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Lucia Chiocchio
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12/14/20

VIA OVERNIGHT MAIL

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

Re: DOCKET NO. 452 - InSite Towers Development, LLC Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at Salisbury Tax Assessor Map 16 Lot 5, 250 Canaan Road, Salisbury, Connecticut
New Cingular Wireless PCS, LLC ("AT&T") Facility Installation

Dear Ms. Bachman:

This letter and enclosures are respectfully submitted on behalf of New Cingular Wireless PCS, LLC ("AT&T") in connection with the above-referenced facility in Salisbury, Connecticut. As you know, the Certificate holder, InSite Towers Development constructed the monopine approved in Docket No. 452. This submission details AT&T's wireless facility installation on the existing monopine, which includes some modifications to AT&T's facility depicted on the Development & Management Plan.

As shown in the Drawings included in Attachment 1 dated November 11, 2020, AT&T's installation includes (6) panel antennas in (3) sectors mounted at a centerline height of 146' above grade level ("AGL") on the 157' tall monopine. In each sector, behind the antennas, (3) remote radio head ("RRH") units will be installed on the mounting bracket for a total of (9) RRHs. Behind the antennas in the alpha and beta sectors, one surge arrestor will be installed on the mounting bracket. The mounting bracket is custom-made so that the distance from the monopine to the outer edge of the antennas does not exceed 8', so that the antennas, RRHs and surge arrestors are all located within the faux branches. Within the existing fenced equipment compound and AT&T's 12' x 24' lease area at grade, AT&T will install a 6'-8" x 6'-8" walk-in equipment cabinet on a concrete pad as well as a 20kW diesel-fueled emergency back-up generator, also installed on a concrete pad.

AT&T's original design included (12) panel antennas and RRHs at the same centerline height of 146' AGL and a proposed 11'-6" x 16' shelter with a diesel generator.

Included in Attachment 2 is structural analysis prepared by Bennett & Pless, Inc. confirming that the monopine can structurally accommodate AT&T's facility. Attachment 3 contains a mount analysis prepared by Hudson Design Group, which concludes that the monopine is capable of supporting AT&T's installation.

Thank you for your consideration of this information. Should you have any questions or need any additional information, please do not hesitate to contact me.

Very truly yours,

Lucia Chiocchio

Attachments

cc: David Weisman, InSite Wireless Group
Laura Wakefield, InSite Wireless Group
Quincy Byrd, Insite Wireless Group
Manny Vincente, Homeland Towers
Raymond Vergati, Homeland Towers
Town of Salisbury First Selectman Curtis Rand
AT&T
SAI

ATTACHMENT 1

PROJECT INFORMATION

SCOPE OF WORK:	TELECOMMUNICATIONS FACILITY (NSB A EXISTING 150'–0" A.G.L. TALL MONOPINE. PROPOSED WALK–IN CABINET, AND GENERATOR WILL BE INSTALLED AT GRADE INSIDE AN EXISTING FENCED–IN COMPOUND. PROPOSED (3) TPA65R–BU8DA–K ANTENNAS, (3) DMP65R–BU8DA–K ANTENNAS, (3) 4478 B14 RRH'S, (3) 8843 B2 B66A RRH'S, (3) 4449 B5–B12 RRH'S, & (2) DC9 SURGE ARRESTORS WILL BE INSTALLED AT A HEIGHT OF 146'–0" A.G.L.):
SITE ADDRESS:	250 CANAAN ROAD SALISBURY, CT 06068
APPLICANT:	AT&T 550 COCHITUATE ROAD FRAMINGHAM, MA 01701
SITE OWNER:	SALISBURY SCHOOL INC 251 CANAAN RD SALISBURY, CT 06068
LATITUDE:	42.00622 N, 42° 0' 22.4" N
LONGITUDE:	73.39144 W, 73° 23' 29.2" W
TYPE OF SITE:	MONOPINE/ WALK–IN CABINET
TOWER HEIGHT:	150'–0"±
RAD CENTER:	146'–0"±
APPLICABLE CODES:	ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE CT STATE BUILDING CODE, NATIONAL ELECTRIC CODE (NEC 2017), ANSI/EIA/TIA–222 H & COMPLY WITH AT&T MOBILITY SPECIFICATIONS

SITE NUMBER: CT1315

SITE NAME: SALISBURY CANAAN ROAD

FA CODE:12676421

PACE ID: MRCTB048657

PROJECT: NSB

DRAWING INDEX

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RF–1	RF PLUMBING DIAGRAM	0

VICINITY MAP

DIRECTIONS TO SITE:
DEPART NORTHEAST, TURN RIGHT AND THEN IMMEDIATELY TURN LEFT ONTO LEGGATT MCCALL CONNECTOR ROAD, BEAR LEFT ONTO BURR ST, TURN LEFT ONTO MA–30/COCHITUATE ROAD, TAKE RAMP RIGHT FOR I–90 EAST/I–90 WEST TOWARD BOSTON/SPRINGFIELD, AT EXIT 2 TAKE RAMP RIGHT FOR US–20E/HOUSATONIC ST, TURN RIGHT ONTO MA–102/PLEASANT ST, KEEP STRAIGHT ONTO US–7S/MA–102/MAIN ST, TURN LEFT ONTO US–7S/SOUTH ST, TURN RIGHT ONTO US–44W/MAIN ST, TURN LEFT, TURN 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.

UNDERGROUND SERVICE ALERT

811 DigSafe MA·ME·NH·RI·VT

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72 HOURS PRIOR

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12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1315
SITE NAME: SALISBURY CANAAN ROAD

250 CANAAN ROAD
SALISBURY, CT 06068
LITCHFIELD COUNTY

550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
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SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

AT&T

TITLE SHEET
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1315	T–1	0

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

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

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

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

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

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

ABBREVIATIONS

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

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SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

AT&T

GENERAL NOTES
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1315	GN-1	0

STRUCTURAL NOTES:

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

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

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

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

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

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

NOTES:

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

NOTES:

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

SPECIAL INSPECTION CHECKLIST

BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
REQUIRED	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:	

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

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1315
SITE NAME: SALISBURY CANAAN ROAD

250 CANAAN ROAD
SALISBURY, CT 06068
LITCHFIELD COUNTY

550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

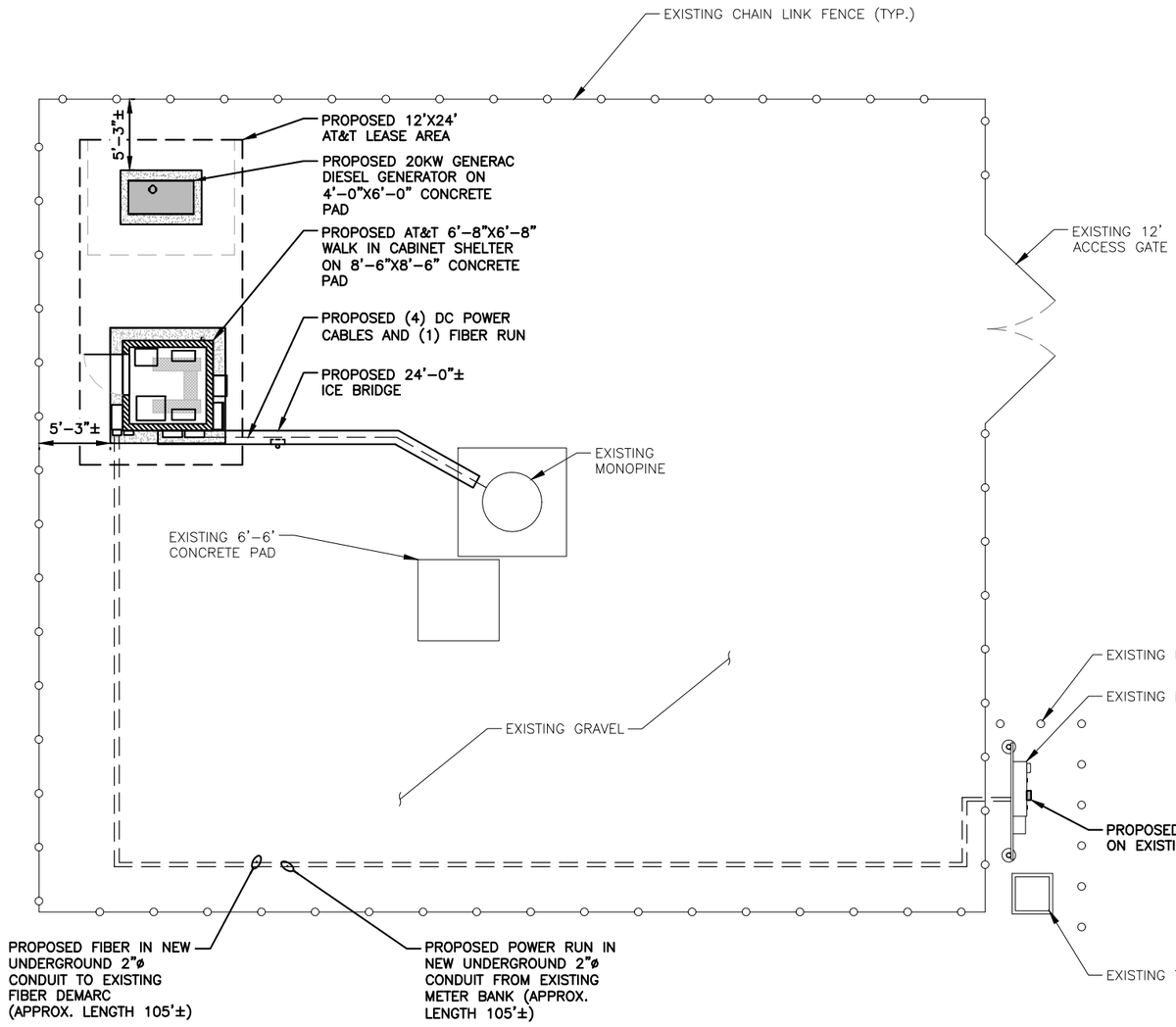
NO.	DATE	REVISIONS	BY	CHK	APP'D
0	11/12/20	ISSUED FOR REVIEW	CC	ES	DPH

SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

AT&T

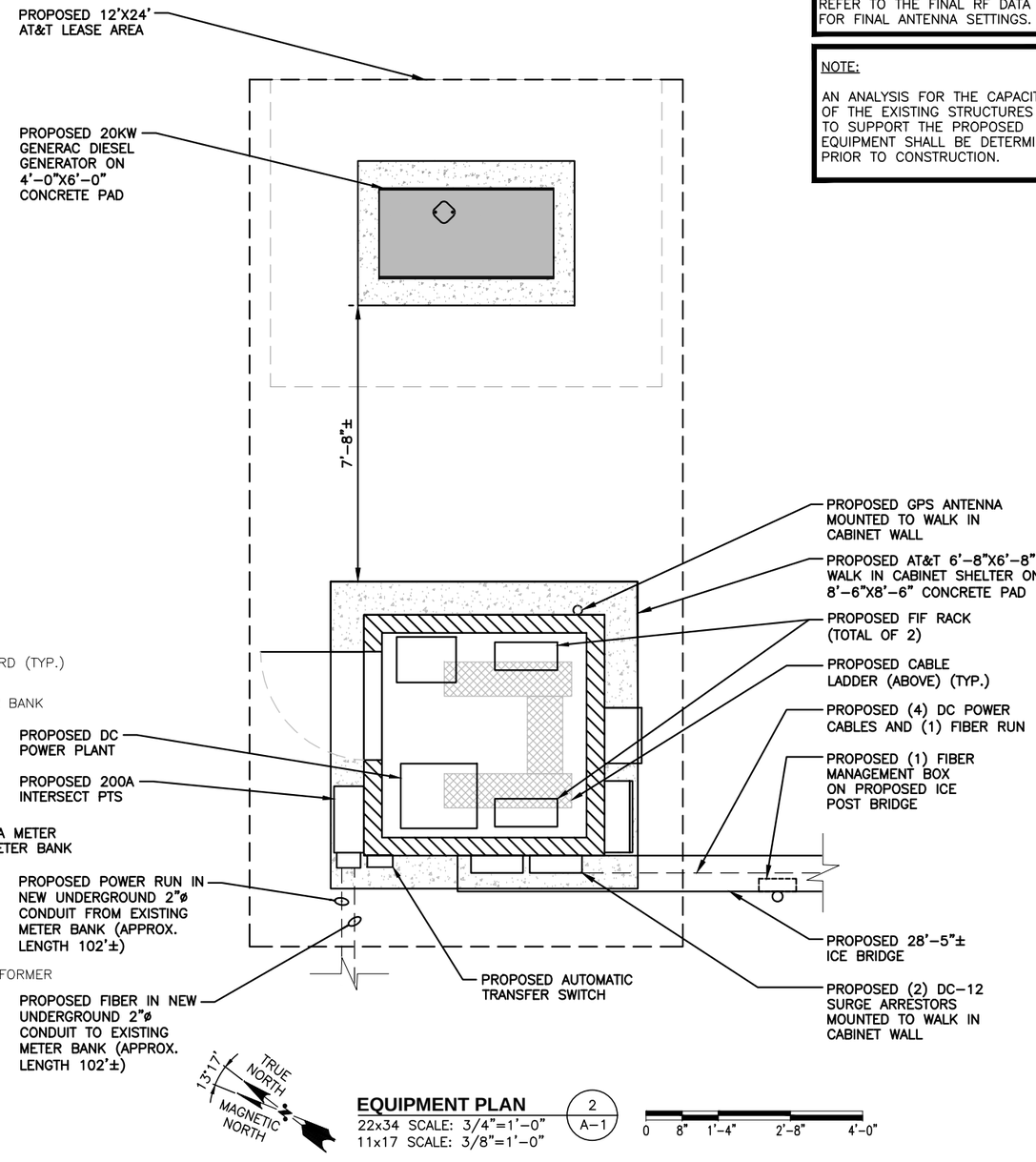
STRUCTURAL NOTES
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1315	SN-1	0



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

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.

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SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

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COMPOUND & EQUIPMENT PLANS
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1315	A-1	0

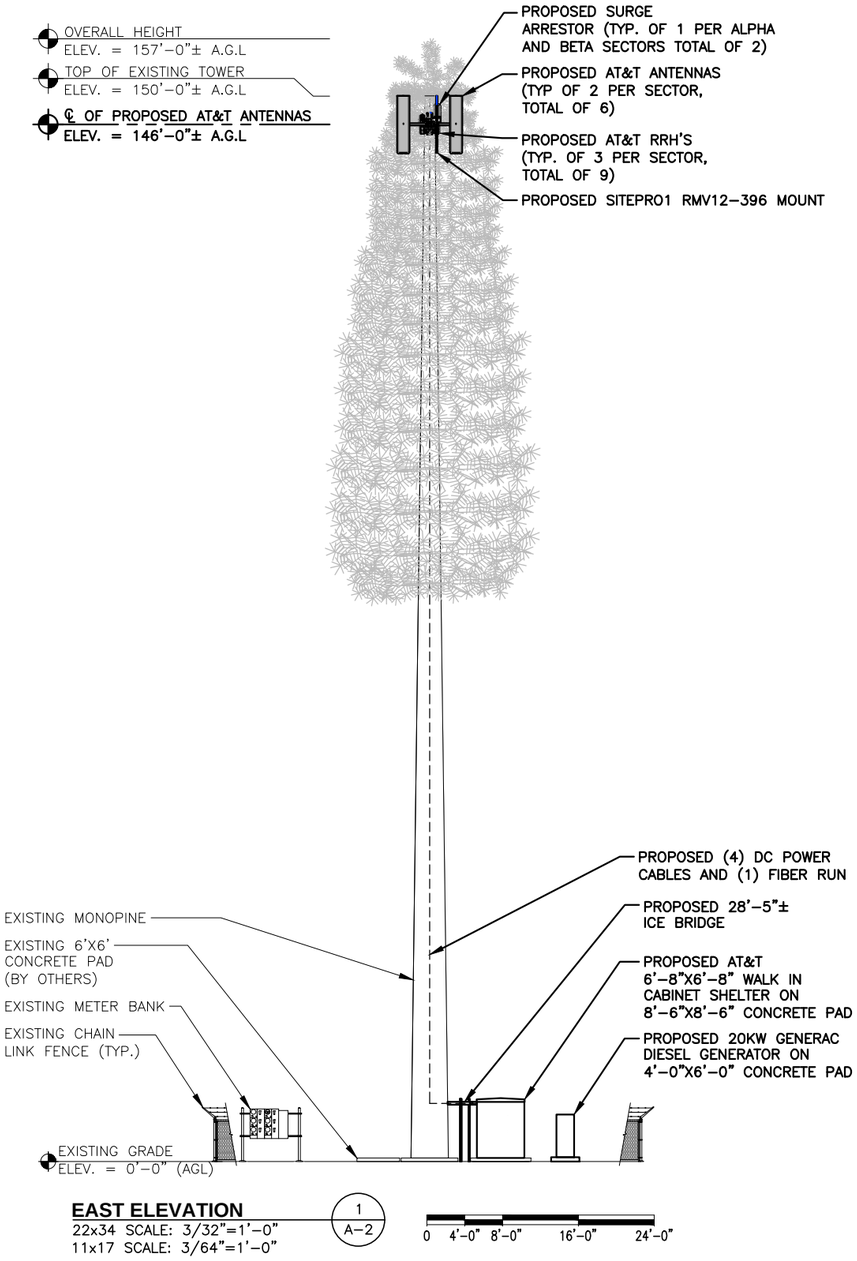
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

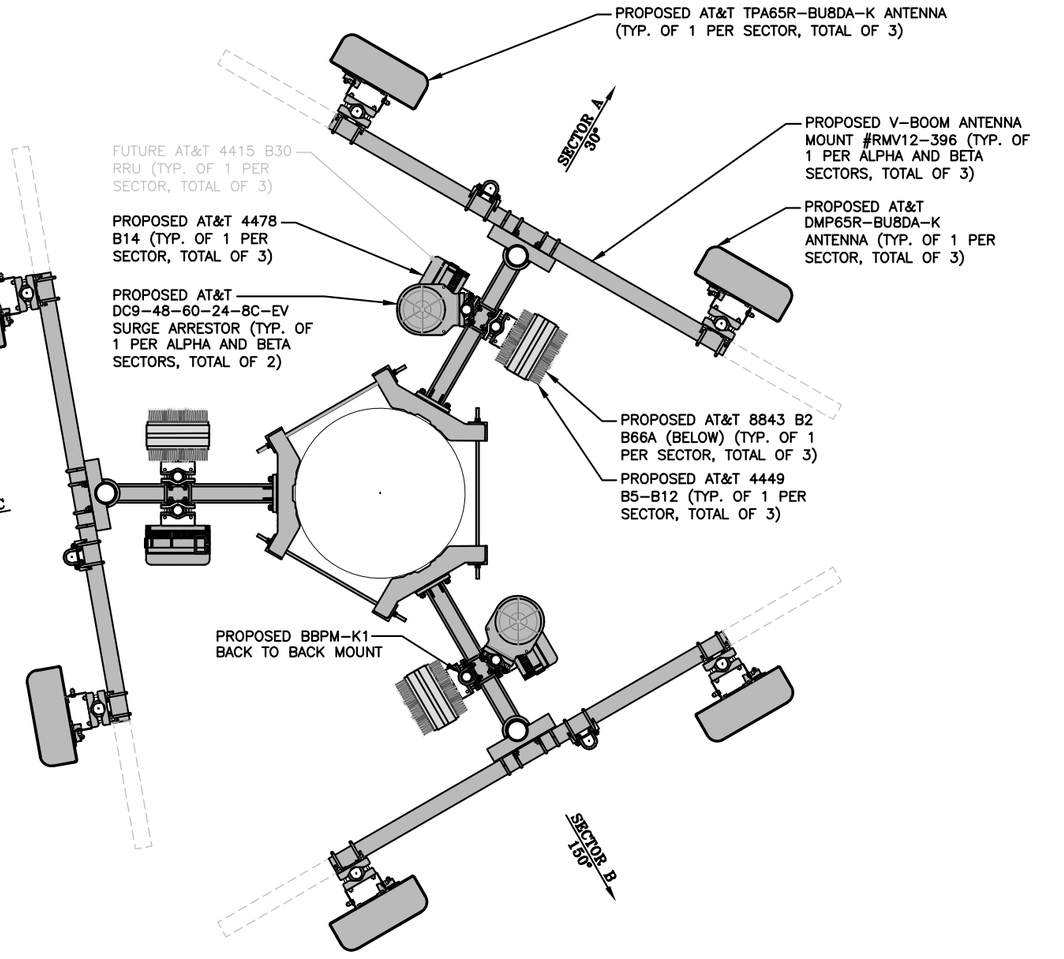
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: NOVEMBER 12, 2020

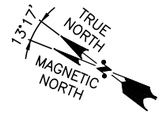
NOTE:

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



EAST ELEVATION 1 / A-2
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"





PROPOSED ANTENNA LAYOUT DESIGN 2 / A-2
SCALE: N.T.S

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at&t
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FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	11/12/20	ISSUED FOR REVIEW	CC	ES	DPH

SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

AT&T

ANTENNA LAYOUT & ELEVATION
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1315	A-2	0

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NOTE:

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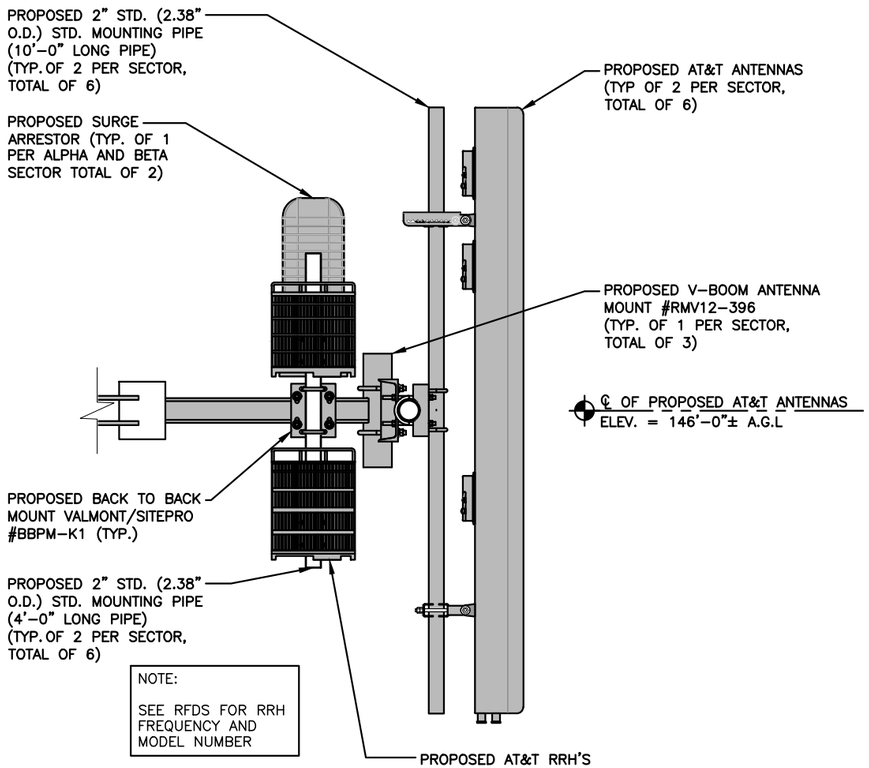
NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: NOVEMBER 12, 2020

