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November 8, 2024

VIA ELECTRONIC MAIL & OVERNIGHT DELIVERY

Melanie Bachman, Esq.
Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, Connecticut 06051

Re: Docket No. 495A
5151 Park Avenue, Fairfield, Connecticut
Development and Management Plan Revision for Intervenor AT&T

Dear Ms. Bachman:

On behalf of New Cingular Wireless PCS LLC (“AT&T”), the Intervenor in Docket 495A, please accept for review and approval this update and revision to the Development and Management Plan (“D&M Plan”) for AT&T’s Facility.

Facility Design Update

AT&T updated its facility configuration as summarized in the table below and detailed in the drawings enclosed in Exhibit A prepared by TEP OPCO, LLC, last revised 10/18/24. Two full sized sets of drawings accompany this submission. The update also includes a minor reduction to AT&T’s antenna centerline height from 76’-9” AGL to 76’ AGL. AT&T’s antennas will be located behind the fiberglass concealment panels as approved in the D&M Plan.

Original Configuration

Updated Configuration

Antennas (12) total:

Antennas (12) total:

- (3) TPA65R-BU6DA-K
- (3) AIR 6449 B77D
- (3) AIR 6419 B77G
- (3) DMP65R-BU6DA-K

- (6) TPA65R-BU6DA-K
- (3) AIR 6419 B77D
- (3) AIR 6419 B77G

RRUs (12) total:

RRUs (9) total:

- (3) 4478 B14 RRU
- (3) 4415 B30 RRU
- (3) 4449 B5/B12 RRU
- (3) 8843 B2/B66A RRU

- (3) 4478 B14 RRU
- (3) 4449 B5/B12 RRU
- (3) 8843 B2/B66A RRU

Surge Protector (3) total:

Surge Protector (2) total:

- (3) DC6-48-60-18

- (2) DC9-48-60-24-8C-EV



Enclosed in Exhibit B is a Structural Analysis prepared by Semaan Engineering Solutions dated 10/10/24 and signed by Thomas L. Taylor, P.E. demonstrating that the facility can structurally accommodate AT&T's updated facility. Also enclosed as Exhibit C is a Mount Analysis prepared by TEP OPCO, LLC last revised 8/2/24 and signed by Daniel P. Hamm, P.E.

The MPE Report prepared by C Squared Systems dated 8/8/24 included in Exhibit D confirms that the maximum cumulative percentage of MPE for AT&T's updated facility along with Verizon's facility is 32.35% of the FCC limit.

Required Notifications

The contact for AT&T is Erwin Buhat, AT&T Lead Tech Vendor Management. He can be reached at eb841k@att.com.

Submitted Documents

In support of this filing, please find enclosed sixteen (16) copies of the instant letter with the following documents:

Exhibit A: Drawings prepared by TEP OPCO, LLC last revised 10/18/24 and signed and sealed by Daniel P. Hamm, P.E.;

Exhibit B: Structural Analysis prepared by Semaan Engineering Solutions dated 10/10/24 and signed by Thomas L. Taylor, P.E.;

Exhibit C: Mount Analysis prepared by TEP OPCO, LLC last revised 8/2/24 and signed by Daniel P. Hamm, P.E.; and

Exhibit D: Cumulative MPE Report prepared by C Squared Systems dated 8/8/24.

Please do not hesitate to contact me if you have any questions. Thank you for your consideration of this request.

Very truly yours,

A handwritten signature in cursive script that reads "Lucia Chiochio".

Lucia Chiochio

Enclosures

cc: William A. Gerber, First Selectman, Town of Fairfield
Kenneth C. Baldwin, Esq.
Anthony Befera Principal Engineer-Real Estate/Regulatory
Cellco Partnership d/b/a Verizon Wireless
AT&T
SAI

Exhibit A

PROJECT INFORMATION

SCOPE OF WORK: TELECOMMUNICATIONS FACILITY: (NSB) A PROPOSED 100'-0" A.G.L. TALL TOWER. PROPOSED OUTDOOR EQUIPMENT WILL BE INSTALLED INSIDE A PROPOSED EQUIPMENT ROOM. PROPOSED TWELVE PANEL ANTENNAS AND ASSOCIATED EQUIPMENT WILL BE INSTALLED AT A HEIGHT OF 76'-0" A.G.L.

SITE ADDRESS: 5151 PARK AVENUE DUP1
FAIRFIELD, CT 06825

APPLICANT: AT&T MOBILITY
492 OLD CONNECTICUT PATH SUITE #210
FRAMINGHAM, MA 01701

SITE OWNER: SACRED HEART UNIVERSITY
5151 PARK AVENUE
FAIRFIELD, CT 06825

LATITUDE: 41.21894 N, 41° 13' 08.19" N

LONGITUDE: 73.24475 W, 73° 14' 41.12" W

TYPE OF SITE: TOWER/EQUIPMENT ROOM

TOWER HEIGHT: 100'-0"±

RAD CENTER: 76'-0"±



SITE NUMBER: CT1440

SITE NAME: FAIRFIELD SACRED HEART CAMPUS

FA CODE:15320157

**PACE ID: MRCTB051775, MRCTB064779, MRCTB064690,
MRCTB064650, MRCTB064716, MRCTB065138, MRCTB065139**

PROJECT: NSB

DRAWING INDEX

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VICINITY MAP

DIRECTIONS TO SITE:
DEPART AND HEAD NORTHEAST. TURN RIGHT. TURN LEFT ONTO LEGGATT MCCALL CONNECTOR RD. BEAR LEFT ONTO BURR ST. TURN LEFT ONTO MA-30 / COCHITUATE RD. TAKE THE RAMP ON THE RIGHT FOR I-90 EAST / I-90 WEST AND HEAD TOWARD BOSTON / SPRINGFIELD. AT EXIT 78, HEAD RIGHT ON THE RAMP FOR I-84 TOWARD HARTFORD / NEW YORK CITY. AT EXIT 57, BEAR LEFT ONTO CT-15 S TOWARD CHARTER OAK BR / NEW YORK CITY / CT-15 SOUTH. AT EXIT 86, HEAD RIGHT ON THE RAMP FOR I-91 SOUTH TOWARD NEW HAVEN / NEW YORK CITY. AT EXIT 17, HEAD RIGHT ON THE RAMP FOR CT-15 SOUTH TOWARD MAIN ST. KEEP LEFT TO GET ONTO CT-15 SOUTH. AT EXIT 47, HEAD ON THE RAMP RIGHT AND FOLLOW SIGNS FOR PARK AVE. AT THE ROUNDABOUT, TAKE THE 2ND EXIT FOR PARK AVE. TURN RIGHT. TURN LEFT. 5151 PARK AVENUE DUP1 WILL BE ON THE RIGHT.



GENERAL NOTES

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

72 HOURS



CALL BEFORE YOU DIG



CALL TOLL FREE 1-800-922-4455
OR CALL 811

UNDERGROUND SERVICE ALERT



TEP OPCO, LLC.
45 BEECHWOOD DR.
NORTH ANDOVER, MA 01845
OFFICE: (978) 557-5553



12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1440
SITE NAME: FAIRFIELD SACRED HEART CAMPUS

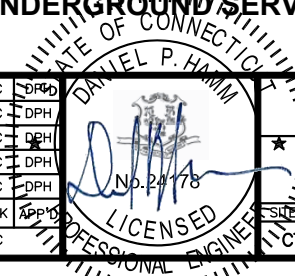
5151 PARK AVENUE DUP1
FAIRFIELD, CT 06825
FAIRFIELD COUNTY



492 OLD CONNECTICUT PATH SUITE #210
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
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7	12/22/23	ISSUED FOR CONSTRUCTION	CC	JC	DPH
6	07/05/23	ISSUED FOR CONSTRUCTION	AM	JC	DPH

SCALE: AS SHOWN DESIGNED BY: JC DRAWN BY: CC



AT&T MOBILITY

TITLE SHEET
(NSB)

SHEET NO.	DRAWING NUMBER	REV
CT1440	T-1	10

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

GENERAL NOTES

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

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

**BUILDING CODE: IBC 2021 WITH 2022 CT STATE BUILDING CODE AMENDMENTS
 ELECTRICAL CODE: 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	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING				

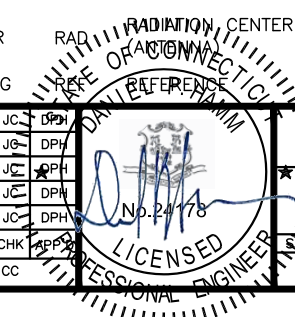


**SITE NUMBER: CT1440
 SITE NAME: FAIRFIELD SACRED HEART CAMPUS**

 5151 PARK AVENUE DUP1
 FAIRFIELD, CT 06825
 FAIRFIELD COUNTY



NO.	DATE	REVISIONS	BY	CHK
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AT&T MOBILITY		
GENERAL NOTES (NSB)		
SITE NUMBER	DRAWING NUMBER	REV
CT1440	GN-1	10

STRUCTURAL NOTES:

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

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

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

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

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

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

NOTES:

- ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"Ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
- 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.
- CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
- EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

NOTES:

- REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
- PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
- PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
- HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
- 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.
- AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

SPECIAL INSPECTION CHECKLIST

BEFORE CONSTRUCTION

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS ¹
N/A	MATERIAL SPECIFICATIONS REPORT ²
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS ³

ADDITIONAL TESTING AND INSPECTIONS:

DURING CONSTRUCTION

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS ⁴
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION ⁵
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT

ADDITIONAL TESTING AND INSPECTIONS:

AFTER CONSTRUCTION

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS ⁶
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS

ADDITIONAL TESTING AND INSPECTIONS:



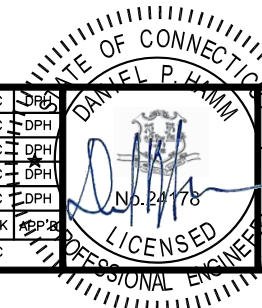
SITE NUMBER: CT1440
SITE NAME: FAIRFIELD SACRED HEART CAMPUS

5151 PARK AVENUE DUP1
FAIRFIELD, CT 06825
FAIRFIELD COUNTY



492 OLD CONNECTICUT PATH SUITE #210
FRAMINGHAM, MA 01701

10	10/18/24	ISSUED FOR CONSTRUCTION	CC	JC	DPH
9	08/05/24	ISSUED FOR CONSTRUCTION	CC	JC	DPH
8	01/31/24	ISSUED FOR CONSTRUCTION	CC	JC	DPH
7	12/22/23	ISSUED FOR CONSTRUCTION	CC	JC	DPH
6	07/05/23	ISSUED FOR CONSTRUCTION	AM	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'R
SCALE: AS SHOWN			DESIGNED BY: JC	DRAWN BY: CC	



AT&T MOBILITY

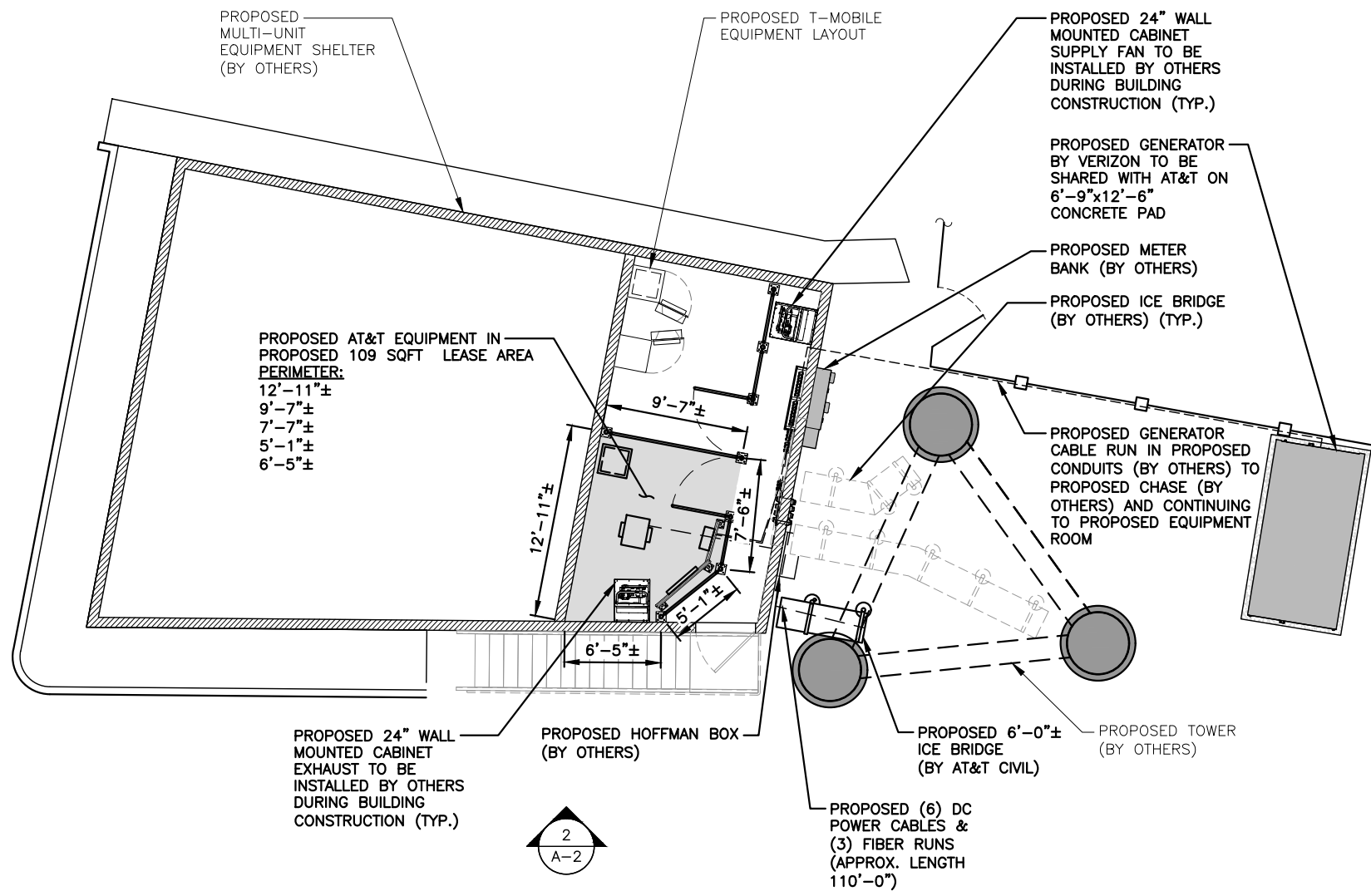
SPECIAL INSPECTION NOTES
(NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1440	SN-1	10

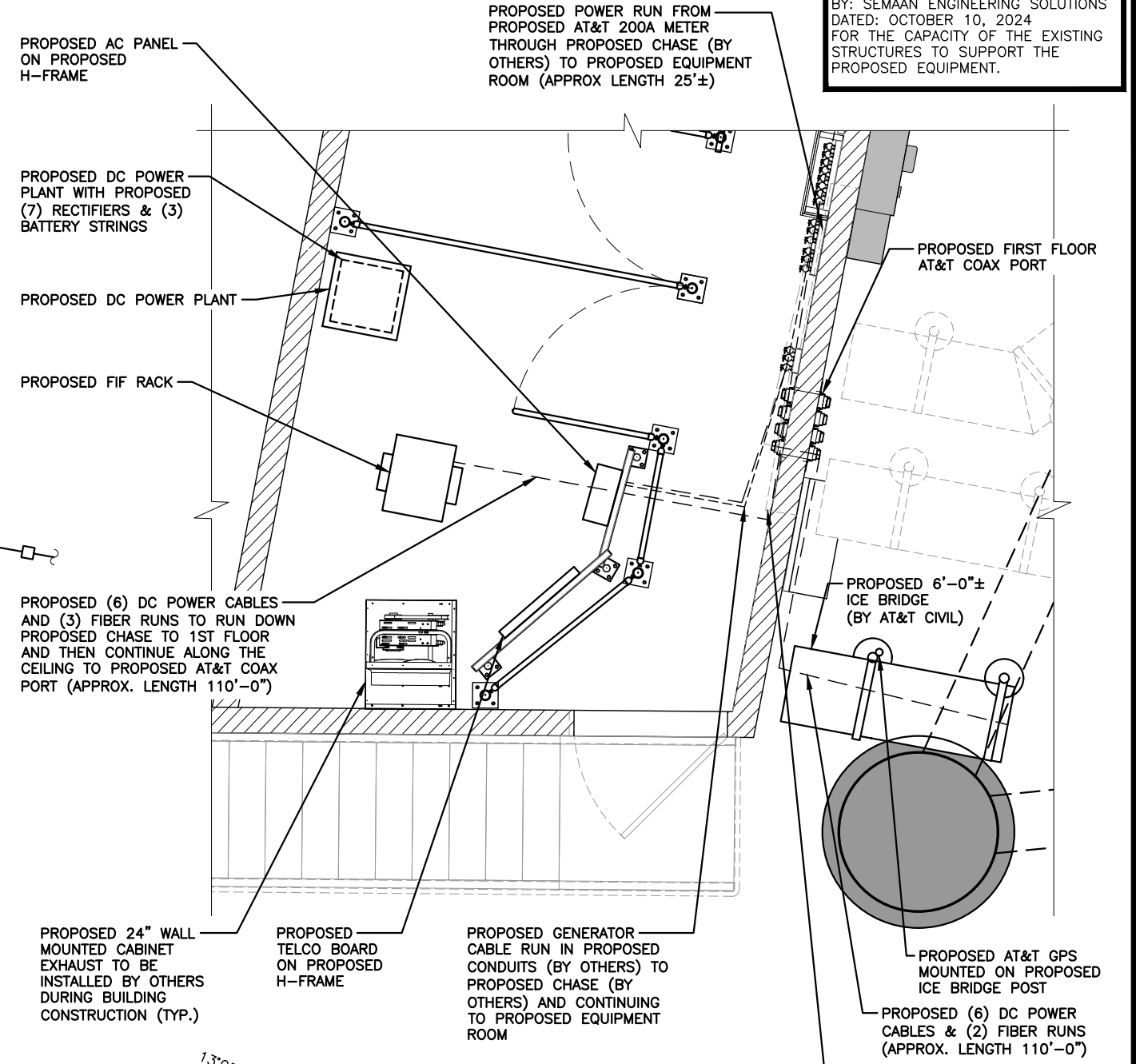
NOTE:
PROPOSED POWER, TELCO, & GROUNDING TO COME FROM EXISTING SOURCES (ROUTING TO BE DETERMINED)

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

NOTE:
REFER TO STRUCTURAL ANALYSIS BY: SEMAAN ENGINEERING SOLUTIONS DATED: OCTOBER 10, 2024 FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



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



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

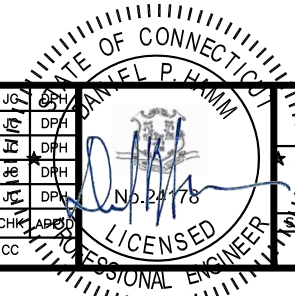


SITE NUMBER: CT1440
SITE NAME: FAIRFIELD SACRED HEART CAMPUS

5151 PARK AVENUE DUP1
FAIRFIELD, CT 06825
FAIRFIELD COUNTY



10	10/18/24	ISSUED FOR CONSTRUCTION	CC	JC	DPH
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6	07/05/23	ISSUED FOR CONSTRUCTION	AM	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: CC		

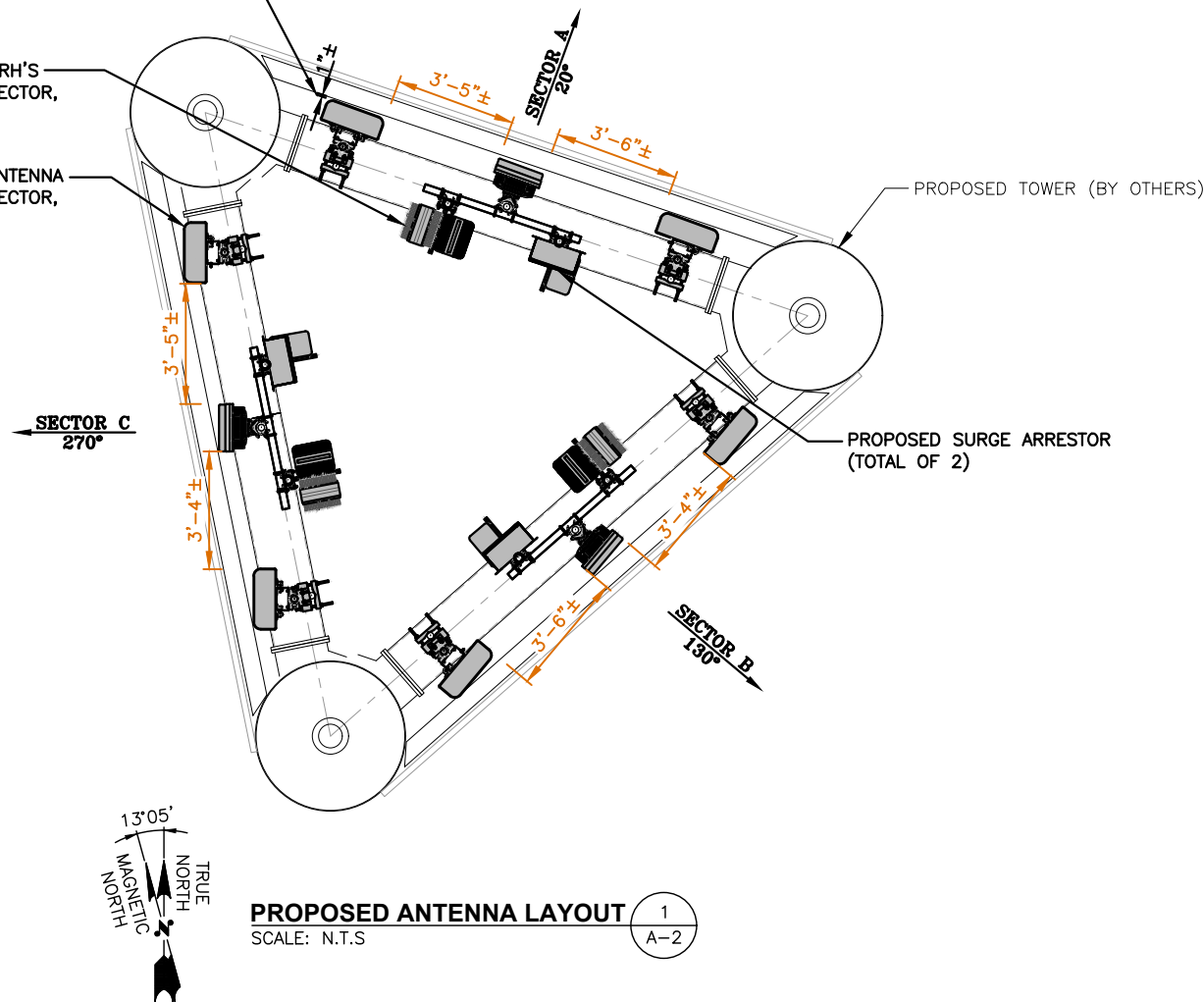


AT&T MOBILITY		
BUILDING & EQUIPMENT PLANS (NSB)		
SITE NUMBER	DRAWING NUMBER	REV
CT1440	A-1	10

GC TO INSTALL ANTENNA FACE WITHIN 1" FROM FRP ENCLOSURE. STANDOFF DIMENSIONS WILL VARY BASED ON ANTENNA MODELS

PROPOSED AT&T RRH'S (TYP. OF 3 PER SECTOR, TOTAL OF 9)

PROPOSED AT&T ANTENNA (TYP. OF 4 PER SECTOR, TOTAL OF 12)



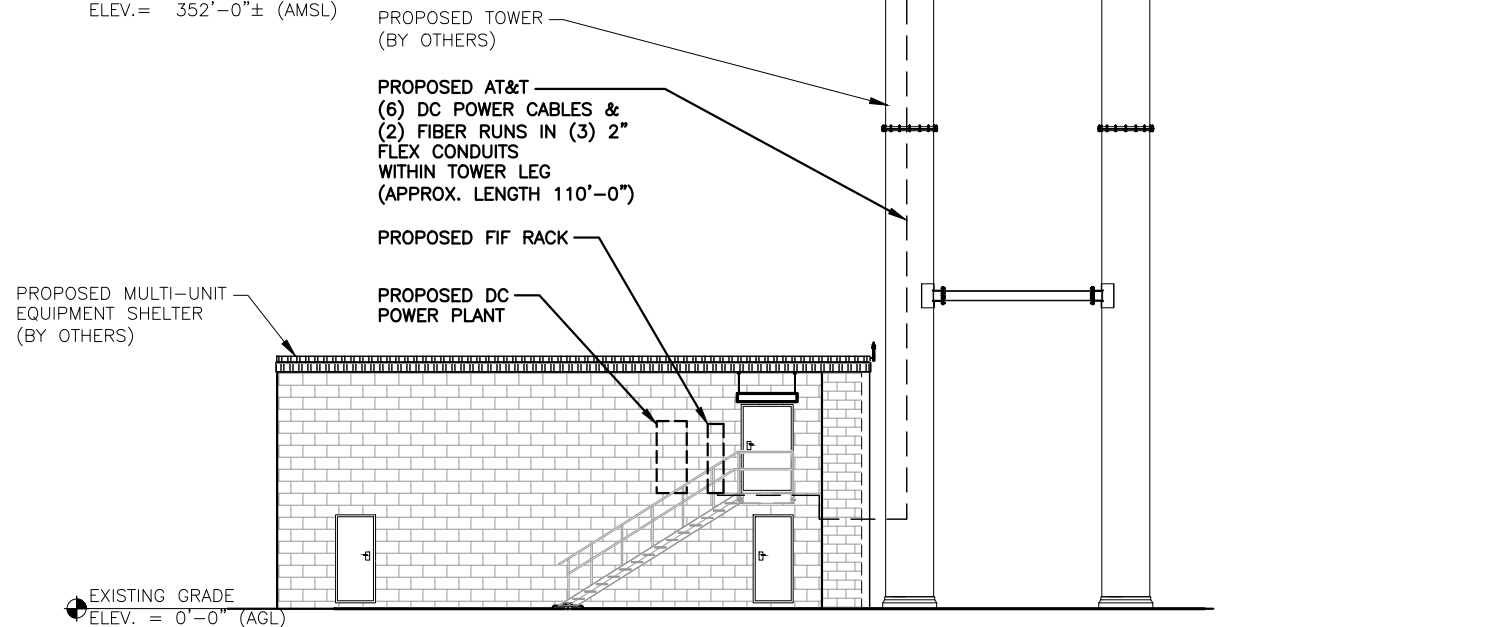
PROPOSED ANTENNA LAYOUT 1
SCALE: N.T.S. A-2

NOTE:
REFER TO STRUCTURAL ANALYSIS BY: SEMAAN ENGINEERING SOLUTIONS DATED: OCTOBER 10, 2024 FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE PROPOSED ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: TEP NORTHEAST (TEP OPCO, LLC.) DATED: AUGUST 2, 2024 (REV. 2)

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

- TOP OF PROPOSED TOWER
ELEV. = 100'-0"± (AGL)
ELEV. = 395'-0"± (AMSL)
- CL OF PROPOSED VERIZON ANTENNAS
ELEV. = 95'-0"± (AGL)
ELEV. = 390'-0"± (AMSL)
- CL OF FUTURE ANTENNAS
ELEV. = 85'-0"± (AGL)
ELEV. = 380'-0"± (AMSL)
- TOP OF PROPOSED FIBERGLASS CONCEALMENT PANELS
ELEV. = 80'-0"± (AGL)
ELEV. = 375'-0"± (AMSL)
- CL OF PROPOSED AT&T ANTENNAS
ELEV. = 76'-0"± (AGL)
ELEV. = 371'-0"± (AMSL)
- CL OF PROPOSED VERIZON ANTENNAS
ELEV. = 68'-6"± (AGL)
ELEV. = 363'-6"± (AMSL)
- CL OF PROPOSED VERIZON ANTENNAS
ELEV. = 67'-0"± (AGL)
ELEV. = 362'-0"± (AMSL)
- CL OF FUTURE ANTENNAS
ELEV. = 57'-0"± (AGL)
ELEV. = 352'-0"± (AMSL)



EXISTING GRADE
ELEV. = 0'-0" (AGL)

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

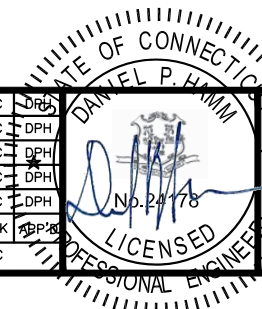


SITE NUMBER: CT1440
SITE NAME: FAIRFIELD SACRED HEART CAMPUS

5151 PARK AVENUE DUP1
FAIRFIELD, CT 06825
FAIRFIELD COUNTY



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7	12/22/23	ISSUED FOR CONSTRUCTION	CC	JC	DPH
6	07/05/23	ISSUED FOR CONSTRUCTION	AM	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN			DESIGNED BY: JC	DRAWN BY: CC	



AT&T MOBILITY		
ANTENNA LAYOUT & ELEVATION (NSB)		
SITE NUMBER	DRAWING NUMBER	REV
CT1440	A-2	10

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE PROPOSED ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: TEP NORTHEAST (TEP OPCO, LLC.) DATED: AUGUST 2, 2024 (REV. 2)

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

NOTE:
REFER TO STRUCTURAL ANALYSIS BY: SEMAAN ENGINEERING SOLUTIONS DATED: OCTOBER 10, 2024 FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

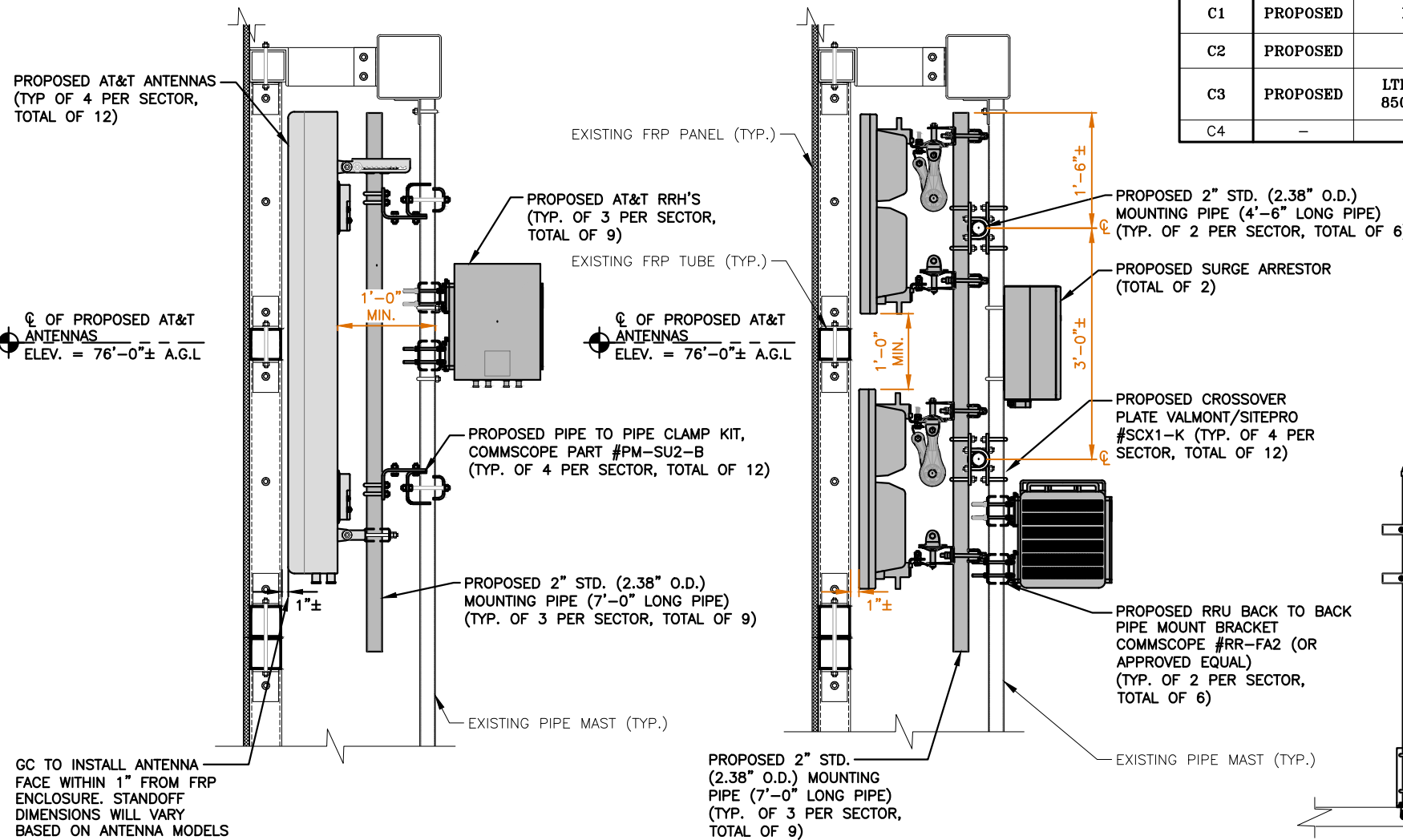
PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

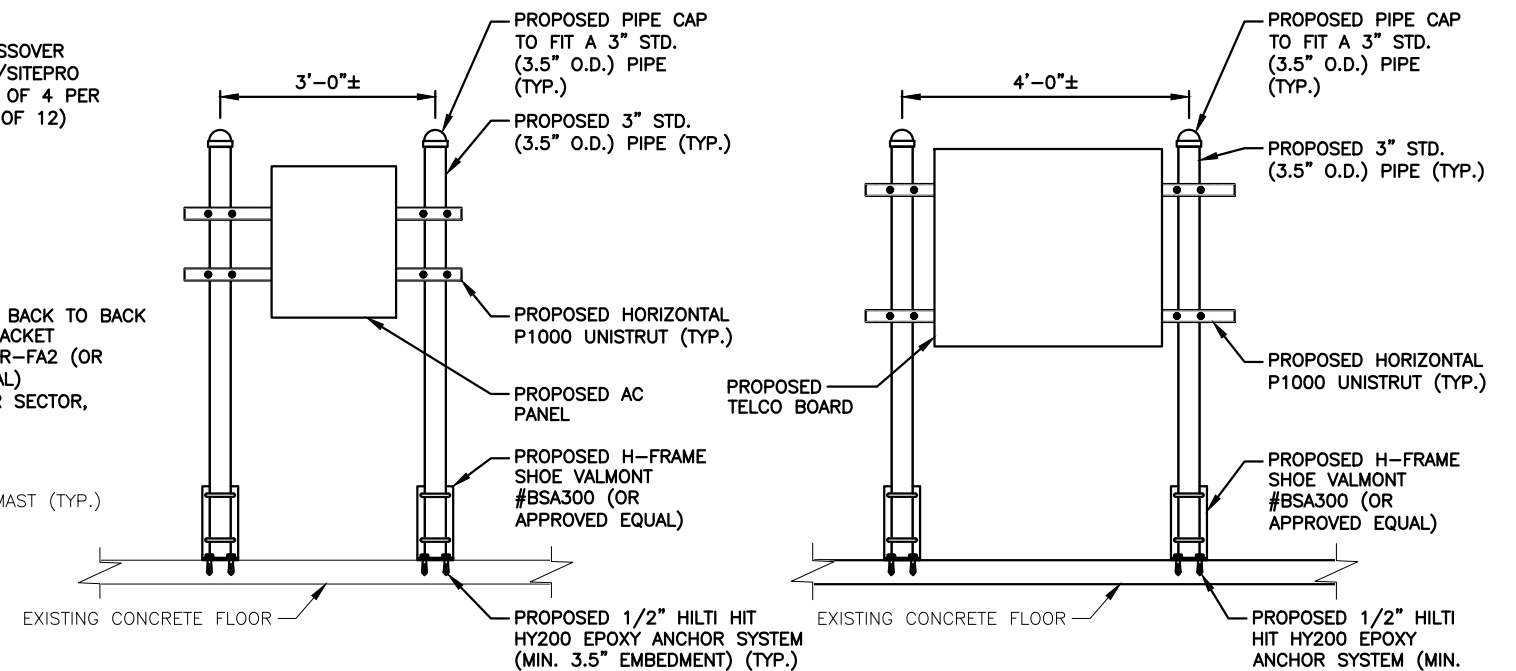
PROPOSED RRUS DETAIL 1
SCALE: N.T.S. A-3

ANTENNA SCHEDULE										
SECTOR	EXISTING/PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ϕ HEIGHT	AZIMUTH	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	PROPOSED	LTE B14	TPA65R-BU6DA-K	71.2X21X7.8	76'-0"	20°	(P) (1) B14 4478	18.1X13.4X8.3	(P) (6) DC POWER CABLES & (2) FIBER RUNS	(P) (2) RAYCAP DC9-48-60-24-PC16-EV
A2	PROPOSED	-	AIR 6419 B77D AIR 6419 B77G	28X15.7X6.7 28X15.7X6.7	76'-0"	20°	-	-		
A3	PROPOSED	LTE 700 BC/850/PCS/AWS	TPA65R-BU6DA-K	71.2X21X7.8	76'-0"	20°	(P) (1) 4449 B5/B12 (P) (1) 8843 B2/B66A	17.9X13.2X9.4 14.9X13.2X10.9		
A4	-	-	-	-	-	-	-	-		
B1	PROPOSED	LTE B14	TPA65R-BU6DA-K	71.2X21X7.8	76'-0"	130°	(P) (1) B14 4478	18.1X13.4X8.3	(P) (6) DC POWER CABLES & (2) FIBER RUNS	(P) (2) RAYCAP DC9-48-60-24-PC16-EV
B2	PROPOSED	-	AIR 6419 B77D AIR 6419 B77G	28X15.7X6.7 28X15.7X6.7	76'-0"	130°	-	-		
B3	PROPOSED	LTE 700 BC/850/PCS/AWS	TPA65R-BU6DA-K	71.2X21X7.8	76'-0"	130°	(P) (1) 4449 B5/B12 (P) (1) 8843 B2/B66A	17.9X13.2X9.4 14.9X13.2X10.9		
B4	-	-	-	-	-	-	-	-		
C1	PROPOSED	LTE B14	TPA65R-BU6DA-K	71.2X21X7.8	76'-0"	270°	(P) (1) B14 4478	18.1X13.4X8.3	(P) (6) DC POWER CABLES & (2) FIBER RUNS	(P) (2) RAYCAP DC9-48-60-24-PC16-EV
C2	PROPOSED	-	AIR 6419 B77D AIR 6419 B77G	28X15.7X6.7 28X15.7X6.7	76'-0"	270°	-	-		
C3	PROPOSED	LTE 700 BC/850/PCS/AWS	TPA65R-BU6DA-K	71.2X21X7.8	76'-0"	270°	(P) (1) 4449 B5/B12 (P) (1) 8843 B2/B66A	17.9X13.2X9.4 14.9X13.2X10.9		
C4	-	-	-	-	-	-	-	-		

FINAL ANTENNA SCHEDULE 2
SCALE: N.T.S. A-3



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



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

PROPOSED TELCO BOARD MOUNTING DETAIL 7
SCALE: N.T.S. A-3

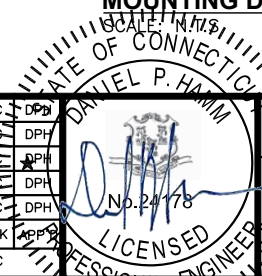


SITE NUMBER: CT1440
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5151 PARK AVENUE DUP1
FAIRFIELD, CT 06825
FAIRFIELD COUNTY



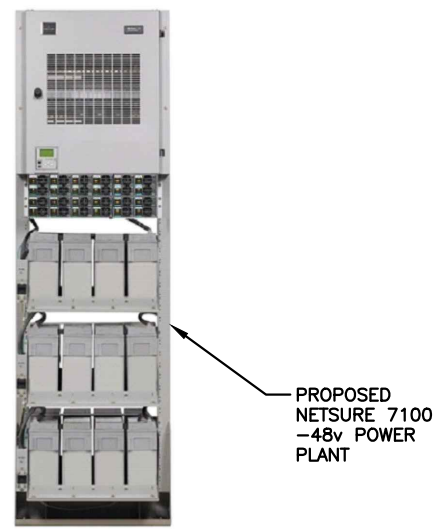
NO.	DATE	REVISIONS	BY	CHK	APP
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8	01/31/24	ISSUED FOR CONSTRUCTION	CC	JC	DPH
7	12/22/23	ISSUED FOR CONSTRUCTION	CC	JC	DPH
6	07/05/23	ISSUED FOR CONSTRUCTION	AM	JC	DPH



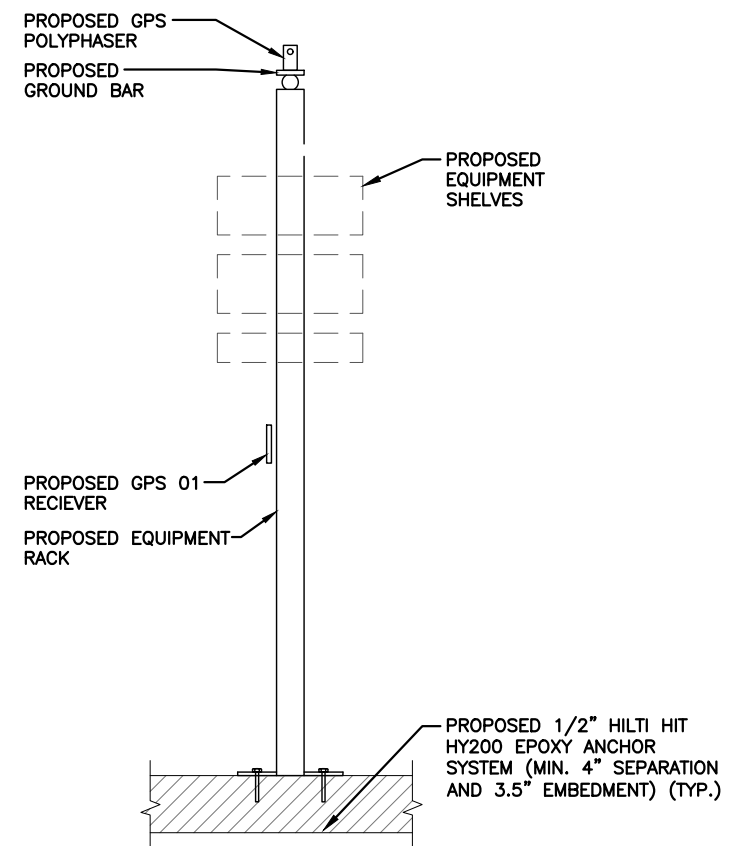
AT&T MOBILITY

DETAILS
(NSB)

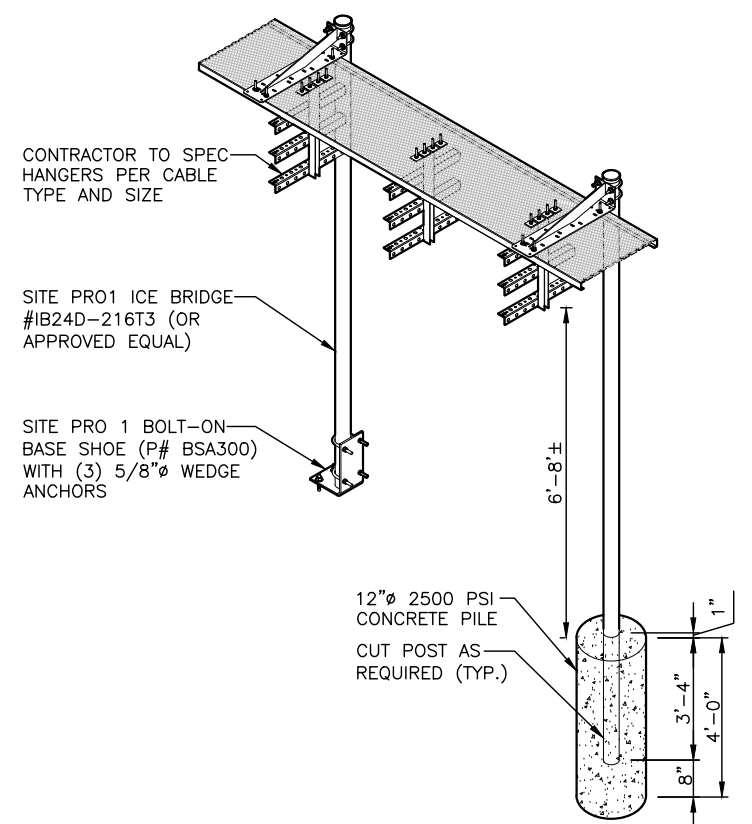
SITE NUMBER	DRAWING NUMBER	REV
CT1440	A-3	10



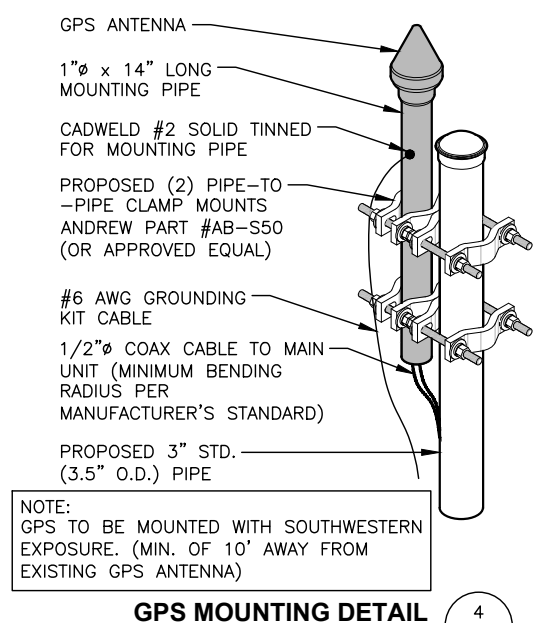
EMERSSON DC POWER PLANT DETAIL
SCALE: N.T.S. (1 A-4)



