



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

February 14, 2023

Mark Roberts
Consultant for SAI
SAI Group
12 Industrial Way
Salem, NH 03079
Mark.Roberts@QCDevelopment.net

RE: **EM-AT&T-164-230130** - AT&T notice of intent to modify an existing telecommunications facility located at 419 Broad Street, Windsor, Connecticut.

Dear Mark Roberts:

The Connecticut Siting Council (Council) is in receipt of your correspondence of February 10, 2023 submitted in response to the Council's February 3, 2023 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie Bachman
Executive Director

MAB/ANM/laf

From: Mark Roberts <mark.roberts@qcdevelopment.net>
Sent: Friday, February 10, 2023 3:56 PM
To: Fontaine, Lisa <Lisa.Fontaine@ct.gov>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: RE: EM-AT&T-164-230130 (Broad St), Windsor- Council Incomplete Letter

Hello Lisa – In response to the attached notice of incompleteness, please find attached the revised Mount Analysis and construction drawings. A hard copy will follow via US Mail.

Thanks

Mark Roberts
QC Development
860-670-9068

PROJECT INFORMATION

SCOPE OF WORK: ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE:

- NEW AT&T ANTENNAS: AIR6419 B77G (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: AIR6449 B77 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: TPA-65R-BU6DA-K (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T ANTENNAS: OPA65R-BU6BA (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4478 B14 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 8843 B2/B66A (PCS/AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4449 B5/B12 (850/700) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T SURGE ARRESTOR: DC6-48-60-18 (TOTAL OF 1).
- NEW (3) 6AWG DC TRUNK.
- NEW (1) 18 PAIR FIBER.
- NEW (6) Y-CABLES.
- PROPOSED LOW PROFILE PLATFORM (SITEPRO1 PART# -RMQLP-4120-H10)

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:

- ADD 6648 + XCEDE CABLE.
- ADD 6630 + IDLE CABLE.
- ADD (4) RECTIFIERS.
- ADD (1) STRINGS OF BATTERIES TO EXISTING POWER PLANT.
- ADD DC12-48-60-RM.

ITEMS TO BE REMOVED:

- EXISTING AT&T ANTENNAS: 7770 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNAS: HPA-65R-BUU-H6 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T ANTENNAS: QS66512-2 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS: RRUS-11 B12 (700) (TYP. 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T RRUS: RRUS-32 B2 (PCS) (TYP. 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T DIPLEXER: LGP 21901 (TYP. 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T DIPLEXER: DBC0061F1V51-2 (TYP. 2 PER SECTOR, TOTAL OF 6).
- EXISTING AT&T TMS TT19-08BP111-001 (TYP. 1 PER SECTOR, TOTAL OF 3).
- EXISTING AT&T (6) 1-1/4" COAX CABLES.

ITEMS TO REMAIN:

- (3) RRU'S, (2) SURGE ARRESTOR, (6) COAX CABLES, (3) DC POWER & (2) FIBER.

SITE ADDRESS: 419 BROAD STREET
WINDSOR, CT 06095

LATITUDE: 41.8458811° N, 41° 50' 45.17" N

LONGITUDE: 72.6461381° W, 72° 38' 46.09" W

TYPE OF SITE: MONOPOLE / INDOOR EQUIPMENT

STRUCTURE HEIGHT: 100'-0"±

RAD CENTER: 100'-0"± (LTE), 101'-8"± (3.45 GHZ), 98'-2"± (C-Band)

CURRENT USE: TELECOMMUNICATIONS FACILITY

PROPOSED USE: TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
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A-2	ANTENNA LAYOUTS & ELEVATION	2
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SN-1	STRUCTURAL NOTES	2
G-1	GROUNDING DETAILS	2
RF-1	RF PLUMBING DIAGRAM	2



SITE NUMBER: CTL01026

SITE NAME: WINDSOR

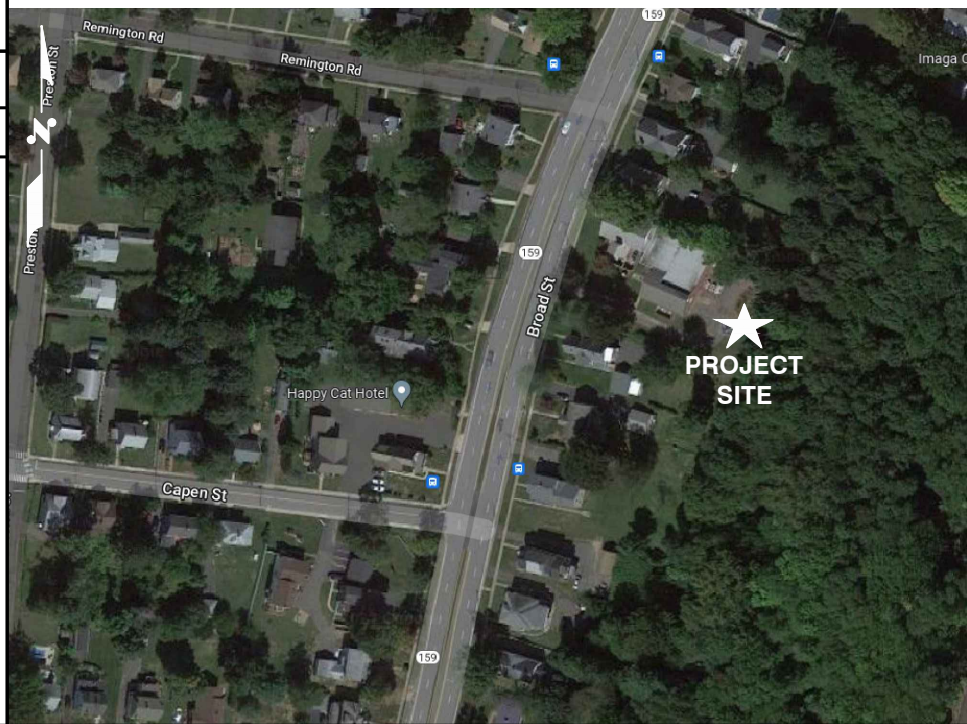
FA CODE: 10035043

**PACE ID: MRCTB061150, MRCTB061112, MRCTB061146, MRCTB061143,
MRCTB061164, MRCTB061113, MRCTB061117, MRCTB061145, MRCTB039871
PROJECT: 5G NR 1SR CBAND_4TX4RX RETOFIT_BBU ADD_5G NR 1DR-1_5G NR
1DR-2_LTE 4C_LTE BBU DUS41 UPGRADE**

VICINITY MAP

DIRECTIONS TO SITE:

START OUT GOING EAST ON ENTERPRISE DR TOWARD CAPITAL BLVD.TURN LEFT ONTO CAPITAL BLVD.TURN LEFT ONTO WEST ST.MERGE ONTO I-91 N VIA THE RAMP ON THE LEFT TOWARD HARTFORD.TAKE THE PARK AVE/CT-178 EXIT, EXIT 36, TOWARD BLOOMFIELD.TURN RIGHT ONTO PARK AVE/CT-178.TURN LEFT ONTO WINDSOR AVE/CT-159. CONTINUE TO FOLLOW CT-159.419 BROAD ST, WINDSOR, CT 06095-3031, 419 BROAD ST IS ON THE RIGHT.



GENERAL NOTES

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

72 HOURS



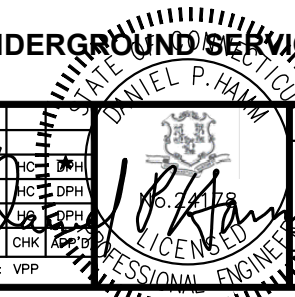
CALL BEFORE YOU DIG



CALL TOLL FREE 1-800-922-4455

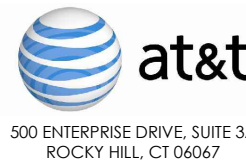
OR CALL 811

UNDERGROUND SERVICE ALERT



SITE NUMBER: CTL01026
SITE NAME: WINDSOR

419 BROAD STREET
WINDSOR, CT 06095
HARTFORD COUNTY



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

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	01/30/23	ISSUED FOR CONSTRUCTION	AM	HC	DPH
1	06/09/22	ISSUED FOR CONSTRUCTION	MS	HC	DPH
A	05/04/22	ISSUED FOR REVIEW	MS	HC	DPH

SITE NUMBER	DRAWING NUMBER	REV
CTL01026	T-1	2

AT&T
TITLE SHEET

5G NR 1SR CBAND_4TX4RX RETOFIT_BBU
ADD_5G NR 1DR-1_5G NR 1DR-2_LTE
4C_LTE BBU DUS41 UPGRADE

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
 CONTRACTOR – SAI
 SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
 OWNER – AT&T MOBILITY
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. **APPLICABLE BUILDING CODES:**
 SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

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

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

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

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

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

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

ABBREVIATIONS

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



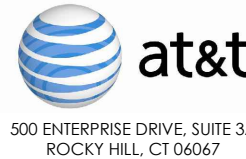
TEP NORTHWEST
 TEP OPCO, LLC.
 45 BEECHWOOD DRIVE, NORTH ANDOVER, MA 01845
 TEL: (978) 557-5553



SAI
 12 INDUSTRIAL WAY
 SALEM, NH 03079

**SITE NUMBER: CTL01026
 SITE NAME: WINDSOR**

419 BROAD STREET
 WINDSOR, CT 06095
 HARTFORD COUNTY



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

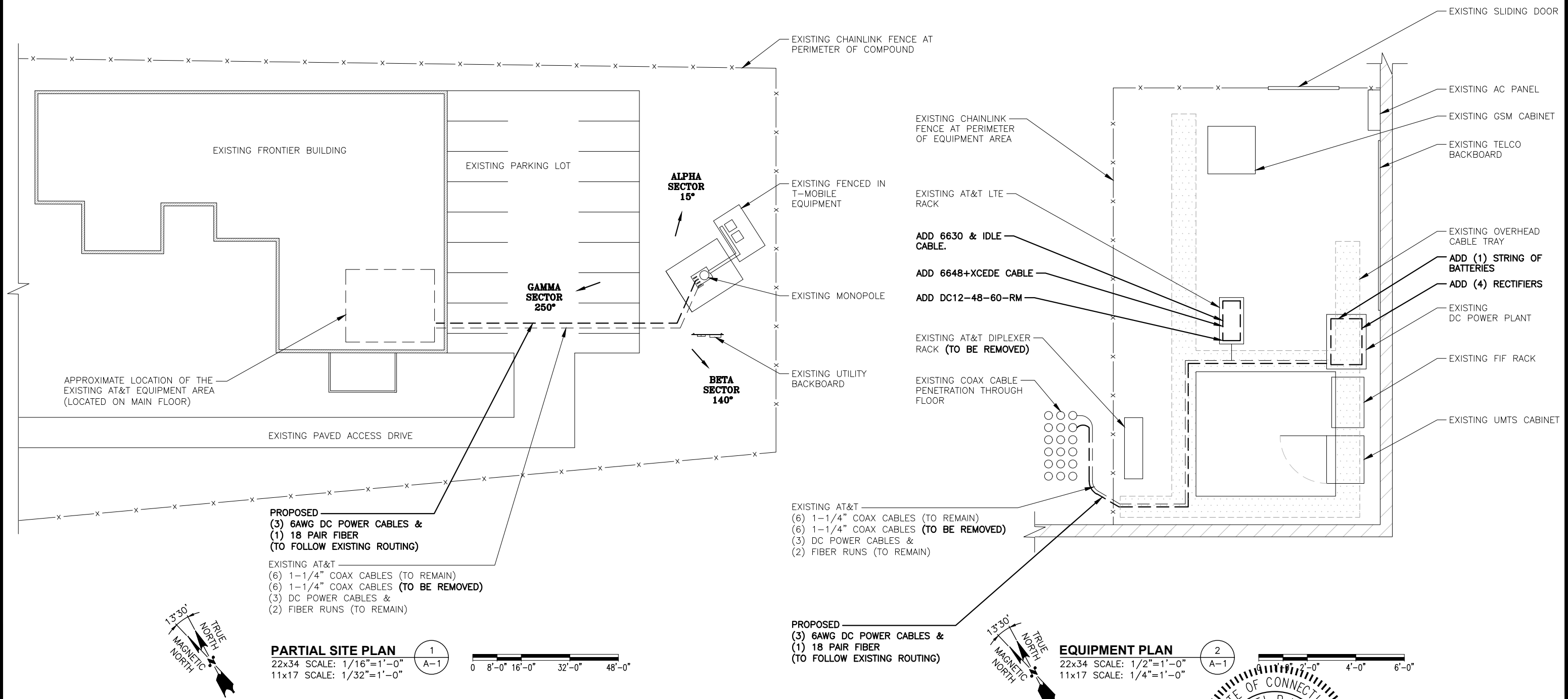
NO.		DATE	REVISIONS	BY	CHK	APP'D
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A	05/04/22	ISSUED FOR REVIEW		AS	HC	DPH
SCALE: AS SHOWN DESIGNED BY: HC DRAWN BY: VPP						

AT&T
GENERAL NOTES
 5G NR 1SR CBAND_4TX4RX RETOFT_BBU
 ADD_5G NR 1DR-1_5G NR 1DR-2_LTE
 4G_LTE BBU DUS41 UPGRADE

SITE NUMBER: CTL01026 DRAWING NUMBER: GN-1 REV: 2

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

NOTE:
REFER TO MOUNT STRUCTURAL ANALYSIS BY: TEP NORTHEAST, DATED: JANUARY 31, 2023 (REV.1), FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT



PROPOSED
(3) 6AWG DC POWER CABLES &
(1) 18 PAIR FIBER
(TO FOLLOW EXISTING ROUTING)

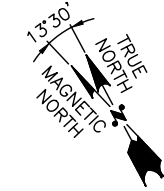
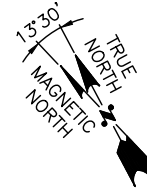
EXISTING AT&T
(6) 1-1/4" COAX CABLES (TO REMAIN)
(6) 1-1/4" COAX CABLES (TO BE REMOVED)
(3) DC POWER CABLES &
(2) FIBER RUNS (TO REMAIN)

PARTIAL SITE PLAN 1
22x34 SCALE: 1/16"=1'-0"
11x17 SCALE: 1/32"=1'-0"

EXISTING AT&T
(6) 1-1/4" COAX CABLES (TO REMAIN)
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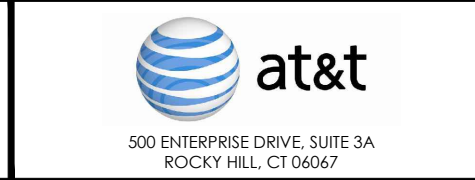
PROPOSED
(3) 6AWG DC POWER CABLES &
(1) 18 PAIR FIBER
(TO FOLLOW EXISTING ROUTING)