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
ALPHA	PROPOSED	LTE B14/AWS	TPA65R-BU8DA-K	96X21X7.8	146'-0"	30°	–	(F) (1) 4415 B30 (P) (1) 4478 B14	14.9X13.2X5.4 18.1X13.4X8.3	(4) DC POWER CABLES AND (1) FIBER RUN	(P) (2) RAYCAP DC9-48-60-24-8C-EV
	PROPOSED	LTE 700BC/850/PCS	DMP65R-BU8DA-K	96X20.7X7.7	146'-0"	30°	–	(P) (1) 8843 B2/B66A (P) (1) 4449 B5/B12	14.9X13.2X10.9 14.9X13.2X10.4		
BETA	PROPOSED	LTE B14/AWS	TPA65R-BU8DA-K	96X21X7.8	146'-0"	150°	–	(F) (1) 4415 B30 (P) (1) 4478 B14	14.9X13.2X5.4 18.1X13.4X8.3		
	PROPOSED	LTE 700BC/850/PCS	DMP65R-BU8DA-K	96X20.7X7.7	146'-0"	150°	–	(P) (1) 8843 B2/B66A (P) (1) 4449 B5/B12	14.9X13.2X10.9 14.9X13.2X10.4		
GAMMA	PROPOSED	LTE B14/AWS	TPA65R-BU8DA-K	96X21X7.8	146'-0"	260°	–	(F) (1) 4415 B30 (P) (1) 4478 B14	14.9X13.2X5.4 18.1X13.4X8.3		
	PROPOSED	LTE 700BC/850/PCS	DMP65R-BU8DA-K	96X20.7X7.7	146'-0"	260°	–	(P) (1) 8843 B2/B66A (P) (1) 4449 B5/B12	14.9X13.2X10.9 14.9X13.2X10.4		

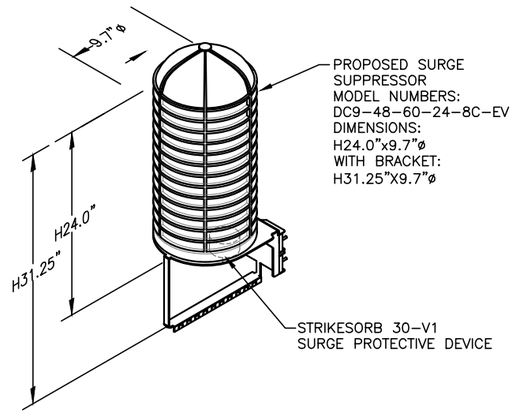
FINAL ANTENNA SCHEDULE (1 / A-3)
SCALE: N.T.S



PROPOSED SECTOR FRAME, ANTENNA,SURGE SUPPRESSOR & RRH'S MOUNTING DETAIL (2 / A-3)
SCALE: N.T.S

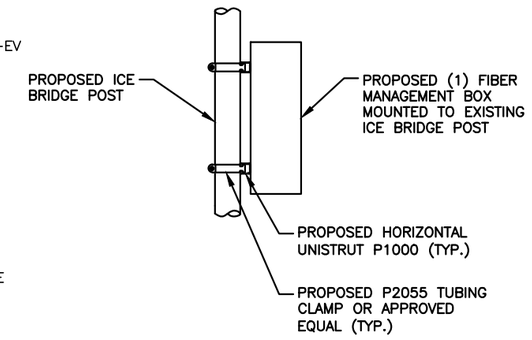
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (3 / A-3)
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (4 / A-3)
SCALE: N.T.S



PROPOSED FIBER MANAGEMENT BOX MOUNTING DETAIL (5 / A-3)
SCALE: N.T.S

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SITE NUMBER: CT1315
SITE NAME: SALISBURY CANAAN ROAD

250 CANAAN ROAD
SALISBURY, CT 06068
LITCHFIELD COUNTY

550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
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SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

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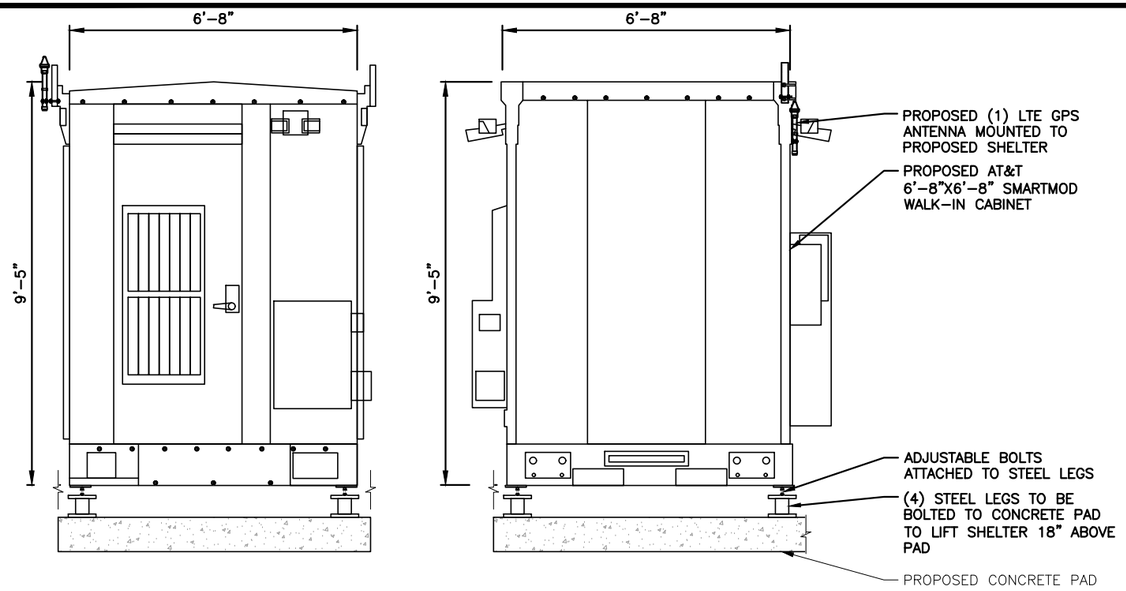
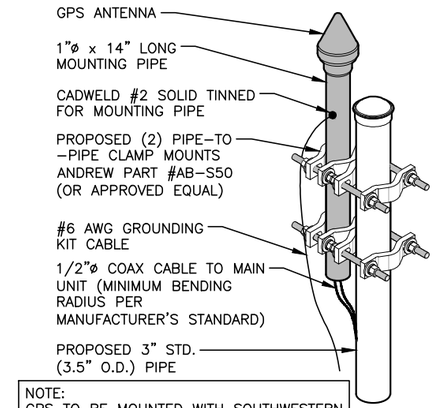
DETAILS
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1315	A-3	0



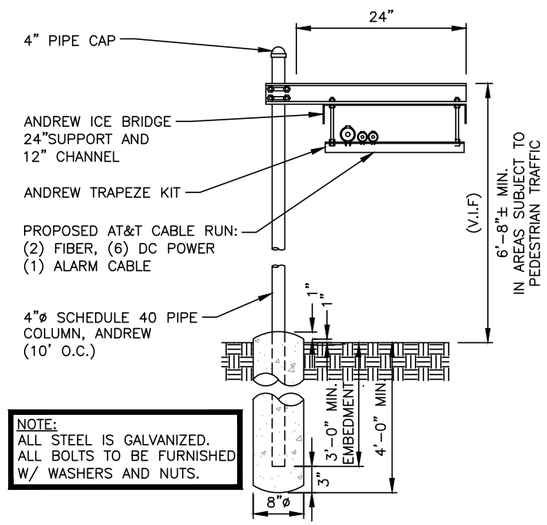
NOTE:
SHELTER SHALL BE MOUNTED PER MANUFACTURER'S SPECIFICATIONS.

TYPICAL SHELTER DETAIL (1 / A-4)
SCALE: N.T.S



NOTE:
GPS TO BE MOUNTED WITH SOUTHWESTERN EXPOSURE. (MIN. OF 10' AWAY FROM EXISTING GPS ANTENNA)

GPS MOUNTING DETAIL (2 / A-4)
N.T.S



NOTE:
ALL STEEL IS GALVANIZED.
ALL BOLTS TO BE FURNISHED W/ WASHERS AND NUTS.

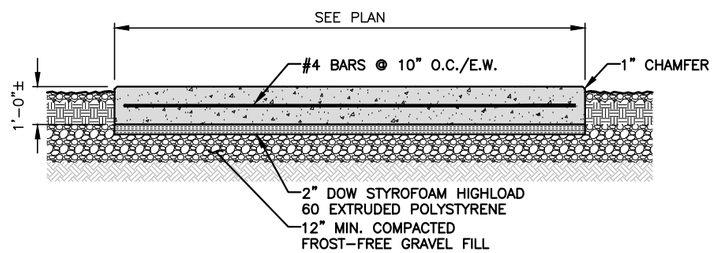
ICE BRIDGE DETAIL (3 / A-4)
SCALE: N.T.S

20 KW GENERATOR DIMENSIONS	
MODEL #	**G007098-0**
MANUF.	GENERAC
HEIGHT	90"
WIDTH	36"
LENGTH	48"

GENERATOR DETAIL (4 / A-4)
SCALE: N.T.S

FOUNDATION NOTES & CONCRETE SPECIFICATIONS:

1. FOUNDATION AREA SHALL BE EXCAVATED TO THE DEPTH AND DIMENSIONS SHOWN ON THE PLANS. EXISTING LEDGE AND ALL OTHER EXISTING UNSUITABLE MATERIAL SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF-SITE. THE SUBGRADE SHALL BE ROLLED WITH A 1-TON, VIBRATORY, WALK-BEHIND ROLLER AT A SPEED OF LESS THAN 2 FPS, 6 PASSES MINIMUM, TO PROVIDE UNYIELDING SURFACE.
2. UNDERCUT SOFT OR "WEAVING" AREAS A MINIMUM OF 12 INCHES DEEP. BACKFILL UNDERCUT AREA WITH FILL MEETING THE SPECIFICATIONS OF STRUCTURAL FILL.
3. CONCRETE TO HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH (f'c)=4000 psi. CONCRETE TO BE AIR ENTRAINED, DESIRED AIR CONTENT TO BE 6% (PLUS OR MINUS 2%)
4. REINFORCING BAR TO BE ASTM A615 GRADE 60.
5. WELDED WIRE FABRIC TO CONFORM TO THE REQUIREMENTS OF ASTM A185. WIRES FOR FABRIC TO CONFORM TO THE REQUIREMENTS OF ASTM A82.
6. COORDINATE WITH MANUFACTURER OF PREFABRICATED SHELTER FOR LOCATION OF ATTACHMENTS TO BASE SLAB.
7. ALL REINFORCING TO HAVE MINIMUM CONCRETE COVER PER ACI SPECIFICATIONS.
8. ALL CONCRETE MATERIALS AND WORKMANSHIP SHALL CONFORM TO LATEST EDITION OF ACI 318 AND APPLICABLE STATE BUILDING CODE.



CONCRETE PAD DETAIL (5 / A-4)
22x34 SCALE: N.T.S

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
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SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

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DETAILS
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1315	A-4	0

NOTE:

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

NOTE:

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NOTE:

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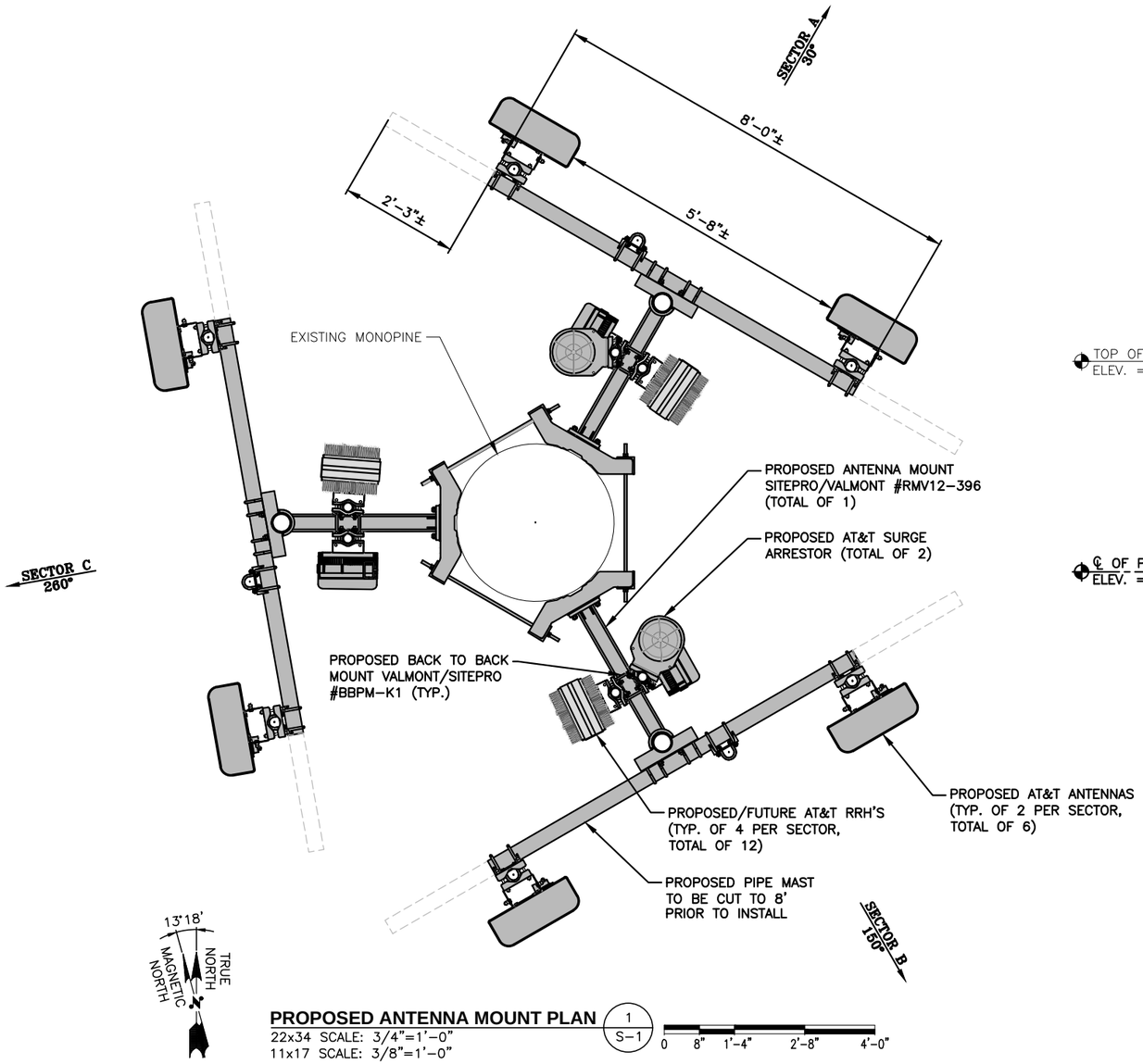
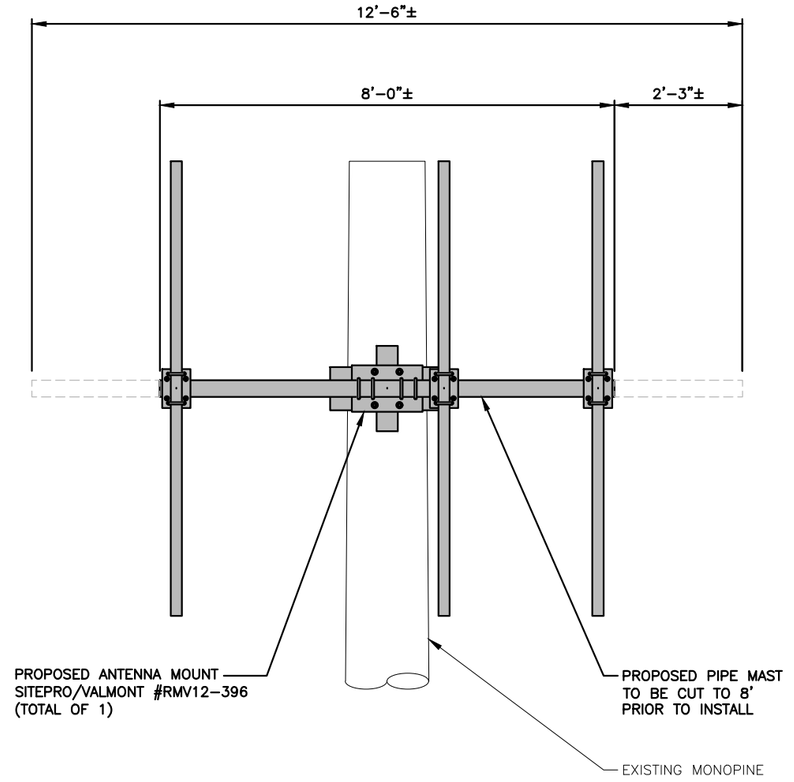
HUDSON DESIGN GROUP, LLC.
DATED: NOVEMBER 12, 2020



PROPOSED ANTENNA MOUNT PLAN (1 / S-1)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"
0 8" 1'-4" 2'-8" 4'-0"

TOP OF EXISTING MONOPINE
ELEV. = 150'-0" (AGL)

℄ OF PROPOSED AT&T ANTENNAS
ELEV. = 146'-0" (AGL)



PROPOSED ANTENNA MOUNT ELEVATION (2 / S-1)
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: JC | DRAWN BY: ES

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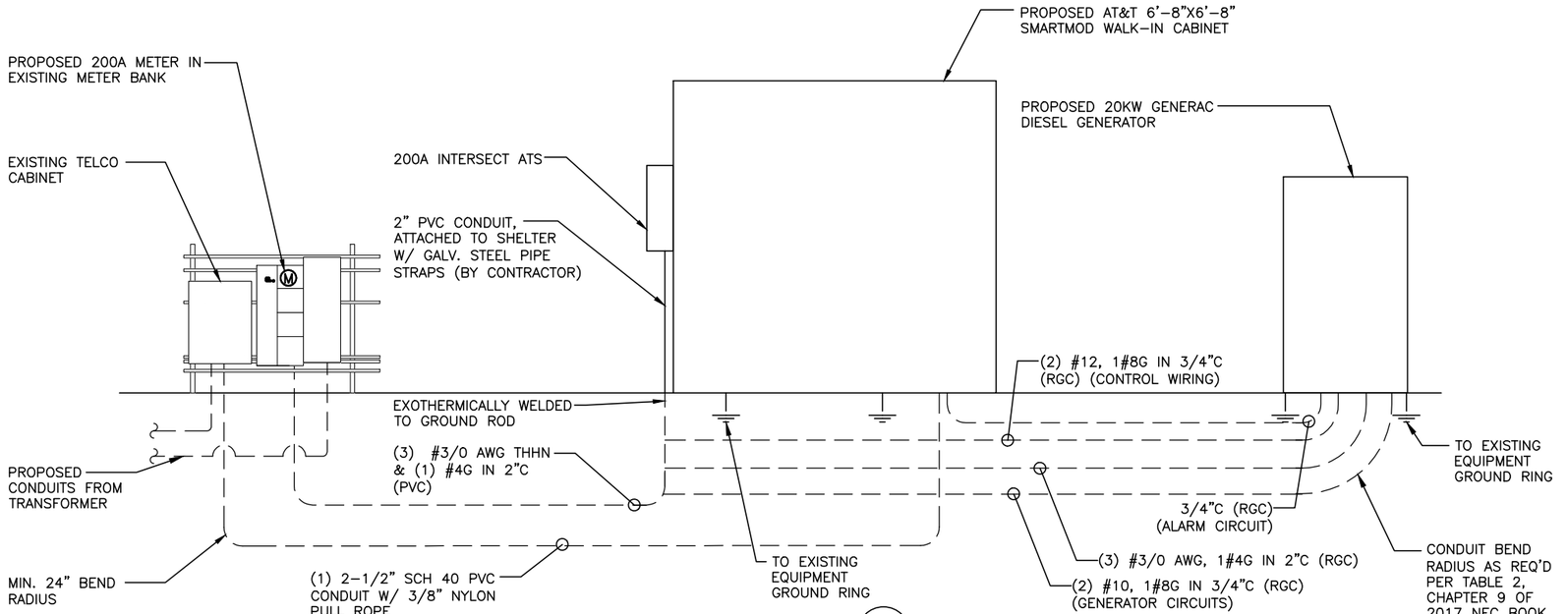
MOUNT MODIFICATION DETAILS
(NSB)

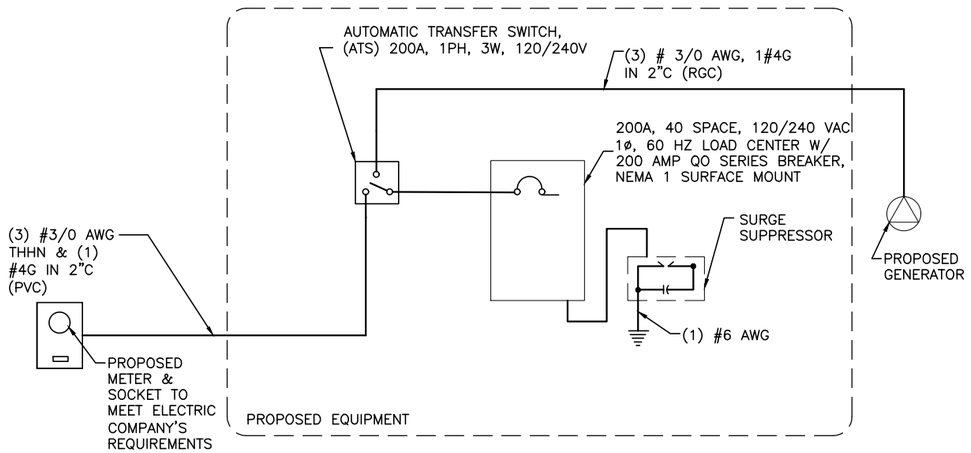
SITE NUMBER	DRAWING NUMBER	REV
CT1315	S-1	0

NOTES:

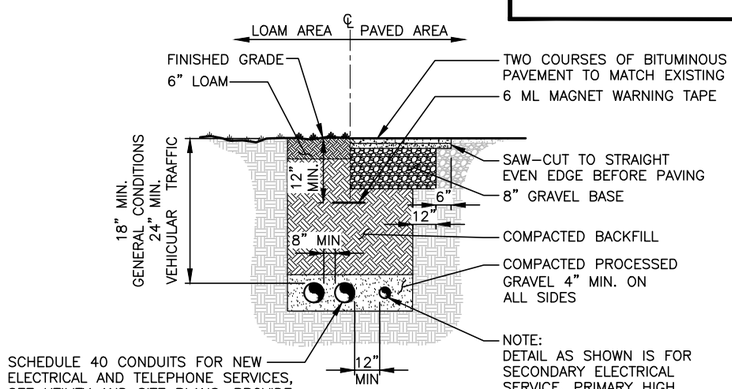
1. GROUND [ATS] TO EXISTING GROUND BAR
2. GROUND GENERATOR TO EXISTING GROUND RING WITH (2) #2 AWG GROUND WIRES.



GENERATOR WIRING DETAIL 1/E-1
SCALE: N.T.S



TYPICAL ONE-LINE DIAGRAM 2/E-1
SCALE: N.T.S



BURIED CONDUIT DETAIL 3/E-1
SCALE: N.T.S

ELECTRICAL LEGEND & ABBREVIATIONS

	NEW PANEL BOARD, SURFACE MOUNTED
	EXISTING PANEL BOARD, SURFACE MOUNTED
T	DRY TYPE TRANSFORMER
M	METER
	CIRCUIT BREAKER
	NON-FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.
F	FUSIBLE DISCONNECT SWITCH, MOUNTED 54"A.F.F.
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR WITH BUILT-IN FUSES, SURFACE MOUNTED
	DUPLEX OUTLET, SURFACE MOUNTED, 20 AMPS, 125 VOLTS, SINGLE PHASE
J	JUNCTION BOX, SURFACE MOUNTED 18" A.F.F.
	EXPOSED WIRING
	HOME RUNS, MINIMUM 2#10 + 1#8G IN 3/4" CONDUIT U.O.N.
A.F.F.	ABOVE FINISHED FLOOR
U.O.N.	UNLESS OTHERWISE NOTED
WP	WEATHERPROOF
GFI	GROUND FAULT INTERRUPTER
A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
PVC	POLYVINYL CHLORIDE
HZ	HERTZ
PH, ø	PHASE
W	WATTS
NEC	NATIONAL ELECTRIC CODE
PPC	POWER PROTECTION CABINET
UL	UNDERWRITER LABORATORIES
PTS	POWER TRANSFER SWITCH
QO	QUICK OPEN
GRC	GALVANIZED RIGID CONDUIT
G	GROUND
	GROUND
MGB	MASTER GROUND BAR — ○ MECHANICAL CONNECTION ● CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
G	GROUND COPPER WIRE, SIZE AS NOTED
	EXPOSED WIRING
	COAXIAL CABLE
	5/8"x8" COPPER CLAD STAINLESS STEEL GROUND ROD
	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PF	POWER FACTOR

ELECTRICAL AND GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THININSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
11. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
12. PPC SUPPLIED BY PROJECT OWNER.
13. GROUNDING SHALL COMPLY WITH NEC ART. 250.
14. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
15. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
16. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
17. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
18. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
19. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
20. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
21. BOND ANTENNA EGB'S AND MGB TO GROUND RING.
22. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MINIMUM RESISTANCE REQUIRED.
23. CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE-TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.
24. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2" 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.