PROPOSED EQUIPMENT RACK DETAIL
SCALE: N.T.S. (2 A-4)

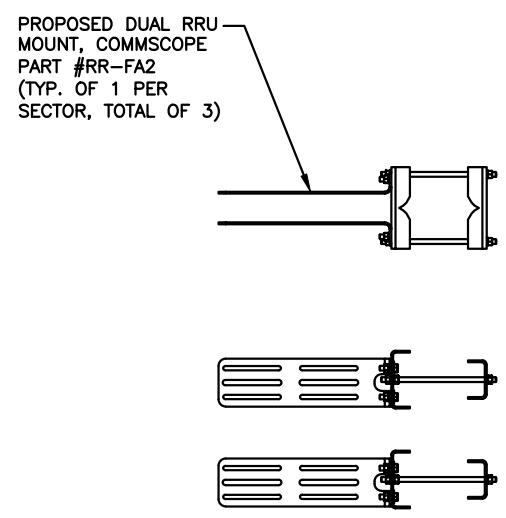


CABLE BRIDGE DETAIL
22x34 SCALE: N.T.S. (3 A-4)

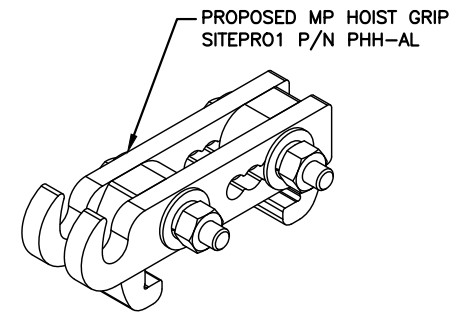


NOTE: GPS TO BE MOUNTED WITH SOUTHWESTERN EXPOSURE. (MIN. OF 10' AWAY FROM EXISTING GPS ANTENNA)

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



BACK TO BACK RRU MOUNT DETAIL
SCALE: N.T.S. (5 A-4)



PROPOSED CABLE HOIST DETAIL
SCALE: N.T.S. (6 A-4)

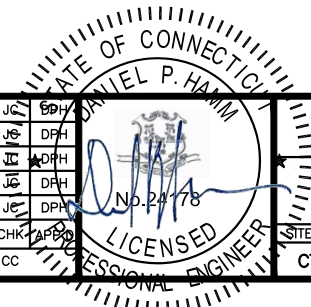


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SITE NAME: FAIRFIELD SACRED HEART CAMPUS

5151 PARK AVENUE DUP1
FAIRFIELD, CT 06825
FAIRFIELD COUNTY



10	10/18/24	ISSUED FOR CONSTRUCTION	CC	JC	DPH
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NO.	DATE	REVISIONS	BY	CHK	APP
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: CC		



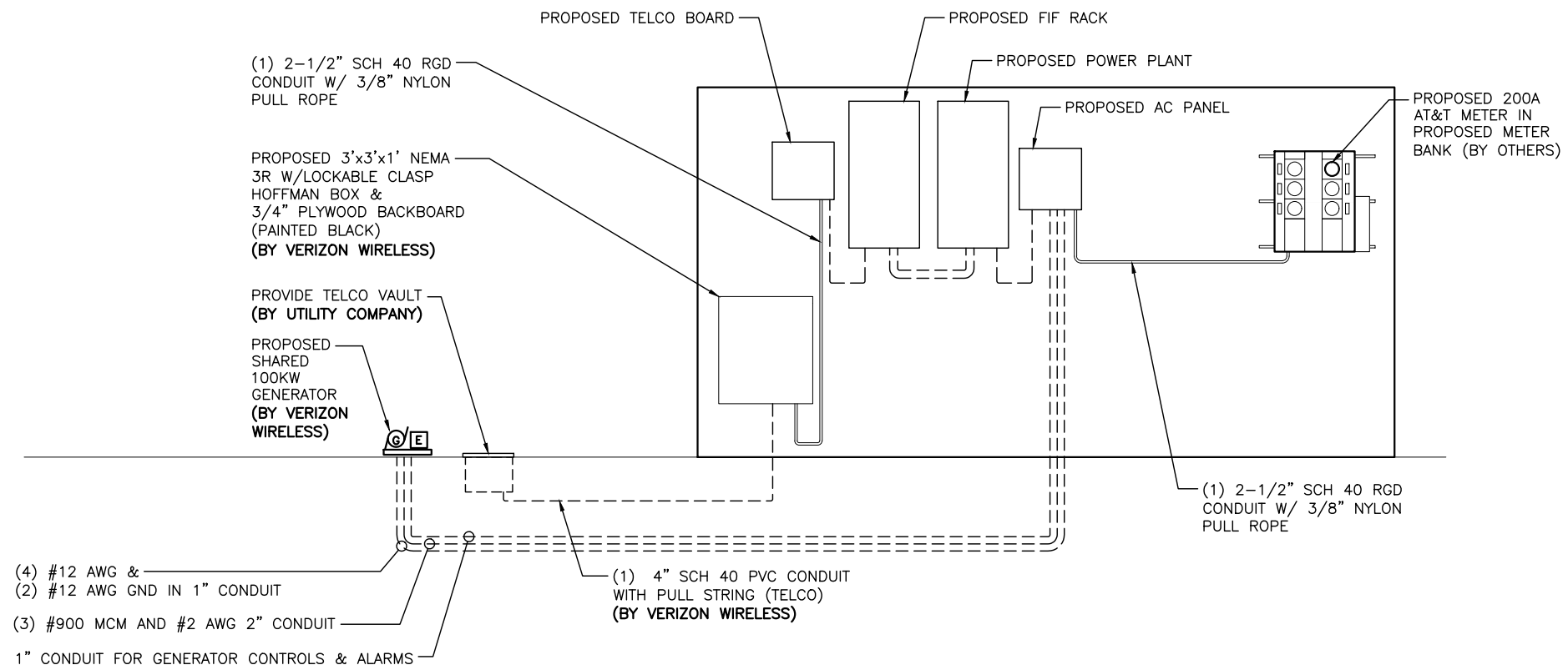
AT&T MOBILITY		
DETAILS (NSB)		
SITE NUMBER	DRAWING NUMBER	REV
CT1440	A-4	10

ELECTRICAL LEGEND & ABBREVIATIONS

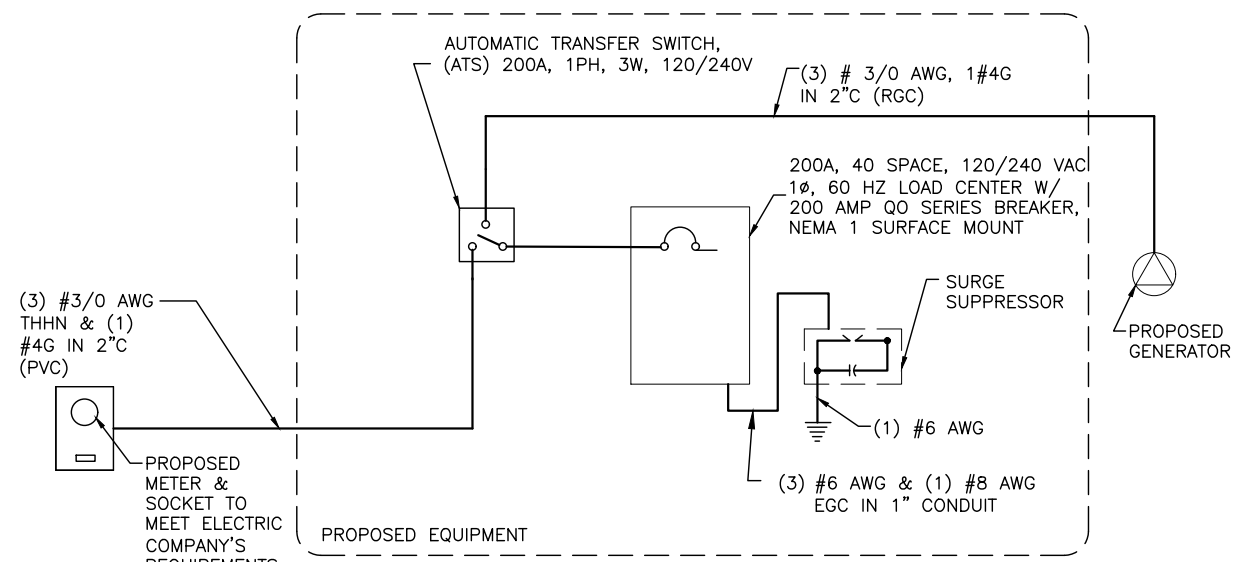
	NEW PANEL BOARD, SURFACE MOUNTED		MECHANICAL CONNECTION
	EXISTING PANEL BOARD, SURFACE MOUNTED		CADWELD CONNECTION
	DRY TYPE TRANSFORMER		
	METER		
	CIRCUIT BREAKER		
	NON-FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.		
	FUSIBLE DISCONNECT SWITCH, MOUNTED 54" A.F.F.		
	TRANSIENT VOLTAGE SURGE SUPPRESSOR WITH BUILT-IN FUSES, SURFACE MOUNTED		
	DUPLEX OUTLET, SURFACE MOUNTED, 20 AMPS, 125 VOLTS, SINGLE PHASE		
	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. #	PHASE		
W	WATTS		
NEC	NATIONAL ELECTRIC CODE		
PPC	POWER PROTECTION CABINET		
UL	UNDERWRITER LABORATORIES		
PTS	POWER TRANSFER SWITCH		
QO	QUICK OPEN GALVANIZED RIGID CONDUIT		
G	GROUND		
	GROUND		
MGB	MASTER GROUND BAR		
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

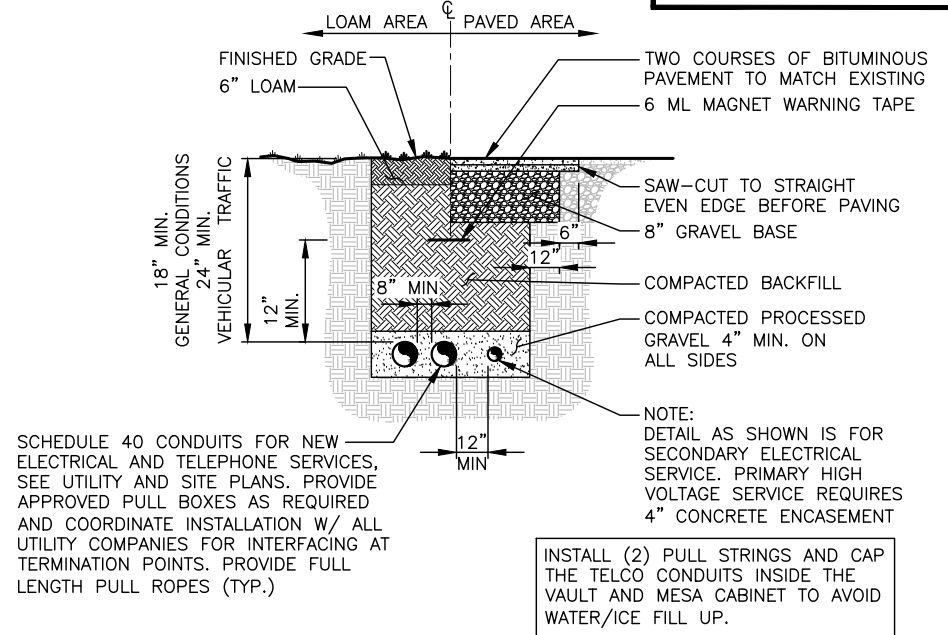
- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
- ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
- THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
- GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
- 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.
- BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
- ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THININSULATION.
- 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.
- 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.
- 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.
- ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
- PPC SUPPLIED BY PROJECT OWNER.
- GROUNDING SHALL COMPLY WITH NEC ART. 250.
- GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
- USE #6 AWG COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 AWG SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
- 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.
- 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 AWG 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.
- CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
- APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
- BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
- BOND ANTENNA EGB'S AND MGB TO GROUND RING.
- CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMS MAXIMUM RESISTANCE REQUIRED.
- CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE-TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.
- 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.



EQUIPMENT WIRING DETAIL 1
SCALE: N.T.S.



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



BURIED CONDUIT DETAIL 3
SCALE: N.T.S.

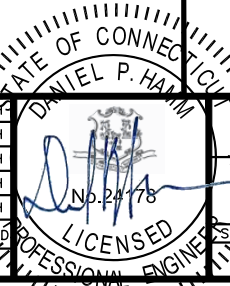


SITE NUMBER: CT1440
SITE NAME: FAIRFIELD SACRED HEART CAMPUS

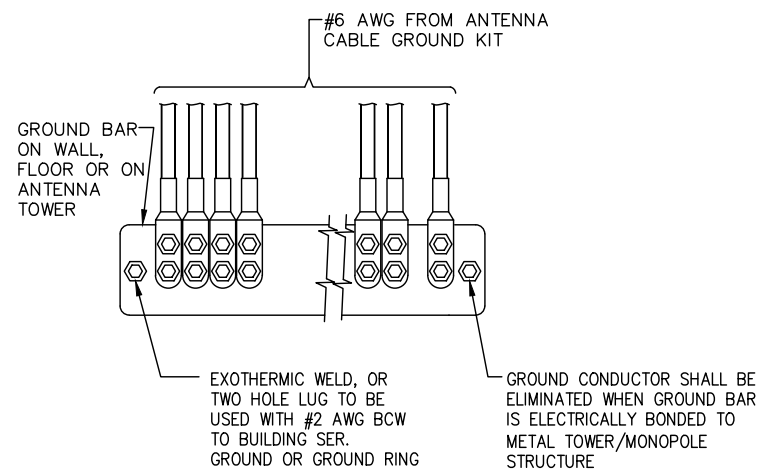
5151 PARK AVENUE DUP1
FAIRFIELD, CT 06825
FAIRFIELD COUNTY



10	10/18/24	ISSUED FOR CONSTRUCTION	CC	JC	DPH
9	08/05/24	ISSUED FOR CONSTRUCTION	CC	JC	DPH
8	01/31/24	ISSUED FOR CONSTRUCTION	CC	JC	DPH
7	12/22/23	ISSUED FOR CONSTRUCTION	CC	JC	DPH
6	07/05/23	ISSUED FOR CONSTRUCTION	AM	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: CC		



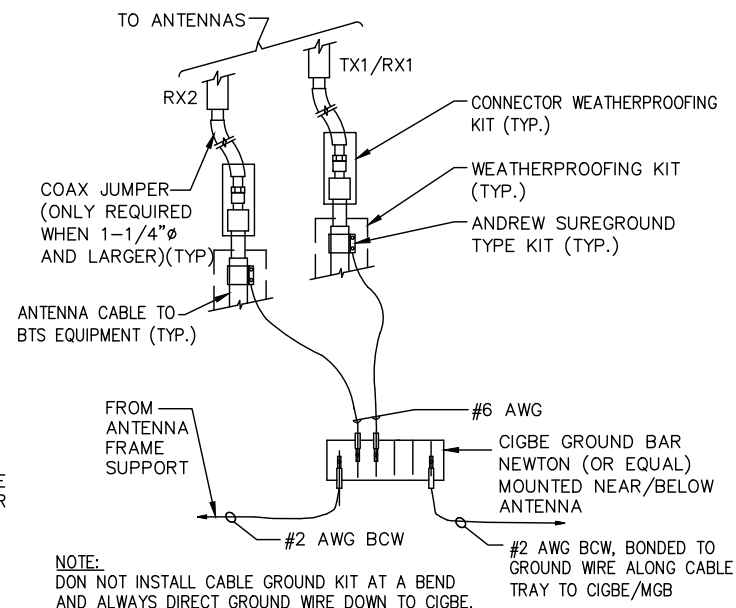
AT&T MOBILITY		
ELECTRICAL NOTES & ONE-LINE DIAGRAM (NSB)		
SITE NUMBER	DRAWING NUMBER	REV
CT1440	E-1	10



INSTALLATION OF GROUND WIRE TO GROUND BAR

SCALE: N.T.S

1
G-1



INSTALLATION OF GROUND WIRE TO GROUNDING BAR TOWER

SCALE: N.T.S

2
G-1

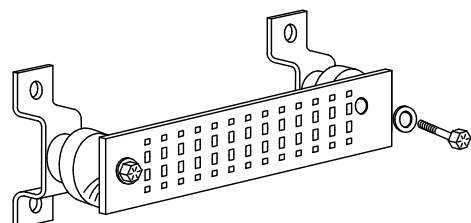
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" - SURGE PRODUCERS

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

SECTION "A" - SURGE ABSORBERS

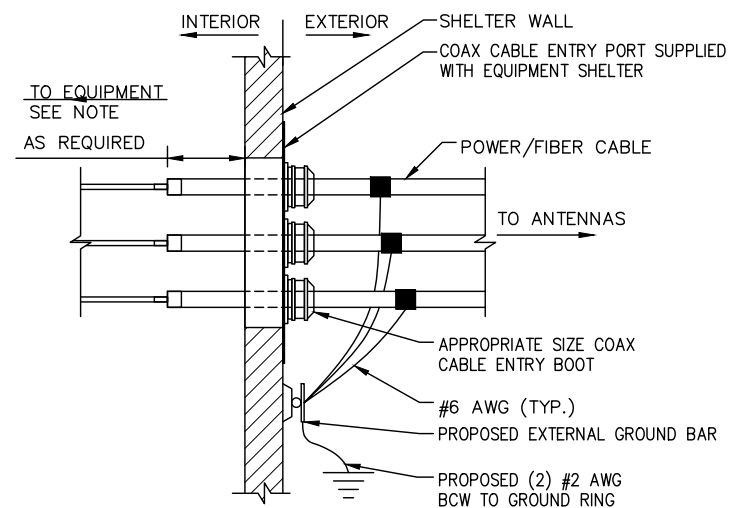
- INTERIOR GROUND RING (#2 AWG)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2 AWG)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2 AWG)
- BUILDING STEEL (IF AVAILABLE) (#2 AWG)



GROUND BAR - DETAIL

SCALE: N.T.S

3
G-1



INSTALLATION OF GROUND WIRE TO GROUND BAR

SCALE: N.T.S

4
G-1

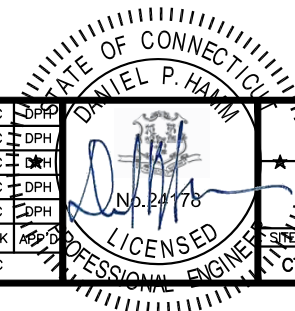


SITE NUMBER: CT1440
SITE NAME: FAIRFIELD SACRED HEART CAMPUS

5151 PARK AVENUE DUP1
FAIRFIELD, CT 06825
FAIRFIELD COUNTY

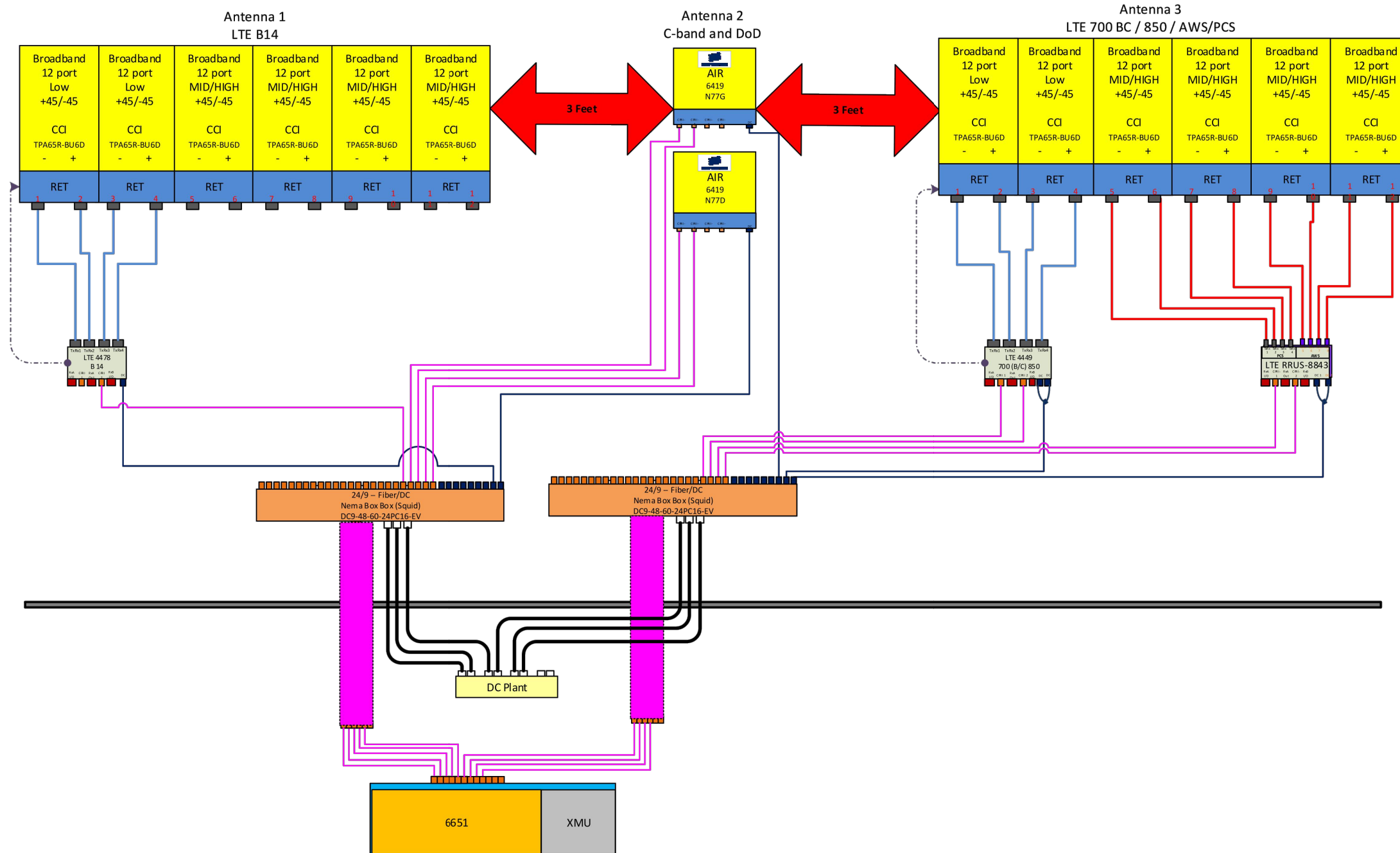


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9	08/05/24	ISSUED FOR CONSTRUCTION	CC	JC	DPH
8	01/31/24	ISSUED FOR CONSTRUCTION	CC	JC	DPH
7	12/22/23	ISSUED FOR CONSTRUCTION	CC	JC	DPH
6	07/05/23	ISSUED FOR CONSTRUCTION	AM	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN			DESIGNED BY: JC	DRAWN BY: CC	



AT&T MOBILITY
GROUNDING DETAILS (NSB)

SITE NUMBER	DRAWING NUMBER	REV
CT1440	G-1	10



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

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

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



SITE NUMBER: CT1440
SITE NAME: FAIRFIELD SACRED HEART CAMPUS

5151 PARK AVENUE DUP1
FAIRFIELD, CT 06825
FAIRFIELD COUNTY



10	10/18/24	ISSUED FOR CONSTRUCTION	CC	JC	DPH
9	08/05/24	ISSUED FOR CONSTRUCTION	CC	JC	DPH
8	01/31/24	ISSUED FOR CONSTRUCTION	CC	JC	DPH
7	12/22/23	ISSUED FOR CONSTRUCTION	CC	JC	DPH
6	07/05/23	ISSUED FOR CONSTRUCTION	AM	JC	DPH
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: JC	DRAWN BY: CC		

AT&T MOBILITY		
RF PLUMBING DIAGRAM (NSB)		
SITE NUMBER	DRAWING NUMBER	REV
CT1440	RF-1	10

Exhibit B



Structural Analysis Report

Prepared for:

KGI

**14425 Falcon Head Blvd, Building E, Suite 100
Austin, TX 78738**

ATTN: Ms. Patricia Tatrai

Structure : 100 ft Stealth Monument
Site ID : 29546
Proposed Carrier : AT&T Wireless
Site Name : Plattsville RELO
Site Location : 5151 Park Avenue
Fairfield, CT
41.2189, -73.2448
County : Fairfield
Date : October 10, 2024
Max Structure Usage : 97%
Max Foundation Usage : 52%
Result : Pass

Prepared By:
Nathan Wood, E.I.T. (NE)
Structural Engineer

A handwritten signature in black ink that reads "Nathan Wood".

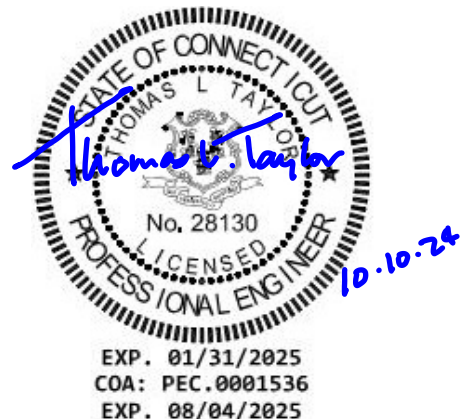




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Conclusion ----- 1

Existing and Reserved Equipment----- 2

Equipment to be Removed ----- 2

Proposed Equipment ----- 2

Structure Usages ----- 3

Foundations ----- 3

Standard Conditions ----- 4

Calculations ----- Attached

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 100 ft Stealth Monument to reflect the change in loading by AT&T Wireless.

Supporting Documents

Tower Drawing	Larson Job # 553278, dated October 19, 2022
Foundation Drawing	Larson Job # 553278, dated October 19, 2022
Geotechnical Report	Terracon Project # J1225042, dated August 10, 2022
Mount Analysis	TEP Project # 317059.978330, dated December 15, 2022
Tower Inventory	KGI TLF Site # 29546, dated October 8, 2024
Proposed Loading	AT&T CDs Site # CT1440, dated July 19, 2024

Analysis

The tower was analyzed using TNX tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed	118 mph (3-Second Gust) Vult
Basic Wind Speed w/Ice	50 mph (3-Second Gust) w/ 1" radial ice concurrent
Code	ANSI/TIA-222-H / 2021 IBC / 2022 Connecticut State Building Code
Risk Category	II
Exposure Category	C
Topographic Category	1
Crest Height	0 ft
Spectral Response	$S_s = 0.216$, $S_1 = 0.055$
Site Class	C - Very Dense Soil
Ground Elevation	294.76 ft
Annex S Considered	Yes

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The structure and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact Semaan Engineering Solutions at 402-289-1888.

Existing and Reserved Equipment

This loading **is** included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
95.0	95.0	2	MX06FRO640-02	Inside (3) 48"Ø x 10' FRP Canister Radomes	(12) 7/8"	Verizon
		4	MX06FRO660-03			
		3	RF4440d-13A			
		3	RF4439d-25A			
85.0	85.0	3	AIR 6419 B41	Inside (3) 48"Ø x 10' FRP Canister Radomes	(3) 6x24 Hybrid	T-Mobile
		3	FFVV-65A-R2-V1			
		3	4449 B71/B85 RRU			
		3	4460 B25/B66 RRU			
68.5	68.5	3	XXDWMM-12.5-65-8T	(12) Pipe Mounts Behind FRP Concealment Panel	-	Verizon
		3	MT6407-77A			
		3	RT-4401CA-CBRS Port1 3550 8DT w/ CBRS RRH - RT4401-48A			
67.0	67.0	3	MX06FRO640-02	(12) Pipe Mounts Behind FRP Concealment Panel	(3) 12x24 Hybrid	Verizon
		1	RF4440d-13A			
		1	RF4439d-25A			
		12	TD-850B-LTE78-43			
		3	RFS OVP			

Equipment to be Removed

This loading **is not** included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
No loading considered as to be removed						

Proposed Equipment

This loading **is** included in the analysis.

Centerline Elevation (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	Equip.					
76.0	76.0	6	TPA65R-BU6DA-K	(3) Face Frames on (12) Pipe Mounts Behind FRP Concealment Panel	(6) 1" DC (3) 1/2" Fiber	AT&T
		3	AIR 6419 B77D			
		3	AIR 6419 B77G			
		3	4478 B14 RRU			
		3	4449 B5/B12 RRU			
		3	8843 B2/B66A RRU			
		2	DC9-48-60-24-8C-EV			

Install proposed coax anywhere on tower.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Top Pole	43%	Pass
Legs	12%	Pass
Horizontals	97%	Pass
Bolts	56%	Pass
Flanges	47%	Pass
Anchor Bolts	18%	Pass
Baseplate	21%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Uplift (Kips)	87.7	52%
Axial (Kips)	164.4	23%
Shear (Kips)	13.7	8%
Reinf. Conc. Fnd. Capacity	N/A	8%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.



Standard Conditions

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

-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- Information from drawings in the possession of Semaan Engineering Solutions, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to Semaan Engineering Solutions Holdings and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and Semaan Engineering Solutions, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

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

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
20"x6" Pipe Mount	80	TPA65R-BU6DA-K w/6' Mount Pipe (ATT)	76
20"x6" Pipe Mount	80		
20"x6" Pipe Mount	80	TPA65R-BU6DA-K w/6' Mount Pipe (ATT)	76
48"Ø x 10' FRP Stealth Radome	80	AIR 6419 B77D w/3' Mount Pipe (ATT)	76
48"Ø x 10' FRP Stealth Radome	80	AIR 6419 B77D w/3' Mount Pipe (ATT)	76
48"Ø x 10' FRP Stealth Radome	80	AIR 6419 B77D w/3' Mount Pipe (ATT)	76
48"Ø x 10' FRP Stealth Radome	80	AIR 6419 B77G w/3' Mount Pipe (ATT)	76
48"Ø x 10' FRP Stealth Radome	80	AIR 6419 B77G w/3' Mount Pipe (ATT)	76
48"Ø x 10' FRP Stealth Radome	80	AIR 6419 B77G w/3' Mount Pipe (ATT)	76
48"Ø x 10' FRP Stealth Radome	80	AIR 6419 B77G w/3' Mount Pipe (ATT)	76
18' Sq. FRP Panel Assembly	80 - 62	TPA65R-BU6DA-K w/6' Mount Pipe (ATT)	76
18' Sq. FRP Panel Assembly	80 - 62	TPA65R-BU6DA-K w/6' Mount Pipe (ATT)	76
Framing_Misc Steel @ 80'	80	TPA65R-BU6DA-K w/6' Mount Pipe (ATT)	76
MX06FRO640-02 (Verizon)	80	TPA65R-BU6DA-K w/6' Mount Pipe (ATT)	76
MX06FRO640-02 (Verizon)	80		
MX06FRO660-03 (Verizon)	80	4478 B14 RRU (ATT)	76
MX06FRO660-03 (Verizon)	80	4478 B14 RRU (ATT)	76
MX06FRO660-03 (Verizon)	80	4478 B14 RRU (ATT)	76
MX06FRO660-03 (Verizon)	80	4449 B5/B12 RRU (ATT)	76
RF4440d-13A (Verizon)	80	4449 B5/B12 RRU (ATT)	76
RF4440d-13A (Verizon)	80	8843 B2/B66A RRU (ATT)	76
RF4439d-25A (Verizon)	80	8843 B2/B66A RRU (ATT)	76
RF4439d-25A (Verizon)	80	8843 B2/B66A RRU (ATT)	76
RF4439d-25A (Verizon)	80	DC9-48-60-24-8C-EV (ATT)	76
(4) 7/8" Coax (Elev 80'-95') (Verizon)	80	DC9-48-60-24-8C-EV (ATT)	76
(4) 7/8" Coax (Elev 80'-95') (Verizon)	80	MT6407-77A (Verizon)	62.5
(4) 7/8" Coax (Elev 80'-95') (Verizon)	80	MT6407-77A (Verizon)	62.5
FFVV-65A-R2-V1 (T-Mobile)	80	MT6407-77A (Verizon)	62.5
FFVV-65A-R2-V1 (T-Mobile)	80	XXDWM-12.5-65-8T (Verizon)	62.5
FFVV-65A-R2-V1 (T-Mobile)	80	XXDWM-12.5-65-8T (Verizon)	62.5
AIR 6419 B41 (T-Mobile)	80	XXDWM-12.5-65-8T (Verizon)	62.5
AIR 6419 B41 (T-Mobile)	80	RT-4401CA-CBRS Port1 3550 8DT w/ CBRS RRH - RT4401-48A (Verizon)	62.5
AIR 6419 B41 (T-Mobile)	80	RT-4401CA-CBRS Port1 3550 8DT w/ CBRS RRH - RT4401-48A (Verizon)	62.5
4449 B71/B85 RRU (T-Mobile)	80	RT-4401CA-CBRS Port1 3550 8DT w/ CBRS RRH - RT4401-48A (Verizon)	62.5
4449 B71/B85 RRU (T-Mobile)	80		
4449 B71/B85 RRU (T-Mobile)	80	RT-4401CA-CBRS Port1 3550 8DT w/ CBRS RRH - RT4401-48A (Verizon)	62.5
4460 B25/B66 RRU (T-Mobile)	80		
4460 B25/B66 RRU (T-Mobile)	80		
4460 B25/B66 RRU (T-Mobile)	80	MX06FRO640-02 (Verizon)	62.5
(1) 6x24 Hybrid (Elev 80'-85') (T-Mobile)	80	MX06FRO640-02 (Verizon)	62.5
(1) 6x24 Hybrid (Elev 80'-85') (T-Mobile)	80	RF4440d-13A (Verizon)	62.5
(1) 6x24 Hybrid (Elev 80'-85') (T-Mobile)	80	RF4439d-25A (Verizon)	62.5
(4) TD-850B-LTE78-43 (Verizon)	80	(4) TD-850B-LTE78-43 (Verizon)	62.5
(4) TD-850B-LTE78-43 (Verizon)	80	(4) TD-850B-LTE78-43 (Verizon)	62.5
(4) 17"x2" Pipe Mount	79.5 - 62.5	RFS OVP (Verizon)	62.5
(4) 17"x2" Pipe Mount	79.5 - 62.5	RFS OVP (Verizon)	62.5
(4) 17"x2" Pipe Mount	79.5 - 62.5	RFS OVP (Verizon)	62.5
Face Frame (ATT)	76	Work Platform_Misc Steel @ 62'	62
Face Frame (ATT)	76	Framing_Misc Steel @ 53'	53
Face Frame (ATT)	76	Framing_Misc Steel @ 26.5'	26.5
TPA65R-BU6DA-K w/6' Mount Pipe (ATT)	76		

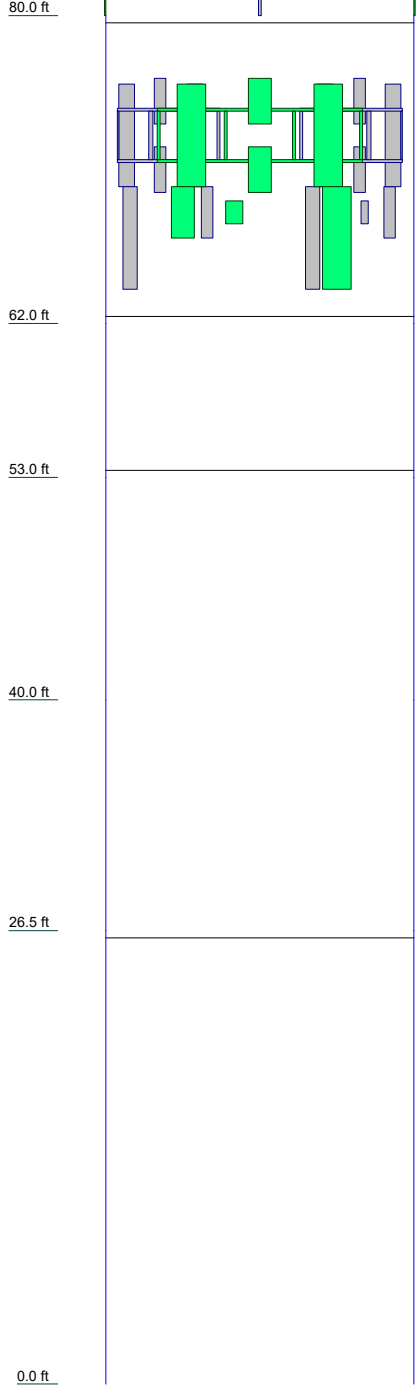
MATERIAL STRENGTH


GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 118 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 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. Leg A azimuth is -40° from North.

Section	T1									
Legs										
Leg Grade										
Diagonals										
Diagonal Grade										
Top Girts										
Bottom Girts										
Face Width (ft)										
# Panels @ (ft)										
Weight (K)										
	18.6	9.3	9.9	10.3	22.6					





Semaan Engineering Solutions
 1047 N 205th Street
 Elkhorn, NE 68022
 Phone: (402) 289-1888
 FAX:

Job: 29546_Plattsville RELO_Base

Project: REV03B	Client: KGI	Drawn by: NathanW	App'd:
Code: TIA-222-H	Date: 10/10/24	Scale: NTS	
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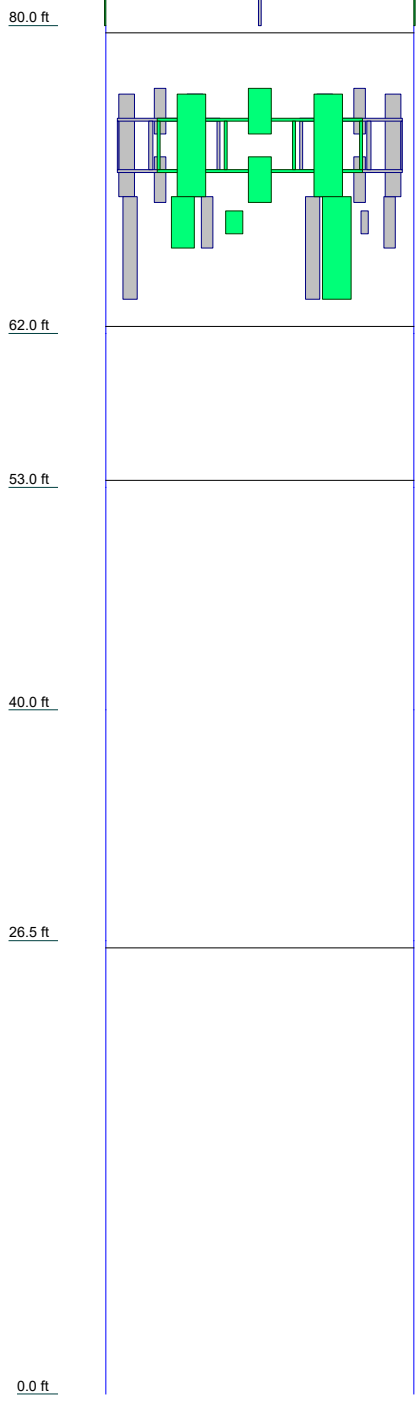
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

TOWER DESIGN NOTES

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4. Tower is also designed for a 50 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. Leg A azimuth is -40° from North.
9. CCISeismic Note: Seismic loads generated by CCISeismic 3.4.0
10. CCISeismic Note: Seismic calculations are in accordance with TIA-222-H-1
11. TOWER RATING: 97.4%

Section	T1	T2	T3	T4	T5	70.6
Legs						
Leg Grade	P48x1/2-ERW>					
Diagonals	A572-50					
Diagonal Grade	N.A.					
Top Girts	N.A.					
Bottom Girts	N.A.					
Face Width (ft)	18					
# Panels @ (ft)	1 @ 17.1667	1 @ 8.58333	1 @ 13	1 @ 13.5	1 @ 26.0833	
Weight (K)	18.6	9.3	9.9	10.3	22.6	

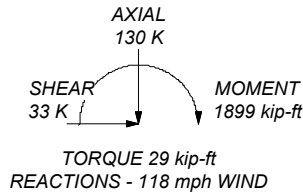
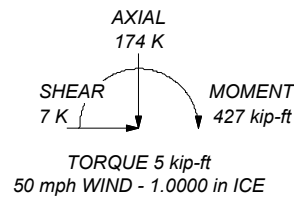
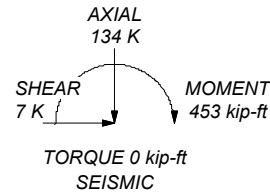


ALL REACTIONS
ARE FACTORED

MAX. CORNER REACTIONS AT BASE:

DOWN: 164 K
SHEAR: 11 K

UPLIFT: -88 K
SHEAR: 14 K



Semaan Engineering Solutions

1047 N 205th Street
Elkhorn, NE 68022
Phone: (402) 289-1888
FAX:

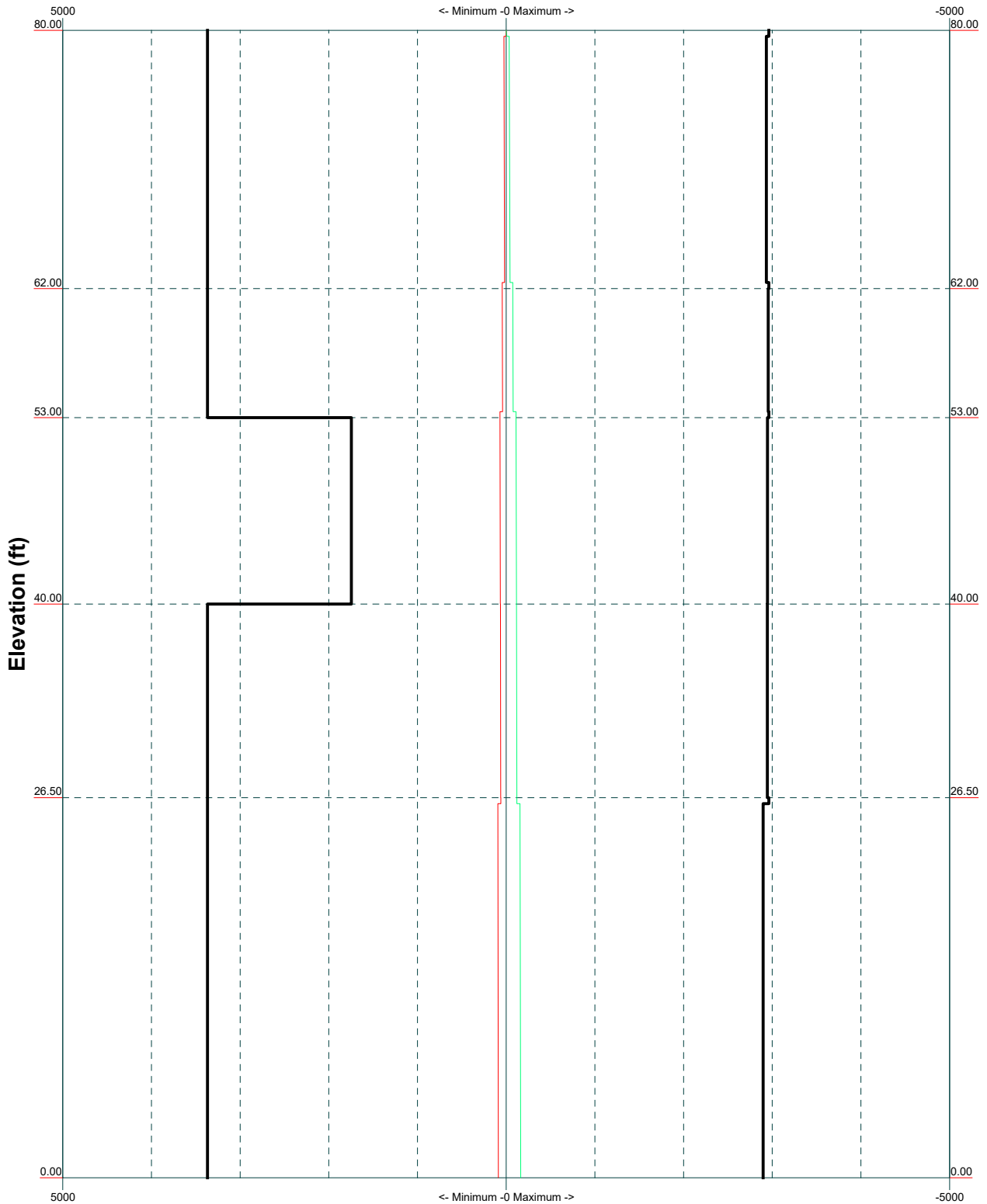
Job: **29546_Plattsville RELO_Base**


Project: REV03B	Drawn by: NathanW	App'd:
Client: KGI	Date: 10/10/24	Scale: NTS
Code: TIA-222-H	Path: S:\TNX files\29546\29546_REV03B\29546_REV03B_Base.eri	Dwg No. E-1

