



**Town of Ashland
Planning Department**

101 Main St.
Ashland, MA 01721
508.881.0101
Ashlandmass.com/193/Planning

Application for Planning Board Approval/Permit

Note: Application must be complete, with a certified plot plan and all application fees to be accepted.

Property Information:

Street Address: 34 Albert Ray Drive

Zoning District: MA014 Overlay District: _____

Assessor's Map: 9 Lot: 173 Deed Book: 30867 Page: 0381

Current Property Owner: Crown Atlantic Company LLC

Permit/Approval Sought:

___ Special Permit (§9.3) ___ Special Permit Amendment/Modification ___ Design Plan Review (§9.6)

___ Site Plan Review (§9.4) ___ Site Plan Modification ___ Scenic Road Permit (Ch. 249 §20)

___ Earth Removal Permit (Ch. 242 §3) ___ Site Alteration Special Permit (§5.8)

___ Subdivision (Include Subdivision Application Form) Wireless Communication Facilities (§6.4)

Use Type: Residential: ___ Commercial: ___ Industrial: ___ Mixed Use:

Applicant Information:

Owner: ___ Tenant: ___ Prospective Purchaser/Tenant: ___

Name: AT&T Mobility

Address: 700 Bell Street, Akron, OH 44307

Phone: 630-470-1400 Email: William.Gates@crowncastle.com

Agent's Name: Katie Adams

Agent's Address: 100 Apollo Drive Suite 303, Chelmsford, MA 01824

Agent's Phone: 781-392-7547 Agent's Email: kadams@nbcllc.com

Additional Information:

Are all real estate taxes and other assessments to the Town current?: yes

Is the parcel on a scenic road?: N Is the parcel in a flood plain?: N

Is the parcel within 100 feet of a wetland or 200 feet of a river: N

Is this an amendment to a previously issued Special Permit? (attach approved permit): N

Date structure(s) built?: _____



Description of the Relief Sought: (attach additional pages if needed)

AT&T modification to existing wireless communication facility. AT&T to remove and replace antennas and ancillary equipment per plans.

This collocation will be aesthetically consistent with the existing structure and AT&Ts existing antenna array .

What specific zoning bylaws and/or Special Permit types are relevant to this application?:

Section 6.4 - Wireless Communications Facility

Benefits of Project:

Modifications to equipment to keep current with evolving technologies, to provide the best coverage for their customers.

Existing use and condition of the property and surrounding neighborhood: (Please list all non-conformities.)

Existing Wireless Communication Cell Tower.

Attach Building Permit Denial letter if applicable.

By signing below you assert this application is complete and accurate to the best of your knowledge:

Signatures:

Applicant/Agent: Katie Adams Applicant's Name: Katie Adams

Agent's Relationship to Applicant: Agent for AT&T Firm: Network Building + Consulting and Crown Castle

Owner: _____ Owner's Name: _____

Note: If the applicant is not the owner, please have the owner sign above or submit a letter of permission with the application.



17056

Network Building & Consulting LLC SA

1777 Sentry Parkway West, VEVA 17, Suite 400
Blue Bell, PA 19422
(410)712-7092



65-330/550

CHECK DATE

9/9/22

PAY Four Hundred and 0/100 Dollars

TO Town of Ashland

AMOUNT

\$400.00

Void After 6 Months

Craig J. Sant

AUTHORIZED SIGNATURE

⑈000 17056⑈ ⑆055003308⑆ 1210000891825⑈

Network Building & Consulting LLC SA

17056

Network Building & Consulting, LLC

Check Date: 9/9/22

Check Request#: CR015755

Project /Site ID: 100788/ 1574

Site Name: 806042

Purpose: Special Permit Application Fee

Memo 1: Check for Special Permit Application fee AT&T @ 806042_586235, Please contact Katie Adams - kadams@nbcllc.com with questions

Memo 2:

Memo 3:

Memo 4:

17056

Security features. Details on back.





8000 Avalon Blvd dSuite 600 & 700
Alpharetta, GA 30009

Phone: (470) 235-6275
www.crowncastle.com

Crown Castle Letter of Authorization


**MA - TOWN OF ASHLAND
Planning Department
101 MAIN STREET, 2ND FLOOR
ASHLAND, TX 77216-3112**

**Re: Application for Zoning/Building Permit
Crown Castle telecommunications site at: ALBERT RAY DRIVE FOUNTAIN AND
GREEN STREETS, ASHLAND, MA 01721**

CROWN ATLANTIC COMPANY LLC ("Crown Castle") hereby authorizes AT&T MOBILITY, including their Agent, to act as our Agent in the processing of all zoning applications, building permits and approvals through the MA - TOWN OF ASHLAND for the existing wireless communications site described below:

**Crown Site ID/Name: 806042/BOS ASHLAND 959026
Customer Site ID: MAL01085/ASHLAND
Site Address: ALBERT RAY DRIVE FOUNTAIN AND GREEN STREETS,
ASHLAND, MA 01721
APN: ASHL-000009-000173**

Crown Castle

By:  Date: 9.19.2022
Terry Holmes
Real Estate Specialist

August 8, 2022

To The Planning Board
34 Albert Ray Drive
Crown Atlantic Company LLC
Abutters To Map 9 Parcel 173

PARCEL ID	PARCEL LOCATION	OWNER NAME 1	OWNER NAME 2	MAILING ADDRESS	CITY/TOWN	STATE	ZIP
05-028-00-000	26 DEARTH CIRCLE	KREH KURT	SONJA KREH	26 DEARTH CIRCLE	ASHLAND	MA	01721
09-163-00-000	16 DEARTH CIRCLE	SURILOV EVGENIY	SVETLANA SURLOV	16 DEARTH CIRCLE	ASHLAND	MA	01721
09-164-00-000	20 DEARTH CIRCLE	DANGEL JEFFREY M	TRUSTEE OF THE JEFFREY M DANGEL FAMILY TRUST	20 DEARTH CIRCLE	ASHLAND	MA	01721
09-165-00-000	23 DEARTH CIRCLE	BRAVACOS LOUIS J JR	GRETCHEN BRAVACOS	23 DEARTH CIRCLE	ASHLAND	MA	01721
09-166-00-000	19 DEARTH CIRCLE	ALFANO JAMES A	WOLF ANDREA	19 DEARTH CIRCLE	ASHLAND	MA	01721
09-167-00-000	15 DEARTH CIRCLE	SOOD AMAN	KHETRAPAL NIDHI	15 DEARTH CIRCLE	ASHLAND	MA	01721
09-168-00-000	11 DEARTH CIRCLE	PARISI ROBERT J & ABELLI LINDA J	TRUSTEES ROBERT J PARISI TRUST	11 DEARTH CIRCLE	ASHLAND	MA	01721
09-169-00-000	7 DEARTH CIRCLE	YARGER MARK A	ROXANNE F YARGER	7 DEARTH CIRCLE	ASHLAND	MA	01721
09-170-00-000	22 ALBERT RAY DR	VISWANATHAN RAJESH	SUBASREE V VISWANATHAN	22 ALBERT RAY DR	ASHLAND	MA	01721
09-171-00-000	26 ALBERT RAY DR	KRISHNAN VENKATA S	LAKSHMI S KRISHNAN	26 ALBERT RAY DR	ASHLAND	MA	01721
09-172-00-000	30 ALBERT RAY DR	SIVAK JAMES M	CARLA SIVAK	30 ALBERT RAY DR	ASHLAND	MA	01721
09-174-00-000	38 ALBERT RAY DR	BOUDREAU JEFFERY	COURTNEY CAROLYN E	38 ALBERT RAY DR	ASHLAND	MA	01721
09-175-00-000	0 GREEN ST REAR	PECK KEELEY	TROSINSKI KEVIN	39 WILLIAM J HEIGHTS	FRAMINGHAM	MA	01701
10-001-00-000	35 ALBERT RAY DR	HELLERMAN TRACY	JENNIFER HELLERMAN	35 ALBERT RAY DR	ASHLAND	MA	01721
10-002-00-000	31 ALBERT RAY DR	MACDONALD RONALD F	ELIZABETH ANN MACDONALD	31 ALBERT RAY DR	ASHLAND	MA	01721
10-003-00-000	10 ENSLIN CIRCLE	GUSTAVSON PAUL F	CYNTHIA GUSTAVSON	10 ENSLIN CIRCLE	ASHLAND	MA	01721

The above reflects the latest information available on our records.