HUDSON Design Group LLC
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NORTH ANDOVER, MA 01845
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FAX: (978) 336-5586

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1315
SITE NAME: SALISBURY CANAAN ROAD

250 CANAAN ROAD
SALISBURY, CT 06068
LITCHFIELD COUNTY

550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

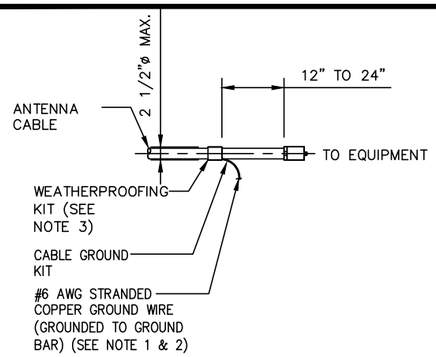
NO.	DATE	REVISIONS	BY	CHK	APP'D
0	11/12/20	ISSUED FOR REVIEW	CC	ES	DPH

SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

AT&T

ELECTRICAL NOTES & ONE-LINE DIAGRAM (NSB)

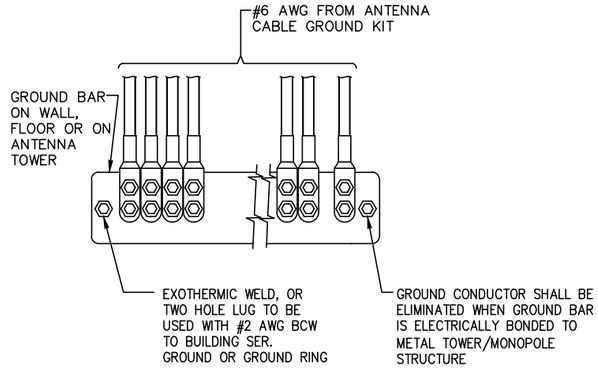
SITE NUMBER	DRAWING NUMBER	REV
CT1315	E-1	0



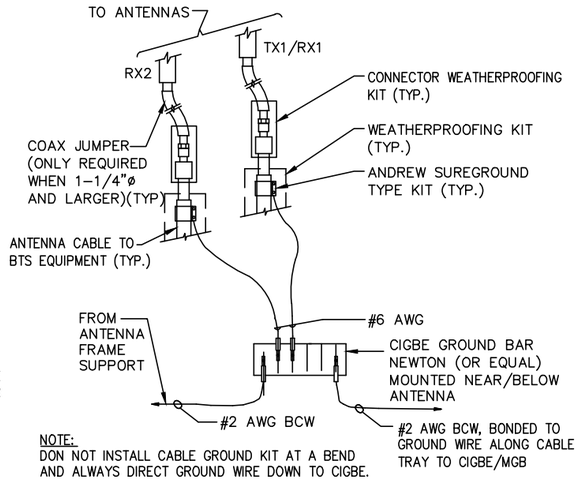
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE SUPPLIED WITH KIT. COLD SHRINK SHALL NOT BE USED.

CONNECTION OF CABLE GROUND KIT TO ANTENNA CABLE 1 G-1
SCALE: N.T.S



INSTALLATION OF GROUND WIRE TO GROUND BAR 2 G-1
SCALE: N.T.S



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

INSTALLATION OF GROUND WIRE TO GROUNDING BAR TOWER 3 G-1
SCALE: N.T.S

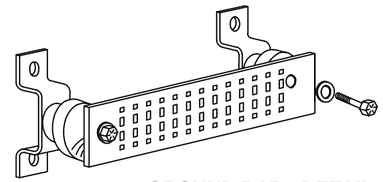
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

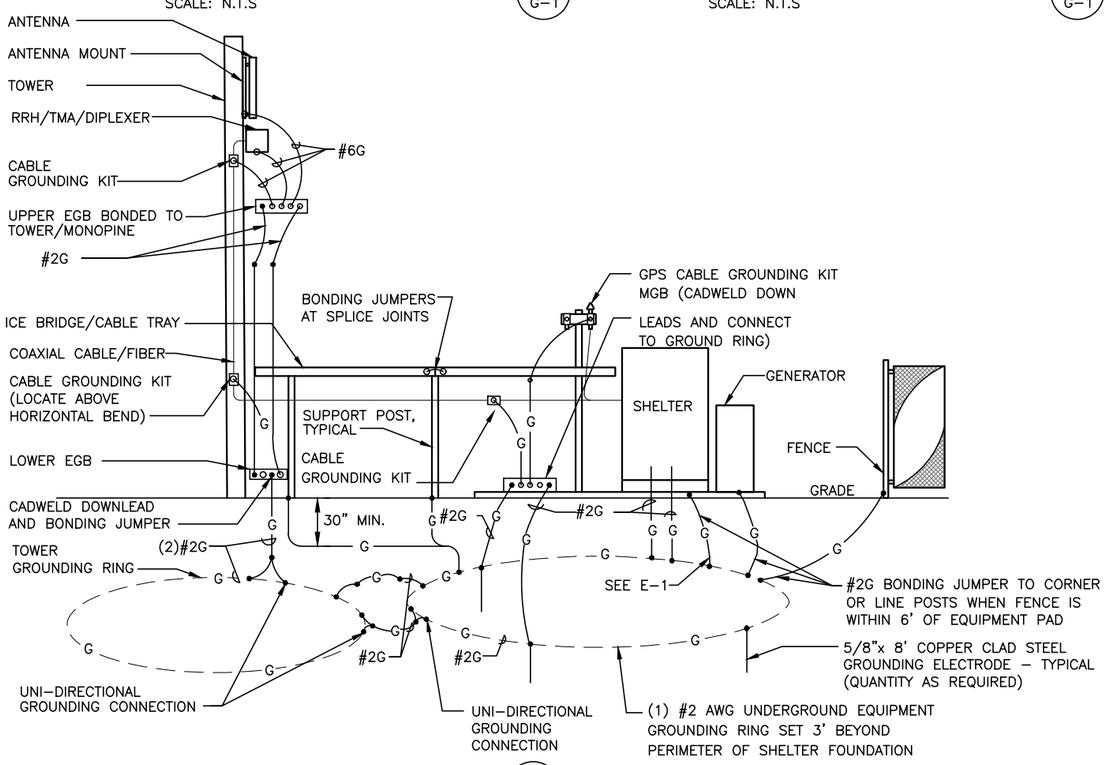
CABLE ENTRY PORTS (HATCH PLATES) (#2 AWG)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2 AWG)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2 AWG)
+24V POWER SUPPLY RETURN BAR (#2 AWG)
-48V POWER SUPPLY RETURN BAR (#2 AWG)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

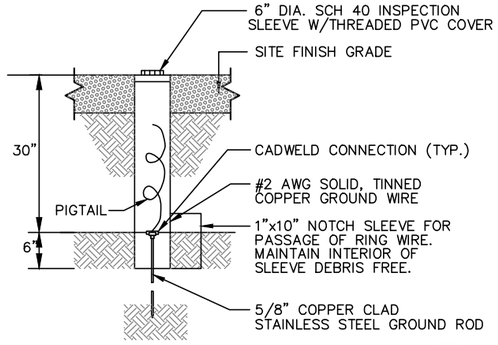
INTERIOR GROUND RING (#2 AWG)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2 AWG)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2 AWG)
BUILDING STEEL (IF AVAILABLE) (#2 AWG)



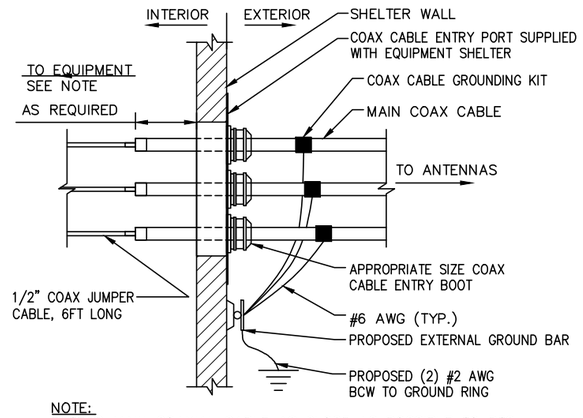
GROUND BAR - DETAIL 4 G-1
SCALE: N.T.S



GROUNDING ONE-LINE DIAGRAM 5 G-1
SCALE: N.T.S



GROUND ROD TEST WELL DETAIL 6 G-1
SCALE: N.T.S



NOTE:
EXTEND MAIN COAXIAL CABLE AS CLOSE AS POSSIBLE TO BTS EQUIPMENT. MAX LENGTH OF BTS JUMPER IS 6 FT.

INSTALLATION OF GROUND WIRE TO GROUND BAR 7 G-1
SCALE: N.T.S

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12 INDUSTRIAL WAY
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SITE NUMBER: CT1315
SITE NAME: SALISBURY CANAAN ROAD

250 CANAAN ROAD
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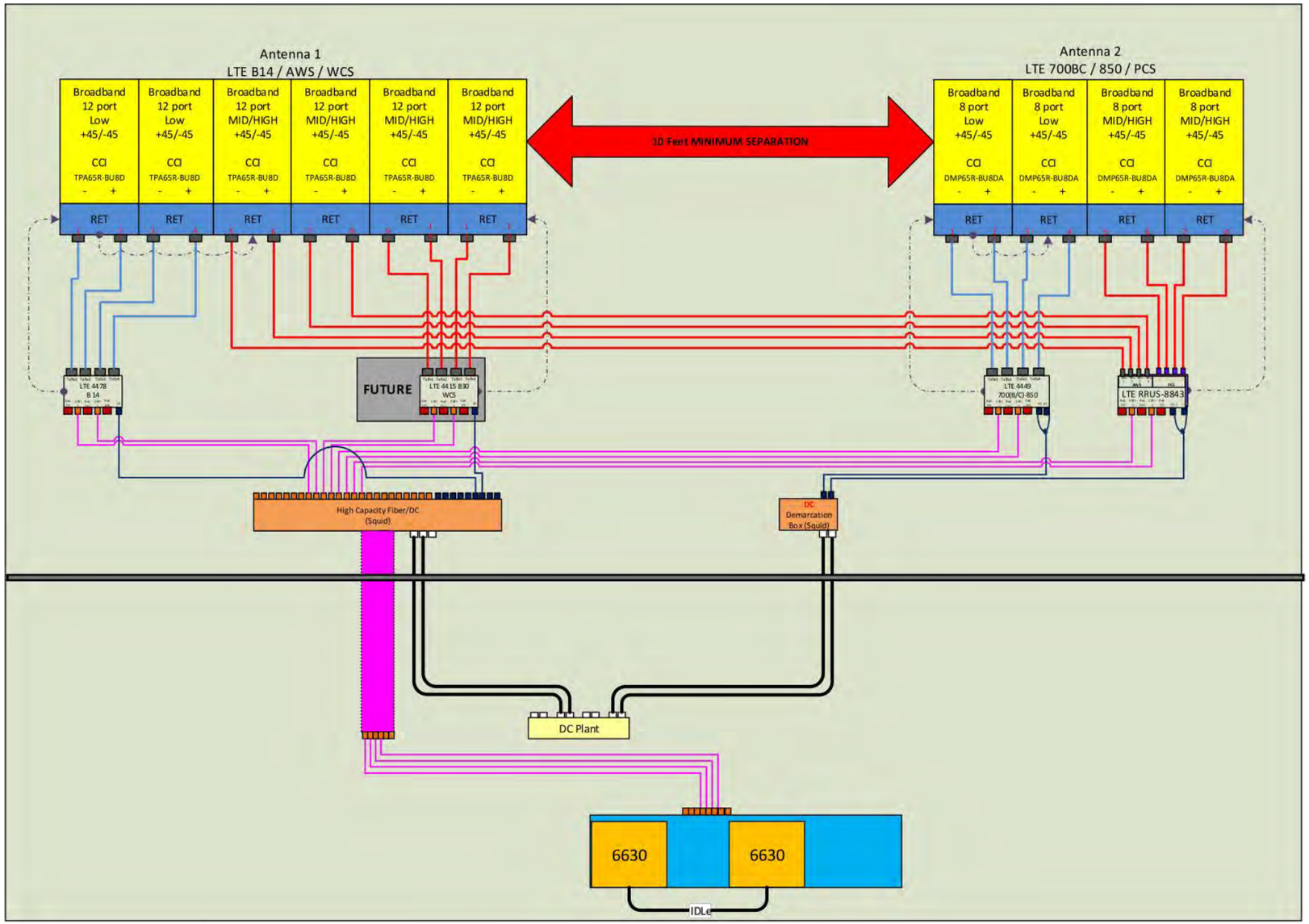
NO.	DATE	REVISIONS	BY	CHK	APP'D
0	11/12/20	ISSUED FOR REVIEW	CC	ES	DPH

SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

AT&T

GROUNDING DETAILS
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1315	G-1	0



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

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

NOTE:

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

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SCALE: AS SHOWN | DESIGNED BY: JC | DRAWN BY: ES

AT&T

RF PLUMBING DIAGRAM
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1315	RF–1	0

ATTACHMENT 2

Structural Analysis Report

Structure	**:** 150 Foot Monopole
Insite Site Name	**:** Salisbury
Insite Site Number	**:** CT114
Proposed Carrier	**:** New Cingular Wireless
Carrier Site Name	**:** CT1315 Salisbury FA 12676421
Carrier Site Number	**:** S4073
Site Location	**:** 250 Canaan Rd. Salisbury, CT 06068 (Litchfield County) 42.00622306, -73.39144917
Date	**:** November 24, 2020
Max Member Stress Level	**:** 64.7% (Tower) 70.8% (Foundation)
Result	**: PASS**

Prepared by:
Bennett & Pless, Inc.
B&P Job No.: 20.03.013.036

STATE OF CONNECTICUT
THOMAS F IRELAND
No. 30273
LICENSED PROFESSIONAL ENGINEER

11/24/20

bennett&pless
Experience Structural Expertise

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Disclaimer of Warranties **3**

Calculations ..... **Attached**

Collocation Application ..... **Attached**

Introduction

We have completed our structural analysis of the proposed equipment installation on the foregoing tower to determine its ability to support the new loads proposed by New Cingular. The objective of the analysis was to determine if the tower meets the current structural codes and standards with the proposed equipment installation.

Existing Structural Information

The following documents for the existing structure were made available for our structural analysis.

Tower Information	Sabre Tower Drawings, Job No. 130280, dated November 3, 2015
Foundation Information	Sabre Tower Drawings, Job No. 130280, dated November 3, 2015
Geotechnical Information	Terracon Geotechnical report Job No. J2155143 dated June 4, 2015.
Existing Equipment Information	Salisbury Volunteer Ambulance Service, Inc Colocation Application, dated January 8, 2018
Tower Reinforcement Information	Tower has not previously been reinforced.

Final Proposed Equipment Loading for New Cingular Wireless

The following proposed loading was obtained from the New Cingular colocation application, dated 8/12/20:

Antenna/Equipment					Coax	
Mount	RAD	Qty.	Antenna	Type	Qty.	Size/Type
146	-	**3**	**Sitepro RMV12-396****	**Mount**	**4** **2** **1**	**1" Power** **2" Conduit** **1/2" Fiber**
	146	**3**	**CCI TPA65R-BU8DA-K**	**Panel**		
		3	**CCI DMP65R-BU8DA-K**	**Panel**		
		6	**CCI HPA-65R-BUU-H8***	**Panel**		
		3	**Ericsson 4478 B14**	**RRU**		
		3	**Ericsson 4449 B5/B12**	**RRU**		
		3	**Ericsson 8843 B2/B66A**	**RRU**		
		3	**Ericsson 4415 B30**	**RRU**		
		9	**Ericsson RRUS12***	**RRU**		
		6	**Ericsson RRUSA2***	**RRU**		
		1	**Raycap DC9-48-60-24-8C-EV**	**Surge**		
		1	**Raycap DC6-48-60-18-8C-EV**	**Surge**		

Note: All equipment shown above is proposed.
Note: (*) Denotes New Cingular Reserve Loading
Note: (**) Proposed Mount will be cut down to 8' from 12'.

Design Criteria

The tower was analyzed using tnxTower (Version 8.0.7.4) tower analysis software using the following design criteria.

State/County	Connecticut / Litchfield
State Building Code	Connecticut State Building Code (IBC 2015)
TIA/EIA Standard Code	TIA-222-H
Basic Wind Speed	113 MPH (V_{ult})
Basic Wind Speed w/ Ice	40 MPH/ 1.00" Ice
Steel Grade	65 ksi pole, A615-75 anchor bolts, 50 ksi Base Plate
Exposure Category	C
Topographic Category (height)	1 (0.0 ft)
Importance Factor	1.0
Base Elevation	930 ft.

Analysis Results

Based on the foregoing information, our structural analysis determined that the existing tower and foundation **are structurally capable of supporting the proposed equipment loads without modification.** A seismic analysis was performed on this tower and is not controlling.

Assumptions

The below assumptions are true, complete and accurate.

1. The existing tower has been maintained to manufacturer's specifications and is in good condition.
2. Foundations are considered to have been properly designed for the original design loads.
3. All member connections are considered to have been designed to meet the load carrying capacity of the connected member.
4. Antenna mount loads have been estimated based on generally accepted industry standards.
5. The mounts for the proposed antennas have been analyzed and designed by others.
6. See additional assumptions contained in the report attached.
7. Tower is within acceptable engineering tolerance at 105%.
8. Foundations are within acceptable engineering tolerance at 110%.

Conclusions

The existing tower and foundation described above **have sufficient capacity** to support the proposed loading based on the governing Building Code.

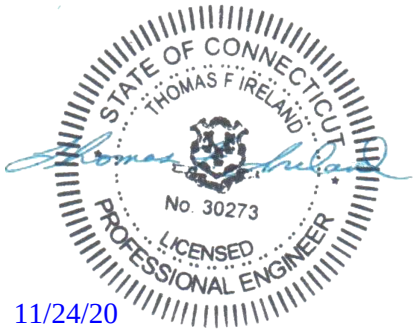
We appreciate the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance please call us anytime at 605-540-4620.

Sincerely,

Analysis by:

Cory Blake, P.E.
Project Engineer

Reviewed by:



11/24/20

Thomas F. Ireland, P.E.
Principal

Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but not necessarily limited, to:

- Information supplied by the client regarding the structure itself, the antenna and transmission line loading on the structure and it components, or relevant information.

- Information from drawings in possession of Bennett & Pless, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to Bennett & Pless and used in the performance of our engineering services is correct and complete. In the absence of information contrary, we consider that all structures were constructed in accordance with the drawings and specifications and are in a un-corroded condition and have not deteriorated; and we, therefore consider that their capacity has not significantly changed from the original design condition.

All services will be performed to the codes and standards specified by the client, and we do not imply to meet any other code and standard requirements unless explicitly agreed to in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes and standards, the client shall specify the exact requirements. In the absence of information to the contrary, all work will be performed in accordance with the revision of ANSI/TIA/EIA-222 requested.

All services are performed, results obtained and recommendations made in accordance with the generally accepted engineering principles and practices. Bennett & Pless is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

Disclaimer of Warranties

Bennett & Pless Inc. makes no warranties, expressed or implied, in connection with this report, and disclaims any liability arising from the ability of the existing structure to support the design loads for which it was originally designed. Bennett & Pless Inc. will not be responsible whatsoever for or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of Bennett & Pless pursuant to this report will be limited to the total fee received for preparation of this report.

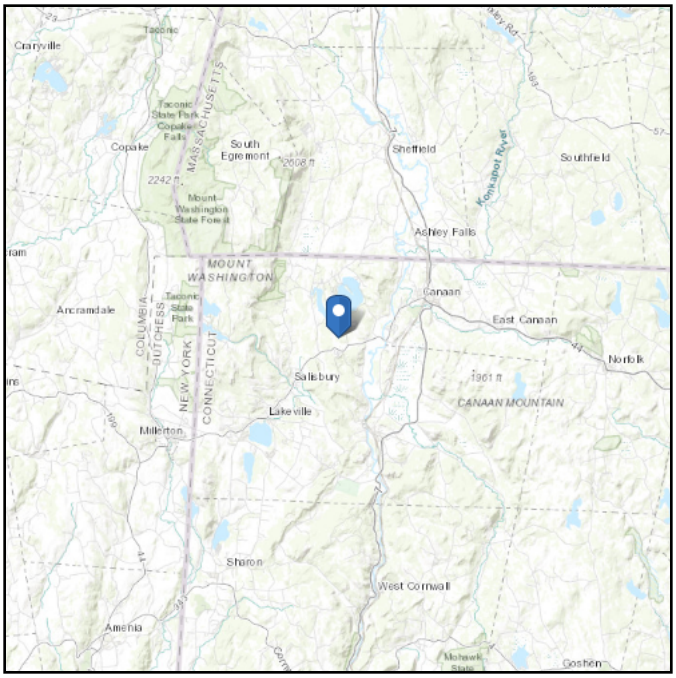
Attachment 1:
Calculations

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Elevation: 896.17 ft (NAVD 88)
Latitude: 42.006
Longitude: -73.391



Wind

Results:

Wind Speed:	113 Vmph
10-year MRI	75 Vmph
25-year MRI	83 Vmph
50-year MRI	89 Vmph
100-year MRI	94 Vmph
Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4
Date Accessed:	Tue Nov 24 2020

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

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

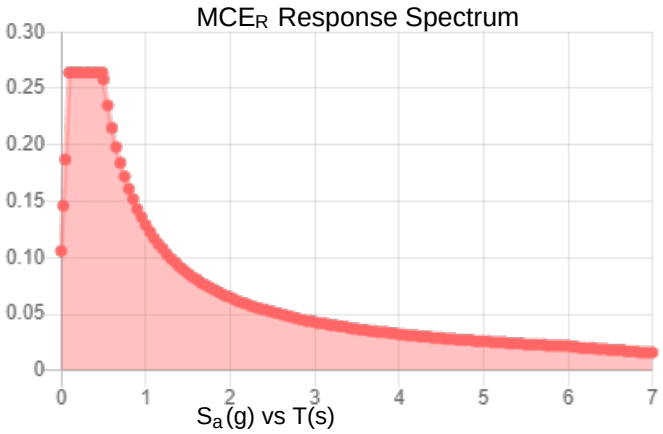
Seismic

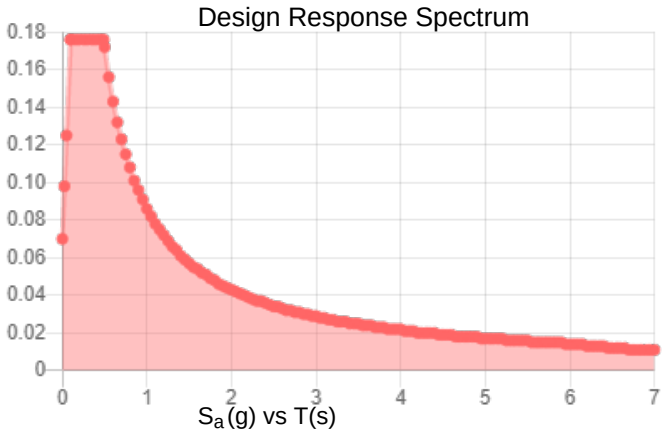
Site Soil Class: D - Default (see Section 11.4.3)