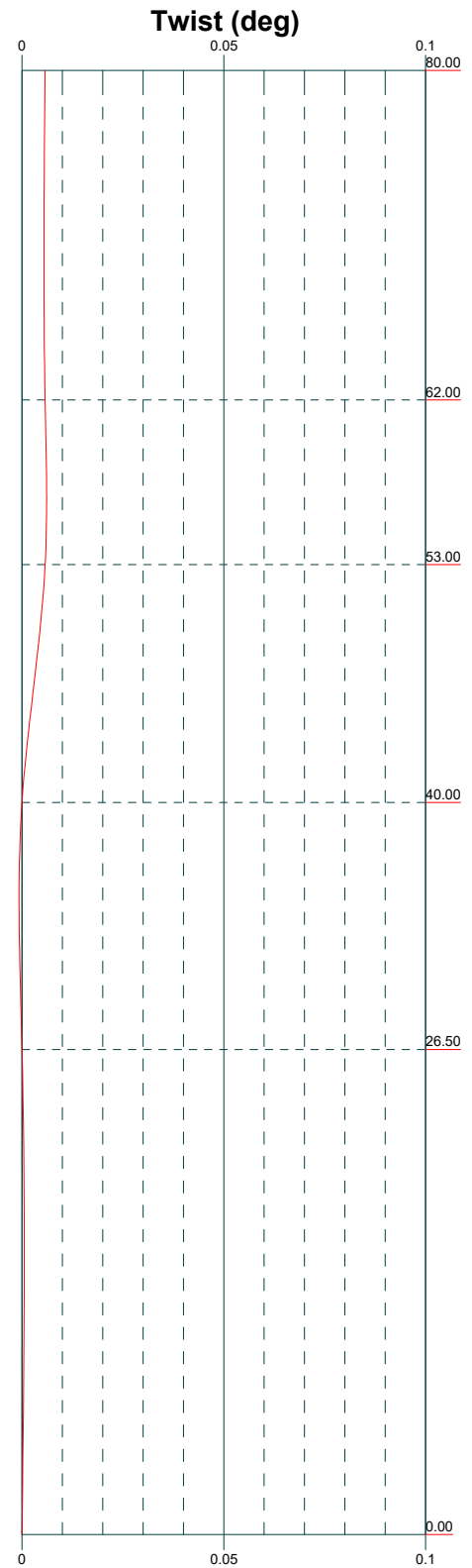
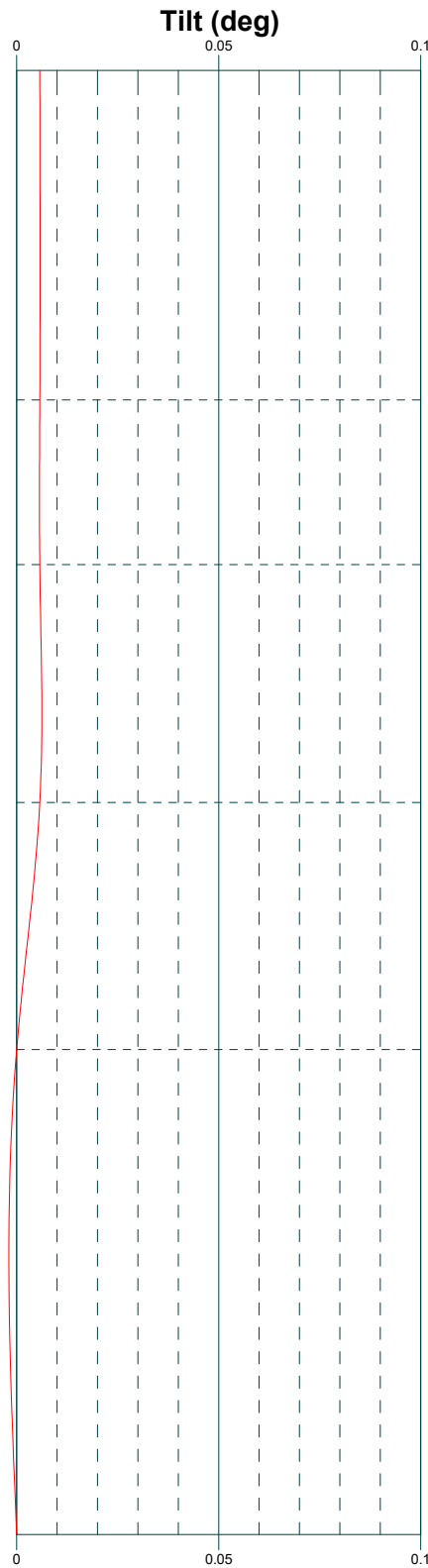
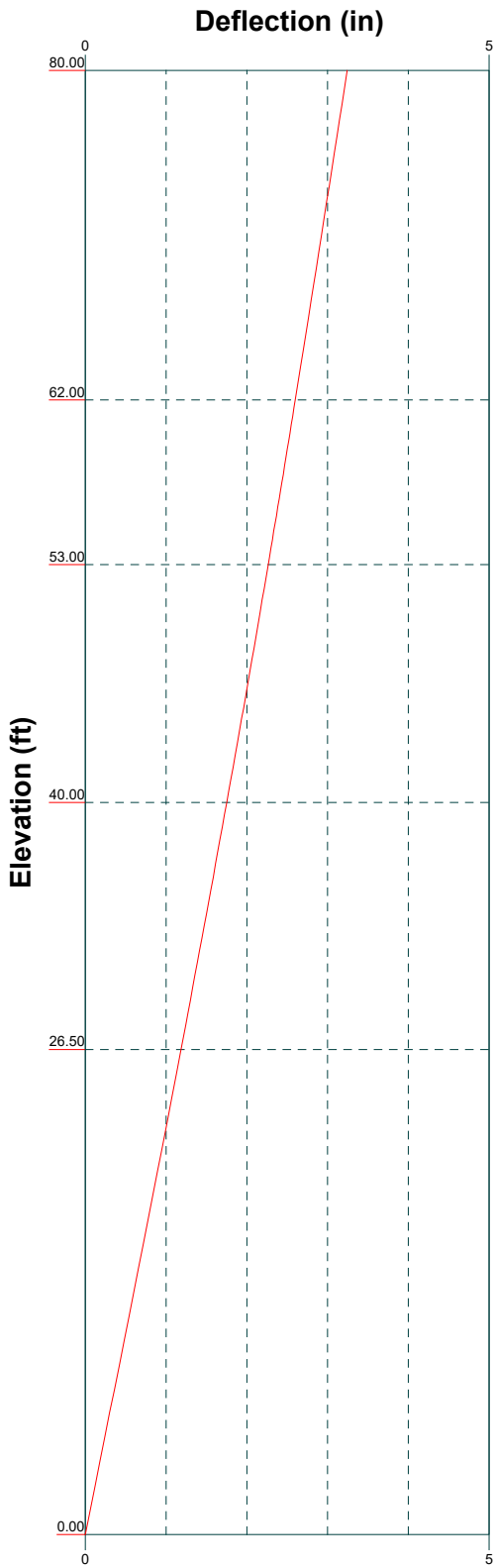
TIA-222-H - 118 mph/50 mph 1.0000 in Ice Exposure C

Leg Capacity ———

Leg Compression (K)



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	Project: REV03B		
	Client: KGI	Drawn by: NathanW	App'd:
	Code: TIA-222-H	Date: 10/10/24	Scale: NTS
	Path: S:\TNX files\29546\29546_REV03B\29546_REV03B_Base.eri		Dwg No. E-3



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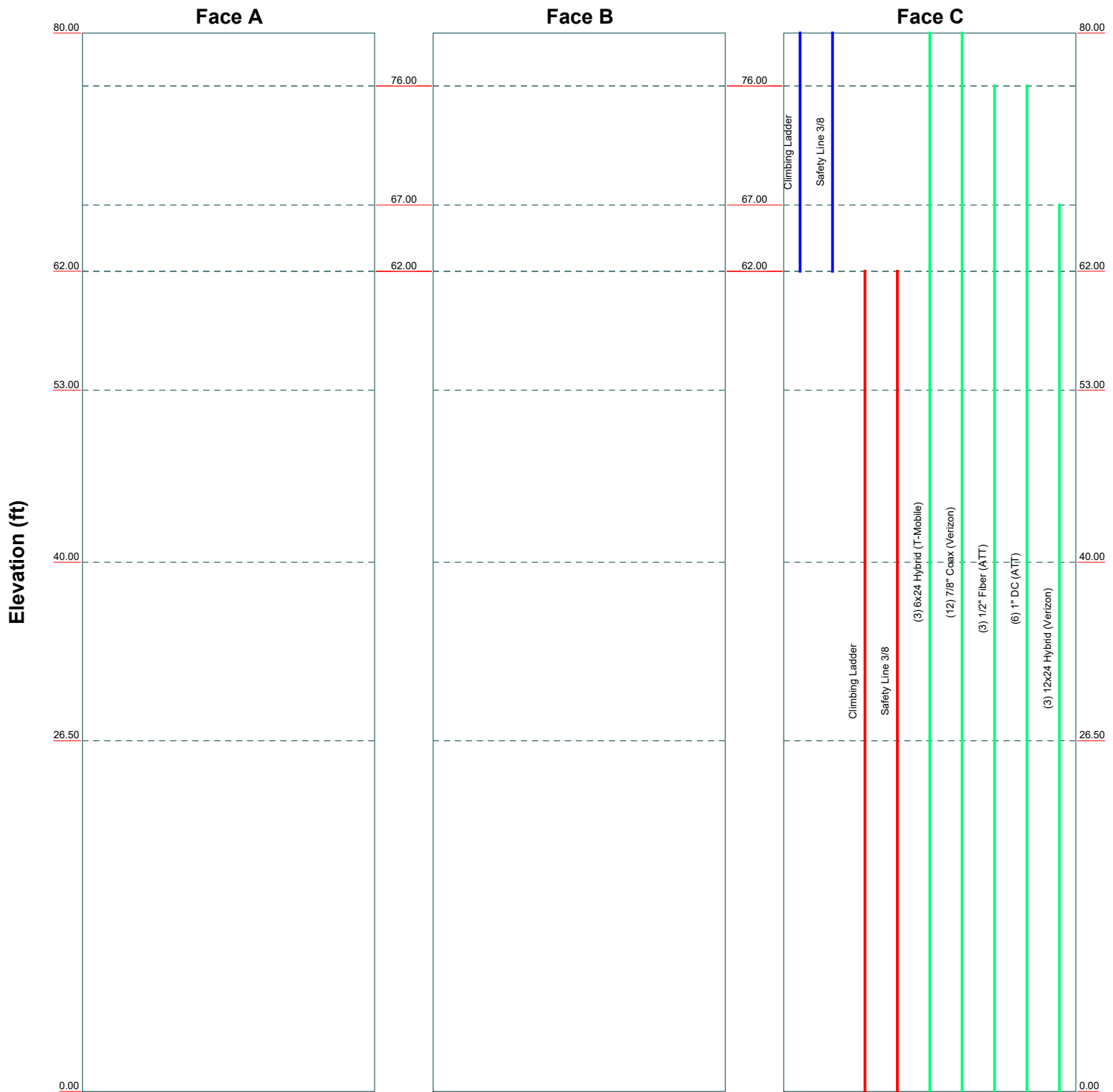
Job: **29546_Plattville RELO_Base**

Project: REV03B		
Client: KGI	Drawn by: NathanW	App'd:
Code: TIA-222-H	Date: 10/10/24	Scale: NTS
Path: S:\TNX files\29546\29546_REV03B\29546_REV03B_Base.eri		Dwg No. E-5

Feed Line Distribution Chart

0' - 80'

— Round
 — Flat
 — App In Face
 — App Out Face
 — Truss Leg



Semaan Engineering Solutions

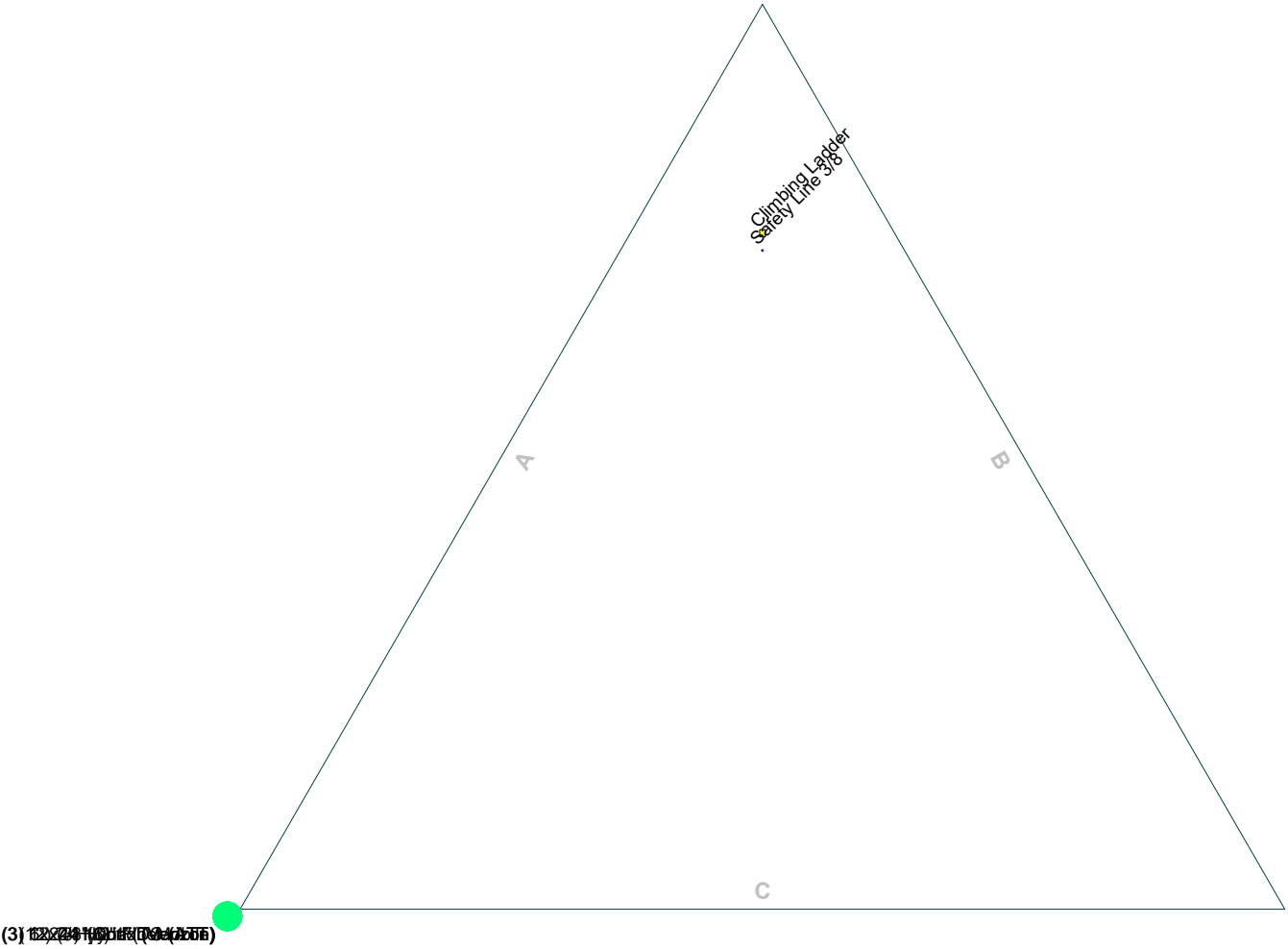
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 FAX:

Job: **29546_Plattville RELO_Base**


Project: REV03B		
Client: KGI	Drawn by: NathanW	App'd:
Code: TIA-222-H	Date: 10/10/24	Scale: NTS
Path: S:\TNX files\29546\29546_REV03B\29546_REV03B_Base.eri		Dwg No. E-7

Feed Line Plan

— Round
 — Flat
 — App In Face
 — App Out Face



(3) 1/2" dia (10) 1/4" dia (10) 1/4" dia

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	Project: REV03B		
	Client: KGI	Drawn by: NathanW	App'd:
	Code: TIA-222-H	Date: 10/10/24	Scale: NTS
	Path: S:\TNX files\29546\29546_REV03B\29546_REV03B_Base.eri		Dwg No. E-7

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Tower Input Data

The main tower is a 3x free standing tower with an overall height of 80.00 ft above the ground line.

The base of the tower is set at an elevation of 0.00 ft above the ground line.

The face width of the tower is 18.00 ft at the top and 18.00 ft at the base.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower is located in Fairfield County, Connecticut.

Tower base elevation above sea level: 294.76 ft.

Basic wind speed of 118 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 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

Leg A azimuth is -40° from North..

CCISEismic Note: Seismic loads generated by CCISEismic 3.4.0.

CCISEismic Note: Seismic calculations are in accordance with TIA-222-H-1.

Non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in tower member design is 1.

Tower analysis based on target reliabilities in accordance with Annex S.

Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$, $K_{es}(E_v \text{ and } E_h) = 1.0$.

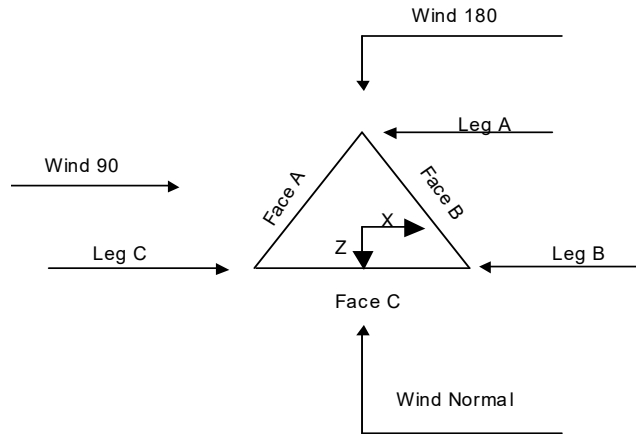
Maximum demand-capacity ratio is: 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> √ Consider Moments - Legs √ Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Kz In Exposure D Hurricane Region Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric Distribute Leg Loads As Uniform Use Special Wind Profile | <ul style="list-style-type: none"> Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurtenances Alternative Appurt. EPA Calculation Autocalc Torque Arm Areas Add IBC .6D+W Combination √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder √ Ignore KL/ry For 60 Deg. Angle Legs Use ASCE 10 X-Brace Ly Rules | <ul style="list-style-type: none"> √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA √ SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque √ Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <li style="background-color: #cccccc;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known |
|--|---|--|

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Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	80.00-62.00			18.00	1	18.00
T2	62.00-53.00			18.00	1	9.00
T3	53.00-40.00			18.00	1	13.00
T4	40.00-26.50			18.00	1	13.50
T5	26.50-0.00			18.00	1	26.50

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	80.00-62.00	17.17	X Brace	No	Yes	5.0000	5.0000
T2	62.00-53.00	8.58	X Brace	No	Yes	0.0000	5.0000
T3	53.00-40.00	13.00	X Brace	No	Yes	0.0000	0.0000
T4	40.00-26.50	13.50	X Brace	No	Yes	0.0000	0.0000
T5	26.50-0.00	26.08	X Brace	No	Yes	5.0000	0.0000

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Tower Section Geometry (cont'd)

Tower Elevation <i>ft</i>	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 80.00-62.00	Pipe	P48x1/2<ERW>	A572-50 (50 ksi)	Tube		A500-46 (46 ksi)
T2 62.00-53.00	Pipe	P48x1/2<ERW>	A572-50 (50 ksi)	Tube		A500-46 (46 ksi)
T3 53.00-40.00	Pipe	P48x1/2<ERW>	A572-50 (50 ksi)	Tube		A500-46 (46 ksi)
T4 40.00-26.50	Pipe	P48x1/2<ERW>	A572-50 (50 ksi)	Tube		A500-46 (46 ksi)
T5 26.50-0.00	Pipe	P48x1/2<ERW>	A572-50 (50 ksi)	Tube		A500-46 (46 ksi)

Tower Section Geometry (cont'd)

Tower Elevation <i>ft</i>	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 80.00-62.00	Tube	HSS10x10x3/8	A500-46 (46 ksi)	Tube	HSS10x10x3/8	A500-46 (46 ksi)
T2 62.00-53.00	Tube		A500-46 (46 ksi)	Tube	HSS10x10x3/8	A500-46 (46 ksi)
T5 26.50-0.00	Tube	HSS10x10x3/8	A500-46 (46 ksi)	Tube		A500-46 (46 ksi)

Tower Section Geometry (cont'd)

Tower Elevation <i>ft</i>	Gusset Area (per face) <i>ft²</i>	Gusset Thickness <i>in</i>	Gusset Grade	Adjust. Factor <i>A_f</i>	Adjust. Factor <i>A_r</i>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals <i>in</i>	Double Angle Stitch Bolt Spacing Horizontals <i>in</i>	Double Angle Stitch Bolt Spacing Redundants <i>in</i>
T1 80.00-62.00	0.00	0.0000	A36 (36 ksi)	0	0.5	1.054	0.0000	0.0000	0.0000
T2 62.00-53.00	0.00	0.0000	A36 (36 ksi)	1	1	1.054	0.0000	0.0000	0.0000
T3 53.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.074	0.0000	0.0000	0.0000
T4 40.00-26.50	0.00	0.0000	A36 (36 ksi)	1	1	1.074	0.0000	0.0000	0.0000
T5 26.50-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.066	0.0000	0.0000	0.0000

Tower Section Geometry (cont'd)

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Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
ft										
T1 80.00-62.00	Yes	Yes	1	1	1	1	1	1	1	1
T2 62.00-53.00	Yes	Yes	1	1	1	1	1	1	1	1
T3 53.00-40.00	Yes	Yes	1	1	1	1	1	1	1	1
T4 40.00-26.50	Yes	Yes	1	1	1	1	1	1	1	1
T5 26.50-0.00	Yes	Yes	1	1	1	1	0.9	1	1	1
				1	1	1	0.9	1	1	1

¹Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 80.00-62.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 62.00-53.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 53.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 40.00-26.50	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 26.50-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 80.00-62.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T2 62.00-53.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T3 53.00-40.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)

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Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T4 40.00-26.50	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)
T5 26.50-0.00	0.0000	0.75 (1)	0.0000	0.75 (1)	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 (1)	0.0000	0.75 (1)
	0.0000	0.75 (2)	0.0000	0.75 (2)							0.0000	0.75 (2)	0.0000	0.75 (2)
	0.0000	0.75 (3)	0.0000	0.75 (3)							0.0000	0.75 (3)	0.0000	0.75 (3)
	0.0000	0.75 (4)	0.0000	0.75 (4)							0.0000	0.75 (4)	0.0000	0.75 (4)

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 80.00-62.00	Flange	0.0000	0	0.0000	0	0.7500	20 *	0.7500	20 *	0.6250	0	0.0000	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2 62.00-53.00	Flange	0.0000	0	0.0000	0	0.0000	0	0.7500	20 *	0.6250	0	0.0000	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3 53.00-40.00	Flange	1.0000	32	0.0000	0	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T4 40.00-26.50	Flange	0.0000	0	0.0000	0	0.0000	0	0.0000	0	0.6250	0	0.0000	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T5 26.50-0.00	Flange	0.0000	0	0.0000	0	0.7500	20 *	0.0000	0	0.6250	0	0.0000	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

* Out-of-plane partial restraint assumed

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Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
<i>*On Leg C*</i>													
Climbing Ladder	C	No	No	Af (CaAa)	62.00 - 0.00	-139.0000	0	1	1	1.0000	1.1300		3.60
Safety Line 3/8	C	No	No	Ar (CaAa)	62.00 - 0.00	-136.0000	0	1	1	1.0000	0.3750		0.22
<i>*</i>													

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	C _A A	Weight plf
<i>*Behind Panel*</i>										
Climbing Ladder	C	No	No	CaAa (In Face)	80.00 - 62.00	-139.0000	0	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00 3.60 10.60 13.30
Safety Line 3/8	C	No	No	CaAa (In Face)	80.00 - 62.00	-136.0000	0	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00 0.22 0.75 1.28
<i>*</i>										
<i>*Inside Leg*</i>										
6x24 Hybrid (T-Mobile)	C	No	No	CaAa (Out Of Face)	80.00 - 0.00	0.0000	0	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00 2.22 2.22 2.22
7/8" Coax (Verizon)	C	No	No	CaAa (Out Of Face)	80.00 - 0.00	0.0000	0	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00 0.52 1.50 3.10
1/2" Fiber (ATT)	C	No	No	CaAa (Out Of Face)	76.00 - 0.00	0.0000	0	3	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00 0.59 0.59 0.59
1" DC (ATT)	C	No	No	CaAa (Out Of Face)	76.00 - 0.00	0.0000	0	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00 0.24 0.24 0.24
12x24 Hybrid (Verizon)	C	No	No	CaAa (Out Of Face)	67.00 - 0.00	0.0000	0	3	No Ice 1/2" Ice	0.00 0.00 0.00 3.20 3.20 3.20

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	C _A A _A ft ² /ft	Weight plf
Ice 1" Ice										

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
T1	80.00-62.00	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	0.39
T2	62.00-53.00	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	2.033	0.000	0.27
T3	53.00-40.00	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	2.936	0.000	0.38
T4	40.00-26.50	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	3.049	0.000	0.40
T5	26.50-0.00	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	5.985	0.000	0.78

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 _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
T1	80.00-62.00	A	0.918	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	1.08
T2	62.00-53.00	A	0.899	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	5.267	0.000	0.55
T3	53.00-40.00	A	0.880	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	7.510	0.000	0.78
T4	40.00-26.50	A	0.851	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	7.642	0.000	0.79
T5	26.50-0.00	A	0.776	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	14.209	0.000	1.47

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in

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Section	Elevation	CP _x	CP _z	CP _x	CP _z
	ft	in	in	Ice in	Ice in
T1	80.00-62.00	0.0000	0.0000	0.0000	0.0000
T2	62.00-53.00	0.0000	-0.8302	0.0000	-1.8183
T3	53.00-40.00	0.0000	-1.0774	0.0000	-2.3278
T4	40.00-26.50	0.0000	-1.0774	0.0000	-2.2850
T5	26.50-0.00	0.0000	-0.9911	0.0000	-2.0331

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	2	Climbing Ladder	62.00 - 80.00	0.6000	0.6000
T1	3	Safety Line 3/8	62.00 - 80.00	0.6000	0.6000
T2	5	Climbing Ladder	53.00 - 62.00	0.5774	0.5563
T2	6	Safety Line 3/8	53.00 - 62.00	0.5774	0.5563
T3	5	Climbing Ladder	40.00 - 53.00	0.6000	0.6000
T3	6	Safety Line 3/8	40.00 - 53.00	0.6000	0.6000
T4	5	Climbing Ladder	26.50 - 40.00	0.6000	0.6000
T4	6	Safety Line 3/8	26.50 - 40.00	0.6000	0.6000
T5	5	Climbing Ladder	0.00 - 26.50	0.6000	0.6000
T5	6	Safety Line 3/8	0.00 - 26.50	0.6000	0.6000

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	71.00	0.00	0.0000	0.69	0.00	0.00	1.66
CCISeismic Tower Section 2	57.50	0.00	0.0000	0.35	0.00	0.00	0.67
CCISeismic Tower Section 3	46.50	0.00	0.0000	0.37	0.00	0.00	0.58
CCISeismic Tower Section 4	33.25	0.00	0.0000	0.38	0.00	0.00	0.43
CCISeismic Tower Section 5	13.25	0.00	0.0000	0.85	0.00	0.00	0.38
CCISeismic 20'x6" Pipe Mount	80.00	0.00	0.0000	0.01	0.00	0.00	0.04
CCISeismic 20'x6" Pipe Mount	80.00	0.00	0.0000	0.01	0.00	0.00	0.04
CCISeismic 20'x6" Pipe Mount	80.00	0.00	0.0000	0.01	0.00	0.00	0.04
CCISeismic miscel 48"Ø x 10' FRP Stealth Radome	80.00	0.00	0.0000	0.01	0.00	0.00	0.04
CCISeismic miscel 48"Ø x 10' FRP Stealth Radome	80.00	0.00	0.0000	0.01	0.00	0.00	0.04
CCISeismic miscel 48"Ø x 10' FRP Stealth Radome	80.00	0.00	0.0000	0.01	0.00	0.00	0.04
CCISeismic miscel 48"Ø x 10' FRP Stealth Radome	80.00	0.00	0.0000	0.01	0.00	0.00	0.04
CCISeismic miscel 48"Ø x 10' FRP Stealth Radome	80.00	0.00	0.0000	0.01	0.00	0.00	0.04
CCISeismic miscel 48"Ø x 10' FRP Stealth Radome	80.00	0.00	0.0000	0.01	0.00	0.00	0.04
CCISeismic 18' Sq. FRP Panel	71.00	0.00	0.0000	0.11	0.00	0.00	0.26

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Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
Assembly							
CCISeismic 18' Sq. FRP Panel Assembly	71.00	0.00	0.0000	0.11	0.00	0.00	0.26
CCISeismic 18' Sq. FRP Panel Assembly	71.00	0.00	0.0000	0.11	0.00	0.00	0.26
CCISeismic (4) tower mounts 17'x2" Pipe Mount	71.00	0.00	0.0000	0.01	0.00	0.00	0.02
CCISeismic (4) tower mounts 17'x2" Pipe Mount	71.00	0.00	0.0000	0.01	0.00	0.00	0.02
CCISeismic (4) tower mounts 17'x2" Pipe Mount	71.00	0.00	0.0000	0.01	0.00	0.00	0.02
CCISeismic Framing & Miscel Steel @ 80'	80.00	0.00	0.0000	0.13	0.00	0.00	0.36
CCISeismic Work Platform & Miscel Steel @ 62'	62.00	0.00	0.0000	0.23	0.00	0.00	0.47
CCISeismic Framing & Miscel Steel @ 53'	53.00	0.00	0.0000	0.15	0.00	0.00	0.27
CCISeismic Framing & Miscel Steel @ 26.5'	26.50	0.00	0.0000	0.14	0.00	0.00	0.12
CCISeismic MX06FRO640-02	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic MX06FRO640-02	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic MX06FRO660-03	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic MX06FRO660-03	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic MX06FRO660-03	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic MX06FRO660-03	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic RF4440d-13A	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic RF4440d-13A	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic RF4440d-13A	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic RF4439d-25A	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic RF4439d-25A	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic RF4439d-25A	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic (4) 7/8" Coax (Elev 80'-95')	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (4) 7/8" Coax (Elev 80'-95')	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (4) 7/8" Coax (Elev 80'-95')	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic FFVV-65A-R2-V1	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic FFVV-65A-R2-V1	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic FFVV-65A-R2-V1	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic AIR 6419 B41	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic AIR 6419 B41	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic AIR 6419 B41	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic 4449 B71/B85 RRU	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic 4449 B71/B85 RRU	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic 4449 B71/B85 RRU	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic 4460 B25/B66 RRU	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic 4460 B25/B66 RRU	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic 4460 B25/B66 RRU	80.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic (1) 6x24 Hybrid (Elev 80'-85')	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (1) 6x24 Hybrid (Elev 80'-85')	80.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (1) 6x24 Hybrid	80.00	0.00	0.0000	0.00	0.00	0.00	0.00

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Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
(Elev 80'-85')							
CCISeismic Face Frame	76.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic Face Frame	76.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic Face Frame	76.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic cci	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
TPA65R-BU6DA-K w/6' Mount Pipe							
CCISeismic cci	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
TPA65R-BU6DA-K w/6' Mount Pipe							
CCISeismic cci	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
TPA65R-BU6DA-K w/6' Mount Pipe							
CCISeismic ericsson AIR 6419 B77D w/3' Mount Pipe	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson AIR 6419 B77D w/3' Mount Pipe	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson AIR 6419 B77D w/3' Mount Pipe	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson AIR 6419 B77G w/3' Mount Pipe	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson AIR 6419 B77G w/3' Mount Pipe	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson AIR 6419 B77G w/3' Mount Pipe	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic cci	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
TPA65R-BU6DA-K w/6' Mount Pipe							
CCISeismic cci	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
TPA65R-BU6DA-K w/6' Mount Pipe							
CCISeismic cci	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
TPA65R-BU6DA-K w/6' Mount Pipe							
CCISeismic ericsson 4478 B14 RRU	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson 4478 B14 RRU	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson 4478 B14 RRU	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson 4449 B5/B12 RRU	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson 4449 B5/B12 RRU	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson 4449 B5/B12 RRU	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson 8843 B2/B66A RRU	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson 8843 B2/B66A RRU	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic ericsson 8843 B2/B66A RRU	76.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic raycap DC9-48-60-24-8C-EV	76.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic raycap DC9-48-60-24-8C-EV	76.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic samsung MT6407-77A	62.50	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic samsung MT6407-77A	62.50	0.00	0.0000	0.00	0.00	0.00	0.01

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Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
CCISeismic samsung MT6407-77A	62.50	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic samsung XXDWMM-12.5-65-8T	62.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic samsung XXDWMM-12.5-65-8T	62.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic samsung XXDWMM-12.5-65-8T	62.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic samsung RT-4401CA-CBRS Port1 3550 8DT w/ CBRS RRH - RT4401-48A	62.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic samsung RT-4401CA-CBRS Port1 3550 8DT w/ CBRS RRH - RT4401-48A	62.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic samsung RT-4401CA-CBRS Port1 3550 8DT w/ CBRS RRH - RT4401-48A	62.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic jma MX06FRO640-02	62.50	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic jma MX06FRO640-02	62.50	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic jma MX06FRO640-02	62.50	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic samsung RF4440d-13A	62.50	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic samsung RF4439d-25A	62.50	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic (4) commscope TD-850B-LTE78-43	62.50	0.00	0.0000	0.01	0.00	0.00	0.02
CCISeismic (4) commscope TD-850B-LTE78-43	62.50	0.00	0.0000	0.01	0.00	0.00	0.02
CCISeismic (4) commscope TD-850B-LTE78-43	62.50	0.00	0.0000	0.01	0.00	0.00	0.02
CCISeismic RFS OVP	62.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic RFS OVP	62.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic RFS OVP	62.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic Climbing Ladder From 62 to 80 (62ft to80ft)	71.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic Safety Line 3/8 From 62 to 80 (62ft to80ft)	71.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Climbing Ladder From 0 to 62 (53ft to62ft)	57.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Climbing Ladder From 0 to 62 (40ft to53ft)	46.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Climbing Ladder From 0 to 62 (26.5ft to40ft)	33.25	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Climbing Ladder From 0 to 62 (0ft to26.5ft)	13.25	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Safety Line 3/8 From 0 to 62 (53ft to62ft)	57.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Safety Line 3/8 From 0 to 62 (40ft to53ft)	46.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic miscl Safety Line	33.25	0.00	0.0000	0.00	0.00	0.00	0.00

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	Client	KGI	Designed by	NathanW

Description	Elevation	Offset From Centroid	Azimuth Angle	E_v	E_{hx}	E_{hz}	E_h
	ft	ft	°	K	K	K	K
3/8 From 0 to 62 (26.5ft to40ft)							
CCISeismic miscl Safety Line	13.25	0.00	0.0000	0.00	0.00	0.00	0.00
3/8 From 0 to 62 (0ft to26.5ft)							
CCISeismic (3) 6x24 Hybrid From 0 to 80 (62ft to80ft)	71.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic (3) 6x24 Hybrid From 0 to 80 (53ft to62ft)	57.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) 6x24 Hybrid From 0 to 80 (40ft to53ft)	46.50	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic (3) 6x24 Hybrid From 0 to 80 (26.5ft to40ft)	33.25	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) 6x24 Hybrid From 0 to 80 (0ft to26.5ft)	13.25	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic (12) 7/8" Coax From 0 to 80 (62ft to80ft)	71.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic (12) 7/8" Coax From 0 to 80 (53ft to62ft)	57.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (12) 7/8" Coax From 0 to 80 (40ft to53ft)	46.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (12) 7/8" Coax From 0 to 80 (26.5ft to40ft)	33.25	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (12) 7/8" Coax From 0 to 80 (0ft to26.5ft)	13.25	0.00	0.0000	0.01	0.00	0.00	0.00
CCISeismic (3) 1/2" Fiber From 0 to 76 (62ft to76ft)	69.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) 1/2" Fiber From 0 to 76 (53ft to62ft)	57.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) 1/2" Fiber From 0 to 76 (40ft to53ft)	46.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) 1/2" Fiber From 0 to 76 (26.5ft to40ft)	33.25	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) 1/2" Fiber From 0 to 76 (0ft to26.5ft)	13.25	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (6) 1" DC From 0 to 76 (62ft to76ft)	69.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (6) 1" DC From 0 to 76 (53ft to62ft)	57.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (6) 1" DC From 0 to 76 (40ft to53ft)	46.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (6) 1" DC From 0 to 76 (26.5ft to40ft)	33.25	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (6) 1" DC From 0 to 76 (0ft to26.5ft)	13.25	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) 12x24 Hybrid From 0 to 67 (62ft to67ft)	64.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (3) 12x24 Hybrid From 0 to 67 (53ft to62ft)	57.50	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic (3) 12x24 Hybrid From 0 to 67 (40ft to53ft)	46.50	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic (3) 12x24 Hybrid From 0 to 67 (26.5ft to40ft)	33.25	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic (3) 12x24 Hybrid From 0 to 67 (0ft to26.5ft)	13.25	0.00	0.0000	0.01	0.00	0.00	0.00

Discrete Tower Loads

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	Client	KGI	Designed by	NathanW

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
Tower Loads									
20'x6" Pipe Mount	A	From Leg	0.00	0.0000	80.00	No Ice	7.26	7.26	0.38
			0.00			1/2" Ice	15.31	15.31	0.47
			10.00			1" Ice	17.39	17.39	0.47
20'x6" Pipe Mount	B	From Leg	0.00	0.0000	80.00	No Ice	7.26	7.26	0.38
			0.00			1/2" Ice	15.31	15.31	0.47
			10.00			1" Ice	17.39	17.39	0.47
20'x6" Pipe Mount	C	From Leg	0.00	0.0000	80.00	No Ice	7.26	7.26	0.38
			0.00			1/2" Ice	15.31	15.31	0.47
			10.00			1" Ice	17.39	17.39	0.47
48"Ø x 10' FRP Stealth Radome	A	From Leg	0.00	0.0000	80.00	No Ice	20.00	20.00	0.40
			0.00			1/2" Ice	28.82	28.82	0.76
			15.00			1" Ice	29.65	29.65	1.13
48"Ø x 10' FRP Stealth Radome	B	From Leg	0.00	0.0000	80.00	No Ice	20.00	20.00	0.40
			0.00			1/2" Ice	28.82	28.82	0.76
			15.00			1" Ice	29.65	29.65	1.13
48"Ø x 10' FRP Stealth Radome	C	From Leg	0.00	0.0000	80.00	No Ice	20.00	20.00	0.40
			0.00			1/2" Ice	28.82	28.82	0.76
			15.00			1" Ice	29.65	29.65	1.13
48"Ø x 10' FRP Stealth Radome	A	From Leg	0.00	0.0000	80.00	No Ice	20.00	20.00	0.40
			0.00			1/2" Ice	28.82	28.82	0.76
			5.00			1" Ice	29.65	29.65	1.13
48"Ø x 10' FRP Stealth Radome	B	From Leg	0.00	0.0000	80.00	No Ice	20.00	20.00	0.40
			0.00			1/2" Ice	28.82	28.82	0.76
			5.00			1" Ice	29.65	29.65	1.13
48"Ø x 10' FRP Stealth Radome	C	From Leg	0.00	0.0000	80.00	No Ice	20.00	20.00	0.40
			0.00			1/2" Ice	28.82	28.82	0.76
			5.00			1" Ice	29.65	29.65	1.13
*									
18' Sq. FRP Panel Assembly	A	From Face	2.00	0.0000	80.00 - 62.00	No Ice	388.80	0.00	2.85
			0.00			1/2" Ice	392.41	0.00	4.45
			0.00			1" Ice	396.02	0.00	6.05
18' Sq. FRP Panel Assembly	B	From Face	2.00	0.0000	80.00 - 62.00	No Ice	388.80	0.00	2.85
			0.00			1/2" Ice	392.41	0.00	4.45
			0.00			1" Ice	396.02	0.00	6.05
18' Sq. FRP Panel Assembly	C	From Face	2.00	0.0000	80.00 - 62.00	No Ice	388.80	0.00	2.85
			0.00			1/2" Ice	392.41	0.00	4.45
			0.00			1" Ice	396.02	0.00	6.05
(4) 17'x2" Pipe Mount	A	From Face	0.00	0.0000	79.50 - 62.50	No Ice	4.04	4.04	0.06
			0.00			1/2" Ice	5.77	5.77	0.09
			0.00			1" Ice	7.51	7.51	0.13
(4) 17'x2" Pipe Mount	B	From Face	0.00	0.0000	79.50 - 62.50	No Ice	4.04	4.04	0.06
			0.00			1/2" Ice	5.77	5.77	0.09
			0.00			1" Ice	7.51	7.51	0.13
(4) 17'x2" Pipe Mount	C	From Face	0.00	0.0000	79.50 - 62.50	No Ice	4.04	4.04	0.06
			0.00			1/2" Ice	5.77	5.77	0.09
			0.00			1" Ice	7.51	7.51	0.13
*									
Framing & Misc Steel @ 80'	C	None		0.0000	80.00	No Ice	0.00	0.00	3.60
						1/2" Ice	0.00	0.00	4.68
						1" Ice	0.00	0.00	5.76
Work Platform & Misc Steel @ 62'	C	None		0.0000	62.00	No Ice	8.00	8.00	6.05
						1/2" Ice	9.06	9.06	7.87
						1" Ice	10.12	10.12	9.68
Framing & Misc Steel @ 53'	C	None		0.0000	53.00	No Ice	9.80	9.80	4.00
						1/2" Ice	11.04	11.04	5.20
						1" Ice	12.28	12.28	6.40

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	Client	KGI	Designed by	NathanW

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
Framing & Misc Steel @ 26.5'	C	None			0.0000	26.50	No Ice 1.80 1/2" Ice 1.98 1" Ice 2.16	1.80 1.98 2.16	3.65 4.75 5.84
Carrier Loads									
Inside Canister Radomes - No Ice									
MX06FRO640-02 (Verizon)	A	From Leg	0.00 0.00 15.00		0.0000	80.00	No Ice 12.38 1/2" Ice 12.88 1" Ice 13.38	7.43 7.88 8.33	0.07 0.07 0.07
MX06FRO640-02 (Verizon)	B	From Leg	0.00 0.00 15.00		0.0000	80.00	No Ice 12.38 1/2" Ice 12.88 1" Ice 13.38	7.43 7.88 8.33	0.07 0.07 0.07
MX06FRO660-03 (Verizon)	C	From Leg	0.00 0.00 15.00		0.0000	80.00	No Ice 9.87 1/2" Ice 10.34 1" Ice 10.82	7.34 7.78 8.24	0.06 0.06 0.06
MX06FRO660-03 (Verizon)	A	From Leg	0.00 0.00 15.00		0.0000	80.00	No Ice 9.87 1/2" Ice 10.34 1" Ice 10.82	7.34 7.78 8.24	0.06 0.06 0.06
MX06FRO660-03 (Verizon)	B	From Leg	0.00 0.00 15.00		0.0000	80.00	No Ice 9.87 1/2" Ice 10.34 1" Ice 10.82	7.34 7.78 8.24	0.06 0.06 0.06
MX06FRO660-03 (Verizon)	C	From Leg	0.00 0.00 15.00		0.0000	80.00	No Ice 9.87 1/2" Ice 10.34 1" Ice 10.82	7.34 7.78 8.24	0.06 0.06 0.06
RF4440d-13A (Verizon)	A	From Leg	0.00 0.00 15.00		0.0000	80.00	No Ice 1.13 1/2" Ice 1.27 1" Ice 1.41	1.13 1.27 1.41	0.07 0.07 0.07
RF4440d-13A (Verizon)	B	From Leg	0.00 0.00 15.00		0.0000	80.00	No Ice 1.13 1/2" Ice 1.27 1" Ice 1.41	1.13 1.27 1.41	0.07 0.07 0.07
RF4440d-13A (Verizon)	C	From Leg	0.00 0.00 15.00		0.0000	80.00	No Ice 1.13 1/2" Ice 1.27 1" Ice 1.41	1.13 1.27 1.41	0.07 0.07 0.07
RF4439d-25A (Verizon)	A	From Leg	0.00 0.00 15.00		0.0000	80.00	No Ice 1.25 1/2" Ice 1.39 1" Ice 1.54	1.25 1.39 1.54	0.07 0.07 0.07
RF4439d-25A (Verizon)	B	From Leg	0.00 0.00 15.00		0.0000	80.00	No Ice 1.25 1/2" Ice 1.39 1" Ice 1.54	1.25 1.39 1.54	0.07 0.07 0.07
RF4439d-25A (Verizon)	C	From Leg	0.00 0.00 15.00		0.0000	80.00	No Ice 1.25 1/2" Ice 1.39 1" Ice 1.54	1.25 1.39 1.54	0.07 0.07 0.07
(4) 7/8" Coax (Elev 80'-95') (Verizon)	A	From Leg	0.00 0.00 7.50		0.0000	80.00	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	0.00 0.00 0.00	0.01 0.01 0.01
(4) 7/8" Coax (Elev 80'-95') (Verizon)	B	From Leg	0.00 0.00 7.50		0.0000	80.00	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	0.00 0.00 0.00	0.01 0.01 0.01
(4) 7/8" Coax (Elev 80'-95') (Verizon)	C	From Leg	0.00 0.00 7.50		0.0000	80.00	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	0.00 0.00 0.00	0.01 0.01 0.01
Carrier Loads									
FFVV-65A-R2-V1 (T-Mobile)	A	From Leg	0.00 0.00 5.00		0.0000	80.00	No Ice 10.12 1/2" Ice 10.53 1" Ice 10.95	4.09 4.40 4.72	0.07 0.07 0.07
FFVV-65A-R2-V1	B	From Leg	0.00		0.0000	80.00	No Ice 10.12	4.09	0.07

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	Client	KGI	Designed by	NathanW

