-0.003	1.00	No
	77	z	-0.003	1.00	No
WL30	64	x	-0.003	1.50	No
		x	-0.003	3.50	No
		x	-0.003	4.50	No
		x	-0.003	6.50	No
	70	x	-0.009	0.50	No
		x	-0.009	7.50	No
	71	x	-0.011	0.50	No
		x	-0.011	7.50	No
	76	x	-0.002	1.00	No
	77	x	-0.002	1.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	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
WL0	0.00	0.00	0.00

WL30	0.00	0.00	0.00

Current Date: 6/7/2022 11:09 AM
Units system: English

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+1.6W0
LC2=1.2DL+1.6W30
LC3=1.2DL-1.6W0
LC4=1.2DL-1.6W30
LC5=0.9DL+1.6W0
LC6=0.9DL+1.6W30
LC7=0.9DL-1.6W0
LC8=0.9DL-1.6W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC14=0.9DL
LC17=1.2DL+WL0
LC18=1.2DL+WL30
LC19=1.2DL-WL0
LC20=1.2DL-WL30

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	L 3X3X1_4	**1**	LC4 at 100.00%	0.05	OK	
		2	LC3 at 100.00%	0.08	OK	
		3	LC4 at 100.00%	0.06	OK	
		4	LC1 at 100.00%	0.06	OK	
		5	LC4 at 100.00%	0.07	OK	
		6	LC2 at 100.00%	0.15	OK	
		7	LC3 at 100.00%	0.11	OK	
		8	LC3 at 100.00%	0.14	OK	
		9	LC4 at 100.00%	0.25	OK	
		10	LC4 at 100.00%	0.21	OK	
		11	LC4 at 100.00%	0.17	OK	
		12	LC4 at 100.00%	0.17	OK	
		13	LC4 at 100.00%	0.16	OK	
		14	LC4 at 100.00%	0.15	OK	
		15	LC4 at 100.00%	0.16	OK	
		16	LC2 at 0.00%	0.23	OK	
		17	LC3 at 0.00%	0.16	OK	
		18	LC3 at 0.00%	0.15	OK	
		19	LC5 at 100.00%	0.08	OK	
		20	LC2 at 0.00%	0.10	OK	
		21	LC2 at 0.00%	0.08	OK	
		22	LC3 at 100.00%	0.12	OK	
		23	LC3 at 100.00%	0.22	OK	
		24	LC2 at 100.00%	0.19	OK	
		25	LC2 at 81.25%	0.23	OK	
		26	LC3 at 0.00%	0.18	OK	
		27	LC2 at 0.00%	0.07	OK	
		28	LC3 at 0.00%	0.05	OK	
		29	LC3 at 0.00%	0.05	OK	
		30	LC3 at 100.00%	0.17	OK	
		31	LC3 at 81.25%	0.34	OK	
		32	LC2 at 100.00%	0.18	OK	

	33	LC3 at 0.00%	0.23	OK	
	34	LC3 at 100.00%	0.21	OK	
	35	LC2 at 0.00%	0.08	OK	
	36	LC2 at 0.00%	0.05	OK	
	37	LC1 at 0.00%	0.07	OK	
	38	LC3 at 100.00%	0.16	OK	
	39	LC3 at 100.00%	0.22	OK	
	40	LC4 at 0.00%	0.28	OK	
	41	LC3 at 100.00%	0.24	OK	
	42	LC3 at 0.00%	0.29	OK	
	43	LC3 at 100.00%	**0.38**	**OK**	
	44	LC3 at 100.00%	0.36	OK	
	45	LC2 at 100.00%	0.29	OK	
	46	LC3 at 100.00%	0.23	OK	
	47	LC3 at 100.00%	0.14	OK	
	48	LC3 at 100.00%	0.11	OK	
	49	LC4 at 100.00%	0.12	OK	
	50	LC2 at 100.00%	0.13	OK	
	51	LC2 at 100.00%	0.10	OK	
	52	LC2 at 100.00%	0.09	OK	
	53	LC2 at 100.00%	0.09	OK	
	54	LC2 at 100.00%	0.10	OK	
	55	LC2 at 100.00%	0.09	OK	
	56	LC4 at 100.00%	0.09	OK	
P1000 Unistrut	**76**	LC4 at 85.42%	0.29	OK	Eq. H1.2-1
	77	LC4 at 12.50%	**0.32**	**OK**	Eq. H1.2-1
PIPE 2x0.154	**63**	LC1 at 36.25%	**0.42**	**OK**	
	64	LC3 at 37.50%	0.15	OK	
	65	LC4 at 36.25%	0.29	OK	
	70	LC3 at 22.92%	0.37	OK	
	71	LC3 at 22.92%	0.39	OK	

Current Date: 6/7/2022 11:09 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	-3.375	0.00	-3.375	0
3	4.4167	0.00	0.00	0
4	7.7917	0.00	-3.375	0
5	7.7917	0.00	-7.7917	0
6	-3.375	0.00	-7.7917	0
7	0.00	0.00	-11.1667	0
8	4.4167	0.00	-11.1667	0
9	-0.9167	0.00	-4.25	0
10	5.3333	0.00	-4.25	0
11	-0.9167	0.00	-6.9167	0
12	5.3333	0.00	-6.9167	0
13	0.9167	0.00	-2.25	0
14	0.9167	0.00	-8.9167	0
15	3.50	0.00	-2.25	0
16	3.50	0.00	-8.9167	0
17	-0.9167	-2.1667	-6.9167	0
18	-0.9167	-2.1667	-4.25	0
19	0.9167	-2.1667	-2.25	0
20	3.50	-2.1667	-2.25	0
21	5.3333	-2.1667	-4.25	0
22	5.3333	-2.1667	-6.9167	0
23	3.50	-2.1667	-8.9167	0

24	0.9167	-2.1667	-8.9167	0
25	0.00	3.00	0.00	0
26	-3.375	3.00	-3.375	0
27	4.4167	3.00	0.00	0
28	7.7917	3.00	-3.375	0
29	7.7917	3.00	-7.7917	0
30	-3.375	3.00	-7.7917	0
31	0.00	3.00	-11.1667	0
32	4.4167	3.00	-11.1667	0
33	0.00	1.50	0.00	0
34	-3.375	1.50	-3.375	0
35	4.4167	1.50	0.00	0
36	7.7917	1.50	-3.375	0
37	7.7917	1.50	-7.7917	0
38	-3.375	1.50	-7.7917	0
39	0.00	1.50	-11.1667	0
40	4.4167	1.50	-11.1667	0
65	5.2292	6.00	-0.3125	0
66	1.00	6.00	0.25	0
67	-2.8625	6.00	-2.5625	0
68	5.2292	-2.00	-0.3125	0
69	1.00	-2.00	0.25	0
70	-2.8625	-2.00	-2.5625	0
81	5.7292	6.00	0.1875	0
82	5.7292	-2.00	0.1875	0
83	-2.9625	6.00	-2.0625	0
84	-2.9625	-2.00	-2.0625	0
93	3.1667	3.25	-0.20	0
95	3.1667	1.25	-0.20	0
96	2.4167	1.25	-0.20	0
94	2.4167	3.25	-0.20	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
9	1	1	1	0	0	0
10	1	1	1	0	0	0
11	1	1	1	0	0	0
12	1	1	1	0	0	0
13	1	1	1	0	0	0
14	1	1	1	0	0	0
15	1	1	1	0	0	0
16	1	1	1	0	0	0
17	1	1	1	0	0	0
18	1	1	1	0	0	0
19	1	1	1	0	0	0
20	1	1	1	0	0	0
21	1	1	1	0	0	0
22	1	1	1	0	0	0
23	1	1	1	0	0	0
24	1	1	1	0	0	0

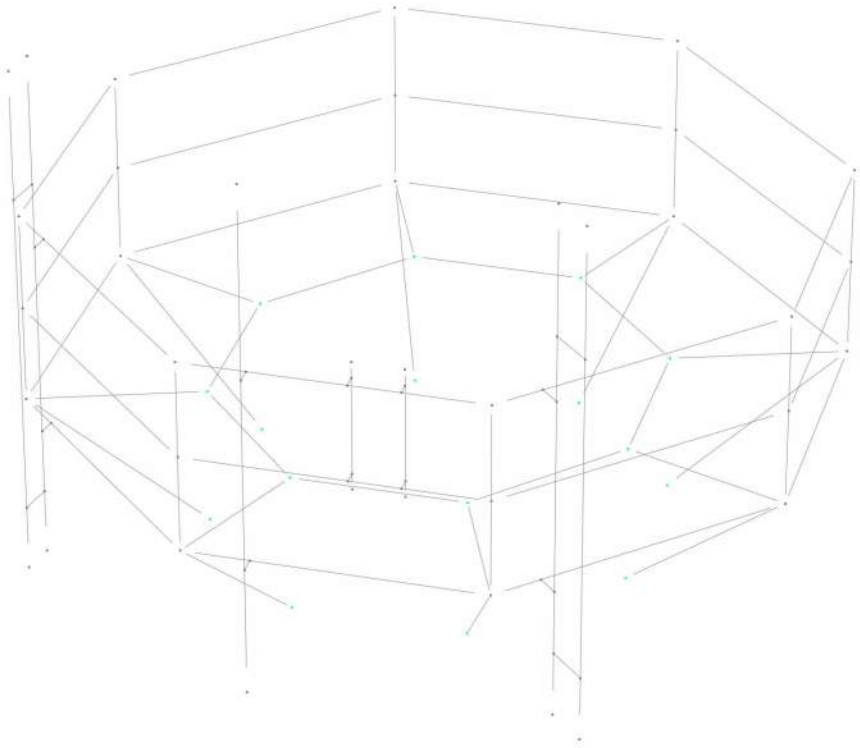
Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	21	4		L 3X3X1_4	A36	0.00	0.00	0.00
2	22	5		L 3X3X1_4	A36	0.00	0.00	0.00
3	23	8		L 3X3X1_4	A36	0.00	0.00	0.00
4	24	7		L 3X3X1_4	A36	0.00	0.00	0.00
5	17	6		L 3X3X1_4	A36	0.00	0.00	0.00
6	18	2		L 3X3X1_4	A36	0.00	0.00	0.00
7	19	1		L 3X3X1_4	A36	0.00	0.00	0.00
8	20	3		L 3X3X1_4	A36	0.00	0.00	0.00
9	3	15		L 3X3X1_4	A36	0.00	0.00	0.00
10	4	10		L 3X3X1_4	A36	0.00	0.00	0.00
11	5	12		L 3X3X1_4	A36	0.00	0.00	0.00
12	8	16		L 3X3X1_4	A36	0.00	0.00	0.00
13	7	14		L 3X3X1_4	A36	0.00	0.00	0.00
14	6	11		L 3X3X1_4	A36	0.00	0.00	0.00
15	2	9		L 3X3X1_4	A36	0.00	0.00	0.00
16	1	13		L 3X3X1_4	A36	0.00	0.00	0.00
17	1	2		L 3X3X1_4	A36	0.00	0.00	0.00
18	2	6		L 3X3X1_4	A36	0.00	0.00	0.00
19	6	7		L 3X3X1_4	A36	0.00	0.00	0.00
20	7	8		L 3X3X1_4	A36	0.00	0.00	0.00
21	8	5		L 3X3X1_4	A36	0.00	0.00	0.00
22	5	4		L 3X3X1_4	A36	0.00	0.00	0.00
23	4	3		L 3X3X1_4	A36	0.00	0.00	0.00
24	3	1		L 3X3X1_4	A36	0.00	0.00	0.00
25	25	26		L 3X3X1_4	A36	0.00	0.00	0.00
26	26	30		L 3X3X1_4	A36	0.00	0.00	0.00
27	30	31		L 3X3X1_4	A36	0.00	0.00	0.00
28	31	32		L 3X3X1_4	A36	0.00	0.00	0.00
29	32	29		L 3X3X1_4	A36	0.00	0.00	0.00
30	29	28		L 3X3X1_4	A36	0.00	0.00	0.00
31	28	27		L 3X3X1_4	A36	0.00	0.00	0.00
32	27	25		L 3X3X1_4	A36	0.00	0.00	0.00
33	33	34		L 3X3X1_4	A36	0.00	0.00	0.00
34	34	38		L 3X3X1_4	A36	0.00	0.00	0.00
35	38	39		L 3X3X1_4	A36	0.00	0.00	0.00
36	39	40		L 3X3X1_4	A36	0.00	0.00	0.00
37	40	37		L 3X3X1_4	A36	0.00	0.00	0.00
38	37	36		L 3X3X1_4	A36	0.00	0.00	0.00
39	36	35		L 3X3X1_4	A36	0.00	0.00	0.00
40	35	33		L 3X3X1_4	A36	0.00	0.00	0.00
41	29	5		L 3X3X1_4	A36	0.00	0.00	0.00
42	28	4		L 3X3X1_4	A36	0.00	0.00	0.00
43	27	3		L 3X3X1_4	A36	0.00	0.00	0.00
44	25	1		L 3X3X1_4	A36	0.00	0.00	0.00
45	26	2		L 3X3X1_4	A36	0.00	0.00	0.00
46	30	6		L 3X3X1_4	A36	0.00	0.00	0.00
47	31	7		L 3X3X1_4	A36	0.00	0.00	0.00
48	32	8		L 3X3X1_4	A36	0.00	0.00	0.00
49	9	13		L 3X3X1_4	A36	0.00	0.00	0.00
50	13	15		L 3X3X1_4	A36	0.00	0.00	0.00
51	15	10		L 3X3X1_4	A36	0.00	0.00	0.00
52	10	12		L 3X3X1_4	A36	0.00	0.00	0.00
53	12	16		L 3X3X1_4	A36	0.00	0.00	0.00
54	16	14		L 3X3X1_4	A36	0.00	0.00	0.00
55	14	11		L 3X3X1_4	A36	0.00	0.00	0.00
56	11	9		L 3X3X1_4	A36	0.00	0.00	0.00
63	65	68		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
64	66	69		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
65	67	70		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
70	83	84		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

71	81	82	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
76	93	95	P1000 Unistrut	A36	0.00	0.00	0.00
77	96	94	P1000 Unistrut	A36	0.00	0.00	0.00

Orientation of local axes

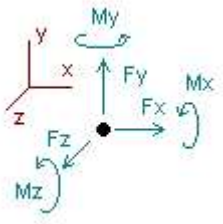
Member	Rotation [Deg]	Axes23	NX	NY	NZ
1	90.00	0	0.00	0.00	0.00
2	90.00	0	0.00	0.00	0.00
3	90.00	0	0.00	0.00	0.00
4	90.00	0	0.00	0.00	0.00
5	90.00	0	0.00	0.00	0.00
6	90.00	0	0.00	0.00	0.00
7	90.00	0	0.00	0.00	0.00
8	90.00	0	0.00	0.00	0.00
9	90.00	0	0.00	0.00	0.00
10	90.00	0	0.00	0.00	0.00
11	90.00	0	0.00	0.00	0.00
12	90.00	0	0.00	0.00	0.00
13	90.00	0	0.00	0.00	0.00
14	90.00	0	0.00	0.00	0.00
15	90.00	0	0.00	0.00	0.00
16	90.00	0	0.00	0.00	0.00
25	90.00	0	0.00	0.00	0.00
26	90.00	0	0.00	0.00	0.00
27	90.00	0	0.00	0.00	0.00
28	90.00	0	0.00	0.00	0.00
29	90.00	0	0.00	0.00	0.00
30	90.00	0	0.00	0.00	0.00
31	90.00	0	0.00	0.00	0.00
32	90.00	0	0.00	0.00	0.00
33	90.00	0	0.00	0.00	0.00
34	90.00	0	0.00	0.00	0.00
35	90.00	0	0.00	0.00	0.00
36	90.00	0	0.00	0.00	0.00
37	90.00	0	0.00	0.00	0.00
38	90.00	0	0.00	0.00	0.00
39	90.00	0	0.00	0.00	0.00
40	90.00	0	0.00	0.00	0.00


Y
X
Z

Current Date: 6/7/2022 11:09 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=1.2DL+1.6W0**						
9	-0.02333	0.07775	0.23640	0.00000	0.00000	0.00000
10	-0.12525	-0.02582	0.08738	0.00000	0.00000	0.00000
11	0.87316	0.01596	0.46099	0.00000	0.00000	0.00000
12	-0.98024	-0.03009	0.42475	0.00000	0.00000	0.00000
13	-0.39467	0.16829	1.43131	0.00000	0.00000	0.00000
14	0.36356	0.00517	1.13357	0.00000	0.00000	0.00000
15	0.70488	0.19515	1.48753	0.00000	0.00000	0.00000
16	-0.39144	0.01434	0.92709	0.00000	0.00000	0.00000
17	-0.48669	0.40146	-0.14055	0.00000	0.00000	0.00000
18	-0.31933	0.28781	0.13025	0.00000	0.00000	0.00000
19	0.03781	-0.07305	-0.15471	0.00000	0.00000	0.00000
20	-0.07762	-0.09994	-0.16085	0.00000	0.00000	0.00000
21	0.33524	0.29017	0.12740	0.00000	0.00000	0.00000
22	0.55326	0.45577	-0.21013	0.00000	0.00000	0.00000
23	0.08717	0.22213	-0.24169	0.00000	0.00000	0.00000
24	-0.15650	0.30869	-0.32803	0.00000	0.00000	0.00000
SUM	0.00000	2.21378	5.21071	0.00000	0.00000	0.00000
Condition **LC2=1.2DL+1.6W30**						
9	2.01997	-0.07647	-0.46955	0.00000	0.00000	0.00000
10	1.14681	0.12693	0.03440	0.00000	0.00000	0.00000
11	0.77470	0.05515	0.51326	0.00000	0.00000	0.00000
12	0.55141	0.08869	-0.46622	0.00000	0.00000	0.00000
13	0.90810	0.07783	-1.00677	0.00000	0.00000	0.00000
14	-0.12891	0.07334	0.34827	0.00000	0.00000	0.00000
15	0.75674	0.14538	0.59578	0.00000	0.00000	0.00000
16	-0.14698	0.07479	-0.31863	0.00000	0.00000	0.00000
17	-0.22821	0.17867	-0.05242	0.00000	0.00000	0.00000
18	-0.90087	0.73526	0.38056	0.00000	0.00000	0.00000
19	-0.26660	0.70235	0.79141	0.00000	0.00000	0.00000
20	-0.01605	-0.07006	-0.09446	0.00000	0.00000	0.00000
21	-0.12193	-0.09717	-0.05307	0.00000	0.00000	0.00000
22	0.04863	0.04466	-0.02627	0.00000	0.00000	0.00000
23	0.03784	0.08578	-0.10571	0.00000	0.00000	0.00000
24	-0.03557	0.06864	-0.07056	0.00000	0.00000	0.00000
SUM	4.39907	2.21378	0.00000	0.00000	0.00000	0.00000

Condition **LC3=1.2DL-1.6W0**

9	0.58048	0.01941	-0.44003	0.00000	0.00000	0.00000
10	-0.15077	0.10152	-0.18904	0.00000	0.00000	0.00000
11	-0.73742	0.06609	-0.41427	0.00000	0.00000	0.00000
12	0.84932	0.12113	-0.38860	0.00000	0.00000	0.00000
13	0.63677	-0.08691	-2.05843	0.00000	0.00000	0.00000
14	-0.31610	0.07677	-1.00849	0.00000	0.00000	0.00000
15	-1.05038	-0.10939	-2.36649	0.00000	0.00000	0.00000
16	0.33076	0.06351	-0.79156	0.00000	0.00000	0.00000
17	0.24391	-0.16100	0.04989	0.00000	0.00000	0.00000
18	-0.38072	0.35452	0.12070	0.00000	0.00000	0.00000
19	-0.33572	0.79957	0.88425	0.00000	0.00000	0.00000
20	0.50542	1.10640	1.19251	0.00000	0.00000	0.00000
21	0.04423	0.06767	0.01279	0.00000	0.00000	0.00000
22	-0.30005	-0.20835	0.12565	0.00000	0.00000	0.00000
23	0.02211	0.05054	-0.01847	0.00000	0.00000	0.00000
24	0.05815	-0.04770	0.07887	0.00000	0.00000	0.00000
SUM	0.00000	2.21378	-5.21071	0.00000	0.00000	0.00000

Condition **LC4=1.2DL-1.6W30**

9	-1.46175	0.17333	0.27151	0.00000	0.00000	0.00000
10	-1.42627	-0.05087	-0.13355	0.00000	0.00000	0.00000
11	-0.64010	0.02676	-0.46540	0.00000	0.00000	0.00000
12	-0.67845	0.00255	0.50340	0.00000	0.00000	0.00000
13	-0.66118	0.00384	0.38055	0.00000	0.00000	0.00000
14	0.17575	0.00872	-0.22555	0.00000	0.00000	0.00000
15	-1.10792	-0.05993	-1.47857	0.00000	0.00000	0.00000
16	0.08830	0.00311	0.45265	0.00000	0.00000	0.00000
17	-0.01517	0.06222	-0.03849	0.00000	0.00000	0.00000
18	0.20003	-0.09253	-0.13111	0.00000	0.00000	0.00000
19	-0.03225	0.02254	-0.06436	0.00000	0.00000	0.00000
20	0.44619	1.07782	1.12740	0.00000	0.00000	0.00000
21	0.50247	0.45557	0.19239	0.00000	0.00000	0.00000
22	0.20300	0.20161	-0.05809	0.00000	0.00000	0.00000
23	0.07124	0.18689	-0.15454	0.00000	0.00000	0.00000
24	-0.06296	0.19215	-0.17825	0.00000	0.00000	0.00000
SUM	-4.39907	2.21378	0.00000	0.00000	0.00000	0.00000

Condition **LC5=0.9DL+1.6W0**

9	-0.09294	0.06564	0.26176	0.00000	0.00000	0.00000
10	-0.09048	-0.03531	0.10019	0.00000	0.00000	0.00000
11	0.85604	0.00570	0.45521	0.00000	0.00000	0.00000
12	-0.96383	-0.04147	0.42016	0.00000	0.00000	0.00000
13	-0.42502	0.15803	1.50932	0.00000	0.00000	0.00000
14	0.35751	-0.00508	1.11791	0.00000	0.00000	0.00000
15	0.74803	0.18446	1.59769	0.00000	0.00000	0.00000
16	-0.38385	0.00462	0.90995	0.00000	0.00000	0.00000
17	-0.45626	0.37135	-0.12921	0.00000	0.00000	0.00000
18	-0.23172	0.20746	0.09886	0.00000	0.00000	0.00000
19	0.07501	-0.16358	-0.24557	0.00000	0.00000	0.00000
20	-0.13100	-0.22570	-0.28986	0.00000	0.00000	0.00000
21	0.28764	0.24531	0.10983	0.00000	0.00000	0.00000
22	0.52159	0.42484	-0.19955	0.00000	0.00000	0.00000
23	0.07348	0.18799	-0.20909	0.00000	0.00000	0.00000
24	-0.14420	0.27607	-0.29688	0.00000	0.00000	0.00000
SUM	0.00000	1.66033	5.21071	0.00000	0.00000	0.00000