Richard E. Ball, M.A.A.
Director of Assessing

Date 8/8/22

16 parcels/abutters

PARID: 0140090017300000
CROWN ATLANTIC COMPANY LLC

MUNICIPALITY: ASHLAND
34 ALBERT RAY DR

LUC: 431
PARCEL YEAR: 2023

Property Information

Property Location: 34 ALBERT RAY DR

Class: I-INDUSTRIAL

Use Code (LUC): 431-TELEPHONE RELAY TOWERS

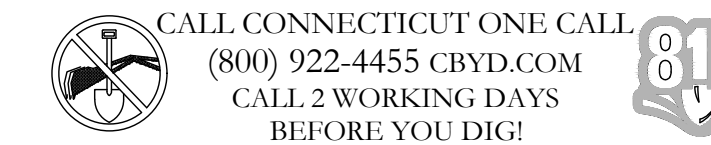
District: MA014 - ASHLAND

Deeded Acres: .6900

Square Feet: 30,056

Owner

Owner	Co-Owner	City	Address	State	Zip Code	Deed Book/Page
CROWN ATLANTIC COMPANY P M B 353		MCMURRAY	4017 WASHINGTON RD	PA	15317	30867/0381
LLC						



CALL CONNECTICUT ONE CALL
(800) 922-4455 CBVD.COM
CALL 2 WORKING DAYS
BEFORE YOU DIG!



700 BELL STREET
AKRON, OHIO 44307



12 GILL STREET, SUITE 5800
WOBURN, MA 01801



TOWER
ENGINEERING
PROFESSIONALS

326 TRYON RD
RALEIGH, NC 27603
(919) 661-6351

TEP JOB #: 61677.633796

AT&T SITE NUMBER:
MA1085

BU #: **806042**
BOS ASHLAND 959026

34 ALBERT RAY DRIVE
ASHLAND, MA 01721
(MIDDLESEX COUNTY)

EXISTING 99' MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	01/05/22	KRS	PRELIMINARY	DA
B	02/22/22	SVP	PRELIMINARY	DA
C	04/07/22	SVP	PRELIMINARY	DA
0	05/20/22	SVP	CONSTRUCTION	DA



05/20/22

IT IS A VIOLATION OF LAW FOR ANY PERSON,
UNLESS THEY ARE ACTING UNDER THE DIRECTION
OF A LICENSED PROFESSIONAL ENGINEER,
TO ALTER THIS DOCUMENT.

SHEET NUMBER:

T-1

REVISION:

0

AT&T SITE NUMBER: MA1085
AT&T SITE NAME: ASHLAND
AT&T FA CODE: 10031986
AT&T PACE NUMBER: MRCTB053860, MRCTB056533, MRCTB055546, MRCTB053629, MRCTB054848, MRCTB054932, MRCTB055960
AT&T PROJECT: 5G NR SOFTWARE RADIO || 5G NR ACTIVATION, 5G NR RADIO || 5G NR 1SR CBAND, 5G NR RADIO || 5G NR 1DR-1, 5G NR SOFTWARE RADIO || 5G NR ACTIVATION, ANTENNA MODIFICATIONS || 4TX4RX SOFTWARE RETROFIT, CELL SITE RF MODIFICATIONS || BBU ADD

BUSINESS UNIT #: 806042
SITE ADDRESS: 34 ALBERT RAY DRIVE
 ASHLAND, MA 01721
COUNTY: MIDDLESEX
STRUCTURE TYPE: MONOPOLE
TOWER HEIGHT: 99'-0"

SITE INFORMATION

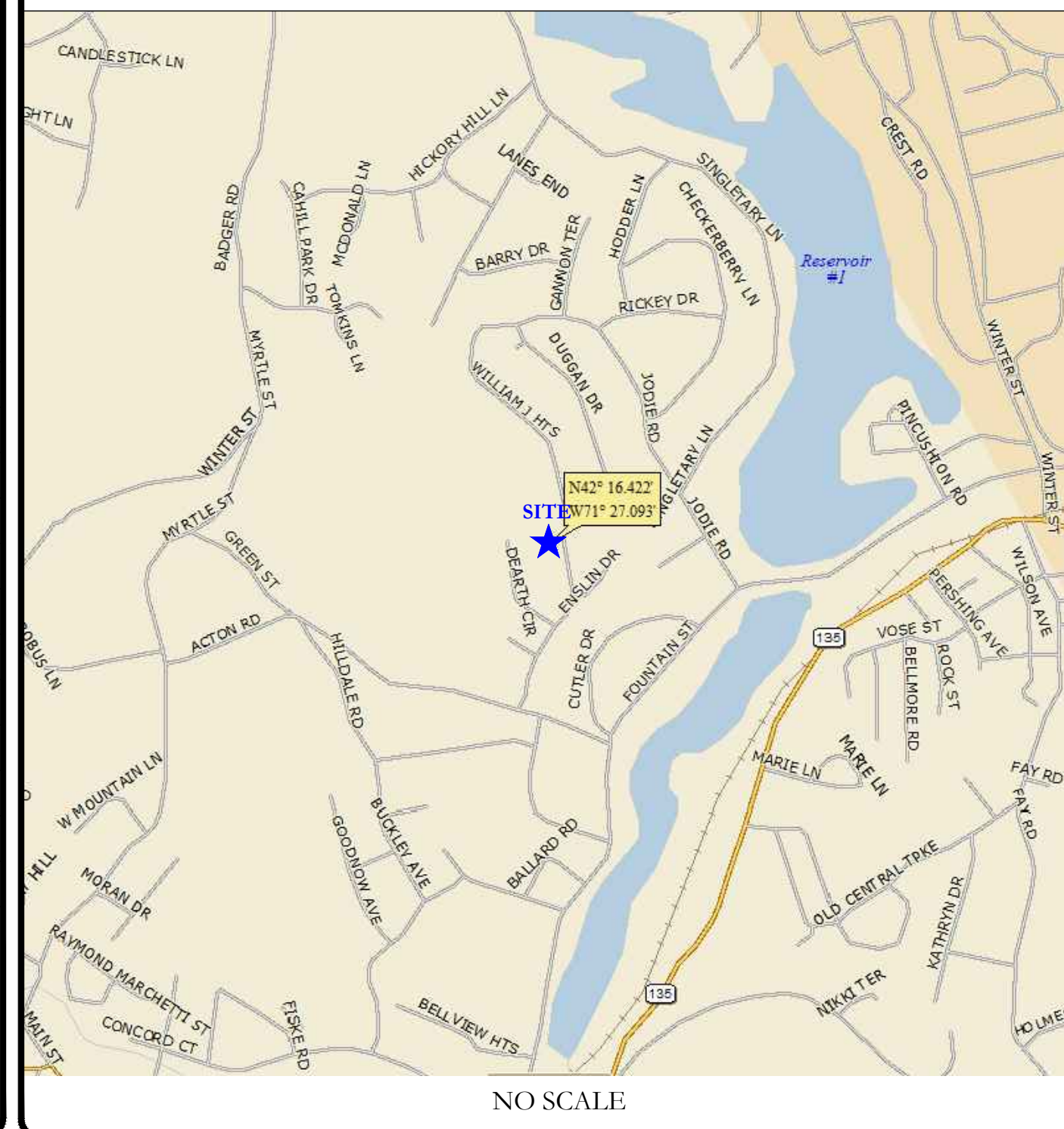
CROWN CASTLE USA INC. BOS ASHLAND 959026
 SITE NAME:
 SITE ADDRESS: 34 ALBERT RAY DRIVE
 ASHLAND, MA 01721
 COUNTY: MIDDLESEX
 PARCEL #: 014/009.0-0173-0000.0
 AREA OF CONSTRUCTION: EXISTING
 LATITUDE: 42° 16' 25.30" (42.273694)
 LONGITUDE: -71° 27' 5.60" (-71.451556)
 LAT/LONG TYPE: NAD83
 GROUND ELEVATION: 322 ±(AMSL)
 CURRENT ZONING: RESIDENTIAL A
 JURISDICTION: TOWN OF ASHLAND
 OCCUPANCY CLASSIFICATION: U
 TYPE OF CONSTRUCTION: IIB
 A.D.A. COMPLIANCE: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
 PROPERTY OWNER: CROWN ATLANTIC COMPANY LLC
 4017 WASHINGTON RD
 MCMURRAY, PA 15317
 TOWER OWNER: CROWN CASTLE USA INC.
 2000 CORPORATE DRIVE
 CANONSBURG, PA 15317
 CARRIER/APPLICANT: AT&T MOBILITY
 700 BELL STREET
 AKRON, OHIO 44307
 ELECTRIC PROVIDER: NSTAR
 (800) 572-9337
 TELCO PROVIDER: COMCAST
 (800) 391-1000