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



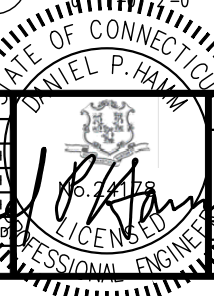
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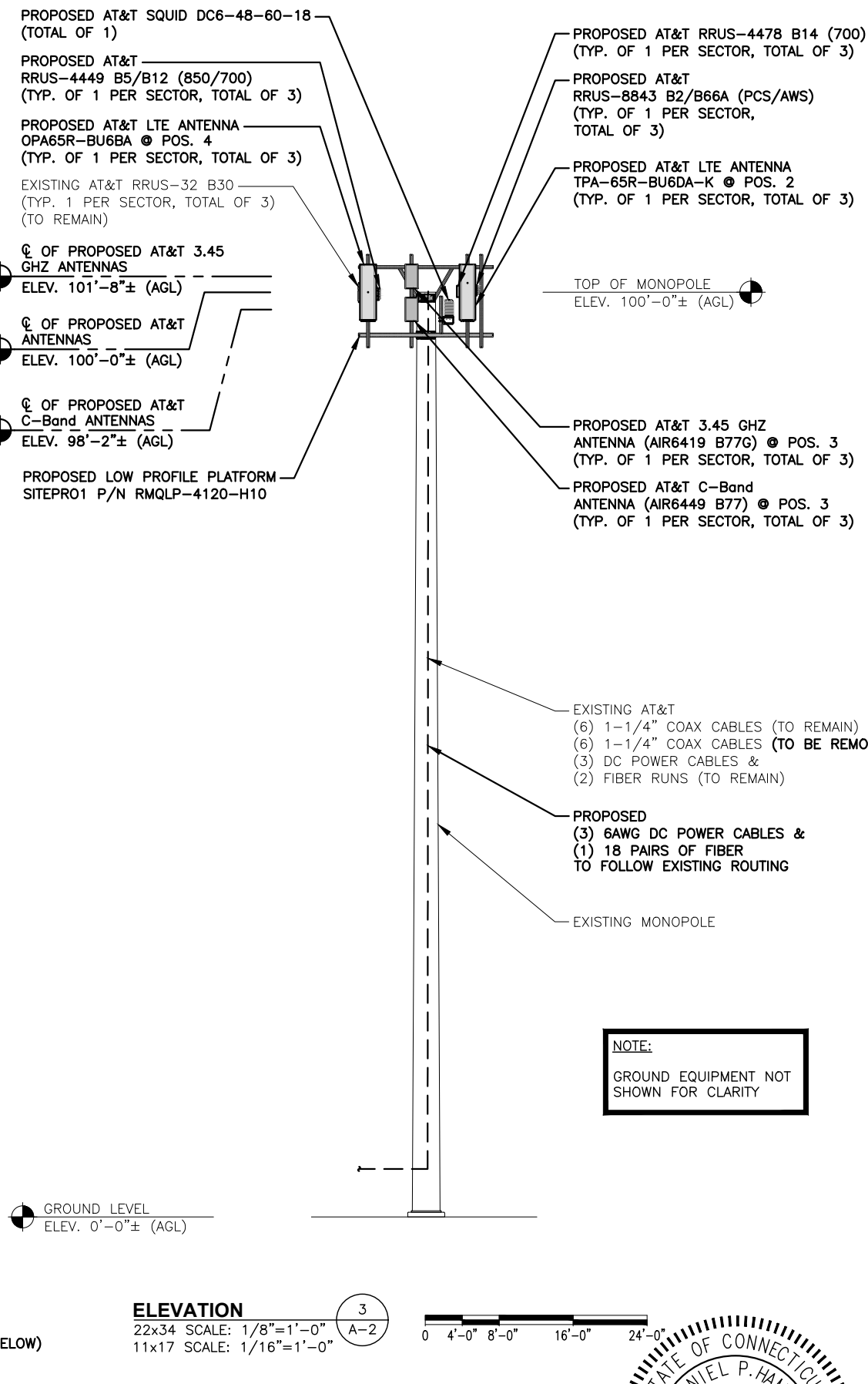
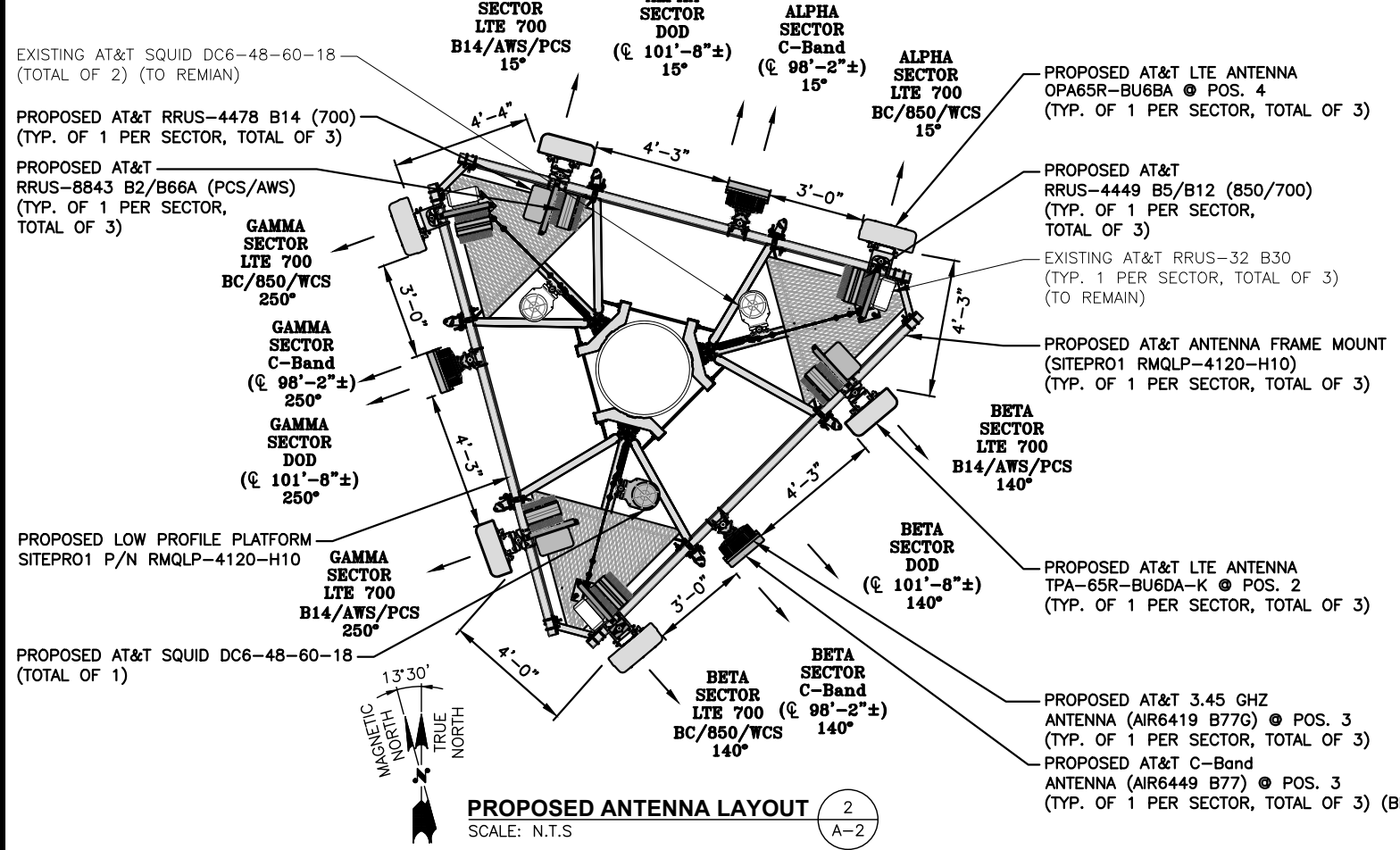
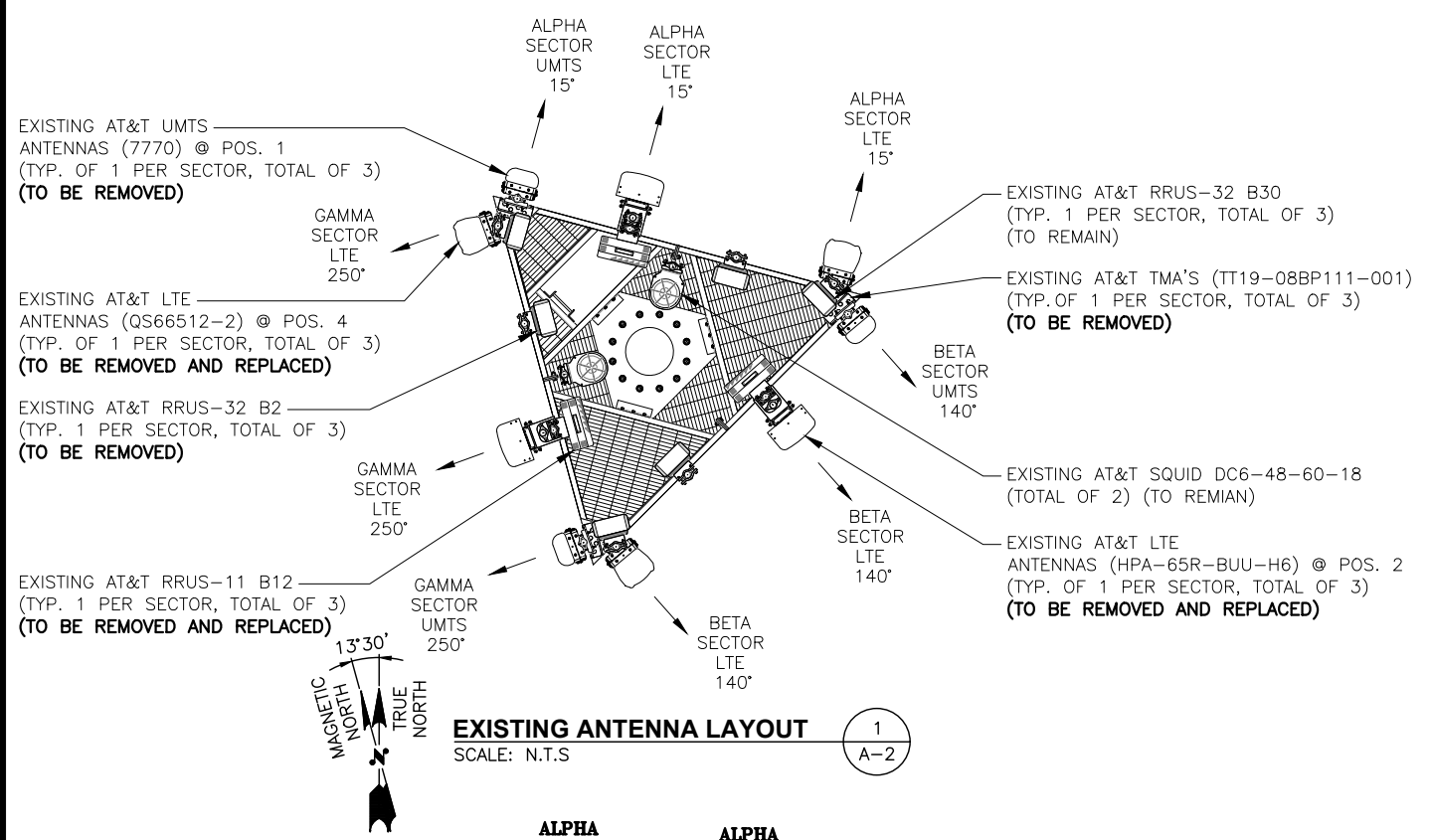


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SCALE: AS SHOWN DESIGNED BY: HC DRAWN BY: VPP



AT&T		
COMPOUND & EQUIPMENT PLANS		
5G NR 1SR CBAND_4TX4RX RETOFT_BBU ADD_5G NR 1DR-1_5G NR 1DR-2_LTE 4G_LTE BBU DUS41 UPGRADE		
SITE NUMBER	DRAWING NUMBER	REV
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NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

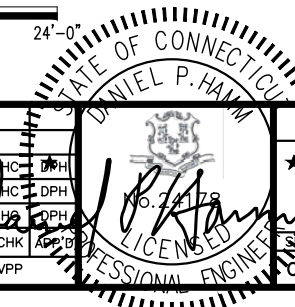


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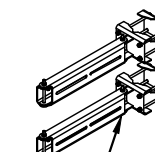
AT&T		
ANTENNA LAYOUTS & ELEVATION		
5G NR 1SR CBAND_4TX4RX RETOFT_BBU ADD_5G NR 1DR-1_5G NR 1DR-2_LTE 4G_LTE BBU DUS41 UPGRADE		
SITE NUMBER	DRAWING NUMBER	REV
CTL01026	A-2	2

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ϕ HEIGHT	ANTENNA TIP HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	-	-	-	-	-	-	-	-	-	-	(E)(2)1-1/4 COAX	(E)(1) RAYCAP DC6-48-60-18
A2	PROPOSED	LTE 700 B14/AWS/PCS	TPA-65R-BU6DA-K	71.2x20.7x7.7	100'-0"±	103'-0"±	15°	-	(P)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A (PCS/AWS)	18.1x13.4x8.3 14.9x13.2x10.9	(E)(2) DC POWER, (E)(1) FIBER & (P)(1) Y-CABLE	(E)(1) RAYCAP DC6-48-60-18
A3	PROPOSED	C-BAND/DOD	AIR6419 B77G AIR6449 B77 (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	101'-8"± 98'-2"±	103'-0"± 99'-5"±	15°	-	-	-	-	(E)(1) RAYCAP DC6-48-60-18
A4	PROPOSED	LTE 700 BC/850/WCS	OPA65R-BU6BA	71.1x11.7x8.4	100'-0"±	103'-0"±	15°	-	(P)(1) 4449 B5/B12 (850/700) (E)(1) RRUS-32 B30 (WCS)	17.9x13.2x10.4	(P)(1) Y-CABLE	(E)(1) RAYCAP DC6-48-60-18
B1	-	-	-	-	-	-	-	-	-	-	(E)(2)1-1/4 COAX	(E)(1) RAYCAP DC6-48-60-18
B2	PROPOSED	LTE 700 B14/AWS/PCS	TPA-65R-BU6DA-K	71.2x20.7x7.7	100'-0"±	103'-0"±	140°	-	(P)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A (PCS/AWS)	18.1x13.4x8.3 14.9x13.2x10.9	(E)(1) DC POWER, (P)(1) DC POWER, (E)(1) FIBER & (P)(1) Y-CABLE	(E)(1) RAYCAP DC6-48-60-18
B3	PROPOSED	C-BAND/DOD	AIR6419 B77G AIR6449 B77 (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	101'-8"± 98'-2"±	103'-0"± 99'-5"±	140°	-	-	-	-	(E)(1) RAYCAP DC6-48-60-18
B4	PROPOSED	LTE 700 BC/850/WCS	OPA65R-BU6BA	71.1x11.7x8.4	100'-0"±	103'-0"±	140°	-	(P)(1) 4449 B5/B12 (850/700) (E)(1) RRUS-32 B30 (WCS)	17.9x13.2x10.4	(P)(1) Y-CABLE	(E)(1) RAYCAP DC6-48-60-18
C1	-	-	-	-	-	-	-	-	-	-	(E)(2)1-1/4 COAX	(E)(1) RAYCAP DC6-48-60-18
C2	PROPOSED	LTE 700 B14/AWS/PCS	TPA-65R-BU6DA-K	71.2x20.7x7.7	100'-0"±	103'-0"±	250°	-	(P)(1) 4478 B14 (700) (P)(1) 8843 B2/B66A (PCS/AWS)	18.1x13.4x8.3 14.9x13.2x10.9	(P)(2) DC POWER & (P)(1) FIBER (P)(1) Y-CABLE	(E)(1) RAYCAP DC6-48-60-18
C3	PROPOSED	C-BAND/DOD	AIR6419 B77G AIR6449 B77 (STACKED)	31.1X16.1X7.3 30.6X15.9X10.6	101'-8"± 98'-2"±	103'-0"± 99'-5"±	250°	-	-	-	-	(E)(1) RAYCAP DC6-48-60-18
C4	PROPOSED	LTE 700 BC/850/WCS	OPA65R-BU6BA	71.1x11.7x8.4	100'-0"±	103'-0"±	250°	-	(P)(1) 4449 B5/B12 (850/700) (E)(1) RRUS-32 B30 (WCS)	17.9x13.2x10.4	(P)(1) Y-CABLE	(E)(1) RAYCAP DC6-48-60-18

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

NOTE:
REFER TO MOUNT STRUCTURAL ANALYSIS BY: TEP NORTHEAST, DATED: JANUARY 31, 2023 (REV.1), FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



DUAL RRU MOUNT
(ROSENBERGER PART# D22ORRUSM) (TYP. OF 2 PER SECTOR, TOTAL OF 6)

DUAL RRU MOUNT DETAIL 7

SCALE: N.T.S.