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
(T-Mobile)			0.00			1/2" Ice	10.53	4.40	0.07
			5.00			1" Ice	10.95	4.72	0.07
FFVV-65A-R2-V1	C	From Leg	0.00	0.0000	80.00	No Ice	10.12	4.09	0.07
(T-Mobile)			0.00			1/2" Ice	10.53	4.40	0.07
			5.00			1" Ice	10.95	4.72	0.07
AIR 6419 B41	A	From Leg	0.00	0.0000	80.00	No Ice	6.13	2.25	0.08
(T-Mobile)			0.00			1/2" Ice	6.45	2.48	0.08
			5.00			1" Ice	6.77	2.71	0.08
AIR 6419 B41	B	From Leg	0.00	0.0000	80.00	No Ice	6.13	2.25	0.08
(T-Mobile)			0.00			1/2" Ice	6.45	2.48	0.08
			5.00			1" Ice	6.77	2.71	0.08
AIR 6419 B41	C	From Leg	0.00	0.0000	80.00	No Ice	6.13	2.25	0.08
(T-Mobile)			0.00			1/2" Ice	6.45	2.48	0.08
			5.00			1" Ice	6.77	2.71	0.08
4449 B71/B85 RRU	A	From Leg	0.00	0.0000	80.00	No Ice	1.95	1.58	0.07
(T-Mobile)			0.00			1/2" Ice	2.13	1.74	0.07
			5.00			1" Ice	2.31	1.91	0.07
4449 B71/B85 RRU	B	From Leg	0.00	0.0000	80.00	No Ice	1.95	1.58	0.07
(T-Mobile)			0.00			1/2" Ice	2.13	1.74	0.07
			5.00			1" Ice	2.31	1.91	0.07
4449 B71/B85 RRU	C	From Leg	0.00	0.0000	80.00	No Ice	1.95	1.58	0.07
(T-Mobile)			0.00			1/2" Ice	2.13	1.74	0.07
			5.00			1" Ice	2.31	1.91	0.07
4460 B25/B66 RRU	A	From Leg	0.00	0.0000	80.00	No Ice	2.56	1.98	0.11
(T-Mobile)			0.00			1/2" Ice	2.76	2.16	0.11
			5.00			1" Ice	2.97	2.34	0.11
4460 B25/B66 RRU	B	From Leg	0.00	0.0000	80.00	No Ice	2.56	1.98	0.11
(T-Mobile)			0.00			1/2" Ice	2.76	2.16	0.11
			5.00			1" Ice	2.97	2.34	0.11
4460 B25/B66 RRU	C	From Leg	0.00	0.0000	80.00	No Ice	2.56	1.98	0.11
(T-Mobile)			0.00			1/2" Ice	2.76	2.16	0.11
			5.00			1" Ice	2.97	2.34	0.11
(1) 6x24 Hybrid (Elev 80'-85')	A	From Leg	0.00	0.0000	80.00	No Ice	0.00	0.00	0.03
(T-Mobile)			0.00			1/2" Ice	0.00	0.00	0.03
			2.50			1" Ice	0.00	0.00	0.03
(1) 6x24 Hybrid (Elev 80'-85')	B	From Leg	0.00	0.0000	80.00	No Ice	0.00	0.00	0.03
(T-Mobile)			0.00			1/2" Ice	0.00	0.00	0.03
			2.50			1" Ice	0.00	0.00	0.03
(1) 6x24 Hybrid (Elev 80'-85')	C	From Leg	0.00	0.0000	80.00	No Ice	0.00	0.00	0.03
(T-Mobile)			0.00			1/2" Ice	0.00	0.00	0.03
			2.50			1" Ice	0.00	0.00	0.03
Behind FRP Panel - Exposed to Ice									
Face Frame (ATT)	A	From Face	1.00	0.0000	76.00	No Ice	0.00	0.00	0.14
			0.00			1/2" Ice	0.00	0.00	0.17
			-3.00			1" Ice	0.00	0.00	0.20
Face Frame (ATT)	B	From Face	1.00	0.0000	76.00	No Ice	0.00	0.00	0.14
			0.00			1/2" Ice	0.00	0.00	0.17
			-3.00			1" Ice	0.00	0.00	0.20
Face Frame (ATT)	C	From Face	1.00	0.0000	76.00	No Ice	0.00	0.00	0.14
			0.00			1/2" Ice	0.00	0.00	0.17
			-3.00			1" Ice	0.00	0.00	0.20
TPA65R-BU6DA-K w/6' Mount Pipe (ATT)	A	From Face	1.50	0.0000	76.00	No Ice	12.73	7.34	0.10
			4.00			1/2" Ice	13.23	8.16	0.20
			-3.00			1" Ice	13.74	8.99	0.30
TPA65R-BU6DA-K w/6'	B	From Face	1.50	0.0000	76.00	No Ice	12.73	7.34	0.10

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	Client		KGI					Designed by		NathanW

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz Lateral	Vert						ft
Mount Pipe (ATT)			4.00	-3.00			1/2" Ice 1" Ice	13.23 13.74	8.16 8.99	0.20 0.30
TPA65R-BU6DA-K w/6' Mount Pipe (ATT)	C	From Face	1.50		0.0000	76.00	No Ice 1/2" Ice 1" Ice	12.73 13.23 13.74	7.34 8.16 8.99	0.10 0.20 0.30
AIR 6419 B77D w/3' Mount Pipe (ATT)	A	From Face	1.50	0.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	4.27 4.57 4.87	3.11 3.52 3.95	0.08 0.12 0.17
AIR 6419 B77D w/3' Mount Pipe (ATT)	B	From Face	1.50	0.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	4.27 4.57 4.87	3.11 3.52 3.95	0.08 0.12 0.17
AIR 6419 B77D w/3' Mount Pipe (ATT)	C	From Face	1.50	0.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	4.27 4.57 4.87	3.11 3.52 3.95	0.08 0.12 0.17
AIR 6419 B77G w/3' Mount Pipe (ATT)	A	From Face	1.50	0.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	4.27 4.57 4.87	3.11 3.52 3.95	0.08 0.12 0.17
AIR 6419 B77G w/3' Mount Pipe (ATT)	B	From Face	1.50	0.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	4.27 4.57 4.87	3.11 3.52 3.95	0.08 0.12 0.17
AIR 6419 B77G w/3' Mount Pipe (ATT)	C	From Face	1.50	0.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	4.27 4.57 4.87	3.11 3.52 3.95	0.08 0.12 0.17
TPA65R-BU6DA-K w/6' Mount Pipe (ATT)	A	From Face	1.50	-4.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	12.73 13.23 13.74	7.34 8.16 8.99	0.10 0.20 0.30
TPA65R-BU6DA-K w/6' Mount Pipe (ATT)	B	From Face	1.50	-4.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	12.73 13.23 13.74	7.34 8.16 8.99	0.10 0.20 0.30
TPA65R-BU6DA-K w/6' Mount Pipe (ATT)	C	From Face	1.50	-3.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	12.73 13.23 13.74	7.34 8.16 8.99	0.10 0.20 0.30
4478 B14 RRU (ATT)	A	From Face	0.00	2.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.55	0.06 0.08 0.10
4478 B14 RRU (ATT)	B	From Face	0.00	2.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.55	0.06 0.08 0.10
4478 B14 RRU (ATT)	C	From Face	0.00	2.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.55	0.06 0.08 0.10
4449 B5/B12 RRU (ATT)	A	From Face	0.00	2.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
4449 B5/B12 RRU (ATT)	B	From Face	0.00	2.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
4449 B5/B12 RRU (ATT)	C	From Face	0.00	2.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
8843 B2/B66A RRU (ATT)	A	From Face	0.00	-2.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
8843 B2/B66A RRU (ATT)	B	From Face	0.00	-2.00	0.0000	76.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
8843 B2/B66A RRU	C	From Face	0.00	-3.00	0.0000	76.00	No Ice	1.64	1.35	0.07

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	Project	REV03B	Date	10:56:12 10/10/24
	Client	KGI	Designed by	NathanW

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						Vert
(ATT)			-2.00			1/2" Ice	1.80	1.50	0.09	
			-3.00			1" Ice	1.97	1.65	0.11	
DC9-48-60-24-8C-EV	B	From Face	0.00		0.0000	76.00	No Ice	1.15	1.15	0.03
(ATT)			-2.00				1/2" Ice	1.79	1.79	0.05
			-3.00				1" Ice	2.00	2.00	0.07
DC9-48-60-24-8C-EV	C	From Face	0.00		0.0000	76.00	No Ice	1.15	1.15	0.03
(ATT)			-2.00				1/2" Ice	1.79	1.79	0.05
			-3.00				1" Ice	2.00	2.00	0.07
*										
MT6407-77A	A	From Face	1.00		0.0000	62.50	No Ice	4.70	1.84	0.09
(Verizon)			4.50				1/2" Ice	4.99	2.07	0.12
			6.00				1" Ice	5.28	2.30	0.15
MT6407-77A	B	From Face	1.00		0.0000	62.50	No Ice	4.70	1.84	0.09
(Verizon)			4.50				1/2" Ice	4.99	2.07	0.12
			6.00				1" Ice	5.28	2.30	0.15
MT6407-77A	C	From Face	1.00		0.0000	62.50	No Ice	4.70	1.84	0.09
(Verizon)			4.50				1/2" Ice	4.99	2.07	0.12
			6.00				1" Ice	5.28	2.30	0.15
XXDWMM-12.5-65-8T	A	From Face	0.00		0.0000	62.50	No Ice	0.89	0.17	0.00
(Verizon)			4.50				1/2" Ice	1.01	0.25	0.01
			6.00				1" Ice	1.14	0.34	0.01
XXDWMM-12.5-65-8T	B	From Face	0.00		0.0000	62.50	No Ice	0.89	0.17	0.00
(Verizon)			4.50				1/2" Ice	1.01	0.25	0.01
			6.00				1" Ice	1.14	0.34	0.01
XXDWMM-12.5-65-8T	C	From Face	0.00		0.0000	62.50	No Ice	0.89	0.17	0.00
(Verizon)			4.50				1/2" Ice	1.01	0.25	0.01
			6.00				1" Ice	1.14	0.34	0.01
RT-4401CA-CBRS Port1	A	From Face	1.00		0.0000	62.50	No Ice	1.54	0.75	0.02
3550 8DT w/ CBRS RRH -			1.50				1/2" Ice	1.70	0.87	0.04
RT4401-48A			6.00				1" Ice	1.86	1.00	0.05
(Verizon)										
RT-4401CA-CBRS Port1	B	From Face	1.00		0.0000	62.50	No Ice	1.54	0.75	0.02
3550 8DT w/ CBRS RRH -			1.50				1/2" Ice	1.70	0.87	0.04
RT4401-48A			6.00				1" Ice	1.86	1.00	0.05
(Verizon)										
RT-4401CA-CBRS Port1	C	From Face	1.00		0.0000	62.50	No Ice	1.54	0.75	0.02
3550 8DT w/ CBRS RRH -			1.50				1/2" Ice	1.70	0.87	0.04
RT4401-48A			6.00				1" Ice	1.86	1.00	0.05
(Verizon)										
*										
MX06FRO640-02	A	From Face	1.00		0.0000	62.50	No Ice	12.38	7.43	0.07
(Verizon)			-4.50				1/2" Ice	12.88	7.88	0.15
			4.50				1" Ice	13.38	8.33	0.24
MX06FRO640-02	B	From Face	1.00		0.0000	62.50	No Ice	12.38	7.43	0.07
(Verizon)			-4.50				1/2" Ice	12.88	7.88	0.15
			4.50				1" Ice	13.38	8.33	0.24
MX06FRO640-02	C	From Face	1.00		0.0000	62.50	No Ice	12.38	7.43	0.07
(Verizon)			-4.50				1/2" Ice	12.88	7.88	0.15
			4.50				1" Ice	13.38	8.33	0.24
RF4440d-13A	C	From Face	0.00		0.0000	62.50	No Ice	1.13	1.13	0.07
(Verizon)			-4.50				1/2" Ice	1.27	1.27	0.09
			4.50				1" Ice	1.41	1.41	0.11
RF4439d-25A	C	From Face	0.00		0.0000	62.50	No Ice	1.25	1.25	0.07
(Verizon)			-4.50				1/2" Ice	1.39	1.39	0.09
			4.50				1" Ice	1.54	1.54	0.11
(4) TD-850B-LTE78-43	A	From Face	0.00		0.0000	62.50	No Ice	1.96	0.82	0.05
(Verizon)			0.00				1/2" Ice	2.13	0.95	0.07

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						
			ft	ft	°	ft	ft ²	ft ²	K	
(4) TD-850B-LTE78-43 (Verizon)	B	From Face	4.50	0.00	0.0000	62.50	1" Ice	2.31	1.08	0.09
			0.00	0.00			No Ice	1.96	0.82	0.05
			0.00	0.00			1/2" Ice	2.13	0.95	0.07
(4) TD-850B-LTE78-43 (Verizon)	C	From Face	4.50	0.00	0.0000	62.50	1" Ice	2.31	1.08	0.09
			0.00	0.00			No Ice	1.96	0.82	0.05
			0.00	0.00			1/2" Ice	2.13	0.95	0.07
RFS OVP (Verizon)	A	From Face	4.50	0.00	0.0000	62.50	1" Ice	2.31	1.08	0.09
			0.00	0.00			No Ice	1.15	1.15	0.03
			0.00	0.00			1/2" Ice	1.79	1.79	0.05
RFS OVP (Verizon)	B	From Face	4.50	0.00	0.0000	62.50	1" Ice	2.00	2.00	0.07
			0.00	0.00			No Ice	1.96	0.82	0.05
			0.00	0.00			1/2" Ice	2.13	0.95	0.07
RFS OVP (Verizon)	C	From Face	4.50	0.00	0.0000	62.50	1" Ice	2.31	1.08	0.09
			0.00	0.00			No Ice	1.96	0.82	0.05
			0.00	0.00			1/2" Ice	2.13	0.95	0.07
*										

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation	z	K _Z	q _z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		psf	ft ²	c	ft ²	ft ²	ft ²		ft ²	ft ²
T1 80.00-62.00	71.00	1.178	34	396.000	A	0.000	72.000	144.000	100.00	0.000	0.000
					B	0.000	72.000		100.00	0.000	0.000
					C	0.000	72.000		100.00	0.000	0.000
T2 62.00-53.00	57.50	1.126	32	198.000	A	11.667	72.000	72.000	86.06	0.000	0.000
					B	11.667	72.000		86.06	0.000	0.000
					C	11.667	72.000		86.06	2.033	0.000
T3 53.00-40.00	46.50	1.077	31	286.000	A	0.000	104.000	104.000	100.00	0.000	0.000
					B	0.000	104.000		100.00	0.000	0.000
					C	0.000	104.000		100.00	2.936	0.000
T4 40.00-26.50	33.25	1.004	29	297.000	A	0.000	108.000	108.000	100.00	0.000	0.000
					B	0.000	108.000		100.00	0.000	0.000
					C	0.000	108.000		100.00	3.049	0.000
T5 26.50-0.00	13.25	0.850	24	583.000	A	11.667	212.000	212.000	94.78	0.000	0.000
					B	11.667	212.000		94.78	0.000	0.000
					C	11.667	212.000		94.78	5.985	0.000

Tower Pressure - With Ice

$G_H = 0.850$

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Section Elevation ft	z ft	K _Z	q _z psf	t _z in	A _G ft ²	F _a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
T1 80.00-62.00	71.00	1.178	6	0.9177	398.753	A	0.000	76.894	149.506	100.00	0.000	0.000
						B	0.000	76.894		100.00	0.000	0.000
						C	0.000	76.894		100.00	0.000	0.000
T2 62.00-53.00	57.50	1.126	6	0.8985	199.348	A	11.667	76.792	74.696	84.44	0.000	0.000
						B	11.667	76.792		84.44	0.000	0.000
						C	11.667	76.792		84.44	5.267	0.000
T3 53.00-40.00	46.50	1.077	6	0.8797	287.906	A	0.000	107.812	107.812	100.00	0.000	0.000
						B	0.000	107.812		100.00	0.000	0.000
						C	0.000	107.812		100.00	7.510	0.000
T4 40.00-26.50	33.25	1.004	5	0.8506	298.914	A	0.000	111.828	111.828	100.00	0.000	0.000
						B	0.000	111.828		100.00	0.000	0.000
						C	0.000	111.828		100.00	7.642	0.000
T5 26.50-0.00	13.25	0.850	4	0.7759	586.427	A	11.667	220.664	218.854	94.20	0.000	0.000
						B	11.667	220.664		94.20	0.000	0.000
						C	11.667	220.664		94.20	14.209	0.000

Tower Pressure - Service

$G_H = 0.850$

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F _a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
T1 80.00-62.00	71.00	1.178	9	396.000	A	0.000	72.000	144.000	100.00	0.000	0.000
					B	0.000	72.000		100.00	0.000	0.000
					C	0.000	72.000		100.00	0.000	0.000
T2 62.00-53.00	57.50	1.126	9	198.000	A	11.667	72.000	72.000	86.06	0.000	0.000
					B	11.667	72.000		86.06	0.000	0.000
					C	11.667	72.000		86.06	2.033	0.000
T3 53.00-40.00	46.50	1.077	8	286.000	A	0.000	104.000	104.000	100.00	0.000	0.000
					B	0.000	104.000		100.00	0.000	0.000
					C	0.000	104.000		100.00	2.936	0.000
T4 40.00-26.50	33.25	1.004	8	297.000	A	0.000	108.000	108.000	100.00	0.000	0.000
					B	0.000	108.000		100.00	0.000	0.000
					C	0.000	108.000		100.00	3.049	0.000
T5 26.50-0.00	13.25	0.850	7	583.000	A	11.667	212.000	212.000	94.78	0.000	0.000
					B	11.667	212.000		94.78	0.000	0.000
					C	11.667	212.000		94.78	5.985	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	F _a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 80.00-62.00	0.39	18.56	A	0.182	2.658	34	1	1	31.360	2.38	131.99	C
			B	0.182	2.658							
			C	0.182	2.658							
T2 62.00-53.00	0.27	9.28	A	0.423	2.021	32	1	1	54.545	3.04	337.34	B
			B	0.423	2.021							
			C	0.423	2.021							

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Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T3 53.00-40.00	0.38	9.90	A	0.364	2.14	31	1	1	57.462	3.25	250.03	B
			B	0.364	2.14		1	1	57.462			
			C	0.364	2.14		1	1	57.462			
T4 40.00-26.50	0.40	10.28	A	0.364	2.14	29	1	1	59.672	3.15	232.99	B
			B	0.364	2.14		1	1	59.672			
			C	0.364	2.14		1	1	59.672			
T5 26.50-0.00	0.78	22.61	A	0.384	2.097	24	1	1	131.859	5.76	217.35	B
			B	0.384	2.097		1	1	131.859			
			C	0.384	2.097		1	1	131.859			
Sum Weight:	2.22	70.63						OTM	675.31 kip-ft	17.57		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 80.00-62.00	0.39	18.56	A	0.182	2.658	34	0.8	1	31.360	2.38	131.99	C
			B	0.182	2.658		0.8	1	31.360			
			C	0.182	2.658		0.8	1	31.360			
T2 62.00-53.00	0.27	9.28	A	0.423	2.021	32	0.8	1	52.212	2.91	323.05	C
			B	0.423	2.021		0.8	1	52.212			
			C	0.423	2.021		0.8	1	52.212			
T3 53.00-40.00	0.38	9.90	A	0.364	2.14	31	0.8	1	57.462	3.25	250.03	C
			B	0.364	2.14		0.8	1	57.462			
			C	0.364	2.14		0.8	1	57.462			
T4 40.00-26.50	0.40	10.28	A	0.364	2.14	29	0.8	1	59.672	3.15	232.99	C
			B	0.364	2.14		0.8	1	59.672			
			C	0.364	2.14		0.8	1	59.672			
T5 26.50-0.00	0.78	22.61	A	0.384	2.097	24	0.8	1	129.525	5.66	213.55	C
			B	0.384	2.097		0.8	1	129.525			
			C	0.384	2.097		0.8	1	129.525			
Sum Weight:	2.22	70.63						OTM	666.58 kip-ft	17.34		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 80.00-62.00	0.39	18.56	A	0.182	2.658	34	0.85	1	31.360	2.38	131.99	C
			B	0.182	2.658		0.85	1	31.360			
			C	0.182	2.658		0.85	1	31.360			
T2 62.00-53.00	0.27	9.28	A	0.423	2.021	32	0.85	1	52.795	2.94	326.80	C
			B	0.423	2.021		0.85	1	52.795			
			C	0.423	2.021		0.85	1	52.795			
T3	0.38	9.90	A	0.364	2.14	31	0.85	1	57.462	3.25	250.21	C

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Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
53.00-40.00			B	0.364	2.14		0.85	1	57.462			
			C	0.364	2.14		0.85	1	57.462			
T4 40.00-26.50	0.40	10.28	A	0.364	2.14	29	0.85	1	59.672	3.15	233.16	C
			B	0.364	2.14		0.85	1	59.672			
			C	0.364	2.14		0.85	1	59.672			
T5 26.50-0.00	0.78	22.61	A	0.384	2.097	24	0.85	1	130.109	5.69	214.64	C
			B	0.384	2.097		0.85	1	130.109			
			C	0.384	2.097		0.85	1	130.109			
Sum Weight:	2.22	70.63						OTM	669.09 kip-ft	17.41		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 80.00-62.00	1.08	22.85	A	0.193	2.62	6	1	1	44.081	0.59	32.84	C
			B	0.193	2.62		1	1	44.081			
			C	0.193	2.62		1	1	44.081			
T2 62.00-53.00	0.55	11.38	A	0.444	1.984	6	1	1	62.061	0.62	68.57	B
			B	0.444	1.984		1	1	62.061			
			C	0.444	1.984		1	1	62.061			
T3 53.00-40.00	0.78	11.95	A	0.374	2.117	6	1	1	67.444	0.69	53.04	B
			B	0.374	2.117		1	1	67.444			
			C	0.374	2.117		1	1	67.444			
T4 40.00-26.50	0.79	12.33	A	0.374	2.118	5	1	1	69.940	0.67	49.34	B
			B	0.374	2.118		1	1	69.940			
			C	0.374	2.118		1	1	69.940			
T5 26.50-0.00	1.47	26.84	A	0.396	2.072	4	1	1	151.699	1.19	45.00	B
			B	0.396	2.072		1	1	151.699			
			C	0.396	2.072		1	1	151.699			
Sum Weight:	4.67	85.34						OTM	147.46 kip-ft	3.76		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 80.00-62.00	1.08	22.85	A	0.193	2.62	6	0.8	1	44.081	0.59	32.84	C
			B	0.193	2.62		0.8	1	44.081			
			C	0.193	2.62		0.8	1	44.081			
T2 62.00-53.00	0.55	11.38	A	0.444	1.984	6	0.8	1	59.728	0.59	66.05	C
			B	0.444	1.984		0.8	1	59.728			
			C	0.444	1.984		0.8	1	59.728			
T3 53.00-40.00	0.78	11.95	A	0.374	2.117	6	0.8	1	67.444	0.69	53.04	C
			B	0.374	2.117		0.8	1	67.444			

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Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T4 40.00-26.50	0.79	12.33	C	0.374	2.117	5	0.8	1	67.444	0.67	49.34	C
			A	0.374	2.118		0.8	1	69.940			
			B	0.374	2.118		0.8	1	69.940			
T5 26.50-0.00	1.47	26.84	C	0.374	2.118	4	0.8	1	69.940	1.17	44.32	C
			A	0.396	2.072		0.8	1	149.366			
			B	0.396	2.072		0.8	1	149.366			
Sum Weight:	4.67	85.34	C	0.396	2.072		0.8	1	149.366	3.72		
								OTM	145.92 kip-ft			

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 80.00-62.00	1.08	22.85	A	0.193	2.62	6	0.85	1	44.081	0.59	32.84	C
			B	0.193	2.62		0.85	1	44.081			
			C	0.193	2.62		0.85	1	44.081			
T2 62.00-53.00	0.55	11.38	A	0.444	1.984	6	0.85	1	60.311	0.60	66.68	C
			B	0.444	1.984		0.85	1	60.311			
			C	0.444	1.984		0.85	1	60.311			
T3 53.00-40.00	0.78	11.95	A	0.374	2.117	6	0.85	1	67.444	0.69	53.04	C
			B	0.374	2.117		0.85	1	67.444			
			C	0.374	2.117		0.85	1	67.444			
T4 40.00-26.50	0.79	12.33	A	0.374	2.118	5	0.85	1	69.940	0.67	49.34	C
			B	0.374	2.118		0.85	1	69.940			
			C	0.374	2.118		0.85	1	69.940			
T5 26.50-0.00	1.47	26.84	A	0.396	2.072	4	0.85	1	149.949	1.18	44.49	C
			B	0.396	2.072		0.85	1	149.949			
			C	0.396	2.072		0.85	1	149.949			
Sum Weight:	4.67	85.34						OTM	146.30 kip-ft	3.73		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 80.00-62.00	0.39	18.56	A	0.182	2.658	9	1	1	31.360	0.65	35.92	C
			B	0.182	2.658		1	1	31.360			
			C	0.182	2.658		1	1	31.360			
T2 62.00-53.00	0.27	9.28	A	0.423	2.021	9	1	1	54.545	0.83	91.81	B
			B	0.423	2.021		1	1	54.545			
			C	0.423	2.021		1	1	54.545			
T3 53.00-40.00	0.38	9.90	A	0.364	2.14	8	1	1	57.462	0.88	68.05	B
			B	0.364	2.14		1	1	57.462			
			C	0.364	2.14		1	1	57.462			

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	Client	KGI	Designed by	NathanW

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T4 40.00-26.50	0.40	10.28	A	0.364	2.14	8	1	1	59.672	0.86	63.41	B
			B	0.364	2.14		1	1	59.672			
			C	0.364	2.14		1	1	59.672			
T5 26.50-0.00	0.78	22.61	A	0.384	2.097	7	1	1	131.859	1.57	59.15	B
			B	0.384	2.097		1	1	131.859			
			C	0.384	2.097		1	1	131.859			
Sum Weight:	2.22	70.63						OTM	183.79 kip-ft	4.78		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 80.00-62.00	0.39	18.56	A	0.182	2.658	9	0.8	1	31.360	0.65	35.92	C
			B	0.182	2.658		0.8	1	31.360			
			C	0.182	2.658		0.8	1	31.360			
T2 62.00-53.00	0.27	9.28	A	0.423	2.021	9	0.8	1	52.212	0.79	87.92	C
			B	0.423	2.021		0.8	1	52.212			
			C	0.423	2.021		0.8	1	52.212			
T3 53.00-40.00	0.38	9.90	A	0.364	2.14	8	0.8	1	57.462	0.88	68.05	C
			B	0.364	2.14		0.8	1	57.462			
			C	0.364	2.14		0.8	1	57.462			
T4 40.00-26.50	0.40	10.28	A	0.364	2.14	8	0.8	1	59.672	0.86	63.41	C
			B	0.364	2.14		0.8	1	59.672			
			C	0.364	2.14		0.8	1	59.672			
T5 26.50-0.00	0.78	22.61	A	0.384	2.097	7	0.8	1	129.525	1.54	58.12	C
			B	0.384	2.097		0.8	1	129.525			
			C	0.384	2.097		0.8	1	129.525			
Sum Weight:	2.22	70.63						OTM	181.41 kip-ft	4.72		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
T1 80.00-62.00	0.39	18.56	A	0.182	2.658	9	0.85	1	31.360	0.65	35.92	C
			B	0.182	2.658		0.85	1	31.360			
			C	0.182	2.658		0.85	1	31.360			
T2 62.00-53.00	0.27	9.28	A	0.423	2.021	9	0.85	1	52.795	0.80	88.94	C
			B	0.423	2.021		0.85	1	52.795			
			C	0.423	2.021		0.85	1	52.795			
T3 53.00-40.00	0.38	9.90	A	0.364	2.14	8	0.85	1	57.462	0.89	68.10	C
			B	0.364	2.14		0.85	1	57.462			
			C	0.364	2.14		0.85	1	57.462			
T4	0.40	10.28	A	0.364	2.14	8	0.85	1	59.672	0.86	63.45	C

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Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
40.00-26.50			B	0.364	2.14		0.85	1	59.672			
			C	0.364	2.14		0.85	1	59.672			
T5 26.50-0.00	0.78	22.61	A	0.384	2.097	7	0.85	1	130.109	1.55	58.42	C
			B	0.384	2.097		0.85	1	130.109			
			C	0.384	2.097		0.85	1	130.109			
Sum Weight:	2.22	70.63						OTM	182.09 kip-ft	4.74		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M _x kip-ft	Sum of Overturning Moments, M _z kip-ft	Sum of Torques kip-ft
Leg Weight	60.37					
Bracing Weight	10.26					
Total Member Self-Weight	70.63			8.77	16.27	
Total Weight	108.50			8.77	16.27	
Wind 0 deg - No Ice		0.00	-32.74	-1804.94	16.27	0.00
Wind 30 deg - No Ice		14.90	-25.81	-1386.20	-789.11	29.38
Wind 60 deg - No Ice		20.98	-12.11	-599.13	-1036.64	16.24
Wind 90 deg - No Ice		21.53	0.00	8.77	-1005.32	-1.25
Wind 120 deg - No Ice		21.18	12.23	621.04	-1044.20	16.24
Wind 150 deg - No Ice		14.90	25.81	1403.74	-789.11	29.38
Wind 180 deg - No Ice		0.00	32.51	1813.75	16.27	0.00
Wind 210 deg - No Ice		-14.90	25.81	1403.74	821.66	-29.38
Wind 240 deg - No Ice		-21.18	12.23	621.04	1076.75	-16.24
Wind 270 deg - No Ice		-21.53	0.00	8.77	1037.87	1.25
Wind 300 deg - No Ice		-20.98	-12.11	-599.13	1069.19	-16.24
Wind 330 deg - No Ice		-14.90	-25.81	-1386.20	821.66	-29.38
Member Ice	14.71					
Total Weight Ice	152.37			16.94	33.93	
Wind 0 deg - Ice		0.00	-6.85	-366.43	33.93	0.00
Wind 30 deg - Ice		3.16	-5.47	-282.97	-139.23	5.19
Wind 60 deg - Ice		4.58	-2.65	-120.10	-203.44	2.68
Wind 90 deg - Ice		4.80	0.00	16.94	-204.62	-0.55
Wind 120 deg - Ice		4.62	2.67	154.76	-204.77	2.68
Wind 150 deg - Ice		3.16	5.47	316.86	-139.23	5.19
Wind 180 deg - Ice		0.00	6.81	398.78	33.93	0.00
Wind 210 deg - Ice		-3.16	5.47	316.86	207.09	-5.19
Wind 240 deg - Ice		-4.62	2.67	154.76	272.63	-2.68
Wind 270 deg - Ice		-4.80	0.00	16.94	272.48	0.55
Wind 300 deg - Ice		-4.58	-2.65	-120.10	271.30	-2.68
Wind 330 deg - Ice		-3.16	-5.47	-282.97	207.09	-5.19
Total Weight	108.50			8.77	16.27	
Wind 0 deg - Service		0.00	-8.91	-492.85	-0.99	0.00
Wind 30 deg - Service		4.06	-7.03	-378.88	-220.18	8.00
Wind 60 deg - Service		5.71	-3.30	-164.68	-287.55	4.42
Wind 90 deg - Service		5.86	0.00	0.76	-279.02	-0.34
Wind 120 deg - Service		5.76	3.33	167.39	-289.60	4.42
Wind 150 deg - Service		4.06	7.03	380.41	-220.18	8.00
Wind 180 deg - Service		0.00	8.85	492.00	-0.99	0.00
Wind 210 deg - Service		-4.06	7.03	380.41	218.20	-8.00
Wind 240 deg - Service		-5.76	3.33	167.39	287.62	-4.42

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Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 270 deg - Service		-5.86	0.00	0.76	277.04	0.34
Wind 300 deg - Service		-5.71	-3.30	-164.68	285.56	-4.42
Wind 330 deg - Service		-4.06	-7.03	-378.88	218.20	-8.00
Seismic Vertical	4.06					
Seismic Horizontal 0 deg		0.00	-6.77	-410.83	0.00	0.00
Seismic Horizontal 30 deg		3.39	-5.86	-355.79	-205.42	0.00
Seismic Horizontal 60 deg		5.86	-3.39	-205.42	-355.79	0.00
Seismic Horizontal 90 deg		6.77	0.00	0.00	-410.83	0.00
Seismic Horizontal 120 deg		5.86	3.39	205.42	-355.79	0.00
Seismic Horizontal 150 deg		3.39	5.86	355.79	-205.42	0.00
Seismic Horizontal 180 deg		0.00	6.77	410.83	0.00	0.00
Seismic Horizontal 210 deg		-3.39	5.86	355.79	205.42	0.00
Seismic Horizontal 240 deg		-5.86	3.39	205.42	355.79	0.00
Seismic Horizontal 270 deg		-6.77	0.00	0.00	410.83	0.00
Seismic Horizontal 300 deg		-5.86	-3.39	-205.42	355.79	0.00
Seismic Horizontal 330 deg		-3.39	-5.86	-355.79	205.42	0.00

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
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

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<i>Comb. No.</i>	<i>Description</i>
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

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Condition</i>	<i>Gov. Load Comb.</i>	<i>Axial K</i>	<i>Major Axis Moment kip-ft</i>	<i>Minor Axis Moment kip-ft</i>
T1	80 - 62	Leg	Max Tension	15	45.26	-0.01	251.93
			Max. Compression	2	-73.96	0.02	-252.84
			Max. Mx	10	-55.35	152.89	87.92
			Max. My	2	-73.76	0.02	-258.42
			Max. Vy	16	-9.28	-124.91	173.72
			Max. Vx	2	-13.44	0.02	-252.84
		Top Girt	Max Tension	2	7.45	-1.84	0.15
			Max. Compression	14	-7.83	-1.21	0.11
			Max. Mx	4	0.05	-125.81	1.98
			Max. My	24	-6.00	61.36	2.82
			Max. Vy	4	14.32	-125.81	1.98
		Bottom Girt	Max. Vx	24	0.31	-63.93	-2.76
			Max Tension	2	0.65	-1.63	0.14
			Max. Compression	14	-0.83	-1.43	0.11

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T2	62 - 53	Leg	Max. Mx	4	0.19	-132.44	1.32
			Max. My	24	-0.58	64.57	1.90
			Max. Vy	4	15.06	-132.44	1.32
			Max. Vx	24	0.21	-67.49	-1.84
			Max Tension	15	69.84	-0.02	358.16
			Max. Compression	2	-109.97	0.03	-362.51
			Max. Mx	10	-81.50	220.75	128.15
		Bottom Girt	Max. My	2	-109.85	0.03	-366.85
			Max. Vy	16	-9.78	-42.70	133.32
			Max. Vx	2	-14.48	0.03	-132.17
			Max Tension	14	4.40	-1.41	0.09
			Max. Compression	2	-4.43	-1.65	0.12
			Max. Mx	4	0.38	-138.22	1.10
			Max. My	12	3.49	67.48	1.50
T3	53 - 40	Leg	Max. Vy	4	15.70	-138.22	1.10
			Max. Vx	12	-0.17	-70.35	-1.44
			Max Tension	15	69.66	-0.02	353.90
			Max. Compression	2	-115.53	0.04	-216.36
			Max. Mx	10	-81.74	218.41	126.81
			Max. My	2	-110.09	0.03	-362.51
			Max. Vy	16	-6.80	-94.86	174.96
T4	40 - 26.5	Leg	Max. Vx	2	-11.81	0.04	-216.36
			Max Tension	15	65.48	-0.02	211.57
			Max. Compression	2	-119.66	0.05	-48.41
			Max. Mx	8	-28.03	144.15	0.16
			Max. My	2	14.94	-4.34	-223.80
			Max. Vy	18	-7.75	-38.28	23.39
			Max. Vx	2	-12.99	0.05	-48.41
T5	26.5 - 0	Leg	Max Tension	15	93.72	-0.03	301.99
			Max. Compression	2	-164.12	-0.00	0.00
			Max. Mx	10	-117.01	191.84	111.67
			Max. My	2	-156.48	0.04	-309.80
			Max. Vy	18	-8.15	0.03	0.05
			Max. Vx	2	-13.14	0.05	-42.94
			Top Girt	Max Tension	14	2.33	-1.25
		Max. Compression		2	-2.56	-1.84	0.08
		Max. Mx		16	0.42	-157.82	0.36
		Max. My		12	1.92	77.29	1.03
		Max. Vy		16	-17.88	-157.82	0.36
		Max. Vx		12	-0.12	-79.93	-1.01

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	16	138.43	5.57	-7.67
	Max. H _x	19	114.85	7.18	-4.19
	Max. H _z	2	-16.03	-1.11	11.06
	Min. Vert	5	-58.92	-6.63	9.59
	Min. H _x	6	-36.76	-8.36	4.87
	Min. H _z	15	93.49	1.15	-9.38
Leg B	Max. Vert	12	136.26	-5.58	-7.68
	Max. H _x	22	-38.93	8.37	4.87
	Max. H _z	2	-18.20	1.11	11.08
	Min. Vert	25	-60.55	6.64	9.60
	Min. H _x	10	124.82	-7.19	-4.20

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Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg A	Min. H _z	15	91.86	-1.15	-9.39
	Max. Vert	2	164.44	-0.00	10.61
	Max. H _x	19	-8.57	6.66	-4.68
	Max. H _z	3	152.36	-0.00	10.62
	Min. Vert	15	-87.70	0.00	-13.74
	Min. H _x	11	-8.57	-6.66	-4.68
	Min. H _z	14	-78.40	0.00	-13.78

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	108.50	0.00	0.00	8.77	16.27	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	130.20	-0.00	-32.74	-1886.77	19.54	-0.00
0.9 Dead+1.0 Wind 0 deg - No Ice	97.65	0.00	-32.74	-1867.73	14.65	-0.00
1.2 Dead+1.0 Wind 30 deg - No Ice	130.20	14.90	-25.81	-1448.70	-822.91	29.37
0.9 Dead+1.0 Wind 30 deg - No Ice	97.65	14.90	-25.81	-1434.68	-818.19	29.38
1.2 Dead+1.0 Wind 60 deg - No Ice	130.20	20.98	-12.11	-625.33	-1081.79	16.24
0.9 Dead+1.0 Wind 60 deg - No Ice	97.65	20.98	-12.11	-620.73	-1074.14	16.24
1.2 Dead+1.0 Wind 90 deg - No Ice	130.20	21.53	0.00	10.54	-1048.98	-1.25
0.9 Dead+1.0 Wind 90 deg - No Ice	97.65	21.53	-0.00	7.90	-1041.71	-1.25
1.2 Dead+1.0 Wind 120 deg - No Ice	130.20	21.18	12.23	650.96	-1089.73	16.24
0.9 Dead+1.0 Wind 120 deg - No Ice	97.65	21.18	12.23	641.03	-1081.98	16.24
1.2 Dead+1.0 Wind 150 deg - No Ice	130.20	14.90	25.81	1469.74	-822.97	29.38
0.9 Dead+1.0 Wind 150 deg - No Ice	97.65	14.90	25.81	1450.45	-818.24	29.38
1.2 Dead+1.0 Wind 180 deg - No Ice	130.20	-0.00	32.51	1898.66	19.54	0.00
0.9 Dead+1.0 Wind 180 deg - No Ice	97.65	0.00	32.51	1874.47	14.65	0.00
1.2 Dead+1.0 Wind 210 deg - No Ice	130.20	-14.90	25.81	1469.73	862.05	-29.37
0.9 Dead+1.0 Wind 210 deg - No Ice	97.65	-14.90	25.81	1450.45	847.55	-29.38
1.2 Dead+1.0 Wind 240 deg - No Ice	130.20	-21.18	12.23	650.96	1128.82	-16.24
0.9 Dead+1.0 Wind 240 deg - No Ice	97.65	-21.18	12.23	641.03	1111.29	-16.24
1.2 Dead+1.0 Wind 270 deg - No Ice	130.20	-21.53	0.00	10.54	1088.06	1.25
0.9 Dead+1.0 Wind 270 deg - No Ice	97.65	-21.53	-0.00	7.90	1071.02	1.25
1.2 Dead+1.0 Wind 300 deg - No Ice	130.20	-20.98	-12.11	-625.34	1120.87	-16.24
0.9 Dead+1.0 Wind 300 deg - No Ice	97.65	-20.98	-12.11	-620.73	1103.44	-16.24

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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
No Ice						
1.2 Dead+1.0 Wind 330 deg - No Ice	130.20	-14.90	-25.81	-1448.71	861.99	-29.38
0.9 Dead+1.0 Wind 330 deg - No Ice	97.65	-14.90	-25.81	-1434.69	847.50	-29.38
1.2 Dead+1.0 Ice+1.0 Temp	174.06	0.00	0.00	18.70	37.19	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	174.06	0.00	-6.85	-389.47	37.21	-0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	174.06	3.16	-5.47	-300.59	-147.13	5.18
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	174.06	4.58	-2.65	-127.16	-215.44	2.68
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	174.06	4.80	0.00	18.71	-216.66	-0.55
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	174.06	4.62	2.67	165.40	-216.87	2.68
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	174.06	3.16	5.47	338.00	-147.15	5.19
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	174.06	0.00	6.81	425.24	37.21	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	174.06	-3.16	5.47	338.00	221.57	-5.18
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	174.06	-4.62	2.67	165.40	291.28	-2.68
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	174.06	-4.80	0.00	18.71	291.08	0.55
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	174.06	-4.58	-2.65	-127.16	289.86	-2.68
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	174.06	-3.16	-5.47	-300.59	221.54	-5.19
Dead+Wind 0 deg - Service	108.50	0.00	-8.91	-503.67	16.28	-0.00
Dead+Wind 30 deg - Service	108.50	4.06	-7.03	-385.35	-211.26	8.00
Dead+Wind 60 deg - Service	108.50	5.71	-3.30	-162.96	-281.18	4.42
Dead+Wind 90 deg - Service	108.50	5.86	0.00	8.78	-272.31	-0.34
Dead+Wind 120 deg - Service	108.50	5.76	3.33	181.75	-283.32	4.42
Dead+Wind 150 deg - Service	108.50	4.06	7.03	402.89	-211.27	8.00
Dead+Wind 180 deg - Service	108.50	0.00	8.85	518.75	16.28	0.00
Dead+Wind 210 deg - Service	108.50	-4.06	7.03	402.89	243.84	-8.00
Dead+Wind 240 deg - Service	108.50	-5.76	3.33	181.75	315.88	-4.42
Dead+Wind 270 deg - Service	108.50	-5.86	0.00	8.78	304.88	0.34
Dead+Wind 300 deg - Service	108.50	-5.71	-3.30	-162.96	313.74	-4.42
Dead+Wind 330 deg - Service	108.50	-4.06	-7.03	-385.35	243.82	-8.00
1.2 Dead+1.0 Ev+1.0 Eh 0 deg	134.26	0.00	-6.77	-420.21	19.54	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 0 deg	93.59	0.00	-6.77	-416.62	14.65	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 30 deg	134.26	3.39	-5.86	-362.50	-195.83	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 30 deg	93.59	3.39	-5.86	-359.74	-197.60	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 60 deg	134.26	5.86	-3.39	-204.84	-353.49	0.00
0.9 Dead-1.0 Ev+1.0 Eh 60 deg	93.59	5.86	-3.39	-204.36	-352.99	0.00
1.2 Dead+1.0 Ev+1.0 Eh 90 deg	134.26	6.77	0.00	10.53	-411.20	0.00
0.9 Dead-1.0 Ev+1.0 Eh 90 deg	93.59	6.77	0.00	7.90	-409.86	0.00
1.2 Dead+1.0 Ev+1.0 Eh 120 deg	134.26	5.86	3.39	225.90	-353.49	0.00
0.9 Dead-1.0 Ev+1.0 Eh 120 deg	93.59	5.86	3.39	220.15	-352.99	0.00
1.2 Dead+1.0 Ev+1.0 Eh 150 deg	134.26	3.39	5.86	383.57	-195.83	0.00
0.9 Dead-1.0 Ev+1.0 Eh 150 deg	93.59	3.39	5.86	375.54	-197.60	0.00
1.2 Dead+1.0 Ev+1.0 Eh 180 deg	134.26	0.00	6.77	441.27	19.54	0.00
0.9 Dead-1.0 Ev+1.0 Eh 180 deg	93.59	0.00	6.77	432.41	14.65	0.00

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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						
1.2 Dead+1.0 Ev+1.0 Eh 210	134.26	-3.39	5.86	383.57	234.91	0.00
deg						
0.9 Dead-1.0 Ev+1.0 Eh 210	93.59	-3.39	5.86	375.54	226.91	0.00
deg						
1.2 Dead+1.0 Ev+1.0 Eh 240	134.26	-5.86	3.39	225.90	392.58	-0.00
deg						
0.9 Dead-1.0 Ev+1.0 Eh 240	93.59	-5.86	3.39	220.15	382.29	-0.00
deg						
1.2 Dead+1.0 Ev+1.0 Eh 270	134.26	-6.77	0.00	10.53	450.29	-0.00
deg						
0.9 Dead-1.0 Ev+1.0 Eh 270	93.59	-6.77	0.00	7.90	439.17	-0.00
deg						
1.2 Dead+1.0 Ev+1.0 Eh 300	134.26	-5.86	-3.39	-204.84	392.58	-0.00
deg						
0.9 Dead-1.0 Ev+1.0 Eh 300	93.59	-5.86	-3.39	-204.36	382.29	-0.00
deg						
1.2 Dead+1.0 Ev+1.0 Eh 330	134.26	-3.39	-5.86	-362.50	234.91	-0.00
deg						
0.9 Dead-1.0 Ev+1.0 Eh 330	93.59	-3.39	-5.86	-359.74	226.91	-0.00
deg						