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	COMPOUND PLAN
C-1.2	EQUIPMENT LAYOUT
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	EQUIPMENT DETAILS
C-4	EQUIPMENT DETAILS
C-4.1	EQUIPMENT DETAILS
C-5	COLOR CODE CHART
C-6	LTE RET NAMING CONVENTION
E-1	ELECTRICAL NOTES
E-2	EQUIPMENT ONE-LINE DIAGRAM
G-1	GROUNDING SCHEMATIC
G-2	GROUNDING DETAILS
ATTACHED	PLUMBING DIAGRAMS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 22x34. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

LOCATION MAP



NO SCALE

SITE PHOTO



PROJECT TEAM

A&E FIRM: TOWER ENGINEERING PROFESSIONALS
 326 TRYON ROAD
 RALEIGH, NC 27603
 JOSEPH T. CRESS - PROJECT MANAGER
 (919) 661-6351
 GRAHAM M. ANDRES - CIVIL ENGINEER
 (919) 661-6351
 GRAHAM M. ANDRES - ELECTRICAL ENGINEER
 (919) 661-6351
 CROWN CASTLE USA INC. DISTRICT CONTACTS:
 12 GILL STREET, SUITE 5800
 WOBURN, MA 01801
 PAUL.PEDICONE - PROJECT MANAGER
 PAUL.PEDICONE@CROWNCastle.COM

PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:

- REMOVE (3) 800-10965 ANTENNAS
- REMOVE (3) OPA-65R-LCUU-H8 ANTENNAS
- REMOVE (3) RRUS-11 B12 RRU's
- REMOVE (6) 782-10250 DIPLEXERS
- REMOVE (2) DC6-48-60-18-8F
- REMOVE (1) PWRT-608-S POWER CABLE
- REMOVE (6) 7/8" COAX CABLES
- REMOVE (3) DC TRUNKS AND (1) FIBER TRUNK
- INSTALL (3) AIR6449 B77D ANTENNAS
- INSTALL (3) AIR6419 B77G ANTENNAS
- INSTALL (3) DMP65R-BU6EA-K ANTENNAS
- INSTALL (3) RRUS 4449 B5/B12 RRU
- INSTALL (1) DC9-48-60-24-8C-EV
- INSTALL (3) DC TRUNK 6 AWG
- INSTALL (1) FIBER TRUNK 24 PAIR
- INSTALL (3) Y-CABLES
- INSTALL (3) ANTENNA STANDOFF SITEPRO1 PART# PM1

GROUND SCOPE OF WORK:

- INSTALL (1) 6648 W/ XCEDE CABLE
- INSTALL (2) RECTIFIER IN EXISTING POWER PLANT
- INSTALL (1) DC12-48-60RDM

APPLICABLE CODES/REFERENCE DOCUMENTS

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	MA STATE BUILDING CODE/2015 IBC
MECHANICAL	MA STATE BUILDING CODE/2015 IMC
ELECTRICAL	MASSACHUSETTS ELECTRICAL CODE/2020 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS: PAUL J. FORD AND COMPANY
 DATED: 02/24/2022
 MOUNT ANALYSIS: KIMLEY-HORN AND ASSOCIATES, INC.
 DATED: 12/07/2021
 RFDS REVISION: 1.0
 DATED: 10/06/2021
 ORDER ID: 586235
 REVISION: 0

NOTE:
 THE POWER DESIGN FOR ANY AC ELECTRICAL POWER CHANGES IS TO BE PERFORMED BY OTHERS AND IS SHOWN HEREIN FOR REFERENCE PURPOSES ONLY. AT&T IS SOLELY RESPONSIBLE FOR THE ELECTRICAL POWER DESIGN.

NOTE:
 PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER.

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

- NOTICE TO PROCEED— NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800-788-7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
- "LOOK UP" – CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT: THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
- PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
- ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED–STD–10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).
- ALL SITE WORK TO COMPLY WITH OAS–STD–10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE," CED–STD–10294 "STANDARD FOR INSTALLATION OF MOUNTS AND APPURTENANCES," AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
- IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR 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.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
- ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
- ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
- CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
- ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., AND/OR LOCAL UTILITIES.
- THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
- THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED IN THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
- CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
- THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
- CONTRACTOR 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
- NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GREENFIELD GROUNDING NOTES:

- 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.
- THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
- THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
- METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
- 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.
- EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
- CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
- ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
- ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
- EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
- ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
- COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
- ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
- APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- BOND ALL METALLIC OBJECTS WITHIN 6 FT OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
- GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (I.E., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
- ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
- BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM. THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY).

GENERAL NOTES:

- FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR: AT&T
CARRIER: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
TOWER OWNER: CROWN CASTLE USA INC.
- THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
- THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
- NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
- SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE CONTACTED AS SOON AS POSSIBLE.
- PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR 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 CROWN CASTLE.
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR 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.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
- CONTRACTOR IS TO PERFORM A SITE INVESTIGATION AND IS TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
- THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF CROWN CASTLE USA INC. CONTRACTOR 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
- UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90° AT TIME OF PLACEMENT.
- CONCRETE EXPOSED TO FREEZE–THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES, AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER–TO–CEMENT RATIO (W/C) OF 0.45.
- ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
#4 BARS AND SMALLER.....40 ksi
#5 BARS AND LARGER.....60 ksi
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.....3"
CONCRETE EXPOSED TO EARTH OR WEATHER:
#6 BARS AND LARGER.....2"
#5 BARS AND SMALLER.....1-1/2"
CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
SLAB AND WALLS.....3/4"
BEAMS AND COLUMNS.....1-1/2"
- A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
 - ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
 - ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PER THE GOVERNING JURISDICTION.
- EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
- ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (I.E. PANEL BOARD AND CIRCUIT ID'S).
- PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
- ALL THE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
- ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
- ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
- ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
- ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
- LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
- WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
- SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
- CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON–PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (I.E. POWDER–ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO HIDE OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
- EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
- METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
- NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
- THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
- THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
- INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "AT&T".
- ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

CONDUCTOR COLOR CODE		
SYSTEM	CONDUCTOR	COLOR
120/240V, 1Ø	A PHASE	BLACK
	B PHASE	RED
	NEUTRAL	WHITE
	GROUND	GREEN
120/208V, 3Ø	A PHASE	BLACK
	B PHASE	RED
	C PHASE	BLUE
	NEUTRAL	WHITE
277/480V, 3Ø	GROUND	GREEN
	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
DC VOLTAGE	NEUTRAL	GREY
	GROUND	GREEN
	POS (+)	RED**
	NEG (-)	BLACK**

APWA UNIFORM COLOR CODE:

- WHITE PROPOSED EXCAVATION
- PINK TEMPORARY SURVEY MARKINGS
- RED ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES
- YELLOW GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
- ORANGE COMMUNICATION, ALARM OR SIGNAL LINES, CABLES, OR CONDUIT AND TRAFFIC LOOPS
- BLUE POTABLE WATER
- PURPLE RECLAIMED WATER, IRRIGATION, AND SLURRY LINES
- GREEN SEWERS AND DRAIN LINES

* SEE NEC 210.5(C)(1) AND (2)
** POLARITY MARKED AT TERMINATION

ABBREVIATIONS:

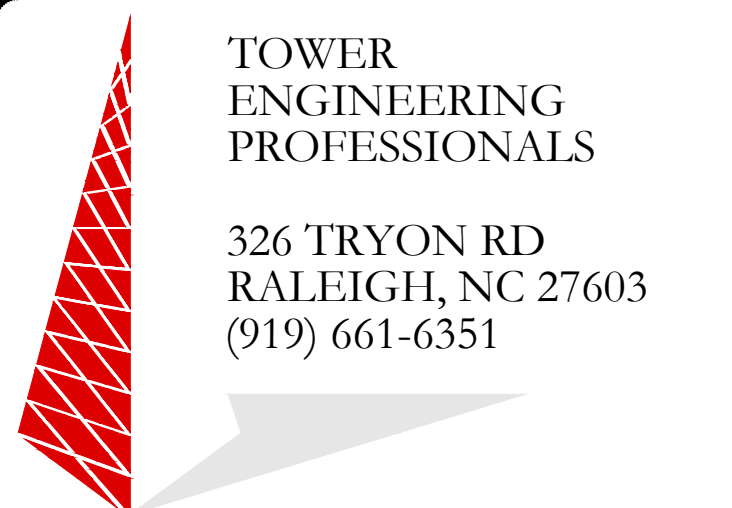
- ANT ANTENNA
- (E) EXISTING
- FF FACILITY INTERFACE FRAME
- GEN GENERATOR
- GPS GLOBAL POSITIONING SYSTEM
- GSM GLOBAL SYSTEM FOR MOBILE
- LTE LONG TERM EVOLUTION
- MGB MASTER GROUND BAR
- MW MICROWAVE
- (N) NEW
- NEC NATIONAL ELECTRIC CODE
- (P) PROPOSED
- PP POWER PLANT
- QTY QUANTITY
- RECT RECTIFIER
- RBS RADIO BASE STATION
- RET REMOTE ELECTRIC TLT
- RFDS RADIO FREQUENCY DATA SHEET
- RRH REMOTE RADIO HEAD
- RRU REMOTE RADIO UNIT
- SIAD SMART INTEGRATED DEVICE
- TMA TOWER MOUNTED AMPLIFIER
- TP TYPICAL
- UMTS UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
- W.P. WORK POINT