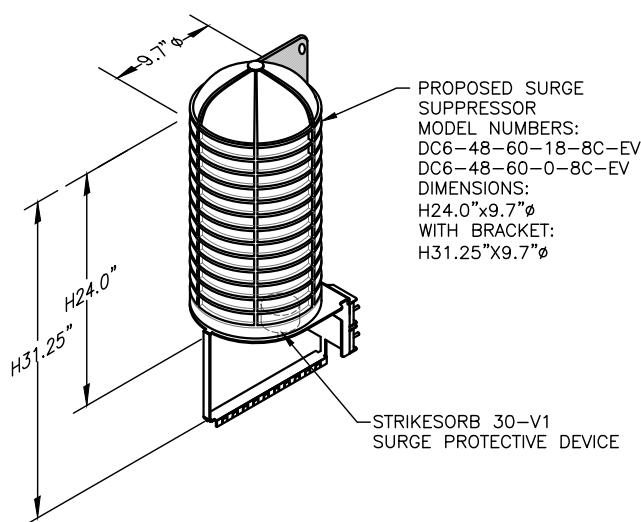


QUANTITY	MODEL	SIZE (L x W x D)
P(3)	4478 B14 (700)	18.1"x13.4"x8.3"
P(3)	8843 (PCS/AWS)	14.9"x13.2"x10.9"
P(3)	4449 (850/700)	17.9"x13.2"x10.4"
E(3)	RRUS-32 (WCS)	27.2"x12.1"x7.0"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

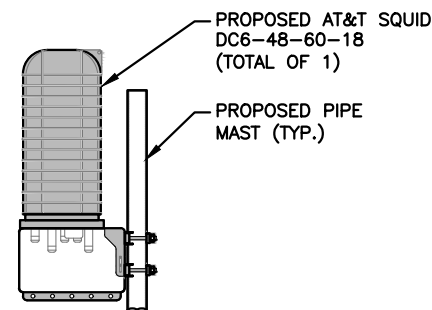
FINAL ANTENNA SCHEDULE 1

SCALE: N.T.S.



DC SURGE SUPPRESSOR DETAIL 3

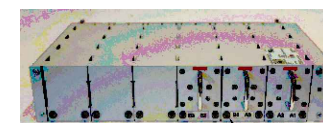
SCALE: N.T.S.



PROPOSED SURGE PROTECTOR MOUNTING DETAIL 4

22x34 SCALE: 1"=1'-0"

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

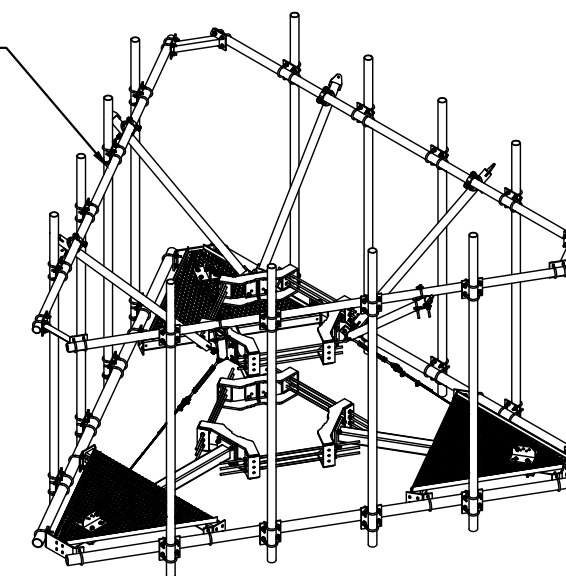


DC12 DETAIL 5

SCALE: N.T.S.



PROPOSED LOW PROFILE PLATFORM
SITEPRO1 P/N RMQLP-4120-H10



PROPOSED LOW PROFILE PLATFORM DETAIL 6

SCALE: N.T.S.



NOTE:
SEE RFDS FOR RRU FREQUENCY AND MODEL NUMBER

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

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

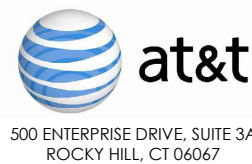
PROPOSED RRUS DETAIL 2

SCALE: N.T.S.



SITE NUMBER: CTL01026
SITE NAME: WINDSOR

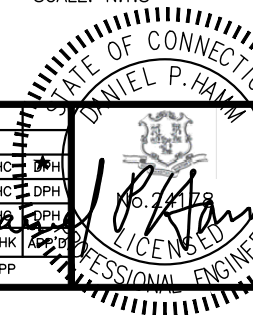
419 BROAD STREET
WINDSOR, CT 06095
HARTFORD COUNTY



NO.	DATE	REVISIONS	BY	CHK	APP'D
2	01/30/23	ISSUED FOR CONSTRUCTION	AM	HC	DPH
1	06/09/22	ISSUED FOR CONSTRUCTION	AM	HC	DPH
A	05/04/22	ISSUED FOR REVIEW	AM	HC	DPH

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

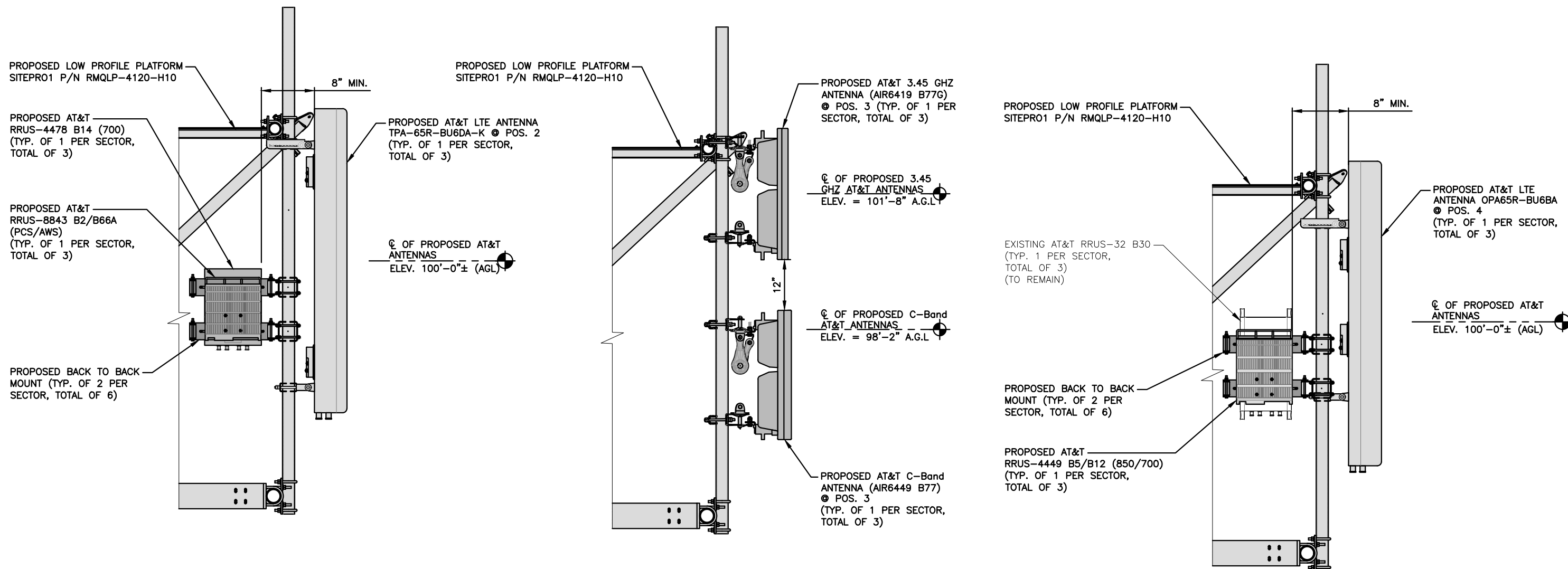
SITE NUMBER	DRAWING NUMBER	REV
CTL01026	A-3	2



AT&T
DETAILS
5G NR 1SR CBAND_4TX4RX RETOFT_BBU
ADD_5G NR 1DR-1_5G NR 1DR-2_LTE
4C_LTE BBU DUS41 UPGRADE

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

NOTE:
REFER TO MOUNT STRUCTURAL ANALYSIS BY: TEP NORTHEAST, DATED: JANUARY 31, 2023 (REV.1), FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT



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



PROPOSED 3.45 GHZ AND C-BAND ANTENNA MOUNTING DETAIL
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

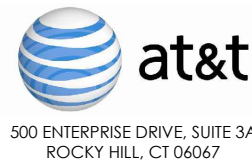


PROPOSED LTE ANTENNA MOUNTING DETAIL
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

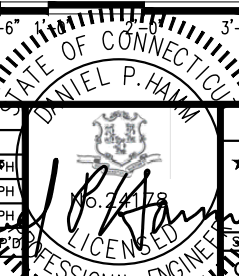


SITE NUMBER: CTL01026
SITE NAME: WINDSOR

419 BROAD STREET
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1	06/09/22	ISSUED FOR CONSTRUCTION	AM	HC	DPH
A	05/04/22	ISSUED FOR REVIEW	AS	HC	DPH



AT&T DETAILS		
5G NR 1SR CBAND_4TX4RX RETOFT_BB ADD_5G NR 1DR-1_5G NR 1DR-2_LTE 4G_LTE BBU DUS41 UPGRADE		
SITE NUMBER	DRAWING NUMBER	REV
CTL01026	A-4	2

STRUCTURAL NOTES:

- DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-H STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
- 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.
- 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".
- STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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 D.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
- 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
REQUIRED	PACKING SLIPS ³

ADDITIONAL TESTING AND INSPECTIONS:

DURING CONSTRUCTION

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



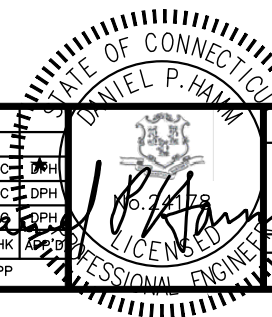
SITE NUMBER: CTL01026
SITE NAME: WINDSOR

419 BROAD STREET
WINDSOR, CT 06095
HARTFORD COUNTY

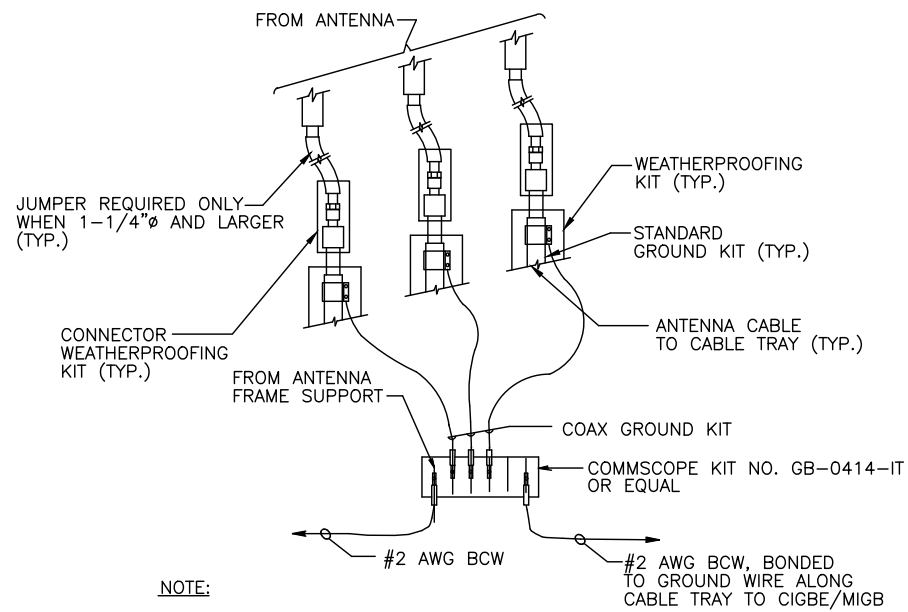


NO.	DATE	REVISIONS	BY	CHK	APP'D
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1	06/09/22	ISSUED FOR CONSTRUCTION	AS	HC	DPH
A	05/04/22	ISSUED FOR REVIEW	AS	HC	DPH

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

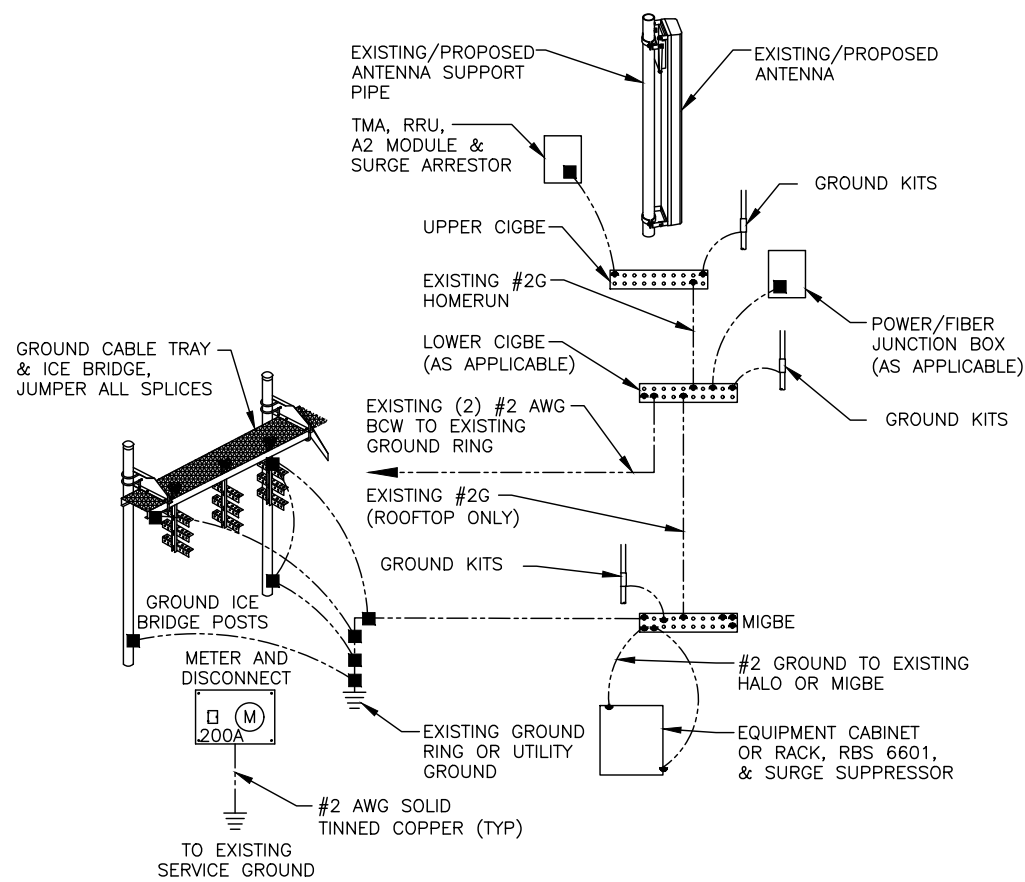


AT&T STRUCTURAL NOTES		
5G NR 1SR CBAND_4TX4RX RETOFT_BBU ADD_5G NR 1DR-1_5G NR 1DR-2_LTE 4G_LTE BBU DUS41 UPGRADE		
SITE NUMBER	DRAWING NUMBER	REV
CTL01026	SN-1	2