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-108.50	0.00	0.00	108.50	0.00	0.000%
2	0.00	-130.20	-32.74	0.00	130.20	32.74	0.000%
3	0.00	-97.65	-32.74	0.00	97.65	32.74	0.000%
4	14.90	-130.20	-25.81	-14.90	130.20	25.81	0.000%
5	14.90	-97.65	-25.81	-14.90	97.65	25.81	0.000%
6	20.98	-130.20	-12.11	-20.98	130.20	12.11	0.000%
7	20.98	-97.65	-12.11	-20.98	97.65	12.11	0.000%
8	21.53	-130.20	0.00	-21.53	130.20	0.00	0.000%
9	21.53	-97.65	0.00	-21.53	97.65	0.00	0.000%
10	21.18	-130.20	12.23	-21.18	130.20	-12.23	0.000%
11	21.18	-97.65	12.23	-21.18	97.65	-12.23	0.000%
12	14.90	-130.20	25.81	-14.90	130.20	-25.81	0.000%
13	14.90	-97.65	25.81	-14.90	97.65	-25.81	0.000%
14	0.00	-130.20	32.51	0.00	130.20	-32.51	0.000%
15	0.00	-97.65	32.51	0.00	97.65	-32.51	0.000%
16	-14.90	-130.20	25.81	14.90	130.20	-25.81	0.000%
17	-14.90	-97.65	25.81	14.90	97.65	-25.81	0.000%
18	-21.18	-130.20	12.23	21.18	130.20	-12.23	0.000%
19	-21.18	-97.65	12.23	21.18	97.65	-12.23	0.000%
20	-21.53	-130.20	0.00	21.53	130.20	0.00	0.000%
21	-21.53	-97.65	0.00	21.53	97.65	0.00	0.000%
22	-20.98	-130.20	-12.11	20.98	130.20	12.11	0.000%
23	-20.98	-97.65	-12.11	20.98	97.65	12.11	0.000%
24	-14.90	-130.20	-25.81	14.90	130.20	25.81	0.000%
25	-14.90	-97.65	-25.81	14.90	97.65	25.81	0.000%
26	0.00	-174.06	0.00	0.00	174.06	0.00	0.000%
27	0.00	-174.06	-6.85	0.00	174.06	6.85	0.000%
28	3.16	-174.06	-5.47	-3.16	174.06	5.47	0.000%
29	4.58	-174.06	-2.65	-4.58	174.06	2.65	0.000%
30	4.80	-174.06	0.00	-4.80	174.06	0.00	0.000%
31	4.62	-174.06	2.67	-4.62	174.06	-2.67	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
32	3.16	-174.06	5.47	-3.16	174.06	-5.47	0.000%
33	0.00	-174.06	6.81	0.00	174.06	-6.81	0.000%
34	-3.16	-174.06	5.47	3.16	174.06	-5.47	0.000%
35	-4.62	-174.06	2.67	4.62	174.06	-2.67	0.000%
36	-4.80	-174.06	0.00	4.80	174.06	0.00	0.000%
37	-4.58	-174.06	-2.65	4.58	174.06	2.65	0.000%
38	-3.16	-174.06	-5.47	3.16	174.06	5.47	0.000%
39	0.00	-108.50	-8.91	0.00	108.50	8.91	0.000%
40	4.06	-108.50	-7.03	-4.06	108.50	7.03	0.000%
41	5.71	-108.50	-3.30	-5.71	108.50	3.30	0.000%
42	5.86	-108.50	0.00	-5.86	108.50	0.00	0.000%
43	5.76	-108.50	3.33	-5.76	108.50	-3.33	0.000%
44	4.06	-108.50	7.03	-4.06	108.50	-7.03	0.000%
45	0.00	-108.50	8.85	0.00	108.50	-8.85	0.000%
46	-4.06	-108.50	7.03	4.06	108.50	-7.03	0.000%
47	-5.76	-108.50	3.33	5.76	108.50	-3.33	0.000%
48	-5.86	-108.50	0.00	5.86	108.50	0.00	0.000%
49	-5.71	-108.50	-3.30	5.71	108.50	3.30	0.000%
50	-4.06	-108.50	-7.03	4.06	108.50	7.03	0.000%
51	0.00	-134.26	-6.77	0.00	134.26	6.77	0.000%
52	0.00	-93.59	-6.77	0.00	93.59	6.77	0.000%
53	3.39	-134.26	-5.86	-3.39	134.26	5.86	0.000%
54	3.39	-93.59	-5.86	-3.39	93.59	5.86	0.000%
55	5.86	-134.26	-3.39	-5.86	134.26	3.39	0.000%
56	5.86	-93.59	-3.39	-5.86	93.59	3.39	0.000%
57	6.77	-134.26	0.00	-6.77	134.26	0.00	0.000%
58	6.77	-93.59	0.00	-6.77	93.59	0.00	0.000%
59	5.86	-134.26	3.39	-5.86	134.26	-3.39	0.000%
60	5.86	-93.59	3.39	-5.86	93.59	-3.39	0.000%
61	3.39	-134.26	5.86	-3.39	134.26	-5.86	0.000%
62	3.39	-93.59	5.86	-3.39	93.59	-5.86	0.000%
63	0.00	-134.26	6.77	0.00	134.26	-6.77	0.000%
64	0.00	-93.59	6.77	0.00	93.59	-6.77	0.000%
65	-3.39	-134.26	5.86	3.39	134.26	-5.86	0.000%
66	-3.39	-93.59	5.86	3.39	93.59	-5.86	0.000%
67	-5.86	-134.26	3.39	5.86	134.26	-3.39	0.000%
68	-5.86	-93.59	3.39	5.86	93.59	-3.39	0.000%
69	-6.77	-134.26	0.00	6.77	134.26	0.00	0.000%
70	-6.77	-93.59	0.00	6.77	93.59	0.00	0.000%
71	-5.86	-134.26	-3.39	5.86	134.26	3.39	0.000%
72	-5.86	-93.59	-3.39	5.86	93.59	3.39	0.000%
73	-3.39	-134.26	-5.86	3.39	134.26	5.86	0.000%
74	-3.39	-93.59	-5.86	3.39	93.59	5.86	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00009984
3	Yes	5	0.00000001	0.00004292
4	Yes	5	0.00000001	0.00058461
5	Yes	5	0.00000001	0.00026137
6	Yes	5	0.00000001	0.00025320
7	Yes	5	0.00000001	0.00011566
8	Yes	5	0.00000001	0.00005001

tnxTower

Semaan Engineering Solutions

1047 N 205th Street

Elkhorn, NE 68022

Phone: (402) 289-1888

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9	Yes	4	0.00000001	0.00062956
10	Yes	5	0.00000001	0.00031559
11	Yes	5	0.00000001	0.00014394
12	Yes	5	0.00000001	0.00046675
13	Yes	5	0.00000001	0.00020908
14	Yes	5	0.00000001	0.00009921
15	Yes	5	0.00000001	0.00004238
16	Yes	5	0.00000001	0.00046061
17	Yes	5	0.00000001	0.00020681
18	Yes	5	0.00000001	0.00031101
19	Yes	5	0.00000001	0.00014215
20	Yes	5	0.00000001	0.00004994
21	Yes	4	0.00000001	0.00062846
22	Yes	5	0.00000001	0.00025208
23	Yes	5	0.00000001	0.00011516
24	Yes	5	0.00000001	0.00058543
25	Yes	5	0.00000001	0.00026163
26	Yes	4	0.00000001	0.00000001
27	Yes	5	0.00000001	0.00090577
28	Yes	5	0.00000001	0.00083501
29	Yes	5	0.00000001	0.00066598
30	Yes	5	0.00000001	0.00057890
31	Yes	5	0.00000001	0.00066854
32	Yes	5	0.00000001	0.00083116
33	Yes	5	0.00000001	0.00089762
34	Yes	5	0.00000001	0.00082715
35	Yes	5	0.00000001	0.00066461
36	Yes	5	0.00000001	0.00057592
37	Yes	5	0.00000001	0.00066222
38	Yes	5	0.00000001	0.00083139
39	Yes	4	0.00000001	0.00035644
40	Yes	5	0.00000001	0.00005194
41	Yes	4	0.00000001	0.00062330
42	Yes	4	0.00000001	0.00020234
43	Yes	4	0.00000001	0.00066353
44	Yes	5	0.00000001	0.00004877
45	Yes	4	0.00000001	0.00035731
46	Yes	5	0.00000001	0.00004823
47	Yes	4	0.00000001	0.00065648
48	Yes	4	0.00000001	0.00020245
49	Yes	4	0.00000001	0.00062141
50	Yes	5	0.00000001	0.00005194
51	Yes	4	0.00000001	0.00045904
52	Yes	4	0.00000001	0.00022542
53	Yes	4	0.00000001	0.00055003
54	Yes	4	0.00000001	0.00028015
55	Yes	4	0.00000001	0.00055198
56	Yes	4	0.00000001	0.00028124
57	Yes	4	0.00000001	0.00046054
58	Yes	4	0.00000001	0.00022623
59	Yes	4	0.00000001	0.00054911
60	Yes	4	0.00000001	0.00027946
61	Yes	4	0.00000001	0.00054874
62	Yes	4	0.00000001	0.00027906
63	Yes	4	0.00000001	0.00046232
64	Yes	4	0.00000001	0.00022706
65	Yes	4	0.00000001	0.00054926
66	Yes	4	0.00000001	0.00027914
67	Yes	4	0.00000001	0.00054730
68	Yes	4	0.00000001	0.00027804
69	Yes	4	0.00000001	0.00046065
70	Yes	4	0.00000001	0.00022617
71	Yes	4	0.00000001	0.00055038
72	Yes	4	0.00000001	0.00027992

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73	Yes	4	0.00000001	0.00055079
74	Yes	4	0.00000001	0.00028031

Maximum Tower Deflections - Service Wind

Section No.	Elevation <i>ft</i>	Horz. Deflection <i>in</i>	Gov. Load Comb.	Tilt °	Twist °
T1	80 - 62	3.243	39	0.0049	0.0062
T2	62 - 53	2.600	39	0.0045	0.0047
T3	53 - 40	2.265	39	0.0041	0.0039
T4	40 - 26.5	1.751	39	0.0033	0.0028
T5	26.5 - 0	1.185	39	0.0024	0.0018

Critical Deflections and Radius of Curvature - Service Wind

Elevation <i>ft</i>	Appurtenance	Gov. Load Comb.	Deflection <i>in</i>	Tilt °	Twist °	Radius of Curvature <i>ft</i>
80.00	20'x6" Pipe Mount	39	3.243	0.0049	0.0062	314794
79.50	(4) 17'x2" Pipe Mount	39	3.225	0.0049	0.0061	314794
76.00	Face Frame	39	3.102	0.0049	0.0059	314794
74.00	18' Sq. FRP Panel Assembly	39	3.031	0.0048	0.0057	262328
73.83	(4) 17'x2" Pipe Mount	39	3.025	0.0048	0.0057	255237
71.00	CCISeismic Tower Section 1	39	2.924	0.0048	0.0055	174885
69.00	CCISeismic (3) 1/2" Fiber From 0 to 76 (62ft to76ft)	39	2.853	0.0047	0.0053	143088
68.17	(4) 17'x2" Pipe Mount	39	2.823	0.0047	0.0052	133011
68.00	18' Sq. FRP Panel Assembly	39	2.817	0.0047	0.0052	131164
64.50	CCISeismic (3) 12x24 Hybrid From 0 to 67 (62ft to67ft)	39	2.691	0.0046	0.0049	101263
62.50	(4) 17'x2" Pipe Mount	39	2.619	0.0045	0.0047	88658
62.00	18' Sq. FRP Panel Assembly	39	2.600	0.0045	0.0047	85787
57.50	CCISeismic Tower Section 2	39	2.435	0.0044	0.0043	64576
53.00	Framing & Miscel Steel @ 53'	39	2.265	0.0041	0.0039	54300
46.50	CCISeismic Tower Section 3	39	2.012	0.0037	0.0034	60086
33.25	CCISeismic Tower Section 4	39	1.472	0.0029	0.0023	69346
26.50	Framing & Miscel Steel @ 26.5'	39	1.185	0.0024	0.0018	68800
13.25	CCISeismic Tower Section 5	39	0.600	0.0013	0.0009	132516

Maximum Tower Deflections - Design Wind

Section No.	Elevation <i>ft</i>	Horz. Deflection <i>in</i>	Gov. Load Comb.	Tilt °	Twist °
T1	80 - 62	12.010	2	0.0181	0.0227
T2	62 - 53	9.631	2	0.0166	0.0173
T3	53 - 40	8.389	2	0.0152	0.0144
T4	40 - 26.5	6.485	2	0.0120	0.0105
T5	26.5 - 0	4.389	2	0.0088	0.0067

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Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
80.00	20'x6" Pipe Mount	2	12.010	0.0181	0.0227	84988
79.50	(4) 17'x2" Pipe Mount	2	11.945	0.0181	0.0226	84988
76.00	Face Frame	2	11.487	0.0178	0.0215	84988
74.00	18' Sq. FRP Panel Assembly	2	11.225	0.0177	0.0209	70824
73.83	(4) 17'x2" Pipe Mount	2	11.203	0.0177	0.0209	68909
71.00	CCISeismic Tower Section 1	2	10.831	0.0175	0.0200	47216
69.00	CCISeismic (3) 1/2" Fiber From 0 to 76 (62ft to76ft)	2	10.567	0.0173	0.0194	38631
68.17	(4) 17'x2" Pipe Mount	2	10.457	0.0173	0.0192	35911
68.00	18' Sq. FRP Panel Assembly	2	10.435	0.0173	0.0191	35412
64.50	CCISeismic (3) 12x24 Hybrid From 0 to 67 (62ft to67ft)	2	9.968	0.0169	0.0181	27339
62.50	(4) 17'x2" Pipe Mount	2	9.699	0.0167	0.0174	23935
62.00	18' Sq. FRP Panel Assembly	2	9.631	0.0166	0.0173	23160
57.50	CCISeismic Tower Section 2	2	9.017	0.0160	0.0158	17431
53.00	Framing & Misc Steel @ 53'	2	8.389	0.0152	0.0144	14656
46.50	CCISeismic Tower Section 3	2	7.453	0.0137	0.0124	16215
33.25	CCISeismic Tower Section 4	2	5.451	0.0105	0.0085	18709
26.50	Framing & Misc Steel @ 26.5'	2	4.389	0.0088	0.0067	18562
13.25	CCISeismic Tower Section 5	2	2.224	0.0047	0.0032	35754

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load Allowable	Allowable Ratio	Criteria
T1	80	Top Girt	A325N	0.7500	20	0.39	19.88	0.020 ✓	1	Bolt Shear
		Bottom Girt	A325N	0.7500	20	0.06	19.88	0.003 ✓	1	Bolt Shear
T2	62	Bottom Girt	A325N	0.7500	20	0.22	19.88	0.011 ✓	1	Bolt Shear
T3	53	Leg	A325N	1.0000	32	2.18	54.52	0.040 ✓	1	Bolt Tension
T5	26.5	Top Girt	A325N	0.7500	20	0.14	19.88	0.007 ✓	1	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
T1	80 - 62	P48x1/2<ERW>	18.00	0.42	0.3	69.4411	-73.86	2962.44	0.025

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T2	62 - 53	P48x1/2<ERW>	9.00	0.42	K=1.00 0.3	69.4411	-109.91	2962.44	0.037
T3	53 - 40	P48x1/2<ERW>	13.00	13.00	K=1.00 9.3	69.4411	-112.81	2946.09	0.038
T4	40 - 26.5	P48x1/2<ERW>	13.50	13.50	K=1.00 9.6	69.4411	-117.67	2944.81	0.040
T5	26.5 - 0	P48x1/2<ERW>	26.50	26.08	K=1.00 18.6	69.4411	-160.30	2897.11	0.055

Leg Bending Design Data (Compression)

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} kip-ft	φM _{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
T1	80 - 62	P48x1/2<ERW>	258.42	3687.47	0.070	0.00	3687.47	0.000
T2	62 - 53	P48x1/2<ERW>	366.85	3687.47	0.099	0.00	3687.47	0.000
T3	53 - 40	P48x1/2<ERW>	362.51	3687.47	0.098	0.00	3687.47	0.000
T4	40 - 26.5	P48x1/2<ERW>	216.35	3687.47	0.059	0.00	3687.47	0.000
T5	26.5 - 0	P48x1/2<ERW>	309.80	3687.47	0.084	0.00	3687.47	0.000

Leg Interaction Design Data (Compression)

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	Ratio $\frac{M_{uy}}{\phi M_{uy}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	80 - 62	P48x1/2<ERW>	0.025	0.070	0.000	0.083	1.000	✓
T2	62 - 53	P48x1/2<ERW>	0.037	0.099	0.000	0.118	1.000	✓
T3	53 - 40	P48x1/2<ERW>	0.038	0.098	0.000	0.117	1.000	✓
T4	40 - 26.5	P48x1/2<ERW>	0.040	0.059	0.000	0.079	1.000	✓
T5	26.5 - 0	P48x1/2<ERW>	0.055	0.084	0.000	0.112	1.000	✓

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	80 - 62	HSS10x10x3/8	18.00	14.00	42.9	13.2000	-1.05	482.96	0.002
T5	26.5 - 0	HSS10x10x3/8	18.00	14.00	K=1.00 38.6	13.2000	-2.39	494.44	0.005

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
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Top Girt Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} kip-ft	φM _{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
T1	80 - 62	HSS10x10x3/8	-125.81	162.84	0.773	1.99	162.84	0.012
T5	26.5 - 0	HSS10x10x3/8	-157.82	162.84	0.969	0.36	162.84	0.002

Top Girt Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	Ratio $\frac{M_{uy}}{\phi M_{uy}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	80 - 62	HSS10x10x3/8	0.002	0.773	0.012	0.786	1.000	✓
T5	26.5 - 0	HSS10x10x3/8	0.005	0.969	0.002	0.974	1.000	✓

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	80 - 62	HSS10x10x3/8	18.00	14.00	42.9	13.2000	-1.05	482.96	0.002
T2	62 - 53	HSS10x10x3/8	18.00	14.00	42.9 K=1.00	13.2000	-1.56	482.96	0.003

Bottom Girt Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M _{uy} kip-ft	φM _{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
T1	80 - 62	HSS10x10x3/8	-132.44	162.84	0.813	1.33	162.84	0.008
T2	62 - 53	HSS10x10x3/8	-138.22	162.84	0.849	1.12	162.84	0.007

Bottom Girt Interaction Design Data

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Section No.	Elevation ft	Size	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
			$\frac{P_u}{\phi P_n}$	$\frac{M_{ux}}{\phi M_{nx}}$	$\frac{M_{uy}}{\phi M_{ny}}$			
T1	80 - 62	HSS10x10x3/8	0.002	0.813	0.008	0.823	1.000	✓
T2	62 - 53	HSS10x10x3/8	0.003	0.849	0.007	0.857	1.000	✓

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L	L _u	Kl/r	A	P _u	ϕP_n	Ratio
			ft	ft		in ²	K	K	$\frac{P_u}{\phi P_n}$
T1	80 - 62	P48x1/2<ERW>	18.00	0.42	0.3	69.4411	41.92	3367.89	0.012
T2	62 - 53	P48x1/2<ERW>	9.00	0.42	0.3	69.4411	65.28	3367.89	0.019
T3	53 - 40	P48x1/2<ERW>	13.00	13.00	9.3	69.4411	65.03	3367.89	0.019
T4	40 - 26.5	P48x1/2<ERW>	13.50	13.50	9.6	69.4411	65.48	3367.89	0.019
T5	26.5 - 0	P48x1/2<ERW>	26.50	26.08	18.6	69.4411	93.72	3367.89	0.028

Leg Bending Design Data (Tension)

Section No.	Elevation ft	Size	M _{ux}	ϕM_{nx}	Ratio	M _{uy}	ϕM_{ny}	Ratio
			kip-ft	kip-ft	$\frac{M_{ux}}{\phi M_{nx}}$	kip-ft	kip-ft	$\frac{M_{uy}}{\phi M_{ny}}$
T1	80 - 62	P48x1/2<ERW>	254.84	3687.47	0.069	0.00	3687.47	0.000
T2	62 - 53	P48x1/2<ERW>	362.42	3687.47	0.098	0.00	3687.47	0.000
T3	53 - 40	P48x1/2<ERW>	358.12	3687.47	0.097	0.00	3687.47	0.000
T4	40 - 26.5	P48x1/2<ERW>	211.57	3687.47	0.057	0.00	3687.47	0.000
T5	26.5 - 0	P48x1/2<ERW>	301.99	3687.47	0.082	0.00	3687.47	0.000

Leg Interaction Design Data (Tension)

Section No.	Elevation ft	Size	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
			$\frac{P_u}{\phi P_n}$	$\frac{M_{ux}}{\phi M_{nx}}$	$\frac{M_{uy}}{\phi M_{ny}}$			
T1	80 - 62	P48x1/2<ERW>	0.012	0.069	0.000	0.075	1.000	✓
T2	62 - 53	P48x1/2<ERW>	0.019	0.098	0.000	0.108	1.000	✓
T3	53 - 40	P48x1/2<ERW>	0.019	0.097	0.000	0.107	1.000	✓
T4	40 - 26.5	P48x1/2<ERW>	0.019	0.057	0.000	0.067	1.000	✓
T5	26.5 - 0	P48x1/2<ERW>	0.028	0.082	0.000	0.096	1.000	✓

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Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
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Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	80 - 62	HSS10x10x3/8	18.00	14.00	42.9	13.2000	1.05	546.48	0.002
T5	26.5 - 0	HSS10x10x3/8	18.00	14.00	42.9	13.2000	2.39	546.48	0.004

Top Girt 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 $\frac{M_{uy}}{\phi M_{ny}}$
T1	80 - 62	HSS10x10x3/8	-125.81	162.84	0.773	1.99	162.84	0.012
T5	26.5 - 0	HSS10x10x3/8	-157.82	162.84	0.969	0.36	162.84	0.002

Top Girt Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	80 - 62	HSS10x10x3/8	0.002	0.773	0.012	0.786	1.000	✓
T5	26.5 - 0	HSS10x10x3/8	0.004	0.969	0.002	0.974	1.000	✓

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	80 - 62	HSS10x10x3/8	18.00	14.00	42.9	13.2000	1.05	546.48	0.002
T2	62 - 53	HSS10x10x3/8	18.00	14.00	42.9	13.2000	1.56	546.48	0.003

Bottom Girt Bending Design Data

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Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M_{uy} kip-ft	ϕM_{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
T1	80 - 62	HSS10x10x3/8	-132.44	162.84	0.813	1.33	162.84	0.008
T2	62 - 53	HSS10x10x3/8	-138.22	162.84	0.849	1.12	162.84	0.007

Bottom Girt Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	Ratio $\frac{M_{uy}}{\phi M_{uy}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	80 - 62	HSS10x10x3/8	0.002	0.813	0.008	0.822	1.000	✓
T2	62 - 53	HSS10x10x3/8	0.003	0.849	0.007	0.857	1.000	✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	80 - 62	Leg	P48x1/2<ERW>	3	-73.86	2962.44	8.3	Pass
T2	62 - 53	Leg	P48x1/2<ERW>	12	-109.91	2962.44	11.8	Pass
T3	53 - 40	Leg	P48x1/2<ERW>	18	-112.81	2946.09	11.7	Pass
T4	40 - 26.5	Leg	P48x1/2<ERW>	21	-117.67	2944.81	7.9	Pass
T5	26.5 - 0	Leg	P48x1/2<ERW>	24	-160.30	2897.11	11.2	Pass
T1	80 - 62	Top Girt	HSS10x10x3/8	5	-1.05	482.96	78.6	Pass
T5	26.5 - 0	Top Girt	HSS10x10x3/8	27	-2.39	494.44	97.4	Pass
T1	80 - 62	Bottom Girt	HSS10x10x3/8	8	-1.05	482.96	82.3	Pass
T2	62 - 53	Bottom Girt	HSS10x10x3/8	14	-1.56	482.96	85.7	Pass
Summary								
Leg (T2)							11.8	Pass
Top Girt (T5)							97.4	Pass
Bottom Girt (T2)							85.7	Pass
Bolt Checks							4.0	Pass
RATING =							97.4	Pass

Seismic Analysis

Site Number:	29546
Order Number:	REV03B_Base
Date:	10/10/2024

Location				
	Decimal Degrees	Deg	Min	Sec
Lat:	41.2189	+	41	13
Long:	-73.2448	-	73	14

Code and Site Parameters		
Seismic Design Code:	TIA-222-H-1	
Site Soil:	C	Dense Soil/Soft Rock
Risk Category:	II	
<u>USGS Seismic Reference</u>		
S _S :	0.2160	g
S ₁ :	0.0550	g
T _L :	6	s

Seismic Design Category Determination	
Importance Factor, I _e :	1
Acceleration-based site coefficient, F _a :	1.3000
Velocity-based site coefficient, F _v :	1.5000
Design spectral response acceleration short period, S _{DS} :	0.1872 g
Design spectral response acceleration 1 s period, S _{D1} :	0.0550 g
T _s :	0.2938
Seismic Design Category Based on S _{DS} :	B
Seismic Design Category Based on S _{D1} :	A
Seismic Design Category Based on S ₁ :	N/A
Controlling Seismic Design Category:	B

Seismic Analysis

Site Number:	29546
Order Number:	REV03B_Base
Date:	10/10/2024

Tower Details		
Tower Type:	Self-Support	
Height, h:	80	ft
Effective Seismic Weight, W:	108.50	kips
Amplification Factor, A _s :	1.0	2.7.8.1
Seismic Base Shear		
Response Modification Factor, R:	3	
w _a :	18.0000	ft
w ₀ :	18.0000	ft
W ₁ :	124.7739	kips
Weight of Structure and Appurtenances within top 5%, W ₂ :	15.4529	kips
K _f :	4540	ft
F _a :	12.0447	hz
Approximate Fundamental Period Self-Support, T _a :	0.0830	s
		2.7.7.1.3.2
Seismic Response Coefficient, C _s	0.0624	2.7.7.1.1
Seismic Response Coefficient Max 1, C _{smax}	0.2208	2.7.7.1.1
Seismic Response Coefficient Max 2, C _{smax}	N/A	2.7.7.1.1
	0.220818838	
Seismic Response Coefficient Min 1, C _{smin}	0.0300	2.7.7.1.1
Seismic Response Coefficient Min 2, C _{smin}	N/A	2.7.7.1.1
	0.0300	
Controlling Seismic Response Coefficient, C _{sc}	0.0624	
Seismic Base Shear, V	6.770	kips
		2.7.7.1.1
Vertical Distribution Factors		
Period Related Exponent, k:	1.000	
Sum of w _i h _i ^k	5360.10	

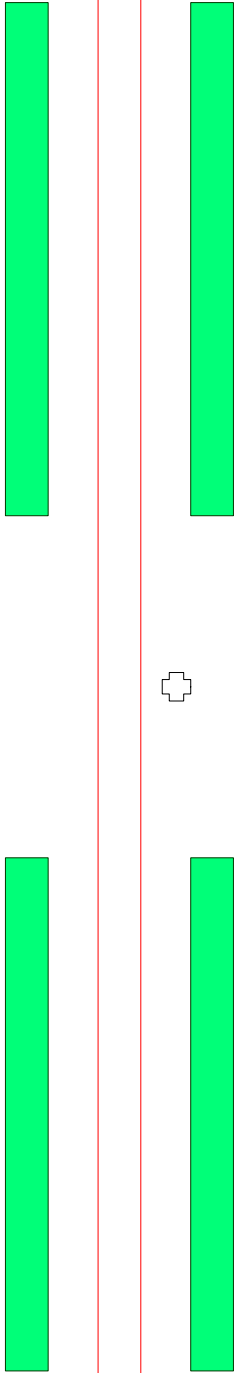
Tower Section Loads								
Section Number	Length	Top Height	Mid Height, h_x	Section Weight, w_x	$w_x h_x^k$	C_{vx}	F_{xh}	F_{xv}
1	18.00	80.00	71.00	18.5619	1317.89	0.2459	1.6646	0.6950
2	9.00	62.00	57.50	9.2809	533.65	0.0996	0.6741	0.3475
3	13.00	53.00	46.50	9.8974	460.23	0.0859	0.5813	0.3706
4	13.50	40.00	33.25	10.2781	341.75	0.0638	0.4317	0.3848
5	26.50	26.50	13.25	22.6108	299.59	0.0559	0.3784	0.8465
Sum				70.6290	2953.11			

Discrete Loads						
Name	h_x	w_x	$w_x h_x^k$	C_{vx}	F_{xh}	F_{xv}
20"x6" Pipe Mount	80.00	0.3800	30.40	0.0057	0.0384	0.0142
20"x6" Pipe Mount	80.00	0.3800	30.40	0.0057	0.0384	0.0142
20"x6" Pipe Mount	80.00	0.3800	30.40	0.0057	0.0384	0.0142
misc 48"Ø x 10' FRP Stealth Radome	80.00	0.4000	32.00	0.0060	0.0404	0.0150
misc 48"Ø x 10' FRP Stealth Radome	80.00	0.4000	32.00	0.0060	0.0404	0.0150
misc 48"Ø x 10' FRP Stealth Radome	80.00	0.4000	32.00	0.0060	0.0404	0.0150
misc 48"Ø x 10' FRP Stealth Radome	80.00	0.4000	32.00	0.0060	0.0404	0.0150
misc 48"Ø x 10' FRP Stealth Radome	80.00	0.4000	32.00	0.0060	0.0404	0.0150
misc 48"Ø x 10' FRP Stealth Radome	80.00	0.4000	32.00	0.0060	0.0404	0.0150
18' Sq. FRP Panel Assembly	71.00	2.8500	202.35	0.0378	0.2556	0.1067
18' Sq. FRP Panel Assembly	71.00	2.8500	202.35	0.0378	0.2556	0.1067
18' Sq. FRP Panel Assembly	71.00	2.8500	202.35	0.0378	0.2556	0.1067
(4) tower mounts 17"x2" Pipe Mount	71.00	0.2400	17.04	0.0032	0.0215	0.0090
(4) tower mounts 17"x2" Pipe Mount	71.00	0.2400	17.04	0.0032	0.0215	0.0090
(4) tower mounts 17"x2" Pipe Mount	71.00	0.2400	17.04	0.0032	0.0215	0.0090
Framing & Misc Steel @ 80'	80.00	3.6000	288.00	0.0537	0.3638	0.1348
Work Platform & Misc Steel @ 62'	62.00	6.0500	375.10	0.0700	0.4738	0.2265
Framing & Misc Steel @ 53'	53.00	4.0000	212.00	0.0396	0.2678	0.1498
Framing & Misc Steel @ 26.5'	26.50	3.6500	96.73	0.0180	0.1222	0.1367
MX06FRO640-02	80.00	0.0700	5.60	0.0010	0.0071	0.0026
MX06FRO640-02	80.00	0.0700	5.60	0.0010	0.0071	0.0026
MX06FRO660-03	80.00	0.0600	4.80	0.0009	0.0061	0.0022
MX06FRO660-03	80.00	0.0600	4.80	0.0009	0.0061	0.0022
MX06FRO660-03	80.00	0.0600	4.80	0.0009	0.0061	0.0022
MX06FRO660-03	80.00	0.0600	4.80	0.0009	0.0061	0.0022
MX06FRO660-03	80.00	0.0600	4.80	0.0009	0.0061	0.0022
RF4440d-13A	80.00	0.0725	5.80	0.0011	0.0073	0.0027
RF4440d-13A	80.00	0.0725	5.80	0.0011	0.0073	0.0027
RF4439d-25A	80.00	0.0747	5.98	0.0011	0.0075	0.0028
RF4439d-25A	80.00	0.0747	5.98	0.0011	0.0075	0.0028
RF4439d-25A	80.00	0.0747	5.98	0.0011	0.0075	0.0028
RF4439d-25A	80.00	0.0747	5.98	0.0011	0.0075	0.0028
(4) 7/8" Coax (Elev 80'-95')	80.00	0.0078	0.62	0.0001	0.0008	0.0003
(4) 7/8" Coax (Elev 80'-95')	80.00	0.0078	0.62	0.0001	0.0008	0.0003
(4) 7/8" Coax (Elev 80'-95')	80.00	0.0078	0.62	0.0001	0.0008	0.0003
FFVV-65A-R2-V1	80.00	0.0732	5.86	0.0011	0.0074	0.0027
FFVV-65A-R2-V1	80.00	0.0732	5.86	0.0011	0.0074	0.0027
FFVV-65A-R2-V1	80.00	0.0732	5.86	0.0011	0.0074	0.0027
AIR 6419 B41	80.00	0.0830	6.64	0.0012	0.0084	0.0031
AIR 6419 B41	80.00	0.0830	6.64	0.0012	0.0084	0.0031
AIR 6419 B41	80.00	0.0830	6.64	0.0012	0.0084	0.0031
4449 B71/B85 RRU	80.00	0.0749	5.99	0.0011	0.0076	0.0028
4449 B71/B85 RRU	80.00	0.0749	5.99	0.0011	0.0076	0.0028
4449 B71/B85 RRU	80.00	0.0749	5.99	0.0011	0.0076	0.0028
4460 B25/B66 RRU	80.00	0.1090	8.72	0.0016	0.0110	0.0041
4460 B25/B66 RRU	80.00	0.1090	8.72	0.0016	0.0110	0.0041
4460 B25/B66 RRU	80.00	0.1090	8.72	0.0016	0.0110	0.0041
4460 B25/B66 RRU	80.00	0.1090	8.72	0.0016	0.0110	0.0041
(1) 6x24 Hybrid (Elev 80'-85')	80.00	0.0333	2.66	0.0005	0.0034	0.0012
(1) 6x24 Hybrid (Elev 80'-85')	80.00	0.0333	2.66	0.0005	0.0034	0.0012
(1) 6x24 Hybrid (Elev 80'-85')	80.00	0.0333	2.66	0.0005	0.0034	0.0012
Face Frame	76.00	0.1387	10.54	0.0020	0.0133	0.0052
Face Frame	76.00	0.1387	10.54	0.0020	0.0133	0.0052
Face Frame	76.00	0.1387	10.54	0.0020	0.0133	0.0052
cci TPA65R-BU6DA-K w/6' Mount Pipe	76.00	0.1000	7.60	0.0014	0.0096	0.0037
cci TPA65R-BU6DA-K w/6' Mount Pipe	76.00	0.1000	7.60	0.0014	0.0096	0.0037
cci TPA65R-BU6DA-K w/6' Mount Pipe	76.00	0.1000	7.60	0.0014	0.0096	0.0037
ericsson AIR 6419 B77D w/3' Mount Pipe	76.00	0.0800	6.08	0.0011	0.0077	0.0030
ericsson AIR 6419 B77D w/3' Mount Pipe	76.00	0.0800	6.08	0.0011	0.0077	0.0030
ericsson AIR 6419 B77D w/3' Mount Pipe	76.00	0.0800	6.08	0.0011	0.0077	0.0030
ericsson AIR 6419 B77D w/3' Mount Pipe	76.00	0.0800	6.08	0.0011	0.0077	0.0030
ericsson AIR 6419 B77G w/3' Mount Pipe	76.00	0.0800	6.08	0.0011	0.0077	0.0030
ericsson AIR 6419 B77G w/3' Mount Pipe	76.00	0.0800	6.08	0.0011	0.0077	0.0030
ericsson AIR 6419 B77G w/3' Mount Pipe	76.00	0.0800	6.08	0.0011	0.0077	0.0030
ericsson AIR 6419 B77G w/3' Mount Pipe	76.00	0.0800	6.08	0.0011	0.0077	0.0030
cci TPA65R-BU6DA-K w/6' Mount Pipe	76.00	0.1000	7.60	0.0014	0.0096	0.0037
cci TPA65R-BU6DA-K w/6' Mount Pipe	76.00	0.1000	7.60	0.0014	0.0096	0.0037
cci TPA65R-BU6DA-K w/6' Mount Pipe	76.00	0.1000	7.60	0.0014	0.0096	0.0037
ericsson 4478 B14 RRU	76.00	0.0600	4.56	0.0009	0.0058	0.0022
ericsson 4478 B14 RRU	76.00	0.0600	4.56	0.0009	0.0058	0.0022
ericsson 4478 B14 RRU	76.00	0.0600	4.56	0.0009	0.0058	0.0022
ericsson 4449 B5/B12 RRU	76.00	0.0700	5.32	0.0010	0.0067	0.0026
ericsson 4449 B5/B12 RRU	76.00	0.0700	5.32	0.0010	0.0067	0.0026
ericsson 4449 B5/B12 RRU	76.00	0.0700	5.32	0.0010	0.0067	0.0026
ericsson 8843 B2/B66A RRU	76.00	0.0700	5.32	0.0010	0.0067	0.0026
ericsson 8843 B2/B66A RRU	76.00	0.0700	5.32	0.0010	0.0067	0.0026
ericsson 8843 B2/B66A RRU	76.00	0.0700	5.32	0.0010	0.0067	0.0026
raycap DC9-48-60-24-8C-EV	76.00	0.0300	2.28	0.0004	0.0029	0.0011
raycap DC9-48-60-24-8C-EV	76.00	0.0300	2.28	0.0004	0.0029	0.0011
samsung MT6407-77A	62.50	0.0900	5.63	0.0010	0.0071	0.0034
samsung MT6407-77A	62.50	0.0900	5.63	0.0010	0.0071	0.0034
samsung MT6407-77A	62.50	0.0900	5.63	0.0010	0.0071	0.0034
samsung XXDWMM-12.5-65-8T	62.50	0.0029	0.18	0.0000	0.0002	0.0001
samsung XXDWMM-12.5-65-8T	62.50	0.0029	0.18	0.0000	0.0002	0.0001

samsung XXDWMM-12.5-65-8T	62.50	0.0029	0.18	0.0000	0.0002	0.0001
samsung RT-4401CA-CBRS Port1 3550 8DT w/ CBRS RRH - RT4401-48A	62.50	0.0200	1.25	0.0002	0.0016	0.0007
samsung RT-4401CA-CBRS Port1 3550 8DT w/ CBRS RRH - RT4401-48A	62.50	0.0200	1.25	0.0002	0.0016	0.0007
samsung RT-4401CA-CBRS Port1 3550 8DT w/ CBRS RRH - RT4401-48A	62.50	0.0200	1.25	0.0002	0.0016	0.0007
jma MX06FRO640-02	62.50	0.0700	4.38	0.0008	0.0055	0.0026
jma MX06FRO640-02	62.50	0.0700	4.38	0.0008	0.0055	0.0026
jma MX06FRO640-02	62.50	0.0700	4.38	0.0008	0.0055	0.0026
samsung RF4440d-13A	62.50	0.0700	4.38	0.0008	0.0055	0.0026
samsung RF4439d-25A	62.50	0.0700	4.38	0.0008	0.0055	0.0026
(4) commscope TD-850B-LTE78-43	62.50	0.2000	12.50	0.0023	0.0158	0.0075
(4) commscope TD-850B-LTE78-43	62.50	0.2000	12.50	0.0023	0.0158	0.0075
(4) commscope TD-850B-LTE78-43	62.50	0.2000	12.50	0.0023	0.0158	0.0075
RFS OVP	62.50	0.0262	1.64	0.0003	0.0021	0.0010
RFS OVP	62.50	0.0500	3.13	0.0006	0.0039	0.0019
RFS OVP	62.50	0.0500	3.13	0.0006	0.0039	0.0019
Sum		35.6460	2322.69			

Linear Loads								
Name	Start Height	End Height	h_x	w_x	$w_x h_x^k$	C_{vx}	F_{xh}	F_{sv}
Climbing Ladder From 62 to 80	62.00	80.00	71.00	0.0648	4.60	0.0009	0.0058	0.0024
Safety Line 3/8 From 62 to 80	62.00	80.00	71.00	0.0040	0.28	0.0001	0.0004	0.0001
miscL Climbing Ladder From 0 to 62	53.00	62.00	57.50	0.0324	1.86	0.0003	0.0024	0.0012
miscL Climbing Ladder From 0 to 62	40.00	53.00	46.50	0.0468	2.18	0.0004	0.0027	0.0018
miscL Climbing Ladder From 0 to 62	26.50	40.00	33.25	0.0486	1.62	0.0003	0.0020	0.0018
miscL Climbing Ladder From 0 to 62	0.00	26.50	13.25	0.0954	1.26	0.0002	0.0016	0.0036
miscL Safety Line 3/8 From 0 to 62	53.00	62.00	57.50	0.0020	0.11	0.0000	0.0001	0.0001
miscL Safety Line 3/8 From 0 to 62	40.00	53.00	46.50	0.0029	0.13	0.0000	0.0002	0.0001
miscL Safety Line 3/8 From 0 to 62	26.50	40.00	33.25	0.0030	0.10	0.0000	0.0001	0.0001
miscL Safety Line 3/8 From 0 to 62	0.00	26.50	13.25	0.0058	0.08	0.0000	0.0001	0.0002
(3) 6x24 Hybrid From 0 to 80	62.00	80.00	71.00	0.1197	8.50	0.0016	0.0107	0.0045
(3) 6x24 Hybrid From 0 to 80	53.00	62.00	57.50	0.0599	3.44	0.0006	0.0043	0.0022
(3) 6x24 Hybrid From 0 to 80	40.00	53.00	46.50	0.0865	4.02	0.0008	0.0051	0.0032
(3) 6x24 Hybrid From 0 to 80	26.50	40.00	33.25	0.0898	2.99	0.0006	0.0038	0.0034
(3) 6x24 Hybrid From 0 to 80	0.00	26.50	13.25	0.1763	2.34	0.0004	0.0029	0.0066
(12) 7/8" Coax From 0 to 80	62.00	80.00	71.00	0.1123	7.97	0.0015	0.0101	0.0042
(12) 7/8" Coax From 0 to 80	53.00	62.00	57.50	0.0562	3.23	0.0006	0.0041	0.0021
(12) 7/8" Coax From 0 to 80	40.00	53.00	46.50	0.0811	3.77	0.0007	0.0048	0.0030
(12) 7/8" Coax From 0 to 80	26.50	40.00	33.25	0.0842	2.80	0.0005	0.0035	0.0032
(12) 7/8" Coax From 0 to 80	0.00	26.50	13.25	0.1654	2.19	0.0004	0.0028	0.0062
(3) 1/2" Fiber From 0 to 76	62.00	76.00	69.00	0.0248	1.71	0.0003	0.0022	0.0009
(3) 1/2" Fiber From 0 to 76	53.00	62.00	57.50	0.0159	0.92	0.0002	0.0012	0.0006
(3) 1/2" Fiber From 0 to 76	40.00	53.00	46.50	0.0230	1.07	0.0002	0.0014	0.0009
(3) 1/2" Fiber From 0 to 76	26.50	40.00	33.25	0.0239	0.79	0.0001	0.0010	0.0009
(3) 1/2" Fiber From 0 to 76	0.00	26.50	13.25	0.0469	0.62	0.0001	0.0008	0.0018
(6) 1" DC From 0 to 76	62.00	76.00	69.00	0.0202	1.39	0.0003	0.0018	0.0008
(6) 1" DC From 0 to 76	53.00	62.00	57.50	0.0130	0.75	0.0001	0.0009	0.0005
(6) 1" DC From 0 to 76	40.00	53.00	46.50	0.0187	0.87	0.0002	0.0011	0.0007
(6) 1" DC From 0 to 76	26.50	40.00	33.25	0.0194	0.65	0.0001	0.0008	0.0007
(6) 1" DC From 0 to 76	0.00	26.50	13.25	0.0382	0.51	0.0001	0.0006	0.0014
(3) 12x24 Hybrid From 0 to 67	62.00	67.00	64.50	0.0480	3.10	0.0006	0.0039	0.0018
(3) 12x24 Hybrid From 0 to 67	53.00	62.00	57.50	0.0864	4.97	0.0009	0.0063	0.0032
(3) 12x24 Hybrid From 0 to 67	40.00	53.00	46.50	0.1248	5.80	0.0011	0.0073	0.0047
(3) 12x24 Hybrid From 0 to 67	26.50	40.00	33.25	0.1296	4.31	0.0008	0.0054	0.0049
(3) 12x24 Hybrid From 0 to 67	0.00	26.50	13.25	0.2544	3.37	0.0006	0.0043	0.0095
Sum					2.2240		84.29	

Section	1
Size	F6x.28<ERW>
Length (ft)	20.00
Grade	A53-B-42
Weight (K)	0.4
	100.0 ft
	80.0 ft
	0.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
48"Ø x 10' FRP Stealth Radome	100 - 90	48"Ø x 10' FRP Stealth Radome	90 - 80
MX06FRO640-02 (Verizon)	95	FFVV-65A-R2-V1 (T-Mobile)	85
MX06FRO660-03 (Verizon)	95	AIR 6419 B41 (T-Mobile)	85
RF4440d-13A (Verizon)	95	4449 B71/B85 RRU (T-Mobile)	85
RF4439d-25A (Verizon)	95	4460 B25/B66 RRU (T-Mobile)	85

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 118 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 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



Semaan Engineering Solutions Job: **29546_Plattsville RELO_Top Pole**

1047 N 205th Street

Elkhorn, NE 68022

Phone: (402) 289-1888

FAX:

Project: **REV03B**

Client: KGI

Code: TIA-222-H

Path: S:\TNX files\29546\29546_REV03B\29546_REV03B_Top Pole.eri

Drawn by: NathanW

Date: 10/10/24

Scale: NTS

App'd:

Dwg No. E-1

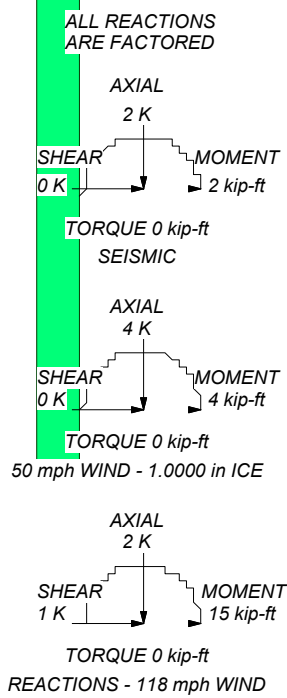
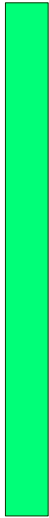
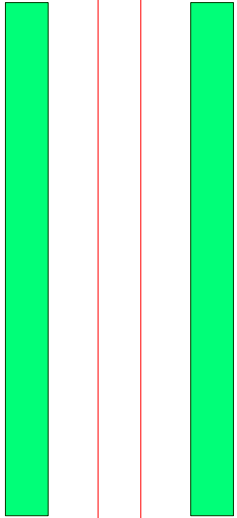
Section	1
Size	F6x.28<ERW>
Length (ft)	20.00
Grade	A53-B-42
Weight (K)	0.4
	100.0 ft

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 118 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 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. CCISeismic Note: Seismic loads generated by CCISeismic 3.4.0
9. CCISeismic Note: Seismic calculations are in accordance with TIA-222-H-1
10. TOWER RATING: 42.7%