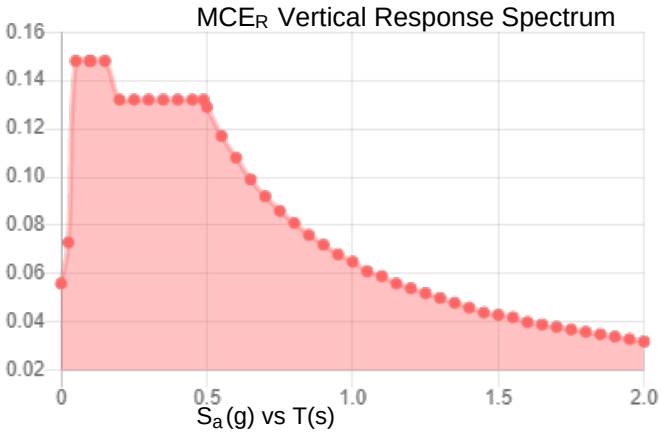
Results:

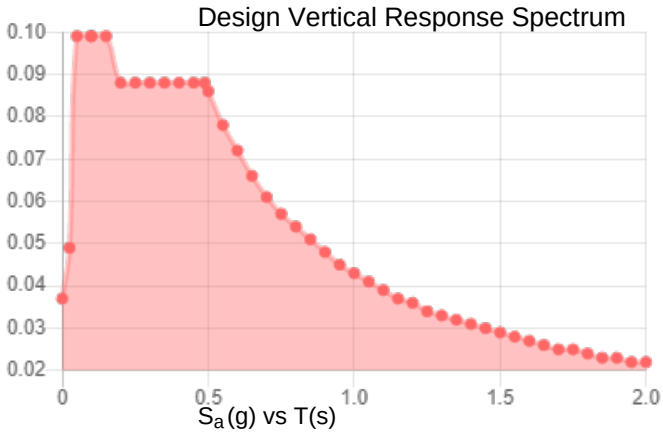
S_S :	0.165	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.086
F_v :	2.4	PGA_M :	0.137
S_{MS} :	0.264	F_{PGA} :	1.6
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.176	C_v :	0.7

Seismic Design Category B









Data Accessed: Tue Nov 24 2020

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

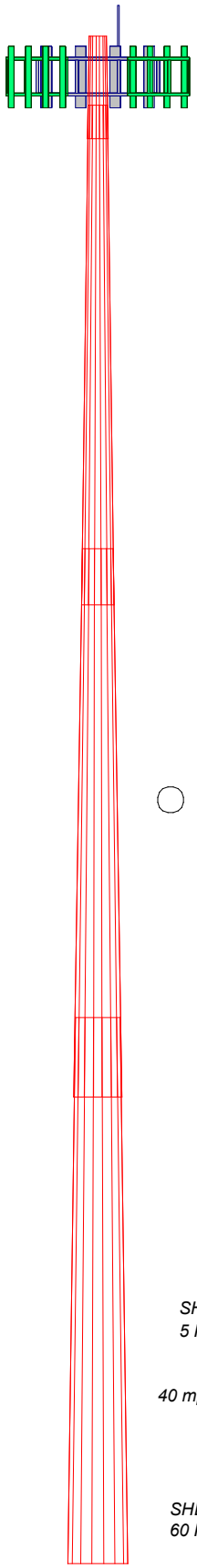
Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	40 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Tue Nov 24 2020

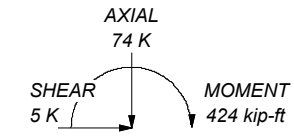
Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

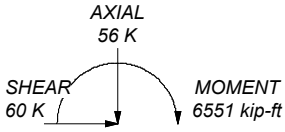
Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	10.00	16	0.2500	3.25	19.5700	23.1300		0.6
2	48.75	16	0.3750	5.50	21.4730	38.8600		5.9
3	53.50	16	0.5000	7.75	36.1484	55.2200		13.1
4	53.25	16	0.5000		51.4573	70.4500		17.5
							A572-65	



ALL REACTIONS ARE FACTORED



TORQUE 0 kip-ft
40 mph WIND - 1.0000 in ICE



TORQUE 0 kip-ft
REACTIONS - 113 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(40) 6' Branch	150 - 141	Ericsson 8843 B2/B66A (ATT)	146
(3) 6' Branch	150	Ericsson 8843 B2/B66A (ATT)	146
5' x 2" Omni	150	Ericsson 4415 B30 (ATT)	146
2' Stand off	150	Ericsson 4415 B30 (ATT)	146
CCI TPA65R-BU8DA-K (ATT)	146	Ericsson 4415 B30 (ATT)	146
CCI TPA65R-BU8DA-K (ATT)	146	(3) RRUS12 (ATT)	146
CCI TPA65R-BU8DA-K (ATT)	146	(3) RRUS 12 (ATT)	146
CCI DMP65R-BU8DA-K (ATT)	146	(3) RRUS 12 (ATT)	146
CCI DMP65R-BU8DA-K (ATT)	146	(2) RRUS A2 B2 (ATT)	146
CCI DMP65R-BU8DA-K (ATT)	146	(2) RRUS A2 B2 (ATT)	146
(2) CCI HPA-65R-BUU-H8 (ATT)	146	(2) RRUS A2 B2 (ATT)	146
(2) CCI HPA-65R-BUU-H8 (ATT)	146	Raycap DC9-48-60-24-8C-EV (ATT)	146
(2) CCI HPA-65R-BUU-H8 (ATT)	146	RayCap DC6-48-60-18-8F (ATT)	146
Ericsson 4478 (ATT)	146	Sector Mount [SM 601-3] (ATT)	146
Ericsson 4478 (ATT)	146	(32) 8' Branch	140 - 125
Ericsson 4478 (ATT)	146	(32) 8' Branch	140 - 125
Ericsson 4449 B5/B12 (ATT)	146	(33) 10' Branch	125 - 105
Ericsson 4449 B5/B12 (ATT)	146	(32) 12' Branch	105 - 95
Ericsson 4449 B5/B12 (ATT)	146	(21) 12' Branch	94 - 80
Ericsson 8843 B2/B66A (ATT)	146		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 113 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. Weld together tower sections have flange connections.
9. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
10. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
11. Welds are fabricated with ER-70S-6 electrodes.
12. TOWER RATING: 64.7%

Bennett and Pless
47 Perimeter Center E, Ste 500
Atlanta, GA 30346
Phone: (678) 990-8700
FAX:

Job: **CT114 Salisbury**			
Project: **Monopole Analysis**			
Client: Insite Towers, LLC	Drawn by: CBlake	App'd:	
Code: TIA-222-H	Date: 11/24/20	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in Litchfield County, Connecticut.
Tower base elevation above sea level: 931.00 ft.
Basic wind speed of 113 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 40 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
CCISeismic Note: Seismic loads generated by CCISeismic 3.2.3.
CCISeismic Note: Seismic calculations are in accordance with TIA-222-H.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice		Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-H Bracing Resist. Exemption
√	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-H Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
√	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component		Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	150.00-140.00	10.00	3.25	16	19.5700	23.1300	0.2500	1.0000	A572-65 (65 ksi)
L2	140.00-94.50	48.75	5.50	16	21.4730	38.8600	0.3750	1.5000	A572-65 (65 ksi)
L3	94.50-46.50	53.50	7.75	16	36.1484	55.2200	0.5000	2.0000	A572-65 (65 ksi)
L4	46.50-1.00	53.25		16	51.4573	70.4500	0.5000	2.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	19.9044	15.4077	726.5515	6.8779	9.9807	72.7956	1464.1039	7.6183	3.3969	13.588
	23.5342	18.2468	1206.7384	8.1453	11.7963	102.2980	2431.7482	9.0221	4.1054	16.421
L2	23.0021	25.2385	1419.2542	7.5109	10.9512	129.5977	2859.9976	12.4791	3.5269	9.405
	39.5478	46.0377	8614.1174	13.7007	19.8186	434.6481	17358.6630	22.7632	6.9869	18.632
L3	38.7577	56.8592	9128.4031	12.6908	18.4357	495.1487	18395.0214	28.1139	6.1985	12.397
	56.2039	87.2784	33015.1532	19.4803	28.1622	1172.3215	66530.1960	43.1546	9.9938	19.988
L4	55.1858	81.2769	26662.0796	18.1408	26.2432	1015.9608	53727.8556	40.1871	9.2450	18.49
	71.7322	111.5703	68966.5033	24.9022	35.9295	1919.4952	138977.243 4	55.1656	13.0246	26.049

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 150.00-140.00				1	1	1			
L2 140.00-94.50				1	1	1			
L3 94.50-46.50				1	1	1			
L4 46.50-1.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF5-50A (7/8" FOAM) (Utility Company) ***	C	No	No	Inside Pole	150.00 - 6.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.33 0.33 0.33

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
1" O.D (AT&T)	C	No	No	Inside Pole	146.00 - 6.00	4	No Ice	0.00	0.00
							1/2" Ice	0.00	0.00
							1" Ice	0.00	0.00
2" Innerduct Conduit (AT&T)	C	No	No	Inside Pole	146.00 - 6.00	2	No Ice	0.00	0.34
							1/2" Ice	0.00	0.34
							1" Ice	0.00	0.34
1/2" FIBER CABLE (AT&T)	C	No	No	Inside Pole	146.00 - 6.00	1	No Ice	0.00	0.08
							1/2" Ice	0.00	0.08
							1" Ice	0.00	0.08

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L2	140.00-94.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.05
L3	94.50-46.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.05
L4	46.50-1.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.04

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.00-140.00	A	1.159	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.01
L2	140.00-94.50	A	1.133	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.05
L3	94.50-46.50	A	1.077	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.05
L4	46.50-1.00	A	0.968	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.04

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	150.00-140.00	0.0000	0.0000	0.0000	0.0000
L2	140.00-94.50	0.0000	0.0000	0.0000	0.0000
L3	94.50-46.50	0.0000	0.0000	0.0000	0.0000
L4	46.50-1.00	0.0000	0.0000	0.0000	0.0000

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

User Defined Loads - Seismic

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
CCISeismic Tower Section 1 - 1	145.00	0.00	0.0000	0.02	0.00	0.00	0.05
CCISeismic Tower Section 2 - 1	138.88	0.00	0.0000	0.03	0.00	0.00	0.06
CCISeismic Tower Section 2 - 2	129.50	0.00	0.0000	0.04	0.00	0.00	0.07
CCISeismic Tower Section 2 - 3	119.50	0.00	0.0000	0.04	0.00	0.00	0.07
CCISeismic Tower Section 2 - 4	109.50	0.00	0.0000	0.05	0.00	0.00	0.07
CCISeismic Tower Section 2 - 5	99.50	0.00	0.0000	0.05	0.00	0.00	0.06
CCISeismic Tower Section 3 - 1	98.25	0.00	0.0000	0.02	0.00	0.00	0.03
CCISeismic Tower Section 3 - 2	91.50	0.00	0.0000	0.07	0.00	0.00	0.07
CCISeismic Tower Section 3 - 3	81.50	0.00	0.0000	0.08	0.00	0.00	0.06
CCISeismic Tower Section 3 - 4	71.50	0.00	0.0000	0.09	0.00	0.00	0.05
CCISeismic Tower Section 3 - 5	61.50	0.00	0.0000	0.09	0.00	0.00	0.04
CCISeismic Tower Section 3 - 6	51.50	0.00	0.0000	0.10	0.00	0.00	0.03
CCISeismic Tower Section 4 - 1	52.63	0.00	0.0000	0.03	0.00	0.00	0.01
CCISeismic Tower Section 4 - 2	46.00	0.00	0.0000	0.10	0.00	0.00	0.03
CCISeismic Tower Section 4 - 3	36.00	0.00	0.0000	0.11	0.00	0.00	0.02
CCISeismic Tower Section 4 - 4	26.00	0.00	0.0000	0.12	0.00	0.00	0.01
CCISeismic Tower Section 4 - 5	16.00	0.00	0.0000	0.12	0.00	0.00	0.00
CCISeismic Tower Section 4 - 6	6.00	0.00	0.0000	0.13	0.00	0.00	0.00
CCISeismic (21) b&p database 12' Branch	87.00	0.00	0.0000	0.03	0.00	0.00	0.02
CCISeismic (32) b&p database 12' Branch	100.00	0.00	0.0000	0.04	0.00	0.00	0.05
CCISeismic (33) b&p database 10' Branch	115.00	0.00	0.0000	0.03	0.00	0.00	0.05
CCISeismic (32) b&p database 8' Branch	132.50	0.00	0.0000	0.03	0.00	0.00	0.06
CCISeismic (32) b&p database 8' Branch	132.50	0.00	0.0000	0.03	0.00	0.00	0.06
CCISeismic (40) b&p database 6' Branch	145.50	0.00	0.0000	0.03	0.00	0.00	0.07
CCISeismic (3) b&p database 6' Branch	150.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic b&p database 5' x 2" Omni	150.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database 2' Stand off	150.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database CCI TPA65R-BU8DA-K	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic b&p database CCI TPA65R-BU8DA-K	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic b&p database CCI	146.00	0.00	0.0000	0.00	0.00	0.00	0.01

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
TPA65R-BU8DA-K CCISeismic b&p database CCI DMP65R-BU8DA-K	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic b&p database CCI DMP65R-BU8DA-K	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic b&p database CCI DMP65R-BU8DA-K	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic (2) b&p database CCI HPA-65R-BUU-H8	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic (2) b&p database CCI HPA-65R-BUU-H8	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic (2) b&p database CCI HPA-65R-BUU-H8	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic b&p database Ericsson 4478	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic b&p database Ericsson 4478	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic b&p database Ericsson 4478	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic b&p database Ericsson 4449 B5/B12	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic b&p database Ericsson 4449 B5/B12	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic b&p database Ericsson 4449 B5/B12	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic b&p database Ericsson 8843 B2/B66A	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic b&p database Ericsson 8843 B2/B66A	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic b&p database Ericsson 8843 B2/B66A	146.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic b&p database Ericsson 4415 B30	146.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database Ericsson 4415 B30	146.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database Ericsson 4415 B30	146.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) RRUS12	146.00	0.00	0.0000	0.01	0.00	0.00	0.02
CCISeismic (3) RRUS 12	146.00	0.00	0.0000	0.01	0.00	0.00	0.02
CCISeismic (3) RRUS 12	146.00	0.00	0.0000	0.01	0.00	0.00	0.02
CCISeismic (2) b&p database RRUS A2 B2	146.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) b&p database RRUS A2 B2	146.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) b&p database RRUS A2 B2	146.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database Raycap DC9-48-60-24-8C-EV	146.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database RayCap DC6-48-60-18-8F	146.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database Sector Mount [SM 601-3]	146.00	0.00	0.0000	0.05	0.00	0.00	0.12
CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (139ft to149ft)	145.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (129ft to139ft)	135.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5	125.00	0.00	0.0000	0.00	0.00	0.00	0.00

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
to 149 (119ft to129ft)							
CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (109ft to119ft)	115.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (99ft to109ft)	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (89ft to99ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (79ft to89ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (69ft to79ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (59ft to69ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (49ft to59ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (39ft to49ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (29ft to39ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (19ft to29ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (9ft to19ft)	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (5ft to9ft)	8.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145 (139ft to145ft)	143.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145 (129ft to139ft)	135.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145 (119ft to129ft)	125.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145 (109ft to119ft)	115.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145 (99ft to109ft)	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145 (89ft to99ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145 (79ft to89ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145	75.00	0.00	0.0000	0.00	0.00	0.00	0.00

Description	Elevation ft	Offset From Centroid ft	Azimuth Angle °	E_v K	E_{hx} K	E_{hz} K	E_h K
(69ft to79ft)							
CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145 (59ft to69ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145 (49ft to59ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145 (39ft to49ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145 (29ft to39ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145 (19ft to29ft)	25.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145 (9ft to19ft)	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145 (5ft to9ft)	8.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database 1/2" FIBER CABLE From 5 to 145 (139ft to145ft)	143.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database 1/2" FIBER CABLE From 5 to 145 (129ft to139ft)	135.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database 1/2" FIBER CABLE From 5 to 145 (119ft to129ft)	125.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database 1/2" FIBER CABLE From 5 to 145 (109ft to119ft)	115.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database 1/2" FIBER CABLE From 5 to 145 (99ft to109ft)	105.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database 1/2" FIBER CABLE From 5 to 145 (89ft to99ft)	95.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database 1/2" FIBER CABLE From 5 to 145 (79ft to89ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database 1/2" FIBER CABLE From 5 to 145 (69ft to79ft)	75.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database 1/2" FIBER CABLE From 5 to 145 (59ft to69ft)	65.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database 1/2" FIBER CABLE From 5 to 145 (49ft to59ft)	55.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database 1/2" FIBER CABLE From 5 to 145 (39ft to49ft)	45.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database 1/2" FIBER CABLE From 5 to 145 (29ft to39ft)	35.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic b&p database 1/2" FIBER CABLE From 5 to 145	25.00	0.00	0.0000	0.00	0.00	0.00	0.00

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
(19ft to29ft)							
CCISeismic b&p database 1/2" FIBER CABLE From 5 to 145	15.00	0.00	0.0000	0.00	0.00	0.00	0.00
(9ft to19ft)							
CCISeismic b&p database 1/2" FIBER CABLE From 5 to 145	8.00	0.00	0.0000	0.00	0.00	0.00	0.00
(5ft to9ft)							

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(21) 12' Branch	C	None			0.0000	94.00 - 80.00	No Ice	6.50	6.50	0.04
							1/2" Ice	0.00	0.00	0.05
							1" Ice	0.00	0.00	0.06
(32) 12' Branch	C	None			0.0000	105.00 - 95.00	No Ice	6.50	6.50	0.04
							1/2" Ice	0.00	0.00	0.05
							1" Ice	0.00	0.00	0.06
(33) 10' Branch	C	None			0.0000	125.00 - 105.00	No Ice	5.10	5.10	0.03
							1/2" Ice	0.00	0.00	0.04
							1" Ice	0.00	0.00	0.05
(32) 8' Branch	C	None			0.0000	140.00 - 125.00	No Ice	3.60	3.60	0.03
							1/2" Ice	0.00	0.00	0.03
							1" Ice	0.00	0.00	0.04
(32) 8' Branch	C	None			0.0000	140.00 - 125.00	No Ice	3.60	3.60	0.03
							1/2" Ice	0.00	0.00	0.03
							1" Ice	0.00	0.00	0.04
(40) 6' Branch	C	None			0.0000	150.00 - 141.00	No Ice	2.50	2.50	0.02
							1/2" Ice	0.00	0.00	0.03
							1" Ice	0.00	0.00	0.03
(3) 6' Branch	C	None			0.0000	150.00	No Ice	2.50	2.50	0.02
							1/2" Ice	0.00	0.00	0.03
							1" Ice	0.00	0.00	0.03
******										
5' x 2" Omni	A	From Leg	2.00		0.0000	150.00	No Ice	1.00	1.00	0.02
			0.00				1/2" Ice	1.39	1.39	0.02
			0.00				1" Ice	1.70	1.70	0.03
2' Stand off	A	From Leg	0.00		0.0000	150.00	No Ice	2.96	2.11	0.01
			0.00				1/2" Ice	4.10	2.93	0.02
			0.00				1" Ice	5.24	3.75	0.02
****										
CCI TPA65R-BU8DA-K (ATT)	A	From Leg	4.00		0.0000	146.00	No Ice	18.09	8.20	0.08
			0.00				1/2" Ice	18.72	8.79	0.18
			0.00				1" Ice	19.36	9.40	0.29
CCI TPA65R-BU8DA-K (ATT)	B	From Leg	4.00		0.0000	146.00	No Ice	18.09	8.20	0.08
			0.00				1/2" Ice	18.72	8.79	0.18
			0.00				1" Ice	19.36	9.40	0.29
CCI TPA65R-BU8DA-K (ATT)	C	From Leg	4.00		0.0000	146.00	No Ice	18.09	8.20	0.08
			0.00				1/2" Ice	18.72	8.79	0.18
			0.00				1" Ice	19.36	9.40	0.29

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
CCI DMP65R-BU8DA-K	A	From Leg	4.00	0.0000	146.00	No Ice	17.87	8.12	0.10
(ATT)			0.00			1/2" Ice	18.50	8.72	0.19
			0.00			1" Ice	19.14	9.32	0.30
CCI DMP65R-BU8DA-K	B	From Leg	4.00	0.0000	146.00	No Ice	17.87	8.12	0.10
(ATT)			0.00			1/2" Ice	18.50	8.72	0.19
			0.00			1" Ice	19.14	9.32	0.30
CCI DMP65R-BU8DA-K	C	From Leg	4.00	0.0000	146.00	No Ice	17.87	8.12	0.10
(ATT)			0.00			1/2" Ice	18.50	8.72	0.19
			0.00			1" Ice	19.14	9.32	0.30
(2) CCI HPA-65R-BUU-H8	A	From Leg	4.00	0.0000	146.00	No Ice	12.98	7.52	0.07
(ATT)			0.00			1/2" Ice	13.56	8.09	0.14
			0.00			1" Ice	14.15	8.67	0.22
(2) CCI HPA-65R-BUU-H8	B	From Leg	4.00	0.0000	146.00	No Ice	12.98	7.52	0.07
(ATT)			0.00			1/2" Ice	13.56	8.09	0.14
			0.00			1" Ice	14.15	8.67	0.22
(2) CCI HPA-65R-BUU-H8	C	From Leg	4.00	0.0000	146.00	No Ice	12.98	7.52	0.07
(ATT)			0.00			1/2" Ice	13.56	8.09	0.14
			0.00			1" Ice	14.15	8.67	0.22
Ericsson 4478	A	From Leg	4.00	0.0000	146.00	No Ice	1.84	1.06	0.06
(ATT)			0.00			1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09
Ericsson 4478	B	From Leg	4.00	0.0000	146.00	No Ice	1.84	1.06	0.06
(ATT)			0.00			1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09
Ericsson 4478	C	From Leg	4.00	0.0000	146.00	No Ice	1.84	1.06	0.06
(ATT)			0.00			1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09
Ericsson 4449 B5/B12	A	From Leg	4.00	0.0000	146.00	No Ice	1.97	1.41	0.07
(ATT)			0.00			1/2" Ice	2.15	1.57	0.09
			0.00			1" Ice	2.33	1.73	0.11
Ericsson 4449 B5/B12	B	From Leg	4.00	0.0000	146.00	No Ice	1.97	1.41	0.07
(ATT)			0.00			1/2" Ice	2.15	1.57	0.09
			0.00			1" Ice	2.33	1.73	0.11
Ericsson 4449 B5/B12	C	From Leg	4.00	0.0000	146.00	No Ice	1.97	1.41	0.07
(ATT)			0.00			1/2" Ice	2.15	1.57	0.09
			0.00			1" Ice	2.33	1.73	0.11
Ericsson 8843 B2/B66A	A	From Leg	4.00	0.0000	146.00	No Ice	1.64	1.36	0.07
(ATT)			0.00			1/2" Ice	1.80	1.51	0.09
			0.00			1" Ice	1.97	1.66	0.11
Ericsson 8843 B2/B66A	B	From Leg	4.00	0.0000	146.00	No Ice	1.64	1.36	0.07
(ATT)			0.00			1/2" Ice	1.80	1.51	0.09
			0.00			1" Ice	1.97	1.66	0.11
Ericsson 8843 B2/B66A	C	From Leg	4.00	0.0000	146.00	No Ice	1.64	1.36	0.07
(ATT)			0.00			1/2" Ice	1.80	1.51	0.09
			0.00			1" Ice	1.97	1.66	0.11
Ericsson 4415 B30	A	From Leg	4.00	0.0000	146.00	No Ice	1.64	0.64	0.04
(ATT)			0.00			1/2" Ice	1.80	0.75	0.06
			0.00			1" Ice	1.97	0.87	0.07
Ericsson 4415 B30	B	From Leg	4.00	0.0000	146.00	No Ice	1.64	0.64	0.04
(ATT)			0.00			1/2" Ice	1.80	0.75	0.06
			0.00			1" Ice	1.97	0.87	0.07
Ericsson 4415 B30	C	From Leg	4.00	0.0000	146.00	No Ice	1.64	0.64	0.04
(ATT)			0.00			1/2" Ice	1.80	0.75	0.06
			0.00			1" Ice	1.97	0.87	0.07
(3) RRUS12	A	From Leg	4.00	0.0000	146.00	No Ice	2.48	0.87	0.06
(ATT)			0.00			1/2" Ice	2.67	0.99	0.08
			0.00			1" Ice	2.88	1.13	0.10