700 BELL STREET
AKRON, OHIO 44307



12 GILL STREET, SUITE 5800
WOBRUN, MA 01801



TOWER
ENGINEERING
PROFESSIONALS

326 TRYON RD
RALEIGH, NC 27603
(919) 661-6351

TEP JOB #: 61677.633796

**AT&T SITE NUMBER:
MA1085**

**BU #: 806042
BOS ASHLAND 959026**

**34 ALBERT RAY DRIVE
ASHLAND, MA 01721
(MIDDLESEX COUNTY)**

EXISTING 99' MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	01/05/22	KRS	PRELIMINARY	DA
B	02/22/22	SVP	PRELIMINARY	DA
C	04/07/22	SVP	PRELIMINARY	DA
D	05/20/22	SVP	CONSTRUCTION	DA



05/20/22

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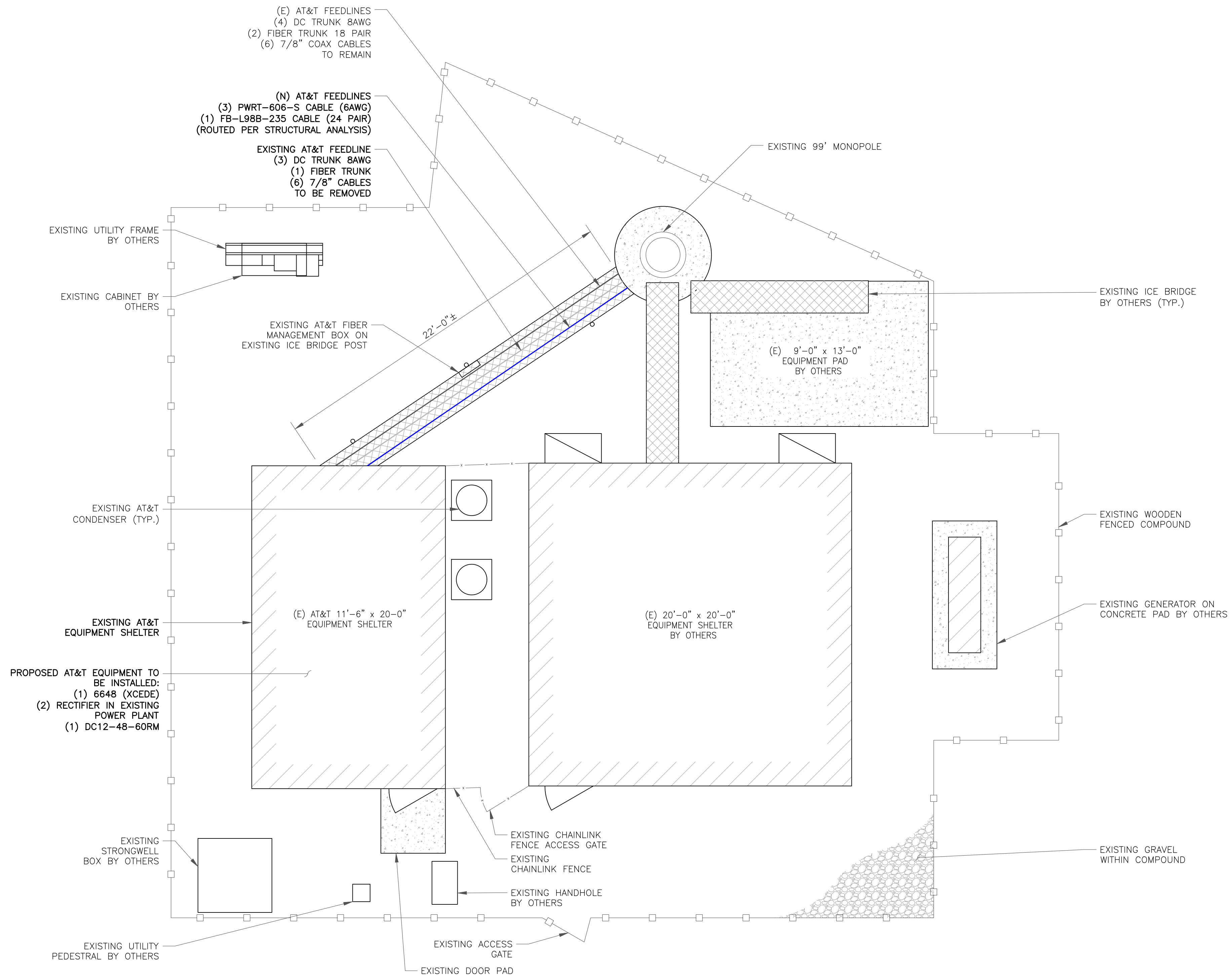
T-2

REVISION:

0

NOTE:
TEP DID NOT CONDUCT FIELD VISIT TO VERIFY LAYOUT. LAYOUT SHOWN BELOW GENERATED FROM INFORMATION PROVIDED BY CROWN CASTLE. FIELD VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION.

- GROUND SCOPE OF WORK:**
- REMOVE (1) DC6-48-60-RM
 - INSTALL (1) 6648 (XCEDE)
 - INSTALL (2) RECTIFIER IN EXISTING POWER PLANT
 - INSTALL (1) DC12-48-60RM



at&t
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AKRON, OHIO 44307

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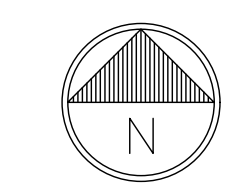


05/20/22

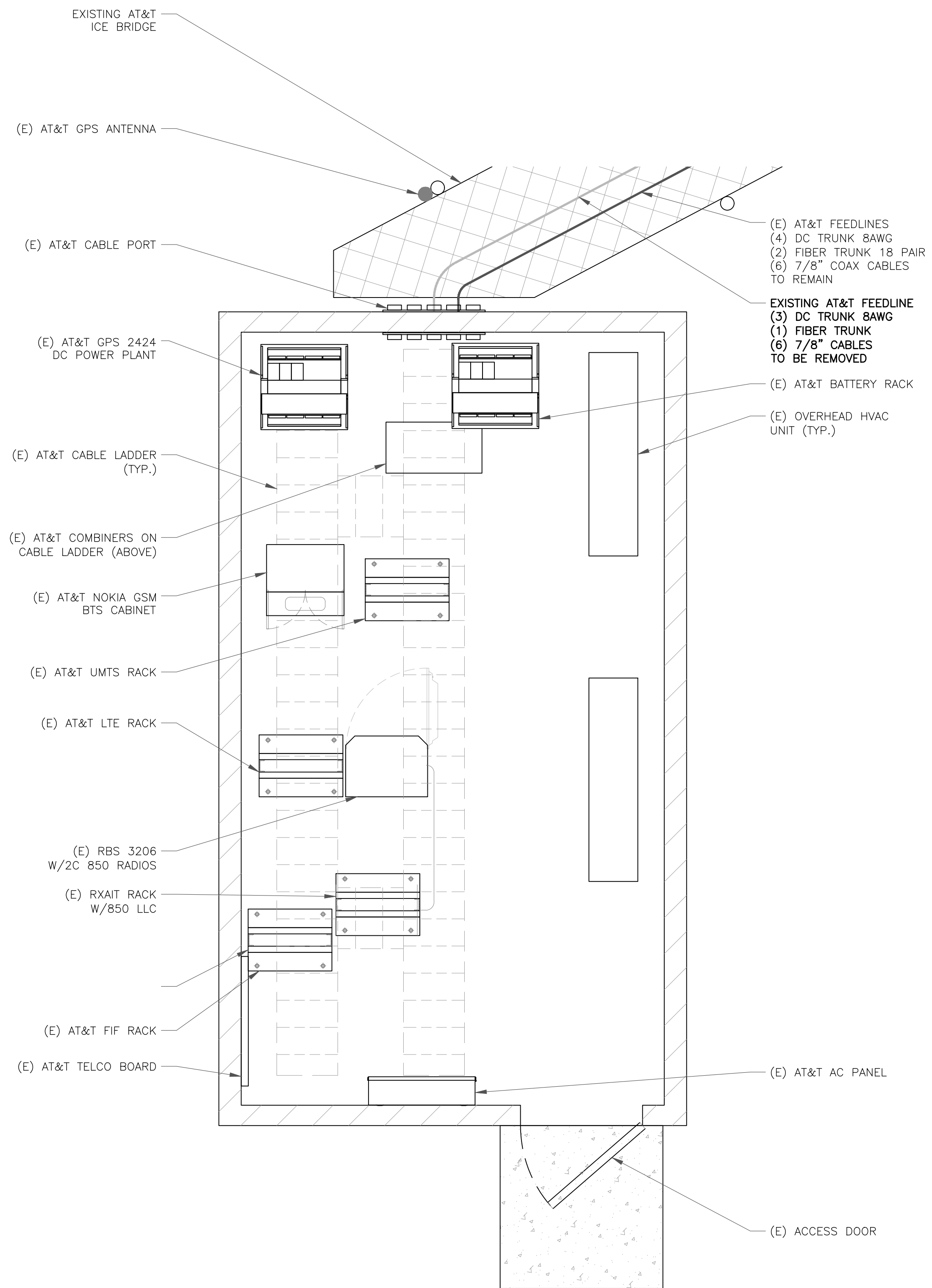
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REVISION: 0