Semaan Engineering Solutions
 1047 N 205th Street
 Elkhorn, NE 68022
 Phone: (402) 289-1888
 FAX:

Job: 29546_Plattsville RELO_Top Pole		
Project: REV03B		
Client: KGI	Drawn by: NathanW	App'd:
Code: TIA-222-H	Date: 10/10/24	Scale: NTS
Path: S:\TNX files\29546\29546_REV03B\29546_REV03B_Top Pole.dwg		Dwg No. E-1

Vx

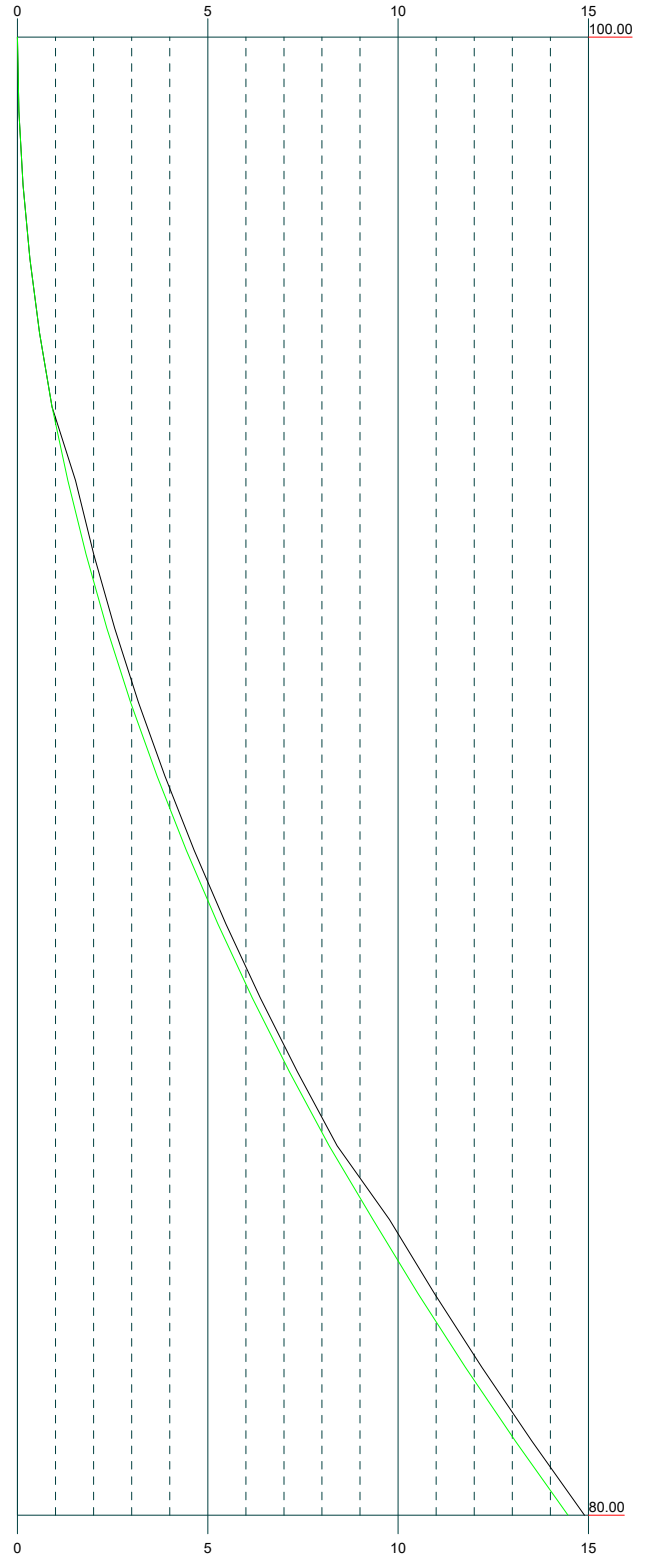
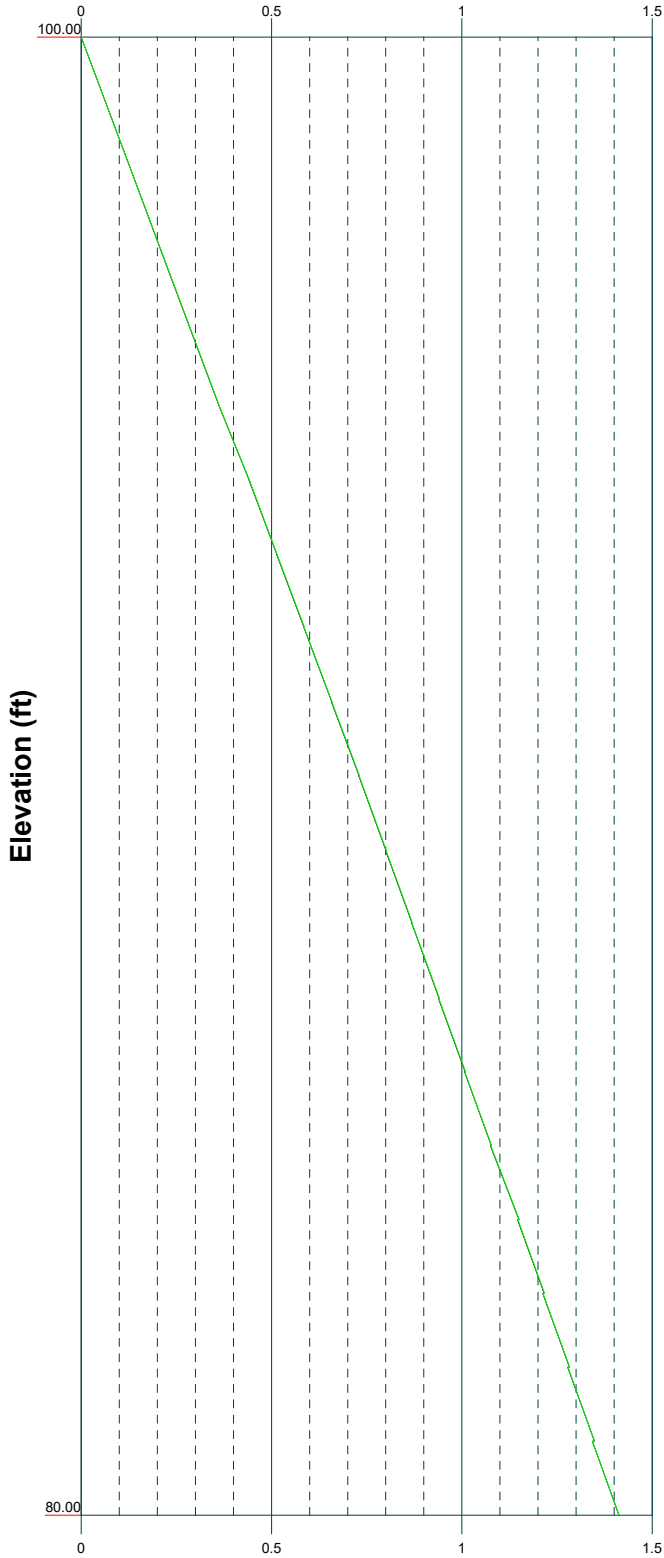
Vz

Mx

Mz

Global Mast Shear (K)

Global Mast Moment (kip-ft)



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1047 N 205th Street
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Job: **29546_Plattsville RELO_Top Pole**

Project: **REV03B**

Client: **KGI**

Drawn by: **NathanW**

App'd:

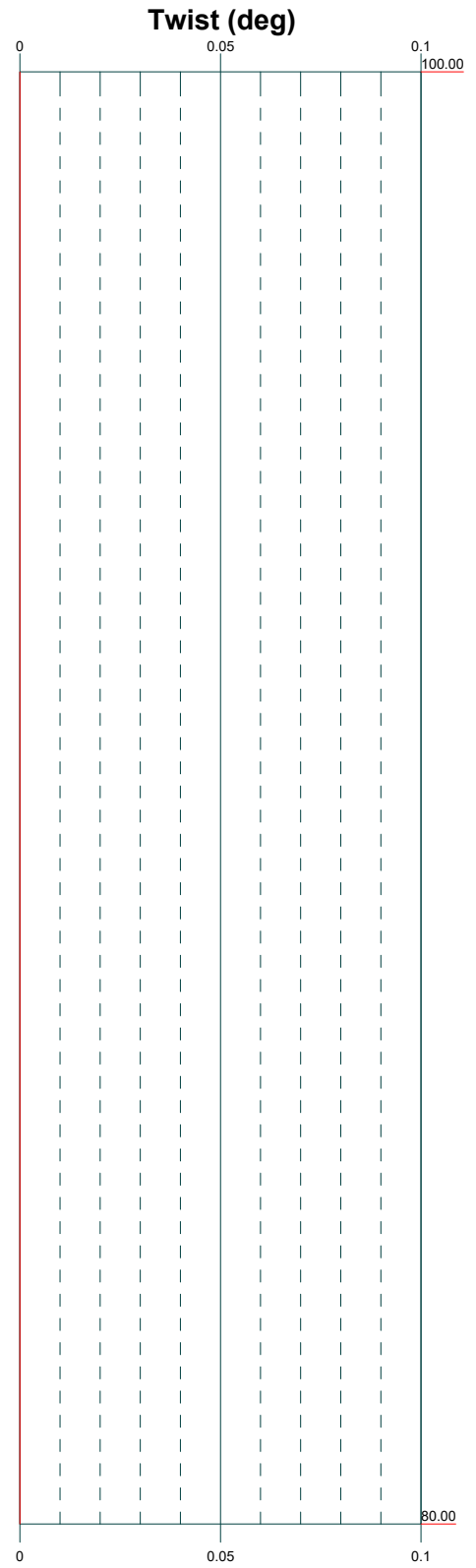
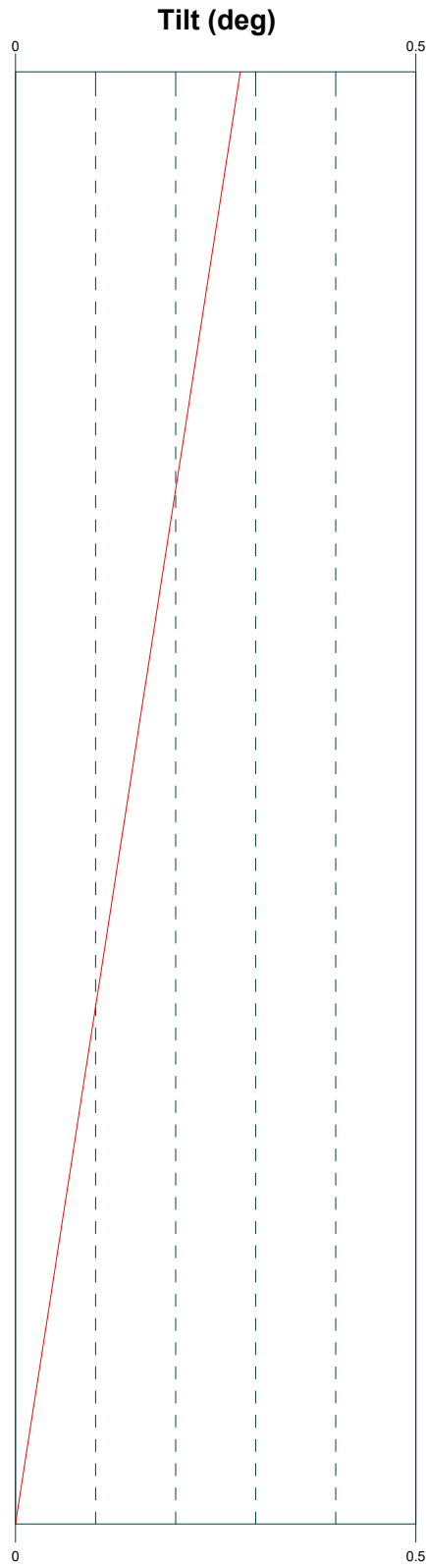
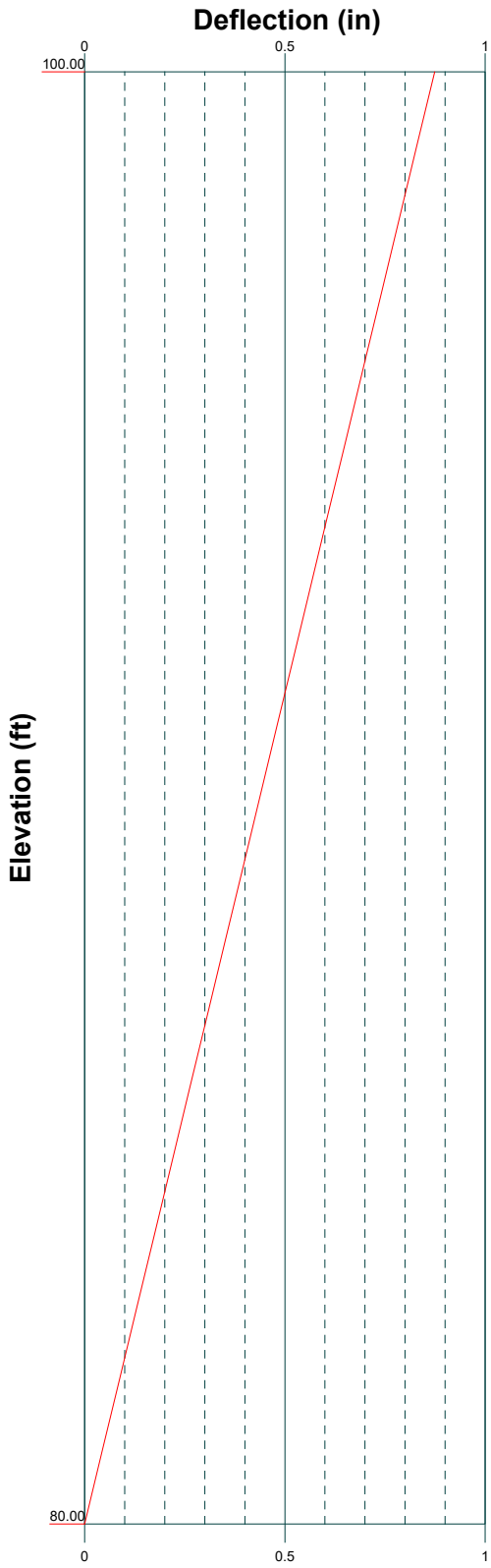
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Date: **10/10/24**

Scale: **NTS**

Path: S:\TNX files\29546\29546_REV03B\29546_REV03B_Top Pole.eri

Dwg No. **E-4**



Semaan Engineering Solutions

1047 N 205th Street
 Elkhorn, NE 68022
 Phone: (402) 289-1888
 FAX:

Job: **29546_Plattsville RELO_Top Pole**

Project: **REV03B**

Client: **KGI**

Drawn by: **NathanW**

App'd:

Code: **TIA-222-H**

Date: **10/10/24**

Scale: **NTS**

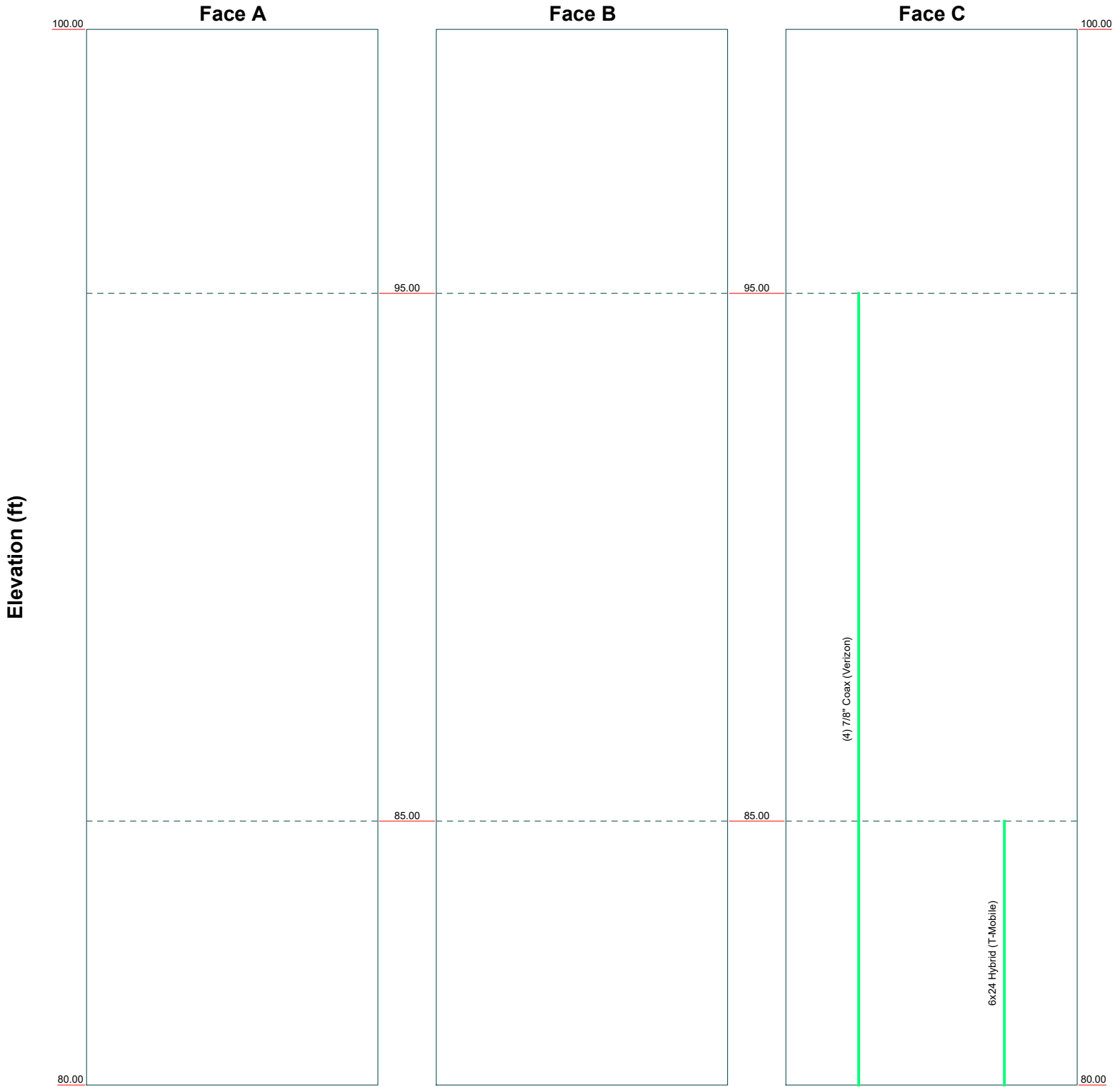
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Dwg No. **E-5**

Feed Line Distribution Chart

80' - 100'

— Round
 — Flat
 — App In Face
 — App Out Face
 — Truss Leg



	Semaan Engineering Solutions		
	1047 N 205th Street		
	Elkhorn, NE 68022		
	Phone: (402) 289-1888		
	FAX:		
Job: 29546_Plattsville RELO_Top Pole			
Project: REV03B			
Client: KGI	Drawn by: NathanW	App'd:	
Code: TIA-222-H	Date: 10/10/24	Scale: NTS	
Path: S:\TNX files\29546\29546_REV03B\29546_REV03B_Top Pole.dwg			Dwg No. E-7

tnxTower Semaan Engineering Solutions 1047 N 205th Street Elkhorn, NE 68022 Phone: (402) 289-1888 FAX:	Job 29546_Plattsville RELO_Top Pole	Page 1 of 17
	Project REV03B	Date 10:53:29 10/10/24
	Client KGI	Designed by NathanW

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 Fairfield County, Connecticut.

Tower base elevation above sea level: 374.76 ft.

Basic wind speed of 118 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 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

CCISEismic Note: Seismic loads generated by CCISEismic 3.4.0.

CCISEismic Note: Seismic calculations are in accordance with TIA-222-H-1.

Non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Tower analysis based on target reliabilities in accordance with Annex S.

Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$, $K_{es}(E_v \text{ and } E_h) = 1.0$.

Maximum demand-capacity ratio is: 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Pole Section Geometry

tnxTower Semaan Engineering Solutions 1047 N 205th Street Elkhorn, NE 68022 Phone: (402) 289-1888 FAX:	Job 29546_Plattsville RELO_Top Pole	Page 2 of 17
	Project REV03B	Date 10:53:29 10/10/24
	Client KGI	Designed by NathanW

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L1	100.00-80.00	20.00	P6x.28<ERW>	A53-B-42 (42 ksi)	

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 100.00-80.00				1	0	1.073			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
7/8" Coax (Verizon)	C	No	No	Inside Pole	95.00 - 80.00	4	No Ice	0.00	0.52
							1/2" Ice	0.00	0.52
							1" Ice	0.00	0.52
6x24 Hybrid (T-Mobile)	C	No	No	Inside Pole	85.00 - 80.00	1	No Ice	0.00	2.50
							1/2" Ice	0.00	2.50
							1" Ice	0.00	2.50

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	100.00-80.00	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 _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	100.00-80.00	A	0.940	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

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Feed Line Center of Pressure

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L1	100.00-80.00	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	95.00	0.00	0.0000	0.01	0.00	0.00	0.02
CCISeismic Tower Section 1 - 2	85.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic miscel 48"Ø x 10' FRP Stealth Radome	95.00	0.00	0.0000	0.01	0.00	0.00	0.04
CCISeismic miscel 48"Ø x 10' FRP Stealth Radome	85.00	0.00	0.0000	0.01	0.00	0.00	0.01
CCISeismic MX06FRO640-02	95.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic MX06FRO660-03	95.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic RF4440d-13A	95.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic RF4439d-25A	95.00	0.00	0.0000	0.00	0.00	0.00	0.01
CCISeismic FFVV-65A-R2-V1	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic AIR 6419 B41	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic 4449 B71/B85 RRU	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic 4460 B25/B66 RRU	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (4) general cable 7/8" Coax From 0 to 15 (10ft to15ft)	92.50	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic (4) general cable 7/8" Coax From 0 to 15 (0ft to10ft)	85.00	0.00	0.0000	0.00	0.00	0.00	0.00
CCISeismic rfs 6x24 Hybrid From 0 to 5 (0ft to5ft)	82.50	0.00	0.0000	0.00	0.00	0.00	0.00

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			ft ft ft	°	ft	ft ²	ft ²	K	
Tower Loads									
48"Ø x 10' FRP Stealth Radome	C	None		0.0000	100.00 - 90.00	No Ice 1/2" Ice	20.00 28.82	20.00 28.82	0.40 0.76

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
48"Ø x 10' FRP Stealth Radome	C	None			0.0000	90.00 - 80.00	1" Ice 29.65 No Ice 20.00 1/2" Ice 28.82 1" Ice 29.65	29.65 20.00 28.82 29.65	1.13 0.40 0.76 1.13
Carrier Loads									
Inside Canister Radomes									
MX06FRO640-02 (Verizon)	B	From Leg	1.00 0.00 0.00		0.0000	95.00	No Ice 12.38 1/2" Ice 12.88 1" Ice 13.38	7.43 7.88 8.33	0.07 0.07 0.07
MX06FRO660-03 (Verizon)	C	From Leg	1.00 0.00 0.00		0.0000	95.00	No Ice 9.87 1/2" Ice 10.34 1" Ice 10.82	7.34 7.78 8.24	0.06 0.06 0.06
RF4440d-13A (Verizon)	B	From Leg	1.00 0.00 0.00		0.0000	95.00	No Ice 1.13 1/2" Ice 1.27 1" Ice 1.41	1.13 1.27 1.41	0.07 0.07 0.07
RF4439d-25A (Verizon)	C	From Leg	1.00 0.00 0.00		0.0000	95.00	No Ice 1.25 1/2" Ice 1.39 1" Ice 1.54	1.25 1.39 1.54	0.07 0.07 0.07
*									
FFVV-65A-R2-V1 (T-Mobile)	B	From Leg	1.00 0.00 0.00		0.0000	85.00	No Ice 10.12 1/2" Ice 10.53 1" Ice 10.95	4.09 4.40 4.72	0.07 0.07 0.07
AIR 6419 B41 (T-Mobile)	C	From Leg	1.00 0.00 0.00		0.0000	85.00	No Ice 6.13 1/2" Ice 6.45 1" Ice 6.77	2.25 2.48 2.71	0.08 0.08 0.08
4449 B71/B85 RRU (T-Mobile)	B	From Leg	1.00 0.00 0.00		0.0000	85.00	No Ice 1.95 1/2" Ice 2.13 1" Ice 2.31	1.58 1.74 1.91	0.07 0.07 0.07
4460 B25/B66 RRU (T-Mobile)	C	From Leg	1.00 0.00 0.00		0.0000	85.00	No Ice 2.56 1/2" Ice 2.76 1" Ice 2.97	1.98 2.16 2.34	0.11 0.11 0.11
*									

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation	z	K _Z	q _z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		psf	ft ²	c	ft ²	ft ²	ft ²		ft ²	ft ²
L1 100.00-80.00	90.00	1.238	41	11.042	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000

Tower Pressure - With Ice

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$$G_H = 0.850$$

Section Elevation	z	K _Z	q _z	t _Z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 100.00-80.00	90.00	1.238	7	0.9397	14.174	A	0.000	0.000	0.000	0.00	0.000	0.000
						B	0.000	0.000		0.00	0.000	0.000
						C	0.000	0.000		0.00	0.000	0.000

Tower Pressure - Service

$$G_H = 0.850$$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 100.00-80.00	90.00	1.238	10	11.042	A	0.000	0.000	0.000	0.00	0.000	0.000
					B	0.000	0.000		0.00	0.000	0.000
					C	0.000	0.000		0.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
L1 100.00-80.00	0.04	0.38	A	0	0.497	41	1	1	0.000	0.00	0.00	C
			B	0	0.497		1	1	0.000			
			C	0	0.497		1	1	0.000			
Sum Weight:	0.04	0.38						OTM	0.00 kip-ft	0.00		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
L1 100.00-80.00	0.04	0.38	A	0	0.497	41	1	1	0.000	0.00	0.00	C
			B	0	0.497		1	1	0.000			
			C	0	0.497		1	1	0.000			
Sum Weight:	0.04	0.38						OTM	0.00 kip-ft	0.00		

Tower Forces - No Ice - Wind 90 To Face

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 100.00-80.00	0.04	0.38	A	0	0.497	41	1	1	0.000	0.00	0.00	C
			B	0	0.497		1	1	0.000			
			C	0	0.497		1	1	0.000			
Sum Weight:	0.04	0.38						OTM	0.00 kip-ft	0.00		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 100.00-80.00	0.04	0.55	A	0	1.1	7	1	1	0.000	0.00	0.00	C
			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
Sum Weight:	0.04	0.55						OTM	0.00 kip-ft	0.00		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 100.00-80.00	0.04	0.55	A	0	1.1	7	1	1	0.000	0.00	0.00	C
			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
Sum Weight:	0.04	0.55						OTM	0.00 kip-ft	0.00		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 100.00-80.00	0.04	0.55	A	0	1.1	7	1	1	0.000	0.00	0.00	C
			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
Sum Weight:	0.04	0.55						OTM	0.00 kip-ft	0.00		

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Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
L1	0.04	0.38	A	0	1.1	10	1	1	0.000	0.00	0.00	C
100.00-80.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
Sum Weight:	0.04	0.38						OTM	0.00 kip-ft	0.00		

Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
L1	0.04	0.38	A	0	1.1	10	1	1	0.000	0.00	0.00	C
100.00-80.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
Sum Weight:	0.04	0.38						OTM	0.00 kip-ft	0.00		

Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	K	K				psf			ft ²	K	plf	
L1	0.04	0.38	A	0	1.1	10	1	1	0.000	0.00	0.00	C
100.00-80.00			B	0	1.1		1	1	0.000			
			C	0	1.1		1	1	0.000			
Sum Weight:	0.04	0.38						OTM	0.00 kip-ft	0.00		

Force Totals

Load Case	Vertical Forces	Sum of Forces X	Sum of Forces Z	Sum of Overturning Moments, M _x	Sum of Overturning Moments, M _z	Sum of Torques
	K	K	K	kip-ft	kip-ft	kip-ft
Leg Weight	0.38					
Bracing Weight	0.00					
Total Member Self-Weight	0.38					
Total Weight	1.84					
Wind 0 deg - No Ice		0.00	-1.41	-13.79	0.04	0.00
Wind 30 deg - No Ice		0.70	-1.22	-11.89	-7.05	0.00
Wind 60 deg - No Ice		1.22	-0.70	-6.70	-12.24	0.00
Wind 90 deg - No Ice		1.41	0.00	0.39	-14.14	0.00

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Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 120 deg - No Ice		1.22	0.70	7.48	-12.24	0.00
Wind 150 deg - No Ice		0.70	1.22	12.67	-7.05	0.00
Wind 180 deg - No Ice		0.00	1.41	14.57	0.04	0.00
Wind 210 deg - No Ice		-0.70	1.22	12.67	7.13	0.00
Wind 240 deg - No Ice		-1.22	0.70	7.48	12.32	0.00
Wind 270 deg - No Ice		-1.41	0.00	0.39	14.22	0.00
Wind 300 deg - No Ice		-1.22	-0.70	-6.70	12.32	0.00
Wind 330 deg - No Ice		-0.70	-1.22	-11.89	7.13	0.00
Member Ice	0.17					
Total Weight Ice	3.38			0.39	0.04	
Wind 0 deg - Ice		0.00	-0.37	-3.37	0.04	0.00
Wind 30 deg - Ice		0.19	-0.32	-2.86	-1.84	0.00
Wind 60 deg - Ice		0.32	-0.19	-1.49	-3.22	0.00
Wind 90 deg - Ice		0.37	0.00	0.39	-3.72	0.00
Wind 120 deg - Ice		0.32	0.19	2.28	-3.22	0.00
Wind 150 deg - Ice		0.19	0.32	3.65	-1.84	0.00
Wind 180 deg - Ice		0.00	0.37	4.16	0.04	0.00
Wind 210 deg - Ice		-0.19	0.32	3.65	1.92	0.00
Wind 240 deg - Ice		-0.32	0.19	2.28	3.30	0.00
Wind 270 deg - Ice		-0.37	0.00	0.39	3.80	0.00
Wind 300 deg - Ice		-0.32	-0.19	-1.49	3.30	0.00
Wind 330 deg - Ice		-0.19	-0.32	-2.86	1.92	0.00
Total Weight	1.84			0.39	0.04	
Wind 0 deg - Service		0.00	-0.33	-2.89	0.04	0.00
Wind 30 deg - Service		0.16	-0.28	-2.45	-1.60	0.00
Wind 60 deg - Service		0.28	-0.16	-1.25	-2.80	0.00
Wind 90 deg - Service		0.33	0.00	0.39	-3.24	0.00
Wind 120 deg - Service		0.28	0.16	2.03	-2.80	0.00
Wind 150 deg - Service		0.16	0.28	3.23	-1.60	0.00
Wind 180 deg - Service		0.00	0.33	3.67	0.04	0.00
Wind 210 deg - Service		-0.16	0.28	3.23	1.68	0.00
Wind 240 deg - Service		-0.28	0.16	2.03	2.88	0.00
Wind 270 deg - Service		-0.33	0.00	0.39	3.32	0.00
Wind 300 deg - Service		-0.28	-0.16	-1.25	2.88	0.00
Wind 330 deg - Service		-0.16	-0.28	-2.45	1.68	0.00
Seismic Vertical	0.07					
Seismic Horizontal 0 deg		0.00	-0.11	-1.33	0.00	0.00
Seismic Horizontal 30 deg		0.05	-0.09	-1.15	-0.67	0.00
Seismic Horizontal 60 deg		0.09	-0.05	-0.67	-1.15	0.00
Seismic Horizontal 90 deg		0.11	0.00	0.00	-1.33	0.00
Seismic Horizontal 120 deg		0.09	0.05	0.67	-1.15	0.00
Seismic Horizontal 150 deg		0.05	0.09	1.15	-0.67	0.00
Seismic Horizontal 180 deg		0.00	0.11	1.33	0.00	0.00
Seismic Horizontal 210 deg		-0.05	0.09	1.15	0.67	0.00
Seismic Horizontal 240 deg		-0.09	0.05	0.67	1.15	0.00
Seismic Horizontal 270 deg		-0.11	0.00	0.00	1.33	0.00
Seismic Horizontal 300 deg		-0.09	-0.05	-0.67	1.15	0.00
Seismic Horizontal 330 deg		-0.05	-0.09	-1.15	0.67	0.00

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

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<i>Comb. No.</i>	<i>Description</i>
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
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

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Comb. No.	Description
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	100 - 80	Pole	Max Tension	33	0.00	-0.00	0.00
			Max. Compression	26	-3.75	0.05	-0.49
			Max. Mx	20	-2.21	14.46	-0.48
			Max. My	14	-2.21	0.05	-14.89
			Max. Vy	20	-1.41	14.46	-0.48
			Max. Vx	14	1.41	0.05	-14.89
			Max. Torque	8			-0.01

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	33	3.75	0.00	-0.37
	Max. H _x	21	1.66	1.41	0.00
	Max. H _z	3	1.66	0.00	1.41
	Max. M _x	3	13.99	0.00	1.41
	Max. M _z	8	14.36	-1.41	0.00
	Max. Torsion	20	0.01	1.41	0.00
	Min. Vert	74	1.59	0.05	0.09
	Min. H _x	9	1.66	-1.41	0.00
	Min. H _z	15	1.66	0.00	-1.41
	Min. M _x	14	-14.89	0.00	-1.41
	Min. M _z	20	-14.46	1.41	0.00
	Min. Torsion	8	-0.01	-1.41	0.00

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	1.84	0.00	0.00	0.40	0.04	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	2.21	0.00	-1.41	-13.93	0.05	-0.00
0.9 Dead+1.0 Wind 0 deg - No Ice	1.66	0.00	-1.41	-13.99	0.04	-0.00

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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
1.2 Dead+1.0 Wind 30 deg - No Ice	2.21	0.70	-1.22	-12.00	-7.16	0.00
0.9 Dead+1.0 Wind 30 deg - No Ice	1.66	0.70	-1.22	-12.07	-7.14	0.00
1.2 Dead+1.0 Wind 60 deg - No Ice	2.21	1.22	-0.70	-6.72	-12.43	0.01
0.9 Dead+1.0 Wind 60 deg - No Ice	1.66	1.22	-0.70	-6.82	-12.39	0.00
1.2 Dead+1.0 Wind 90 deg - No Ice	2.21	1.41	0.00	0.48	-14.36	0.01
0.9 Dead+1.0 Wind 90 deg - No Ice	1.66	1.41	0.00	0.36	-14.32	0.00
1.2 Dead+1.0 Wind 120 deg - No Ice	2.21	1.22	0.70	7.69	-12.43	0.01
0.9 Dead+1.0 Wind 120 deg - No Ice	1.66	1.22	0.70	7.54	-12.39	0.00
1.2 Dead+1.0 Wind 150 deg - No Ice	2.21	0.70	1.22	12.96	-7.16	0.00
0.9 Dead+1.0 Wind 150 deg - No Ice	1.66	0.70	1.22	12.79	-7.14	0.00
1.2 Dead+1.0 Wind 180 deg - No Ice	2.21	0.00	1.41	14.89	0.05	0.00
0.9 Dead+1.0 Wind 180 deg - No Ice	1.66	0.00	1.41	14.71	0.04	0.00
1.2 Dead+1.0 Wind 210 deg - No Ice	2.21	-0.70	1.22	12.96	7.25	-0.00
0.9 Dead+1.0 Wind 210 deg - No Ice	1.66	-0.70	1.22	12.79	7.21	-0.00
1.2 Dead+1.0 Wind 240 deg - No Ice	2.21	-1.22	0.70	7.69	12.53	-0.01
0.9 Dead+1.0 Wind 240 deg - No Ice	1.66	-1.22	0.70	7.54	12.47	-0.00
1.2 Dead+1.0 Wind 270 deg - No Ice	2.21	-1.41	0.00	0.48	14.46	-0.01
0.9 Dead+1.0 Wind 270 deg - No Ice	1.66	-1.41	0.00	0.36	14.39	-0.00
1.2 Dead+1.0 Wind 300 deg - No Ice	2.21	-1.22	-0.70	-6.72	12.53	-0.01
0.9 Dead+1.0 Wind 300 deg - No Ice	1.66	-1.22	-0.70	-6.82	12.47	-0.00
1.2 Dead+1.0 Wind 330 deg - No Ice	2.21	-0.70	-1.22	-12.00	7.25	-0.00
0.9 Dead+1.0 Wind 330 deg - No Ice	1.66	-0.70	-1.22	-12.07	7.21	-0.00
1.2 Dead+1.0 Ice+1.0 Temp	3.75	0.00	0.00	0.49	0.05	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	3.75	0.00	-0.37	-3.38	0.05	-0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	3.75	0.19	-0.32	-2.86	-1.89	0.00
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	3.75	0.32	-0.19	-1.45	-3.30	0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	3.75	0.37	0.00	0.49	-3.82	0.00
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	3.75	0.32	0.19	2.42	-3.30	0.00
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	3.75	0.19	0.32	3.84	-1.89	0.00
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	3.75	0.00	0.37	4.36	0.05	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	3.75	-0.19	0.32	3.84	1.98	-0.00

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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
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	3.75	-0.32	0.19	2.42	3.40	-0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	3.75	-0.37	0.00	0.49	3.92	-0.00
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	3.75	-0.32	-0.19	-1.45	3.40	-0.00
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	3.75	-0.19	-0.32	-2.86	1.98	-0.00
Dead+Wind 0 deg - Service	1.84	0.00	-0.33	-2.92	0.04	-0.00
Dead+Wind 30 deg - Service	1.84	0.16	-0.28	-2.48	-1.62	0.00
Dead+Wind 60 deg - Service	1.84	0.28	-0.16	-1.26	-2.84	0.00
Dead+Wind 90 deg - Service	1.84	0.33	0.00	0.40	-3.28	0.00
Dead+Wind 120 deg - Service	1.84	0.28	0.16	2.06	-2.84	0.00
Dead+Wind 150 deg - Service	1.84	0.16	0.28	3.28	-1.62	0.00
Dead+Wind 180 deg - Service	1.84	0.00	0.33	3.73	0.04	0.00
Dead+Wind 210 deg - Service	1.84	-0.16	0.28	3.28	1.70	-0.00
Dead+Wind 240 deg - Service	1.84	-0.28	0.16	2.06	2.92	-0.00
Dead+Wind 270 deg - Service	1.84	-0.33	0.00	0.40	3.37	-0.00
Dead+Wind 300 deg - Service	1.84	-0.28	-0.16	-1.26	2.92	-0.00
Dead+Wind 330 deg - Service	1.84	-0.16	-0.28	-2.48	1.70	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 0 deg	2.28	0.00	-0.11	-0.87	0.05	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 0 deg	1.59	0.00	-0.11	-0.99	0.04	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 30 deg	2.28	0.05	-0.09	-0.69	-0.63	0.00
0.9 Dead-1.0 Ev+1.0 Eh 30 deg	1.59	0.05	-0.09	-0.81	-0.64	0.00
1.2 Dead+1.0 Ev+1.0 Eh 60 deg	2.28	0.09	-0.05	-0.20	-1.13	0.00
0.9 Dead-1.0 Ev+1.0 Eh 60 deg	1.59	0.09	-0.05	-0.32	-1.13	0.00
1.2 Dead+1.0 Ev+1.0 Eh 90 deg	2.28	0.11	0.00	0.48	-1.31	0.00
0.9 Dead-1.0 Ev+1.0 Eh 90 deg	1.59	0.11	0.00	0.36	-1.31	0.00
1.2 Dead+1.0 Ev+1.0 Eh 120 deg	2.28	0.09	0.05	1.16	-1.13	0.00
0.9 Dead-1.0 Ev+1.0 Eh 120 deg	1.59	0.09	0.05	1.03	-1.13	0.00
1.2 Dead+1.0 Ev+1.0 Eh 150 deg	2.28	0.05	0.09	1.66	-0.63	0.00
0.9 Dead-1.0 Ev+1.0 Eh 150 deg	1.59	0.05	0.09	1.53	-0.64	0.00
1.2 Dead+1.0 Ev+1.0 Eh 180 deg	2.28	0.00	0.11	1.84	0.05	0.00
0.9 Dead-1.0 Ev+1.0 Eh 180 deg	1.59	0.00	0.11	1.71	0.04	0.00
1.2 Dead+1.0 Ev+1.0 Eh 210 deg	2.28	-0.05	0.09	1.66	0.73	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 210 deg	1.59	-0.05	0.09	1.53	0.71	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 240 deg	2.28	-0.09	0.05	1.16	1.22	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 240 deg	1.59	-0.09	0.05	1.03	1.21	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 270 deg	2.28	-0.11	0.00	0.48	1.41	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 270 deg	1.59	-0.11	0.00	0.36	1.39	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 300 deg	2.28	-0.09	-0.05	-0.20	1.22	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 300 deg	1.59	-0.09	-0.05	-0.32	1.21	-0.00
1.2 Dead+1.0 Ev+1.0 Eh 330 deg	2.28	-0.05	-0.09	-0.69	0.73	-0.00
0.9 Dead-1.0 Ev+1.0 Eh 330 deg	1.59	-0.05	-0.09	-0.81	0.71	-0.00

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Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-1.84	0.00	0.00	1.84	0.00	0.000%
2	0.00	-2.21	-1.41	0.00	2.21	1.41	0.000%
3	0.00	-1.66	-1.41	0.00	1.66	1.41	0.000%
4	0.70	-2.21	-1.22	-0.70	2.21	1.22	0.000%
5	0.70	-1.66	-1.22	-0.70	1.66	1.22	0.000%
6	1.22	-2.21	-0.70	-1.22	2.21	0.70	0.000%
7	1.22	-1.66	-0.70	-1.22	1.66	0.70	0.000%
8	1.41	-2.21	0.00	-1.41	2.21	0.00	0.000%
9	1.41	-1.66	0.00	-1.41	1.66	0.00	0.000%
10	1.22	-2.21	0.70	-1.22	2.21	-0.70	0.000%
11	1.22	-1.66	0.70	-1.22	1.66	-0.70	0.000%
12	0.70	-2.21	1.22	-0.70	2.21	-1.22	0.000%
13	0.70	-1.66	1.22	-0.70	1.66	-1.22	0.000%
14	0.00	-2.21	1.41	0.00	2.21	-1.41	0.000%
15	0.00	-1.66	1.41	0.00	1.66	-1.41	0.000%
16	-0.70	-2.21	1.22	0.70	2.21	-1.22	0.000%
17	-0.70	-1.66	1.22	0.70	1.66	-1.22	0.000%
18	-1.22	-2.21	0.70	1.22	2.21	-0.70	0.000%
19	-1.22	-1.66	0.70	1.22	1.66	-0.70	0.000%
20	-1.41	-2.21	0.00	1.41	2.21	0.00	0.000%
21	-1.41	-1.66	0.00	1.41	1.66	0.00	0.000%
22	-1.22	-2.21	-0.70	1.22	2.21	0.70	0.000%
23	-1.22	-1.66	-0.70	1.22	1.66	0.70	0.000%
24	-0.70	-2.21	-1.22	0.70	2.21	1.22	0.000%
25	-0.70	-1.66	-1.22	0.70	1.66	1.22	0.000%
26	0.00	-3.75	0.00	0.00	3.75	-0.00	0.000%
27	0.00	-3.75	-0.37	0.00	3.75	0.37	0.000%
28	0.19	-3.75	-0.32	-0.19	3.75	0.32	0.000%
29	0.32	-3.75	-0.19	-0.32	3.75	0.19	0.000%
30	0.37	-3.75	0.00	-0.37	3.75	-0.00	0.000%
31	0.32	-3.75	0.19	-0.32	3.75	-0.19	0.000%
32	0.19	-3.75	0.32	-0.19	3.75	-0.32	0.000%
33	0.00	-3.75	0.37	0.00	3.75	-0.37	0.000%
34	-0.19	-3.75	0.32	0.19	3.75	-0.32	0.000%
35	-0.32	-3.75	0.19	0.32	3.75	-0.19	0.000%
36	-0.37	-3.75	0.00	0.37	3.75	-0.00	0.000%
37	-0.32	-3.75	-0.19	0.32	3.75	0.19	0.000%
38	-0.19	-3.75	-0.32	0.19	3.75	0.32	0.000%
39	0.00	-1.84	-0.33	0.00	1.84	0.33	0.000%
40	0.16	-1.84	-0.28	-0.16	1.84	0.28	0.000%
41	0.28	-1.84	-0.16	-0.28	1.84	0.16	0.000%
42	0.33	-1.84	0.00	-0.33	1.84	0.00	0.000%
43	0.28	-1.84	0.16	-0.28	1.84	-0.16	0.000%
44	0.16	-1.84	0.28	-0.16	1.84	-0.28	0.000%
45	0.00	-1.84	0.33	0.00	1.84	-0.33	0.000%
46	-0.16	-1.84	0.28	0.16	1.84	-0.28	0.000%
47	-0.28	-1.84	0.16	0.28	1.84	-0.16	0.000%
48	-0.33	-1.84	0.00	0.33	1.84	0.00	0.000%
49	-0.28	-1.84	-0.16	0.28	1.84	0.16	0.000%
50	-0.16	-1.84	-0.28	0.16	1.84	0.28	0.000%
51	0.00	-2.28	-0.11	0.00	2.28	0.11	0.000%
52	0.00	-1.59	-0.11	0.00	1.59	0.11	0.000%
53	0.05	-2.28	-0.09	-0.05	2.28	0.09	0.000%
54	0.05	-1.59	-0.09	-0.05	1.59	0.09	0.000%
55	0.09	-2.28	-0.05	-0.09	2.28	0.05	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
56	0.09	-1.59	-0.05	-0.09	1.59	0.05	0.000%
57	0.11	-2.28	0.00	-0.11	2.28	0.00	0.000%
58	0.11	-1.59	0.00	-0.11	1.59	0.00	0.000%
59	0.09	-2.28	0.05	-0.09	2.28	-0.05	0.000%
60	0.09	-1.59	0.05	-0.09	1.59	-0.05	0.000%
61	0.05	-2.28	0.09	-0.05	2.28	-0.09	0.000%
62	0.05	-1.59	0.09	-0.05	1.59	-0.09	0.000%
63	0.00	-2.28	0.11	0.00	2.28	-0.11	0.000%
64	0.00	-1.59	0.11	0.00	1.59	-0.11	0.000%
65	-0.05	-2.28	0.09	0.05	2.28	-0.09	0.000%
66	-0.05	-1.59	0.09	0.05	1.59	-0.09	0.000%
67	-0.09	-2.28	0.05	0.09	2.28	-0.05	0.000%
68	-0.09	-1.59	0.05	0.09	1.59	-0.05	0.000%
69	-0.11	-2.28	0.00	0.11	2.28	0.00	0.000%
70	-0.11	-1.59	0.00	0.11	1.59	0.00	0.000%
71	-0.09	-2.28	-0.05	0.09	2.28	0.05	0.000%
72	-0.09	-1.59	-0.05	0.09	1.59	0.05	0.000%
73	-0.05	-2.28	-0.09	0.05	2.28	0.09	0.000%
74	-0.05	-1.59	-0.09	0.05	1.59	0.09	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	4	0.0000001	0.0000001
3	Yes	4	0.0000001	0.0000001
4	Yes	4	0.0000001	0.0000001
5	Yes	4	0.0000001	0.0000001
6	Yes	4	0.0000001	0.0000001
7	Yes	4	0.0000001	0.0000001
8	Yes	4	0.0000001	0.0000001
9	Yes	4	0.0000001	0.0000001
10	Yes	4	0.0000001	0.0000001
11	Yes	4	0.0000001	0.0000001
12	Yes	4	0.0000001	0.0000001
13	Yes	4	0.0000001	0.0000001
14	Yes	4	0.0000001	0.0000001
15	Yes	4	0.0000001	0.0000001
16	Yes	4	0.0000001	0.0000001
17	Yes	4	0.0000001	0.0000001
18	Yes	4	0.0000001	0.0000001
19	Yes	4	0.0000001	0.0000001
20	Yes	4	0.0000001	0.0000001
21	Yes	4	0.0000001	0.0000001
22	Yes	4	0.0000001	0.0000001
23	Yes	4	0.0000001	0.0000001
24	Yes	4	0.0000001	0.0000001
25	Yes	4	0.0000001	0.0000001
26	Yes	4	0.0000001	0.0000001
27	Yes	4	0.0000001	0.0000001
28	Yes	4	0.0000001	0.0000001
29	Yes	4	0.0000001	0.0000001
30	Yes	4	0.0000001	0.0000001
31	Yes	4	0.0000001	0.0000001
32	Yes	4	0.0000001	0.0000001