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert ft ft ft*	*Azimuth Adjustment °*	*Placement ft*		*C_AA_A Front ft^2*	*C_AA_A Side ft^2*	*Weight K*
(3) RRUS 12	B	From Leg	4.00	0.0000	146.00	No Ice	2.48	0.87	0.06
(ATT)			0.00			1/2" Ice	2.67	0.99	0.08
			0.00			1" Ice	2.88	1.13	0.10
(3) RRUS 12	C	From Leg	4.00	0.0000	146.00	No Ice	2.48	0.87	0.06
(ATT)			0.00			1/2" Ice	2.67	0.99	0.08
			0.00			1" Ice	2.88	1.13	0.10
(2) RRUS A2 B2	C	From Leg	4.00	0.0000	146.00	No Ice	2.06	0.49	0.02
(ATT)			0.00			1/2" Ice	2.24	0.60	0.03
			0.00			1" Ice	2.43	0.72	0.05
(2) RRUS A2 B2	C	From Leg	4.00	0.0000	146.00	No Ice	2.06	0.49	0.02
(ATT)			0.00			1/2" Ice	2.24	0.60	0.03
			0.00			1" Ice	2.43	0.72	0.05
(2) RRUS A2 B2	C	From Leg	4.00	0.0000	146.00	No Ice	2.06	0.49	0.02
(ATT)			0.00			1/2" Ice	2.24	0.60	0.03
			0.00			1" Ice	2.43	0.72	0.05
Raycap	A	From Leg	4.00	0.0000	146.00	No Ice	2.74	1.99	0.03
DC9-48-60-24-8C-EV			0.00			1/2" Ice	2.96	2.20	0.05
(ATT)			0.00			1" Ice	3.20	2.42	0.07
RayCap DC6-48-60-18-8F	B	From Leg	4.00	0.0000	146.00	No Ice	0.79	0.79	0.02
(ATT)			0.00			1/2" Ice	1.27	1.27	0.04
			0.00			1" Ice	1.45	1.45	0.05
Sector Mount [SM 601-3]	C	None		0.0000	146.00	No Ice	30.27	30.27	1.42
(ATT)						1/2" Ice	41.24	41.24	1.99
						1" Ice	52.21	52.21	2.56

Load Combinations

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

Comb. No.	Description
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service
51	1.2 Dead+1.0 Ev+1.0 Eh 0 deg
52	0.9 Dead-1.0 Ev+1.0 Eh 0 deg
53	1.2 Dead+1.0 Ev+1.0 Eh 30 deg
54	0.9 Dead-1.0 Ev+1.0 Eh 30 deg
55	1.2 Dead+1.0 Ev+1.0 Eh 60 deg
56	0.9 Dead-1.0 Ev+1.0 Eh 60 deg
57	1.2 Dead+1.0 Ev+1.0 Eh 90 deg
58	0.9 Dead-1.0 Ev+1.0 Eh 90 deg
59	1.2 Dead+1.0 Ev+1.0 Eh 120 deg
60	0.9 Dead-1.0 Ev+1.0 Eh 120 deg
61	1.2 Dead+1.0 Ev+1.0 Eh 150 deg
62	0.9 Dead-1.0 Ev+1.0 Eh 150 deg
63	1.2 Dead+1.0 Ev+1.0 Eh 180 deg
64	0.9 Dead-1.0 Ev+1.0 Eh 180 deg
65	1.2 Dead+1.0 Ev+1.0 Eh 210 deg
66	0.9 Dead-1.0 Ev+1.0 Eh 210 deg
67	1.2 Dead+1.0 Ev+1.0 Eh 240 deg
68	0.9 Dead-1.0 Ev+1.0 Eh 240 deg
69	1.2 Dead+1.0 Ev+1.0 Eh 270 deg
70	0.9 Dead-1.0 Ev+1.0 Eh 270 deg
71	1.2 Dead+1.0 Ev+1.0 Eh 300 deg
72	0.9 Dead-1.0 Ev+1.0 Eh 300 deg
73	1.2 Dead+1.0 Ev+1.0 Eh 330 deg
74	0.9 Dead-1.0 Ev+1.0 Eh 330 deg

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 140	Pole	Max Tension	20	0.00	-0.00	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-11.67	1.25	-0.45
			Max. Mx	20	-4.86	40.02	-0.58
			Max. My	14	-4.87	0.90	-39.52
			Max. Vy	20	-12.78	40.02	-0.58
			Max. Vx	14	12.68	0.90	-39.52
			Max. Torque	17			-0.39
L2	140 - 94.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.41	1.25	-0.46
			Max. Mx	20	-14.07	1172.84	-7.11
			Max. My	14	-14.08	7.45	-1167.73
			Max. Vy	20	-39.62	1172.84	-7.11
			Max. Vx	14	39.52	7.45	-1167.73
			Max. Torque	17			-0.39
L3	94.5 - 46.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.11	1.25	-0.46
			Max. Mx	20	-30.44	3470.90	-14.03
			Max. My	14	-30.44	14.40	-3460.87
			Max. Vy	20	-54.60	3470.90	-14.03
			Max. Vx	14	54.49	14.40	-3460.87
			Max. Torque	17			-0.39
L4	46.5 - 1	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.37	1.25	-0.45
			Max. Mx	20	-55.63	6535.77	-22.01
			Max. My	14	-55.63	22.38	-6520.07
			Max. Vy	20	-60.27	6535.77	-22.01
			Max. Vx	14	60.16	22.38	-6520.07
			Max. Torque	17			-0.39

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	74.37	-0.00	0.00
	Max. H_x	21	41.74	60.24	-0.15
	Max. H_z	3	41.74	-0.15	60.13
	Max. M_x	2	6519.76	-0.15	60.13
	Max. M_z	8	6534.72	-60.24	0.15
	Max. Torsion	5	0.39	-30.25	52.15
	Min. Vert	68	40.12	1.20	-0.69
	Min. H_x	9	41.74	-60.24	0.15
	Min. H_z	15	41.74	0.15	-60.13
	Min. M_x	14	-6520.07	0.15	-60.13
	Min. M_z	20	-6535.77	60.24	-0.15
	Min. Torsion	17	-0.39	30.25	-52.15

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	46.38	-0.00	0.00	0.13	0.42	0.00
1.2 Dead+1.0 Wind 0 deg - No	55.66	0.15	-60.13	-6519.76	-21.33	-0.31

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Ice						
0.9 Dead+1.0 Wind 0 deg - No Ice	41.74	0.15	-60.13	-6492.34	-21.35	-0.31
1.2 Dead+1.0 Wind 30 deg - No Ice	55.66	30.25	-52.15	-5657.38	-3286.16	-0.39
0.9 Dead+1.0 Wind 30 deg - No Ice	41.74	30.25	-52.15	-5633.51	-3272.38	-0.39
1.2 Dead+1.0 Wind 60 deg - No Ice	55.66	52.24	-30.19	-3278.83	-5670.31	-0.36
0.9 Dead+1.0 Wind 60 deg - No Ice	41.74	52.24	-30.19	-3265.00	-5646.46	-0.36
1.2 Dead+1.0 Wind 90 deg - No Ice	55.66	60.24	-0.15	-21.70	-6534.72	-0.24
0.9 Dead+1.0 Wind 90 deg - No Ice	41.74	60.24	-0.15	-21.62	-6507.32	-0.24
1.2 Dead+1.0 Wind 120 deg - No Ice	55.66	52.09	29.94	3241.33	-5648.52	-0.05
0.9 Dead+1.0 Wind 120 deg - No Ice	41.74	52.09	29.94	3227.62	-5624.79	-0.05
1.2 Dead+1.0 Wind 150 deg - No Ice	55.66	29.99	52.00	5635.91	-3248.34	0.15
0.9 Dead+1.0 Wind 150 deg - No Ice	41.74	29.99	52.00	5612.07	-3234.76	0.15
1.2 Dead+1.0 Wind 180 deg - No Ice	55.66	-0.15	60.13	6520.07	22.38	0.31
0.9 Dead+1.0 Wind 180 deg - No Ice	41.74	-0.15	60.13	6492.57	22.13	0.31
1.2 Dead+1.0 Wind 210 deg - No Ice	55.66	-30.25	52.15	5657.69	3287.20	0.39
0.9 Dead+1.0 Wind 210 deg - No Ice	41.74	-30.25	52.15	5633.74	3273.16	0.39
1.2 Dead+1.0 Wind 240 deg - No Ice	55.66	-52.24	30.19	3279.15	5671.35	0.36
0.9 Dead+1.0 Wind 240 deg - No Ice	41.74	-52.24	30.19	3265.24	5647.24	0.36
1.2 Dead+1.0 Wind 270 deg - No Ice	55.66	-60.24	0.15	22.01	6535.77	0.24
0.9 Dead+1.0 Wind 270 deg - No Ice	41.74	-60.24	0.15	21.86	6508.09	0.24
1.2 Dead+1.0 Wind 300 deg - No Ice	55.66	-52.09	-29.94	-3241.02	5649.56	0.05
0.9 Dead+1.0 Wind 300 deg - No Ice	41.74	-52.09	-29.94	-3227.38	5625.56	0.05
1.2 Dead+1.0 Wind 330 deg - No Ice	55.66	-29.99	-52.00	-5635.59	3249.39	-0.15
0.9 Dead+1.0 Wind 330 deg - No Ice	41.74	-29.99	-52.00	-5611.83	3235.54	-0.15
1.2 Dead+1.0 Ice+1.0 Temp	74.37	0.00	-0.00	0.45	1.25	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	74.37	0.02	-4.56	-418.26	-1.73	-0.05
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	74.37	2.30	-3.96	-363.69	-211.50	-0.07
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	74.37	3.97	-2.30	-211.54	-364.24	-0.06
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	74.37	4.57	-0.02	-2.58	-419.02	-0.04
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	74.37	3.95	2.26	207.21	-361.18	-0.01
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	74.37	2.27	3.94	361.60	-206.20	0.03
1.2 Dead+1.0 Wind 180	74.37	-0.02	4.56	419.23	4.38	0.06

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	74.37	-2.30	3.96	364.66	214.14	0.07
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	74.37	-3.97	2.30	212.50	366.88	0.06
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	74.37	-4.57	0.02	3.54	421.67	0.04
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	74.37	-3.95	-2.26	-206.24	363.82	0.01
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	74.37	-2.27	-3.94	-360.63	208.85	-0.03
Dead+Wind 0 deg - Service	46.38	0.04	-15.17	-1640.95	-5.06	-0.08
Dead+Wind 30 deg - Service	46.38	7.63	-13.15	-1423.83	-826.80	-0.10
Dead+Wind 60 deg - Service	46.38	13.18	-7.62	-825.17	-1426.87	-0.09
Dead+Wind 90 deg - Service	46.38	15.19	-0.04	-5.37	-1644.51	-0.06
Dead+Wind 120 deg - Service	46.38	13.14	7.55	815.91	-1421.38	-0.01
Dead+Wind 150 deg - Service	46.38	7.56	13.12	1418.60	-817.27	0.04
Dead+Wind 180 deg - Service	46.38	-0.04	15.17	1641.21	5.93	0.08
Dead+Wind 210 deg - Service	46.38	-7.63	13.15	1424.09	827.67	0.10
Dead+Wind 240 deg - Service	46.38	-13.18	7.62	825.43	1427.75	0.09
Dead+Wind 270 deg - Service	46.38	-15.19	0.04	5.63	1645.38	0.06
Dead+Wind 300 deg - Service	46.38	-13.14	-7.55	-815.65	1422.25	0.01
Dead+Wind 330 deg - Service	46.38	-7.56	-13.12	-1418.33	818.14	-0.04
1.2 Dead+1.0 Ev+1.0 Eh 0 deg	57.29	0.00	-1.39	-159.96	0.53	0.00
0.9 Dead-1.0 Ev+1.0 Eh 0 deg	40.12	0.00	-1.39	-159.02	0.39	0.00
1.2 Dead+1.0 Ev+1.0 Eh 30 deg	57.29	0.69	-1.20	-138.51	-79.53	0.00
0.9 Dead-1.0 Ev+1.0 Eh 30 deg	40.12	0.69	-1.20	-137.70	-79.18	0.00
1.2 Dead+1.0 Ev+1.0 Eh 60 deg	57.29	1.20	-0.69	-79.90	-138.14	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 60 deg	40.12	1.20	-0.69	-79.45	-137.43	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 90 deg	57.29	1.39	-0.00	0.16	-159.59	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 90 deg	40.12	1.39	-0.00	0.12	-158.75	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 120 deg	57.29	1.20	0.69	80.21	-138.14	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 120 deg	40.12	1.20	0.69	79.69	-137.43	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 150 deg	57.29	0.69	1.20	138.82	-79.53	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 150 deg	40.12	0.69	1.20	137.94	-79.18	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 180 deg	57.29	0.00	1.39	160.27	0.53	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 180 deg	40.12	0.00	1.39	159.26	0.39	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 210 deg	57.29	-0.69	1.20	138.82	80.58	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 210 deg	40.12	-0.69	1.20	137.94	79.96	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 240 deg	57.29	-1.20	0.69	80.21	139.19	0.00
0.9 Dead-1.0 Ev+1.0 Eh 240 deg	40.12	-1.20	0.69	79.69	138.21	0.00
1.2 Dead+1.0 Ev+1.0 Eh 270 deg	57.29	-1.39	-0.00	0.16	160.64	0.00
0.9 Dead-1.0 Ev+1.0 Eh 270 deg	40.12	-1.39	-0.00	0.12	159.53	0.00
1.2 Dead+1.0 Ev+1.0 Eh 300 deg	57.29	-1.20	-0.69	-79.90	139.19	0.00
0.9 Dead-1.0 Ev+1.0 Eh 300 deg	40.12	-1.20	-0.69	-79.45	138.21	0.00
1.2 Dead+1.0 Ev+1.0 Eh 330 deg	57.29	-0.69	-1.20	-138.51	80.58	0.00

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead-1.0 Ev+1.0 Eh 330 deg	40.12	-0.69	-1.20	-137.70	79.96	0.00

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-46.38	0.00	0.00	46.38	0.00	0.000%
2	0.15	-55.66	-60.13	-0.15	55.66	60.13	0.003%
3	0.15	-41.74	-60.13	-0.15	41.74	60.13	0.002%
4	30.25	-55.66	-52.15	-30.25	55.66	52.15	0.000%
5	30.25	-41.74	-52.15	-30.25	41.74	52.15	0.000%
6	52.24	-55.66	-30.19	-52.24	55.66	30.19	0.000%
7	52.24	-41.74	-30.19	-52.24	41.74	30.19	0.000%
8	60.24	-55.66	-0.15	-60.24	55.66	0.15	0.003%
9	60.24	-41.74	-0.15	-60.24	41.74	0.15	0.002%
10	52.09	-55.66	29.94	-52.09	55.66	-29.94	0.000%
11	52.09	-41.74	29.94	-52.09	41.74	-29.94	0.000%
12	29.99	-55.66	52.00	-29.99	55.66	-52.00	0.000%
13	29.99	-41.74	52.00	-29.99	41.74	-52.00	0.000%
14	-0.15	-55.66	60.13	0.15	55.66	-60.13	0.003%
15	-0.15	-41.74	60.13	0.15	41.74	-60.13	0.002%
16	-30.25	-55.66	52.15	30.25	55.66	-52.15	0.000%
17	-30.25	-41.74	52.15	30.25	41.74	-52.15	0.000%
18	-52.24	-55.66	30.19	52.24	55.66	-30.19	0.000%
19	-52.24	-41.74	30.19	52.24	41.74	-30.19	0.000%
20	-60.24	-55.66	0.15	60.24	55.66	-0.15	0.003%
21	-60.24	-41.74	0.15	60.24	41.74	-0.15	0.002%
22	-52.09	-55.66	-29.94	52.09	55.66	29.94	0.000%
23	-52.09	-41.74	-29.94	52.09	41.74	29.94	0.000%
24	-29.99	-55.66	-52.00	29.99	55.66	52.00	0.000%
25	-29.99	-41.74	-52.00	29.99	41.74	52.00	0.000%
26	0.00	-74.37	0.00	-0.00	74.37	0.00	0.000%
27	0.02	-74.37	-4.56	-0.02	74.37	4.56	0.001%
28	2.30	-74.37	-3.96	-2.30	74.37	3.96	0.001%
29	3.97	-74.37	-2.30	-3.97	74.37	2.30	0.001%
30	4.57	-74.37	-0.02	-4.57	74.37	0.02	0.001%
31	3.95	-74.37	2.26	-3.95	74.37	-2.26	0.001%
32	2.27	-74.37	3.94	-2.27	74.37	-3.94	0.001%
33	-0.02	-74.37	4.56	0.02	74.37	-4.56	0.001%
34	-2.30	-74.37	3.96	2.30	74.37	-3.96	0.001%
35	-3.97	-74.37	2.30	3.97	74.37	-2.30	0.001%
36	-4.57	-74.37	0.02	4.57	74.37	-0.02	0.001%
37	-3.95	-74.37	-2.26	3.95	74.37	2.26	0.001%
38	-2.27	-74.37	-3.94	2.27	74.37	3.94	0.001%
39	0.04	-46.38	-15.17	-0.04	46.38	15.17	0.004%
40	7.63	-46.38	-13.16	-7.63	46.38	13.15	0.004%
41	13.18	-46.38	-7.62	-13.18	46.38	7.62	0.004%
42	15.20	-46.38	-0.04	-15.19	46.38	0.04	0.004%
43	13.14	-46.38	7.55	-13.14	46.38	-7.55	0.004%
44	7.57	-46.38	13.12	-7.56	46.38	-13.12	0.004%
45	-0.04	-46.38	15.17	0.04	46.38	-15.17	0.004%
46	-7.63	-46.38	13.16	7.63	46.38	-13.15	0.004%
47	-13.18	-46.38	7.62	13.18	46.38	-7.62	0.004%
48	-15.20	-46.38	0.04	15.19	46.38	-0.04	0.004%
49	-13.14	-46.38	-7.55	13.14	46.38	7.55	0.004%
50	-7.57	-46.38	-13.12	7.56	46.38	13.12	0.004%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
51	0.00	-57.29	-1.39	-0.00	57.29	1.39	0.002%
52	0.00	-40.12	-1.39	-0.00	40.12	1.39	0.005%
53	0.69	-57.29	-1.20	-0.69	57.29	1.20	0.002%
54	0.69	-40.12	-1.20	-0.69	40.12	1.20	0.005%
55	1.20	-57.29	-0.69	-1.20	57.29	0.69	0.002%
56	1.20	-40.12	-0.69	-1.20	40.12	0.69	0.005%
57	1.39	-57.29	0.00	-1.39	57.29	0.00	0.002%
58	1.39	-40.12	0.00	-1.39	40.12	0.00	0.005%
59	1.20	-57.29	0.69	-1.20	57.29	-0.69	0.002%
60	1.20	-40.12	0.69	-1.20	40.12	-0.69	0.005%
61	0.69	-57.29	1.20	-0.69	57.29	-1.20	0.002%
62	0.69	-40.12	1.20	-0.69	40.12	-1.20	0.005%
63	0.00	-57.29	1.39	-0.00	57.29	-1.39	0.002%
64	0.00	-40.12	1.39	-0.00	40.12	-1.39	0.005%
65	-0.69	-57.29	1.20	0.69	57.29	-1.20	0.002%
66	-0.69	-40.12	1.20	0.69	40.12	-1.20	0.005%
67	-1.20	-57.29	0.69	1.20	57.29	-0.69	0.002%
68	-1.20	-40.12	0.69	1.20	40.12	-0.69	0.005%
69	-1.39	-57.29	0.00	1.39	57.29	0.00	0.002%
70	-1.39	-40.12	0.00	1.39	40.12	0.00	0.005%
71	-1.20	-57.29	-0.69	1.20	57.29	0.69	0.002%
72	-1.20	-40.12	-0.69	1.20	40.12	0.69	0.005%
73	-0.69	-57.29	-1.20	0.69	57.29	1.20	0.002%
74	-0.69	-40.12	-1.20	0.69	40.12	1.20	0.005%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	10	0.00003666	0.00009404
3	Yes	10	0.00000001	0.00007566
4	Yes	12	0.00000001	0.00011460
5	Yes	12	0.00000001	0.00008485
6	Yes	12	0.00000001	0.00011604
7	Yes	12	0.00000001	0.00008593
8	Yes	10	0.00003665	0.00009701
9	Yes	10	0.00000001	0.00007784
10	Yes	12	0.00000001	0.00011273
11	Yes	12	0.00000001	0.00008355
12	Yes	12	0.00000001	0.00011247
13	Yes	12	0.00000001	0.00008334
14	Yes	10	0.00003666	0.00009775
15	Yes	10	0.00000001	0.00007845
16	Yes	12	0.00000001	0.00011611
17	Yes	12	0.00000001	0.00008597
18	Yes	12	0.00000001	0.00011493
19	Yes	12	0.00000001	0.00008505
20	Yes	10	0.00003665	0.00009421
21	Yes	10	0.00000001	0.00007577
22	Yes	12	0.00000001	0.00011305
23	Yes	12	0.00000001	0.00008375
24	Yes	12	0.00000001	0.00011306
25	Yes	12	0.00000001	0.00008379
26	Yes	6	0.00000001	0.00000001
27	Yes	9	0.00000001	0.00013442

28	Yes	9	0.00000001	0.00013650
29	Yes	9	0.00000001	0.00013656
30	Yes	9	0.00000001	0.00013427
31	Yes	9	0.00000001	0.00013472
32	Yes	9	0.00000001	0.00013500
33	Yes	9	0.00000001	0.00013536
34	Yes	9	0.00000001	0.00013869
35	Yes	9	0.00000001	0.00013926
36	Yes	9	0.00000001	0.00013679
37	Yes	9	0.00000001	0.00013646
38	Yes	9	0.00000001	0.00013554
39	Yes	9	0.00000001	0.00014188
40	Yes	9	0.00000001	0.00011861
41	Yes	9	0.00000001	0.00012251
42	Yes	9	0.00000001	0.00014220
43	Yes	9	0.00000001	0.00011954
44	Yes	9	0.00000001	0.00011892
45	Yes	9	0.00000001	0.00014199
46	Yes	9	0.00000001	0.00012253
47	Yes	9	0.00000001	0.00011938
48	Yes	9	0.00000001	0.00014237
49	Yes	9	0.00000001	0.00012042
50	Yes	9	0.00000001	0.00012028
51	Yes	8	0.00000001	0.00004635
52	Yes	7	0.00000001	0.00010862
53	Yes	8	0.00000001	0.00004604
54	Yes	7	0.00000001	0.00010815
55	Yes	8	0.00000001	0.00004593
56	Yes	7	0.00000001	0.00010796
57	Yes	8	0.00000001	0.00004605
58	Yes	7	0.00000001	0.00010811
59	Yes	8	0.00000001	0.00004605
60	Yes	7	0.00000001	0.00010818
61	Yes	8	0.00000001	0.00004625
62	Yes	7	0.00000001	0.00010853
63	Yes	8	0.00000001	0.00004659
64	Yes	7	0.00000001	0.00010906
65	Yes	8	0.00000001	0.00004666
66	Yes	7	0.00000001	0.00010925
67	Yes	8	0.00000001	0.00004677
68	Yes	7	0.00000001	0.00010943
69	Yes	8	0.00000001	0.00004688
70	Yes	7	0.00000001	0.00010956
71	Yes	8	0.00000001	0.00004665
72	Yes	7	0.00000001	0.00010922
73	Yes	8	0.00000001	0.00004645
74	Yes	7	0.00000001	0.00010887