Condition **LC6=0.9DL+1.6W30**

9	1.95030	-0.08857	-0.44427	0.00000	0.00000	0.00000
10	1.18136	0.11741	0.04725	0.00000	0.00000	0.00000
11	0.75770	0.04488	0.50749	0.00000	0.00000	0.00000
12	0.56765	0.07730	-0.47070	0.00000	0.00000	0.00000
13	0.87752	0.06760	-0.92853	0.00000	0.00000	0.00000
14	-0.13488	0.06308	0.33271	0.00000	0.00000	0.00000
15	0.79966	0.13473	0.70596	0.00000	0.00000	0.00000
16	-0.13935	0.06507	-0.33574	0.00000	0.00000	0.00000
17	-0.19790	0.14865	-0.04108	0.00000	0.00000	0.00000
18	-0.81309	0.65481	0.34920	0.00000	0.00000	0.00000
19	-0.22917	0.61158	0.70033	0.00000	0.00000	0.00000
20	-0.06930	-0.19589	-0.22361	0.00000	0.00000	0.00000
21	-0.16928	-0.14186	-0.07064	0.00000	0.00000	0.00000
22	0.01710	0.01384	-0.01578	0.00000	0.00000	0.00000
23	0.02410	0.05162	-0.07312	0.00000	0.00000	0.00000
24	-0.02333	0.03608	-0.03946	0.00000	0.00000	0.00000
SUM	4.39907	1.66033	0.00000	0.00000	0.00000	0.00000

Condition **LC7=0.9DL-1.6W0**

9	0.51116	0.00723	-0.41470	0.00000	0.00000	0.00000
10	-0.11621	0.09198	-0.17626	0.00000	0.00000	0.00000
11	-0.75422	0.05582	-0.41992	0.00000	0.00000	0.00000
12	0.86528	0.10971	-0.39301	0.00000	0.00000	0.00000
13	0.60641	-0.09710	-1.98004	0.00000	0.00000	0.00000
14	-0.32212	0.06652	-1.02404	0.00000	0.00000	0.00000
15	-1.00709	-0.12002	-2.25610	0.00000	0.00000	0.00000
16	0.33832	0.05380	-0.80866	0.00000	0.00000	0.00000
17	0.27411	-0.19092	0.06113	0.00000	0.00000	0.00000
18	-0.29333	0.27433	0.08933	0.00000	0.00000	0.00000
19	-0.29845	0.70874	0.79302	0.00000	0.00000	0.00000
20	0.45171	0.98016	1.06300	0.00000	0.00000	0.00000
21	-0.00309	0.02302	-0.00469	0.00000	0.00000	0.00000
22	-0.33137	-0.23901	0.13610	0.00000	0.00000	0.00000
23	0.00843	0.01638	0.01415	0.00000	0.00000	0.00000
24	0.07046	-0.08030	0.10998	0.00000	0.00000	0.00000
SUM	0.00000	1.66033	-5.21071	0.00000	0.00000	0.00000

Condition **LC8=0.9DL-1.6W30**

9	-1.53101	0.16114	0.29692	0.00000	0.00000	0.00000
10	-1.39150	-0.06037	-0.12079	0.00000	0.00000	0.00000
11	-0.65703	0.01651	-0.47108	0.00000	0.00000	0.00000
12	-0.66232	-0.00885	0.49889	0.00000	0.00000	0.00000
13	-0.69132	-0.00638	0.45870	0.00000	0.00000	0.00000
14	0.16965	-0.00152	-0.24121	0.00000	0.00000	0.00000
15	-1.06440	-0.07059	-1.36819	0.00000	0.00000	0.00000
16	0.09584	-0.00661	0.43551	0.00000	0.00000	0.00000
17	0.01515	0.03221	-0.02725	0.00000	0.00000	0.00000
18	0.28724	-0.17261	-0.16251	0.00000	0.00000	0.00000
19	0.00480	-0.06806	-0.15537	0.00000	0.00000	0.00000
20	0.39234	0.95164	0.99802	0.00000	0.00000	0.00000
21	0.45491	0.41076	0.17491	0.00000	0.00000	0.00000
22	0.17156	0.17083	-0.04753	0.00000	0.00000	0.00000
23	0.05761	0.15275	-0.12192	0.00000	0.00000	0.00000
24	-0.05059	0.15949	-0.14709	0.00000	0.00000	0.00000
SUM	-4.39907	1.66033	0.00000	0.00000	0.00000	0.00000

Condition **LC9=1.2DL+Di+Wi0**

9	0.74134	0.11890	-0.24943	0.00000	0.00000	0.00000
10	-0.37316	0.07967	-0.12958	0.00000	0.00000	0.00000
11	0.24360	0.09040	0.09300	0.00000	0.00000	0.00000
12	-0.24349	0.09962	0.07308	0.00000	0.00000	0.00000
13	0.21101	0.10655	-0.50596	0.00000	0.00000	0.00000
14	0.07420	0.09531	0.21061	0.00000	0.00000	0.00000
15	-0.33092	0.11631	-0.89908	0.00000	0.00000	0.00000
16	-0.09673	0.09228	0.20330	0.00000	0.00000	0.00000
17	-0.33382	0.32275	-0.12211	0.00000	0.00000	0.00000
18	-0.94623	0.86364	0.34083	0.00000	0.00000	0.00000
19	-0.30490	0.74510	0.73265	0.00000	0.00000	0.00000
20	0.49913	1.17261	1.19805	0.00000	0.00000	0.00000
21	0.50090	0.46800	0.18283	0.00000	0.00000	0.00000
22	0.35120	0.33521	-0.12215	0.00000	0.00000	0.00000
23	0.13418	0.33606	-0.32212	0.00000	0.00000	0.00000
24	-0.12632	0.32865	-0.31593	0.00000	0.00000	0.00000
SUM	0.00000	5.37106	0.36800	0.00000	0.00000	0.00000

Condition **LC10=1.2DL+Di+Wi30**

9	0.87734	0.10662	-0.29422	0.00000	0.00000	0.00000
10	-0.27684	0.09402	-0.13857	0.00000	0.00000	0.00000
11	0.16956	0.09933	0.08663	0.00000	0.00000	0.00000
12	-0.14143	0.11028	0.00574	0.00000	0.00000	0.00000
13	0.32434	0.09621	-0.72133	0.00000	0.00000	0.00000
14	0.02447	0.10140	0.15734	0.00000	0.00000	0.00000
15	-0.33729	0.10930	-0.98869	0.00000	0.00000	0.00000
16	-0.10127	0.09504	0.14311	0.00000	0.00000	0.00000
17	-0.28663	0.28313	-0.10438	0.00000	0.00000	0.00000
18	-0.98938	0.89607	0.36104	0.00000	0.00000	0.00000
19	-0.33791	0.82405	0.83030	0.00000	0.00000	0.00000
20	0.50643	1.18458	1.21546	0.00000	0.00000	0.00000
21	0.45574	0.43051	0.16741	0.00000	0.00000	0.00000
22	0.30397	0.29760	-0.10359	0.00000	0.00000	0.00000
23	0.13300	0.33553	-0.32352	0.00000	0.00000	0.00000
24	-0.11810	0.30740	-0.29272	0.00000	0.00000	0.00000
SUM	0.20600	5.37106	0.00000	0.00000	0.00000	0.00000

Condition **LC11=1.2DL+Di-Wi0**

9	0.76878	0.11479	-0.30119	0.00000	0.00000	0.00000
10	-0.32999	0.09516	-0.12990	0.00000	0.00000	0.00000
11	0.07125	0.09903	0.01038	0.00000	0.00000	0.00000
12	-0.05153	0.11710	0.00418	0.00000	0.00000	0.00000
13	0.30005	0.07993	-0.82653	0.00000	0.00000	0.00000
14	0.03912	0.09864	0.07849	0.00000	0.00000	0.00000
15	-0.50852	0.08215	-1.25574	0.00000	0.00000	0.00000
16	-0.05057	0.08891	0.13090	0.00000	0.00000	0.00000
17	-0.24307	0.25285	-0.09350	0.00000	0.00000	0.00000
18	-0.93942	0.86042	0.33882	0.00000	0.00000	0.00000
19	-0.34549	0.83959	0.84685	0.00000	0.00000	0.00000
20	0.56138	1.30555	1.34903	0.00000	0.00000	0.00000
21	0.45207	0.43105	0.16995	0.00000	0.00000	0.00000
22	0.25204	0.25903	-0.07775	0.00000	0.00000	0.00000
23	0.13661	0.33962	-0.32264	0.00000	0.00000	0.00000
24	-0.11271	0.30724	-0.28936	0.00000	0.00000	0.00000
SUM	0.00000	5.37106	-0.36800	0.00000	0.00000	0.00000

Condition **LC12=1.2DL+Di-Wi30**

9	0.63278	0.12707	-0.25636	0.00000	0.00000	0.00000
10	-0.42634	0.08081	-0.12090	0.00000	0.00000	0.00000
11	0.14529	0.09011	0.01675	0.00000	0.00000	0.00000
12	-0.15355	0.10646	0.07152	0.00000	0.00000	0.00000
13	0.18675	0.09029	-0.61113	0.00000	0.00000	0.00000
14	0.08886	0.09254	0.13176	0.00000	0.00000	0.00000
15	-0.50220	0.08915	-1.16616	0.00000	0.00000	0.00000
16	-0.04602	0.08616	0.19110	0.00000	0.00000	0.00000
17	-0.29026	0.29246	-0.11123	0.00000	0.00000	0.00000
18	-0.89628	0.82799	0.31860	0.00000	0.00000	0.00000
19	-0.31249	0.76062	0.74916	0.00000	0.00000	0.00000
20	0.55411	1.29359	1.33164	0.00000	0.00000	0.00000
21	0.49724	0.46854	0.18536	0.00000	0.00000	0.00000
22	0.29924	0.29662	-0.09630	0.00000	0.00000	0.00000
23	0.13779	0.34016	-0.32125	0.00000	0.00000	0.00000
24	-0.12093	0.32849	-0.31257	0.00000	0.00000	0.00000
SUM	-0.20600	5.37106	0.00000	0.00000	0.00000	0.00000

Condition **LC13=1.2DL**

9	0.27790	0.04857	-0.10140	0.00000	0.00000	0.00000
10	-0.13862	0.03805	-0.05119	0.00000	0.00000	0.00000
11	0.06786	0.04105	0.02289	0.00000	0.00000	0.00000
12	-0.06477	0.04559	0.01802	0.00000	0.00000	0.00000
13	0.12143	0.04088	-0.31279	0.00000	0.00000	0.00000
14	0.02414	0.04100	0.06244	0.00000	0.00000	0.00000
15	-0.17288	0.04262	-0.44106	0.00000	0.00000	0.00000
16	-0.03032	0.03886	0.06848	0.00000	0.00000	0.00000
17	-0.12126	0.12006	-0.04516	0.00000	0.00000	0.00000
18	-0.35001	0.32110	0.12553	0.00000	0.00000	0.00000
19	-0.14894	0.36276	0.36418	0.00000	0.00000	0.00000
20	0.21417	0.50399	0.51699	0.00000	0.00000	0.00000
21	0.18982	0.17900	0.07010	0.00000	0.00000	0.00000
22	0.12597	0.12321	-0.04209	0.00000	0.00000	0.00000
23	0.05473	0.13661	-0.13043	0.00000	0.00000	0.00000
24	-0.04923	0.13045	-0.12451	0.00000	0.00000	0.00000
SUM	0.00000	2.21378	0.00000	0.00000	0.00000	0.00000

Condition **LC14=0.9DL**

9	0.20843	0.03642	-0.07606	0.00000	0.00000	0.00000
10	-0.10396	0.02853	-0.03839	0.00000	0.00000	0.00000
11	0.05090	0.03078	0.01717	0.00000	0.00000	0.00000
12	-0.04858	0.03419	0.01352	0.00000	0.00000	0.00000
13	0.09107	0.03065	-0.23459	0.00000	0.00000	0.00000
14	0.01811	0.03075	0.04683	0.00000	0.00000	0.00000
15	-0.12965	0.03196	-0.33078	0.00000	0.00000	0.00000
16	-0.02274	0.02915	0.05136	0.00000	0.00000	0.00000
17	-0.09095	0.09005	-0.03387	0.00000	0.00000	0.00000
18	-0.26251	0.24083	0.09415	0.00000	0.00000	0.00000
19	-0.11170	0.27208	0.27314	0.00000	0.00000	0.00000
20	0.16062	0.37798	0.38773	0.00000	0.00000	0.00000
21	0.14236	0.13425	0.05257	0.00000	0.00000	0.00000
22	0.09449	0.09241	-0.03157	0.00000	0.00000	0.00000
23	0.04104	0.10246	-0.09782	0.00000	0.00000	0.00000
24	-0.03692	0.09783	-0.09338	0.00000	0.00000	0.00000
SUM	0.00000	1.66033	0.00000	0.00000	0.00000	0.00000

Condition **LC17=1.2DL+WL0**

9	0.27365	0.04922	-0.09380	0.00000	0.00000	0.00000
10	-0.14474	0.03578	-0.05101	0.00000	0.00000	0.00000
11	0.09291	0.03979	0.03488	0.00000	0.00000	0.00000
12	-0.09296	0.04301	0.02820	0.00000	0.00000	0.00000
13	0.10851	0.04467	-0.26634	0.00000	0.00000	0.00000
14	0.02933	0.04050	0.08178	0.00000	0.00000	0.00000
15	-0.14678	0.04765	-0.38858	0.00000	0.00000	0.00000
16	-0.03707	0.03934	0.07920	0.00000	0.00000	0.00000
17	-0.13441	0.13019	-0.04931	0.00000	0.00000	0.00000
18	-0.35084	0.32145	0.12576	0.00000	0.00000	0.00000
19	-0.14315	0.34929	0.34791	0.00000	0.00000	0.00000
20	0.20503	0.48446	0.49481	0.00000	0.00000	0.00000
21	0.19679	0.18428	0.07194	0.00000	0.00000	0.00000
22	0.14056	0.13441	-0.04862	0.00000	0.00000	0.00000
23	0.05439	0.13613	-0.13040	0.00000	0.00000	0.00000
24	-0.05123	0.13360	-0.12842	0.00000	0.00000	0.00000
SUM	0.00000	2.21378	0.10800	0.00000	0.00000	0.00000

Condition **LC18=1.2DL+WL30**

9	0.31063	0.04591	-0.10624	0.00000	0.00000	0.00000
10	-0.11802	0.03987	-0.05357	0.00000	0.00000	0.00000
11	0.07117	0.04228	0.03246	0.00000	0.00000	0.00000
12	-0.06303	0.04612	0.00898	0.00000	0.00000	0.00000
13	0.14030	0.04160	-0.32816	0.00000	0.00000	0.00000
14	0.01539	0.04220	0.06608	0.00000	0.00000	0.00000
15	-0.15042	0.04537	-0.41699	0.00000	0.00000	0.00000
16	-0.03788	0.04008	0.06190	0.00000	0.00000	0.00000
17	-0.12082	0.11884	-0.04424	0.00000	0.00000	0.00000
18	-0.36233	0.33009	0.13120	0.00000	0.00000	0.00000
19	-0.15248	0.37162	0.37551	0.00000	0.00000	0.00000
20	0.20772	0.48915	0.50118	0.00000	0.00000	0.00000
21	0.18403	0.17371	0.06760	0.00000	0.00000	0.00000
22	0.12657	0.12330	-0.04308	0.00000	0.00000	0.00000
23	0.05406	0.13597	-0.13074	0.00000	0.00000	0.00000
24	-0.04890	0.12766	-0.12190	0.00000	0.00000	0.00000
SUM	0.05600	2.21378	0.00000	0.00000	0.00000	0.00000

Condition **LC19=1.2DL-WL0**

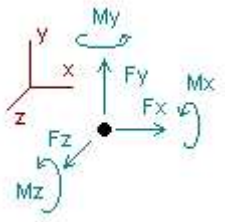
9	0.28215	0.04792	-0.10901	0.00000	0.00000	0.00000
10	-0.13250	0.04031	-0.05136	0.00000	0.00000	0.00000
11	0.04282	0.04231	0.01090	0.00000	0.00000	0.00000
12	-0.03657	0.04817	0.00784	0.00000	0.00000	0.00000
13	0.13435	0.03708	-0.35924	0.00000	0.00000	0.00000
14	0.01895	0.04150	0.04309	0.00000	0.00000	0.00000
15	-0.19897	0.03759	-0.49354	0.00000	0.00000	0.00000
16	-0.02357	0.03838	0.05775	0.00000	0.00000	0.00000
17	-0.10811	0.10994	-0.04102	0.00000	0.00000	0.00000
18	-0.34917	0.32074	0.12530	0.00000	0.00000	0.00000
19	-0.15473	0.37624	0.38046	0.00000	0.00000	0.00000
20	0.22330	0.52351	0.53917	0.00000	0.00000	0.00000
21	0.18284	0.17372	0.06826	0.00000	0.00000	0.00000
22	0.11140	0.11200	-0.03556	0.00000	0.00000	0.00000
23	0.05506	0.13708	-0.13046	0.00000	0.00000	0.00000
24	-0.04723	0.12729	-0.12060	0.00000	0.00000	0.00000
SUM	0.00000	2.21378	-0.10800	0.00000	0.00000	0.00000

Condition **LC20=1.2DL-WL30**

9	0.24517	0.05122	-0.09657	0.00000	0.00000	0.00000
10	-0.15922	0.03622	-0.04880	0.00000	0.00000	0.00000
11	0.06455	0.03981	0.01332	0.00000	0.00000	0.00000
12	-0.06651	0.04506	0.02705	0.00000	0.00000	0.00000
13	0.10256	0.04015	-0.29741	0.00000	0.00000	0.00000
14	0.03290	0.03980	0.05879	0.00000	0.00000	0.00000
15	-0.19534	0.03987	-0.46513	0.00000	0.00000	0.00000
16	-0.02277	0.03765	0.07505	0.00000	0.00000	0.00000
17	-0.12169	0.12129	-0.04608	0.00000	0.00000	0.00000
18	-0.33769	0.31210	0.11986	0.00000	0.00000	0.00000
19	-0.14540	0.35390	0.35286	0.00000	0.00000	0.00000
20	0.22061	0.51882	0.53280	0.00000	0.00000	0.00000
21	0.19561	0.18429	0.07260	0.00000	0.00000	0.00000
22	0.12538	0.12311	-0.04111	0.00000	0.00000	0.00000
23	0.05539	0.13724	-0.13012	0.00000	0.00000	0.00000
24	-0.04956	0.13324	-0.12712	0.00000	0.00000	0.00000
SUM	-0.05600	2.21378	0.00000	0.00000	0.00000	0.00000

Envelope for nodal reactions

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



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2DL+1.6W0
LC2=1.2DL+1.6W30
LC3=1.2DL-1.6W0
LC4=1.2DL-1.6W30
LC5=0.9DL+1.6W0
LC6=0.9DL+1.6W30
LC7=0.9DL-1.6W0
LC8=0.9DL-1.6W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.2DL
LC14=0.9DL
LC17=1.2DL+WL0
LC18=1.2DL+WL30
LC19=1.2DL-WL0
LC20=1.2DL-WL30

Node		Forces						Moments					
		Fx [Kip]	lc	Fy [Kip]	lc	Fz [Kip]	lc	Mx [Kip*ft]	lc	My [Kip*ft]	lc	Mz [Kip*ft]	lc
9	Max	2.020	LC2	0.173	LC4	0.297	LC8	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-1.531	LC8	-0.089	LC6	-0.470	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
10	Max	1.181	LC6	0.127	LC2	0.100	LC5	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-1.426	LC4	-0.060	LC8	-0.189	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
11	Max	0.873	LC1	0.099	LC10	0.513	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.754	LC7	0.006	LC5	-0.471	LC8	0.00000	LC1	0.00000	LC1	0.00000	LC1
12	Max	0.865	LC7	0.121	LC3	0.503	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.980	LC1	-0.041	LC5	-0.471	LC6	0.00000	LC1	0.00000	LC1	0.00000	LC1
13	Max	0.908	LC2	0.168	LC1	1.509	LC5	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.691	LC8	-0.097	LC7	-2.058	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
14	Max	0.364	LC1	0.101	LC10	1.134	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.322	LC7	-0.005	LC5	-1.024	LC7	0.00000	LC1	0.00000	LC1	0.00000	LC1
15	Max	0.800	LC6	0.195	LC1	1.598	LC5	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-1.108	LC4	-0.120	LC7	-2.366	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
16	Max	0.338	LC7	0.095	LC10	0.927	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.391	LC1	-0.007	LC8	-0.809	LC7	0.00000	LC1	0.00000	LC1	0.00000	LC1
17	Max	0.274	LC7	0.401	LC1	0.061	LC7	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.487	LC1	-0.191	LC7	-0.141	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
18	Max	0.287	LC8	0.896	LC10	0.381	LC2	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.989	LC10	-0.173	LC8	-0.163	LC8	0.00000	LC1	0.00000	LC1	0.00000	LC1
19	Max	0.075	LC5	0.840	LC11	0.884	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.345	LC11	-0.164	LC5	-0.246	LC5	0.00000	LC1	0.00000	LC1	0.00000	LC1
20	Max	0.561	LC11	1.306	LC11	1.349	LC11	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.131	LC5	-0.226	LC5	-0.290	LC5	0.00000	LC1	0.00000	LC1	0.00000	LC1
21	Max	0.502	LC4	0.469	LC12	0.192	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.169	LC6	-0.142	LC6	-0.071	LC6	0.00000	LC1	0.00000	LC1	0.00000	LC1
22	Max	0.553	LC1	0.456	LC1	0.136	LC7	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.331	LC7	-0.239	LC7	-0.210	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
23	Max	0.138	LC12	0.340	LC12	0.014	LC7	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	0.008	LC7	0.016	LC7	-0.324	LC10	0.00000	LC1	0.00000	LC1	0.00000	LC1
24	Max	0.070	LC7	0.329	LC9	0.110	LC7	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.157	LC1	-0.080	LC7	-0.328	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1

Date: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM **Checked By:** MSC

HUDSON Design Group LLC

Forces on Steel Tension Bands:

Lateral Forces:

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

Item	Weight (lbs.)	Qty.	Total (lbs.)
QD8616-7 Antenna	150	1	150
AIR6449 Antenna	82	1	82
AIR6419 Antenna	66	1	66
DMP65R-BU8DA Antenna	119	1	119
B14 4478 RRH	60	1	60
Platform Mount	898	1	898.5
Existing Pipes (8')	70	5	350
Miscellaneous	100	--	100
		Total =	1725.5 lbs.