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33	Yes	4	0.00000001	0.00000001
34	Yes	4	0.00000001	0.00000001
35	Yes	4	0.00000001	0.00000001
36	Yes	4	0.00000001	0.00000001
37	Yes	4	0.00000001	0.00000001
38	Yes	4	0.00000001	0.00000001
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001
51	Yes	4	0.00000001	0.00000001
52	Yes	4	0.00000001	0.00000001
53	Yes	4	0.00000001	0.00000001
54	Yes	4	0.00000001	0.00000001
55	Yes	4	0.00000001	0.00000001
56	Yes	4	0.00000001	0.00000001
57	Yes	4	0.00000001	0.00000001
58	Yes	4	0.00000001	0.00000001
59	Yes	4	0.00000001	0.00000001
60	Yes	4	0.00000001	0.00000001
61	Yes	4	0.00000001	0.00000001
62	Yes	4	0.00000001	0.00000001
63	Yes	4	0.00000001	0.00000001
64	Yes	4	0.00000001	0.00000001
65	Yes	4	0.00000001	0.00000001
66	Yes	4	0.00000001	0.00000001
67	Yes	4	0.00000001	0.00000001
68	Yes	4	0.00000001	0.00000001
69	Yes	4	0.00000001	0.00000001
70	Yes	4	0.00000001	0.00000001
71	Yes	4	0.00000001	0.00000001
72	Yes	4	0.00000001	0.00000001
73	Yes	4	0.00000001	0.00000001
74	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation <i>ft</i>	Horz. Deflection <i>in</i>	Gov. Load Comb.	Tilt <i>°</i>	Twist <i>°</i>
L1	100 - 80	0.874	45	0.2814	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation <i>ft</i>	Appurtenance	Gov. Load Comb.	Deflection <i>in</i>	Tilt <i>°</i>	Twist <i>°</i>	Radius of Curvature <i>ft</i>
100.00	48"Ø x 10' FRP Stealth Radome	45	0.874	0.2814	0.0002	Inf

tnxTower Semaan Engineering Solutions 1047 N 205th Street Elkhorn, NE 68022 Phone: (402) 289-1888 FAX:	Job 29546_Plattsville RELO_Top Pole	Page 16 of 17
	Project REV03B	Date 10:53:29 10/10/24
	Client KGI	Designed by NathanW

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
95.00	48"Ø x 10' FRP Stealth Radome	45	0.656	0.2110	0.0001	Inf
92.50	CCISeismic (4) general cable 7/8" Coax From 0 to 15 (10ft to15ft)	45	0.546	0.1759	0.0001	Inf
90.00	48"Ø x 10' FRP Stealth Radome	45	0.437	0.1407	0.0001	Inf
85.00	48"Ø x 10' FRP Stealth Radome	45	0.219	0.0703	0.0000	Inf
82.50	CCISeismic rfs 6x24 Hybrid From 0 to 5 (0ft to5ft)	45	0.109	0.0352	0.0000	Inf
80.00	48"Ø x 10' FRP Stealth Radome	0	0.000	0.0000	0.0000	Inf

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	100 - 80	3.417	14	1.0923	0.0009

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
100.00	48"Ø x 10' FRP Stealth Radome	14	3.417	1.0923	0.0009	Inf
95.00	48"Ø x 10' FRP Stealth Radome	14	2.563	0.8192	0.0007	Inf
92.50	CCISeismic (4) general cable 7/8" Coax From 0 to 15 (10ft to15ft)	14	2.136	0.6827	0.0005	Inf
90.00	48"Ø x 10' FRP Stealth Radome	14	1.709	0.5462	0.0004	Inf
85.00	48"Ø x 10' FRP Stealth Radome	14	0.854	0.2731	0.0002	Inf
82.50	CCISeismic rfs 6x24 Hybrid From 0 to 5 (0ft to5ft)	14	0.427	0.1365	0.0001	Inf
80.00	48"Ø x 10' FRP Stealth Radome	0	0.000	0.0000	0.0000	Inf

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	100 - 80 (1)	P6x.28<ERW>	20.00	0.00	0.0	5.2067	-2.21	212.12	0.010

Pole Bending Design Data

tnxTower Semaan Engineering Solutions 1047 N 205th Street Elkhorn, NE 68022 Phone: (402) 289-1888 FAX:	Job 29546_Plattsville RELO_Top Pole	Page 17 of 17
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	Client KGI	Designed by NathanW

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{ux} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	M_{uy} kip-ft	ϕM_{uy} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{uy}}$
L1	100 - 80 (1)	P6x.28<ERW>	14.89	35.83	0.416	0.00	35.83	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	100 - 80 (1)	P6x.28<ERW>	1.41	59.04	0.024	0.00	33.04	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{ux}}$	Ratio $\frac{M_{uy}}{\phi M_{uy}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	100 - 80 (1)	0.010	0.416	0.000	0.024	0.000	0.427 ✓	1.000	✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L1	100 - 80	Pole	P6x.28<ERW>	1	-2.21	212.12	42.7	Pass	
							Summary		
							Pole (L1)	42.7	Pass
							RATING =	42.7	Pass

Seismic Analysis

Site Number:	29546
Order Number:	REV03B_Top Pole
Date:	10/10/2024

Location				
	Decimal Degrees	Deg	Min	Sec
Lat:	41.2189	+	41	13
Long:	-73.2448	-	73	14

Code and Site Parameters		
Seismic Design Code:	TIA-222-H-1	
Site Soil:	C	Dense Soil/Soft Rock
Risk Category:	II	
<u>USGS Seismic Reference</u>		
S _S :	0.2160	g
S ₁ :	0.0550	g
T _L :	6	s

Seismic Design Category Determination	
Importance Factor, I _e :	1
Acceleration-based site coefficient, F _a :	1.3000
Velocity-based site coefficient, F _v :	1.5000
Design spectral response acceleration short period, S _{DS} :	0.1872 g
Design spectral response acceleration 1 s period, S _{D1} :	0.0550 g
T _s :	0.2938
Seismic Design Category Based on S _{DS} :	B
Seismic Design Category Based on S _{D1} :	A
Seismic Design Category Based on S ₁ :	N/A
Controlling Seismic Design Category:	B

Seismic Analysis

Site Number:	29546
Order Number:	REV03B_Top Pole
Date:	10/10/2024

Tower Details		
Tower Type:	Stepped Monopole	
Height, h:	20	ft
Effective Seismic Weight, W:	1.84	kips
Amplification Factor, A _s :	1.0	2.7.8.1
Seismic Base Shear		
Response Modification Factor, R:	1.5	
Discrete Appurtenance Weight in Top 1/3 of Structure, W _U :	0.2772	kips
W _L :	1.564001521	kips
E:	29000.0	ksi
g:	386.088	in/s ²
Average Moment of Inertia, I _{avg} :	26.40830845	in ⁴
F _a :	1.585834262	hz
Approximate Fundamental Period Monopole, T _a :	0.6306	s
		2.7.7.1.3.3
Seismic Response Coefficient, C _s	0.1248	2.7.7.1.1
Seismic Response Coefficient Max 1, C _{smax}	0.0581	2.7.7.1.1
Seismic Response Coefficient Max 2, C _{smax}	N/A	2.7.7.1.1
	0.058147256	
Seismic Response Coefficient Min 1, C _{smin}	0.0300	2.7.7.1.1
Seismic Response Coefficient Min 2, C _{smin}	N/A	2.7.7.1.1
	0.0300	
Controlling Seismic Response Coefficient, C _{sc}	0.0581	
Seismic Base Shear, V	0.107	kips
		2.7.7.1.1
Vertical Distribution Factors		
Period Related Exponent, k:	1.065	
Sum of w _i h _i ^k	20.99	

Tower Section Loads								
Section Number	Length	Top Height	Mid Height, h_x	Section Weight, w_x	$w_x h_x^k$	C_{vx}	F_{xh}	F_{xv}
1 - 1	10.00	20.00	15.00	0.1901	3.40	0.1621	0.0174	0.0071
1 - 2	10.00	10.00	5.00	0.1901	1.06	0.0503	0.0054	0.0071
Sum				0.3802	4.46			

Discrete Loads						
Name	h_x	w_x	$w_x h_x^k$	C_{vx}	F_{xh}	F_{xv}
misc 48"Ø x 10' FRP Stealth Radome	15.00	0.4000	7.16	0.3411	0.0365	0.0150
misc 48"Ø x 10' FRP Stealth Radome	5.00	0.4000	2.22	0.1058	0.0113	0.0150
MX06FRO640-02	15.00	0.0700	1.25	0.0597	0.0064	0.0026
MX06FRO660-03	15.00	0.0600	1.07	0.0512	0.0055	0.0022
RF4440d-13A	15.00	0.0725	1.30	0.0618	0.0066	0.0027
RF4439d-25A	15.00	0.0747	1.34	0.0637	0.0068	0.0028
FFVV-65A-R2-V1	5.00	0.0732	0.41	0.0194	0.0021	0.0027
AIR 6419 B41	5.00	0.0830	0.46	0.0220	0.0024	0.0031
4449 B71/B85 RRU	5.00	0.0749	0.42	0.0198	0.0021	0.0028
4460 B25/B66 RRU	5.00	0.1090	0.61	0.0288	0.0031	0.0041
Sum		1.4173	16.23			

Linear Loads								
Name	Start Height	End Height	h_x	w_x	$w_x h_x^k$	C_{vx}	F_{xh}	F_{xv}
(4) general cable 7/8" Coax From 0 to 15	10.00	15.00	12.50	0.0104	0.15	0.0073	0.0008	0.0004
(4) general cable 7/8" Coax From 0 to 15	0.00	10.00	5.00	0.0208	0.12	0.0055	0.0006	0.0008
rfs 6x24 Hybrid From 0 to 5	0.00	5.00	2.50	0.0125	0.03	0.0016	0.0002	0.0005
			Sum	0.0437	0.30			

Site ID: 29546
 Site Name: Plattsville RELO
 Engineer: NDW
 Date: 5/17/2023

100 ft Stealth Monument

Areas & Weights

FRP Panel Assembly Area & Weight						
Item	Member	Unit Weight	Combined Measurement	Weight		
By Area		psf	ft. ²	lb.		
Facia Panels	1" Honeycomb FRP Panel	2.00	324	648		
By Length		plf	ft.	lbs.		
Framing	VALMONT FRP 5x5x5/16" TUBE	4.42	221	978		
Connections	VALMONT FRP ∠5x5x5/16"	2.55	167	425		
Standoffs	C6x11.5	11.50	14	155		
Attach Rail	∠6x6x3/8"	14.84	34	504		
			Subtotal	2711		
			+5% (Bolts & Misc Steel)	136		
			est. Total Weight (lb.)	2850		
From		62				
To		80				
Panel Height		18				
Panel Width		18				
			Aspect Ratio =	1.000		
			Coef. C _o =	1.200		
			CaAa (ft ²) =	389		
			Weight (lb.) =	2850		
			CaAa - 1/2" Ice (ft ²) =	392		
			Weight - 1/2" Ice (lb.) =	4450		

48" Ø x 10' FRP Stealth Radome						
Item	Member	Unit Weight	Combined Measurement	Weight		
By Area		psf	ft. ²	lb.		
Canister Shell	1/4" FRP	2.50	126	314		
Top Cap	3/8" FRP	3.78	13	48		
Bulkhead Plate	3/8" PL	15.31	1	15		
By Length		plf	ft.	lbs.		
Bulkhead Arms	VALMONT FRP 2x2x1/4" TUBE	1.27	12	15		
			Subtotal	392		
			+5% (Bolts & Misc Steel)	20		
			est. Total Weight (lb.)	400		

Framing & Misc Steel @ 80'						
Item	Member	Unit Weight	Combined Measurement	Weight		
By Total Number		lb	#	lb.		
Horz Conn	HSS BEAM CONN ASSEMB (top)	1000.00	3	3000		
By Length		plf	ft.	lbs.		
Inner Brace	C6x11.5	11.50	17	190		
Mount Conn Angle	∠4x4x1/4"	6.60	37	243		
			Subtotal	3432		
			+5% (Bolts & Misc Steel)	172		
			est. Total Weight (lb.)	3600		

Work Platform & Misc Steel @ 62'						
Item	Member	Unit Weight	Combined Measurement	Weight		
By Total Number		lb	#	lb.		
Horz Conn	HSS BEAM CONN ASSEMBLY	1100.00	3	3300		
By Area		psf	ft. ²	lb.		
Platform Grating	1 1/4" X 3/16" BAR GRATE	9.10	129	1170		
By Length		plf	ft.	lbs.		
Inner Brace	C6x11.5	11.50	17	190		
Mount Conn Angle	∠4x4x1/4"	6.60	74	485		
Platform Edge	∠2x2x3/16"	2.43	32	77		
Platform Bracing	C6x11.5	11.50	45	518		
			Subtotal	5739		
			+5% (Bolts & Misc Steel)	287		
			est. Total Weight (lb.)	6050		

Framing & Misc Steel @ 53'						
Item	Member	Unit Weight	Combined Measurement	Weight		
By Total Number		lb	#	lb.		
Horz Conn	HSS BEAM CONN ASSEMBLY	1100.00	3	3300		
By Length		plf	ft.	lbs.		
Inner Brace	C6x11.5	11.50	17	190		
Mount Conn Angle	∠4x4x1/4"	6.60	37	243		
Platform Edge	∠2x2x3/16"	2.43	32	77		
			Subtotal	3809		
			+5% (Bolts & Misc Steel)	190		
			est. Total Weight (lb.)	4000		

Framing & Misc Steel @ 26.5'						
Item	Member	Unit Weight	Combined Measurement	Weight		
By Total Number		lb	#	lb.		
Horz Conn	HSS BEAM CONN ASSEMBLY	1100.00	3	3300		
By Length		plf	ft.	lbs.		
Inner Brace	C6x11.5	11.50	17	190		
			Subtotal	3490		
			+5% (Bolts & Misc Steel)	174		
			est. Total Weight (lb.)	3650		

Site ID: 29546
 Site Name: Plattsville RELO
 Engineer: NDW
 Date: 10/10/2024

Bolted Unstiffened Extended End Plate - HSS Beam

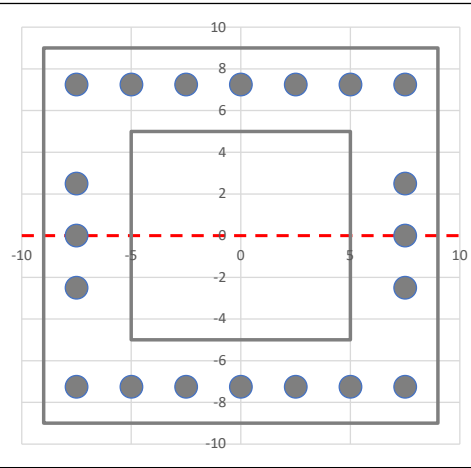
Analysis per TIA-222-H Standards

18 x18" Plate w/(20) 0.75" A325N

Bolt Grade: A325N
 Diameter: $\phi_b = 0.75$ in
 Area: $A_b = 0.4418$ in²
 Min Tensile Strength: $F_{ub} = 120$ ksi
 # of Bolts: $n_b = 20$

Beam Height: $h_b = 10$ in
 Beam Width: $b_b = 10$ in

Plate Height: $h_p = 18$ in
 Plate Width: $b_p = 18$ in
 Plate Thick: $t_p = 1$ in
 Plate Yield: $F_y = 50$ ksi



Bolt Group Moment of Inertia: $I_b = 760.9$ in⁴

Bolt Layout Table (in)

d_x	d_y
-7.5	7.25
-5	7.25
-2.5	7.25
0	7.25
2.5	7.25
5	7.25
7.5	7.25
-7.5	-7.25
-5	-7.25
-2.5	-7.25
0	-7.25
2.5	-7.25
5	-7.25
7.5	-7.25
-7.5	2.5
-7.5	0
-7.5	-2.5
7.5	2.5
7.5	0
7.5	-2.5

4.9.6.1 Design Tensile Strength	ϕR_{nt}	Threads per inch	$n = 10$
$R_{nt} = F_{ub} A_n$ $A_n = \frac{\pi}{4} \left(\phi_b - \frac{.9743}{n} \right)^2$ OR $0.75 A_b$		$A_n = 0.3345$ in ²	$\phi = 0.75$
		$\phi R_{nt} = 30.10$ k/bolt	
4.9.6.3 Design Shear Strength	ϕR_{nv}	Included (N): $R_{nv} = 0.625 F_{ub} 0.8 A_b$	$\phi = 0.75$
		$\phi R_{nv} = 19.88$ k/bolt	

Maximum Member Forces From TNX Output

Section	Elev (ft)	Top Girt	T_{uz} (k)	V_{uz} (k)	M_{ux} (kip-ft)
T1	80	HSS10x10x3/8	1.05	14.32	125.81
T5	26.5	HSS10x10x3/8	2.39	17.88	157.82

Section	Elev (ft)	Bottom Girt	T_{uz} (k)	V_{uz} (k)	M_{ux} (kip-ft)
T1	62	HSS10x10x3/8	1.05	15.06	132.44
T2	63	HSS10x10x3/8	1.56	15.70	138.22

Sample Calculation

T1 Top Girt @ 80'

Bolts:

Max Tension Force in Bolts above NA: $T_{ub} = \frac{M_{uc}}{I_b} + \frac{T_{uz}}{n_b}$

$c = 7.25$ in

Tension due to Moment: 4.81 k

Axial Tension: 0.05 k

$T_{ub} = 4.86$ k

Shear force per bolt: $V_{ub} = \frac{V_u}{n_b}$

$V_{ub} = 0.716$ k

$\left(\frac{V_{ub}}{\phi R_{nv}} \right)^2 + \left(\frac{T_{ub}}{\phi R_{nt}} \right)^2 \leq 1$ Interaction = 2.74%

Plate:

Max Compression Force in Bolts below NA: $P_{ub} = \frac{M_{uc}}{I_b}$

$c = 7.25$ in

$P_{ub} = 33.68$ k

Moment in Plate at Base of Beam: $M_u = 75.78$ k-in

Plastic Moment Capacity of Plate: $\phi M_n = \frac{0.9 F_y B_p t_p^2}{4}$

$\phi M_n = 202.50$ k-in

$\frac{M_u}{\phi M_n} = 37.42\%$

Connection Summary:

Section	Elev (ft)	V_{ub} (k)	T_{ub} (k)	Bolt Interaction	P_{ub} (k)	M_u (k-in)	Plate Bending
T1	80	0.72	4.86	2.7%	33.68	75.78	37.4%
T5	26.5	0.89	6.15	4.4%	42.25	95.06	46.9%

Section	Elev (ft)	V_{ub} (k)	T_{ub} (k)	Bolt Interaction	P_{ub} (k)	M_u (k-in)	Plate Bending
T1	80	0.75	5.12	3.0%	35.45	79.77	39.4%
T2	26.5	0.79	5.36	3.3%	37.00	83.25	41.1%

Top Monopole Flange Plate Connection

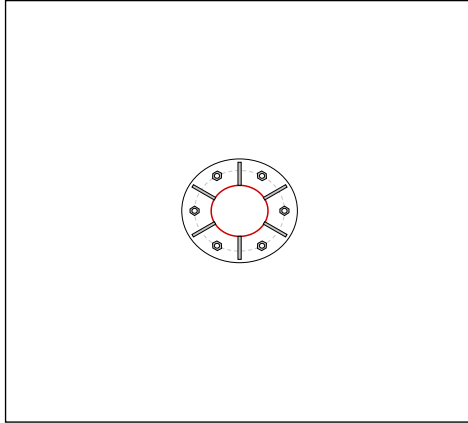
Elevation = 80 ft.

Site Number:	29546
Order Number:	REV03B_Leg
Date:	10/10/2024

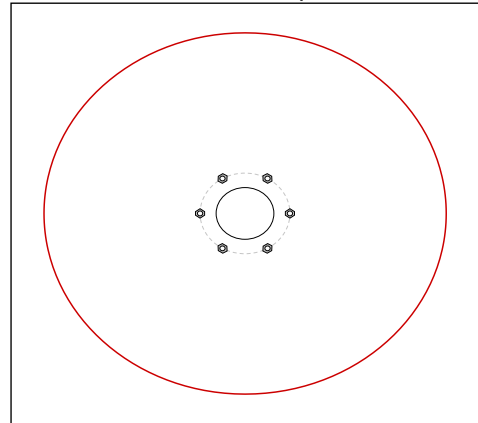
Applied Loads	
Moment (kip-ft)	14.9
Axial Force (kips)	2.2
Shear Force (kips)	1.4

TIA-222 Revision	H
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Top Plate - External



Bottom Plate - Spoke*



Connection Properties

Bolt Data

(6) 5/8" ϕ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 10.5" BC

Top Plate Data

13.5" OD x 1" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Top Stiffener Data

(6) 6"H x 3"W x 0.375"T, Notch: 0.5"
 plate: Fy= 36 ksi ; weld: Fy= 70 ksi
 horiz. weld: 0.25" fillet
 vert. weld: 0.25" fillet

Top Pole Data

6.625" x 0.28" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Plate Data

*See attached Spoke Flange Plate Connection Calcs

Bottom Stiffener Data

N/A

Bottom Pole Data

48" x 0.5" round pole (A572-50; Fy=50 ksi, Fu=65 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	10.96
Allowable (kips)	20.34
Stress Rating:	53.9% Pass

Top Plate Capacity

Max Stress (ksi):	8.15	(Roark's Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	18.1%	Pass
Tension Side Stress Rating:	N/A	

Top Stiffener Capacity

Horizontal Weld:	33.4%	Pass
Vertical Weld:	17.8%	Pass
Plate Flexure+Shear:	13.9%	Pass
Plate Tension+Shear:	31.4%	Pass
Plate Compression:	40.6%	Pass

Top Pole Capacity

Punching Shear:	8.8%	Pass
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Bottom Plate Capacity

Max Stress (ksi):	N/A
Allowable Stress (ksi):	N/A
Stress Rating:	N/A
Tension Side Stress Rating:	N/A

Bottom Stiffener Capacity

Horizontal Weld:	N/A
Vertical Weld:	N/A
Plate Flexure+Shear:	N/A
Plate Tension+Shear:	N/A
Plate Compression:	N/A

Bottom Pole Capacity

Punching Shear:	N/A
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Site Number: 29546
 Site Name: Plattsville RELO
 Job Number: REV03B
 Engineer: NDW
 Date: 10/10/2024

Spoke Flange Plate Connection

Flange @ 80.00

Moment: 14.9 k-ft
 Shear: 1.4 k
 Compression: 2.2 k
 TIA-222 Code Revision: H

Lower Monopole Shaft Diameter: 48.0 in
 Lower Monopole Thickness: 0.5000 in
 Monopole Shaft Material: A572 Gr. 50
 Monopole Shaft Yield Strength: 50 ksi
 Monopole Shaft Ultimate Strength: 65 ksi

Lower Spoke Flange Diameter / Length: 49.50 in
 Lower Flange Thickness: 2.50 in
 Lower Flange Spoke Width: 4.00 in
 Lower Flange Material: A572 Gr. 50
 Lower Flange Yield Strength: 50 ksi
 Lower Flange Ultimate Strength: 65 ksi

Connection Bolts

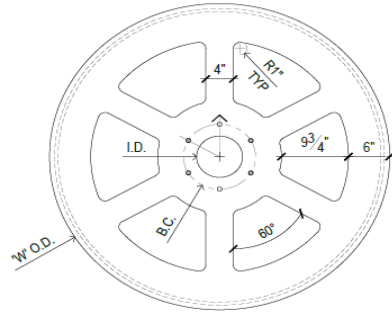
Connection Bolt Arrangement: Round
 Connection Bolt Yield Strength: 92 ksi
 Connection Ultimate Strength: 120 ksi
 Connection Bolt Diameter: 0.625 in
 Connection Bolt Circle: 10.50 in
 # of Connection Bolts: 6
 Minimum Connection Bolt Separation: 1.67 in
 Additional Connection Bolts Installed: N

Include Plate Thickness Beyond Bolt Circle: Y
 Unsupported Anchor Rod Projection: 0.00 in

Spoke Flange Weld Strength: 70 ksi
 Spoke Flange Weld Size: 0.25 in
 # of sides: 2

Connection Bolt Capacity

Area of Bolt: 0.23 in²
 Inertia of Bolt: 0.00 in⁴
 Total Bolt Inertia: 18.7 in⁴
 Maximum Bolt Tension: 10.964 k
 Maximum Bolt Compression: 11.700 k
 Bolt Shear: 0.2 k
 Tensile Bolt Capacity: 20.3 k
 Compressive Bolt Capacity: 20.8 k
 Shear Bolt Capacity: 9.2 k
 Interaction Equation: 0.56 Result: OK



(6) HOLE LEG CAP PLATE w/ CUT OUTS

Lower Flange

$\phi Mn = 0.9 \times \text{yield strength} \times \text{Spoke Width} \times \text{thickness}^2 / 4$: 281.25 k-in
 Length from Bolt to Outer Pole: 19.5 in
 Max Reaction: 2.49 k
 Mu = Max Reaction x Length from Bolt to Outer Pole: 48.61 k-in
 Interaction Equation: 0.17 Result: OK

Weld Capacity: 5.57 k/in
 Max Reaction /Weld: 0.31 k/in
 Interaction Equation: 0.06 Result: OK

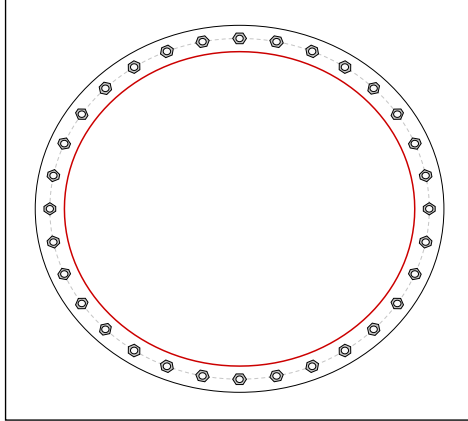
Leg Flange Plate Connection

Elevation = 40 ft.

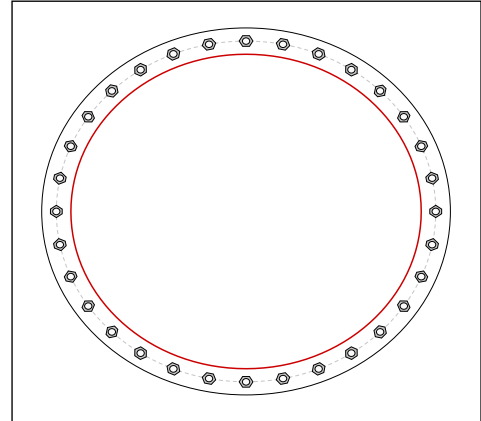
Site Number:	29546
Order Number:	REV03B_Leg
Date:	10/10/2024
TIA-222 Revision	H

Applied Loads	
Moment (kip-ft)	362.5
Axial Force (kips)	112.8
Shear Force (kips)	13.0

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(32) 1" \emptyset bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 52" BC

Top Plate Data

56" OD x 2" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Top Stiffener Data

N/A

Top Pole Data

48" x 0.5" round pole (A572-50; Fy=50 ksi, Fu=65 ksi)

Bottom Plate Data

56" OD x 2" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Bottom Stiffener Data

N/A

Bottom Pole Data

48" x 0.5" round pole (A572-50; Fy=50 ksi, Fu=65 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	6.93
Allowable (kips)	54.54
Stress Rating:	12.7% Pass

Top Plate Capacity

Max Stress (ksi):	3.80	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	8.5%	Pass
Tension Side Stress Rating:	2.1%	Pass

Bottom Plate Capacity

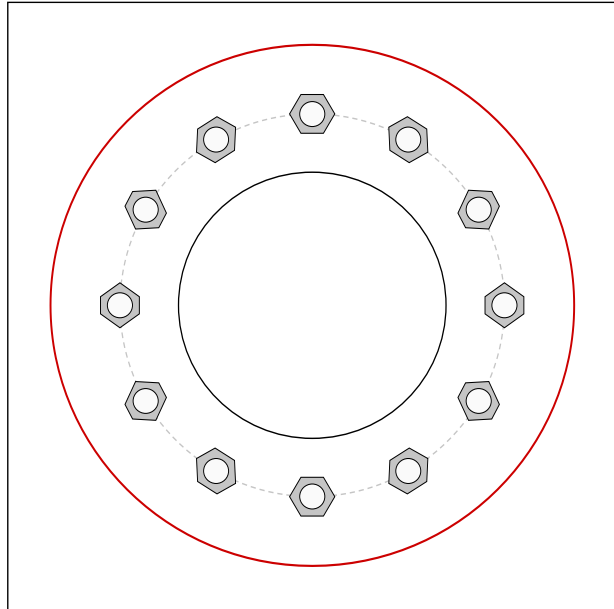
Max Stress (ksi):	3.80	(Flexural)
Allowable Stress (ksi):	45.00	
Stress Rating:	8.5%	Pass
Tension Side Stress Rating:	2.1%	Pass

Leg Base Plate Connection

Site Info	
Site Number:	29546
Order Number:	REV03B_Leg
Date:	10/10/2024

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
I_{ar} (in)	2.25

Applied Loads	
Moment (kip-ft)	309.8
Axial Force (kips)	164.4
Shear Force (kips)	10.6



Connection Properties	Analysis Results
-----------------------	------------------

Anchor Rod Data	
(12) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 34.5" BC	
Base Plate Data	
24" ID x 3" Plate (A572-60; $F_y=60$ ksi, $F_u=75$ ksi)	
Stiffener Data	
N/A	
Pole Data	
48" x 0.5" round pole (A572-50; $F_y=50$ ksi, $F_u=65$ ksi)	

Anchor Rod Summary		<i>(units of kips, kip-in)</i>
$Pu_c = 49.56$	$\phi Pn_c = 268.39$	Stress Rating
$Vu = 0.88$	$\phi Vn = 120.77$	18.5%
$Mu = n/a$	$\phi Mn = n/a$	Pass
Base Plate Summary		
Max Stress (ksi):	11.19	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	20.7%	Pass

Drilled Pier Foundation

Site Number:	29546
Order Number:	REV03B
Date:	10/10/2024
TIA-222 Revision:	H
Tower Type:	Self Support

Mapped Foundation?:	N	
Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	0.0	0.0
Axial Force (kips)	164.4	87.7
Shear Force (kips)	10.6	13.7

Material Properties	
Concrete Strength, f'c:	4 ksi
Rebar Strength, Fy:	60 ksi
Tie Yield Strength, Fyt:	60 ksi

Pier Design Data	
Depth	18 ft
Ext. Above Grade	0.5 ft
Pier Section 1	
<i>From 0.5' above grade to 0.33' below grade</i>	
Pier Diameter	4.5 ft
Rebar Quantity	16
Rebar Size	8
Clear Cover to Ties	3 in
Tie Size	4
Tie Spacing	1 in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Pier Section 2	
<i>From 0.33' below grade to 1.58' below grade</i>	
Pier Diameter	4.5 ft
Rebar Quantity	16
Rebar Size	8
Clear Cover to Ties	3 in
Tie Size	4
Tie Spacing	1.75 in
Pier Section 3	
<i>From 1.58' below grade to 10.58' below grade</i>	
Pier Diameter	4.5 ft
Rebar Quantity	16
Rebar Size	8
Clear Cover to Ties	3 in
Tie Size	4
Tie Spacing	3 in
Pier Section 4	
<i>From 10.58' below grade to 18' below grade</i>	
Pier Diameter	4.5 ft
Rebar Quantity	16
Rebar Size	8
Clear Cover to Ties	3 in
Tie Size	4
Tie Spacing	6 in

Analysis Results		
Soil Lateral Check		
D ₅₀ (ft from TOC)	9.61	9.61
Soil Safety Factor	22.13	17.08
Max Moment (kip-ft)	70.46	91.27
Rating	6.0%	7.8%

Soil Vertical Check		
Skin Friction (kips)	199.33	132.89
End Bearing (kips)	740.57	-
Weight of Concrete (kips)	49.38	37.04
Total Capacity (kips)	939.90	169.93
Axial (kips)	213.82	87.70
Rating	22.7%	51.6%

Reinforced Concrete Flexure		
Critical Depth (ft from TOC)	9.63	9.36
Critical Moment (kip-ft)	70.46	91.18
Critical Moment Capacity	1535.66	1204.24
Rating	4.6%	7.6%

Reinforced Concrete Shear		
Critical Depth (ft from TOC)	14.91	14.91
Critical Shear (kip)	16.14	20.91
Critical Shear Capacity	478.64	314.15
Rating	3.4%	6.7%

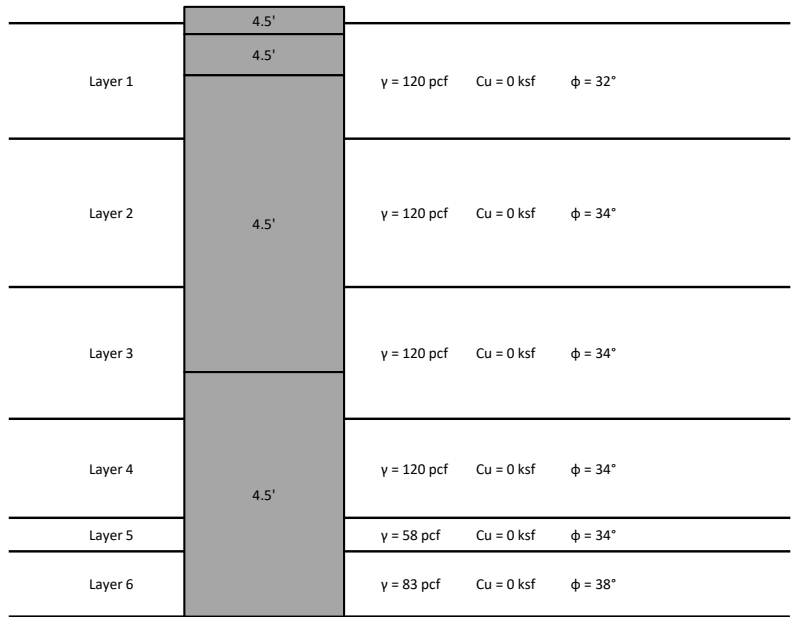
Structural Foundation Rating	7.6%
Soil Interaction Rating	51.6%

Check Limitation	
Apply TIA-222-H Section 15.5:	<input type="checkbox"/>
N/A	<input type="checkbox"/>
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	<input type="checkbox"/>
Shear Design Options	
Check Shear along Depth of Pier:	<input checked="" type="checkbox"/>
Utilize Shear-Friction Methodology:	<input type="checkbox"/>
Override Critical Depth:	<input type="checkbox"/>

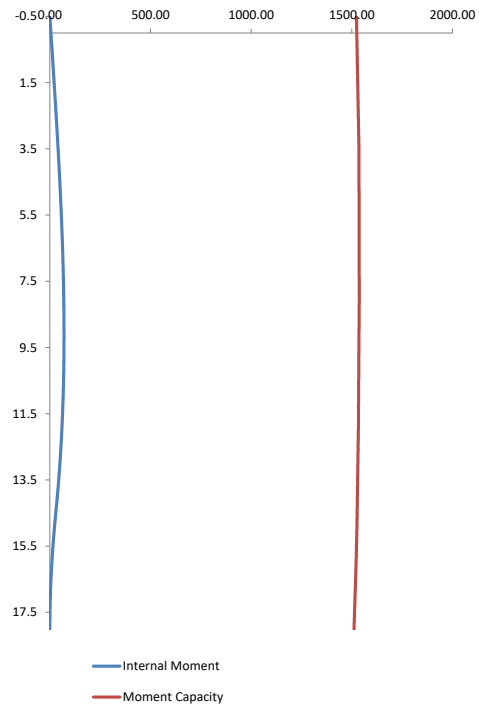
[Go to Soil Calculations](#)

Soil Profile														
Groundwater Depth	15	# of Layers	6											

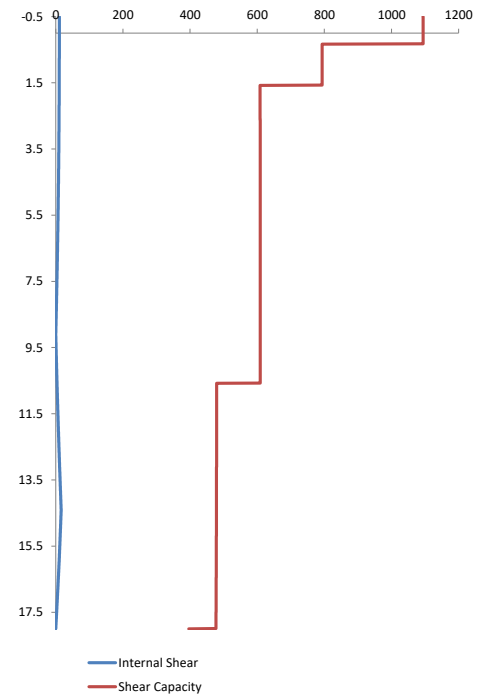
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	Y _{soil} (pcf)	Y _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Net Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.5	3.5	120	150	0	32	0.000	0.000	0.00	0.00			Cohesionless
2	3.5	8	4.5	120	150	0	34	0.812	0.812	0.80	0.53		29	Cohesionless
3	8	12	4	120	150	0	34	1.288	1.288	1.20	0.80		50	Cohesionless
4	12	15	3	120	150	0	34	1.626	1.626	1.60	1.07		42	Cohesionless
5	15	16	1	57.6	87.6	0	34	1.771	1.771	1.60	1.07		61	Cohesionless
6	16	18	2	82.6	87.6	0	38	1.830	1.830	2.00	1.33	60	72	Cohesionless

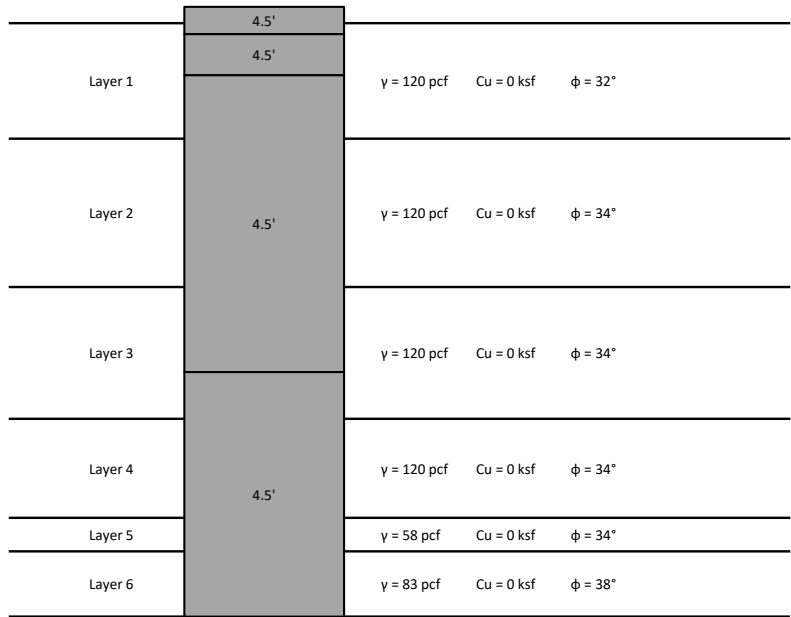


Moment Diagrams - Compression

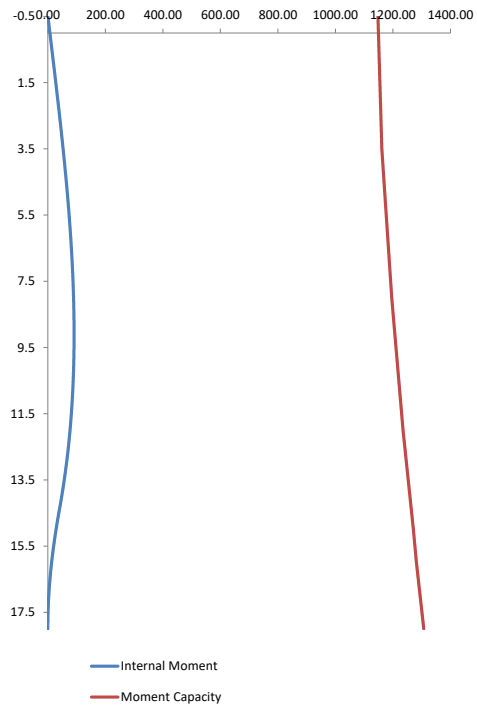


Shear Diagrams - Compression

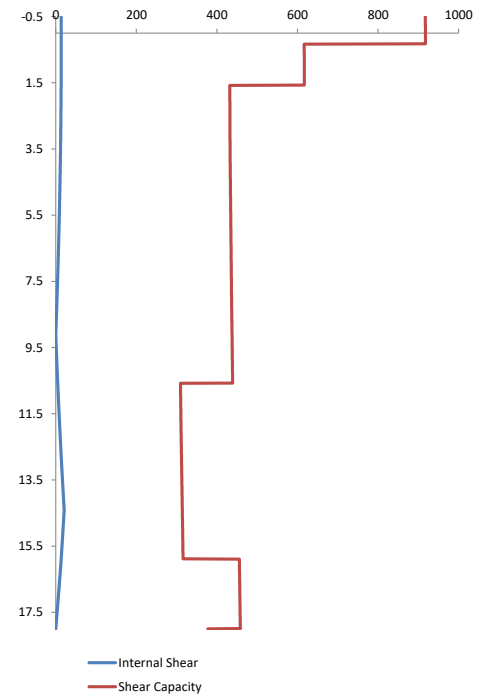




Moment Diagrams - Uplift







Shear Diagrams - Uplift



29546_Plattsville RELO

Exposure C

Legend

-  1500'/500'
-  2600'
-  41.2189, -73.2448
-  Football Field

41.2189, -73.2448

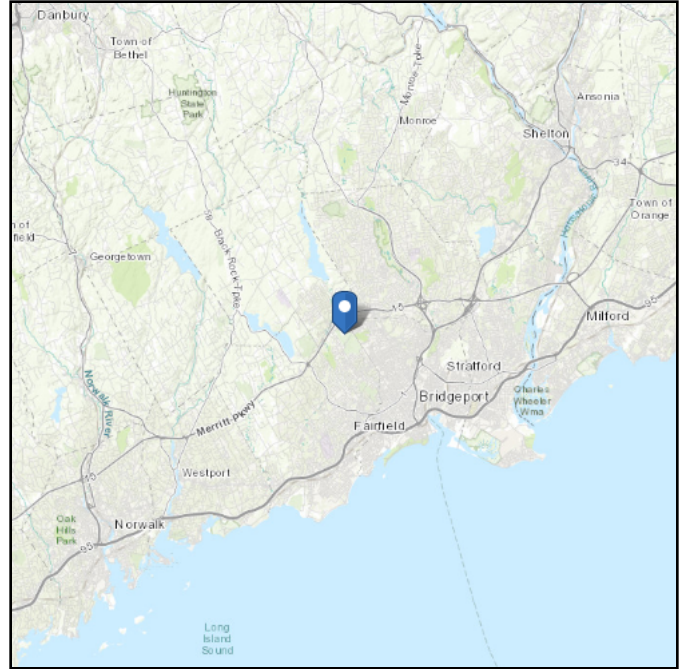
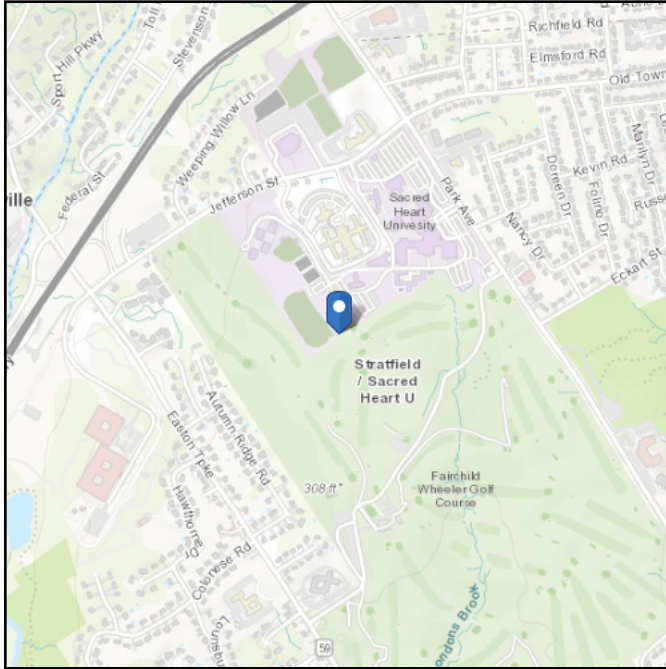


ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: C - Very Dense Soil and Soft Rock

Latitude: 41.2189
Longitude: -73.2448
Elevation: 294.7618173326403 ft (NAVD 88)



Wind

Results:

Wind Speed	118 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	90 Vmph
100-year MRI	98 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Fri May 12 2023

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).