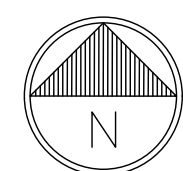
1 COMPOUND PLAN
SCALE: 1/4"=1'-0" (FULL SIZE)
1/8"=1'-0" (11x17)



NOTE:
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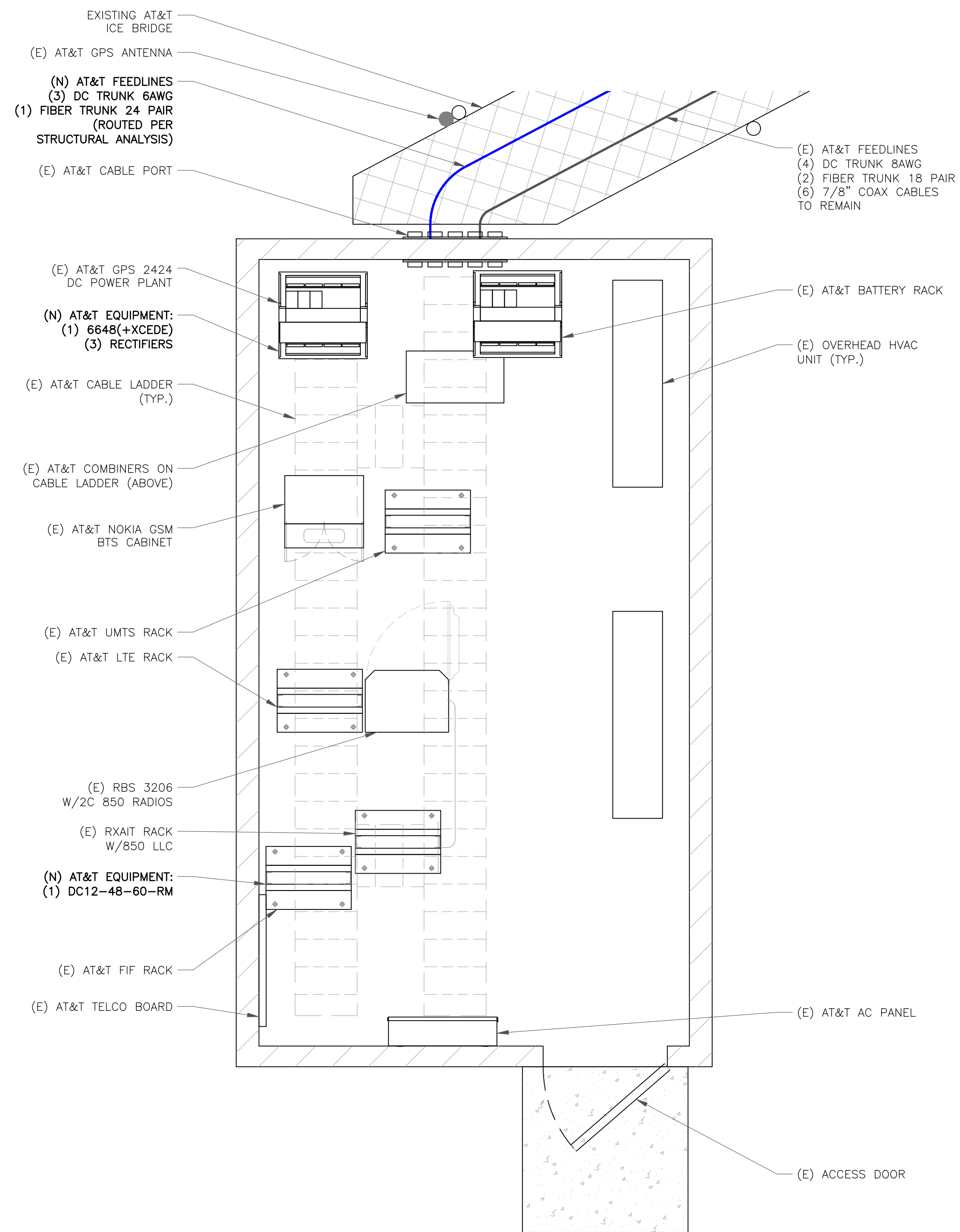


1 EXISTING EQUIPMENT LAYOUT
SCALE: 1/2"=1'-0" (FULL SIZE)
1/4"=1'-0" (11x17)

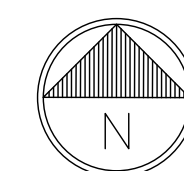


NOTE TITLE

- INSTALL (1) 6648 (XCEDE)
- INSTALL (2) RECTIFIER IN EXISTING POWER PLANT
- INSTALL (1) DC12-48-60RM



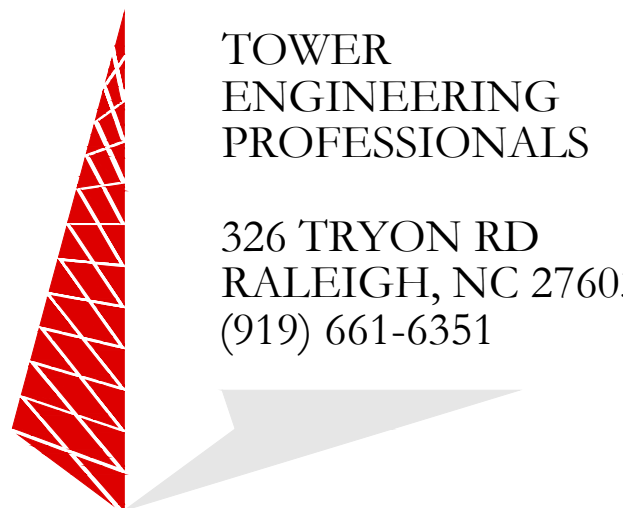
2 FINAL EQUIPMENT LAYOUT
SCALE: 1/2"=1'-0" (FULL SIZE)
1/4"=1'-0" (11x17)



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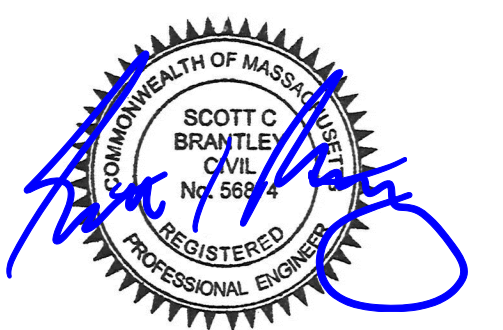
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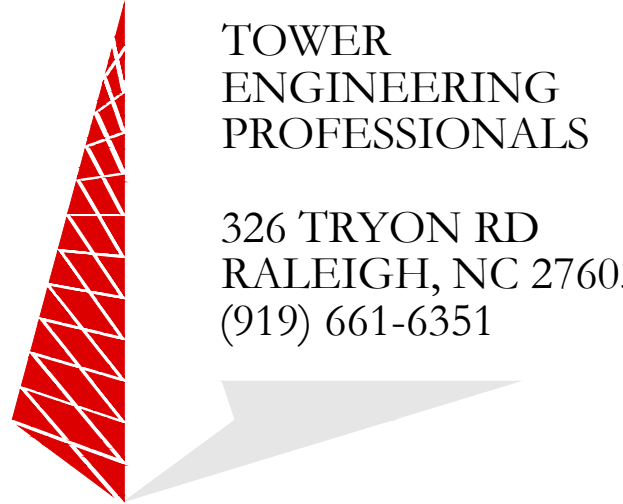
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0	05/20/22	SVP	CONSTRUCTION	DA