Number of Bands = 2
Tension per Band = 862.7 lbs.

Diameter of Smokestack = 6.50 ft
Circumference of Smokestack = 20.4 ft

Linear Load per Band= 42.25 plf

Calculate Approximate Weight of 3/8" Thick Band:

Weight of Steel 490 lb/ft^3
Width 6.00 in
Thickness 3/8 in

Steel Weight per Band= 7.7 plf

Date: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

Total Gravity Force per Band=

Linear Load per Band=	42.25	plf
Steel Weight per Band=	7.7	plf
Total =	**49.9**	**plf**

CHECK FRICTION FORCES

Friction Equation = $F_s = \mu_s N$

Force of static friction	**F_s =**	49.9	plf
Coefficient of static friction	**μ_s =**	0.7	
Force required on band	**N =**	71.3	plf
	Factor of Safety =	1.5	
Force required on band	**N_T =**	106.9	plf

Date: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM **Checked By:** MSC

HUDSON Design Group LLC

CHECK CONNECTION CAPACITY (Worst Case)

Reference: AISC Steel Construction Manual 14th Edition (ASD)

Bolt Type = A36 5/8" Threaded Rod

Allowable Tensile Load =

F_{Tall} = 6673 lbs.

Allowable Shear Load =

F_{Vall}= 4004 lbs.

Tension Forces

Required Linear Force = 106.9 plf

Diameter of Smokestack = 6.50 ft
Circumference of Smokestack = 20.42 ft

Total Tension = 2184 lbs.

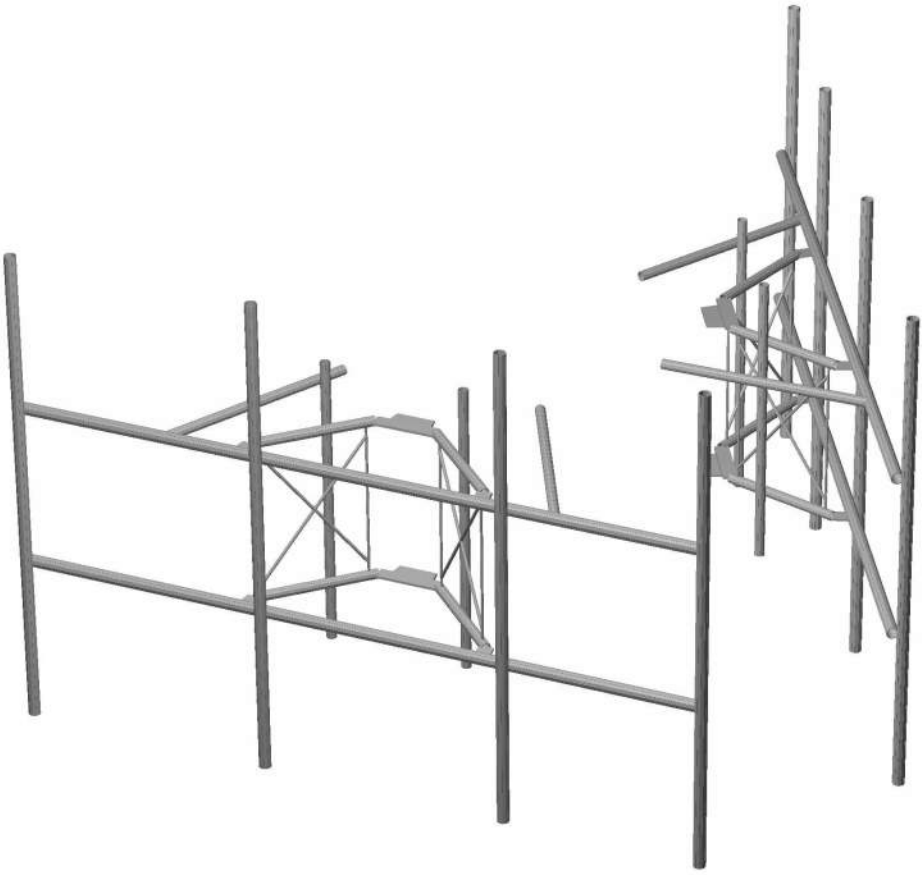
No. of Knuckle Supports = 3
No. of Bolts / Support = 1

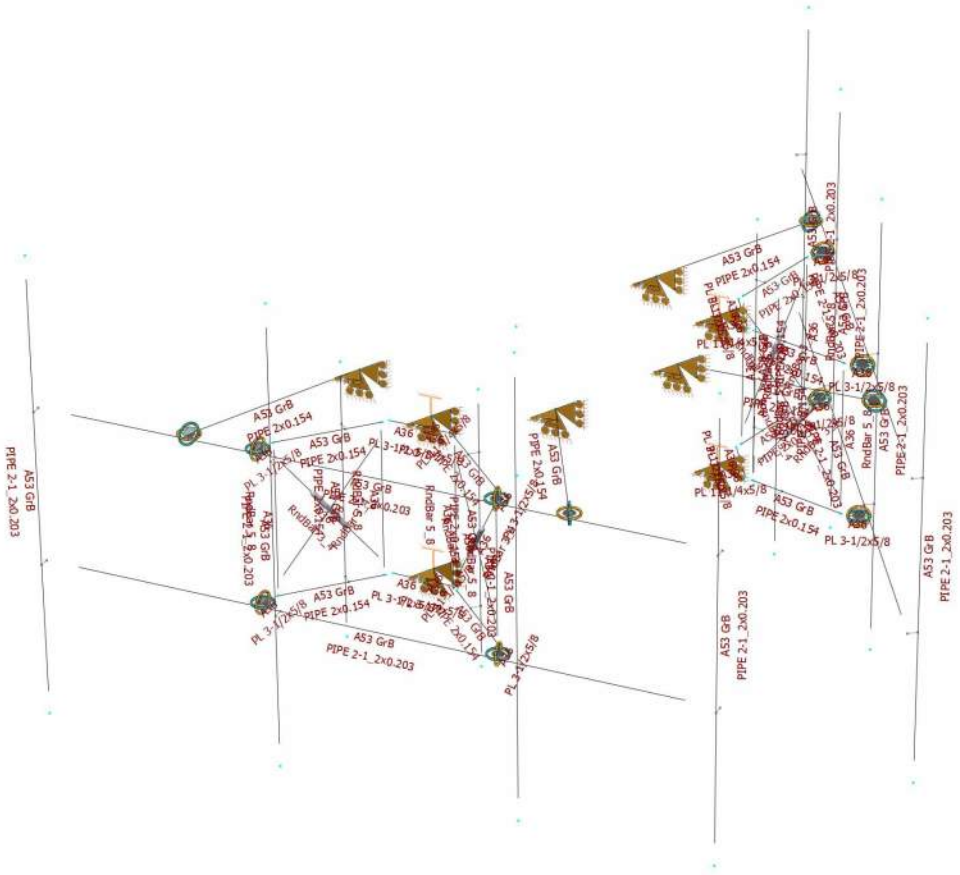
Tension Design Load /Bolts =

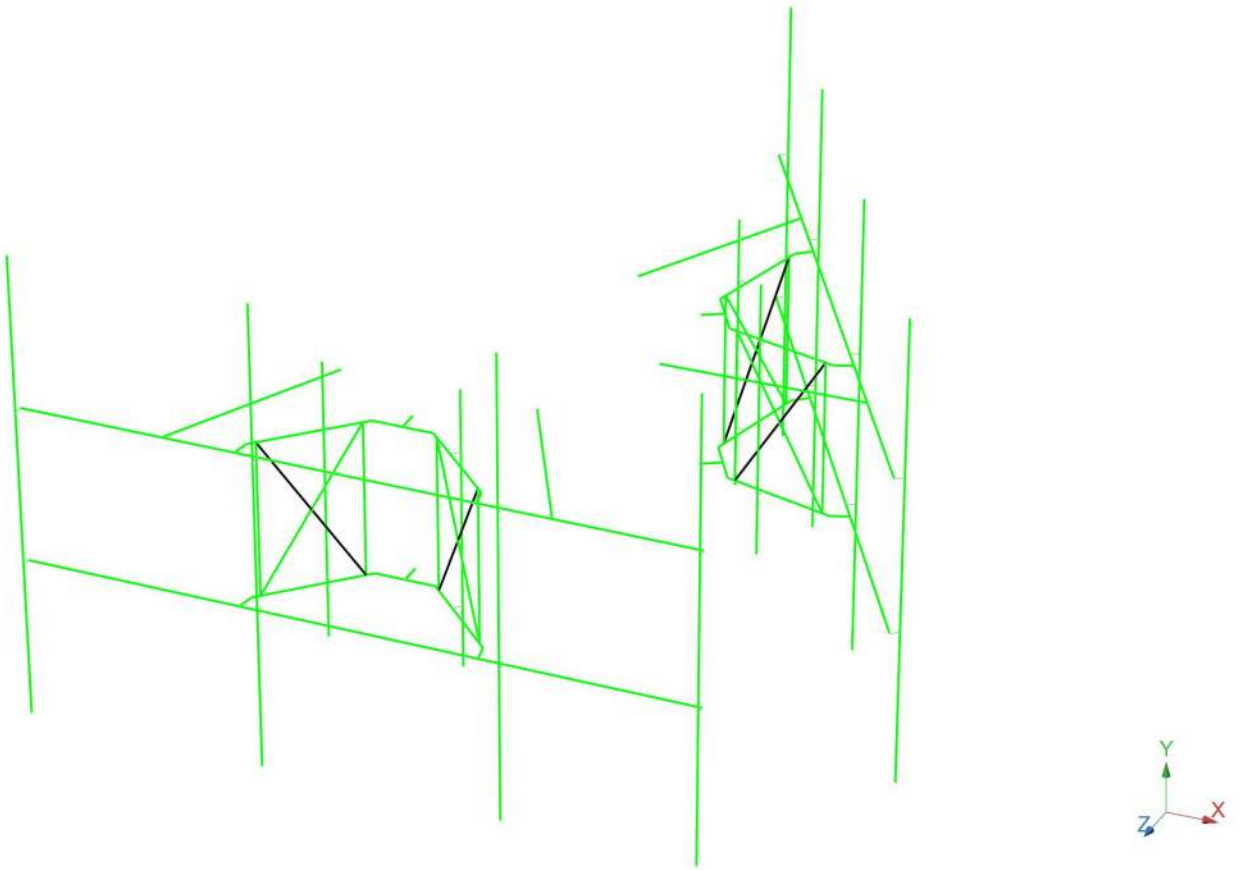
f_t= 727.91 lbs. < 6673 lbs. **Therefore, OK !**

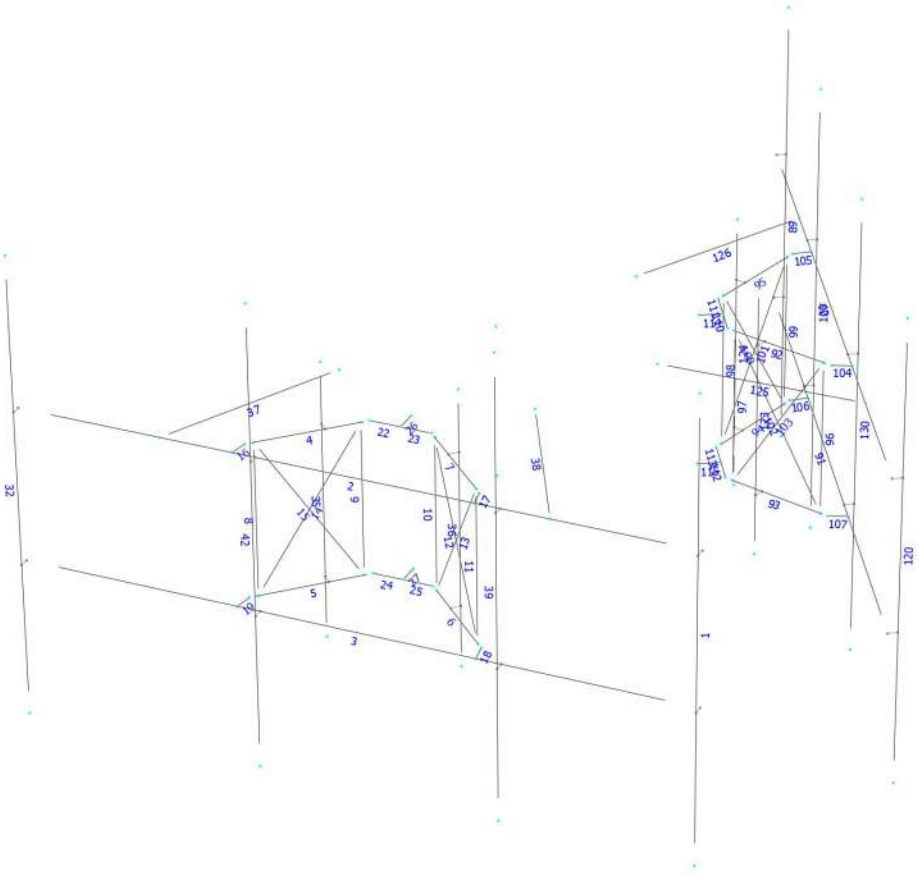
HUDSON
Design Group LLC

Beta & Gamma Sector Calculations


Y
X
Z


A53 GrB
PIPE 2x0.154
PIPE 2-1_2x0.203
PL 3-1/2x5/8
RndBar 5_8
A36
Y
X
Z


Design status
Not designed
Error on design
Design O.K.
With warnings
Y
X
Z


Y
X
Z

Current Date: 6/7/2022 11:25 AM
Units system: English

Load data

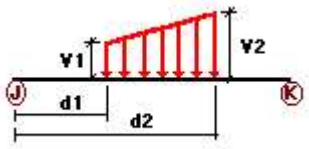
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	500 lb Live Load Antenna 1	No	LL
LLa2	500 lb Live Load Antenna 2	No	LL
LLa3	500 lb Live Load Antenna 3	No	LL
LLa4	500 lb Live Load Antenna 4	No	LL

Distributed force on members



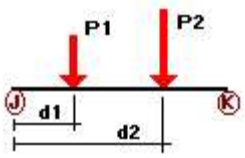
Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
W0	1	z	-0.01	-0.01	0.00	No	100.00	Yes
	2	z	-0.01	-0.01	0.00	No	100.00	Yes
	3	z	-0.01	-0.01	0.00	No	100.00	Yes
	4	z	-0.009	-0.009	0.00	No	100.00	Yes
	5	z	-0.009	-0.009	0.00	No	100.00	Yes
	6	z	-0.009	-0.009	0.00	No	100.00	Yes
	7	z	-0.009	-0.009	0.00	No	100.00	Yes
	8	z	-0.002	-0.002	0.00	No	100.00	Yes
	9	z	-0.002	-0.002	0.00	No	100.00	Yes
	10	z	-0.002	-0.002	0.00	No	100.00	Yes
	11	z	-0.002	-0.002	0.00	No	100.00	Yes
	12	z	-0.003	-0.003	0.00	No	100.00	Yes
	13	z	-0.003	-0.003	0.00	No	100.00	Yes
	14	z	-0.003	-0.003	0.00	No	100.00	Yes
	15	z	-0.003	-0.003	0.00	No	100.00	Yes
	16	z	-0.004	-0.004	0.00	No	100.00	Yes

	17	z	-0.004	-0.004	0.00	No	100.00	Yes
	18	z	-0.004	-0.004	0.00	No	100.00	Yes
	19	z	-0.004	-0.004	0.00	No	100.00	Yes
	22	z	-0.004	-0.004	0.00	No	100.00	Yes
	23	z	-0.004	-0.004	0.00	No	100.00	Yes
	24	z	-0.004	-0.004	0.00	No	100.00	Yes
	25	z	-0.004	-0.004	0.00	No	100.00	Yes
	35	z	-0.009	-0.009	0.00	No	100.00	Yes
	36	z	-0.009	-0.009	0.00	No	100.00	Yes
	37	z	-0.009	-0.009	0.00	No	100.00	Yes
	38	z	-0.009	-0.009	0.00	No	100.00	Yes
	89	z	-0.01	-0.01	0.00	No	100.00	Yes
	90	z	-0.01	-0.01	0.00	No	100.00	Yes
	91	z	-0.01	-0.01	0.00	No	100.00	Yes
	92	z	-0.009	-0.009	0.00	No	100.00	Yes
	93	z	-0.009	-0.009	0.00	No	100.00	Yes
	94	z	-0.009	-0.009	0.00	No	100.00	Yes
	95	z	-0.009	-0.009	0.00	No	100.00	Yes
	96	z	-0.002	-0.002	0.00	No	100.00	Yes
	97	z	-0.002	-0.002	0.00	No	100.00	Yes
	98	z	-0.002	-0.002	0.00	No	100.00	Yes
	99	z	-0.002	-0.002	0.00	No	100.00	Yes
	100	z	-0.003	-0.003	0.00	No	100.00	Yes
	101	z	-0.003	-0.003	0.00	No	100.00	Yes
	102	z	-0.003	-0.003	0.00	No	100.00	Yes
	103	z	-0.003	-0.003	0.00	No	100.00	Yes
	104	z	-0.004	-0.004	0.00	No	100.00	Yes
	105	z	-0.004	-0.004	0.00	No	100.00	Yes
	106	z	-0.004	-0.004	0.00	No	100.00	Yes
	107	z	-0.004	-0.004	0.00	No	100.00	Yes
	110	z	-0.004	-0.004	0.00	No	100.00	Yes
	111	z	-0.004	-0.004	0.00	No	100.00	Yes
	112	z	-0.004	-0.004	0.00	No	100.00	Yes
	113	z	-0.004	-0.004	0.00	No	100.00	Yes
	114	z	-0.004	-0.004	0.00	No	100.00	Yes
	115	z	-0.004	-0.004	0.00	No	100.00	Yes
	120	z	-0.01	-0.01	0.00	No	100.00	Yes
	123	z	-0.009	-0.009	0.00	No	100.00	Yes
	124	z	-0.009	-0.009	0.00	No	100.00	Yes
	125	z	-0.009	-0.009	0.00	No	100.00	Yes
	126	z	-0.009	-0.009	0.00	No	100.00	Yes
	127	z	-0.01	-0.01	0.00	No	100.00	Yes
	130	z	-0.01	-0.01	0.00	No	100.00	Yes
W30	1	x	-0.01	-0.01	0.00	No	100.00	Yes
	4	x	-0.009	-0.009	0.00	No	100.00	Yes
	5	x	-0.009	-0.009	0.00	No	100.00	Yes
	6	x	-0.009	-0.009	0.00	No	100.00	Yes
	7	x	-0.009	-0.009	0.00	No	100.00	Yes
	8	x	-0.002	-0.002	0.00	No	100.00	Yes
	9	x	-0.002	-0.002	0.00	No	100.00	Yes
	10	x	-0.002	-0.002	0.00	No	100.00	Yes
	11	x	-0.002	-0.002	0.00	No	100.00	Yes
	12	x	-0.003	-0.003	0.00	No	100.00	Yes
	13	x	-0.003	-0.003	0.00	No	100.00	Yes
	14	x	-0.003	-0.003	0.00	No	100.00	Yes
	15	x	-0.003	-0.003	0.00	No	100.00	Yes
	16	x	-0.004	-0.004	0.00	No	100.00	Yes
	17	x	-0.004	-0.004	0.00	No	100.00	Yes
	18	x	-0.004	-0.004	0.00	No	100.00	Yes
	19	x	-0.004	-0.004	0.00	No	100.00	Yes

	22	x	-0.004	-0.004	0.00	No	100.00	Yes
	23	x	-0.004	-0.004	0.00	No	100.00	Yes
	24	x	-0.004	-0.004	0.00	No	100.00	Yes
	25	x	-0.004	-0.004	0.00	No	100.00	Yes
	26	x	-0.004	-0.004	0.00	No	100.00	Yes
	27	x	-0.004	-0.004	0.00	No	100.00	Yes
	32	x	-0.01	-0.01	0.00	No	100.00	Yes
	35	x	-0.009	-0.009	0.00	No	100.00	Yes
	36	x	-0.009	-0.009	0.00	No	100.00	Yes
	37	x	-0.009	-0.009	0.00	No	100.00	Yes
	38	x	-0.009	-0.009	0.00	No	100.00	Yes
	39	x	-0.01	-0.01	0.00	No	100.00	Yes
	42	x	-0.01	-0.01	0.00	No	100.00	Yes
	89	x	-0.01	-0.01	0.00	No	100.00	Yes
	90	x	-0.01	-0.01	0.00	No	100.00	Yes
	91	x	-0.01	-0.01	0.00	No	100.00	Yes
	92	x	-0.009	-0.009	0.00	No	100.00	Yes
	93	x	-0.009	-0.009	0.00	No	100.00	Yes
	94	x	-0.009	-0.009	0.00	No	100.00	Yes
	95	x	-0.009	-0.009	0.00	No	100.00	Yes
	96	x	-0.002	-0.002	0.00	No	100.00	Yes
	97	x	-0.002	-0.002	0.00	No	100.00	Yes
	98	x	-0.002	-0.002	0.00	No	100.00	Yes
	99	x	-0.002	-0.002	0.00	No	100.00	Yes
	100	x	-0.003	-0.003	0.00	No	100.00	Yes
	101	x	-0.003	-0.003	0.00	No	100.00	Yes
	102	x	-0.003	-0.003	0.00	No	100.00	Yes
	103	x	-0.003	-0.003	0.00	No	100.00	Yes
	104	x	-0.004	-0.004	0.00	No	100.00	Yes
	105	x	-0.004	-0.004	0.00	No	100.00	Yes
	106	x	-0.004	-0.004	0.00	No	100.00	Yes
	107	x	-0.004	-0.004	0.00	No	100.00	Yes
	110	x	-0.004	-0.004	0.00	No	100.00	Yes
	111	x	-0.004	-0.004	0.00	No	100.00	Yes
	112	x	-0.004	-0.004	0.00	No	100.00	Yes
	113	x	-0.004	-0.004	0.00	No	100.00	Yes
	114	x	-0.004	-0.004	0.00	No	100.00	Yes
	115	x	-0.004	-0.004	0.00	No	100.00	Yes
	123	x	-0.009	-0.009	0.00	No	100.00	Yes
	124	x	-0.009	-0.009	0.00	No	100.00	Yes
	125	x	-0.009	-0.009	0.00	No	100.00	Yes
	126	x	-0.009	-0.009	0.00	No	100.00	Yes
Di	1	y	-0.01	-0.01	0.00	No	100.00	Yes
	2	y	-0.01	-0.01	0.00	No	100.00	Yes
	3	y	-0.01	-0.01	0.00	No	100.00	Yes
	4	y	-0.009	-0.009	0.00	No	100.00	Yes
	5	y	-0.009	-0.009	0.00	No	100.00	Yes
	6	y	-0.009	-0.009	0.00	No	100.00	Yes
	7	y	-0.009	-0.009	0.00	No	100.00	Yes
	8	y	-0.005	-0.005	0.00	No	100.00	Yes
	9	y	-0.005	-0.005	0.00	No	100.00	Yes
	10	y	-0.005	-0.005	0.00	No	100.00	Yes
	11	y	-0.005	-0.005	0.00	No	100.00	Yes
	12	y	-0.005	-0.005	0.00	No	100.00	Yes
	13	y	-0.005	-0.005	0.00	No	100.00	Yes
	14	y	-0.005	-0.005	0.00	No	100.00	Yes
	15	y	-0.005	-0.005	0.00	No	100.00	Yes
	16	y	-0.011	-0.011	0.00	No	100.00	Yes
	17	y	-0.011	-0.011	0.00	No	100.00	Yes
	18	y	-0.011	-0.011	0.00	No	100.00	Yes