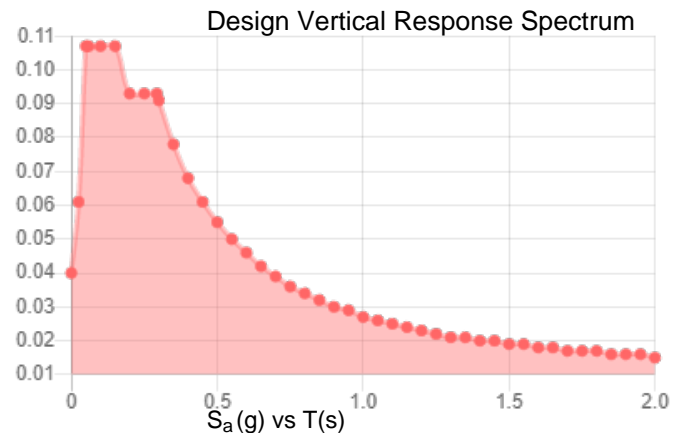
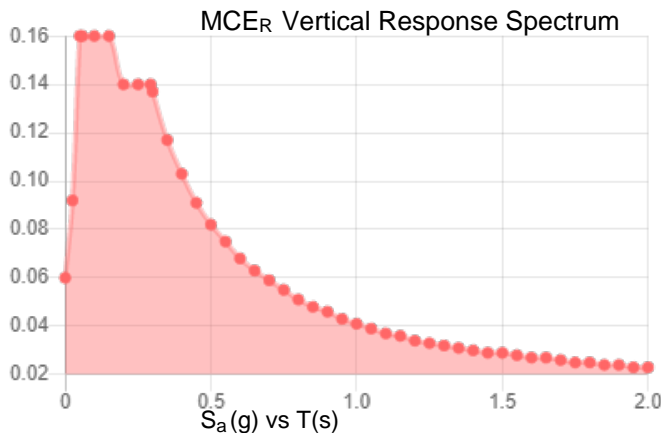
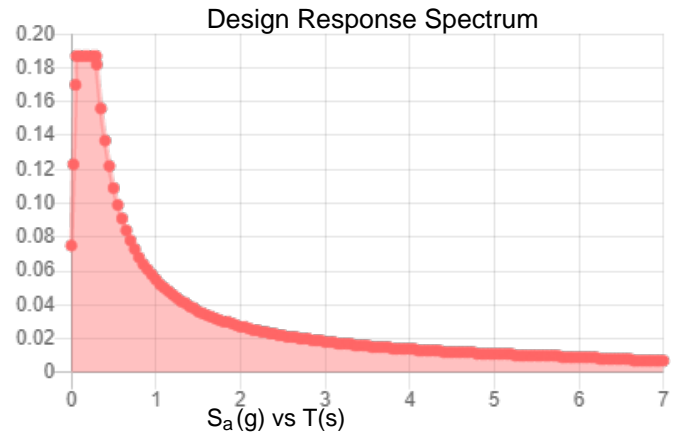
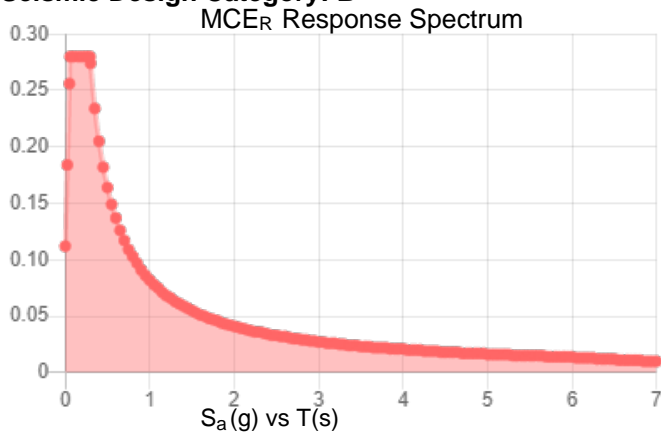
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class:

Results:

S_s :	0.216	S_{D1} :	0.055
S_1 :	0.055	T_L :	6
F_a :	1.3	PGA :	0.123
F_v :	1.5	PGA _M :	0.157
S_{MS} :	0.28	F_{PGA} :	1.277
S_{M1} :	0.082	I_e :	1
S_{DS} :	0.187	C_v :	0.716

Seismic Design Category: B



Data Accessed:

Fri May 12 2023

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: 15 F
Gust Speed 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Fri May 12 2023

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.

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Exhibit C

December 15, 2022
July 22, 2024 (Rev.1)
August 2, 2024 (Rev.2)



SAI Communications
12 Industrial Way
Salem NH, 03079

RE: AT&T Site Number: CT1440 (NSB)
FA Number: 15320157
PACE Number: MRCTB065139
PT Number: 2051A1648M
TEP Project Number: 317059.978330
AT&T Site Name: FAIRFIELD SACRED HEART CAMPUS
Site Address: 5151 Park Avenue Dup1
Fairfield, CT 06825

To Whom It May Concern:

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

- **(6) TPA65R-BU6DA-K Antennas (71.2"x20.7"x7.7" – Wt. = 69 lbs. /each)**
- **(3) AIR6419 B77D Antennas (28.2"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) AIR6419 B77G Antennas (28.2"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each) (Pos.2)**
- **(3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each) (Pos.2)**
- **(3) 8843 B2/B66A RRH's (14.9"x13.2"x10.9" – Wt. = 72 lbs. /each) (Pos.3)**
- **(2) DC9-48-60-24-PC16-EV Surge Arrestors (18.9"x15.9"x9.6" – Wt. = 35 lbs. /each) (Pos.3)**

** Proposed equipment shown in bold.*

No original structural design documents or fabrication drawings were available for the proposed mounts.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2021 with 2022 Connecticut State Building Code, and AT&T Mount Technical Directive – R22.
- Additional wind load will not be applicable in this analysis due to the proposed equipment being enclosed within a proposed FRP enclosure. TEP NE is under the assumption that the enclosure has been constructed properly and adequately secured to the tower structure. Per TIA-222-H, the max ice thickness for this site is equal to 1.0 in. An escalated ice thickness of 1.09 in was used for this analysis.
- TEP NE considers this site to be exposure category C; tower is located near large, flat, open, terrain/grasslands.
- TEP NE considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- TEP NE considers this site to have a spectral response acceleration parameter at short periods, S_s , of 0.219 and a spectral response acceleration parameter at a period of 1 second, S_1 , of 0.055.
- This analysis does not include live load conditions for these mounts.
- The proposed mounts will be secured to the proposed self supporting tower with U-bolts tightened around the steel pipe mast. TEP NE considers the U-bolt as the governing connection members.

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

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Proposed Mount Rating	35	LC4	9%	PASS

This determination was based on the following limitations and assumptions:

1. TEP NE is not responsible for any modifications completed prior to and hereafter which TEP NE was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The proposed mounts 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. TEP NE performed a localized analysis on the mount itself and not on the supporting tower structure.

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

Respectfully Submitted,
TEP Northeast



Michael Cabral
Director



Daniel P. Hamm, PE
Vice President



Ice Weight Calculations

Date: 7/22/2024

Project Name: FAIRFIELD SACRED HEART CAMPUS

Project No.: CT1440

Designed By: KSBM Checked By: MSC



ICE WEIGHT CALCULATIONS - AT&T EQUIPMENT

Thickness of ice: 1.09 in.

Density of ice: 56 pcf

TPA65R-BU6DA-K Antenna

Weight of ice based on total radial SF area:

Height (in): 71.2

Width (in): 20.7

Depth (in): 7.7

Total weight of ice on object: 183 lbs

Weight of object: 69.0 lbs

Combined weight of ice and object: 252 lbs

AIR6419 B77D Antenna

Weight of ice based on total radial SF area:

Height (in): 28.2

Width (in): 16.1

Depth (in): 7.3

Total weight of ice on object: 59 lbs

Weight of object: 66.0 lbs

Combined weight of ice and object: 125 lbs

AIR6419 B77G Antenna

Weight of ice based on total radial SF area:

Height (in): 28.2

Width (in): 16.1

Depth (in): 7.3

Total weight of ice on object: 59 lbs

Weight of object: 66.0 lbs

Combined weight of ice and object: 125 lbs

4478 B14 RRH

Weight of ice based on total radial SF area:

Height (in): 18.1

Width (in): 13.4

Depth (in): 8.3

Total weight of ice on object: 34 lbs

Weight of object: 60.0 lbs

Combined weight of ice and object: 94 lbs

4449 B5/B12 RRH

Weight of ice based on total radial SF area:

Height (in): 17.9

Width (in): 13.2

Depth (in): 9.4

Total weight of ice on object: 34 lbs

Weight of object: 73.0 lbs

Combined weight of ice and object: 107 lbs

8843 B2/B66A RRH

Weight of ice based on total radial SF area:

Height (in): 14.9

Width (in): 13.2

Depth (in): 10.9

Total weight of ice on object: 30 lbs

Weight of object: 72.0 lbs

Combined weight of ice and object: 102 lbs

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

Weight of ice based on total radial SF area:

Height (in): 18.9

Width (in): 15.9

Depth (in): 9.6

Total weight of ice on object: 41 lbs

Weight of object: 35.0 lbs

Combined weight of ice and object: 76 lbs

2" Pipe

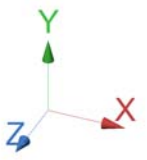
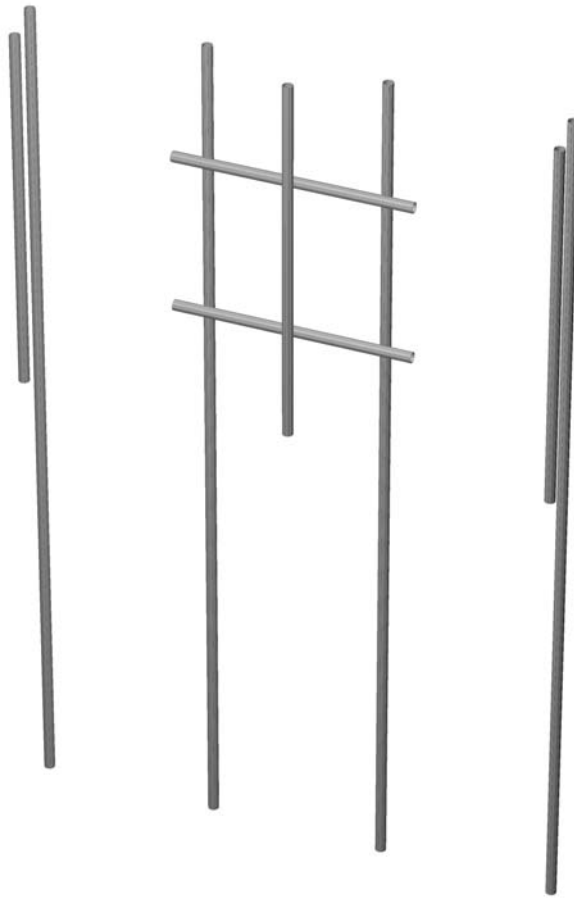
Per foot weight of ice:

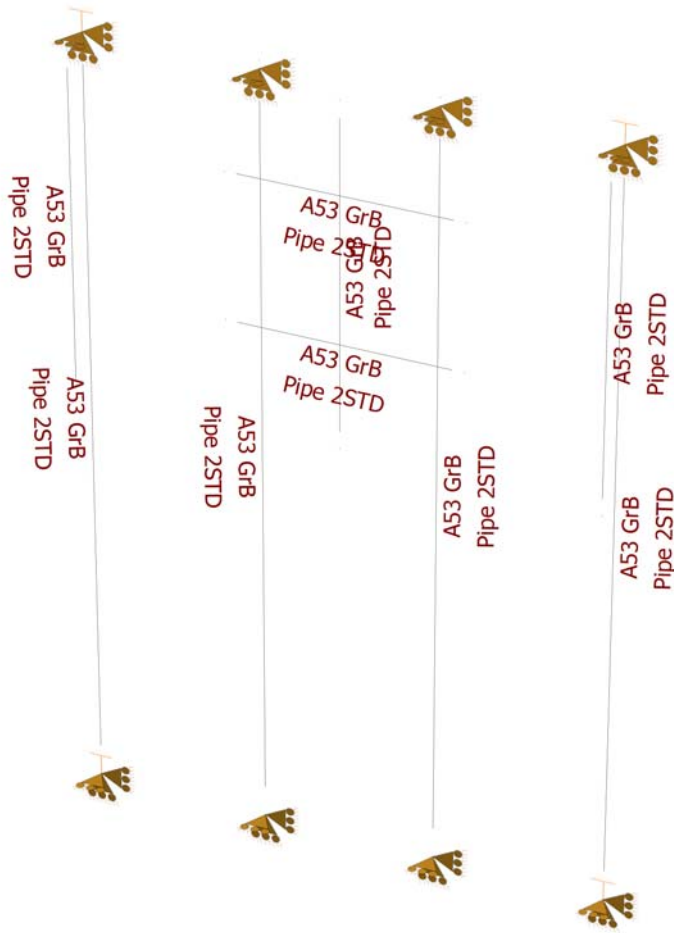
diameter (in): 2.38

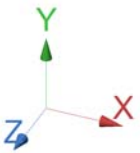
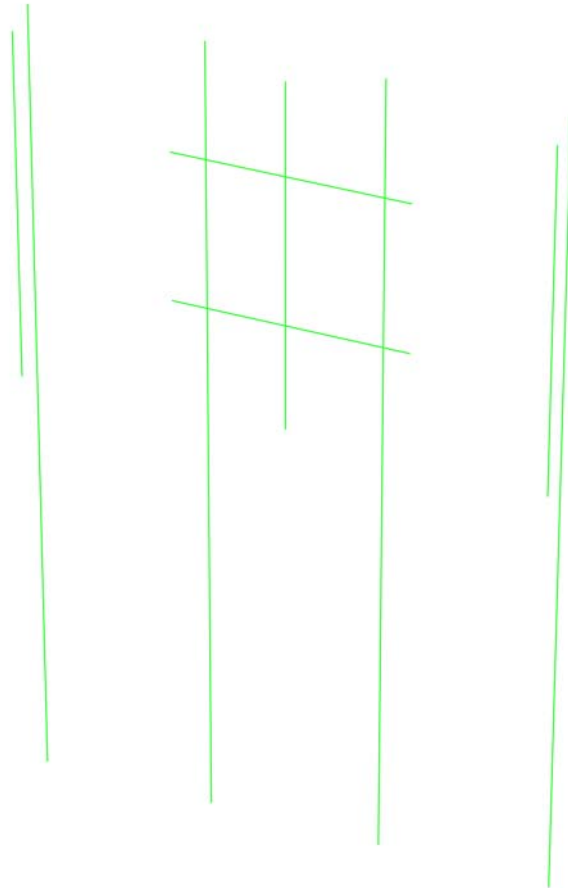
Per foot weight of ice on object: 5 plf

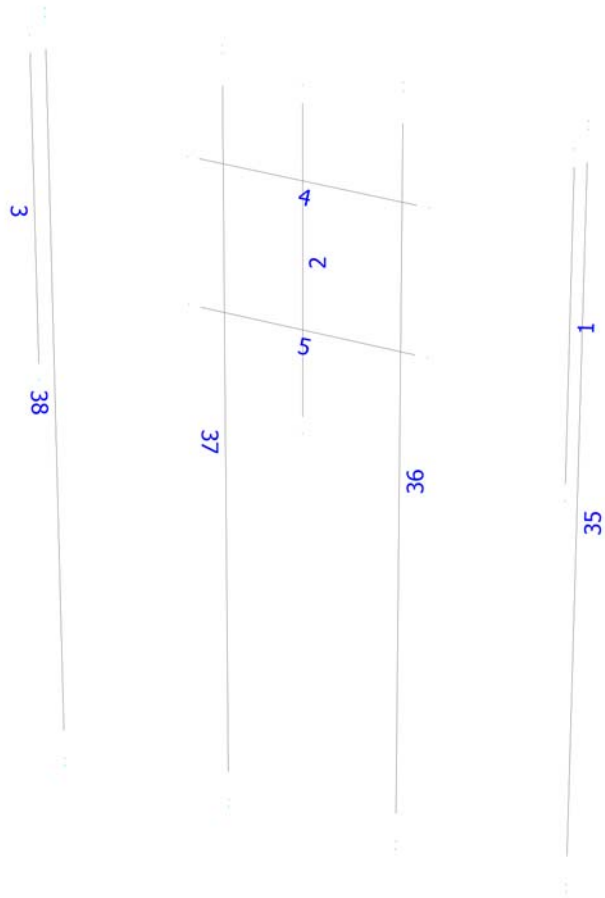


**Mount Calculations
(Proposed Conditions)**











Load data

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Di	Ice Load	No	LL

Distributed force on members

Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Di	1	y	-0.005	-0.005	0.00	No	100.00	Yes
	2	y	-0.005	-0.005	0.00	No	100.00	Yes
	3	y	-0.005	-0.005	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
	35	y	-0.005	-0.005	0.00	No	100.00	Yes
	36	y	-0.005	-0.005	0.00	No	100.00	Yes
	37	y	-0.005	-0.005	0.00	No	100.00	Yes
	38	y	-0.005	-0.005	0.00	No	100.00	Yes

Concentrated forces on members

Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	1	y	-0.075	1.00	No
		y	-0.075	6.00	No
	2	y	-0.033	0.75	No
		y	-0.033	2.50	No
		y	-0.033	4.50	No
		y	-0.033	6.25	No
		y	-0.033	6.25	No
	3	y	-0.075	1.00	No
		y	-0.075	6.00	No
	35	y	-0.035	9.50	No
		y	-0.035	14.50	No
		y	-0.098	12.00	No
		y	-0.098	12.00	No
	36	y	-0.073	3.50	No
		y	-0.072	3.50	No
		y	-0.03	9.50	No
		y	-0.03	14.50	No
		y	-0.098	12.00	No
	37	y	-0.035	3.50	No
		y	-0.06	6.50	No
		y	-0.012	9.50	No
38	y	-0.012	10.50	No	
	y	-0.044	9.50	No	
	y	-0.044	11.50	No	

		y	-0.082	12.00	No
Di	1	y	-0.092	1.00	No
		y	-0.092	6.00	No
2		y	-0.03	0.75	No
		y	-0.03	2.50	No
		y	-0.03	4.50	No
		y	-0.03	6.25	No
		y	-0.092	1.00	No
3		y	-0.092	6.00	No
		y	-0.094	9.50	No
35		y	-0.094	14.50	No
		y	-0.032	12.00	No
36		y	-0.034	3.50	No
		y	-0.03	3.50	No
37		y	-0.079	9.50	No
		y	-0.079	14.50	No
		y	-0.032	12.00	No
		y	-0.041	3.50	No
		y	-0.034	6.50	No
38		y	-0.012	9.50	No
		y	-0.012	10.50	No
		y	-0.035	9.50	No
		y	-0.035	11.50	No
		y	-0.03	12.00	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
Di	Ice Load	No	0.00	0.00	0.00

Glossary

Comb : Indicates if load condition is a load combination



Current Date: 8/2/2024 11:57 AM
Units system: English

Steel Code Check Summary - Group by member

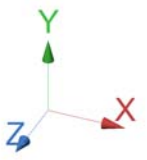
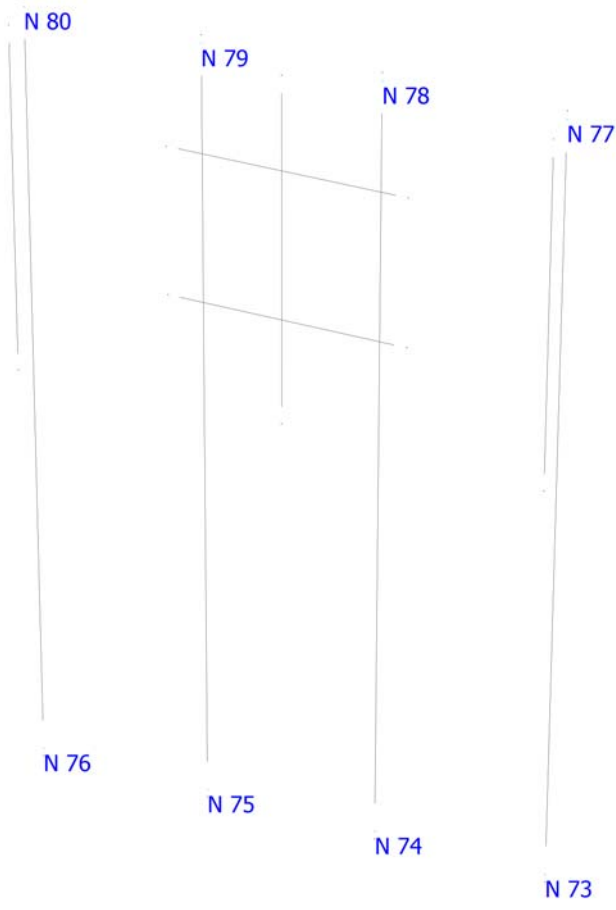
Load conditions to be included in design :

- LC1=1.4D
- LC2=1.2D
- LC3=0.9D
- LC4=1.2D+Di

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	<i>Pipe 2STD</i>	1	LC4 at 71.43%	0.03	OK	
		2	LC4 at 28.57%	0.02	OK	
		3	LC4 at 71.43%	0.03	OK	
		4	LC4 at 50.00%	0.05	OK	
		5	LC4 at 50.00%	0.06	OK	
		35	LC4 at 32.43%	0.09	OK	
		36	LC4 at 32.43%	0.03	OK	
		37	LC4 at 32.43%	0.03	OK	
		38	LC4 at 32.43%	0.09	OK	



Connection Check



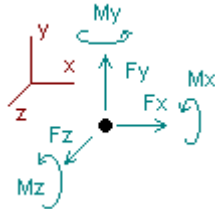


Analysis result

Nodes

Envelope for nodal reactions

Note.- I_c is the controlling load condition



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.4D

LC2=1.2D

LC3=0.9D

LC4=1.2D+Di

Node		Forces						Moments					
		Fx	I_c	Fy	I_c	Fz	I_c	Mx	I_c	My	I_c	Mz	I_c
		[Kip]		[Kip]		[Kip]		[Kip*ft]		[Kip*ft]		[Kip*ft]	
73	Max	0.000	LC1	0.457	LC4	0.015	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	0.000	LC1	0.182	LC3	0.006	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
74	Max	0.000	LC3	0.415	LC4	0.005	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.001	LC4	0.179	LC3	0.002	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
75	Max	0.001	LC4	0.172	LC4	0.005	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	0.000	LC3	0.087	LC3	0.002	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
76	Max	0.000	LC1	0.351	LC4	0.015	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	0.000	LC1	0.176	LC3	0.006	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
77	Max	0.000	LC1	0.433	LC4	-0.006	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	0.000	LC1	0.183	LC3	-0.015	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
78	Max	0.009	LC4	0.470	LC4	-0.002	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	0.004	LC3	0.231	LC3	-0.005	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
79	Max	-0.004	LC3	0.337	LC4	-0.002	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.009	LC4	0.158	LC3	-0.005	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1
80	Max	0.000	LC1	0.421	LC4	-0.006	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	0.000	LC1	0.191	LC3	-0.015	LC4	0.00000	LC1	0.00000	LC1	0.00000	LC1

Date: 8/2/2024
Project Name: FAIRFIELD SACRED HEART CAMPUS
Project No.: CT1440
Designed By: KSBM Checked By: MSC



CHECK CONNECTION CAPACITY (Worst Case)

Reference: Portland Bolt, 2022.

Bolt Type = J429 GR.2 3/8" U-Bolt

Allowable Tensile Load =

$F_{Tall} =$ 2278 lbs.

Allowable Shear Load =

$F_{Vall} =$ 1367 lbs.

TENSILE FORCES

Reactions in Z direction: 5 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 9 lbs. (See Bentley Output)

Reactions in Y direction: 470 lbs. (See Bentley Output)

Resultant: 470 lbs.

No. of Supports = 1

No. of Bolts / Support = 1

Tension Design Load /Bolts =

$f_t =$ 5 lbs. < 2278 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

$f_v =$ 470 lbs. < 1367 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

$f_t / F_T + f_v / F_V \leq 1.0$
0.002 + 0.344 = 0.346 < 1.0 **Therefore, OK !**

Exhibit D



C Squared Systems, LLC
65 Dartmouth Drive
Auburn, NH 03032
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support@csquaredsystems.com

Calculated Radio Frequency Emissions Report



CT1440

5151 Park Avenue DUP1, Fairfield, CT

August 8, 2024

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of AT&T's antenna arrays mounted at 76' on a proposed bell tower located at 5151 Park Avenue DUP1 in Fairfield, CT. The coordinates of the monopole tower are 41° 13' 8.19" N, 73° 14' 41.12" W.

AT&T is proposing the following:

- 1) Install twelve (12) multi-band antennas, four (4) per sector to support its commercial LTE and 5G network.

This report considers the planned antenna configuration for AT&T¹ and Verizon² to calculate the resulting % Maximum Permissible Exposure (MPE) at ground level around the proposed facility.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm²). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment C of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment C contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

¹ As referenced to AT&T's Radio Frequency Design Sheet updated 12/01/2022 and TEP Northeast's Construction Drawings, dated 7/19/2024.

² As referenced to Verizon's Radio Frequency Design Sheet updated 01/13/2022

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{\text{GRF}^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2} \right) \times \text{Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Off Beam Loss is determined by the selected antenna patterns

Ground reflection factor (GRF) of 1.6

These calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

4. Antenna Inventory

Table 1 below outlines AT&T’s proposed antenna configuration for the site. The associated data sheets and antenna patterns for these specific antenna models are included in Attachments C.

Operator	Sector / Azimuth	TX Freq (MHz)	Power at Antenna (Watts)	Ant Gain (dBi)	Power EIRP (Watts)	Antenna Model	Beam Width	Mech. Tilt	Length (ft)	Antenna Centerline Height (ft)			
AT&T	Alpha / 20°	739	80	14.5	2255	TPA65R-BU6D	73	0	6.0	76			
		763	160	14.5	4509		73						
		850	80	15.1	2589		63						
		1900	160	18.1	10330		66						
		2100	240	18.4	16604		66						
		3500	86.75	25.65	31862	AIR 6419	-				0	2.35	76
		3700	54.22	25.65	19914								
	Beta / 130°	739	80	14.5	2255	TPA65R-BU6D	73	0	6.0	76			
		763	160	14.5	4509		73						
		850	80	15.1	2589		63						
		1900	160	18.1	10330		66						
		2100	240	18.4	16604		66						
		3500	86.75	25.65	31862	AIR 6419	-				0	2.35	76
		3700	54.22	25.65	19914								76
	Gamma / 270°	739	80	14.5	2255	TPA65R-BU6D	73	0	6.0	76			
		763	160	14.5	4509		73						
		850	80	15.1	2589		63						
		1900	160	18.1	10330		66						
		2100	240	18.4	16604		66						
		3500	86.75	25.65	31862	AIR 6419	-				0	2.35	76
		3700	54.22	25.65	19914								76

Table 1: Proposed Antenna Inventory³⁴

³ As referenced to AT&T’s Radio Frequency Design Sheet updated 12/01/2022 and TEP Northeast’s Construction Drawings, dated 7/19/2024.

⁴ Transmit power assumes 0 dB of cable loss.

5. Calculation Results

The calculated power density results are shown in Figure 1 below. For completeness, the calculations for this analysis range from 0 feet horizontal distance (directly below the antennas) to a value of 3,000 feet horizontal distance from the site. In addition to the other worst-case scenario considerations that were previously mentioned, the power density calculations to each horizontal distance point away from the antennas was completed using a local maximum off beam antenna gain (within ± 5 degrees of the true mathematical angle) to incorporate a realistic worst-case scenario.

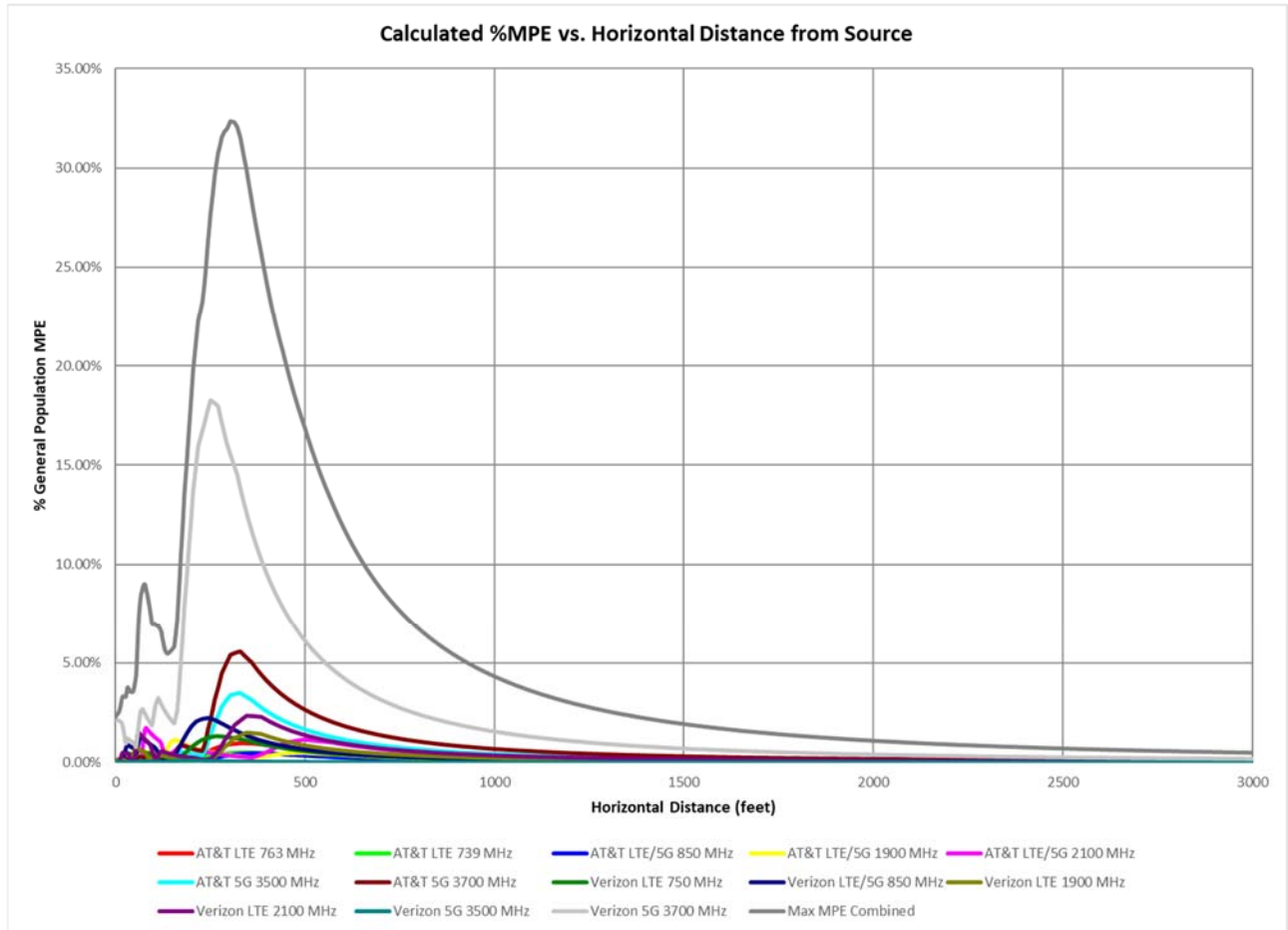


Figure 1: Graph of General Population % MPE vs. Distance

The highest percent of MPE (32.35% of the General Population limit) is calculated to occur at a horizontal distance of 304 feet from antennas. Please note that the percent of MPE calculations close to the site take into account off beam loss, which is determined from the vertical pattern of the antennas used. Therefore, RF power density levels may increase as the distance from the site increases. At distances of approximately 1500 feet and beyond, one would now be in the main beam of the antenna pattern and off beam loss is no longer considered. Beyond this point, RF levels become calculated solely on distance from the site and the percent of MPE decreases significantly as distance from the site increases.

Table 2 below lists percent of MPE values as well as the associated parameters that were included in the calculations. The highest percent of MPE value was calculated to occur at a horizontal distance of 304 feet from the site (reference Figure 1).

As stated in Section 3, all calculations assume that the antennas are operating at 100 percent capacity, that all antenna channels are transmitting simultaneously, and that the radio transmitters are operating at full power. Obstructions (trees, buildings etc.) that would normally attenuate the signal are not taken into account. In addition, a six foot height offset was considered in this analysis to account for average human height. As a result, the predicted signal levels are significantly higher than the actual signal levels will be from the final configuration. The results presented in Figure 1 and Table 2 assume level ground elevation from the base of the tower out to the horizontal distances calculated.

Carrier	Number of Transmitters	Power out of Base Station Per Transmitter (Watts)	Antenna Height (Feet)	Distance to the Base of Antennas (Feet)	Power Density (mW/cm ²)	Limit (mW/cm ²)	% MPE
AT&T 5G 3500 MHz	1	54.2	76.0	304	0.033859	1.000	3.39%
AT&T 5G 3700 MHz	1	86.8	76.0	304	0.054173	1.000	5.42%
AT&T LTE 739 MHz	1	80.0	76.0	304	0.002327	0.493	0.47%
AT&T LTE 763 MHz	1	160.0	76.0	304	0.004654	0.509	0.92%
AT&T LTE/5G 1900 MHz	1	160.0	76.0	304	0.003637	1.000	0.36%
AT&T LTE/5G 2100 MHz	1	240.0	76.0	304	0.003365	1.000	0.34%
AT&T LTE/5G 850 MHz	1	80.0	76.0	304	0.002114	0.567	0.37%
Verizon 5G 3500 MHz	1	20.0	68.5	304	0.000529	1.000	0.05%
Verizon 5G 3700 MHz	1	200.0	68.5	304	0.154801	1.000	15.48%
Verizon LTE 1900 MHz	1	160.0	67.0	304	0.010359	1.000	1.04%
Verizon LTE 2100 MHz	1	240.0	67.0	304	0.015524	1.000	1.55%
Verizon LTE 750 MHz	1	160.0	67.0	304	0.006236	0.500	1.25%
Verizon LTE/5G 850 MHz	1	160.0	67.0	304	0.009745	0.567	1.72%
						Total	32.35%

Table 2: Maximum Percent of General Population Exposure Values^{5,6,7}

⁵ Frequencies listed are representative of the operating band and are not the specific operating frequency.

⁶ The total % MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

⁷ In the case where antenna pattern data was unavailable, generic antenna pattern was used based on the frequency, bandwidth and gain of the antenna.

6. Conclusion

The above analysis verifies that RF exposure levels from the site with AT&T's proposed antenna configuration will be well below the maximum permissible levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using the conservative calculation methods and parameters detailed above, the maximum cumulative percent of MPE in consideration of all transmitters is calculated to be **32.35%** of the FCC limit (General Population/Uncontrolled). This maximum cumulative percent of MPE value is calculated to occur 304 feet away from the site.

7. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



Report Prepared By: Ram Acharya
RF Engineer
C Squared Systems, LLC

August 7, 2024
Date



Reviewed/Approved By: Martin Lavin
Senior RF Engineer
C Squared Systems, LLC

August 8, 2024
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2019, IEEE Standard Safety Levels With Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2021, IEEE Recommended Practice for Measurements and Computations of Electric, Magnetic, and Electromagnetic Fields with Respect to Human Exposure to Such Fields, 0 Hz-300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure⁸

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure⁹

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 3: FCC Limits for Maximum Permissible Exposure

⁸ Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

⁹ General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

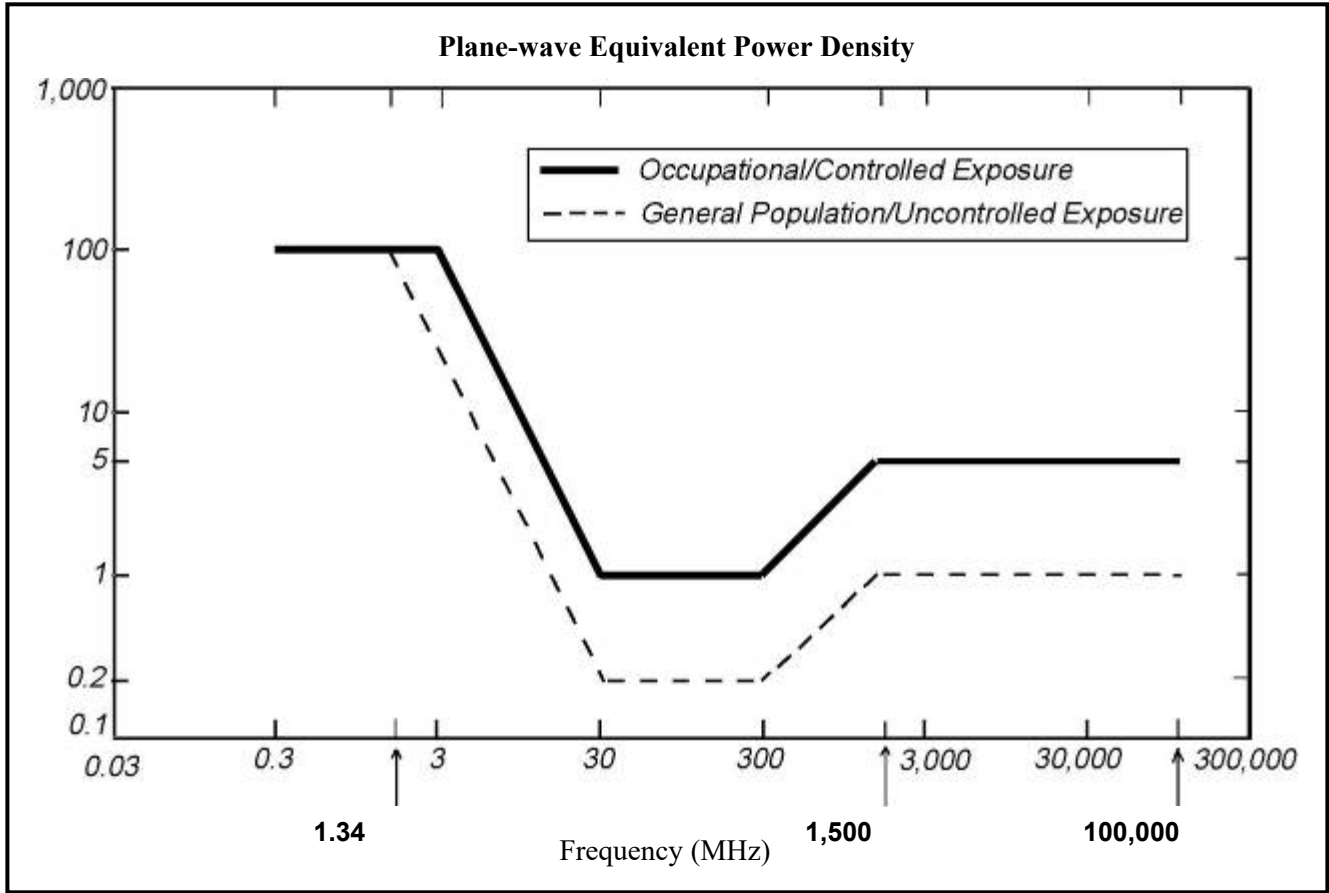
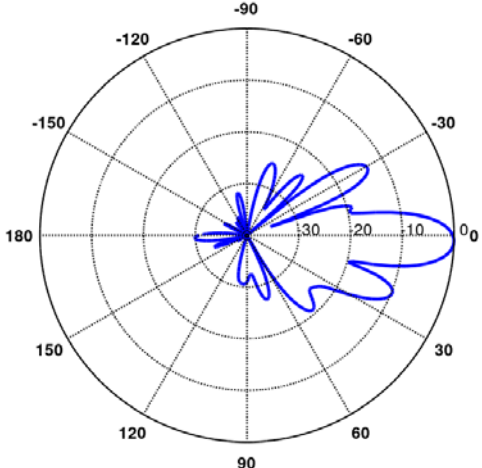
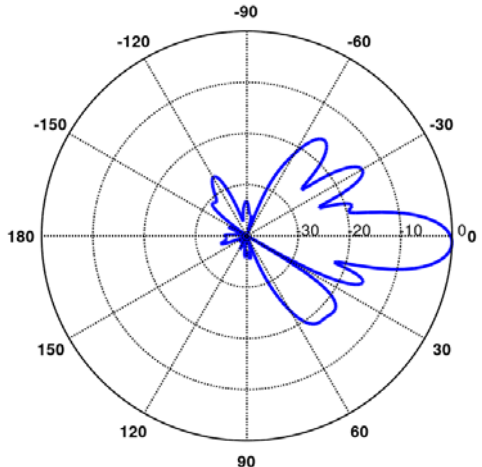
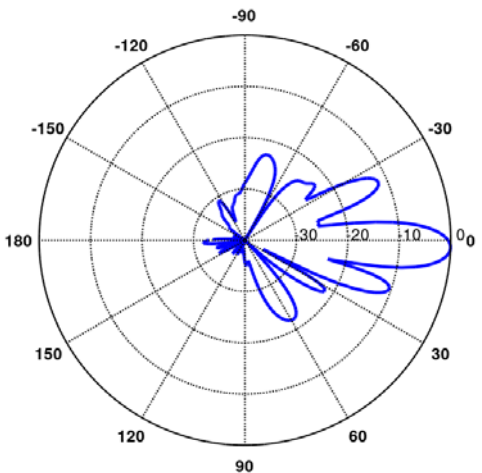


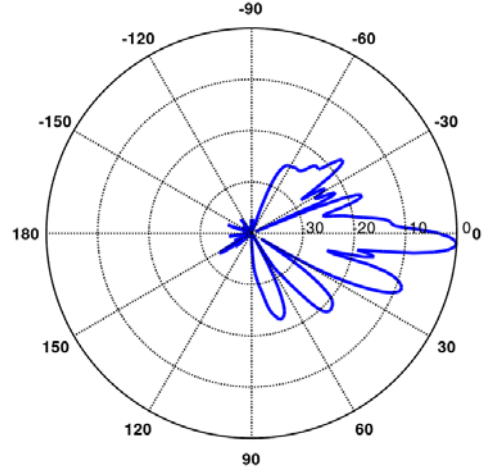
Figure 2: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Model Data Sheets and Electrical Patterns

<p>739 MHz</p> <p>Manufacturer: CCI Model #: TPA65R-BU6D Frequency Band: 698-806 MHz Gain: 14.5 dBi Vertical Beamwidth: 12.8° Horizontal Beamwidth: 73° Polarization: Dual Linear 45° Dimensions (L x W x D): 71.2" x 20.7" x 7.7"</p>	
<p>763 MHz</p> <p>Manufacturer: CCI Model #: TPA65R-BU6D Frequency Band: 698-806 MHz Gain: 14.5 dBi Vertical Beamwidth: 12.8° Horizontal Beamwidth: 73° Polarization: Dual Linear 45° Dimensions (L x W x D): 71.2" x 20.7" x 7.7"</p>	
<p>850 MHz</p> <p>Manufacturer: CCI Model #: TPA65R-BU6D Frequency Band: 824-896 MHz Gain: 15.1 dBi Vertical Beamwidth: 11.1° Horizontal Beamwidth: 63° Polarization: Dual Linear 45° Dimensions (L x W x D): 71.2" x 20.7" x 7.7"</p>	

1900 MHz

Manufacturer: CCI
 Model #: TPA65R-BU6D
 Frequency Band: 1850-1990 MHz
 Gain: 18.1 dBi
 Vertical Beamwidth: 5.2°
 Horizontal Beamwidth: 66°
 Polarization: Dual Linear 45°
 Dimensions (L x W x D): 71.2" x 20.7" x 7.7"



2100 MHz

Manufacturer: CCI
 Model #: TPA65R-BU6D
 Frequency Band: 1920-2180 MHz
 Gain: 18.4 dBi
 Vertical Beamwidth: 4.8°
 Horizontal Beamwidth: 66°
 Polarization: Dual Linear 45°
 Dimensions (L x W x D): 71.2" x 20.7" x 7.7"