05/20/22

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SHEET NUMBER:

C-3

REVISION:

0

EXISTING ANTENNA SCHEDULE (RFDS 03/25/2022, VERSION 2.00)

SECTOR	ANTENNA				TMA	RRH	RAYCAP	DIPLEXER	TRANSMISSION LINE			
	POS.	TECHNOLOGY	AZIMUTH	MODEL NO.	RAD CL.	MODEL NO.	MODEL NO.	MODEL NO.	MODEL NO.	DC POWER	FIBER	COAX
A	A1	LTE WCS	10°	*CCI OPA-65R-LCUU-H8	87'-0"	-	***(1) RRUS-32 B30	-	-	*(3) DC TRUNK 8AWG (4) DC TRUNK 8AWG	*(1) FIBER TRUNK (2) FIBER TRUNK	*(6) 7/8" COAX (6) 7/8" COAX
	A2	LTE 700, LTE AWS	10°	*KATHREIN 800-10965	87'-0"	-	(1) RADIO 4478 B14 (1) RRUS-32 B66A	*(1) RAYCAP DC6-48-60-0-8F	-			
	A3	LTE 700, LTE 1900, UMTS 850	10°	***KATHREIN 800-10965	87'-0"	-	*(1) RRUS-11 B12 (1) RRUS-32 B2	-	*(2) KATHREIN - 782-10250			
B	B1	LTE WCS	130°	*CCI OPA-65R-LCUU-H8	87'-0"	-	***(1) RRUS-32 B30	-	-			
	B2	LTE 700, LTE AWS	130°	*KATHREIN 800-10965	87'-0"	-	(1) RADIO 4478 B14 (1) RRUS-32 B66A	*(1) RAYCAP DC6-48-60-0-8F	-			
	B3	LTE 700, LTE 1900, UMTS 850	130°	KATHREIN 800-10965	87'-0"	-	*(1) RRUS-11 B12 (1) RRUS-32 B2	(1) RAYCAP DC6-48-60-18-8F	*(2) KATHREIN - 782-10250			
C	C1	LTE WCS	250°	*CCI OPA-65R-LCUU-H8	87'-0"	-	***(1) RRUS-32 B30	-	-			
	C2	LTE 700, LTE AWS	250°	*KATHREIN 800-10965	87'-0"	-	(1) RADIO 4478 B14 (1) RRUS-32 B66A	(1) RAYCAP DC6-48-60-18-8F	-			
	C3	LTE 700, LTE 1900, UMTS 850	250°	KATHREIN 800-10965	87'-0"	-	*(1) RRUS-11 B12 (1) RRUS-32 B2	-	*(2) KATHREIN - 782-10250			

*ANTENNA/TOWER MOUNTED EQUIPMENT TO BE REMOVED

**COAX TO BE REMOVED

***TO BE RELOCATED

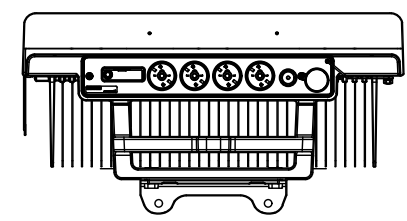
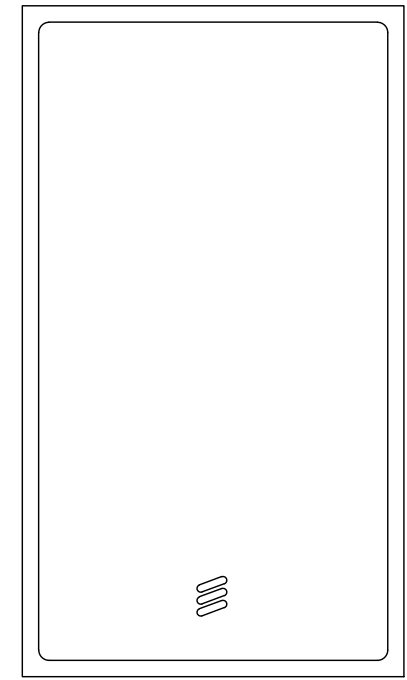
1 EXISTING EQUIPMENT SCHEDULE
SCALE: NOT TO SCALE

FINAL ANTENNA SCHEDULE (RFDS 03/25/2022, VERSION 2.00)

SECTOR	ANTENNA				TMA	RRH	RAYCAP	DIPLEXER	TRANSMISSION LINE			ADDITIONAL COMPONENT
	POS.	TECHNOLOGY	AZIMUTH	MODEL NO.	RAD CL.	MODEL NO.	MODEL NO.	MODEL NO.	MODEL NO.	DC POWER	FIBER	
A	A1	LTE 700, LTE AWS, 5G AWS	10°	KATHREIN 800-10965	87'-0"	-	(1) RRH 4478 B14 (1) RRUS-32 B66A	-	-	(4) DC TRUNK 8AWG (3) DC TRUNK 6AWG	(2) FIBER TRUNK (1) FIBER TRUNK (24 PAIR)	
	A2A	5G CBAND	10°	ERICSSON AIR6419 B77D	89'-6"	-	-	(1) RAYCAP DC9-48-60-24-8C-EV	-			
	A2B	5G DoD	10°	ERICSSON AIR6449 B77D	86'-0"	-	-	-	-			
	A3	LTE 700, LTE WCS, LTE 1900, 5G 1900, 5G 850	10°	CCI DMP65R-BU6e	87'-0"	-	(1) RRH RRUS-32 B2 (1) RRH RRUS-32 B30 (1) RRH 4449 B5/B12	-	-			
B	B1	LTE 700, LTE AWS, 5G AWS	130°	KATHREIN 800-10965	87'-0"	-	(1) RRH 4478 B14 (1) RRUS-32 B66A	-	-			
	B2A	5G CBAND	130°	ERICSSON AIR6419 B77D	89'-6"	-	-	(1) RAYCAP DC6-48-60-18-8F	-			
	B2B	5G DoD	130°	ERICSSON AIR6449 B77D	86'-0"	-	-	-	-			
	B3	LTE 700, LTE WCS, LTE 1900, 5G 1900, 5G 850	130°	CCI DMP65R-BU6e	87'-0"	-	(1) RRH RRUS-32 B2 (1) RRH RRUS-32 B30 (1) RRH 4449 B5/B12	-	-	(1) Y-CABLE		
C	C1	LTE 700, LTE AWS, 5G AWS	250°	KATHREIN 800-10965	87'-0"	-	(1) RRH 4478 B14 (1) RRUS-32 B66A	-	-			
	C2A	5G CBAND	250°	ERICSSON AIR6419 B77D	89'-6"	-	-	(1) RAYCAP DC6-48-60-18-8F	-			
	C2B	5G DoD	250°	ERICSSON AIR6449 B77D	86'-0"	-	-	-	-			
	C3	LTE 700, LTE WCS, LTE 1900, 5G 1900, 5G 850	250°	CCI DMP65R-BU6e	87'-0"	-	(1) RRH RRUS-32 B2 (1) RRH RRUS-32 B30 (1) RRH 4449 B5/B12	-	-	(1) Y-CABLE		

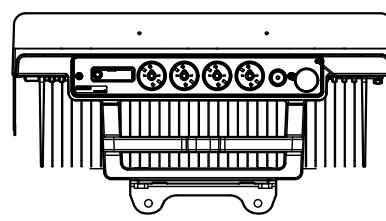
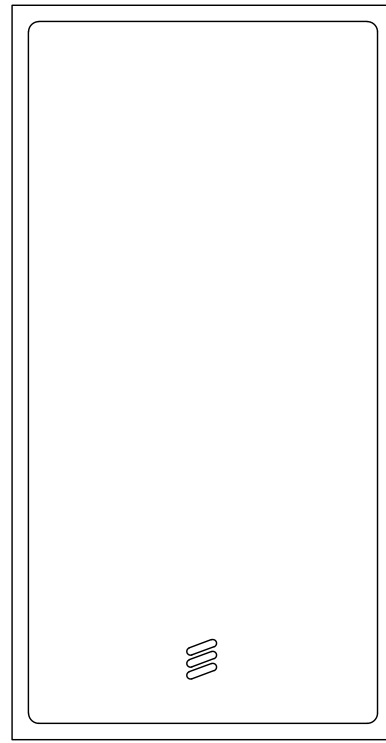
NEW ANTENNA/TOWER MOUNTED EQUIPMENT IN BOLD.