19	y	-0.011	-0.011	0.00	No	100.00	Yes
22	y	-0.011	-0.011	0.00	No	100.00	Yes
23	y	-0.011	-0.011	0.00	No	100.00	Yes
24	y	-0.011	-0.011	0.00	No	100.00	Yes
25	y	-0.011	-0.011	0.00	No	100.00	Yes
26	y	-0.027	-0.027	0.00	No	100.00	Yes
27	y	-0.027	-0.027	0.00	No	100.00	Yes
32	y	-0.01	-0.01	0.00	No	100.00	Yes
35	y	-0.009	-0.009	0.00	No	100.00	Yes
36	y	-0.009	-0.009	0.00	No	100.00	Yes
37	y	-0.009	-0.009	0.00	No	100.00	Yes
38	y	-0.009	-0.009	0.00	No	100.00	Yes
39	y	-0.01	-0.01	0.00	No	100.00	Yes
42	y	-0.01	-0.01	0.00	No	100.00	Yes
89	y	-0.01	-0.01	0.00	No	100.00	Yes
90	y	-0.01	-0.01	0.00	No	100.00	Yes
91	y	-0.01	-0.01	0.00	No	100.00	Yes
92	y	-0.009	-0.009	0.00	No	100.00	Yes
93	y	-0.009	-0.009	0.00	No	100.00	Yes
94	y	-0.009	-0.009	0.00	No	100.00	Yes
95	y	-0.009	-0.009	0.00	No	100.00	Yes
96	y	-0.005	-0.005	0.00	No	100.00	Yes
97	y	-0.005	-0.005	0.00	No	100.00	Yes
98	y	-0.005	-0.005	0.00	No	100.00	Yes
99	y	-0.005	-0.005	0.00	No	100.00	Yes
100	y	-0.005	-0.005	0.00	No	100.00	Yes
101	y	-0.005	-0.005	0.00	No	100.00	Yes
102	y	-0.005	-0.005	0.00	No	100.00	Yes
103	y	-0.005	-0.005	0.00	No	100.00	Yes
104	y	-0.011	-0.011	0.00	No	100.00	Yes
105	y	-0.011	-0.011	0.00	No	100.00	Yes
106	y	-0.011	-0.011	0.00	No	100.00	Yes
107	y	-0.011	-0.011	0.00	No	100.00	Yes
110	y	-0.011	-0.011	0.00	No	100.00	Yes
111	y	-0.011	-0.011	0.00	No	100.00	Yes
112	y	-0.011	-0.011	0.00	No	100.00	Yes
113	y	-0.011	-0.011	0.00	No	100.00	Yes
114	y	-0.027	-0.027	0.00	No	100.00	Yes
115	y	-0.027	-0.027	0.00	No	100.00	Yes
120	y	-0.01	-0.01	0.00	No	100.00	Yes
123	y	-0.009	-0.009	0.00	No	100.00	Yes
124	y	-0.009	-0.009	0.00	No	100.00	Yes
125	y	-0.009	-0.009	0.00	No	100.00	Yes
126	y	-0.009	-0.009	0.00	No	100.00	Yes
127	y	-0.01	-0.01	0.00	No	100.00	Yes
130	y	-0.01	-0.01	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	32	y	-0.06	1.50	No
		y	-0.06	8.50	No
	35	y	-0.033	2.00	No
		y	-0.06	4.00	No
		y	-0.073	4.00	No
	36	y	-0.072	2.00	No
		y	-0.06	4.00	No
		y	-0.053	4.00	No
	39	y	-0.075	1.50	No
		y	-0.075	8.50	No
	42	y	-0.033	1.00	No
		y	-0.033	3.00	No
		y	-0.041	5.00	No
		y	-0.041	7.00	No
	120	y	-0.06	1.50	No
		y	-0.06	8.50	No
	123	y	-0.033	2.00	No
		y	-0.06	4.00	No
		y	-0.073	4.00	No
	124	y	-0.072	2.00	No
		y	-0.06	4.00	No
		y	-0.053	4.00	No
	127	y	-0.075	1.50	No
		y	-0.075	8.50	No
	130	y	-0.033	1.00	No
		y	-0.033	3.00	No
		y	-0.041	5.00	No
		y	-0.041	7.00	No
W0	32	z	-0.323	1.50	No
		z	-0.323	8.50	No
	35	z	-0.041	2.00	No
		z	-0.06	4.00	No
		z	-0.051	4.00	No
	36	z	-0.059	2.00	No
		z	-0.045	4.00	No
		z	-0.046	4.00	No
	39	z	-0.34	1.50	No
		z	-0.34	8.50	No
	42	z	-0.076	1.00	No
		z	-0.076	3.00	No
		z	-0.073	5.00	No
		z	-0.073	7.00	No
	120	z	-0.191	1.50	No
		z	-0.191	8.50	No
	123	z	-0.041	2.00	No
		z	-0.089	4.00	No
	124	z	-0.051	2.00	No
		z	-0.097	4.00	No
	127	z	-0.215	1.50	No
		z	-0.215	8.50	No
	130	z	-0.046	1.00	No
		z	-0.046	3.00	No
		z	-0.048	5.00	No
		z	-0.048	7.00	No
W30	32	x	-0.147	1.50	No
		x	-0.147	8.50	No
	35	x	-0.041	2.00	No
		x	-0.099	4.00	No
	36	x	-0.049	2.00	No
		x	-0.114	4.00	No

	39	x	-0.174	1.50	No
		x	-0.174	8.50	No
	42	x	-0.037	1.00	No
		x	-0.037	3.00	No
		x	-0.039	5.00	No
		x	-0.039	7.00	No
	120	x	-0.279	1.50	No
		x	-0.279	8.50	No
	123	x	-0.041	2.00	No
		x	-0.07	4.00	No
	124	x	-0.057	2.00	No
		x	-0.063	4.00	No
	127	x	-0.298	1.50	No
		x	-0.298	8.50	No
	130	x	-0.066	1.00	No
		x	-0.066	3.00	No
		x	-0.065	5.00	No
		x	-0.065	7.00	No
Di	32	y	-0.199	1.50	No
		y	-0.199	8.50	No
	35	y	-0.048	2.00	No
		y	-0.074	4.00	No
		y	-0.056	4.00	No
	36	y	-0.049	2.00	No
		y	-0.055	4.00	No
		y	-0.077	4.00	No
	39	y	-0.215	1.50	No
		y	-0.215	8.50	No
	42	y	-0.053	1.00	No
		y	-0.053	3.00	No
		y	-0.052	5.00	No
		y	-0.052	7.00	No
	120	y	-0.199	1.50	No
		y	-0.199	8.50	No
	123	y	-0.048	2.00	No
		y	-0.074	4.00	No
		y	-0.056	4.00	No
	124	y	-0.049	2.00	No
		y	-0.055	4.00	No
		y	-0.077	4.00	No
	127	y	-0.215	1.50	No
		y	-0.215	8.50	No
	130	y	-0.053	1.00	No
		y	-0.053	3.00	No
		y	-0.052	5.00	No
		y	-0.052	7.00	No
Wi0	32	z	-0.068	1.50	No
		z	-0.068	8.50	No
	35	z	-0.011	2.00	No
		z	-0.018	4.00	No
		z	-0.014	4.00	No
	36	z	-0.016	2.00	No
		z	-0.013	4.00	No
		z	-0.014	4.00	No
	39	z	-0.071	1.50	No
		z	-0.071	8.50	No
	42	z	-0.018	1.00	No
		z	-0.018	3.00	No
		z	-0.017	5.00	No
		z	-0.017	7.00	No

	120	z	-0.043	1.50	No
		z	-0.043	8.50	No
	123	z	-0.011	2.00	No
		z	-0.023	4.00	No
	124	z	-0.014	2.00	No
		z	-0.024	4.00	No
	127	z	-0.048	1.50	No
		z	-0.048	8.50	No
	130	z	-0.012	1.00	No
		z	-0.012	3.00	No
		z	-0.012	5.00	No
		z	-0.012	7.00	No
Wi30	32	x	-0.035	1.50	No
		x	-0.035	8.50	No
	35	x	-0.011	2.00	No
		x	-0.025	4.00	No
	36	x	-0.014	2.00	No
		x	-0.027	4.00	No
	39	x	-0.04	1.50	No
		x	-0.04	8.50	No
	42	x	-0.01	1.00	No
		x	-0.01	3.00	No
		x	-0.011	5.00	No
		x	-0.011	7.00	No
	120	x	-0.059	1.50	No
		x	-0.059	8.50	No
	123	x	-0.011	2.00	No
		x	-0.019	4.00	No
	124	x	-0.015	2.00	No
		x	-0.017	4.00	No
	127	x	-0.062	1.50	No
		x	-0.062	8.50	No
	130	x	-0.016	1.00	No
		x	-0.016	3.00	No
		x	-0.016	5.00	No
		x	-0.016	7.00	No
WL0	32	z	-0.02	1.50	No
		z	-0.02	8.50	No
	35	z	-0.003	2.00	No
		z	-0.003	4.00	No
		z	-0.003	4.00	No
	36	z	-0.004	2.00	No
		z	-0.003	4.00	No
		z	-0.003	4.00	No
	39	z	-0.021	1.50	No
		z	-0.021	8.50	No
	42	z	-0.005	1.00	No
		z	-0.005	3.00	No
		z	-0.005	5.00	No
		z	-0.005	7.00	No
	120	z	-0.012	1.50	No
		z	-0.012	8.50	No
	123	z	-0.003	2.00	No
		z	-0.006	4.00	No
	124	z	-0.003	2.00	No
		z	-0.006	4.00	No
	127	z	-0.014	1.50	No
		z	-0.014	8.50	No
	130	z	-0.003	1.00	No
		z	-0.003	3.00	No

		z	-0.003	5.00	No
		z	-0.003	7.00	No
WL30	32	x	-0.009	1.50	No
		x	-0.009	8.50	No
	35	x	-0.003	2.00	No
		x	-0.006	4.00	No
	36	x	-0.003	2.00	No
		x	-0.007	4.00	No
	39	x	-0.011	1.50	No
		x	-0.011	8.50	No
	42	x	-0.003	1.00	No
		x	-0.003	3.00	No
		x	-0.003	5.00	No
		x	-0.003	7.00	No
	120	x	-0.018	1.50	No
		x	-0.018	8.50	No
	123	x	-0.003	2.00	No
		x	-0.004	4.00	No
	124	x	-0.004	2.00	No
		x	-0.004	4.00	No
	127	x	-0.019	1.50	No
		x	-0.019	8.50	No
	130	x	-0.004	1.00	No
		x	-0.004	3.00	No
		x	-0.004	5.00	No
		x	-0.004	7.00	No
LL1	2	y	-0.25	50.00	Yes
LL2	2	y	-0.25	100.00	Yes
LLa1	1	y	-0.50	50.00	Yes
LLa2	39	y	-0.50	50.00	Yes
LLa3	42	y	-0.50	50.00	Yes
LLa4	32	y	-0.50	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	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
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

Current Date: 6/7/2022 11:25 AM
Units system: English

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+W0
LC2=1.2DL+W30
LC3=1.2DL-W0
LC4=1.2DL-W30
LC5=0.9DL+W0
LC6=0.9DL+W30
LC7=0.9DL-W0
LC8=0.9DL-W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.4DL
LC14=1.2DL+1.6LL1
LC15=1.2DL+1.6LL2
LC16=1.2DL+WL0+1.6LLa1
LC17=1.2DL+WL30+1.6LLa1
LC18=1.2DL-WL0+1.6LLa1
LC19=1.2DL-WL30+1.6LLa1
LC20=1.2DL+WL0+1.6LLa2
LC21=1.2DL+WL30+1.6LLa2
LC22=1.2DL-WL0+1.6LLa2
LC23=1.2DL-WL30+1.6LLa2
LC24=1.2DL+WL0+1.6LLa3
LC25=1.2DL+WL30+1.6LLa3
LC26=1.2DL-WL0+1.6LLa3
LC27=1.2DL-WL30+1.6LLa3
LC28=1.2DL+WL0+1.6LLa4
LC29=1.2DL+WL30+1.6LLa4
LC30=1.2DL-WL0+1.6LLa4
LC31=1.2DL-WL30+1.6LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 2-1_2x0.203	**1**	LC18 at 33.33%	0.32	OK	
		2	LC29 at 32.14%	0.47	OK	
		3	LC28 at 31.25%	**0.48**	**OK**	
		32	LC29 at 33.33%	0.41	OK	
		39	LC19 at 33.33%	0.25	OK	
		42	LC29 at 33.33%	0.18	OK	
		89	LC4 at 33.33%	0.07	OK	
		90	LC11 at 32.14%	0.33	OK	
		91	LC10 at 31.25%	0.36	OK	
		120	LC11 at 33.33%	0.27	OK	
		127	LC4 at 66.67%	0.19	OK	
		130	LC10 at 64.58%	0.15	OK	
	PIPE 2x0.154	**4**	LC29 at 93.75%	**0.55**	**OK**	
		5	LC31 at 93.75%	0.55	OK	
		6	LC17 at 93.75%	0.48	OK	
		7	LC19 at 93.75%	0.49	OK	
		35	LC30 at 22.92%	0.16	OK	
		36	LC16 at 22.92%	0.12	OK	

	37	LC5 at 100.00%	0.07	OK
	38	LC5 at 0.00%	0.03	OK
	92	LC11 at 93.75%	0.53	OK
	93	LC9 at 93.75%	0.49	OK
	94	LC3 at 93.75%	0.35	OK
	95	LC11 at 93.75%	0.34	OK
	123	LC10 at 77.08%	0.09	OK
	124	LC10 at 77.08%	0.07	OK
	125	LC7 at 100.00%	0.05	OK
	126	LC6 at 0.00%	0.04	OK
PL 11-1/4x5/8	**26**	LC9 at 0.00%	0.28	OK
	27	LC9 at 0.00%	**0.31**	**OK**
	114	LC11 at 0.00%	0.28	OK
	115	LC11 at 0.00%	0.30	OK
PL 3-1/2x5/8	**16**	LC28 at 100.00%	0.37	OK
	17	LC16 at 100.00%	0.32	OK
	18	LC18 at 100.00%	0.39	OK
	19	LC30 at 100.00%	0.44	OK
	22	LC9 at 100.00%	**0.55**	**OK**
	23	LC12 at 0.00%	0.49	OK
	24	LC31 at 0.00%	0.48	OK
	25	LC12 at 0.00%	0.45	OK
	104	LC10 at 100.00%	0.33	OK
	105	LC2 at 100.00%	0.21	OK
	106	LC12 at 100.00%	0.23	OK
	107	LC12 at 100.00%	0.39	OK
	110	LC10 at 100.00%	0.54	OK
	111	LC9 at 0.00%	0.49	OK
	112	LC11 at 100.00%	0.46	OK
	113	LC10 at 0.00%	0.45	OK
RndBar 3_4	**12**	LC16 at 100.00%	0.23	OK
	13	LC11 at 0.00%	0.24	With warnings
	14	LC30 at 0.00%	**0.27**	**OK**
	15	LC31 at 100.00%	0.26	With warnings
	100	LC12 at 0.00%	0.22	OK
	101	LC9 at 0.00%	0.24	With warnings
	102	LC9 at 0.00%	0.24	OK
	103	LC11 at 100.00%	0.21	With warnings
RndBar 5_8	**8**	LC28 at 87.50%	0.62	OK
	9	LC30 at 87.50%	**0.65**	**OK**
	10	LC16 at 87.50%	0.58	OK
	11	LC16 at 87.50%	0.54	OK
	96	LC10 at 87.50%	0.60	OK
	97	LC12 at 87.50%	0.64	OK
	98	LC10 at 87.50%	0.42	OK
	99	LC10 at 87.50%	0.42	OK

Current Date: 6/7/2022 11:25 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	2.00	0
2	-0.6362	0.00	2.4783	0
3	0.00	-3.3333	2.00	0
4	-0.6362	-3.3333	2.4783	0
5	0.6362	-3.3333	2.4783	0
6	0.6362	0.00	2.4783	0
7	7.00	-6.6667	4.83	0
8	7.00	3.3333	4.83	0
13	-2.4126	0.00	4.2374	0
14	-2.4126	-3.3333	4.2374	0
15	2.4126	-3.3333	4.2374	0
16	2.4126	0.00	4.2374	0
17	-2.2835	0.00	4.1096	0
18	-2.2835	-3.3333	4.1096	0
19	-0.7653	0.00	2.6062	0
20	-0.7653	-3.3333	2.6062	0
21	0.7653	0.00	2.6062	0
22	0.7653	-3.3333	2.6062	0
23	2.2835	0.00	4.1096	0
24	2.2835	-3.3333	4.1096	0
25	-2.4792	0.00	4.63	0
26	2.4792	0.00	4.63	0
27	2.4792	-3.3333	4.63	0

28	-2.4792	-3.3333	4.63	0
31	0.00	0.00	2.4783	0
32	0.00	-3.3333	2.4783	0
41	-7.00	-6.6667	4.83	0
42	-7.00	3.3333	4.83	0
45	-1.4213	-4.6667	2.9573	0
46	1.4213	-4.6667	2.9573	0
47	-1.4213	1.3333	2.9573	0
48	1.4213	1.3333	2.9573	0
49	-4.00	0.00	4.63	0
50	-2.0572	0.00	0.8316	0
51	4.00	0.00	4.63	0
52	2.0572	0.00	0.8316	0
53	3.00	-6.6667	4.83	0
54	3.00	3.3333	4.83	0
59	-2.00	-6.6667	4.83	0
60	-2.00	3.3333	4.83	0
65	0.00	0.00	-2.00	0
66	0.00	-3.3333	-2.00	0
131	3.4641	0.00	-4.00	0
132	4.1964	0.00	-3.6882	0
133	3.4641	-3.3333	-4.00	0
134	4.1964	-3.3333	-3.6882	0
135	3.5603	-3.3333	-4.7901	0
136	3.5603	0.00	-4.7901	0
137	2.415	-6.6667	-11.4772	0
138	2.415	3.3333	-11.4772	0
143	6.6081	0.00	-3.0293	0
144	6.6081	-3.3333	-3.0293	0
145	4.1955	-3.3333	-7.2081	0
146	4.1955	0.00	-7.2081	0
147	6.4328	0.00	-3.0772	0
148	6.4328	-3.3333	-3.0772	0
149	4.3717	0.00	-3.6404	0
150	4.3717	-3.3333	-3.6404	0
151	3.6064	0.00	-4.9658	0
152	3.6064	-3.3333	-4.9658	0
153	4.1493	0.00	-7.0324	0
154	4.1493	-3.3333	-7.0324	0
155	6.9813	0.00	-3.168	0
156	4.5022	0.00	-7.462	0
157	4.5022	-3.3333	-7.462	0
158	6.9813	-3.3333	-3.168	0
161	3.8784	0.00	-4.2392	0
162	3.8784	-3.3333	-4.2392	0
171	9.415	-6.6667	0.6472	0
172	9.415	3.3333	0.6472	0
175	5.0038	-4.6667	-3.2477	0
176	3.5825	-4.6667	-5.7096	0
177	5.0038	1.3333	-3.2477	0
178	3.5825	1.3333	-5.7096	0
179	7.7417	0.00	-1.8509	0
180	3.4931	0.00	-1.7802	0
181	3.7417	0.00	-8.7791	0
182	1.6861	0.00	-5.0671	0
183	4.415	-6.6667	-8.0131	0
184	4.415	3.3333	-8.0131	0
189	6.915	-6.6667	-3.6829	0
190	6.915	3.3333	-3.6829	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	0	1	0
3	1	1	1	0	1	0
50	1	1	1	0	0	0
52	1	1	1	0	0	0
131	1	1	1	0	1	0
133	1	1	1	0	1	0
180	1	1	1	0	0	0
182	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	8	7		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
2	9	10		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
3	11	12		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
4	13	2		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
5	14	4		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
6	15	5		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
7	16	6		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
8	17	18		RndBar 5_8	A36	0.00	0.00	0.00
9	19	20		RndBar 5_8	A36	0.00	0.00	0.00
10	21	22		RndBar 5_8	A36	0.00	0.00	0.00
11	23	24		RndBar 5_8	A36	0.00	0.00	0.00
12	21	24		RndBar 3_4	A36	0.00	0.00	0.00
13	22	23		RndBar 3_4	A36	0.00	0.00	0.00
14	18	19		RndBar 3_4	A36	0.00	0.00	0.00
15	17	20		RndBar 3_4	A36	0.00	0.00	0.00
16	13	25		PL 3-1/2x5/8	A36	0.00	0.00	0.00
17	16	26		PL 3-1/2x5/8	A36	0.00	0.00	0.00
18	15	27		PL 3-1/2x5/8	A36	0.00	0.00	0.00
19	14	28		PL 3-1/2x5/8	A36	0.00	0.00	0.00
22	2	31		PL 3-1/2x5/8	A36	0.00	0.00	0.00
23	31	6		PL 3-1/2x5/8	A36	0.00	0.00	0.00
24	4	32		PL 3-1/2x5/8	A36	0.00	0.00	0.00
25	32	5		PL 3-1/2x5/8	A36	0.00	0.00	0.00
26	31	1		PL 11-1/4x5/8	A36	11.25	9.25	0.00
27	32	3		PL 11-1/4x5/8	A36	11.25	9.25	0.00
32	42	41		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
35	47	45		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
36	48	46		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
37	49	50		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
38	52	51		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
39	54	53		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
42	60	59		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
89	138	137		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
90	139	140		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
91	141	142		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
92	143	132		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
93	144	134		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
94	145	135		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
95	146	136		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
96	147	148		RndBar 5_8	A36	0.00	0.00	0.00
97	149	150		RndBar 5_8	A36	0.00	0.00	0.00