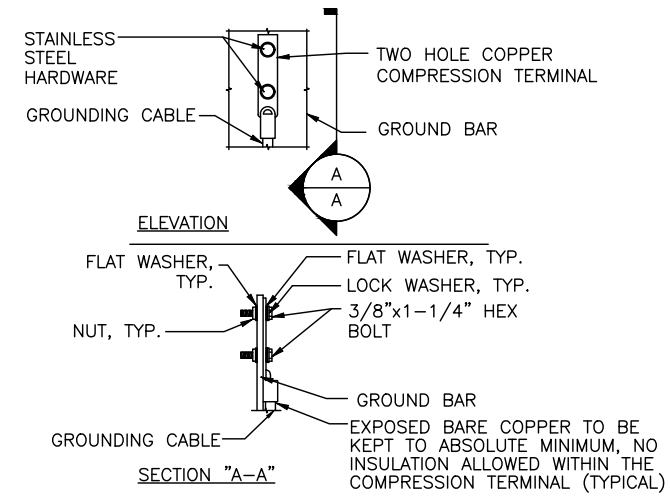


NOTE:
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1)
SCALE: N.T.S. G-1



GROUNDING RISER DIAGRAM (2)
SCALE: N.T.S. G-1



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

TYPICAL GROUND BAR CONNECTION DETAIL (3)
SCALE: N.T.S. G-1

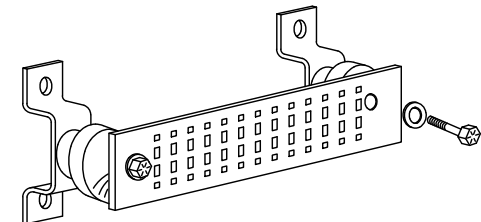
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" - SURGE PRODUCERS

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

SECTION "A" - SURGE ABSORBERS

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



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



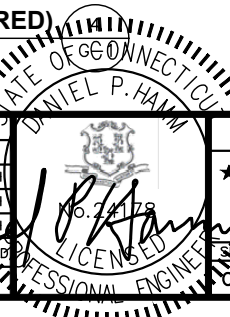
SITE NUMBER: CTL01026
SITE NAME: WINDSOR

419 BROAD STREET
WINDSOR, CT 06095
HARTFORD COUNTY



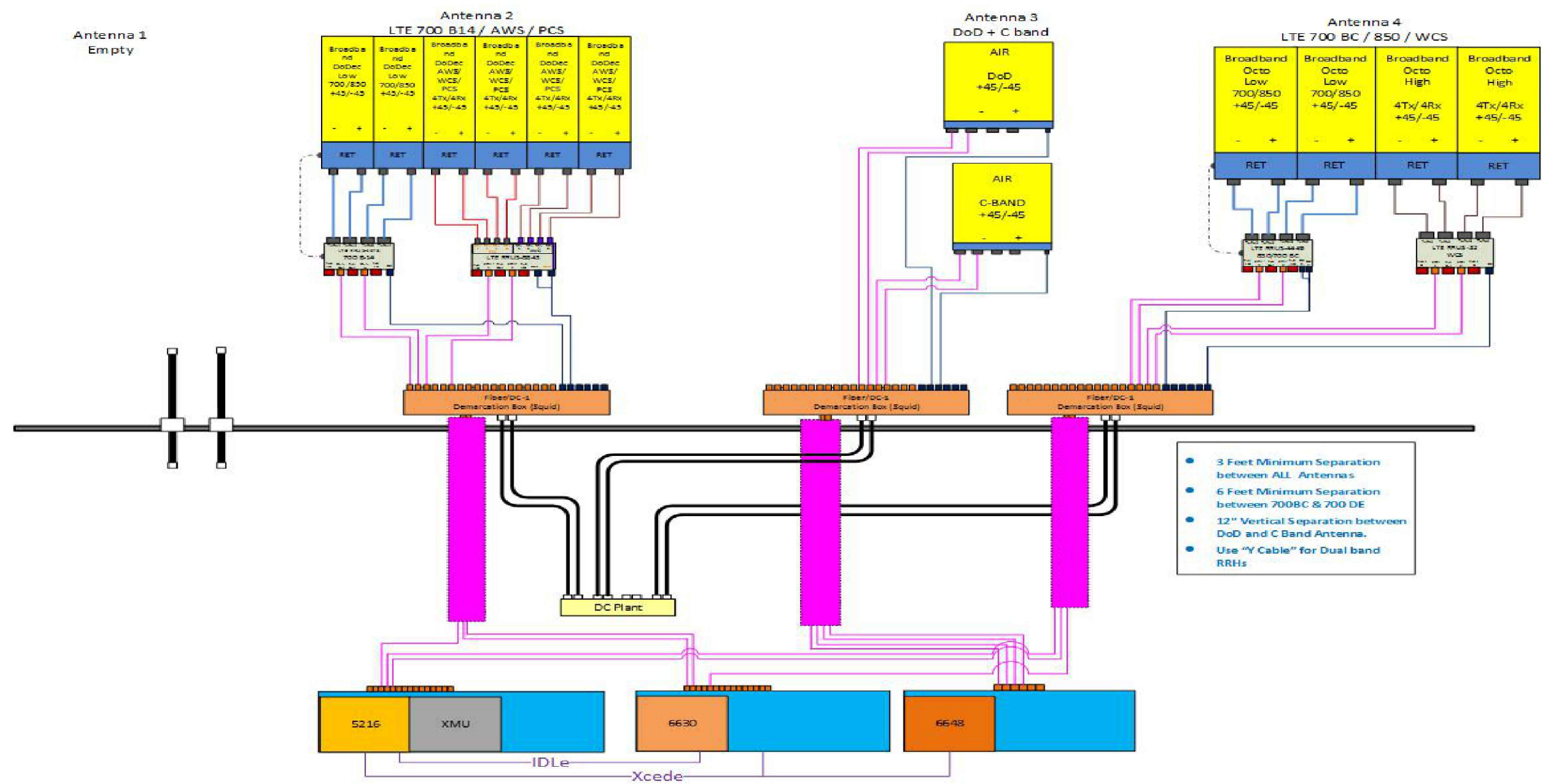
NO.	DATE	REVISIONS	BY	CHK	APP'D
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1	06/09/22	ISSUED FOR CONSTRUCTION	MS	HC	DPH
A	05/04/22	ISSUED FOR REVIEW	MS	HC	DPH

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



AT&T		
GROUNDING DETAILS		
5G NR 1SR CBAND_4TX4RX RETOFT_BBU ADD_5G NR 1DR-1_5G NR 1DR-2_LTE 4G_LTE BBU DUS41 UPGRADE		
SITE NUMBER	DRAWING NUMBER	REV
CTL01026	G-1	2

NOTE:
 REV: 2
 DATED: 05/04/2022
 RFDS ID: 5023306



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

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.

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	01/30/23	ISSUED FOR CONSTRUCTION	AM	HC	DPH
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A	05/04/22	ISSUED FOR REVIEW	PS	HC	DPH

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

AT&T		
RF PLUMBING DIAGRAM		
5G NR 1SR CBAND_4TX4RX RETOFT_BBU ADD_5G NR 1DR-1_5G NR 1DR-2_LTE 4G_LTE BBU DUS41 UPGRADE		
SITE NUMBER	DRAWING NUMBER	REV
CTL01026	RF-1	2

April 20, 2022
January 31, 2023 (Rev.1)



SAI Communications
12 Industrial Way
Salem NH, 03079

RE: AT&T Site Number: CT1026
FA Number: 10035043
PACE Number: MRCTB061145
PT Number: 2051A13REG
TEP Project Number: 353968
Site Name: WINDSOR
Site Address: 419 Broad Street
Windsor, CT 06095

To Whom It May Concern:

TEP Northeast (TEP NE) has been authorized by SAI Communications to perform a mount analysis on the proposed AT&T antenna/RRH mount to determine its capability of supporting the following additional loading:

- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (2) DC6-48-60-18 Surge Arrestors (31.4"x10.2" Ø – Wt. = 33 lbs.)
- **(3) TPA65R-BU6DA-K Antennas (71.2"x20.7"x7.7" – Wt. = 69 lbs. /each)**
- **(3) AIR6419 Antennas (31.0"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) AIR6449 Antennas (30.6"x15.9"x10.6" – Wt. = 82 lbs. /each)**
- **(3) OPA65R-BU6BA Antennas (71.1"x11.7"x8.4" – Wt. = 55 lbs. /each)**
- **(3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(3) 8843 B2/B66A RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)**
- **(1) DC6-48-60-18 Surge Arrestor (31.4"x10.2" Ø – Wt. = 33 lbs.)**

*Proposed equipment shown in bold.

Mount fabrication drawings prepared by SitePro1 P/N RMQLP-4120-H10 dated October 18, 2019, were used to perform this analysis. TEP NE conducted a ground audit of the existing AT&T antenna mount on March 8, 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 2021 with 2022 Connecticut State Building Code, and AT&T Mount Technical Directive – R22.
- TEP NE considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix P of the Connecticut State Building Code, the max basic wind speed for this site is equal to 120 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.5 in. An escalated ice thickness of 1.68 in was used for this analysis.
- TEP NE considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- TEP NE considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- TEP NE considers this site to have a spectral response acceleration parameter at short periods, S_s , of 0.181 and a spectral response acceleration parameter at a period of 1 second, S_1 , of 0.055.
- 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 3.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The proposed mount is to be secured to the existing monopole with ring mounts and threaded rods. TEP NE considers the threaded rods to be the governing connection member.

Based on our evaluation, we have determined that the Proposed SitePro1 RMQLP-4120-H10 mount **IS CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Proposed Mount Rating	45	LC2	40%	PASS

Reference Documents:

- Fabrication drawings prepared by SitePro1 P/N RMQLP-4120-H10 dated October 18, 2019

This determination was based on the following limitations and assumptions:

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

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

Respectfully Submitted,
TEP Northeast



Michael Cabral
Director



Daniel P. Hamm, PE
Vice President

FIELD PHOTOS:

*Note: Existing mount to be removed.



FIELD PHOTOS (CONT.):

*Note: Existing mount to be removed.





Wind & Ice Calculations

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2.6.5.2 Velocity Pressure Coeff:

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

$K_z =$ **0.988**

$z =$ 100.0 (ft)
 $z_g =$ 1200 (ft)
 $\alpha =$ 7

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

Table 2-4

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

2.6.6.2 Topographic Factor:

Table 2-5

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

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

$$K_h = e^{(fz/H)}$$

$K_{zt} =$ **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)

$z =$ 100.0

$z_s =$ 44 (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)

$K_e =$ 1.00 (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 =

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

$K_{iz} =$ 1.12 (from Sec. 2.6.10)

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

$t_{iz} =$ 1.68 in

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2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

$G_h = 1.0$ Latticed Structures > 600 ft

$G_h = 0.85$ Latticed Structures 450 ft or less

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

$h =$ 100.0 $G_h =$ 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

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

$G_h =$ 1.35 $G_h =$ 1.00

2.6.11.2 Design Wind Force on Appurtenances

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

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

$q_z =$	34.55
$q_{z(ice)} =$	6.00
$q_{z(30)} =$	2.16

$K_z =$	0.988 (from 2.6.5.2)
$K_{zt} =$	1.0 (from 2.6.6.2.1)
$K_s =$	1.0 (from 2.6.7)
$K_e =$	1.00 (from 2.6.8)
$K_d =$	0.95 (from Table 2-2)
$V_{max} =$	120 mph (Ultimate Wind Speed)
$V_{max(ice)} =$	50 mph
$V_{30} =$	30 mph

Table 2-2

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



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 = **1.68 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)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.44	1.24	439	93	27
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.93	1.20	144	34	9
AIR6449 Antenna	30.6	15.9	10.6	3.38	1.92	1.20	140	33	9
OPA65R-BU6BA Antenna	71.1	11.7	8.4	5.78	6.08	1.36	271	63	17
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	2.18	1.20	43	12	3
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	4.36	1.28	23	9	1
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.20	47	13	3
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	2.73	1.21	24	8	1
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.90	1.20	48	14	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	3.81	1.26	25	9	2
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	3.89	1.26	58	17	4
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	7.77	1.43	33	12	2
DC6-48-60-18 Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	54	14	3
Plate 6x3/8	6.0	12.0		0.50	0.50	2.00	35		
2x2 Angle	2.0	12.0		0.17	0.17	2.00	12		
2-1/2x2-1/2 Angle	2.5	12.0		0.21	0.21	2.00	14		
2" Pipe	2.4	12.0		0.20	0.20	1.20	8		
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	10		
3" Pipe	3.5	12.0		0.29	0.29	1.20	12		
HSS 4x4	4.0	12.0		0.33	0.33	1.25	14		

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WIND LOADS

Angle = **30** (deg)

Ice Thickness = **1.68** 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)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	439	194	378
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	144	70	126
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	140	95	129
OPA65R-BU6BA Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	271	208	255
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	43	70	50
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	23	70	35
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	47	57	49
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	24	57	32
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	48	68	53
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	25	68	36
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	58	95	67
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	33	95	48

WIND LOADS WITH ICE:

TPA65R-BU6DA-K Antenna	74.6	24.1	11.1	12.45	5.72	3.10	6.75	1.23	1.39	92	48	81
AIR6419 Antenna	34.5	19.5	10.7	4.65	2.55	1.77	3.23	1.20	1.23	34	19	30
AIR6449 Antenna	34.0	19.3	14.0	4.54	3.29	1.76	2.43	1.20	1.20	33	24	30
OPA65R-BU6BA Antenna	74.5	15.1	11.8	7.78	6.08	4.95	6.34	1.31	1.37	61	50	58
4478 B14 RRH (Side)	21.5	11.7	16.8	1.74	2.50	1.84	1.28	1.20	1.20	12	18	14
4478 B14 RRH (Shielded)	21.5	7.5	16.8	1.12	2.50	2.86	1.28	1.22	1.20	8	18	11
8843 B2/B66A RRH (Side)	18.3	14.3	16.6	1.81	2.10	1.28	1.10	1.20	1.20	13	15	14
8843 B2/B66A RRH (Shielded)	18.3	8.8	16.6	1.12	2.10	2.07	1.10	1.20	1.20	8	15	10
4449 B5/B12 RRH (Side)	21.3	12.8	16.6	1.88	2.44	1.67	1.28	1.20	1.20	14	18	15
4449 B5/B12 RRH (Shielded)	21.3	8.1	16.6	1.19	2.44	2.64	1.28	1.21	1.20	9	18	11
RRUS-32 B30 RRH (Side)	30.6	10.4	15.5	2.20	3.28	2.95	1.98	1.22	1.20	16	24	18
RRUS-32 B30 RRH (Shielded)	30.6	6.9	15.5	1.45	3.28	4.46	1.98	1.29	1.20	11	24	14