2 FINAL EQUIPMENT SCHEDULE
SCALE: NOT TO SCALE



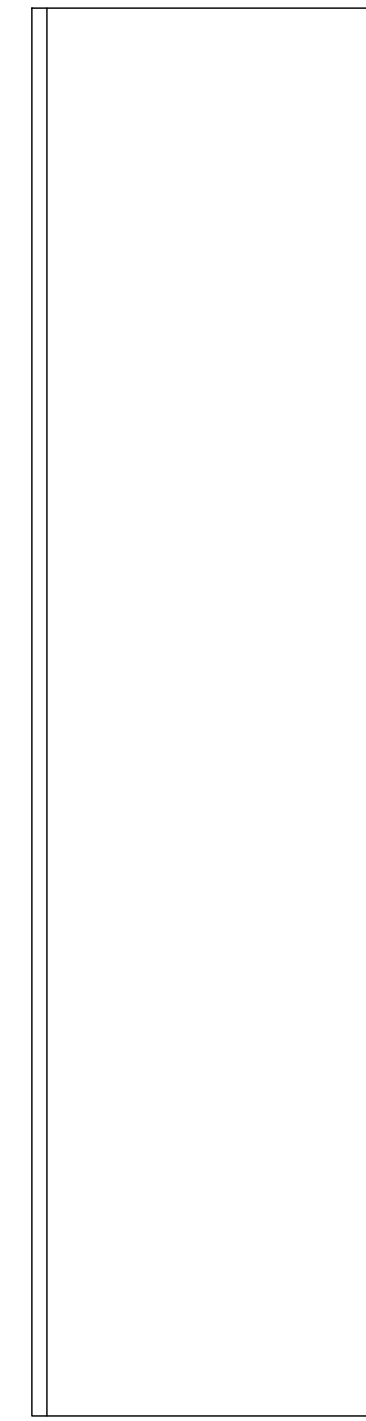
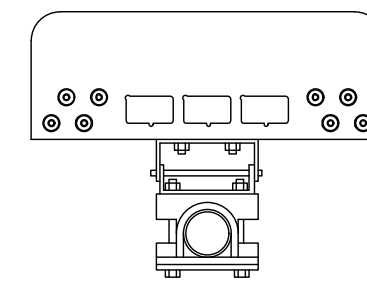
ERICSSON - AIR 6419 B77G
 WEIGHT (WITHOUT MOUNTING HARDWARE): 66.20 LBS
 SIZE (HxWxD): 27.95x15.75x6.68 IN.

1 ERICSSON - AIR 6419 B77G
 SCALE: NOT TO SCALE



ERICSSON - AIR 6449 B77D
 WEIGHT (WITHOUT MOUNTING HARDWARE): 81.60 LBS
 SIZE (HxWxD): 30.39x15.87x8.07 IN.

2 ERICSSON - AIR 6419 B77D
 SCALE: NOT TO SCALE



CCI - DMP65R-BU6DA
 WEIGHT (WITHOUT MOUNTING HARDWARE): 89.30 LBS
 SIZE (HxWxD): 71.20x20.70x7.70 IN.

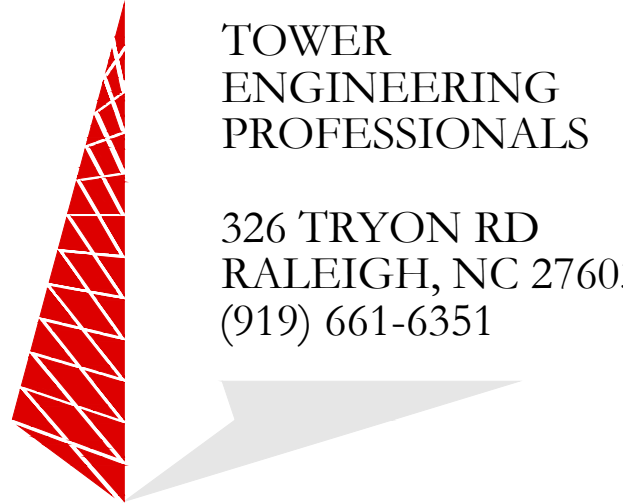
3 CCI-DMP65R-BU6DA
 SCALE: NOT TO SCALE



700 BELL STREET
 AKRON, OHIO 44307



12 GILL STREET, SUITE 5800
 WOBURN, MA 01801



TOWER
 ENGINEERING
 PROFESSIONALS
 326 TRYON RD
 RALEIGH, NC 27603
 (919) 661-6351

TEP JOB #: 61677.633796

AT&T SITE NUMBER:
MA1085

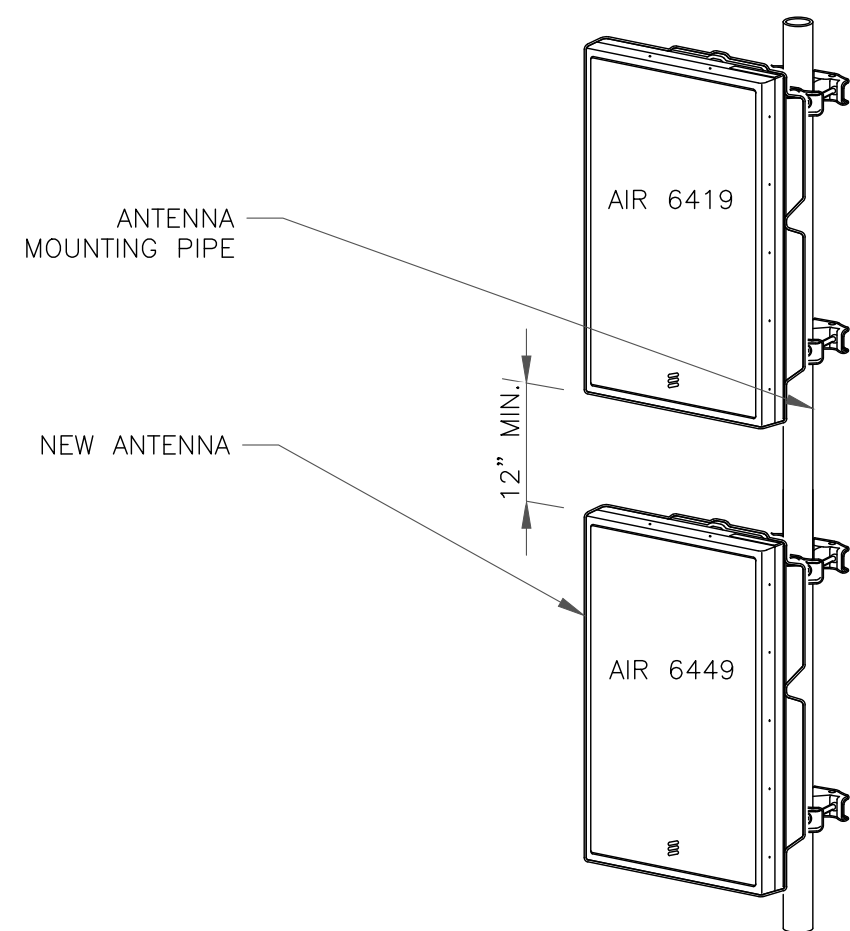
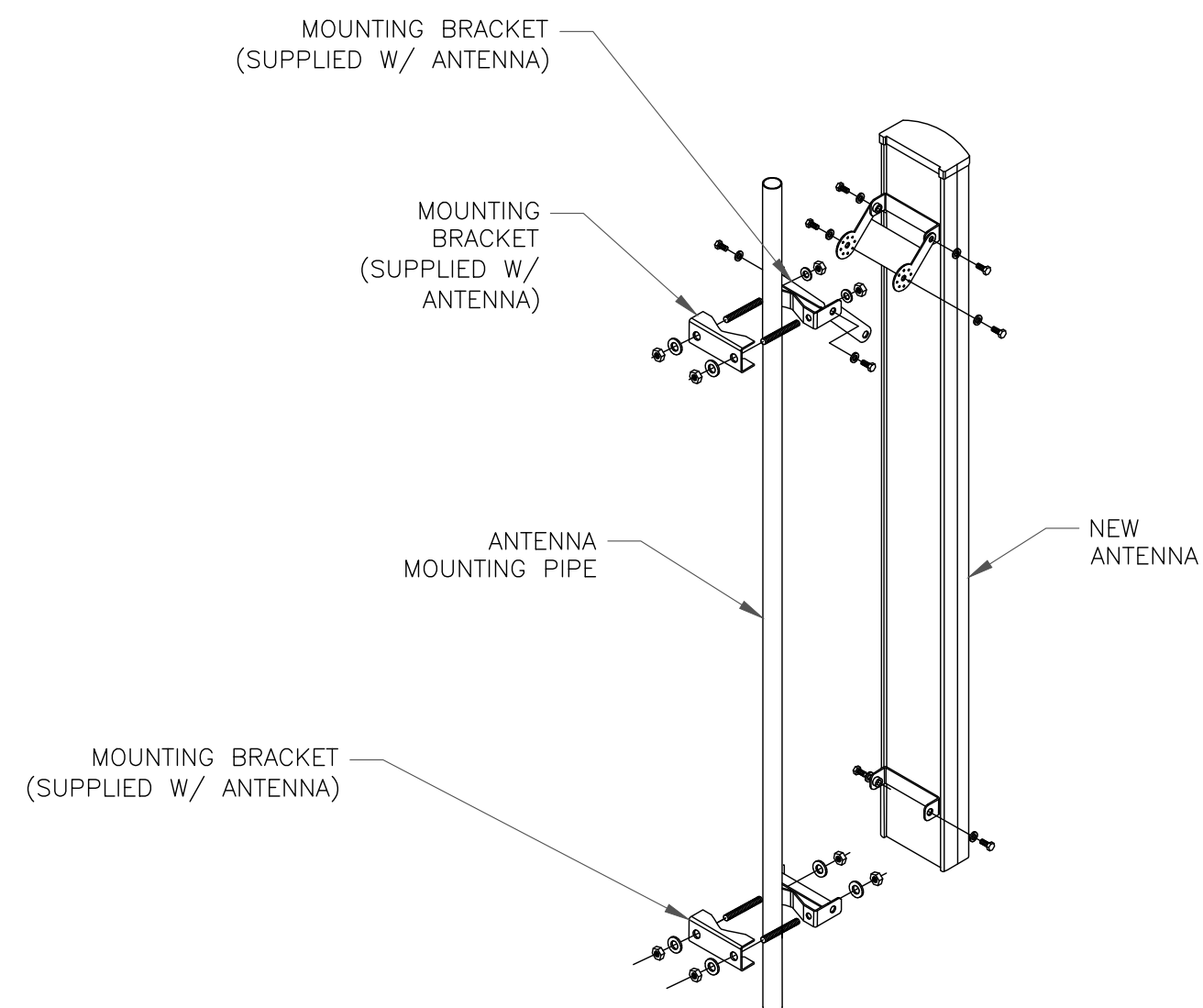
BU #: **806042**
BOS ASHLAND 959026