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 140	18.821	47	1.1668	0.0007
L2	143.25 - 94.5	17.174	47	1.1611	0.0006
L3	100 - 46.5	8.001	47	0.7968	0.0001
L4	54.25 - 1	2.230	47	0.3912	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	(40) 6' Branch	47	18.821	1.1668	0.0008	16827
146.00	CCI TPA65R-BU8DA-K	47	17.842	1.1649	0.0007	16827
145.50	(40) 6' Branch	47	17.720	1.1644	0.0007	16827
145.00	CCISeismic Tower Section 1 - 1	47	17.598	1.1638	0.0006	16827
143.00	CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145 (139ft to145ft)	47	17.113	1.1606	0.0006	13048
141.00	(40) 6' Branch	47	16.632	1.1554	0.0006	11517
140.00	(32) 8' Branch	47	16.393	1.1521	0.0005	11106
138.88	CCISeismic Tower Section 2 - 1	47	16.126	1.1479	0.0005	10773
135.00	(32) 8' Branch	47	15.215	1.1292	0.0005	9880
132.50	CCISeismic (32) b&p database 8' Branch	47	14.637	1.1140	0.0004	9379
130.00	(32) 8' Branch	47	14.067	1.0966	0.0004	8926
129.50	CCISeismic Tower Section 2 - 2	47	13.954	1.0929	0.0004	8841
125.00	(33) 10' Branch	47	12.953	1.0562	0.0003	8140
120.00	(33) 10' Branch	47	11.876	1.0097	0.0003	7482
119.50	CCISeismic Tower Section 2 - 3	47	11.770	1.0048	0.0003	7422
115.00	(33) 10' Branch	47	10.839	0.9588	0.0002	6922
110.00	(33) 10' Branch	47	9.845	0.9052	0.0002	6439
109.50	CCISeismic Tower Section 2 - 4	47	9.748	0.8997	0.0002	6395
105.00	(32) 12' Branch	47	8.898	0.8506	0.0002	6020
100.00	(32) 12' Branch	47	8.001	0.7968	0.0001	5713
99.50	CCISeismic Tower Section 2 - 5	47	7.914	0.7915	0.0001	5698
98.25	CCISeismic Tower Section 3 - 1	47	7.699	0.7785	0.0001	5675
95.00	(32) 12' Branch	47	7.156	0.7452	0.0001	5670
94.00	(21) 12' Branch	47	6.993	0.7352	0.0001	5673
91.50	CCISeismic Tower Section 3 - 2	47	6.596	0.7104	0.0001	5682
87.00	(21) 12' Branch	47	5.914	0.6673	0.0001	5698
85.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (79ft to89ft)	47	5.625	0.6486	0.0001	5705
81.50	CCISeismic Tower Section 3 - 3	47	5.139	0.6167	0.0001	5718
80.00	(21) 12' Branch	47	4.938	0.6032	0.0001	5723
75.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (69ft to79ft)	47	4.304	0.5595	0.0001	5741
71.50	CCISeismic Tower Section 3 - 4	47	3.892	0.5298	0.0001	5754
65.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (59ft to69ft)	47	3.193	0.4762	0.0001	5778
61.50	CCISeismic Tower Section 3 - 5	47	2.853	0.4481	0.0000	5791
55.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (49ft to59ft)	47	2.289	0.3970	0.0000	5869
52.63	CCISeismic Tower Section 4 - 1	47	2.105	0.3786	0.0000	6030
51.50	CCISeismic Tower Section 3 - 6	47	2.022	0.3699	0.0000	6143
46.00	CCISeismic Tower Section 4 - 2	47	1.649	0.3279	0.0000	6884
45.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (39ft to49ft)	47	1.587	0.3204	0.0000	7040
36.00	CCISeismic Tower Section 4 - 3	47	1.102	0.2530	0.0000	8851
35.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (29ft to39ft)	47	1.055	0.2456	0.0000	9111
26.00	CCISeismic Tower Section 4 - 4	47	0.690	0.1797	0.0000	12391

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
25.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (19ft to29ft)	47	0.655	0.1724	0.0000	12907
16.00	CCISeismic Tower Section 4 - 5	47	0.375	0.1074	0.0000	20651
15.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (9ft to19ft)	47	0.348	0.1002	0.0000	22126
8.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (5ft to9ft)	47	0.167	0.0500	0.0000	44253
6.00	CCISeismic Tower Section 4 - 6	47	0.119	0.0357	0.0000	61954

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 140	74.681	18	4.6314	0.0030
L2	143.25 - 94.5	68.153	18	4.6093	0.0023
L3	100 - 46.5	31.772	18	3.1655	0.0005
L4	54.25 - 1	8.857	18	1.5540	0.0002

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	(40) 6' Branch	18	74.681	4.6314	0.0032	4338
146.00	CCI TPA65R-BU8DA-K	18	70.801	4.6241	0.0028	4338
145.50	(40) 6' Branch	18	70.318	4.6222	0.0028	4338
145.00	CCISeismic Tower Section 1 - 1	18	69.836	4.6200	0.0027	4338
143.00	CCISeismic (2) b&p database 2" Innerduct Conduit From 5 to 145 (139ft to145ft)	18	67.914	4.6073	0.0026	3362
141.00	(40) 6' Branch	18	66.007	4.5870	0.0024	2965
140.00	(32) 8' Branch	18	65.060	4.5741	0.0024	2857
138.88	CCISeismic Tower Section 2 - 1	18	64.000	4.5574	0.0023	2770
135.00	(32) 8' Branch	18	60.390	4.4835	0.0020	2535
132.50	CCISeismic (32) b&p database 8' Branch	18	58.099	4.4234	0.0018	2404
130.00	(32) 8' Branch	18	55.840	4.3547	0.0017	2285
129.50	CCISeismic Tower Section 2 - 2	18	55.392	4.3400	0.0017	2263
125.00	(33) 10' Branch	18	51.422	4.1947	0.0014	2080
120.00	(33) 10' Branch	18	47.149	4.0103	0.0012	1908
119.50	CCISeismic Tower Section 2 - 3	18	46.730	3.9907	0.0012	1893
115.00	(33) 10' Branch	18	43.035	3.8083	0.0010	1763
110.00	(33) 10' Branch	18	39.092	3.5956	0.0008	1638
109.50	CCISeismic Tower Section 2 - 4	18	38.708	3.5740	0.0008	1626
105.00	(32) 12' Branch	18	35.334	3.3791	0.0007	1529
100.00	(32) 12' Branch	18	31.772	3.1655	0.0006	1449
99.50	CCISeismic Tower Section 2 - 5	18	31.428	3.1446	0.0006	1445
98.25	CCISeismic Tower Section 3 - 1	18	30.575	3.0927	0.0005	1439

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
95.00	(32) 12' Branch	18	28.419	2.9606	0.0005	1437
94.00	(21) 12' Branch	18	27.774	2.9207	0.0005	1437
91.50	CCISeismic Tower Section 3 - 2	18	26.197	2.8226	0.0004	1439
87.00	(21) 12' Branch	18	23.490	2.6512	0.0004	1442
85.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (79ft to89ft)	18	22.341	2.5771	0.0004	1443
81.50	CCISeismic Tower Section 3 - 3	18	20.411	2.4501	0.0003	1446
80.00	(21) 12' Branch	18	19.615	2.3968	0.0003	1447
75.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (69ft to79ft)	18	17.098	2.2231	0.0003	1450
71.50	CCISeismic Tower Section 3 - 4	18	15.458	2.1049	0.0003	1453
65.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (59ft to69ft)	18	12.683	1.8920	0.0002	1458
61.50	CCISeismic Tower Section 3 - 5	18	11.333	1.7803	0.0002	1460
55.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (49ft to59ft)	18	9.093	1.5772	0.0002	1479
52.63	CCISeismic Tower Section 4 - 1	18	8.361	1.5041	0.0002	1519
51.50	CCISeismic Tower Section 3 - 6	18	8.030	1.4696	0.0002	1548
46.00	CCISeismic Tower Section 4 - 2	18	6.550	1.3028	0.0001	1734
45.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (39ft to49ft)	18	6.304	1.2727	0.0001	1773
36.00	CCISeismic Tower Section 4 - 3	18	4.376	1.0052	0.0001	2229
35.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (29ft to39ft)	18	4.191	0.9758	0.0001	2294
26.00	CCISeismic Tower Section 4 - 4	18	2.741	0.7137	0.0001	3120
25.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (19ft to29ft)	18	2.601	0.6848	0.0001	3250
16.00	CCISeismic Tower Section 4 - 5	18	1.491	0.4265	0.0000	5200
15.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (9ft to19ft)	18	1.381	0.3980	0.0000	5571
8.00	CCISeismic b&p database LDF5-50A (7/8" FOAM) From 5 to 149 (5ft to9ft)	18	0.664	0.1987	0.0000	11142
6.00	CCISeismic Tower Section 4 - 6	18	0.471	0.1419	0.0000	15599

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	150 - 140 (1)	TP23.13x19.57x0.25	10.00	149.00	240.1	16.6853	-11.21	65.41	0.171
L2	140 - 94.5 (2)	TP38.86x21.473x0.375	48.75	149.00	137.5	43.6911	-14.06	521.96	0.027
L3	94.5 - 46.5 (3)	TP55.22x36.1484x0.5	53.50	149.00	96.7	82.8719	-30.43	1994.47	0.015
L4	46.5 - 1 (4)	TP70.45x51.4573x0.5	53.25	149.00	71.8	111.570	-55.63	3998.41	0.014

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
						0			

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	150 - 140 (1)	TP23.13x19.57x0.25	1.52	529.05	0.003	0.00	529.05	0.000
L2	140 - 94.5 (2)	TP38.86x21.473x0.375	1177.72	2392.82	0.492	0.00	2392.82	0.000
L3	94.5 - 46.5 (3)	TP55.22x36.1484x0.5	3480.63	6344.37	0.549	0.00	6344.37	0.000
L4	46.5 - 1 (4)	TP70.45x51.4573x0.5	6551.11	10361.08	0.632	0.00	10361.08	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	150 - 140 (1)	TP23.13x19.57x0.25	1.43	298.43	0.005	0.03	537.22	0.000
L2	140 - 94.5 (2)	TP38.86x21.473x0.375	39.73	766.78	0.052	0.36	2455.72	0.000
L3	94.5 - 46.5 (3)	TP55.22x36.1484x0.5	54.70	1454.40	0.038	0.36	6626.24	0.000
L4	46.5 - 1 (4)	TP70.45x51.4573x0.5	60.37	1958.06	0.031	0.36	12010.17	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 140 (1)	0.171	0.003	0.000	0.005	0.000	0.174 ✔	1.000	4.8.2 ✔
L2	140 - 94.5 (2)	0.027	0.492	0.000	0.052	0.000	0.522 ✔	1.000	4.8.2 ✔
L3	94.5 - 46.5 (3)	0.015	0.549	0.000	0.038	0.000	0.565 ✔	1.000	4.8.2 ✔
L4	46.5 - 1 (4)	0.014	0.632	0.000	0.031	0.000	0.647 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	150 - 140	Pole	TP23.13x19.57x0.25	1	-11.21	65.41	17.4	Pass
L2	140 - 94.5	Pole	TP38.86x21.473x0.375	2	-14.06	521.96	52.2	Pass
L3	94.5 - 46.5	Pole	TP55.22x36.1484x0.5	3	-30.43	1994.47	56.5	Pass
L4	46.5 - 1	Pole	TP70.45x51.4573x0.5	4	-55.63	3998.41	64.7	Pass
							Summary	
						Pole (L4)	64.7	Pass
						RATING =	**64.7**	**Pass**

Base/Flange Plate	Plate Type	***Baseplate***	
	Pole Diameter	70.45	in
	Pole Thickness	0.5	in
	Plate Diameter	83.5	in
	Plate Thickness	2.5	in
	Plate Fy	50	ksi
	Weld Length	0.3125	in
	ϕ_s Resistance	555.78	k-in
	Applied	295.35	k-in
Stiffeners	#	***0***	

Bolts	#	***28***	
	Bolt Circle	77.75	in
	(R)adial / (S)quare	R	
●	Diameter	2.25	in
	Hole Diameter	2.64	in
	Type	A615-75	
	Fy	75	ksi
	Fu	100	ksi
	ϕ_s Resistance	259.82	k
	Applied	146.39	k
Reinforcement ●	#	***0***	
Extra Bolts O	#	***0***	

Code Rev.	***H***	**Date**	11/24/2020
		Engineer	CB
		Site #	CT114
Moment	6551.0 k-ft	**Carrier**	AT&T
Axial	56.0 k		
Shear	60.0 k		

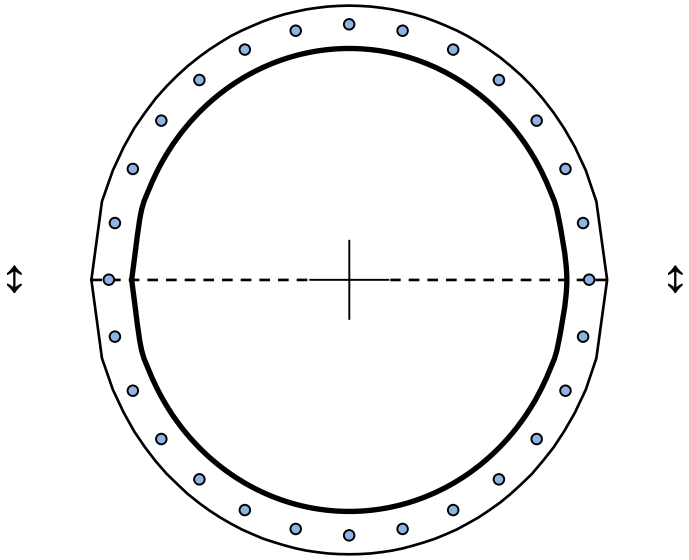


Plate Stress Ratio:

0.53 (Pass)

Bolt Stress Ratio:

0.56 (Pass)

PROJECT No:	20.03.013.036		**ENG:**	CB
PROJECT NAME:	CT114 Salisbury		**CHK:**	TI
	Insite			
DATE:	November 24, 2020		**PAGE:**	of

TIA-222-G

SINGLE GLOBAL FOUNDATION WITH PIER(s) CHECKS

Global Tower Reactions		*Factored Loads*		*Calculated Reactions*		**Factored Resistance**				
◉TIA-H	Maximum Moment	**6,551.00**	k-ft	Disturbing Moment	**6,911.0**	**11,666.2**	k-ft	**pass**	**59.2%**	
○EIA-F	Axial Load	**56.00**	kips	Maximum Bearing	**2.08**	**9.00**	kips	**pass**	**23.1%**	
	Shear Load	**60.00**	kips	Punching Shear	**882.0**	**1,245.4**	kips	**pass**	**70.8%**	**[GOVERNS]**
	Pier Rebar Required	(minimum only, use PCACOL for total quantity)			**(29) #10 @ 9.75 in **MINIMUM****					
	Rebar Required	(checked rebar for 6" min to 24" max spacing)			**(33) #10 @ 12.19 in**				**SF=2.82**	

Soil Parameters	**Soils Report**		**Pier Geometry**			**Pad Geometry**	
ϕ	**30.0** °		Qty of Piers	**1**		Width (Bm)	**33.00** ft
Water Level	**15.00** ft	(4.57 m)	Width (Bp)	**8.00**	ft	Width (Wm)	**33.00** ft
Soil Dry Density (γ_{dry})	**0.110** kcf	(17.3 kN/m^3)	Width (Wp)	**8.00**	ft	Height (Hm)	**1.75** ft
Soil Sub Density (γ_{sub})	**0.050** kcf	(7.85 kN/m^3)	Height (Hp)	**4.25**	ft	Depth (D)	**6.00** ft
All. Bearing Pressure	**6.000** ksf	(287.3 kPa)	Pier Type	**R**	(**R**nd or **S**q)		
Bearing Safety Factor	**2**		Conc γ_{dry}	**0.150**	kcf (23.6)		

Volume of Concrete/Soil	**Concrete (79.4cuyd)** 1 Pier	Mat	Soil	
Depth (above)	**0.50**	--	--	ft
Depth (dry)	4.25	1.75	4.25	ft
Depth (submerged)	0.00	0.00	0.00	ft
Volume (above)	25.09	--	--	ft^3
Volume (dry)	213.25	1,905.75	5137.39	ft^3
Volume (submerged)	0.00	0	0.00	ft^3
Total	**238**	**1906**	**5137**	ft^3

Calculations	*Factored*	*Allowable*	
Axial Download	56.0	--	kips
Weight of Concrete (not factored)	321.6	--	kips(79.4yds)
Weight of Soil (not factored)	565.1	--	kips
Total Download (P)	**942.7**	--	kips
Resisting Moment Arm	**16.5**	--	ft
Moment Resistance	**11666.2**	--	k-ft
	(x 0.75, cl 9.4.1)		

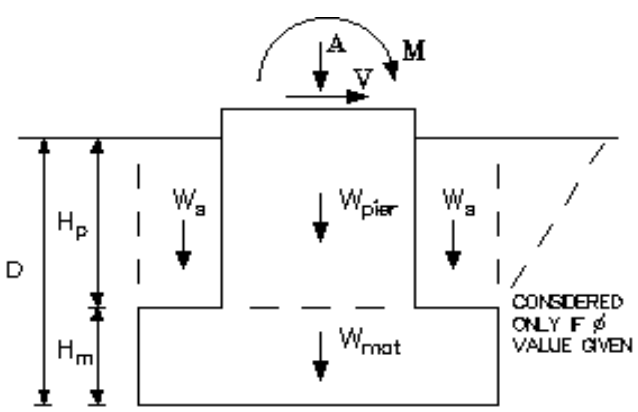
Concrete Reinforcing Design				
f'c	**4.500**	ksi	(31.0 MPa)	
fy	60.00	ksi	(413.7 MPa)	
	MAT		**PIER**	
Steel (Metric/ASTM)	**ASTM**		**ASTM**	
Bar size	**10**	#	**10**	#
	1.270	in²	1.270	in²

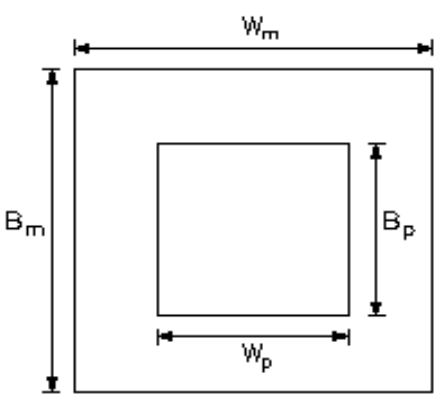
Slab Reinforcing					
½ Disturbing Moment	3455.50	kip-ft			
Ku	323.19		**Wgt of Rebar**		
ρ	0.00629		**18,539**	**lbs**	
4/3•ρ if $\rho < \rho$ min	0.00838				
ρ min ≥ 0.0018	0.00180				
As	42.32	in²			
Number of bars	**33**	bars on	**12.19**	in c/c	

Note: The 1/2 moment is derived from a bending moment diagram that considered the uplift and download components at the exact face width of the tower.

Bearing Capacity Check			
Contact Area	1089.00	--	ft²
Calculate eccentricity e	7.33	--	**ft [>L/6]**
Calculate (c = L/2 - e)	9.17	--	ft
1) q_{max} = P/A • (1+6e/L)	--	--	
2) q_{max} = 2P / b•3c	**2.08**	--	**ksf [GOV]**
$q_{allowable}$	9.00	--	ksf
	(2 • 0.75)		

Check for 2-Way Shear (Punching)			
Shear Area (b_o x d)	42.98	--	ft²
Factored Bearing Stress	0.866	--	ksf
Factored Shear Force	882.04	--	kips
Factored Shear Resistance	**1245.4**	--	kips
Check for 2-way Shear	**0.71**	--	
	(ACI-318)		





M =	6551.0	k-ft
A =	56.0	kips
V =	60.0	kips
Bp =	8.00	ft
Wp =	8.00	ft
Hp =	4.25	ft
Bm =	33.00	ft
Wm =	33.00	ft
Hm =	1.75	ft
D =	6.00	ft
V_{mat} =	2144.1	cuft

Rebar = (33) #10 @ 12.19 in

Attachment 2:
Collocation Application

WORKSHEET 1 OF 2 (COMPLETE BOTH WORKSHEET TABS)

InSite Towers, LLC

CUSTOMER APPLICATION

DATE SUBMITTED: 08/12/20

A Site Application Fee to be paid upon submission of this Customer Application.

CUSTOMER INFORMATION

COMPANY NAME:	New Cingular Wireless PCS, LLC	PHONE:	(877) 231-5447
ENTITY Type: i.e. Inc., LLP	LLC	FAX:	
STATE of Inc.	Delaware	SERVICE (PCS, SMR):	LTE 700, AWS, WCS, 5G 860, LTE 1900

CUSTOMER ADDRESSES

COMPANY Address:	1025 Lenox Park Blvd. NE - 3rd Floor	CITY/STATE:	Atlanta, GA	ZIP :	30319
BILLING Address:	1025 Lenox Park Blvd. NE - 3rd Floor	CITY/STATE:	Atlanta, GA	ZIP :	30319
NOTICE Address 1:	1025 Lenox Park Blvd. NE - 3rd Floor	CITY/STATE:	Atlanta, GA	ZIP :	30319
NOTICE Address 2:	208 S. Akard Street	CITY/STATE:	Dallas, TX	ZIP :	75202-4206

CUSTOMER CONTACTS

PRIMARY CONTACT:	Kevin Mason	PHONE:	(617) 597-7256
TITLE:	Sr. Project Manager	E-MAIL Address:	kmason@saigrp.com
SIGNATORY NAME:	Brian Leyden	PHONE:	(860) 830-7194
TITLE:	Area Manager	E-MAIL Address:	bl5326@att.com
EMERGENCY CONTACT:	ATT NOC	PHONE:	800-638-2822
TITLE:	ATT NOC	E-MAIL Address:	nocnoc@att.com
TECHNICAL/OPS:	Erwin Buhat	PHONE:	(203) 317-6440
TITLE:	Senior - Tech Vendor Mgmt.	E-MAIL Address:	eb841k@att.com
RF ENGINEER:	Radu Alecsandru	PHONE:	(203) 317-6444
TITLE:	RF Engineer	E-MAIL Address:	RA9161@att.com
BILLING CONTACT:	Jane Barnett	PHONE:	(203) 379-8438
TITLE:	Senior Specialist - Technical PM	E-MAIL Address:	jb3838@att.com
LEGAL CONTACT:	Kathie Fray	PHONE:	(303) 979-9010
TITLE:	Senior Paralegal	E-MAIL Address:	kt2612@att.com

SITE INFORMATION

CUSTOMER Site # / Name:	S4073/CT1315 Salisbury FA: 12676421			INSITE Site # and Name:	CT114 Salisbury
SITE LATITUDE:	42.00622306			SITE LONGITUDE:	-73.39144917
SITE ADDRESS:	250 Canaan Road			CITY:	Salisbury
STATE:	CT	ZIP:	06068	STRUCTURE TYPE:	Monopine

USE THIS SECTION TO PROVIDE A DESCRIPTION OF COLOCATION OR MODIFICATION REQUEST

This is application is intended to update the equipment to be installed by AT&T at the 146' RAD center and to change the ground equipment inside the existing leased area. The proposed installation will consist of (3) CCI TPA65R-BU8DA-K antennas, (3) CCI DMP65R-BU8DA-K antennas, (3) RRH 4478 B14, (3) RRH 4449 B5/B12, (3) RRH 8843 B2/B66A, (3) RRH LTE 4415 B30, (1) DC9-48-60-24-8C-EV surge suppressor, (1) DC6-48-60-18-8C-EV surge suppressor, (4) DC lines (0.82 inch diameter) 8AWG6, P/N: PWRT-608-S, (1) 24-pair Fiber line (0.405 inch diameter) P/N: RFFT-48SM-001-XM. The DC and Fiber cables will be housed in (2) x 2" innerducts. The mount consists of (3) ~~Site Pro VFA12-M3 WLL~~ sector mount frames. Ground equipment inside the 12' x 23' (276 square feet) leased space will include (1) Walk-In-Cabinet (WIC) which is 6.6' x 6.6' x 9.5' tall and a 20kW diesel generator.