WIND LOADS AT 30 MPH:

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	27	12	24
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	9	4	8
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	8
OPA65R-BU6BA Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	17	13	16
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	4	3
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	4	2
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	1	4	2
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	4	2
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
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	3

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WIND LOADS

Angle = **60** (deg) Ice Thickness = **1.68** 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)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	439	194	255
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	144	70	88
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	140	95	106
OPA65R-BU6BA Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	271	208	224
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	43	70	63
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	23	70	58
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	47	57	54
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	24	57	48
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	48	68	63
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	25	68	57
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	58	95	85
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	33	95	79

WIND LOADS WITH ICE:

TPA65R-BU6DA-K Antenna	74.6	24.1	11.1	12.45	5.72	3.10	6.75	1.23	1.39	92	48	59
AIR6419 Antenna	34.5	19.5	10.7	4.65	2.55	1.77	3.23	1.20	1.23	34	19	23
AIR6449 Antenna	34.0	19.3	14.0	4.54	3.29	1.76	2.43	1.20	1.20	33	24	26
OPA65R-BU6BA Antenna	74.5	15.1	11.8	7.78	6.08	4.95	6.34	1.31	1.37	61	50	53
4478 B14 RRH (Side)	21.5	11.7	16.8	1.74	2.50	1.84	1.28	1.20	1.20	12	18	17
4478 B14 RRH (Shielded)	21.5	7.5	16.8	1.12	2.50	2.86	1.28	1.22	1.20	8	18	16
8843 B2/B66A RRH (Side)	18.3	14.3	16.6	1.81	2.10	1.28	1.10	1.20	1.20	13	15	15
8843 B2/B66A RRH (Shielded)	18.3	8.8	16.6	1.12	2.10	2.07	1.10	1.20	1.20	8	15	13
4449 B5/B12 RRH (Side)	21.3	12.8	16.6	1.88	2.44	1.67	1.28	1.20	1.20	14	18	17
4449 B5/B12 RRH (Shielded)	21.3	8.1	16.6	1.19	2.44	2.64	1.28	1.21	1.20	9	18	15
RRUS-32 B30 RRH (Side)	30.6	10.4	15.5	2.20	3.28	2.95	1.98	1.22	1.20	16	24	22
RRUS-32 B30 RRH (Shielded)	30.6	6.9	15.5	1.45	3.28	4.46	1.98	1.29	1.20	11	24	21

WIND LOADS AT 30 MPH:

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	27	12	16
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	9	4	6
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	7
OPA65R-BU6BA Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	17	13	14
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	4	4
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	4	4
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	1	4	3
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	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	5
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	5

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WIND LOADS

Angle = **90** (deg) Ice Thickness = **1.68** 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)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	439	194	194
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	144	70	70
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	140	95	95
OPA65R-BU6BA Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	271	208	208
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	43	70	70
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	23	70	70
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	47	57	57
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	24	57	57
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	48	68	68
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	25	68	68
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	58	95	95
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	33	95	95

WIND LOADS WITH ICE:

TPA65R-BU6DA-K Antenna	74.6	24.1	11.1	12.45	5.72	3.10	6.75	1.23	1.39	92	48	48
AIR6419 Antenna	34.5	19.5	10.7	4.65	2.55	1.77	3.23	1.20	1.23	34	19	19
AIR6449 Antenna	34.0	19.3	14.0	4.54	3.29	1.76	2.43	1.20	1.20	33	24	24
OPA65R-BU6BA Antenna	74.5	15.1	11.8	7.78	6.08	4.95	6.34	1.31	1.37	61	50	50
4478 B14 RRH (Side)	21.5	11.7	16.8	1.74	2.50	1.84	1.28	1.20	1.20	12	18	18
4478 B14 RRH (Shielded)	21.5	7.5	16.8	1.12	2.50	2.86	1.28	1.22	1.20	8	18	18
8843 B2/B66A RRH (Side)	18.3	14.3	16.6	1.81	2.10	1.28	1.10	1.20	1.20	13	15	15
8843 B2/B66A RRH (Shielded)	18.3	8.8	16.6	1.12	2.10	2.07	1.10	1.20	1.20	8	15	15
4449 B5/B12 RRH (Side)	21.3	12.8	16.6	1.88	2.44	1.67	1.28	1.20	1.20	14	18	18
4449 B5/B12 RRH (Shielded)	21.3	8.1	16.6	1.19	2.44	2.64	1.28	1.21	1.20	9	18	18
RRUS-32 B30 RRH (Side)	30.6	10.4	15.5	2.20	3.28	2.95	1.98	1.22	1.20	16	24	24
RRUS-32 B30 RRH (Shielded)	30.6	6.9	15.5	1.45	3.28	4.46	1.98	1.29	1.20	11	24	24

WIND LOADS AT 30 MPH:

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	27	12	12
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	9	4	4
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	6
OPA65R-BU6BA Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	17	13	13
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	4	4
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	4	4
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	1	4	4
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	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
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	6

Date: 1/31/2023
 Project Name: WINDSOR
 Project No.: CT1026
 Designed By: KSBM Checked By: MSC



WIND LOADS

Angle = **120** (deg) Ice Thickness = **1.68** 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)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	439	194	255
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	144	70	88
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	140	95	106
OPA65R-BU6BA Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	271	208	224
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	43	70	63
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	23	70	58
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	47	57	54
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	24	57	48
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	48	68	63
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	25	68	57
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	58	95	85
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	33	95	79

WIND LOADS WITH ICE:

TPA65R-BU6DA-K Antenna	74.6	24.1	11.1	12.45	5.72	3.10	6.75	1.23	1.39	92	48	59
AIR6419 Antenna	34.5	19.5	10.7	4.65	2.55	1.77	3.23	1.20	1.23	34	19	23
AIR6449 Antenna	34.0	19.3	14.0	4.54	3.29	1.76	2.43	1.20	1.20	33	24	26
OPA65R-BU6BA Antenna	74.5	15.1	11.8	7.78	6.08	4.95	6.34	1.31	1.37	61	50	53
4478 B14 RRH (Side)	21.5	11.7	16.8	1.74	2.50	1.84	1.28	1.20	1.20	12	18	17
4478 B14 RRH (Shielded)	21.5	7.5	16.8	1.12	2.50	2.86	1.28	1.22	1.20	8	18	16
8843 B2/B66A RRH (Side)	18.3	14.3	16.6	1.81	2.10	1.28	1.10	1.20	1.20	13	15	15
8843 B2/B66A RRH (Shielded)	18.3	8.8	16.6	1.12	2.10	2.07	1.10	1.20	1.20	8	15	13
4449 B5/B12 RRH (Side)	21.3	12.8	16.6	1.88	2.44	1.67	1.28	1.20	1.20	14	18	17
4449 B5/B12 RRH (Shielded)	21.3	8.1	16.6	1.19	2.44	2.64	1.28	1.21	1.20	9	18	15
RRUS-32 B30 RRH (Side)	30.6	10.4	15.5	2.20	3.28	2.95	1.98	1.22	1.20	16	24	22
RRUS-32 B30 RRH (Shielded)	30.6	6.9	15.5	1.45	3.28	4.46	1.98	1.29	1.20	11	24	21

WIND LOADS AT 30 MPH:

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	27	12	16
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	9	4	6
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	7
OPA65R-BU6BA Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	17	13	14
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	4	4
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	4	4
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	1	4	3
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	4
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	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	5
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	5

Date: 1/31/2023
 Project Name: WINDSOR
 Project No.: CT1026
 Designed By: KSBM Checked By: MSC



WIND LOADS

Angle = **150** (deg) Ice Thickness = **1.68** 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)
TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	439	194	378
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	144	70	126
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	140	95	129
OPA65R-BU6BA Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	271	208	255
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	43	70	50
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	23	70	35
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	47	57	49
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	24	57	32
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	48	68	53
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	25	68	36
RRUS-32 B30 RRH (Side)	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	58	95	67
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	33	95	48

WIND LOADS WITH ICE:

TPA65R-BU6DA-K Antenna	74.6	24.1	11.1	12.45	5.72	3.10	6.75	1.23	1.39	92	48	81
AIR6419 Antenna	34.5	19.5	10.7	4.65	2.55	1.77	3.23	1.20	1.23	34	19	30
AIR6449 Antenna	34.0	19.3	14.0	4.54	3.29	1.76	2.43	1.20	1.20	33	24	30
OPA65R-BU6BA Antenna	74.5	15.1	11.8	7.78	6.08	4.95	6.34	1.31	1.37	61	50	58
4478 B14 RRH (Side)	21.5	11.7	16.8	1.74	2.50	1.84	1.28	1.20	1.20	12	18	14
4478 B14 RRH (Shielded)	21.5	7.5	16.8	1.12	2.50	2.86	1.28	1.22	1.20	8	18	11
8843 B2/B66A RRH (Side)	18.3	14.3	16.6	1.81	2.10	1.28	1.10	1.20	1.20	13	15	14
8843 B2/B66A RRH (Shielded)	18.3	8.8	16.6	1.12	2.10	2.07	1.10	1.20	1.20	8	15	10
4449 B5/B12 RRH (Side)	21.3	12.8	16.6	1.88	2.44	1.67	1.28	1.20	1.20	14	18	15
4449 B5/B12 RRH (Shielded)	21.3	8.1	16.6	1.19	2.44	2.64	1.28	1.21	1.20	9	18	11
RRUS-32 B30 RRH (Side)	30.6	10.4	15.5	2.20	3.28	2.95	1.98	1.22	1.20	16	24	18
RRUS-32 B30 RRH (Shielded)	30.6	6.9	15.5	1.45	3.28	4.46	1.98	1.29	1.20	11	24	14

WIND LOADS AT 30 MPH:

TPA65R-BU6DA-K Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	27	12	24
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	9	4	8
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	9	6	8
OPA65R-BU6BA Antenna	71.1	11.7	8.4	5.78	4.15	6.08	8.46	1.36	1.45	17	13	16
4478 B14 RRH (Side)	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	4	3
4478 B14 RRH (Shielded)	18.1	4.2	13.4	0.52	1.68	4.36	1.35	1.28	1.20	1	4	2
8843 B2/B66A RRH (Side)	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3
8843 B2/B66A RRH (Shielded)	14.9	5.5	13.2	0.56	1.37	2.73	1.13	1.21	1.20	1	4	2
4449 B5/B12 RRH (Side)	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	4	3
4449 B5/B12 RRH (Shielded)	17.9	4.7	13.2	0.58	1.64	3.81	1.36	1.26	1.20	2	4	2
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
RRUS-32 B30 RRH (Shielded)	27.2	3.5	12.1	0.66	2.29	7.77	2.25	1.43	1.20	2	6	3

Date: 1/31/2023
 Project Name: WINDSOR
 Project No.: CT1026
 Designed By: KSBM Checked By: MSC



ICE WEIGHT CALCULATIONS

Thickness of ice: 1.68 in.
 Density of ice: 56 pcf

TPA65R-BU6DA-K Antenna

Weight of ice based on total radial SF area:
 Height (in): 71.2
 Width (in): 20.7
 Depth (in): 7.7
 Total weight of ice on object: 289 lbs
 Weight of object: 69.0 lbs
 Combined weight of ice and object: 358 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: 103 lbs
 Weight of object: 66.0 lbs
 Combined weight of ice and object: 169 lbs

AIR6449 Antenna

Weight of ice based on total radial SF area:
 Height (in): 30.6
 Width (in): 15.9
 Depth (in): 10.6
 Total weight of ice on object: 109 lbs
 Weight of object: 82.0 lbs
 Combined weight of ice and object: 191 lbs

OPA65R-BU6BA Antenna

Weight of ice based on total radial SF area:
 Height (in): 71.1
 Width (in): 11.7
 Depth (in): 8.4
 Total weight of ice on object: 196 lbs
 Weight of object: 55.0 lbs
 Combined weight of ice and object: 251 lbs

4478 B14 RRH

Weight of ice based on total radial SF area:
 Height (in): 18.1
 Width (in): 13.4
 Depth (in): 8.3
 Total weight of ice on object: 54 lbs
 Weight of object: 60.0 lbs
 Combined weight of ice and object: 114 lbs

8843 B2/B66A RRH

Weight of ice based on total radial SF area:
 Height (in): 14.9
 Width (in): 13.2
 Depth (in): 10.9
 Total weight of ice on object: 48 lbs
 Weight of object: 72.0 lbs
 Combined weight of ice and object: 120 lbs

4449 B5/B12 RRH

Weight of ice based on total radial SF area:
 Height (in): 17.9
 Width (in): 13.2
 Depth (in): 9.4
 Total weight of ice on object: 55 lbs
 Weight of object: 73.0 lbs
 Combined weight of ice and object: 128 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: 73 lbs
 Weight of object: 60.0 lbs
 Combined weight of ice and object: 133 lbs

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

Weight of ice based on total radial SF area:
 Depth (in): 31.4
 Diameter(in): 10.3
 Total weight of ice on object: 64 lbs
 Weight of object: 29 lbs
 Combined weight of ice and object: 93 lbs

PL 6x3/8

Weight of ice based on total radial SF area:
 Height (in): 6
 Width (in): 0.38
 Per foot weight of ice on object: 16 plf

2" pipe

Per foot weight of ice:
 diameter (in): 2.38
 Per foot weight of ice on object: 8 plf

L 2-1/2x2-1/2 Angles

Weight of ice based on total radial SF area:
 Height (in): 2.5
 Width (in): 2.5
 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: 9 plf

L 2x2 Angles

Weight of ice based on total radial SF area:
 Height (in): 2
 Width (in): 2
 Per foot weight of ice on object: 9 plf