98	151	152	RndBar 5_8	A36	0.00	0.00	0.00
99	153	154	RndBar 5_8	A36	0.00	0.00	0.00
100	151	154	RndBar 3_4	A36	0.00	0.00	0.00
101	152	153	RndBar 3_4	A36	0.00	0.00	0.00
102	148	149	RndBar 3_4	A36	0.00	0.00	0.00
103	147	150	RndBar 3_4	A36	0.00	0.00	0.00
104	143	155	PL 3-1/2x5/8	A36	0.00	0.00	0.00
105	146	156	PL 3-1/2x5/8	A36	0.00	0.00	0.00
106	145	157	PL 3-1/2x5/8	A36	0.00	0.00	0.00
107	144	158	PL 3-1/2x5/8	A36	0.00	0.00	0.00
110	132	161	PL 3-1/2x5/8	A36	0.00	0.00	0.00
111	161	136	PL 3-1/2x5/8	A36	0.00	0.00	0.00
112	134	162	PL 3-1/2x5/8	A36	0.00	0.00	0.00
113	162	135	PL 3-1/2x5/8	A36	0.00	0.00	0.00
114	161	131	PL 11-1/4x5/8	A36	11.25	9.25	0.00
115	162	133	PL 11-1/4x5/8	A36	11.25	9.25	0.00
120	172	171	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
123	177	175	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
124	178	176	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
125	179	180	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
126	182	181	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
127	184	183	PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
130	190	189	PIPE 2-1_2x0.203	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
8	0.00	2	0.00	0.00	1.00
9	0.00	2	0.00	0.00	1.00
10	0.00	2	0.00	0.00	1.00
11	0.00	2	0.00	0.00	1.00
16	90.00	0	0.00	0.00	0.00
17	90.00	0	0.00	0.00	0.00
18	90.00	0	0.00	0.00	0.00
19	90.00	0	0.00	0.00	0.00
22	90.00	0	0.00	0.00	0.00
23	90.00	0	0.00	0.00	0.00
24	90.00	0	0.00	0.00	0.00
25	90.00	0	0.00	0.00	0.00
26	90.00	0	0.00	0.00	0.00
27	90.00	0	0.00	0.00	0.00
32	315.00	0	0.00	0.00	0.00
39	315.00	0	0.00	0.00	0.00
42	315.00	0	0.00	0.00	0.00
89	0.00	2	-0.9659	0.00	-0.2588
96	0.00	2	0.866	0.00	-0.50
97	0.00	2	0.866	0.00	-0.50
98	0.00	2	0.866	0.00	-0.50
99	0.00	2	0.866	0.00	-0.50
104	90.00	0	0.00	0.00	0.00
105	90.00	0	0.00	0.00	0.00
106	90.00	0	0.00	0.00	0.00
107	90.00	0	0.00	0.00	0.00
110	90.00	0	0.00	0.00	0.00

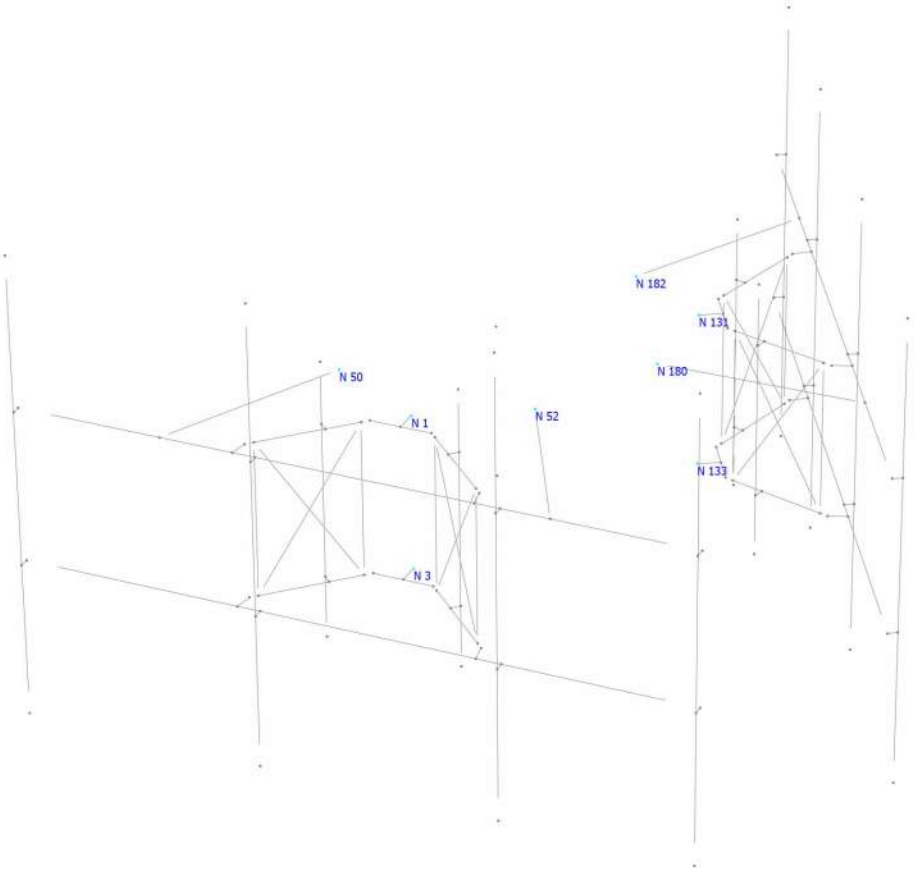
111	90.00	0	0.00	0.00	0.00
112	90.00	0	0.00	0.00	0.00
113	90.00	0	0.00	0.00	0.00
114	90.00	0	0.00	0.00	0.00
115	90.00	0	0.00	0.00	0.00
120	0.00	2	-0.9659	0.00	-0.2588
123	0.00	2	-0.50	0.00	-0.866
124	0.00	2	-0.50	0.00	-0.866
127	0.00	2	-0.9659	0.00	-0.2588
130	0.00	2	-0.9659	0.00	-0.2588

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
12	0.00	-3.50	0.00	0.00	3.50	0.00
13	0.00	3.50	0.00	0.00	-3.50	0.00
14	0.00	3.50	0.00	0.00	-3.50	0.00
15	0.00	-3.50	0.00	0.00	3.50	0.00
26	0.00	-0.625	0.00	0.00	-0.625	0.00
27	0.00	-0.625	0.00	0.00	-0.625	0.00
100	0.00	-3.50	0.00	0.00	3.50	0.00
101	0.00	3.50	0.00	0.00	-3.50	0.00
102	0.00	3.50	0.00	0.00	-3.50	0.00
103	0.00	-3.50	0.00	0.00	3.50	0.00
114	0.00	-0.625	0.00	0.00	-0.625	0.00
115	0.00	-0.625	0.00	0.00	-0.625	0.00

Hinges

	Node-J				Node-K						
Member	**M33**	**M22**	**V3**	**V2**	**M33**	**M22**	**V3**	**V2**	**TOR**	**AXL**	**Axial rigidity**
13	0	0	0	0	0	0	0	0	0	0	Tension only
15	0	0	0	0	0	0	0	0	0	0	Tension only
16	1	1	0	0	0	0	0	0	0	0	Full
17	1	1	0	0	0	0	0	0	0	0	Full
18	1	1	0	0	0	0	0	0	0	0	Full
19	1	1	0	0	0	0	0	0	0	0	Full
37	1	1	0	0	0	0	0	0	0	0	Full
38	0	0	0	0	1	1	0	0	0	0	Full
101	0	0	0	0	0	0	0	0	0	0	Tension only
103	0	0	0	0	0	0	0	0	0	0	Tension only
104	1	1	0	0	0	0	0	0	0	0	Full
105	1	1	0	0	0	0	0	0	0	0	Full
106	1	1	0	0	0	0	0	0	0	0	Full
107	1	1	0	0	0	0	0	0	0	0	Full
125	1	1	0	0	0	0	0	0	0	0	Full
126	0	0	0	0	1	1	0	0	0	0	Full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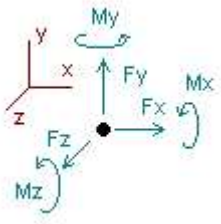
N 131
N 180
N 50
N 1
N 52
N 133
N 3
Y
X
Z

Current Date: 6/7/2022 11:25 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=1.2DL+W0**						
1	0.69159	0.89829	-1.70934	0.00000	-0.15968	0.00000
3	-0.21938	0.69693	2.21546	0.00000	0.09252	0.00000
50	-0.76413	0.00450	1.50314	0.00000	0.00000	0.00000
52	0.29192	0.00733	0.57927	0.00000	0.00000	0.00000
131	0.15229	0.87117	1.67798	0.00000	-0.41369	0.00000
133	0.96857	0.71541	0.69190	0.00000	-1.16030	0.00000
180	-1.28953	0.01217	0.04156	0.00000	0.00000	0.00000
182	0.16868	0.00813	-0.29591	0.00000	0.00000	0.00000
SUM	0.00000	3.21393	4.70406	0.00000	-1.64115	0.00000
Condition **LC2=1.2DL+W30**						
1	1.64952	0.87593	-0.95868	0.00000	0.51016	0.00000
3	0.64627	0.71399	0.99675	0.00000	0.84953	0.00000
50	-0.23310	0.00742	0.48826	0.00000	0.00000	0.00000
52	-0.25161	0.00972	-0.52633	0.00000	0.00000	0.00000
131	-1.08628	0.89466	1.16631	0.00000	-0.45728	0.00000
133	2.02094	0.69907	-0.31172	0.00000	-0.60576	0.00000
180	0.84922	0.00636	-0.01467	0.00000	0.00000	0.00000
182	0.48105	0.00679	-0.83993	0.00000	0.00000	0.00000
SUM	4.07602	3.21393	-0.00001	0.00000	0.29664	0.00000
Condition **LC3=1.2DL-W0**						
1	-0.24002	0.85639	-0.22029	0.00000	0.25044	0.00000
3	-0.21452	0.72822	-0.22166	0.00000	-0.27569	0.00000
50	0.77185	0.01291	-1.51703	0.00000	0.00000	0.00000
52	-0.31731	0.00953	-0.62955	0.00000	0.00000	0.00000
131	-2.05044	0.88233	-1.10905	0.00000	0.51312	0.00000
133	0.97467	0.70941	-1.31220	0.00000	0.97750	0.00000
180	1.27228	0.00575	-0.03914	0.00000	0.00000	0.00000
182	-0.19651	0.00940	0.34487	0.00000	0.00000	0.00000
SUM	0.00000	3.21393	-4.70406	0.00000	1.46537	0.00000

Condition **LC4=1.2DL-W30**

1	-1.19754	0.87791	-0.97281	0.00000	-0.41881	0.00000
3	-1.08064	0.71110	0.99652	0.00000	-1.03410	0.00000
50	0.23922	0.01020	-0.50193	0.00000	0.00000	0.00000
52	0.22788	0.00784	0.47821	0.00000	0.00000	0.00000
131	-0.82191	0.86007	-0.59041	0.00000	0.54983	0.00000
133	-0.07724	0.72611	-0.30912	0.00000	0.42691	0.00000
180	-0.85750	0.01063	0.01360	0.00000	0.00000	0.00000
182	-0.50828	0.01007	0.88595	0.00000	0.00000	0.00000
SUM	-4.07602	3.21393	0.00001	0.00000	-0.47616	0.00000

Condition **LC5=0.9DL+W0**

1	0.63436	0.67476	-1.46677	0.00000	-0.17132	0.00000
3	-0.16448	0.52172	1.96522	0.00000	0.11555	0.00000
50	-0.76491	0.00338	1.50473	0.00000	0.00000	0.00000
52	0.29503	0.00542	0.58534	0.00000	0.00000	0.00000
131	0.38890	0.65162	1.60626	0.00000	-0.42520	0.00000
133	0.72641	0.53823	0.76986	0.00000	-1.13775	0.00000
180	-1.28742	0.00921	0.04154	0.00000	0.00000	0.00000
182	0.17212	0.00611	-0.30213	0.00000	0.00000	0.00000
SUM	0.00000	2.41045	4.70406	0.00000	-1.61872	0.00000

Condition **LC6=0.9DL+W30**

1	1.59257	0.65516	-0.71735	0.00000	0.49832	0.00000
3	0.70097	0.53724	0.74755	0.00000	0.87269	0.00000
50	-0.23397	0.00559	0.48999	0.00000	0.00000	0.00000
52	-0.24847	0.00730	-0.52018	0.00000	0.00000	0.00000
131	-0.84777	0.67187	1.09461	0.00000	-0.46920	0.00000
133	1.77728	0.52353	-0.23383	0.00000	-0.58323	0.00000
180	0.85099	0.00473	-0.01472	0.00000	0.00000	0.00000
182	0.48443	0.00503	-0.84608	0.00000	0.00000	0.00000
SUM	4.07602	2.41045	-0.00001	0.00000	0.31857	0.00000

Condition **LC7=0.9DL-W0**

1	-0.29580	0.63844	0.01959	0.00000	0.23924	0.00000
3	-0.16084	0.55008	-0.46980	0.00000	-0.25258	0.00000
50	0.77078	0.00969	-1.51499	0.00000	0.00000	0.00000
52	-0.31414	0.00707	-0.62333	0.00000	0.00000	0.00000
131	-1.81186	0.66046	-1.18001	0.00000	0.50045	0.00000
133	0.73098	0.53324	-1.23504	0.00000	1.00031	0.00000
180	1.27397	0.00439	-0.03919	0.00000	0.00000	0.00000
182	-0.19309	0.00707	0.33871	0.00000	0.00000	0.00000
SUM	0.00000	2.41045	-4.70406	0.00000	1.48741	0.00000

Condition **LC8=0.9DL-W30**

1	-1.25358	0.65724	-0.73170	0.00000	-0.42980	0.00000
3	-1.02677	0.53448	0.74737	0.00000	-1.01112	0.00000
50	0.23824	0.00768	-0.50003	0.00000	0.00000	0.00000
52	0.23104	0.00589	0.48436	0.00000	0.00000	0.00000
131	-0.58521	0.64141	-0.66140	0.00000	0.53756	0.00000
133	-0.31944	0.54833	-0.23188	0.00000	0.44973	0.00000
180	-0.85548	0.00794	0.01358	0.00000	0.00000	0.00000
182	-0.50481	0.00749	0.87972	0.00000	0.00000	0.00000
SUM	-4.07602	2.41045	0.00001	0.00000	-0.45362	0.00000

Condition **LC9=1.2DL+Di+Wi0**

1	0.95685	1.97127	-2.34465	0.00000	0.14386	0.00000
3	-0.79265	1.53991	2.51126	0.00000	-0.33163	0.00000
50	-0.15052	0.02578	0.29415	0.00000	0.00000	0.00000
52	-0.01368	0.02796	-0.02677	0.00000	0.00000	0.00000
131	-2.18357	1.96441	0.61365	0.00000	0.13903	0.00000
133	2.39075	1.54321	-0.32471	0.00000	-0.54486	0.00000
180	-0.20179	0.02903	0.00333	0.00000	0.00000	0.00000
182	-0.00539	0.02774	0.00973	0.00000	0.00000	0.00000
SUM	0.00000	7.12931	0.73600	0.00000	-0.59361	0.00000

Condition **LC10=1.2DL+Di+Wi30**

1	1.04542	1.96575	-2.22883	0.00000	0.26025	0.00000
3	-0.66044	1.54341	2.30535	0.00000	-0.24810	0.00000
50	-0.03847	0.02733	0.07515	0.00000	0.00000	0.00000
52	-0.07751	0.02843	-0.15167	0.00000	0.00000	0.00000
131	-2.38935	1.97017	0.49035	0.00000	0.11378	0.00000
133	2.56101	1.54003	-0.46724	0.00000	-0.44141	0.00000
180	0.18523	0.02657	-0.00305	0.00000	0.00000	0.00000
182	0.01111	0.02763	-0.02005	0.00000	0.00000	0.00000
SUM	0.63700	7.12931	0.00000	0.00000	-0.31548	0.00000

Condition **LC11=1.2DL+Di-Wi0**

1	0.70145	1.96045	-2.11008	0.00000	0.23695	0.00000
3	-0.78959	1.54619	2.09929	0.00000	-0.45140	0.00000
50	0.15233	0.02996	-0.29763	0.00000	0.00000	0.00000
52	-0.06419	0.02831	-0.12558	0.00000	0.00000	0.00000
131	-2.51682	1.96713	0.16932	0.00000	0.26321	0.00000
133	2.39293	1.54254	-0.60987	0.00000	-0.22567	0.00000
180	0.20250	0.02647	-0.00329	0.00000	0.00000	0.00000
182	-0.07862	0.02825	0.14184	0.00000	0.00000	0.00000
SUM	0.00000	7.12931	-0.73600	0.00000	-0.17690	0.00000

Condition **LC12=1.2DL+Di-Wi30**

1	0.61287	1.96595	-2.22593	0.00000	0.12057	0.00000
3	-0.92181	1.54270	2.30520	0.00000	-0.53499	0.00000
50	0.04025	0.02841	-0.07866	0.00000	0.00000	0.00000
52	-0.00031	0.02786	-0.00060	0.00000	0.00000	0.00000
131	-2.31148	1.96141	0.29284	0.00000	0.28827	0.00000
133	2.22268	1.54573	-0.46736	0.00000	-0.32899	0.00000
180	-0.18413	0.02890	0.00299	0.00000	0.00000	0.00000
182	-0.09508	0.02835	0.17153	0.00000	0.00000	0.00000
SUM	-0.63700	7.12931	0.00000	0.00000	-0.45513	0.00000

Condition **LC13=1.4DL**

1	0.26364	1.02470	-1.12554	0.00000	0.05329	0.00000
3	-0.25328	0.82990	1.16277	0.00000	-0.10754	0.00000
50	0.00434	0.01013	-0.00848	0.00000	0.00000	0.00000
52	-0.01470	0.01016	-0.02875	0.00000	0.00000	0.00000
131	-1.10865	1.02466	0.33289	0.00000	0.05643	0.00000
133	1.13357	0.82985	-0.36198	0.00000	-0.10571	0.00000
180	-0.00889	0.01008	0.00015	0.00000	0.00000	0.00000
182	-0.01603	0.01011	0.02894	0.00000	0.00000	0.00000
SUM	0.00000	3.74959	0.00000	0.00000	-0.10354	0.00000

Condition **LC14=1.2DL+1.6LL1**

1	0.22497	1.10270	-1.26767	0.00000	0.04095	0.00000
3	-0.21712	0.88693	1.31236	0.00000	-0.08199	0.00000
50	0.00750	0.00870	-0.01467	0.00000	0.00000	0.00000
52	-0.01535	0.00872	-0.03002	0.00000	0.00000	0.00000
131	-0.95024	0.87698	0.28532	0.00000	0.04837	0.00000
133	0.97162	0.71261	-0.31027	0.00000	-0.09058	0.00000
180	-0.00763	0.00864	0.00013	0.00000	0.00000	0.00000
182	-0.01375	0.00866	0.02482	0.00000	0.00000	0.00000
SUM	0.00000	3.61393	0.00000	0.00000	-0.08325	0.00000

Condition **LC15=1.2DL+1.6LL2**

1	-0.65761	1.10626	-1.27546	0.00000	-0.14676	0.00000
3	0.62338	0.88342	1.31222	0.00000	0.32755	0.00000
50	0.02651	0.00878	-0.05186	0.00000	0.00000	0.00000
52	0.00772	0.00859	0.01509	0.00000	0.00000	0.00000
131	-0.95024	0.87698	0.28532	0.00000	0.04837	0.00000
133	0.97162	0.71261	-0.31027	0.00000	-0.09058	0.00000
180	-0.00763	0.00864	0.00013	0.00000	0.00000	0.00000
182	-0.01375	0.00866	0.02482	0.00000	0.00000	0.00000
SUM	0.00000	3.61393	0.00000	0.00000	0.13858	0.00000

Condition **LC16=1.2DL+WL0+1.6LLa1**

1	-1.49091	1.33944	-1.63223	0.00000	-0.35542	0.00000
3	1.46349	1.05051	1.73233	0.00000	0.69884	0.00000
50	0.00835	0.00869	-0.01634	0.00000	0.00000	0.00000
52	0.01907	0.00841	0.03724	0.00000	0.00000	0.00000
131	-0.90422	0.87683	0.34513	0.00000	0.03216	0.00000
133	0.97149	0.71265	-0.27115	0.00000	-0.13416	0.00000
180	-0.06341	0.00878	0.00105	0.00000	0.00000	0.00000
182	-0.00386	0.00862	0.00697	0.00000	0.00000	0.00000
SUM	0.00000	4.01393	0.20300	0.00000	0.24142	0.00000