USE THIS SECTION TO LIST EQUIPMENT TO BE REMOVED

No equipment has been installed since the site was originally leased on 1/10/2014.

Sitepro RMV12-396 will be used in place of the mount listed above per email from 11/24/20

APPLICATION PREPARED BY

NAME:	Kevin Mason	PHONE:	(617) 597-7256
COMPANY:	SAI	ADDRESS:	12 Industrial Way, Salem, NH 03079
TITLE:	Sr. Project Manager	E-MAIL Address:	kmason@saigrp.com

SYSTEM REQUIREMENTS										
POWER provided by:	Utility Company direct				TELCO provided by:	Fiber				
Power Requirements:	Amps:	200	Volts:	120/240	No. of Outlets:	N/A				
Generator Provided by:	Licensee	Make:	Generac	Model:	SDC020	Fuel Type:	Diesel	Capacity:	92 gal.	
Batteries:	Quantity:	20	Make:	Enersys	Model:	SBS190F				
Note: audible alarms related to generator and other equipment shall be permanently disabled at unmanned sites										
SPACE REQUIREMENTS & RADIO INVENTORY										
Type of Space Required:	Ground:	Yes	Floor:	No	Total Square Feet:	276 sq ft				
Dimensions of Equipment Floor/Ground Space:	12' x 23'				Equipment Height:	114				
Dimensions of Generator Ground Space:	inside 12' x 23'				Dimensions of Fuel Tank Ground Space:	N/A				
No. of Transmitters (Tx):	1	Transmitter Make/Model:	Ericsson 6630			Transmitter Power Output	30W			
No. of Receivers (Rx):	1	Receiver Make/Model:	Ericsson 6630			Transmitter ERP:	3,459			
Cabinet also contains:										

EQUIPMENT LOADING DESCRIPTION (FINAL CONFIGURATION)					
	Sector 1	**Sector 2**	**Sector 3**	**DISH(ES)**	**OTHER**
Antenna Type (1):	Panel	Panel	Panel	N/A	N/A
# of Antennas (1)/ Sector:	One (1)	One (1)	One (1)	None	None
Tx, Rx or Both:	Both	Both	Both	N/A	N/A
Antenna Manufacturer (1):	CCI	CCI	CCI	N/A	N/A
Antenna Model (1):	TPA65R-BU8DA-K	TPA65R-BU8DA-K	TPA65R-BU8DA-K	N/A	N/A
Antenna Dimensions (1):	96" X 21" X 7.8"	96" X 21" X 7.8"	96" X 21" X 7.8"	N/A	N/A
Antenna Weight (1):	83 lbs	83 lbs	83 lbs	N/A	N/A
Antenna RAD Ctr (1):	146 ft., Azimuth 0	146 ft., Azimuth 120	146 ft., Azimuth 240	N/A	N/A
Antenna Type (2):	Panel	Panel	Panel	N/A	N/A
# of Antennas (2)/ Sector:	One (1)	One (1)	One (1)	None	None
Tx, Rx or Both:	Both	Both	Both	N/A	N/A
Antenna Manufacturer (2):	CCI	CCI	CCI	N/A	N/A
Antenna Model (2):	DMP65R-BU8DA-K	DMP65R-BU8DA-K	DMP65R-BU8DA-K	N/A	N/A
Antenna Dimensions (2):	96" X 20.7" X 7.7"	96" X 20.7" X 7.7"	96" X 20.7" X 7.7"	N/A	N/A
Antenna Weight (2):	96 lbs	96 lbs	96 lbs	N/A	N/A
Antenna RAD Ctr (2):	146 ft., Azimuth 0	146 ft., Azimuth 120	146 ft., Azimuth 240	N/A	N/A
Antenna Type (3):	Panel	Panel	Panel	N/A	N/A
# of Antennas (3)/ Sector:	Two (2)	Two (2)	Two (2)	None	None
Tx, Rx or Both:	N/A	N/A	N/A	N/A	N/A
Antenna Manufacturer (3):	CCI	CCI	CCI	N/A	N/A
Antenna Model (3):	HPA-65R-BUU-H8	HPA-65R-BUU-H8	HPA-65R-BUU-H8	N/A	N/A
Antenna Dimensions (3):	92.4" x 14.8" x 7.4"	92.4" x 14.8" x 7.4"	92.4" x 14.8" x 7.4"	N/A	N/A
Antenna Weight (3):	68 lbs	68 lbs	68 lbs	N/A	N/A
Antenna RAD Ctr (3):	146 ft RESERVED	146 ft RESERVED	146 ft RESERVED	N/A	N/A

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# of RRU/RRHs/ Sector (1):	One (1)	One (1)	One (1)		
RRU/RRH Manufacturer (1):	Ericsson	Ericsson	Ericsson		
RRU/RRH Model (1):	4478 B14	4478 B14	4478 B14		
RRU/RRH Dimensions (1):	18.1"x13.4"x8.26"	18.1"x13.4"x8.26"	18.1"x13.4"x8.26"		
RRU/RRH Weight (1):	59 lbs	59 lbs	59 lbs		
RRU/RRH RAD Ctr (1):	146 ft., Azimuth 0	146 ft., Azimuth 120	146 ft., Azimuth 240		
# of RRU/RRHs/ Sector (2):	One (1)	One (1)	One (1)		
RRU/RRH Manufacturer (2):	Ericsson	Ericsson	Ericsson		
RRU/RRH Model (2):	4449 B5/B12	4449 B5/B12	4449 B5/B12		
RRU/RRH Dimension (2):	17.9"x13.19"x9.4"	17.9"x13.19"x9.4"	17.9"x13.19"x9.4"		
RRU/RRH Weight (2):	71 lbs	71 lbs	71 lbs		
RRU/RRH RAD Ctr (2):	146 ft., Azimuth 0	146 ft., Azimuth 120	146 ft., Azimuth 240		
# of RRU/RRHs/ Sector (3):	One (1)	One (1)	One (1)		
RRU/RRH Manufacturer (3):	Ericsson	Ericsson	Ericsson		
RRU/RRH Model (3):	8843 B2/B66A	8843 B2/B66A	8843 B2/B66A		
RRU/RRH Dimension (3):	14.96"x13.19"x11.1"	14.96"x13.19"x11.1"	14.96"x13.19"x11.1"		
RRU/RRH Weight (3):	75 lbs	75 lbs	75 lbs		
RRU/RRH RAD Ctr (3):	146 ft., Azimuth 0	146 ft., Azimuth 120	146 ft., Azimuth 240		
# of RRU/RRHs/ Sector (4):	One (1)	One (1)	One (1)		
RRU/RRH Manufacturer (4):	Ericsson	Ericsson	Ericsson		
RRU/RRH Model (4):	4415 B30	4415 B30	4415 B30		
RRU/RRH Dimension (4):	16.5"x13.4"x5.9"	16.5"x13.4"x5.9"	16.5"x13.4"x5.9"		
RRU/RRH Weight (4):	47.4	47.4	47.4		
RRU/RRH RAD Ctr (4):	146 ft., Azimuth 0	146 ft., Azimuth 120	146 ft., Azimuth 240		
# of RRU/RRHs/ Sector (5):	Three (3)	Three (3)	Three (3)		
RRU/RRH Manufacturer (5):	Ericsson	Ericsson	Ericsson		
RRU/RRH Model (5):	RRUS12	RRUS12	RRUS12		
RRU/RRH Dimension (5):	20.4" x 18.5" x 7.5"	20.4" x 18.5" x 7.5"	20.4" x 18.5" x 7.5"		
RRU/RRH Weight (5):	50 lbs	50 lbs	50 lbs		
RRU/RRH RAD Ctr (5):	146' RESERVED	146' RESERVED	146' RESERVED		
# of RRU/RRHs/ Sector (7):	Two (2)	Two (2)	Two (2)		
RRU/RRH Manufacturer (7):	Ericsson	Ericsson	Ericsson		
RRU/RRH Model (7):	RRUSA2	RRUSA2	RRUSA2		
RRU/RRH Dimension (7):	16.4" x 15.1" x 3.4"	16.4" x 15.1" x 3.4"	16.4" x 15.1" x 3.4"		
RRU/RRH Weight (7):	22 lbs	22 lbs	22 lbs		
RRU/RRH RAD Ctr (7):	146' RESERVED	146' RESERVED	146' RESERVED		
# of TMAs/ Sector (2):	None	None	None		
# of Diplexers/ Sector:	None	None	None		
# of Surge Suppressors/Sctr:	One (1)	One (1)	None		
Surge Suppressor Make:	Raycap	Raycap	N/A		
Surge Suppressor Model:	DC9-48-60-24-8C-EV	DC6-48-60-18-8C-EV	N/A		
Surge Supressor Dimensions:	18.28"×10.24"×31.4"	18.28"× 10.24"×31.4"	N/A		
Surge Supressor Weight:	28.7	26.2	N/A		
Surge Supressors RAD Ctr:	146 ft	146 ft	N/A	**Please include microwave dish frequencies below:**	**Please include microwave dish frequencies below:**
Transmit Frequencies:	1850-1865; 1930-1945; 1885-1890; 1965-1970; 1770-1780; 2170-2180; 704-710; 734-740, 710-716, 740-746, 716-722, 722-728; 758-768; 788-798, 2305-2310, 2350-2355, 2310-2315, 2355-2360, 2315-2320, 2345-2350 MHz			N/A	N/A
Receive Frequencies:	1850-1865, 1930-1945, 1885-1890, 1965-1970, 1770-1780, 2170-2180; 704-710, 734-740, 710-716, 740-746, 716-722, 722-728; 758-768, 788-798, 2305-2310, 2350-2355, 2310-2315, 2355-2360, 2315-2320, 2345-2350 MHz			N/A	N/A
# of Lines:	Four (4)	Two (2)	One (1)	None	None
Line Size:	1" Power	2" Conduit	1/2" Fiber	N/A	N/A
Mount Type:	T-Arm	T-Arm	T-Arm	N/A	N/A
Mount Size:	Eight Feet (8')	Eight Feet (8')	Eight Feet (8')	N/A	N/A

ATTACHMENT 3

November 12, 2020

SAI Communications
12 Industrial Way
Salem NH, 03079

RE:		
	Site Number:	CT1315 (NSB)
	FA Number:	12676421
	PACE Number:	MRCTB048657
	PT Number:	2051A0WGHZ
	Site Name:	SALISBURY CANAAN ROAD
	Site Address:	250 Canaan Road Salisbury, CT 06068

To Whom It May Concern:

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

- **(3) TPA65R-BU8DA Antennas (96.0"x20.7"x7.7" – Wt. = 87 lbs. /each)**
- **(3) DMP65R-BU8DA Antennas (96.0"x20.7"x7.7" – Wt. = 96 lbs. /each)**
- **(3) 4415 B30 RRH's (16.5"x13.4"x5.9" – Wt. = 46 lbs. /each)**
- **(3) B14 4478 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)**
- **(3) B2/B66A 8843 RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each)**
- **(3) B5/B12 4449 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)**
- **(2) Squid Surge Arrestors (24.0"x9.7"Ø – Wt. = 33 lbs)**

*Proposed equipment shown in bold.

Mount fabrication drawings prepared by SitePro1 P/N RMV12-396, dated July 1, 2015 were used to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code, and AT&T Mount Technical Directive – R13.
- 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 115 mph with a max basic wind speed with ice of 40 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.16 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 0.173 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.065.
- AT&T policy forbids walking on or suspending below T-arm mounts. This analysis does not include live load conditions for this mount.

Based on our evaluation, we have determined that the New SitePro1 RMV12-396mounts **ARE CAPABLE** of supporting the proposed installation:

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
New Mount Rating	6	LC7	70%	**PASS**

Reference Documents:

- Fabrication drawings prepared by SitePro1, P/N RMV12-396, dated July 1, 2015.

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 proposed mount will be adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

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

Respectfully Submitted,
Hudson Design Group LLC

Michael Cabral
Vice President

Daniel P. Hamm, PE
Principal

FIELD PHOTOS:

HUDSON
Design Group LLC

Wind & Ice
Calculations

Date: 11/10/2020
Project Name: SALISBURY CANAAN ROAD
Project No.: CT1315
Designed By: CL **Checked By:** MSC

HUDSON Design Group LLC

2.6.5.2 Velocity Pressure Coeff:

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

z=	146	(ft)
z_g=	1200	(ft)
α=	7.0	
K_z=	**1.101**	

Kzmin ≤ Kz ≤ 2.01

Table 2-4

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

2.6.6.2 Topographic Factor:

Table 2-5

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

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

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

K_{zt}=	**1**	
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=	146	
z_s=	890	(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=	0.97	(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 =	1.00 in
Importance Factor =	I=	1.0 (from Table 2-3)
	K_{iz} =	1.16 (from Sec. 2.6.10)

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

t_{iz} = 1.16 in

Date: 11/10/2020
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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=	150	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=	1.101	(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=	**34.29**	K_e=	0.97	(from 2.6.8)
$q_{z\,(ice)}$=	**4.15**	K_d=	0.95	(from Table 2-2)
$q_{z\,(30)}$=	**2.33**	V_{max}=	115	mph (Ultimate Wind Speed)
		$V_{max\,(ice)}$=	40	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: 11/10/2020
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Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		**Aspect Ratio ≤ 2.5**	**Aspect Ratio = 7**	**Aspect Ratio ≥ 25**
		Ca	**Ca**	**Ca**
Flat		1.2	1.4	2.0
Square/Rectangular HSS		$1.2 - 2.8(r_s) \geq 0.85$	$1.4 - 4.0(r_s) \geq 0.90$	$2.0 - 6.0(r_s) \geq 1.25$
Round	**C < 39** (Subcritical)	0.7	0.8	1.2
	39 ≤ 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 = **1.16** **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-BU8DA Antennas	96.0	20.7	7.7	13.80	4.64	1.30	**613**	**84**	**42**
DMP65R-BU8DA Antennas	96.0	20.7	7.7	13.80	4.64	1.30	**613**	**84**	**42**
4415 B30 RRH	16.5	5.9	13.4	0.68	2.80	1.21	**28**	**5**	**2**
B14 4478 RRH	18.1	8.3	13.4	1.04	2.18	1.20	**43**	**7**	**3**
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.20	**46**	**8**	**3**
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.90	1.20	**48**	**8**	**3**
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	**39**	**6**	**3**
2" Pipe	2.4	12.0		0.20	0.20	0.70	**5**	**1**	**0**
3" Pipe	3.5	12.0		0.29	0.29	0.70	**7**	**2**	**0**
4" Pipe	4.5	12.0		0.38	0.38	0.70	**9**	**2**	**1**
4x4 HSS	4.0	12.0		0.33	0.33	0.70	**8**	**2**	**1**

Date: 11/10/2020
Project Name: SALISBURY CANAAN ROAD
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HUDSON Design Group LLC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.16	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-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	613	279	529
DMP65R-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	613	279	529
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	28	63	37
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	43	69	50
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	46	56	49
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	48	68	53

WIND LOADS WITH ICE:

TPA65R-BU8DA Antennas	98.3	23.0	10.0	15.72	6.84	4.27	9.81	1.28	1.49	83	42	73
DMP65R-BU8DA Antennas	98.3	23.0	10.0	15.72	6.84	4.27	9.81	1.28	1.49	83	42	73
4415 B30 RRH	18.8	8.2	15.7	1.07	2.05	2.29	1.20	1.20	1.20	5	10	7
B14 4478 RRH	20.4	10.6	15.7	1.51	2.23	1.92	1.30	1.20	1.20	7	11	8
B2/B66A 8843 RRH	17.2	13.2	15.5	1.58	1.86	1.30	1.11	1.20	1.20	8	9	8
B5/B12 4449 RRH	20.2	11.7	15.5	1.65	2.18	1.73	1.30	1.20	1.20	8	11	9

WIND LOADS AT 30 MPH:

TPA65R-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	42	19	36
DMP65R-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	42	19	36
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	3
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4

Date: 11/10/2020
Project Name: SALISBURY CANAAN ROAD
Project No.: CT1315
Designed By: CL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.16	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-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	613	279	362
DMP65R-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	613	279	362
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	28	63	54
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	43	69	63
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	46	56	54
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	48	68	63

WIND LOADS WITH ICE:

TPA65R-BU8DA Antennas	98.3	23.0	10.0	15.72	6.84	4.27	9.81	1.28	1.49	83	42	53
DMP65R-BU8DA Antennas	98.3	23.0	10.0	15.72	6.84	4.27	9.81	1.28	1.49	83	42	53
4415 B30 RRH	18.8	8.2	15.7	1.07	2.05	2.29	1.20	1.20	1.20	5	10	9
B14 4478 RRH	20.4	10.6	15.7	1.51	2.23	1.92	1.30	1.20	1.20	7	11	10
B2/B66A 8843 RRH	17.2	13.2	15.5	1.58	1.86	1.30	1.11	1.20	1.20	8	9	9
B5/B12 4449 RRH	20.2	11.7	15.5	1.65	2.18	1.73	1.30	1.20	1.20	8	11	10

WIND LOADS AT 30 MPH:

TPA65R-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	42	19	25
DMP65R-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	42	19	25
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	4
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4

Date: 11/10/2020
Project Name: SALISBURY CANAAN ROAD
Project No.: CT1315
Designed By: CL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.16	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-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	613	279	279
DMP65R-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	613	279	279
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	28	63	63
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	43	69	69
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	46	56	56
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	48	68	68

WIND LOADS WITH ICE:

TPA65R-BU8DA Antennas	98.3	23.0	10.0	15.72	6.84	4.27	9.81	1.28	1.49	83	42	42
DMP65R-BU8DA Antennas	98.3	23.0	10.0	15.72	6.84	4.27	9.81	1.28	1.49	83	42	42
4415 B30 RRH	18.8	8.2	15.7	1.07	2.05	2.29	1.20	1.20	1.20	5	10	10
B14 4478 RRH	20.4	10.6	15.7	1.51	2.23	1.92	1.30	1.20	1.20	7	11	11
B2/B66A 8843 RRH	17.2	13.2	15.5	1.58	1.86	1.30	1.11	1.20	1.20	8	9	9
B5/B12 4449 RRH	20.2	11.7	15.5	1.65	2.18	1.73	1.30	1.20	1.20	8	11	11

WIND LOADS AT 30 MPH:

TPA65R-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	42	19	19
DMP65R-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	42	19	19
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	4
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	5
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	5

Date: 11/10/2020
Project Name: SALISBURY CANAAN ROAD
Project No.: CT1315
Designed By: CL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.16	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-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	613	279	362
DMP65R-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	613	279	362
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	28	63	54
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	43	69	63
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	46	56	54
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	48	68	63

WIND LOADS WITH ICE:

TPA65R-BU8DA Antennas	98.3	23.0	10.0	15.72	6.84	4.27	9.81	1.28	1.49	83	42	53
DMP65R-BU8DA Antennas	98.3	23.0	10.0	15.72	6.84	4.27	9.81	1.28	1.49	83	42	53
4415 B30 RRH	18.8	8.2	15.7	1.07	2.05	2.29	1.20	1.20	1.20	5	10	9
B14 4478 RRH	20.4	10.6	15.7	1.51	2.23	1.92	1.30	1.20	1.20	7	11	10
B2/B66A 8843 RRH	17.2	13.2	15.5	1.58	1.86	1.30	1.11	1.20	1.20	8	9	9
B5/B12 4449 RRH	20.2	11.7	15.5	1.65	2.18	1.73	1.30	1.20	1.20	8	11	10

WIND LOADS AT 30 MPH:

TPA65R-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	42	19	25
DMP65R-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	42	19	25
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	4
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	4
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	4
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4

Date: 11/10/2020
Project Name: SALISBURY CANAAN ROAD
Project No.: CT1315
Designed By: CL Checked By: MSC

HUDSON Design Group LLC

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.16	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-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	613	279	529
DMP65R-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	613	279	529
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	28	63	37
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	43	69	50
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	46	56	49
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	48	68	53

WIND LOADS WITH ICE:

TPA65R-BU8DA Antennas	98.3	23.0	10.0	15.72	6.84	4.27	9.81	1.28	1.49	83	42	73
DMP65R-BU8DA Antennas	98.3	23.0	10.0	15.72	6.84	4.27	9.81	1.28	1.49	83	42	73
4415 B30 RRH	18.8	8.2	15.7	1.07	2.05	2.29	1.20	1.20	1.20	5	10	7
B14 4478 RRH	20.4	10.6	15.7	1.51	2.23	1.92	1.30	1.20	1.20	7	11	8
B2/B66A 8843 RRH	17.2	13.2	15.5	1.58	1.86	1.30	1.11	1.20	1.20	8	9	8
B5/B12 4449 RRH	20.2	11.7	15.5	1.65	2.18	1.73	1.30	1.20	1.20	8	11	9

WIND LOADS AT 30 MPH:

TPA65R-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	42	19	36
DMP65R-BU8DA Antennas	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	42	19	36
4415 B30 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	4	3
B14 4478 RRH	18.1	8.3	13.4	1.04	1.68	2.18	1.35	1.20	1.20	3	5	3
B2/B66A 8843 RRH	14.9	10.9	13.2	1.13	1.37	1.37	1.13	1.20	1.20	3	4	3
B5/B12 4449 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	3	5	4

Date: 11/10/2020
Project Name: SALISBURY CANAAN ROAD
Project No.: CT1315
Designed By: CL **Checked By:** MSC

HUDSON Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.16 in.
Density of ice: 56 pcf

TPA65R-BU8DA Antennas

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:		264 lbs
Weight of object:	87.0 lbs	
Combined weight of ice and object:		351 lbs

DMP65R-BU8DA Antennas

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:		264 lbs
Weight of object:	96.0 lbs	
Combined weight of ice and object:		360 lbs

4415 B30 RRH

Weight of ice based on total radial SF area:

Height (in):	16.5	
Width (in):	16.4	
Depth (in):	5.9	
Total weight of ice on object:		36 lbs
Weight of object:	46.0 lbs	
Combined weight of ice and object:		82 lbs

B14 4478 RRH

Weight of ice based on total radial SF area:

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

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:		32 lbs
Weight of object:	72.0 lbs	
Combined weight of ice and object:		104 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:		37 lbs
Weight of object:	73.0 lbs	
Combined weight of ice and object:		110 lbs

Squid 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:		31 lbs
Weight of object:	33 lbs	
Combined weight of ice and object:		64 lbs

2" Pipe

Per foot weight of ice:

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

3" Pipe

Per foot weight of ice:

diameter (in):	3.5	
Per foot weight of ice on object:		7 plf

4" Pipe

Per foot weight of ice:

diameter (in):	4.5	
Per foot weight of ice on object:		8 plf

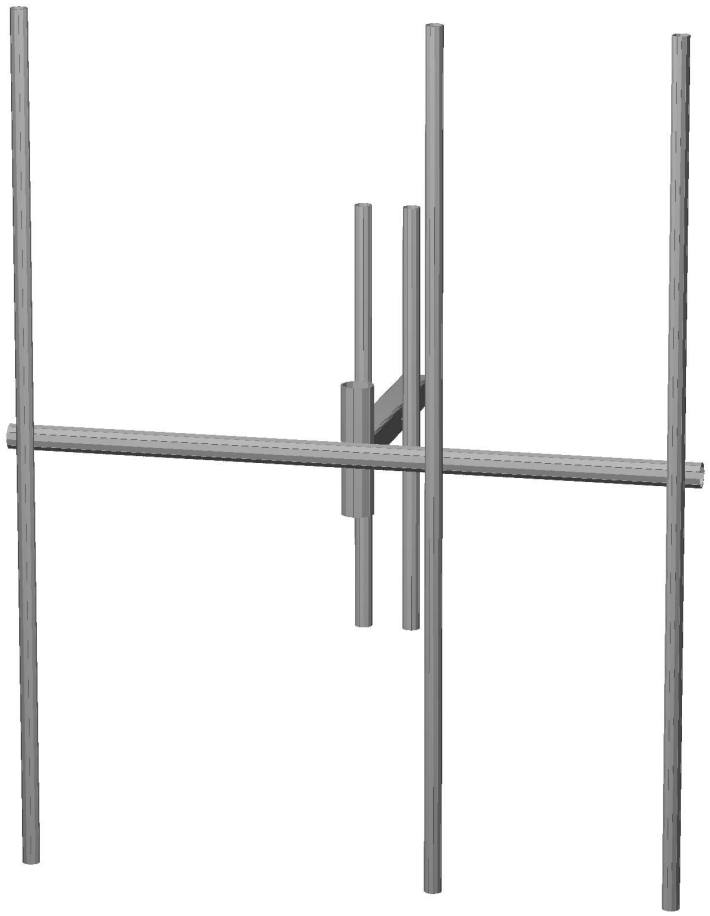
HSS 4x4

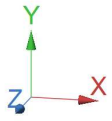
Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		10 plf

HUDSON
Design Group LLC

Mount Calculations
(Existing Conditions)

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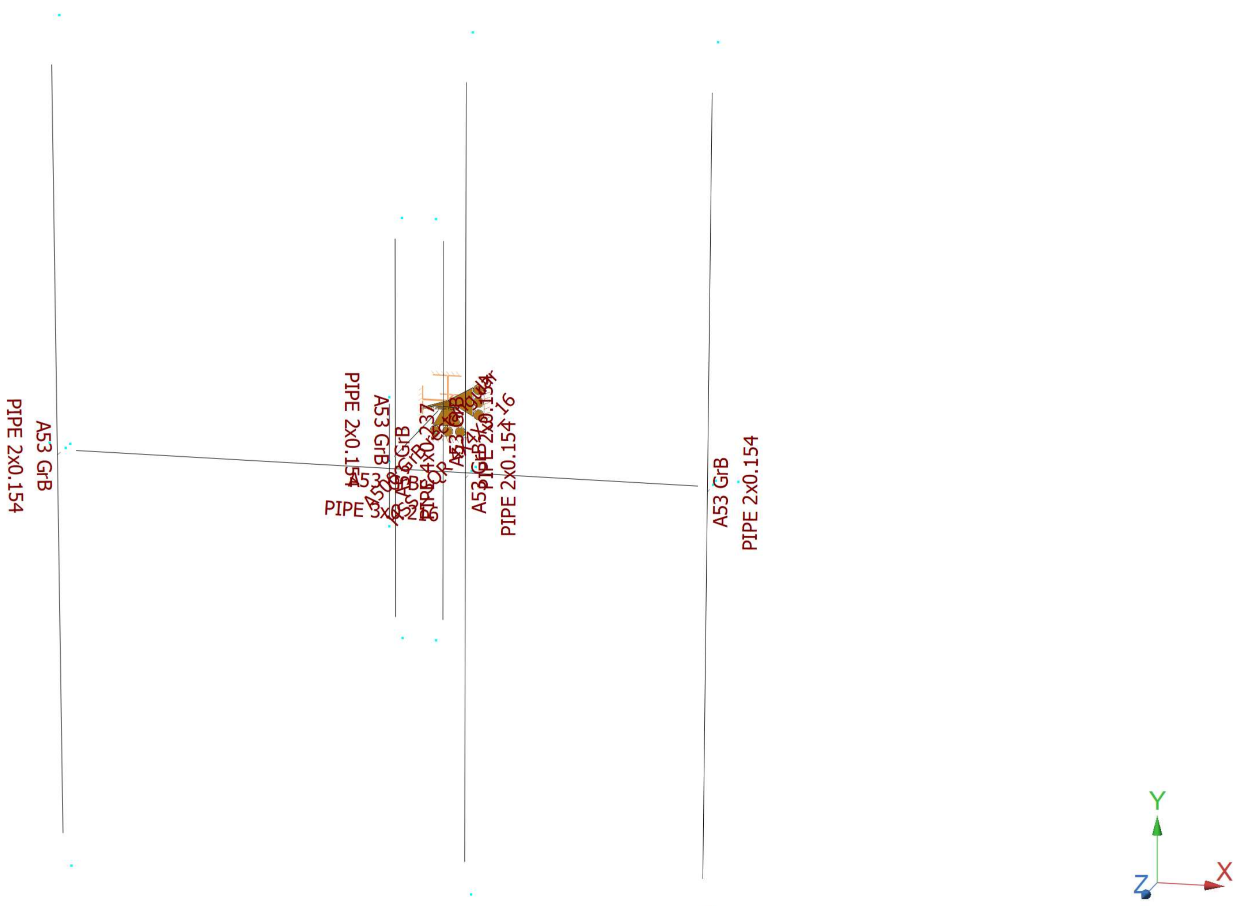

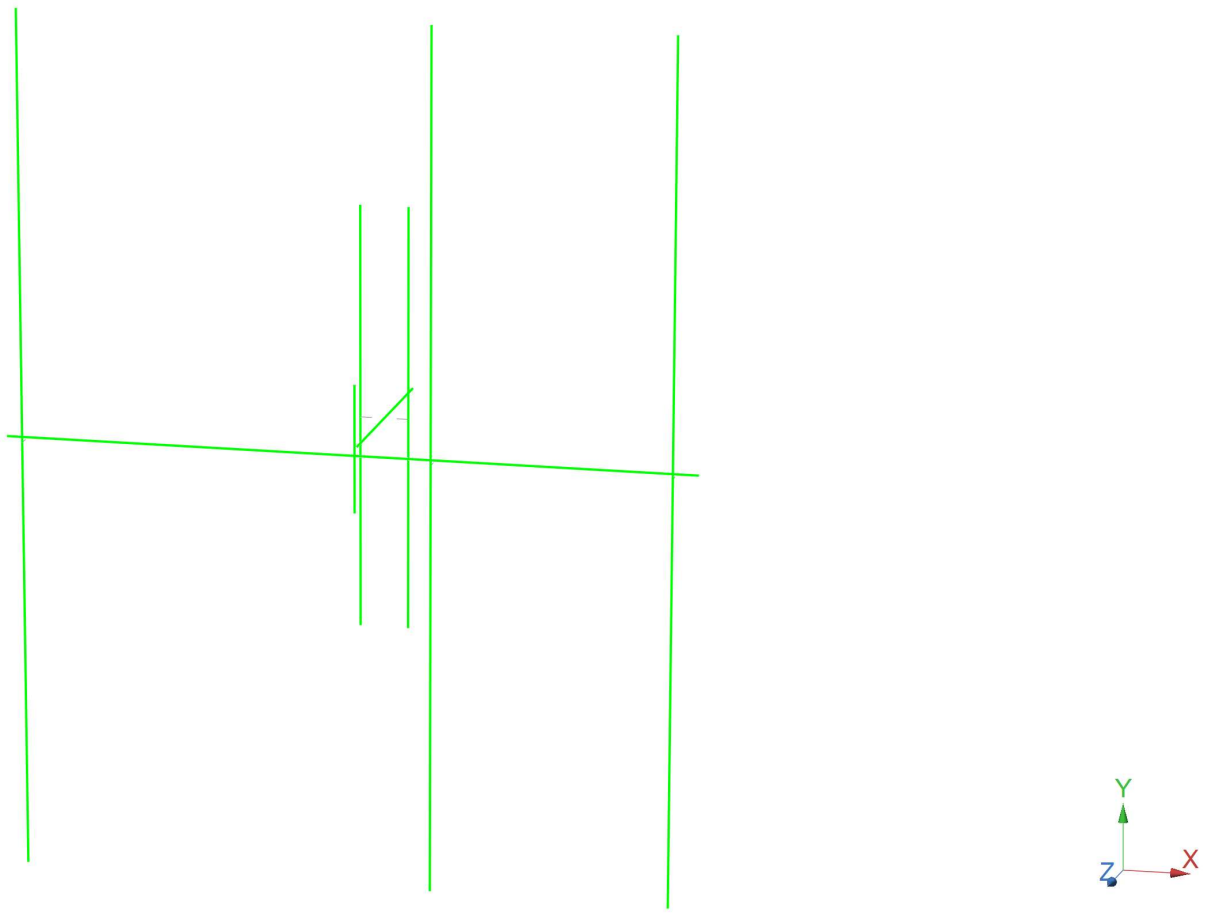
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Error on design
Design O.K.
With warnings
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X
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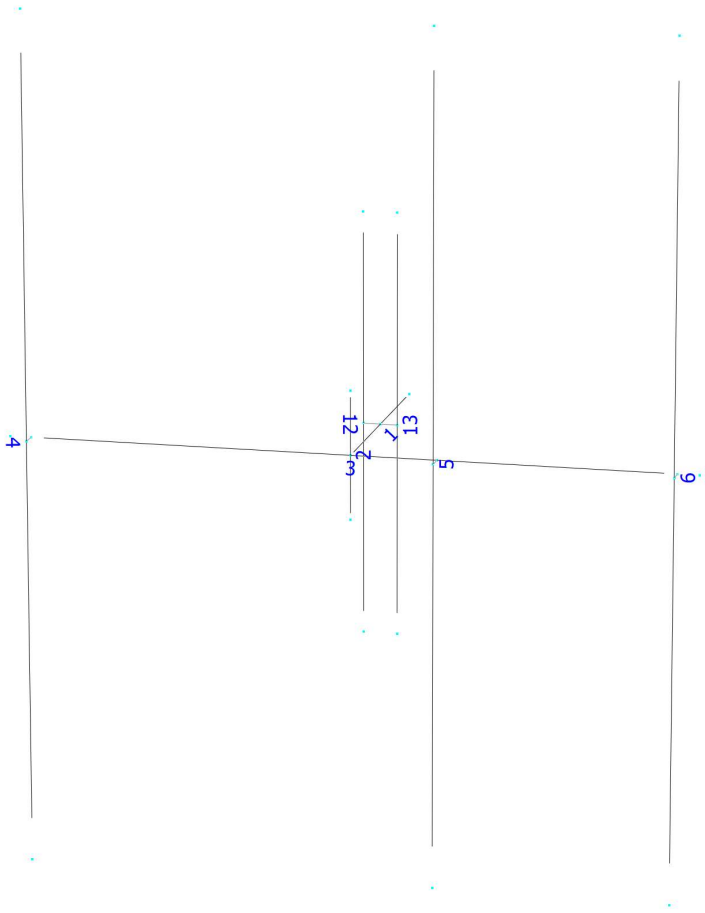
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12
7
13
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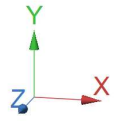
3
5
9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Load data

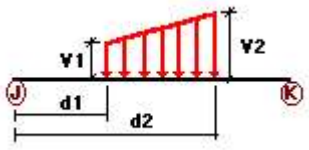
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND

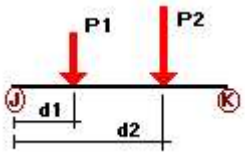
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	2	z	-0.009	-0.009	0.00	No	100.00	Yes
	3	z	-0.007	-0.007	0.00	No	100.00	Yes
	5	z	-0.005	-0.005	0.00	No	100.00	Yes
	12	z	-0.005	-0.005	0.00	No	100.00	Yes
	13	z	-0.005	-0.005	0.00	No	100.00	Yes
W30	2	z	-0.009	-0.009	0.00	No	100.00	Yes
	3	z	-0.007	-0.007	0.00	No	100.00	Yes
	5	z	-0.005	-0.005	0.00	No	100.00	Yes
	12	z	-0.005	-0.005	0.00	No	100.00	Yes

	13	z	-0.005	-0.005	0.00	No	100.00	Yes
W60	1	x	-0.008	-0.008	0.00	No	100.00	Yes
	2	x	-0.009	-0.009	0.00	No	100.00	Yes
	4	x	-0.005	-0.005	0.00	No	100.00	Yes
	5	x	-0.005	-0.005	0.00	No	100.00	Yes
	6	x	-0.005	-0.005	0.00	No	100.00	Yes
W90	1	x	-0.008	-0.008	0.00	No	100.00	Yes
	2	x	-0.009	-0.009	0.00	No	100.00	Yes
	4	x	-0.005	-0.005	0.00	No	100.00	Yes
	5	x	-0.005	-0.005	0.00	No	100.00	Yes
	6	x	-0.005	-0.005	0.00	No	100.00	Yes
W120	1	x	-0.008	-0.008	0.00	No	100.00	Yes
	2	x	-0.009	-0.009	0.00	No	100.00	Yes
	4	x	-0.005	-0.005	0.00	No	100.00	Yes
	5	x	-0.005	-0.005	0.00	No	100.00	Yes
	6	x	-0.005	-0.005	0.00	No	100.00	Yes
W150	2	z	0.009	0.009	0.00	No	100.00	Yes
	3	z	0.007	0.007	0.00	No	100.00	Yes
	4	z	0.005	0.005	0.00	No	100.00	Yes
	5	z	0.005	0.005	0.00	No	100.00	Yes
	6	z	0.005	0.005	0.00	No	100.00	Yes
	12	z	0.005	0.005	0.00	No	100.00	Yes
	13	z	0.005	0.005	0.00	No	100.00	Yes
Di	1	y	-0.01	-0.01	0.00	No	100.00	Yes
	2	y	-0.008	-0.008	0.00	No	100.00	Yes
	3	y	-0.007	-0.007	0.00	No	100.00	Yes
	4	y	-0.005	-0.005	0.00	No	100.00	Yes
	5	y	-0.005	-0.005	0.00	No	100.00	Yes
	6	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

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	4	y	-0.044	2.00	No
		y	-0.044	8.00	No
	6	y	-0.048	2.00	No
		y	-0.048	8.00	No
	12	y	-0.072	1.50	No
		y	-0.073	4.25	No
	13	y	-0.033	1.00	No
		y	-0.06	2.75	No
		y	-0.046	4.25	No
Wo	4	z	-0.307	2.00	No
		z	-0.307	8.00	No
	6	z	-0.307	2.00	No
		z	-0.307	8.00	No
	12	z	-0.046	1.50	No

		z	-0.048	4.25	No
	13	z	-0.039	1.00	No
		z	-0.043	2.75	No
		z	-0.028	4.25	No
W30	4	3	-0.265	2.00	No
		3	-0.265	8.00	No
	6	3	-0.265	2.00	No
		3	-0.265	8.00	No
	12	3	-0.049	1.50	No
		3	-0.053	4.25	No
	13	3	-0.039	1.00	No
		3	-0.05	2.75	No
		3	-0.037	4.25	No
W60	4	3	-0.181	2.00	No
		3	-0.181	8.00	No
	6	3	-0.181	2.00	No
		3	-0.181	8.00	No
	12	3	-0.054	1.50	No
		3	-0.063	4.25	No
	13	3	-0.039	1.00	No
		3	-0.063	2.75	No
		3	-0.054	4.25	No
W90	4	x	-0.14	2.00	No
		x	-0.14	8.00	No
	6	x	-0.14	2.00	No
		x	-0.14	8.00	No
	12	x	-0.056	1.50	No
		x	-0.068	4.25	No
	13	x	-0.039	1.00	No
		x	-0.069	2.75	No
		x	-0.063	4.25	No
W120	4	2	-0.181	2.00	No
		2	-0.181	8.00	No
	6	2	-0.181	2.00	No
		2	-0.181	8.00	No
	12	2	-0.054	1.50	No
		2	-0.063	4.25	No
	13	2	-0.039	1.00	No
		2	-0.063	2.75	No
		2	-0.054	4.25	No
W150	4	2	-0.265	2.00	No
		2	-0.265	8.00	No
	6	2	-0.265	2.00	No
		2	-0.265	8.00	No
	12	2	-0.049	1.50	No
		2	-0.053	4.25	No
	13	2	-0.039	1.00	No
		2	-0.05	2.75	No
		2	-0.037	4.25	No
Di	4	y	-0.132	2.00	No
		y	-0.132	8.00	No
	6	y	-0.132	2.00	No
		y	-0.132	8.00	No
	12	y	-0.032	1.50	No
		y	-0.037	4.25	No
	13	y	-0.031	1.00	No
		y	-0.036	2.75	No
		y	-0.036	4.25	No
WI0	4	z	-0.042	2.00	No
		z	-0.042	8.00	No

	6	z	-0.042	2.00	No
		z	-0.042	8.00	No
	12	z	-0.008	1.50	No
		z	-0.008	4.25	No
	13	z	-0.006	1.00	No
		z	-0.007	2.75	No
		z	-0.005	4.25	No
WI30	4	3	-0.037	2.00	No
		3	-0.037	8.00	No
	6	3	-0.037	2.00	No
		3	-0.037	8.00	No
	12	3	-0.008	1.50	No
		3	-0.009	4.25	No
	13	3	-0.006	1.00	No
		3	-0.008	2.75	No
		3	-0.007	4.25	No
WI60	4	3	-0.027	2.00	No
		3	-0.027	8.00	No
	6	3	-0.027	2.00	No
		3	-0.027	8.00	No
	12	3	-0.009	1.50	No
		3	-0.01	4.25	No
	13	3	-0.006	1.00	No
		3	-0.01	2.75	No
		3	-0.009	4.25	No
WI90	4	x	-0.021	2.00	No
		x	-0.021	8.00	No
	6	x	-0.021	2.00	No
		x	-0.021	8.00	No
	12	x	-0.009	1.50	No
		x	-0.011	4.25	No
	13	x	-0.006	1.00	No
		x	-0.011	2.75	No
		x	-0.01	4.25	No
WI120	4	2	-0.027	2.00	No
		2	-0.027	8.00	No
	6	2	-0.027	2.00	No
		2	-0.027	8.00	No
	12	2	-0.009	1.50	No
		2	-0.01	4.25	No
	13	2	-0.006	1.00	No
		2	-0.01	2.75	No
		2	-0.009	4.25	No
WI150	4	2	-0.037	2.00	No
		2	-0.037	8.00	No
	6	2	-0.037	2.00	No
		2	-0.037	8.00	No
	12	2	-0.008	1.50	No
		2	-0.009	4.25	No
	13	2	-0.006	1.00	No
		2	-0.008	2.75	No
		2	-0.007	4.25	No
WL0	4	z	-0.021	2.00	No
		z	-0.021	8.00	No
	6	z	-0.021	2.00	No
		z	-0.021	8.00	No
	12	z	-0.003	1.50	No
		z	-0.003	4.25	No
	13	z	-0.003	1.00	No
		z	-0.003	2.75	No

		z	-0.002	4.25	No
WL30	4	3	-0.018	2.00	No
		3	-0.018	8.00	No
	6	3	-0.018	2.00	No
		3	-0.018	8.00	No
	12	3	-0.003	1.50	No
		3	-0.004	4.25	No
	13	3	-0.003	1.00	No
		3	-0.003	2.75	No
		3	-0.003	4.25	No
WL60	4	3	-0.013	2.00	No
		3	-0.013	8.00	No
	6	3	-0.013	2.00	No
		3	-0.013	8.00	No
	12	3	-0.004	1.50	No
		3	-0.004	4.25	No
	13	3	-0.003	1.00	No
		3	-0.004	2.75	No
		3	-0.004	4.25	No
WL90	4	x	-0.01	2.00	No
		x	-0.01	8.00	No
	6	x	-0.01	2.00	No
		x	-0.01	8.00	No
	12	x	-0.004	1.50	No
		x	-0.005	4.25	No
	13	x	-0.003	1.00	No
		x	-0.005	2.75	No
		x	-0.004	4.25	No
WL120	4	2	-0.013	2.00	No
		2	-0.013	8.00	No
	6	2	-0.013	2.00	No
		2	-0.013	8.00	No
	12	2	-0.004	1.50	No
		2	-0.004	4.25	No
	13	2	-0.003	1.00	No
		2	-0.004	2.75	No
		2	-0.004	4.25	No
WL150	4	2	-0.018	2.00	No
		2	-0.018	8.00	No
	6	2	-0.018	2.00	No
		2	-0.018	8.00	No
	12	2	-0.003	1.50	No
		2	-0.004	4.25	No
	13	2	-0.003	1.00	No
		2	-0.003	2.75	No
		2	-0.003	4.25	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00

W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00

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Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC40=1.2D+WL0
LC41=1.2D+WL30
LC42=1.2D+WL60
LC43=1.2D+WL90
LC44=1.2D+WL120
LC45=1.2D+WL150
LC46=1.2D-WL0
LC47=1.2D-WL30
LC48=1.2D-WL60
LC49=1.2D-WL90
LC50=1.2D-WL120
LC51=1.2D-WL150
LC52=1.2D+WL0
LC53=1.2D+WL30
LC54=1.2D+WL60
LC55=1.2D+WL90
LC56=1.2D+WL120

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

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X3_16	**1**	LC12 at 0.00%	**0.41**	**OK**	
	PIPE 2x0.154	**4**	LC1 at 50.00%	0.70	OK	
		5	LC6 at 50.00%	0.05	OK	
		6	LC7 at 50.00%	**0.70**	**OK**	
		12	LC4 at 50.00%	0.09	OK	
		13	LC10 at 50.00%	0.10	OK	
	PIPE 3x0.216	**3**	LC7 at 50.00%	**0.54**	**OK**	
	PIPE 4x0.237	**2**	LC9 at 50.00%	**0.00**	**OK**	

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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	-3.00	0
2	0.00	0.00	0.00	0
3	-4.00	0.00	0.00	0
4	4.00	0.00	0.00	0
5	0.00	0.75	0.00	0
6	0.00	-0.75	0.00	0
7	1.00	0.00	0.00	0
8	3.75	0.00	0.00	0
9	-3.75	0.00	0.00	0
10	-3.75	0.00	0.20	0
11	1.00	0.00	0.20	0
12	3.75	0.00	0.20	0
13	-3.75	5.00	0.20	0
14	1.00	5.00	0.20	0
15	3.75	5.00	0.20	0
16	-3.75	-5.00	0.20	0
17	1.00	-5.00	0.20	0
18	3.75	-5.00	0.20	0
19	0.00	0.00	-1.50	0
20	0.20	0.00	-1.50	0
21	-0.20	0.00	-1.50	0
22	0.20	-2.50	-1.50	0

23	-0.20	-2.50	-1.50	0
24	0.20	2.50	-1.50	0
25	-0.20	2.50	-1.50	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
1	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	1	2		HSS_SQR 4X4X3_16	A500 GrB rectangular	0.00	0.00	0.00
2	6	5		PIPE 4x0.237	A53 GrB	0.00	0.00	0.00
3	3	4		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
4	13	16		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
5	17	14		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
6	15	18		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
12	25	23		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
13	24	22		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
4	315.00	0	0.00	0.00	0.00
5	315.00	0	0.00	0.00	0.00
6	315.00	0	0.00	0.00	0.00
12	315.00	0	0.00	0.00	0.00
13	315.00	0	0.00	0.00	0.00

Rigid end offsets

Member	DJX [in]	DJY [in]	DJZ [in]	DKX [in]	DKY [in]	DKZ [in]
1	0.00	0.00	0.00	0.00	0.00	-1.25
3	0.00	0.00	3.50	0.00	0.00	3.50
4	0.00	0.00	4.00	0.00	0.00	4.00
5	0.00	0.00	4.00	0.00	0.00	4.00
6	0.00	0.00	4.00	0.00	0.00	4.00
12	-1.00	0.00	0.00	-1.00	0.00	0.00
13	1.00	0.00	0.00	1.00	0.00	0.00