HSS 4x4

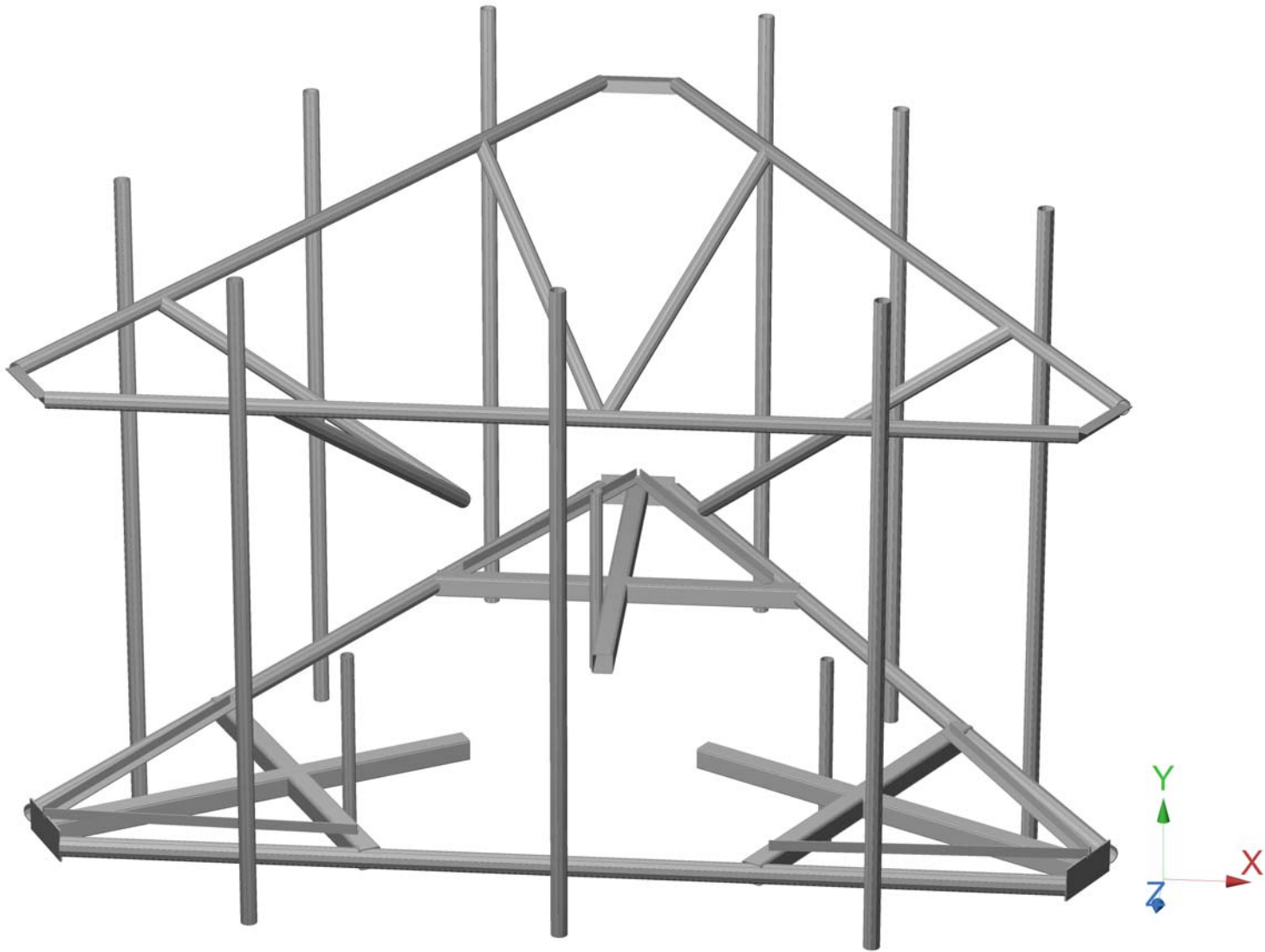
Weight of ice based on total radial SF area:
 Height (in): 4
 Width (in): 4
 Per foot weight of ice on object: 15 plf

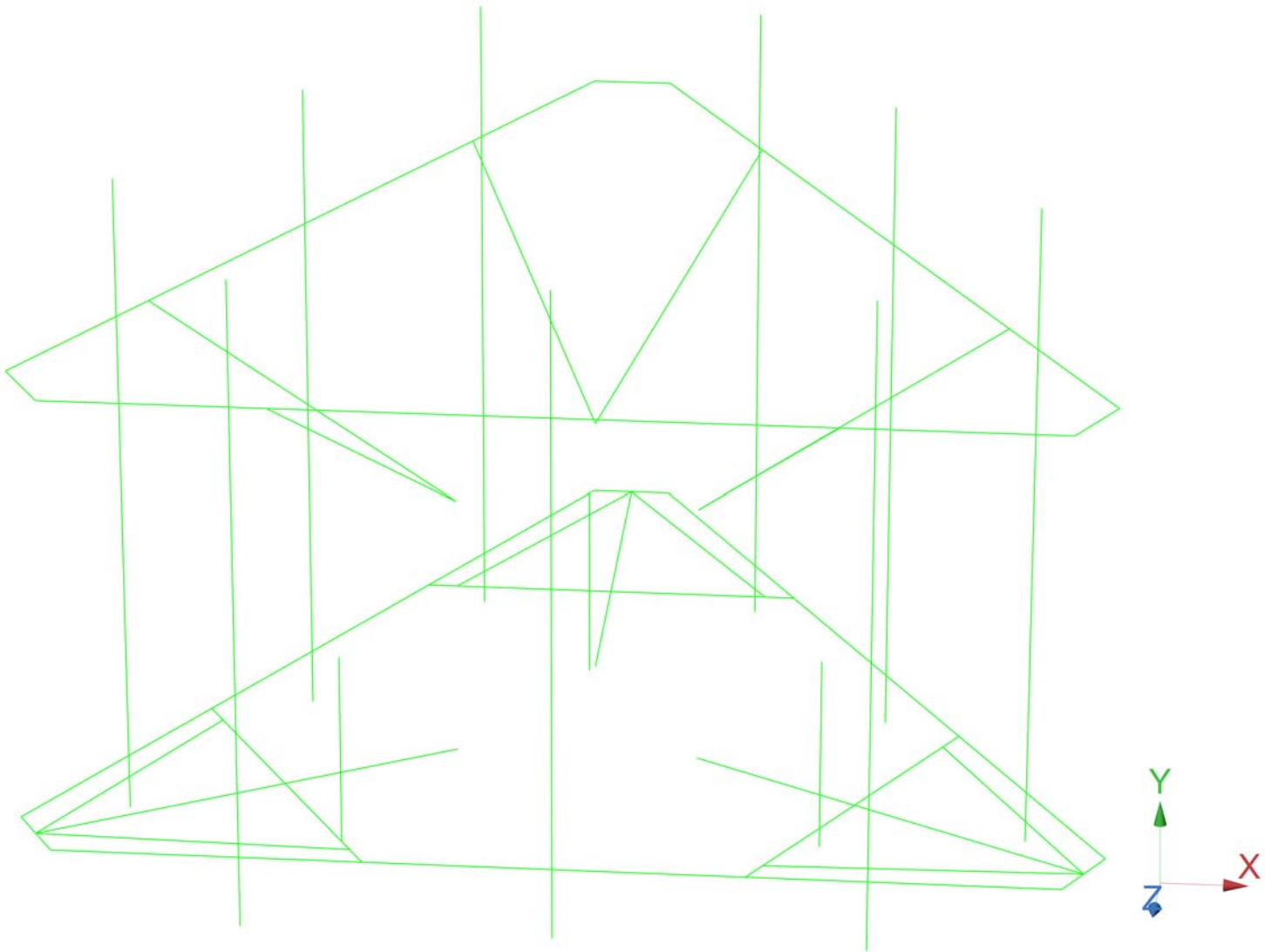
3" Pipe

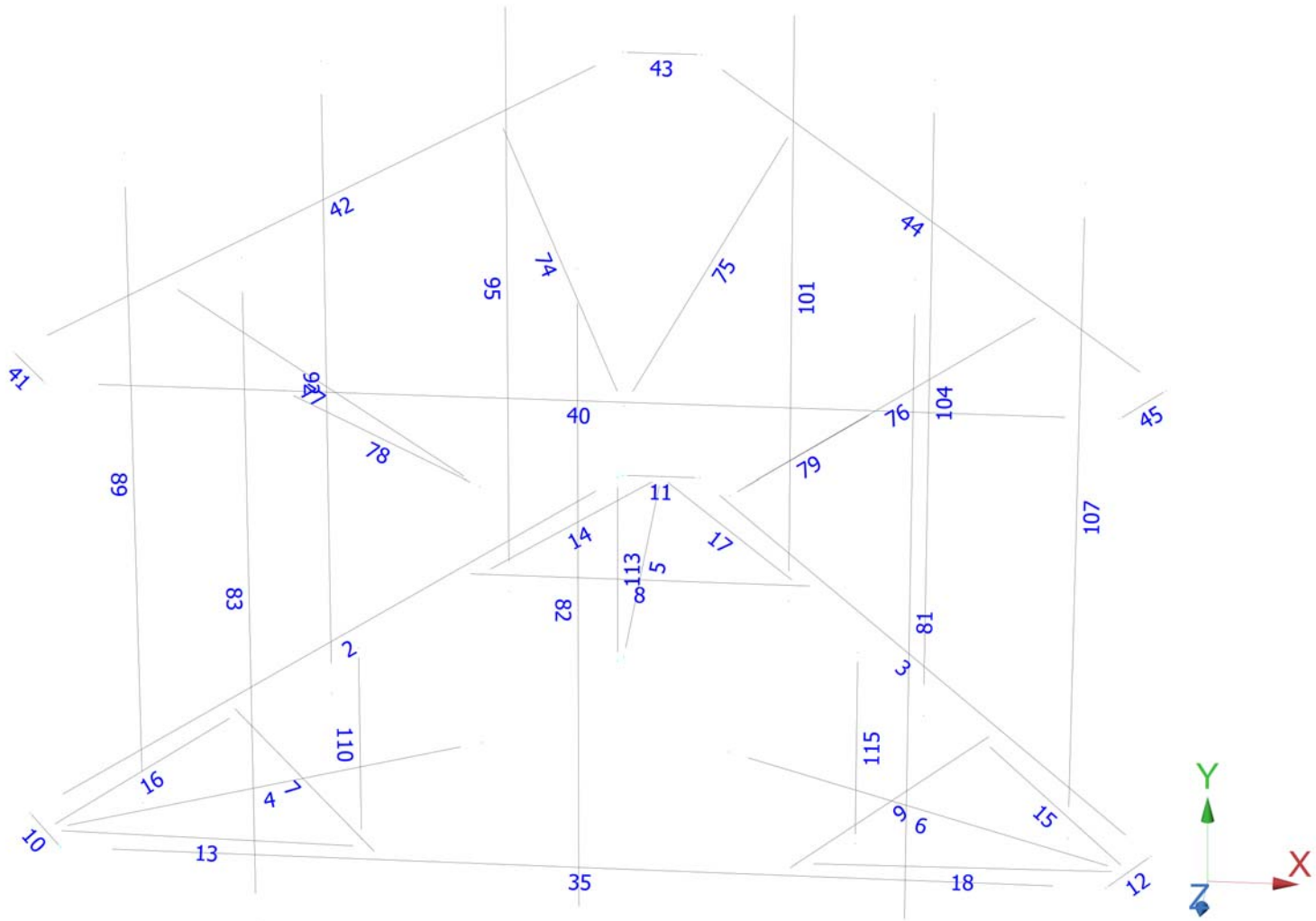
Per foot weight of ice:
 diameter (in): 3.5
 Per foot weight of ice on object: 11 plf



**Mount Calculations
(Proposed Conditions)**







Load data

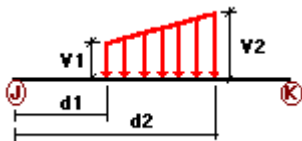
GLOSSARY

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

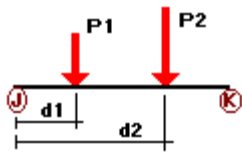


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%	
DL	4	y	-0.01	-0.01	0.00	No	3.90	No	
	5	y	-0.01	-0.01	0.00	No	3.90	No	
	6	y	-0.01	-0.01	0.00	No	3.90	No	
	7	y	-0.01	0.00	0.00	No	0.00	No	
	8	y	-0.01	0.00	0.00	No	0.00	No	
	9	y	-0.01	0.00	0.00	No	0.00	No	
	13	y	-0.01	0.00	0.00	No	0.00	No	
	14	y	-0.01	0.00	0.00	No	0.00	No	
	15	y	-0.01	0.00	0.00	No	0.00	No	
	16	y	-0.01	0.00	0.00	No	0.00	No	
	17	y	-0.01	0.00	0.00	No	0.00	No	
	18	y	-0.01	0.00	0.00	No	0.00	No	
	W0	2	z	-0.013	0.00	0.00	No	0.00	No
		3	z	-0.013	0.00	0.00	No	0.00	No
		4	z	-0.016	0.00	0.00	No	0.00	No
		5	z	-0.016	0.00	0.00	No	0.00	No

6	z	-0.016	0.00	0.00	No	0.00	No	
7	z	-0.016	0.00	0.00	No	0.00	No	
8	z	-0.016	0.00	0.00	No	0.00	No	
9	z	-0.016	0.00	0.00	No	0.00	No	
10	z	-0.037	0.00	0.00	No	0.00	No	
11	z	-0.037	0.00	0.00	No	0.00	No	
12	z	-0.037	0.00	0.00	No	0.00	No	
13	z	-0.012	0.00	0.00	No	0.00	No	
14	z	-0.012	0.00	0.00	No	0.00	No	
15	z	-0.012	0.00	0.00	No	0.00	No	
16	z	-0.012	0.00	0.00	No	0.00	No	
17	z	-0.012	0.00	0.00	No	0.00	No	
18	z	-0.012	0.00	0.00	No	0.00	No	
35	z	-0.013	0.00	0.00	No	0.00	No	
40	z	-0.011	0.00	0.00	No	0.00	No	
41	z	-0.016	0.00	0.00	No	0.00	No	
42	z	-0.011	0.00	0.00	No	0.00	No	
43	z	-0.016	0.00	0.00	No	0.00	No	
44	z	-0.011	0.00	0.00	No	0.00	No	
45	z	-0.016	0.00	0.00	No	0.00	No	
74	z	-0.011	0.00	0.00	No	0.00	No	
75	z	-0.011	0.00	0.00	No	0.00	No	
76	z	-0.011	0.00	0.00	No	0.00	No	
77	z	-0.011	0.00	0.00	No	0.00	No	
78	z	-0.011	0.00	0.00	No	0.00	No	
79	z	-0.011	0.00	0.00	No	0.00	No	
89	z	-0.011	0.00	0.00	No	0.00	No	
92	z	-0.011	0.00	0.00	No	0.00	No	
95	z	-0.011	0.00	0.00	No	0.00	No	
101	z	-0.011	0.00	0.00	No	0.00	No	
104	z	-0.011	0.00	0.00	No	0.00	No	
107	z	-0.011	0.00	0.00	No	0.00	No	
110	z	-0.009	0.00	0.00	No	0.00	No	
113	z	-0.009	0.00	0.00	No	0.00	No	
115	z	-0.009	0.00	0.00	No	0.00	No	
W30	2	x	-0.013	0.00	0.00	No	0.00	No
	3	x	-0.013	0.00	0.00	No	0.00	No
	4	x	-0.016	0.00	0.00	No	0.00	No
	5	x	-0.016	0.00	0.00	No	0.00	No
	6	x	-0.016	0.00	0.00	No	0.00	No
	7	x	-0.016	0.00	0.00	No	0.00	No
	8	x	-0.016	0.00	0.00	No	0.00	No
	9	x	-0.016	0.00	0.00	No	0.00	No
	10	x	-0.037	0.00	0.00	No	0.00	No
	11	x	-0.037	0.00	0.00	No	0.00	No
	12	x	-0.037	0.00	0.00	No	0.00	No
	13	x	-0.012	0.00	0.00	No	0.00	No
	14	x	-0.012	0.00	0.00	No	0.00	No
	15	x	-0.012	0.00	0.00	No	0.00	No
	16	x	-0.012	0.00	0.00	No	0.00	No
	17	x	-0.012	0.00	0.00	No	0.00	No
	18	x	-0.012	0.00	0.00	No	0.00	No
	41	x	-0.016	0.00	0.00	No	0.00	No
	42	x	-0.011	0.00	0.00	No	0.00	No
	43	x	-0.016	0.00	0.00	No	0.00	No
	44	x	-0.011	0.00	0.00	No	0.00	No
	45	x	-0.016	0.00	0.00	No	0.00	No
	74	x	-0.011	0.00	0.00	No	0.00	No
	75	x	-0.011	0.00	0.00	No	0.00	No
	76	x	-0.011	0.00	0.00	No	0.00	No