Condition **LC17=1.2DL+WL30+1.6LLa1**

1	-1.46947	1.33805	-1.59511	0.00000	-0.32279	0.00000
3	1.49746	1.05154	1.67608	0.00000	0.71994	0.00000
50	0.04219	0.00881	-0.08257	0.00000	0.00000	0.00000
52	0.00082	0.00865	0.00160	0.00000	0.00000	0.00000
131	-0.96695	0.87794	0.31631	0.00000	0.02164	0.00000
133	1.01979	0.71185	-0.31028	0.00000	-0.10748	0.00000
180	0.04927	0.00850	-0.00082	0.00000	0.00000	0.00000
182	0.00289	0.00860	-0.00521	0.00000	0.00000	0.00000
SUM	0.17600	4.01393	0.00000	0.00000	0.31132	0.00000

Condition **LC18=1.2DL-WL0+1.6LLa1**

1	-1.56457	1.33690	-1.55783	0.00000	-0.32712	0.00000
3	1.46378	1.05252	1.61986	0.00000	0.66582	0.00000
50	0.09715	0.00902	-0.19013	0.00000	0.00000	0.00000
52	0.00364	0.00861	0.00711	0.00000	0.00000	0.00000
131	-0.99626	0.87712	0.22551	0.00000	0.06458	0.00000
133	0.97175	0.71258	-0.34939	0.00000	-0.04700	0.00000
180	0.04815	0.00850	-0.00080	0.00000	0.00000	0.00000
182	-0.02364	0.00869	0.04268	0.00000	0.00000	0.00000
SUM	0.00000	4.01393	-0.20300	0.00000	0.35628	0.00000

Condition **LC19=1.2DL-WL30+1.6LLa1**

1	-1.58601	1.33829	-1.59495	0.00000	-0.35975	0.00000
3	1.42981	1.05149	1.67610	0.00000	0.64471	0.00000
50	0.06331	0.00890	-0.12390	0.00000	0.00000	0.00000
52	0.02189	0.00837	0.04275	0.00000	0.00000	0.00000
131	-0.93357	0.87601	0.25435	0.00000	0.07508	0.00000
133	0.92345	0.71338	-0.31026	0.00000	-0.07368	0.00000
180	-0.06450	0.00878	0.00107	0.00000	0.00000	0.00000
182	-0.03038	0.00871	0.05485	0.00000	0.00000	0.00000
SUM	-0.17600	4.01393	0.00000	0.00000	0.28637	0.00000

Condition **LC20=1.2DL+WL0+1.6LLa2**

1	-0.46529	1.33777	-1.64946	0.00000	-0.08385	0.00000
3	0.50298	1.05205	1.73222	0.00000	0.08182	0.00000
50	-0.02862	0.00850	0.05597	0.00000	0.00000	0.00000
52	-0.00907	0.00873	-0.01773	0.00000	0.00000	0.00000
131	-0.90422	0.87683	0.34513	0.00000	0.03216	0.00000
133	0.97149	0.71265	-0.27115	0.00000	-0.13416	0.00000
180	-0.06341	0.00878	0.00105	0.00000	0.00000	0.00000
182	-0.00386	0.00862	0.00697	0.00000	0.00000	0.00000
SUM	0.00000	4.01393	0.20300	0.00000	-0.10403	0.00000

Condition **LC21=1.2DL+WL30+1.6LLa2**

1	-0.44396	1.33639	-1.61251	0.00000	-0.05123	0.00000
3	0.53703	1.05310	1.67597	0.00000	0.10290	0.00000
50	0.00519	0.00868	-0.01016	0.00000	0.00000	0.00000
52	-0.02727	0.00888	-0.05331	0.00000	0.00000	0.00000
131	-0.96695	0.87794	0.31631	0.00000	0.02164	0.00000
133	1.01979	0.71185	-0.31028	0.00000	-0.10748	0.00000
180	0.04927	0.00850	-0.00082	0.00000	0.00000	0.00000
182	0.00289	0.00860	-0.00521	0.00000	0.00000	0.00000
SUM	0.17600	4.01393	0.00000	0.00000	-0.03416	0.00000

Condition **LC22=1.2DL-WL0+1.6LLa2**

1	-0.53907	1.33518	-1.57512	0.00000	-0.05558	0.00000
3	0.50338	1.05403	1.61971	0.00000	0.04885	0.00000
50	0.06019	0.00898	-0.11770	0.00000	0.00000	0.00000
52	-0.02450	0.00885	-0.04789	0.00000	0.00000	0.00000
131	-0.99626	0.87712	0.22551	0.00000	0.06458	0.00000
133	0.97175	0.71258	-0.34939	0.00000	-0.04700	0.00000
180	0.04815	0.00850	-0.00080	0.00000	0.00000	0.00000
182	-0.02364	0.00869	0.04268	0.00000	0.00000	0.00000
SUM	0.00000	4.01393	-0.20300	0.00000	0.01085	0.00000

Condition **LC23=1.2DL-WL30+1.6LLa2**

1	-0.56040	1.33656	-1.61207	0.00000	-0.08820	0.00000
3	0.46932	1.05298	1.67595	0.00000	0.02776	0.00000
50	0.02637	0.00880	-0.05158	0.00000	0.00000	0.00000
52	-0.00629	0.00871	-0.01230	0.00000	0.00000	0.00000
131	-0.93357	0.87601	0.25435	0.00000	0.07508	0.00000
133	0.92345	0.71338	-0.31026	0.00000	-0.07368	0.00000
180	-0.06450	0.00878	0.00107	0.00000	0.00000	0.00000
182	-0.03038	0.00871	0.05485	0.00000	0.00000	0.00000
SUM	-0.17600	4.01393	0.00000	0.00000	-0.05903	0.00000

Condition **LC24=1.2DL+WL0+1.6LLa3**

1	0.74445	1.33808	-1.66008	0.00000	0.08505	0.00000
3	-0.69755	1.05193	1.73236	0.00000	-0.13654	0.00000
50	-0.03591	0.00834	0.07020	0.00000	0.00000	0.00000
52	-0.01099	0.00870	-0.02149	0.00000	0.00000	0.00000
131	-0.90422	0.87683	0.34513	0.00000	0.03216	0.00000
133	0.97149	0.71265	-0.27115	0.00000	-0.13416	0.00000
180	-0.06341	0.00878	0.00105	0.00000	0.00000	0.00000
182	-0.00386	0.00862	0.00697	0.00000	0.00000	0.00000
SUM	0.00000	4.01393	0.20300	0.00000	-0.15350	0.00000

Condition **LC25=1.2DL+WL30+1.6LLa3**

1	0.76565	1.33667	-1.62307	0.00000	0.11765	0.00000
3	-0.66338	1.05297	1.67603	0.00000	-0.11545	0.00000
50	-0.00210	0.00864	0.00410	0.00000	0.00000	0.00000
52	-0.02918	0.00877	-0.05706	0.00000	0.00000	0.00000
131	-0.96695	0.87794	0.31631	0.00000	0.02164	0.00000
133	1.01979	0.71185	-0.31028	0.00000	-0.10748	0.00000
180	0.04927	0.00850	-0.00082	0.00000	0.00000	0.00000
182	0.00289	0.00860	-0.00521	0.00000	0.00000	0.00000
SUM	0.17600	4.01393	0.00000	0.00000	-0.08363	0.00000

Condition **LC26=1.2DL-WL0+1.6LLa3**

1	0.67047	1.33535	-1.58559	0.00000	0.11328	0.00000
3	-0.69697	1.05382	1.61970	0.00000	-0.16948	0.00000
50	0.05292	0.00912	-0.10345	0.00000	0.00000	0.00000
52	-0.02642	0.00876	-0.05166	0.00000	0.00000	0.00000
131	-0.99626	0.87712	0.22551	0.00000	0.06458	0.00000
133	0.97175	0.71258	-0.34939	0.00000	-0.04700	0.00000
180	0.04815	0.00850	-0.00080	0.00000	0.00000	0.00000
182	-0.02364	0.00869	0.04268	0.00000	0.00000	0.00000
SUM	0.00000	4.01393	-0.20300	0.00000	-0.03863	0.00000

Condition **LC27=1.2DL-WL30+1.6LLa3**

1	0.64927	1.33676	-1.62261	0.00000	0.08068	0.00000
3	-0.73114	1.05277	1.67604	0.00000	-0.19059	0.00000
50	0.01910	0.00882	-0.03734	0.00000	0.00000	0.00000
52	-0.00823	0.00869	-0.01609	0.00000	0.00000	0.00000
131	-0.93357	0.87601	0.25435	0.00000	0.07508	0.00000
133	0.92345	0.71338	-0.31026	0.00000	-0.07368	0.00000
180	-0.06450	0.00878	0.00107	0.00000	0.00000	0.00000
182	-0.03038	0.00871	0.05485	0.00000	0.00000	0.00000
SUM	-0.17600	4.01393	0.00000	0.00000	-0.10850	0.00000

Condition **LC28=1.2DL+WL0+1.6LLa4**

1	2.01140	1.34209	-1.64272	0.00000	0.42220	0.00000
3	-1.89850	1.04860	1.73266	0.00000	-0.82350	0.00000
50	-0.06447	0.00761	0.12589	0.00000	0.00000	0.00000
52	-0.04844	0.00875	-0.09482	0.00000	0.00000	0.00000
131	-0.90422	0.87683	0.34513	0.00000	0.03216	0.00000
133	0.97149	0.71265	-0.27115	0.00000	-0.13416	0.00000
180	-0.06341	0.00878	0.00105	0.00000	0.00000	0.00000
182	-0.00386	0.00862	0.00697	0.00000	0.00000	0.00000
SUM	0.00000	4.01393	0.20300	0.00000	-0.50330	0.00000

Condition **LC29=1.2DL+WL30+1.6LLa4**

1	2.03217	1.34057	-1.60545	0.00000	0.45461	0.00000
3	-1.86396	1.04954	1.67611	0.00000	-0.80234	0.00000
50	-0.03060	0.00816	0.05974	0.00000	0.00000	0.00000
52	-0.06661	0.00879	-0.13040	0.00000	0.00000	0.00000
131	-0.96695	0.87794	0.31631	0.00000	0.02164	0.00000
133	1.01979	0.71185	-0.31028	0.00000	-0.10748	0.00000
180	0.04927	0.00850	-0.00082	0.00000	0.00000	0.00000
182	0.00289	0.00860	-0.00521	0.00000	0.00000	0.00000
SUM	0.17600	4.01393	0.00000	0.00000	-0.43357	0.00000

Condition **LC30=1.2DL-WL0+1.6LLa4**

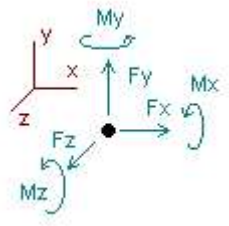
1	1.93685	1.33903	-1.56742	0.00000	0.45021	0.00000
3	-1.89753	1.05019	1.61951	0.00000	-0.85671	0.00000
50	0.02458	0.00906	-0.04799	0.00000	0.00000	0.00000
52	-0.06390	0.00878	-0.12509	0.00000	0.00000	0.00000
131	-0.99626	0.87712	0.22551	0.00000	0.06458	0.00000
133	0.97175	0.71258	-0.34939	0.00000	-0.04700	0.00000
180	0.04815	0.00850	-0.00080	0.00000	0.00000	0.00000
182	-0.02364	0.00869	0.04268	0.00000	0.00000	0.00000
SUM	0.00000	4.01393	-0.20300	0.00000	-0.38891	0.00000

Condition **LC31=1.2DL-WL30+1.6LLa4**

1	1.91608	1.34055	-1.60470	0.00000	0.41781	0.00000
3	-1.93207	1.04925	1.67605	0.00000	-0.87787	0.00000
50	-0.00929	0.00850	0.01815	0.00000	0.00000	0.00000
52	-0.04572	0.00874	-0.08950	0.00000	0.00000	0.00000
131	-0.93357	0.87601	0.25435	0.00000	0.07508	0.00000
133	0.92345	0.71338	-0.31026	0.00000	-0.07368	0.00000
180	-0.06450	0.00878	0.00107	0.00000	0.00000	0.00000
182	-0.03038	0.00871	0.05485	0.00000	0.00000	0.00000
SUM	-0.17600	4.01393	0.00000	0.00000	-0.45866	0.00000

Envelope for nodal reactions

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



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2DL+W0
LC2=1.2DL+W30
LC3=1.2DL-W0
LC4=1.2DL-W30
LC5=0.9DL+W0
LC6=0.9DL+W30
LC7=0.9DL-W0

LC8=0.9DL-W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.4DL
LC14=1.2DL+1.6LL1
LC15=1.2DL+1.6LL2
LC16=1.2DL+WL0+1.6LLa1
LC17=1.2DL+WL30+1.6LLa1
LC18=1.2DL-WL0+1.6LLa1
LC19=1.2DL-WL30+1.6LLa1
LC20=1.2DL+WL0+1.6LLa2
LC21=1.2DL+WL30+1.6LLa2
LC22=1.2DL-WL0+1.6LLa2
LC23=1.2DL-WL30+1.6LLa2
LC24=1.2DL+WL0+1.6LLa3
LC25=1.2DL+WL30+1.6LLa3
LC26=1.2DL-WL0+1.6LLa3
LC27=1.2DL-WL30+1.6LLa3
LC28=1.2DL+WL0+1.6LLa4
LC29=1.2DL+WL30+1.6LLa4
LC30=1.2DL-WL0+1.6LLa4
LC31=1.2DL-WL30+1.6LLa4

		Forces						Moments					
Node		**Fx** [Kip]	**lc**	**Fy** [Kip]	**lc**	**Fz** [Kip]	**lc**	**Mx** [Kip*ft]	**lc**	**My** [Kip*ft]	**lc**	**Mz** [Kip*ft]	**lc**
1	Max	2.032	LC29	1.971	LC9	0.020	LC7	0.00000	LC1	0.51016	LC2	0.00000	LC1
	Min	-1.586	LC19	0.638	LC7	-2.345	LC9	0.00000	LC1	-0.42980	LC8	0.00000	LC1
3	Max	1.497	LC17	1.546	LC11	2.511	LC9	0.00000	LC1	0.87269	LC6	0.00000	LC1
	Min	-1.932	LC31	0.522	LC5	-0.470	LC7	0.00000	LC1	-1.03410	LC4	0.00000	LC1
50	Max	0.772	LC3	0.030	LC11	1.505	LC5	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.765	LC5	0.003	LC5	-1.517	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
52	Max	0.295	LC5	0.028	LC10	0.585	LC5	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.317	LC3	0.005	LC5	-0.630	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
131	Max	0.389	LC5	1.970	LC10	1.678	LC1	0.00000	LC1	0.54983	LC4	0.00000	LC1
	Min	-2.517	LC11	0.641	LC8	-1.180	LC7	0.00000	LC1	-0.46920	LC6	0.00000	LC1
133	Max	2.561	LC10	1.546	LC12	0.770	LC5	0.00000	LC1	1.00031	LC7	0.00000	LC1
	Min	-0.319	LC8	0.524	LC6	-1.312	LC3	0.00000	LC1	-1.16030	LC1	0.00000	LC1
180	Max	1.274	LC7	0.029	LC9	0.042	LC1	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-1.290	LC1	0.004	LC7	-0.039	LC7	0.00000	LC1	0.00000	LC1	0.00000	LC1
182	Max	0.484	LC6	0.028	LC12	0.886	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.508	LC4	0.005	LC6	-0.846	LC6	0.00000	LC1	0.00000	LC1	0.00000	LC1

Date: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM **Checked By:** MSC

HUDSON Design Group LLC

Forces on Steel Tension Bands:

Lateral Forces:

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

Item	Weight (lbs.)	Qty.	Total (lbs.)
QD8616-7 Antenna	150	2	300
AIR6449 Antenna	82	2	164
AIR6419 Antenna	66	2	132
DMP65R-BU8DA Antenna	119	2	238
B2/B66A 8843 RRH	72	2	144
RRUS-E2 B29 RRH	53	2	106
B5/B12 4449 RRH	73	2	146
RRUS-32 B30 RRH	60	2	120
B14 4478 RRH	60	2	120
Surge Arrestor	33	2	66
VFA14-H10-2120 Mount	913	2	1826.0
Miscellaneous	100	--	100
		Total =	3362.0 lbs.

Number of Bands = 2
Tension per Band = 1681.0 lbs.

Diameter of Smokestack = 6.50 ft
Circumference of Smokestack = 20.4 ft

Linear Load per Band= 82.32 plf

Calculate Approximate Weight of 3/8" Thick Band:

Weight of Steel 490 lb/ft^3
Width 6.00 in
Thickness 3/8 in

Steel Weight per Band= 7.7 plf

Date: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM Checked By: MSC

HUDSON Design Group LLC

Total Gravity Force per Band=

Linear Load per Band=	82.32	plf
Steel Weight per Band=	7.7	plf
Total =	**90.0**	**plf**

CHECK FRICTION FORCES

Friction Equation = $F_s = \mu_s N$

Force of static friction	**F_s =**	90.0	plf
Coefficient of static friction	**μ_s =**	0.7	
Force required on band	**N =**	128.5	plf
	Factor of Safety =	1.5	
Force required on band	**N_T =**	192.8	plf

Date: 6/7/2022
Project Name: BRISTOL MIDDLE STREET
Project No.: CT3461
Designed By: KM **Checked By:** MSC

HUDSON Design Group LLC

CHECK CONNECTION CAPACITY (Worst Case)

Reference: AISC Steel Construction Manual 14th Edition (ASD)

Bolt Type = A36 5/8" Threaded Rod

Allowable Tensile Load =

F_{Tall} = 6673 lbs.

Allowable Shear Load =

F_{Vall}= 4004 lbs.

Tension Forces

Required Linear Force = 192.8 plf

Diameter of Smokestack = 6.50 ft
Circumference of Smokestack = 20.42 ft

Total Tension = 3937 lbs.

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

Tension Design Load /Bolts =

f_t= 656.19 lbs. < 6673 lbs. **Therefore, OK !**

EXHIBIT 5

Radio Frequency Safety Survey Report Prediction (RFSSRP)

AT&T Wireless Monopole Facility

Site Name	BRISTOL MIDDLE STREET
Site ID	CTL03461
Site Address	383 MIDDLE STREET, BRISTOL, CT 06010

Latitude: 41.660140 **Longitude:** -72.910000 **USID:** 157860 **FA**: 10578401 **Centerline PN:** N/A **Pace ID:** MRCTB055333	**Prepared for:** Centerline on behalf of AT&T **Report Date:** June 30, 2022 **Report Writer:** Michael Fox **Report Reviewer:** Yasir Alqadhili

Statement of Compliance

AT&T is compliant with FCC Regulations.

TABLE OF CONTENTS

1.0 GENERAL SUMMARY

Centerline Communications, LLC ("Centerline") has been contracted to provide a Radio Frequency (RF) Analysis for the following AT&T Mobility wireless monopole facility to determine whether the facility is in compliance with federal standards and regulations regarding RF exposure. This analysis includes theoretical exposure calculations for all AT&T Mobility equipment.

1.1 SITE SUMMARY

Analysis Site Data	
Site USID:	157860
Site FA#:	10578401
Site Name:	BRISTOL MIDDLE STREET
Site Address:	383 MIDDLE STREET, BRISTOL CT 06010
Site Latitude:	41.660140
Site Longitude:	-72.910000
Facility Type:	Monopole
Compliance Summary	
Compliance Status:	Compliant
Maximum Modeled AT&T MPE% on Walking Surface (General Public Limit):	5.47%
Maximum Modeled AT&T MPE% at Ground Level (General Public Limit):	3.74%
Site Survey Data	
Is Access Locked or Controlled? :	Unknown
Lock or Control Measures if Present:	Unknown
Parapet Height:	0
Site Data Information	
CD:	10578401.AE201.220622
RFDS:	NEW-ENGLAND_CONNECTICUT_CTL03461_2021-5G-NR-Radio_5G-NR-1SR-CBAND_hs357s_PTN_10578401_157860_10-06-2021_Final-Approved_v1.00

Signage and barriers are the primary means of mitigating accessible areas of exposure. Below is a summary of existing and recommended signage at this AT&T facility.

Existing Signage and Barriers (AT&T Sectors)										
Location	Information	Notice	Notice 2	Caution	Caution 2	Caution 2B	Caution 2C	Warning	Warning 2	Barriers
Tower Access	0	0	0	0	0	1	0	0	0	0
Alpha	0	0	0	0	0	0	0	0	0	0
Beta	0	0	0	0	0	0	0	0	0	0
Gamma	0	0	0	0	0	0	0	0	0	0

Recommended Signage and Barriers (AT&T Sectors) – Actions that MUST be Taken						
Location	Notice 2	Caution 2	Caution 2B	Caution 2C	Warning 2	Barriers
Tower Access	0	0	0	0	0	0
Alpha	0	0	0	0	0	0
Beta	0	0	0	0	0	0
Gamma	0	0	0	0	0	0

Final Compliant Configuration (AT&T Sectors) – All Mitigation Items that MUST be in Place										
Location	Information	Notice	Notice 2	Caution	Caution 2	Caution 2B	Caution 2C	Warning	Warning 2	Barriers
Tower Access	0	0	0	0	0	1	0	0	0	0
Alpha	0	0	0	0	0	0	0	0	0	0
Beta	0	0	0	0	0	0	0	0	0	0
Gamma	0	0	0	0	0	0	0	0	0	0

Alpha:

- No action required.

Beta:

- No action required.

Gamma:

- No action required.

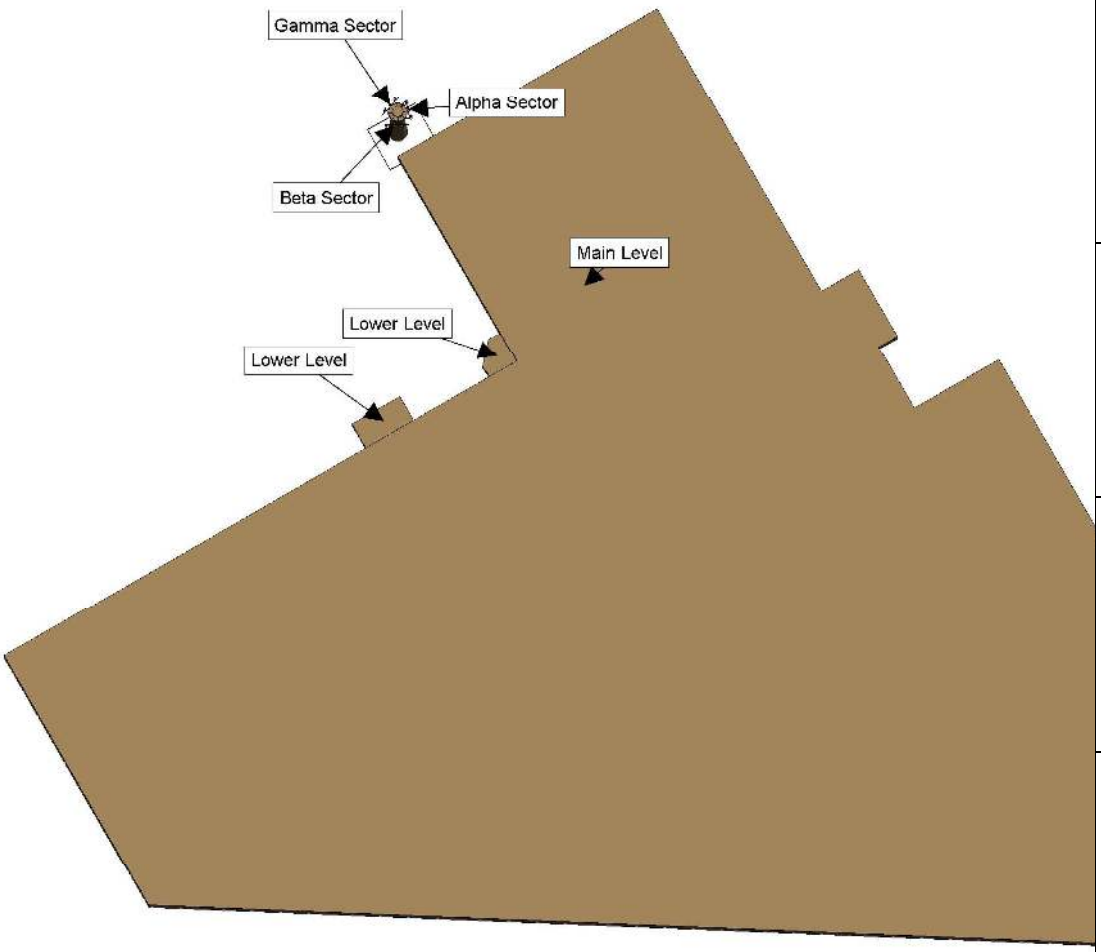
AT&T Policy Items:

- None

Notes:

- None

2.0 SITE SCALE MAP



Site Map


INFO 1 Sign

INFO 1 Sign

INFO 2 Sign


Caution 1 Sign

Notice 1 Sign


Caution 2 Sign


Notice 2 Sign

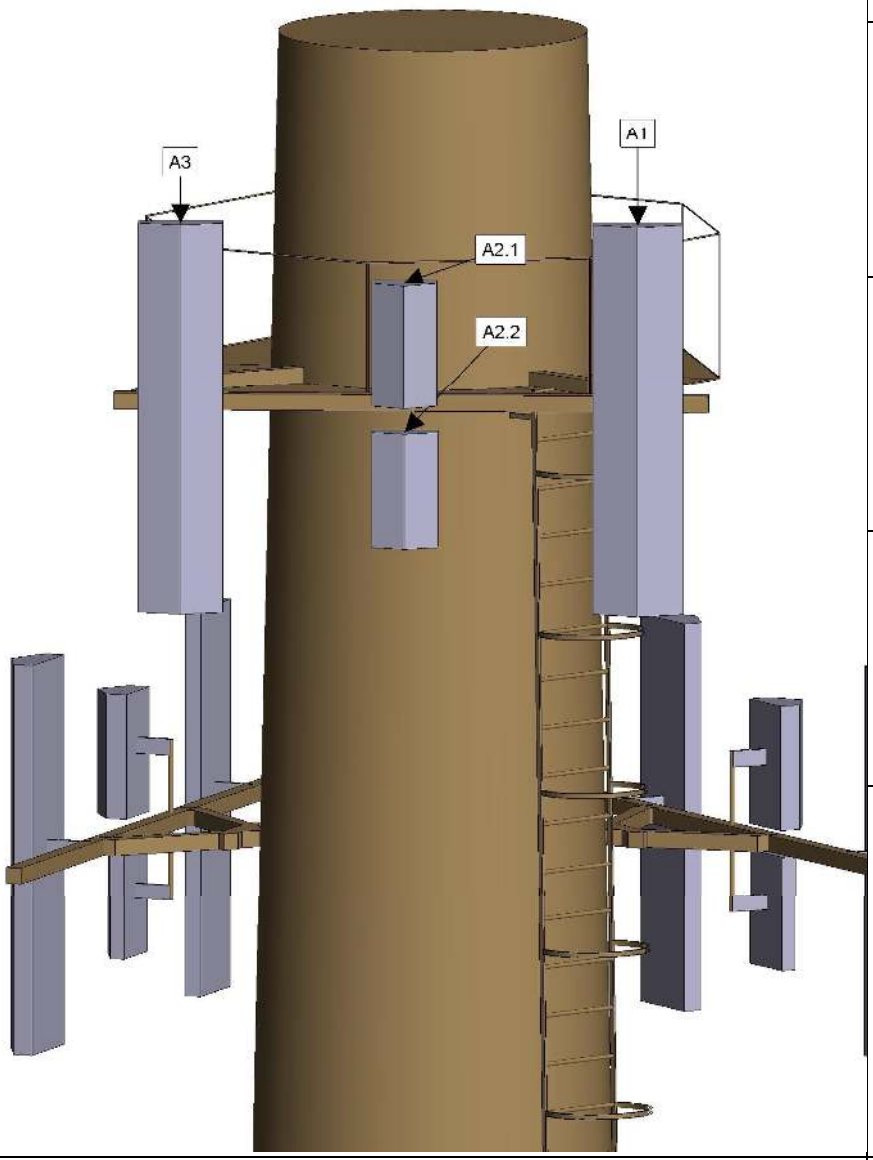
Warning 2 Sign

Items to be removed

Existing Sign

Proposed Sign

Signage/ Mitigation Plan
BRISTOL MIDDLE STREET / 10578401



Alpha Sector

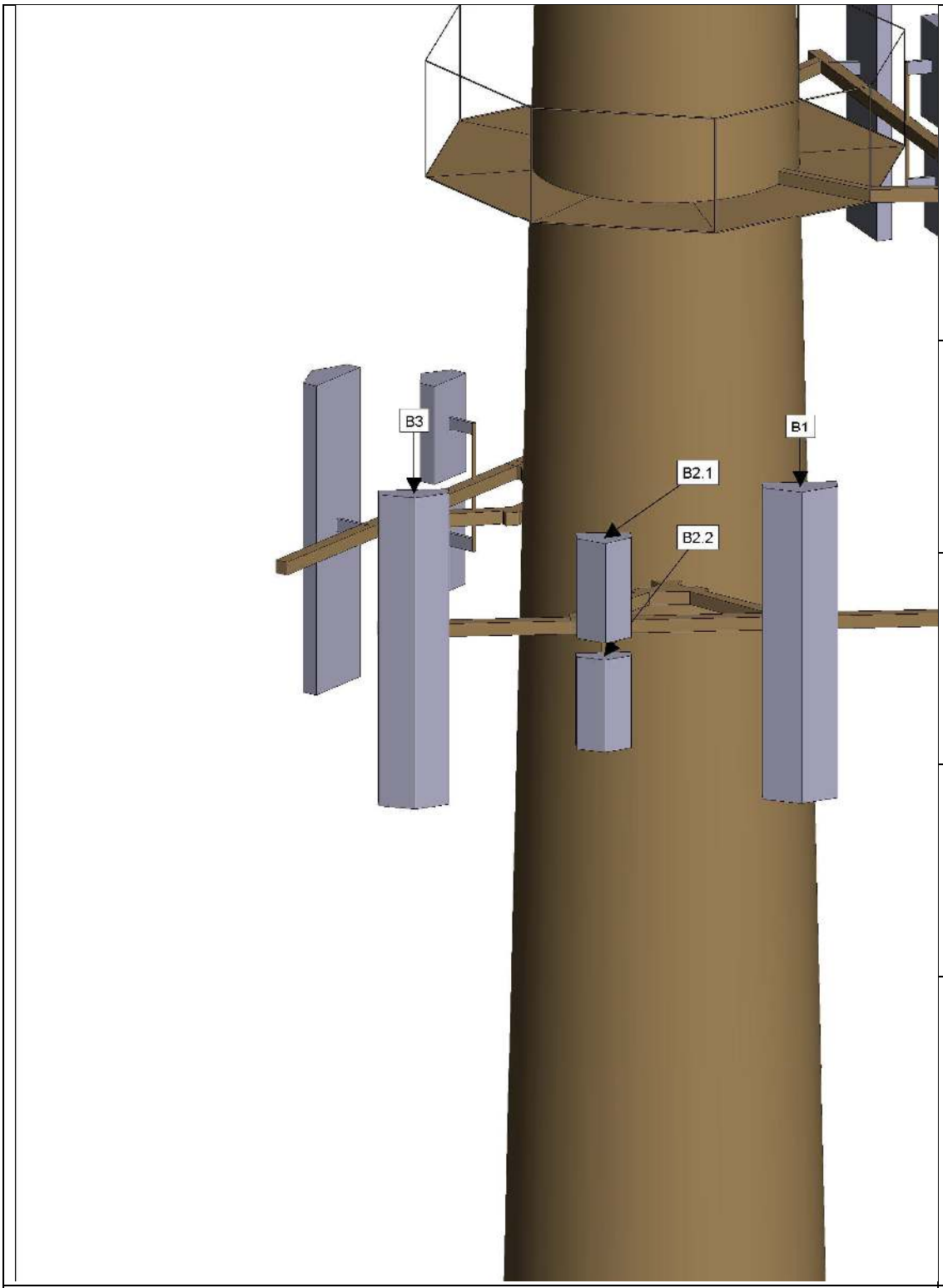
 INFO 1 Sign	 INFO 1 Sign
 INFO 2 Sign	 Caution 1 Sign
 Notice 1 Sign	 Caution 2 Sign
 Notice 2 Sign	 Warning 2 Sign

Items to be removed

Existing Sign

Proposed Sign

Signage/ Mitigation Plan
BRISTOL MIDDLE STREET / 10578401



Beta Sector

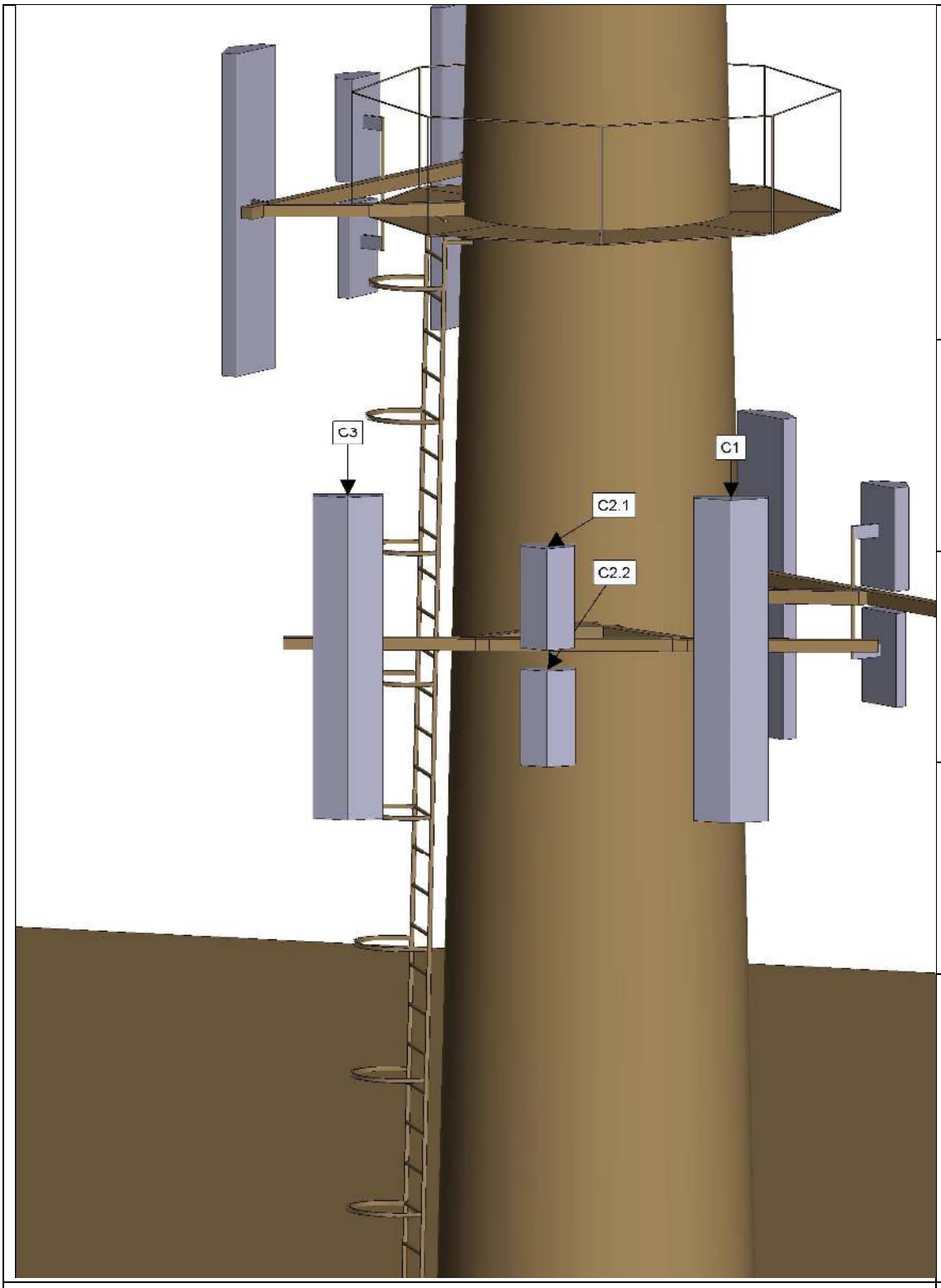
 INFO 1 Sign	 INFO 1 Sign
 INFO 2 Sign	 Caution 1 Sign
 Notice 1 Sign	 Caution 2 Sign
 Notice 2 Sign	 Warning 2 Sign

Items to be removed

Existing Sign

Proposed Sign

Signage/ Mitigation Plan
BRISTOL MIDDLE STREET / 10578401



Gamma Sector

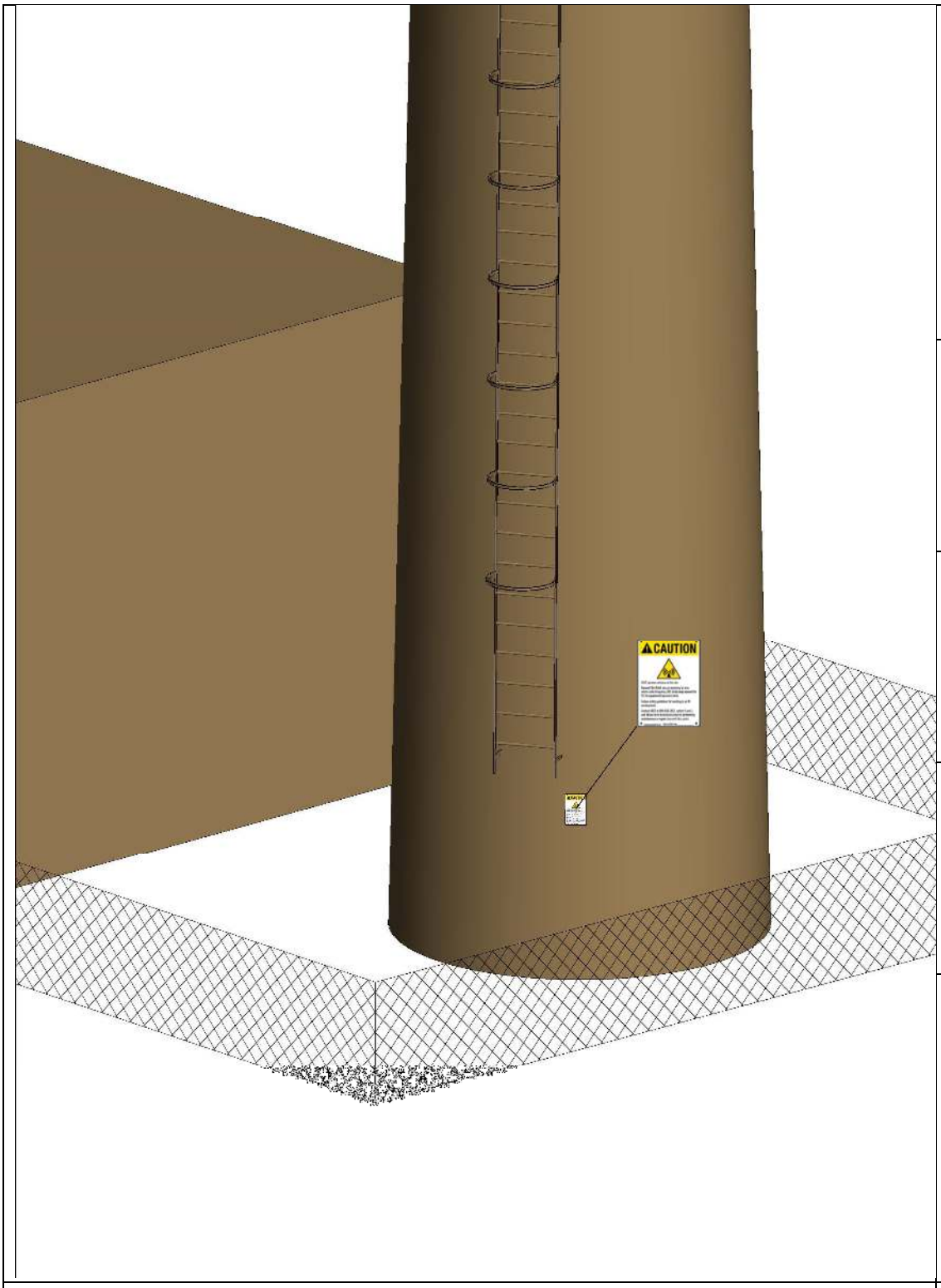
 INFO 1 Sign	 INFO 1 Sign
 INFO 2 Sign	 Caution 1 Sign
 Notice 1 Sign	 Caution 2 Sign
 Notice 2 Sign	 Warning 2 Sign

Items to be removed

Existing Sign

Proposed Sign

Signage/ Mitigation Plan
BRISTOL MIDDLE STREET / 10578401



Tower Base


INFO 1 Sign

INFO 1 Sign

INFO 2 Sign


Caution 1 Sign

Notice 1 Sign


Caution 2 Sign


Notice 2 Sign

Warning 2 Sign

Items to be removed

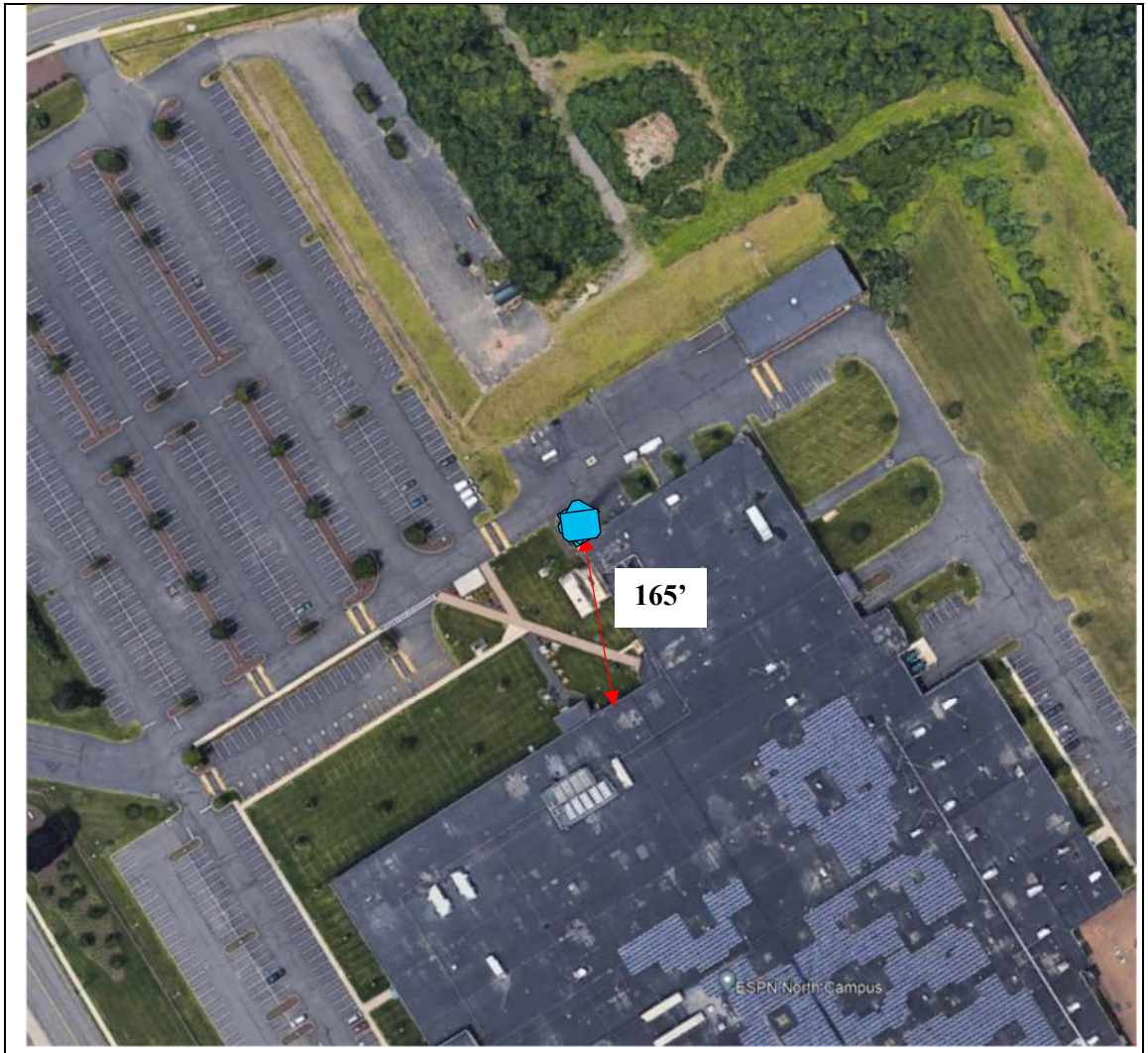
Existing Sign

Proposed Sign

Signage/ Mitigation Plan
BRISTOL MIDDLE STREET / 10578401

2.1 ADJACENT BUILDING ANALYSIS

- All adjacent buildings are >90’ away laterally from the 6449 **and** 6419antennas and/or >20’ below the bottom tips of the 6449 **and** 6419 antennas.