	77	x	-0.011	0.00	0.00	No	0.00	No
	78	x	-0.011	0.00	0.00	No	0.00	No
	79	x	-0.011	0.00	0.00	No	0.00	No
	81	x	-0.011	0.00	0.00	No	0.00	No
	82	x	-0.011	0.00	0.00	No	0.00	No
	83	x	-0.011	0.00	0.00	No	0.00	No
	89	x	-0.011	0.00	0.00	No	0.00	No
	92	x	-0.011	0.00	0.00	No	0.00	No
	95	x	-0.011	0.00	0.00	No	0.00	No
	101	x	-0.011	0.00	0.00	No	0.00	No
	104	x	-0.011	0.00	0.00	No	0.00	No
	107	x	-0.011	0.00	0.00	No	0.00	No
	110	x	-0.009	0.00	0.00	No	0.00	No
	113	x	-0.009	0.00	0.00	No	0.00	No
	115	x	-0.009	0.00	0.00	No	0.00	No
Di	2	y	-0.011	0.00	0.00	No	0.00	No
	3	y	-0.011	0.00	0.00	No	0.00	No
	4	y	-0.015	0.00	0.00	No	0.00	No
	5	y	-0.015	0.00	0.00	No	0.00	No
	6	y	-0.015	0.00	0.00	No	0.00	No
	7	y	-0.015	0.00	0.00	No	0.00	No
	8	y	-0.015	0.00	0.00	No	0.00	No
	9	y	-0.015	0.00	0.00	No	0.00	No
	10	y	-0.016	0.00	0.00	No	0.00	No
	11	y	-0.016	0.00	0.00	No	0.00	No
	12	y	-0.016	0.00	0.00	No	0.00	No
	13	y	-0.009	0.00	0.00	No	0.00	No
	14	y	-0.009	0.00	0.00	No	0.00	No
	15	y	-0.009	0.00	0.00	No	0.00	No
	16	y	-0.009	0.00	0.00	No	0.00	No
	17	y	-0.009	0.00	0.00	No	0.00	No
	18	y	-0.009	0.00	0.00	No	0.00	No
	35	y	-0.011	0.00	0.00	No	0.00	No
	40	y	-0.009	0.00	0.00	No	0.00	No
	41	y	-0.011	0.00	0.00	No	0.00	No
	42	y	-0.009	0.00	0.00	No	0.00	No
	43	y	-0.011	0.00	0.00	No	0.00	No
	44	y	-0.009	0.00	0.00	No	0.00	No
	45	y	-0.011	0.00	0.00	No	0.00	No
	74	y	-0.009	0.00	0.00	No	0.00	No
	75	y	-0.009	0.00	0.00	No	0.00	No
	76	y	-0.009	0.00	0.00	No	0.00	No
	77	y	-0.009	0.00	0.00	No	0.00	No
	78	y	-0.009	0.00	0.00	No	0.00	No
	79	y	-0.009	0.00	0.00	No	0.00	No
	81	y	-0.009	0.00	0.00	No	0.00	No
	82	y	-0.009	0.00	0.00	No	0.00	No
	83	y	-0.009	0.00	0.00	No	0.00	No
	89	y	-0.009	0.00	0.00	No	0.00	No
	92	y	-0.009	0.00	0.00	No	0.00	No
	95	y	-0.009	0.00	0.00	No	0.00	No
	101	y	-0.009	0.00	0.00	No	0.00	No
	104	y	-0.009	0.00	0.00	No	0.00	No
	107	y	-0.009	0.00	0.00	No	0.00	No
	110	y	-0.008	0.00	0.00	No	0.00	No
	113	y	-0.008	0.00	0.00	No	0.00	No
	115	y	-0.008	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	81	y	-0.035	1.00	No
		y	-0.035	6.00	No
		y	-0.06	4.00	No
		y	-0.072	4.00	No
	82	y	-0.033	1.25	No
		y	-0.033	3.00	No
		y	-0.041	5.00	No
		y	-0.041	6.75	No
	83	y	-0.028	1.00	No
		y	-0.028	6.00	No
		y	-0.073	4.00	No
		y	-0.06	4.00	No
	89	y	-0.035	1.00	No
		y	-0.035	6.00	No
		y	-0.06	4.00	No
		y	-0.072	4.00	No
	92	y	-0.033	1.25	No
		y	-0.033	3.00	No
		y	-0.041	5.00	No
		y	-0.041	6.75	No
	95	y	-0.028	1.00	No
		y	-0.028	6.00	No
		y	-0.073	4.00	No
		y	-0.06	4.00	No
101	y	-0.035	1.00	No	
	y	-0.035	6.00	No	
	y	-0.06	4.00	No	
	y	-0.072	4.00	No	
104	y	-0.033	1.25	No	
	y	-0.033	3.00	No	
	y	-0.041	5.00	No	
	y	-0.041	6.75	No	
107	y	-0.028	1.00	No	
	y	-0.028	6.00	No	
	y	-0.073	4.00	No	
	y	-0.06	4.00	No	
110	y	-0.033	1.00	No	
	113	y	-0.033	1.00	No
		115	y	-0.033	1.00
W0	81		z	-0.22	1.00
		z	-0.22	6.00	No
		z	-0.023	4.00	No
		z	-0.024	4.00	No
	82	z	-0.073	1.25	No
		z	-0.073	3.00	No
		z	-0.071	5.00	No
		z	-0.071	6.75	No
	83	z	-0.136	1.00	No
		z	-0.136	6.00	No
		z	-0.025	4.00	No
		z	-0.033	4.00	No
89	z	-0.128	1.00	No	
	z	-0.128	6.00	No	
	z	-0.058	4.00	No	

	92	z	-0.045	1.25	No
		z	-0.045	3.00	No
		z	-0.054	5.00	No
		z	-0.054	6.75	No
	95	z	-0.112	1.00	No
		z	-0.112	6.00	No
		z	-0.079	4.00	No
	101	z	-0.128	1.00	No
		z	-0.128	6.00	No
		z	-0.058	4.00	No
	104	z	-0.045	1.25	No
		z	-0.045	3.00	No
		z	-0.054	5.00	No
		z	-0.054	6.75	No
	107	z	-0.112	1.00	No
		z	-0.112	6.00	No
		z	-0.079	4.00	No
	110	z	-0.054	1.00	No
	113	z	-0.054	1.00	No
	115	z	-0.054	1.00	No
W30	81	x	-0.098	1.00	No
		x	-0.098	6.00	No
		x	-0.07	4.00	No
	82	x	-0.035	1.25	No
		x	-0.035	3.00	No
		x	-0.048	5.00	No
		x	-0.048	6.75	No
	83	x	-0.104	1.00	No
		x	-0.104	6.00	No
		x	-0.095	4.00	No
	89	x	-0.189	1.00	No
		x	-0.189	6.00	No
		x	-0.035	4.00	No
	92	x	-0.063	1.25	No
		x	-0.063	3.00	No
		x	-0.065	5.00	No
		x	-0.065	6.75	No
	95	x	-0.128	1.00	No
		x	-0.128	6.00	No
		x	-0.048	4.00	No
	101	x	-0.189	1.00	No
		x	-0.189	6.00	No
		x	-0.035	4.00	No
	104	x	-0.063	1.25	No
		x	-0.063	3.00	No
		x	-0.065	5.00	No
		x	-0.065	6.75	No
	107	x	-0.128	1.00	No
		x	-0.128	6.00	No
		x	-0.048	4.00	No
	110	x	-0.054	1.00	No
	113	x	-0.054	1.00	No
	115	x	-0.054	1.00	No
Di	81	y	-0.145	1.00	No
		y	-0.145	6.00	No
		y	-0.054	4.00	No
		y	-0.048	4.00	No
	82	y	-0.052	1.25	No
		y	-0.052	3.00	No
		y	-0.055	5.00	No

		y	-0.055	6.75	No
83		y	-0.098	1.00	No
		y	-0.098	6.00	No
		y	-0.055	4.00	No
		y	-0.073	4.00	No
89		y	-0.145	1.00	No
		y	-0.145	6.00	No
		y	-0.054	4.00	No
		y	-0.048	4.00	No
92		y	-0.052	1.25	No
		y	-0.052	3.00	No
		y	-0.055	5.00	No
		y	-0.055	6.75	No
95		y	-0.098	1.00	No
		y	-0.098	6.00	No
		y	-0.055	4.00	No
		y	-0.073	4.00	No
101		y	-0.145	1.00	No
		y	-0.145	6.00	No
		y	-0.054	4.00	No
		y	-0.048	4.00	No
104		y	-0.052	1.25	No
		y	-0.052	3.00	No
		y	-0.055	5.00	No
		y	-0.055	6.75	No
107		y	-0.098	1.00	No
		y	-0.098	6.00	No
		y	-0.055	4.00	No
		y	-0.073	4.00	No
110		y	-0.064	1.00	No
113		y	-0.064	1.00	No
115		y	-0.064	1.00	No
Wi0	81	z	-0.047	1.00	No
		z	-0.047	6.00	No
		z	-0.009	4.00	No
		z	-0.008	4.00	No
82		z	-0.017	1.25	No
		z	-0.017	3.00	No
		z	-0.017	5.00	No
		z	-0.017	6.75	No
83		z	-0.032	1.00	No
		z	-0.032	6.00	No
		z	-0.009	4.00	No
		z	-0.012	4.00	No
89		z	-0.03	1.00	No
		z	-0.03	6.00	No
		z	-0.016	4.00	No
92		z	-0.012	1.25	No
		z	-0.012	3.00	No
		z	-0.013	5.00	No
		z	-0.013	6.75	No
95		z	-0.027	1.00	No
		z	-0.027	6.00	No
		z	-0.021	4.00	No
101		z	-0.03	1.00	No
		z	-0.03	6.00	No
		z	-0.016	4.00	No
104		z	-0.012	1.25	No
		z	-0.012	3.00	No
		z	-0.013	5.00	No

		z	-0.013	6.75	No
	107	z	-0.027	1.00	No
		z	-0.027	6.00	No
		z	-0.021	4.00	No
	110	z	-0.014	1.00	No
	113	z	-0.014	1.00	No
	115	z	-0.014	1.00	No
Wi30	81	x	-0.024	1.00	No
		x	-0.024	6.00	No
		x	-0.018	4.00	No
	82	x	-0.01	1.25	No
		x	-0.01	3.00	No
		x	-0.012	5.00	No
		x	-0.012	6.75	No
	83	x	-0.025	1.00	No
		x	-0.025	6.00	No
		x	-0.024	4.00	No
	89	x	-0.041	1.00	No
		x	-0.041	6.00	No
		x	-0.011	4.00	No
	92	x	-0.015	1.25	No
		x	-0.015	3.00	No
		x	-0.016	5.00	No
		x	-0.016	6.75	No
	95	x	-0.03	1.00	No
		x	-0.03	6.00	No
		x	-0.014	4.00	No
	101	x	-0.041	1.00	No
		x	-0.041	6.00	No
		x	-0.011	4.00	No
	104	x	-0.015	1.25	No
		x	-0.015	3.00	No
		x	-0.016	5.00	No
		x	-0.016	6.75	No
	107	x	-0.03	1.00	No
		x	-0.03	6.00	No
		x	-0.014	4.00	No
	110	x	-0.014	1.00	No
	113	x	-0.014	1.00	No
	115	x	-0.014	1.00	No
WLO	81	z	-0.014	1.00	No
		z	-0.014	6.00	No
		z	-0.001	4.00	No
		z	-0.001	4.00	No
	82	z	-0.005	1.25	No
		z	-0.005	3.00	No
		z	-0.005	5.00	No
		z	-0.005	6.75	No
	83	z	-0.009	1.00	No
		z	-0.009	6.00	No
		z	-0.002	4.00	No
		z	-0.002	4.00	No
	89	z	-0.008	1.00	No
		z	-0.008	6.00	No
		z	-0.004	4.00	No
	92	z	-0.003	1.25	No
		z	-0.003	3.00	No
		z	-0.004	5.00	No
		z	-0.004	6.75	No
	95	z	-0.007	1.00	No

		z	-0.007	6.00	No
		z	-0.005	4.00	No
101		z	-0.008	1.00	No
		z	-0.008	6.00	No
		z	-0.004	4.00	No
104		z	-0.003	1.25	No
		z	-0.003	3.00	No
		z	-0.004	5.00	No
		z	-0.004	6.75	No
107		z	-0.007	1.00	No
		z	-0.007	6.00	No
		z	-0.005	4.00	No
110		z	-0.003	1.00	No
113		z	-0.003	1.00	No
115		z	-0.003	1.00	No
WL30	81	x	-0.007	1.00	No
		x	-0.007	6.00	No
		x	-0.004	4.00	No
82		x	-0.003	1.25	No
		x	-0.003	3.00	No
		x	-0.003	5.00	No
		x	-0.003	6.75	No
83		x	-0.007	1.00	No
		x	-0.007	6.00	No
		x	-0.006	4.00	No
89		x	-0.012	1.00	No
		x	-0.012	6.00	No
		x	-0.002	4.00	No
92		x	-0.004	1.25	No
		x	-0.004	3.00	No
		x	-0.005	5.00	No
		x	-0.005	6.75	No
95		x	-0.008	1.00	No
		x	-0.008	6.00	No
		x	-0.003	4.00	No
101		x	-0.012	1.00	No
		x	-0.012	6.00	No
		x	-0.002	4.00	No
104		x	-0.004	1.25	No
		x	-0.004	3.00	No
		x	-0.005	5.00	No
		x	-0.005	6.75	No
107		x	-0.008	1.00	No
		x	-0.008	6.00	No
		x	-0.003	4.00	No
110		x	-0.003	1.00	No
113		x	-0.003	1.00	No
115		x	-0.003	1.00	No
LL1	40	y	-0.25	50.00	Yes
LL2	40	y	-0.25	0.00	Yes
LLa2	81	y	-0.50	50.00	Yes
LLa3	82	y	-0.50	50.00	Yes
LLa4	83	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