C-Band Antennas ⟷ C-Band Lateral Distance

3.0 ANTENNA INVENTORY

ANT ID	Operator	Type/Make/Model	System / Freq (MHz)	TPO (Watts)	Azimuth (°)	Mech. Tilt (°)	Elec. Tilt (°)	Gain (dBi)	Total EIRP (Watts)	Antenna Z Value (ft.) AGL*
A1	AT&T	Panel/Quintel/QD8616-7	700	180.00	70	0	2 to 12	13.05	3633.06	116.02
A1	AT&T	Panel/Quintel/QD8616-7	1900	120.00	70	0	0 to 9	15.05	3838.67	116.02
A1	AT&T	Panel/Quintel/QD8616-7	2100	120.00	70	0	0 to 9	15.35	4113.21	116.02
A2.1	AT&T	Panel/Ericsson/AIR6449 B78M envelope	3650	108.40	70	0	0	23.45	23989.95	120.22
A2.2	AT&T	Panel/Ericsson/AIR 6419 B77G Envelope	3450	108.40	70	0	6	23.05	21879.09	117.23
A3	AT&T	Panel/CCI/DMP65R-BU8D	700	120.00	70	0	2 to 12	12.95	2366.91	116.02
A3	AT&T	Panel/CCI/DMP65R-BU8D	850	120.00	70	0	2 to 12	13.85	2911.93	116.02
A3	AT&T	Panel/CCI/DMP65R-BU8D	2300	75.00	70	0	0 to 8	15.95	2951.63	116.02
B1	AT&T	Panel/Quintel/QD8616-7	700	180.00	180	0	2 to 12	13.05	3633.06	106.02
B1	AT&T	Panel/Quintel/QD8616-7	1900	120.00	180	0	0 to 9	15.05	3838.67	106.02
B1	AT&T	Panel/Quintel/QD8616-7	2100	120.00	180	0	0 to 9	15.35	4113.21	106.02
B2.1	AT&T	Panel/Ericsson/AIR6449 B78M envelope	3650	108.40	180	0	0	23.45	23989.95	110.24
B2.2	AT&T	Panel/Ericsson/AIR 6419 B77G Envelope	3450	108.40	180	0	6	23.05	21879.09	107.23
B3	AT&T	Panel/CCI/DMP65R-BU8D	700	120.00	180	0	2 to 12	12.95	2366.91	106.02
B3	AT&T	Panel/CCI/DMP65R-BU8D	850	120.00	180	0	2 to 12	13.85	2911.93	106.02
B3	AT&T	Panel/CCI/DMP65R-BU8D	2300	75.00	180	0	0 to 8	15.95	2951.63	106.02
C1	AT&T	Panel/Quintel/QD8616-7	700	180.00	310	0	2 to 12	13.05	3633.06	106.02

ANT ID	Operator	Type/Make/Model	System / Freq (MHz)	TPO (Watts)	Azimuth (°)	Mech. Tilt (°)	Elec. Tilt (°)	Gain (dBi)	Total EIRP (Watts)	Antenna Z Value (ft.) AGL*
C1	AT&T	Panel/Quintel/QD8616-7	1900	120.00	310	0	0 to 9	15.05	3838.67	106.02
C1	AT&T	Panel/Quintel/QD8616-7	2100	120.00	310	0	0 to 9	15.35	4113.21	106.02
C2.1	AT&T	Panel/Ericsson/AIR6449 B78M envelope	3650	108.40	310	0	0	23.45	23989.95	110.24
C2.2	AT&T	Panel/Ericsson/AIR 6419 B77G Envelope	3450	108.40	310	0	6	23.05	21879.09	107.23
C3	AT&T	Panel/CCI/DMP65R-BU8D	700	120.00	310	0	2 to 12	12.95	2366.91	106.02
C3	AT&T	Panel/CCI/DMP65R-BU8D	850	120.00	310	0	2 to 12	13.85	2911.93	106.02
C3	AT&T	Panel/CCI/DMP65R-BU8D	2300	75.00	310	0	0 to 8	15.95	2951.63	106.02

**AGL = Above Ground Level*

Note: Z Value represents the bottom tip of the antenna

75% duty cycle is assumed for all AT&T antennas

C-Band antennas were calculated using AT&T's preferred conservative power reduction factor of 0.32

4.0 PREDICTED RF EXPOSURE LEVELS

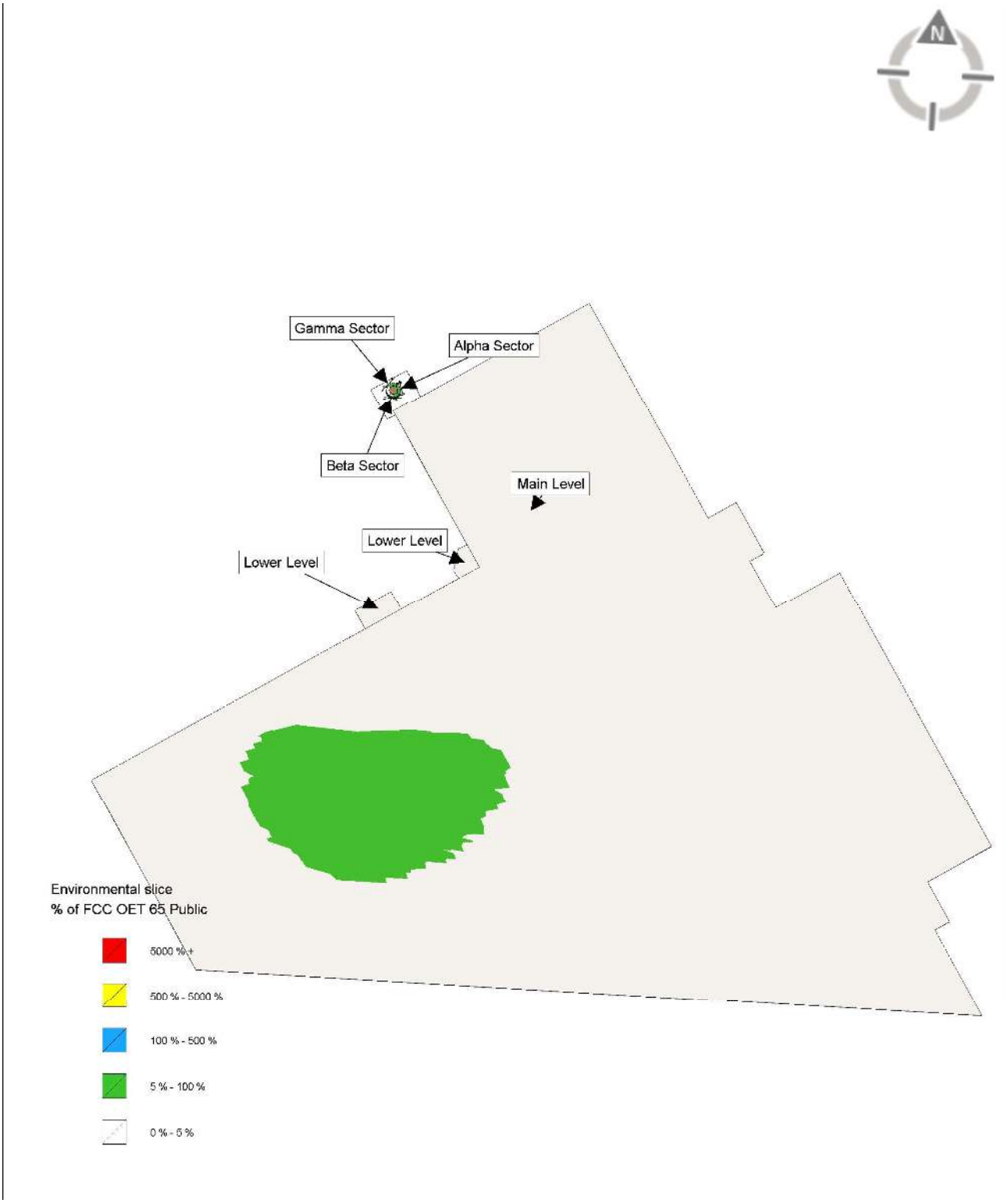
The results of the calculations performed based upon the data listed for this facility are summarized in the tables below:

Maximum Predicted MPE Level on Site – AT&T Only:	% of MPE Limit:
Accessible **General Population** MPE Limits:	**5.47%**
Accessible **Occupational** MPE Limits:	**1.09%**

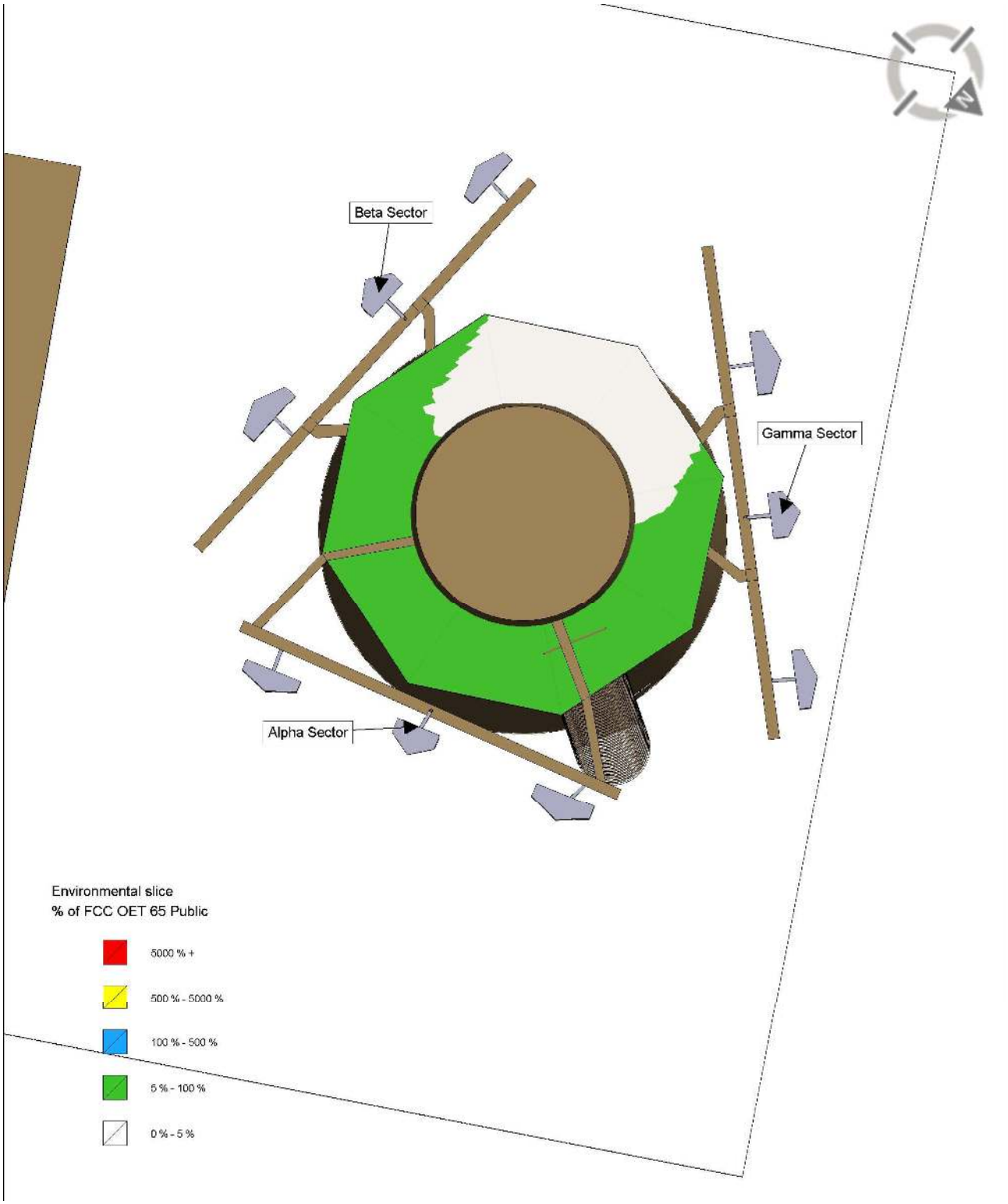
Maximum Predicted Ground Level MPE – AT&T Only:	% of MPE Limit:
Ground Level **General Population** MPE Limits:	**3.74%**
Ground Level **Occupational** MPE Limits:	**0.75%**

5.0 EMISSIONS DIAGRAMS

Main Level Overview



Tower platform Detail View



6.0 STATEMENT OF COMPLIANCE

Centerline conducted worst case modeling to determine whether the monopole facility located at 383 MIDDLE STREET in BRISTOL, Connecticut is in compliance with FCC Regulations.

6.1 STATEMENT OF AT&T MOBILITY COMPLIANCE

Based on the information analyzed, AT&T is in compliance with FCC Regulations. No additional action is required by AT&T.

6.2 RECOMMENDATIONS

Existing Signage and Barriers (AT&T Sectors)										
Location	Information	Notice	Notice 2	Caution	Caution 2	Caution 2B	Caution 2C	Warning	Warning 2	Barriers
Tower Access	0	0	0	0	0	1	0	0	0	0
Alpha	0	0	0	0	0	0	0	0	0	0
Beta	0	0	0	0	0	0	0	0	0	0
Gamma	0	0	0	0	0	0	0	0	0	0

Recommended Signage and Barriers (AT&T Sectors) – Actions that MUST be Taken						
Location	Notice 2	Caution 2	Caution 2B	Caution 2C	Warning 2	Barriers
Tower Access	0	0	0	0	0	0
Alpha	0	0	0	0	0	0
Beta	0	0	0	0	0	0
Gamma	0	0	0	0	0	0

Final Compliant Configuration (AT&T Sectors) – All Mitigation Items that MUST be in Place										
Location	Information	Notice	Notice 2	Caution	Caution 2	Caution 2B	Caution 2C	Warning	Warning 2	Barriers
Tower Access	0	0	0	0	0	1	0	0	0	0
Alpha	0	0	0	0	0	0	0	0	0	0
Beta	0	0	0	0	0	0	0	0	0	0
Gamma	0	0	0	0	0	0	0	0	0	0

Alpha:

- No action required.

Beta:

- No action required.

Gamma:

- No action required.

AT&T Policy Items:

- None

Notes:

- None

7.0 FALL ARREST AND PARAPET INFORMATION

As per AT&T barrier policy, rooftop edges that are protected with a 39-inch parapet wall or guardrail are safe for work activity within six (6) feet of the edge. OSHA has stated that an existing 39-inch guardrail or parapet provides sufficient protection for employees. The height of the top rail or equivalent component of guardrail systems in new construction shall be at least 42 inches above the walking or working surface. It should also be noted that the height of the parapet or guardrail may be reduced to no less than 30 inches at any point provided the sum of the depth (horizontal distance) of the top edge, and the height of the top edge (vertical distance from the work surface to the top edge of the top member), is at least 48 inches. If there is no reason for working atop the roof, then edge protection is not required. In addition, workers may use personnel lifts or temporary fall protection measures to perform work within 6 feet of the roof edge in place of permanent edge protection.

Reference: 29 CFR 1910.28, 29 CFR 1910.23 (NPRM-1990); OSHA Letters of Interpretation 2/9/83 and 3/8/9

APPENDIX A: AT&T RF SIGNAGE

Sign	Description	Sign	Description
	**Information 1 Sign** Gives guidelines on how to proceed and who to contact regarding areas that may exceed either the FCC's General Population or Occupational exposure limits.		**Caution 2C Sign** Gives specific information on how to proceed and who to contact regarding antennas that are façade mounted, concealed or on stand-alone structures.
	**Blue Notice 1 Sign** Used to alert individuals that they are entering an area that may exceed the FCC's General Population exposure limit. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.		**Blue Notice 2 Sign** Used to alert individuals that they are entering an area that may exceed the FCC's General Population exposure limits. To be used on barriers or antenna sectors as a hybrid of the Information 1 and Blue Notice 1 signs.
	**Yellow Caution 1 Sign (Rooftop)** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational exposure limit. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.		**Yellow Caution 2 Sign (Rooftop)** Used to alert individuals that they are entering an area that may exceed the FCC's Occupational exposure limit. To be used on barriers or antenna sectors as a hybrid of the Information 1 and Yellow Caution 1 signs.
	**Yellow Caution 2B Sign (Tower)** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational exposure limits. Must be placed at the base of the tower to warn tower climbers of potential for exposure.		**Warning 2 Sign** Used to inform individuals that they are entering an area that may exceed the FCC's Occupational exposure limit by a factor of 10 or greater. Must be positioned such that persons approaching from any angle have ample warning to avoid the marked areas.

APPENDIX B: FCC GUIDELINES AND EXPOSURE 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.

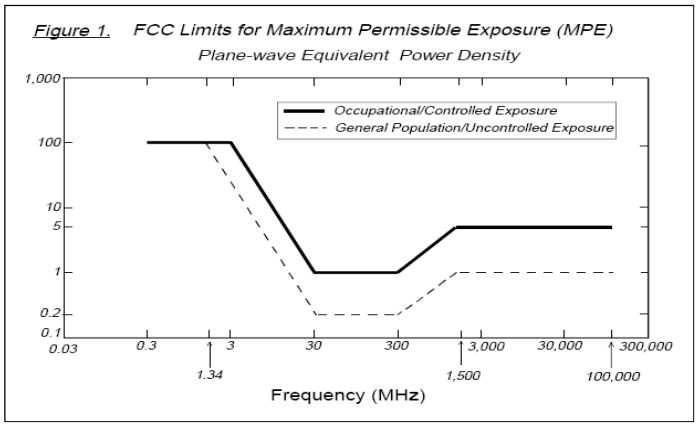
The FCC Mandates that if a site is found to be out of compliance with regard to exposure that any system operator contributing 5% or more to areas exceeding the FCC's allowable limits will be responsible for bringing the site into compliance.

Additional details can be found in FCC OET 65.

Table 1: Limits for Maximum Permissible Exposure (MPE)				
(A) Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1,500	--	--	f/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)

* Plane-wave equivalent power density



APPENDIX C: CALCULATION METHODOLOGY

IXUS electromagnetic energy (EME) calculation software was used to assess all RF field levels presented in this study. IXUS software uses a fast and accurate EME calculation tool that allows for the determination of RF field strength in the vicinity of radio communication base stations and transmitters. At its core, the IXUS EME calculation module implements evaluation techniques detailed in the ITU-T K.61, CENELEC EN 50383, and IEC 62232 specifications and referenced in *C95.3 IEEE Recommended Practice for Measurements and Computations of Electric, Magnetic, and Electromagnetic Fields with Respect to Human Exposure to Such Fields, 0 Hz to 300 GHz*. The EME calculation result at any point in 3D space is achieved via a synthetic ray tracing technique, a conservative cylindrical envelope method, or through full-wave electromagnetic simulation. The ray tracing method is an advanced computation method described in IEC 622322 where the power is summed from elemental sources representing the individual components of the antenna which are selected by an analysis of published manufacturer datasheets and antenna pattern information. The selection of the solution method is determined by the particular antenna being considered.

APPENDIX D: CERTIFICATIONS

I, Michael Fox, preparer of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document.

Michael Fox

6/30/2022

I, Yasir Alqadhili, reviewer and approver of this report certify that I am fully trained and aware of the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have been trained in the procedures and requirements outlined in AT&T's RF Exposure: Responsibilities, Procedures & Guidelines document.

Yasir Alqadhili

6/30/2022

APPENDIX E: PROPRIETARY STATEMENT

This report was prepared for the use of AT&T Mobility, LLC to meet requirements specified in AT&T's corporate RF safety guidelines. It was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same locale under like circumstances. The conclusions provided by Centerline Communications, LLC are based solely on the information provided by AT&T Mobility and all observations in this report are valid on the date of the investigation. Any additional information that becomes available concerning the site should be provided to Centerline Communications, LLC so that our conclusions may be revised and modified, if necessary. This report has been prepared in accordance with Standard Conditions for Engagement and authorized proposal, both of which are integral parts of this report. No other warranty, expressed or implied, is made.

EXHIBIT 6

From: UPS
To: Evan Renwick
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030321169758
Date: Wednesday, July 6, 2022 1:33:57 PM

Hello, your package has been delivered.

Delivery Date: Wednesday, 07/06/2022
Delivery Time: 1:32 PM
Signed by: FT DESK

CENTERLINE SITE ACQUISITION

Tracking Number:	**1Z9Y45030321169758**
Ship To:	MAYOR'S OFFICE 111 N. MAIN ST 3RD FLOOR BRISTOL, CT 060108107 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CT3461- CSC_MAYOR

Discover more about UPS:

Visit https://link.edgepilot.com/s/108d0fa9/kCrN0olUEke9hXbfFFBPMg?u=http://www.ups.com/

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From: UPS
To: Evan Renwick
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030321864363
Date: Wednesday, July 6, 2022 12:38:44 PM

Hello, your package has been delivered.

Delivery Date: Wednesday, 07/06/2022
Delivery Time: 12:36 PM
Signed by: FT DESK

CENTERLINE SITE ACQUISITION

Tracking Number:	**1Z9Y45030321864363**
Ship To:	ZONING DEPARTMENT 111 N. MAIN ST 2ND FLOOR BRISTOL, CT 060108107 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CT3461-CSC_ZEO

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From: UPS
To: Evan Renwick
Subject: UPS Delivery Notification, Tracking Number 1Z9Y45030325551970
Date: Wednesday, July 6, 2022 12:38:45 PM

Hello, your package has been delivered.

Delivery Date: Wednesday, 07/06/2022
Delivery Time: 12:36 PM
Signed by: FT DESK

CENTERLINE SITE ACQUISITION

Tracking Number:	**1Z9Y45030325551970**
Ship To:	PLANNING DEPARTMENT 111 N. MAIN ST 2ND FLOOR BRISTOL, CT 060108107 US
Number of Packages:	1
UPS Service:	UPS Ground
Package Weight:	1.0 LBS
Reference Number:	CT3461-CSC_CITY PLANNER

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Your shipment from

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Estimated delivery

Tomorrow, July 08 between 9:15 A.M. - 1:15 P.M.

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

Ship To

BRISTOL SPORTS CENTER LEASECO
PROPERTY MANAGEMENT
2901 W. BUTTERFIELD RD
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