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+W0+1.6LLa1
- LC17=1.2DL+W30+1.6LLa1
- LC18=1.2DL-W0+1.6LLa1
- LC19=1.2DL-W30+1.6LLa1
- LC20=1.2DL+W0+1.6LLa2
- LC21=1.2DL+W30+1.6LLa2
- LC22=1.2DL-W0+1.6LLa2
- LC23=1.2DL-W30+1.6LLa2
- LC24=1.2DL+W0+1.6LLa3
- LC25=1.2DL+W30+1.6LLa3
- LC26=1.2DL-W0+1.6LLa3
- LC27=1.2DL-W30+1.6LLa3
- LC28=1.2DL+W0+1.6LLa4
- LC29=1.2DL+W30+1.6LLa4
- LC30=1.2DL-W0+1.6LLa4
- LC31=1.2DL-W30+1.6LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	4	LC11 at 100.00%	0.13	OK	
		5	LC4 at 100.00%	0.13	OK	
		6	LC12 at 100.00%	0.13	OK	
		7	LC2 at 50.00%	0.14	OK	
		8	LC9 at 48.44%	0.13	OK	
		9	LC4 at 48.44%	0.14	OK	
	L 2-1_2X2-1_2X3_16	41	LC4 at 100.00%	0.34	OK	
		43	LC3 at 6.25%	0.39	OK	
		45	LC2 at 100.00%	0.40	OK	
	L 2X2X1_4	13	LC3 at 100.00%	0.13	OK	
		14	LC1 at 100.00%	0.14	OK	
		15	LC4 at 100.00%	0.15	OK	
		16	LC2 at 0.00%	0.14	OK	
		17	LC1 at 0.00%	0.13	OK	
		18	LC3 at 0.00%	0.13	OK	
	PIPE 2-1_2x0.203	40	LC2 at 18.75%	0.17	OK	

42	LC3 at 76.79%	0.20	OK
44	LC2 at 76.79%	0.20	OK
74	LC2 at 0.00%	0.19	OK
75	LC4 at 0.00%	0.22	OK
76	LC1 at 0.00%	0.17	OK
77	LC1 at 0.00%	0.18	OK
78	LC2 at 0.00%	0.12	OK
79	LC3 at 0.00%	0.15	OK
81	LC3 at 60.42%	0.10	OK
82	LC2 at 89.58%	0.08	OK
83	LC2 at 89.58%	0.10	OK
89	LC2 at 89.58%	0.12	OK
92	LC1 at 89.58%	0.10	OK
95	LC1 at 89.58%	0.14	OK
101	LC1 at 89.58%	0.13	OK
104	LC1 at 89.58%	0.10	OK
107	LC4 at 89.58%	0.13	OK

PIPE 2x0.154

110	LC3 at 65.63%	0.04	OK
113	LC2 at 65.63%	0.04	OK
115	LC3 at 65.63%	0.04	OK

PIPE 3x0.216

2	LC1 at 81.25%	0.12	OK
3	LC4 at 81.25%	0.13	OK
35	LC25 at 50.00%	0.17	OK

PL 6x3/8

10	LC2 at 50.00%	0.11	OK
11	LC1 at 50.00%	0.12	OK
12	LC4 at 50.00%	0.11	OK

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
3	0.596	-4.00	-8.7157	0
4	7.846	-4.00	3.8417	0
9	-7.846	-4.00	3.8417	0
10	-0.596	-4.00	-8.7157	0
12	7.25	-4.00	4.874	0
13	-7.25	-4.00	4.874	0
14	7.548	-4.00	4.3578	0
15	1.7716	-4.00	1.0228	0
18	-7.548	-4.00	4.3578	0
19	-1.7716	-4.00	1.0228	0
20	0.00	-4.00	-8.7157	0
21	0.00	-4.00	-2.0457	0
22	2.846	-4.00	-4.8186	0
23	5.596	-4.00	-0.0554	0
26	-2.846	-4.00	-4.8186	0
27	-5.596	-4.00	-0.0554	0
28	-2.75	-4.00	4.874	0
29	2.75	-4.00	4.874	0
30	5.3725	-4.00	0.3317	0
31	2.9735	-4.00	4.4869	0
34	-2.9735	-4.00	4.4869	0
35	-5.3725	-4.00	0.3317	0
36	-2.399	-4.00	-4.8186	0

37	2.399	-4.00	-4.8186	0
108	-7.25	3.00	4.874	0
109	-7.846	3.00	3.8417	0
110	-0.596	3.00	-8.7157	0
111	0.596	3.00	-8.7157	0
112	7.25	3.00	4.874	0
113	7.846	3.00	3.8417	0
114	-1.7716	0.00	1.0228	0
115	0.00	0.00	-2.0457	0
116	1.7716	0.00	1.0228	0
173	6.221	3.00	1.0271	0
174	-4.00	3.00	4.874	0
175	-2.221	3.00	-5.9011	0
176	4.00	3.00	4.874	0
177	-6.221	3.00	1.0271	0
178	2.221	3.00	-5.9011	0
184	4.50	5.00	5.074	0
185	4.50	-5.00	5.074	0
186	0.00	5.00	5.074	0
187	0.00	-5.00	5.074	0
188	-4.50	5.00	5.074	0
189	-4.50	-5.00	5.074	0
210	-6.6442	5.00	1.3601	0
211	2.1442	5.00	-6.4341	0
212	-6.6442	-5.00	1.3601	0
213	2.1442	-5.00	-6.4341	0
222	-4.3942	5.00	-2.537	0
223	4.3942	5.00	-2.537	0
224	-4.3942	-5.00	-2.537	0
225	4.3942	-5.00	-2.537	0
234	-2.1442	5.00	-6.4341	0
235	6.6442	5.00	1.3601	0
236	-2.1442	-5.00	-6.4341	0
237	6.6442	-5.00	1.3601	0
244	-3.3707	-2.00	2.2531	0
245	-3.3707	-5.00	2.2531	0
250	-0.2658	-2.00	-4.0457	0
251	-0.2658	-5.00	-4.0457	0
254	3.6366	-2.00	1.7926	0
255	3.6366	-5.00	1.7926	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
15	1	1	1	1	1	1
19	1	1	1	1	1	1
21	1	1	1	1	1	1
114	1	1	1	1	1	1
115	1	1	1	1	1	1
116	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	Ig factor
2	9	10		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
3	3	4		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
4	18	19		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
5	20	21		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
6	14	15		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
7	28	27		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
8	26	22		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
9	23	29		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
10	13	9		PL 6x3/8	A36	0.00	0.00	0.00
11	10	3		PL 6x3/8	A36	0.00	0.00	0.00
12	12	4		PL 6x3/8	A36	0.00	0.00	0.00
13	34	18		L 2X2X1_4	A36	0.00	0.00	0.00
14	36	20		L 2X2X1_4	A36	0.00	0.00	0.00
15	30	14		L 2X2X1_4	A36	0.00	0.00	0.00
16	18	35		L 2X2X1_4	A36	0.00	0.00	0.00
17	20	37		L 2X2X1_4	A36	0.00	0.00	0.00
18	14	31		L 2X2X1_4	A36	0.00	0.00	0.00
35	12	13		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
40	112	108		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
41	108	109		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
42	109	110		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
43	110	111		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
44	111	113		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
45	112	113		L 2-1_2X2-1_2X3_16	A36	0.00	0.00	0.00
74	115	175		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
75	115	178		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
76	116	173		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
77	114	177		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
78	114	174		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
79	116	176		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
81	184	185		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
82	186	187		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
83	188	189		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
89	210	212		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
92	222	224		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
95	234	236		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
101	211	213		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
104	223	225		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
107	235	237		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
110	244	245		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
113	250	251		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
115	254	255		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

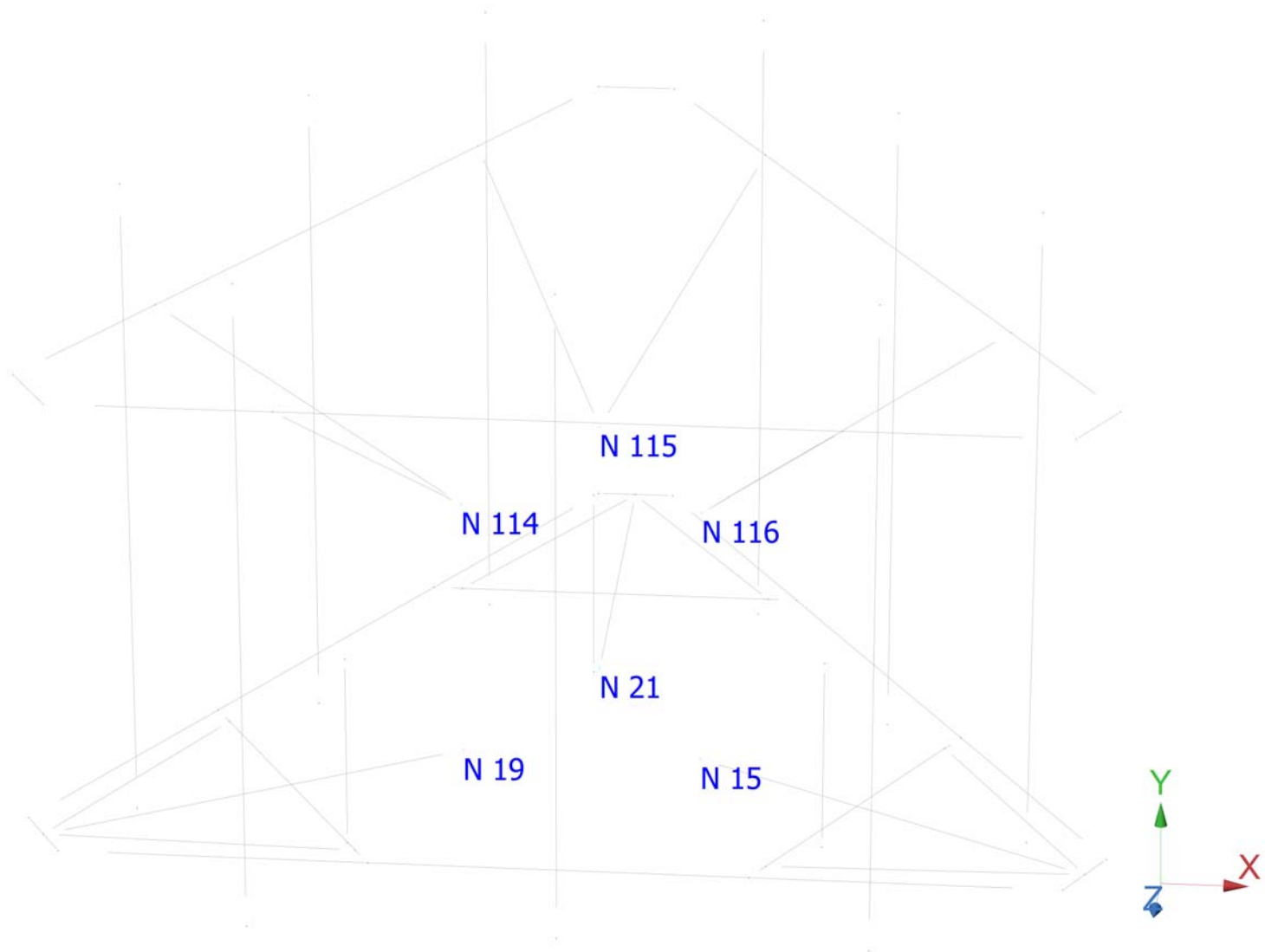
Member	Rotation [Deg]	Axes23	NX	NY	NZ
41	180.00	0	0.00	0.00	0.00
43	180.00	0	0.00	0.00	0.00
45	90.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
13	0.00	3.00	0.00	0.00	3.00	0.00
14	0.00	3.00	0.00	0.00	3.00	0.00
15	0.00	3.00	0.00	0.00	3.00	0.00
16	0.00	3.00	0.00	0.00	3.00	0.00
17	0.00	3.00	0.00	0.00	3.00	0.00
18	0.00	3.00	0.00	0.00	3.00	0.00

Hinges

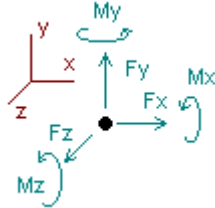
Member	Node-J				Node-K				TOR	AXL	Axial rigidity
	M33	M22	V3	V2	M33	M22	V3	V2			
74	0	0	0	0	1	1	0	0	0	0	Full
75	0	0	0	0	1	1	0	0	0	0	Full
76	0	0	0	0	1	1	0	0	0	0	Full
77	0	0	0	0	1	1	0	0	0	0	Full
78	0	0	0	0	1	1	0	0	0	0	Full
79	0	0	0	0	1	1	0	0	0	0	Full



Analysis result

Envelope for nodal reactions

Note.- I_c is the controlling load condition



Direction of positive forces and moments

Envelope of nodal reactions for :

- LC1=1.2DL+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

Node		Forces						Moments					
		Fx [Kip]	I_c	Fy [Kip]	I_c	Fz [Kip]	I_c	Mx [Kip*ft]	I_c	My [Kip*ft]	I_c	Mz [Kip*ft]	I_c
15	Max	1.045	LC2	1.355	LC12	0.798	LC1	0.20766	LC5	0.72706	LC7	1.74184	LC12
	Min	-1.000	LC8	0.182	LC6	-0.757	LC7	-1.08391	LC26	-0.76812	LC1	0.06547	LC6
19	Max	1.008	LC6	1.354	LC10	0.720	LC1	0.18858	LC5	0.59024	LC5	-0.08794	LC8
	Min	-1.066	LC4	0.192	LC8	-0.702	LC7	-1.10477	LC26	-0.62982	LC3	-1.73642	LC10

21	Max	0.725	LC2	1.360	LC9	1.224	LC5	1.98974	LC9	1.15630	LC8	0.62622	LC8
	Min	-0.713	LC8	0.171	LC7	-1.284	LC3	0.24072	LC7	-1.19644	LC2	-0.62718	LC2
114	Max	1.183	LC6	1.008	LC4	0.758	LC1	0.37540	LC5	0.37968	LC1	0.25748	LC8
	Min	-1.301	LC4	-0.759	LC6	-0.687	LC7	-0.47082	LC3	-0.32042	LC7	-0.50541	LC2
115	Max	0.620	LC6	1.088	LC3	1.324	LC5	0.54414	LC1	0.66086	LC4	0.58142	LC4
	Min	-0.624	LC4	-0.839	LC5	-1.460	LC3	-0.28147	LC7	-0.60039	LC6	-0.53995	LC6
116	Max	1.244	LC2	0.985	LC2	0.864	LC1	0.38285	LC5	0.48648	LC3	0.48964	LC4
	Min	-1.124	LC8	-0.736	LC8	-0.798	LC7	-0.55003	LC3	-0.42509	LC5	-0.28313	LC6



Connection Check

Date: 1/31/2023
Project Name: WINDSOR
Project No.: CT1026
Designed By: KSBM Checked By: MSC



CHECK CONNECTION CAPACITY (Worst Case)

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

Bolt Type = A36 5/8" (Threaded Rod)

Allowable Tensile Load =

$$F_{Tall} = 6673 \text{ lbs.}$$

Allowable Shear Load =

$$F_{Vall} = 4004 \text{ lbs.}$$

TENSILE FORCES

Reaction **F = 1284 lbs.** (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 725 lbs. (See Bentley Output)

Reactions in Y direction: 1360 lbs. (See Bentley Output)

Resultant: 1541 lbs.

No. of Supports = 1

No. of Bolts / Support = 3

Tension Design Load /Bolts =

$$f_t = 428.00 \text{ lbs.} < 6673 \text{ lbs.} \text{ Therefore, OK !}$$

Shear Design Load / Bolts=

$$f_v = 513.73 \text{ lbs.} < 4004 \text{ lbs.} \text{ Therefore, OK !}$$

CHECK COMBINED TENSION AND SHEAR

$$\begin{array}{rclclcl} f_t / F_T & + & f_v / F_V & \leq & 1.0 \\ 0.064 & + & 0.128 & = & 0.192 < 1.0 \text{ Therefore, OK !} \end{array}$$