34 ALBERT RAY DRIVE
 ASHLAND, MA 01721
 (MIDDLESEX COUNTY)

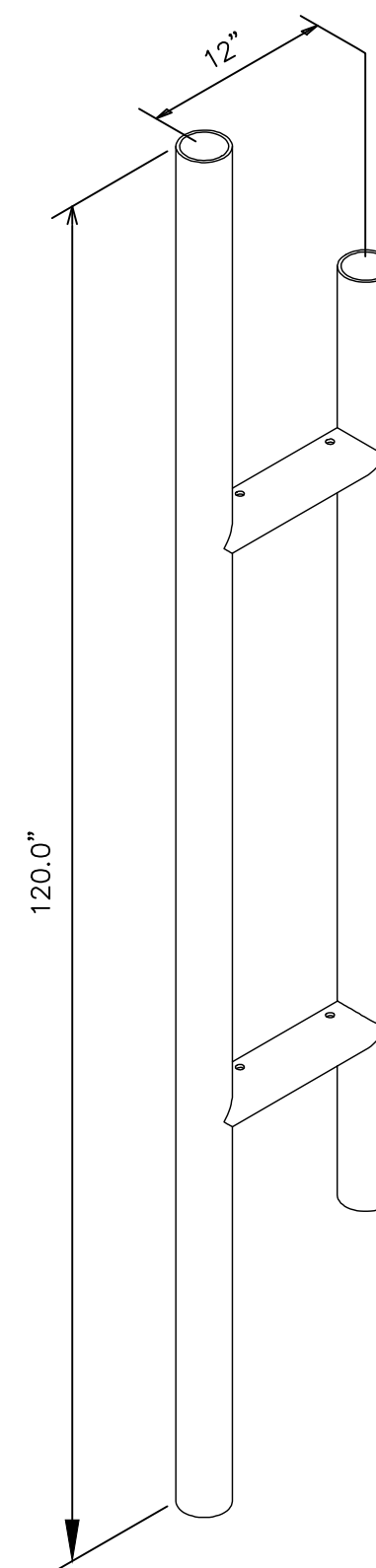
EXISTING 99' MONOPOLE

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REV	DATE	DRWN	DESCRIPTION	DES./QA
A	01/05/22	KRS	PRELIMINARY	DA
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0	05/20/22	SVP	CONSTRUCTION	DA



4 ANTENNA MOUNTING DETAIL
 SCALE: NOT TO SCALE



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	1	X-PM1	PM1 STANDOFF MOUNT WELDMENT		60	60

5 ANTENNA STANDOFF DETAIL
 SCALE: NOT TO SCALE

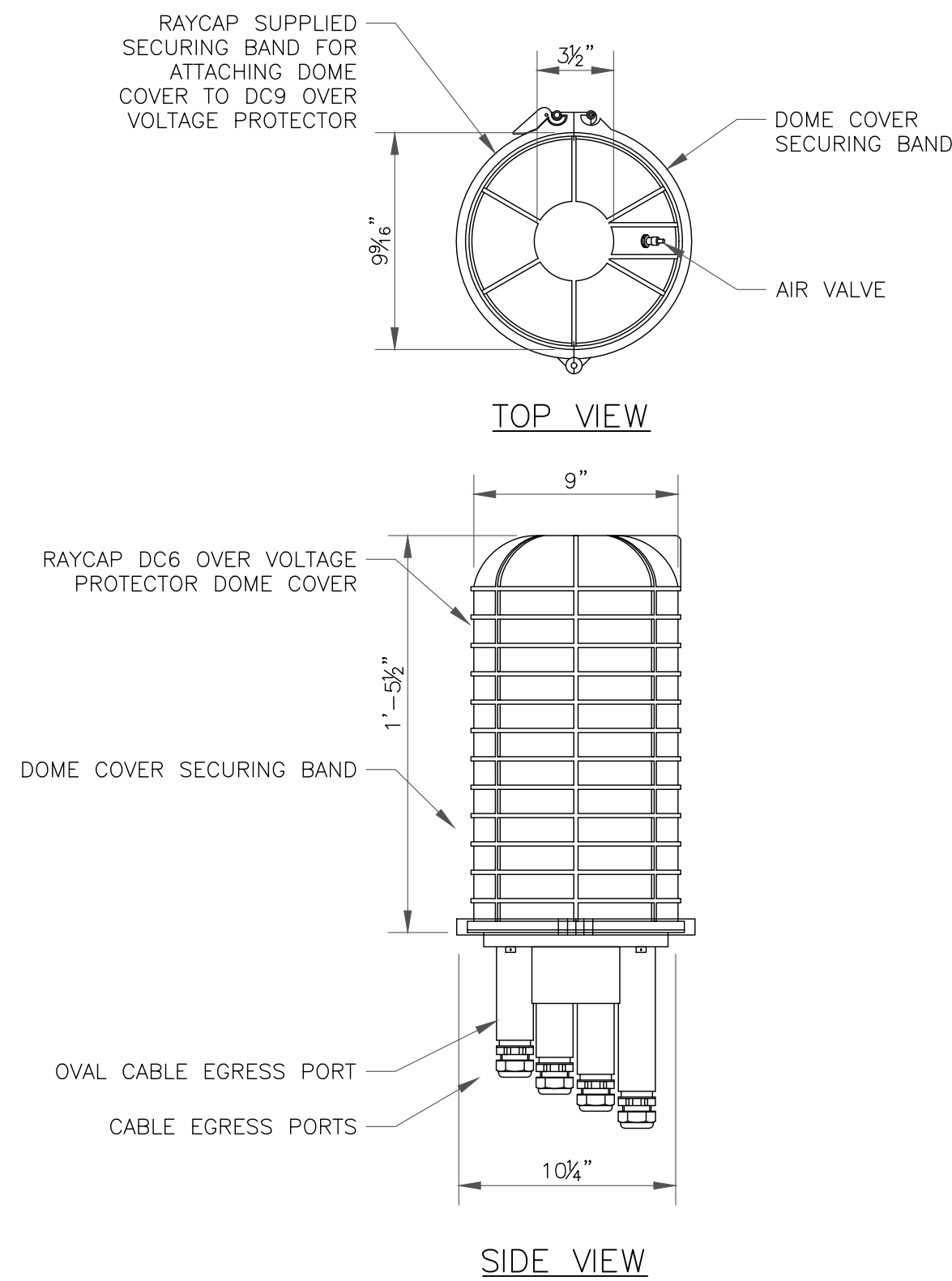


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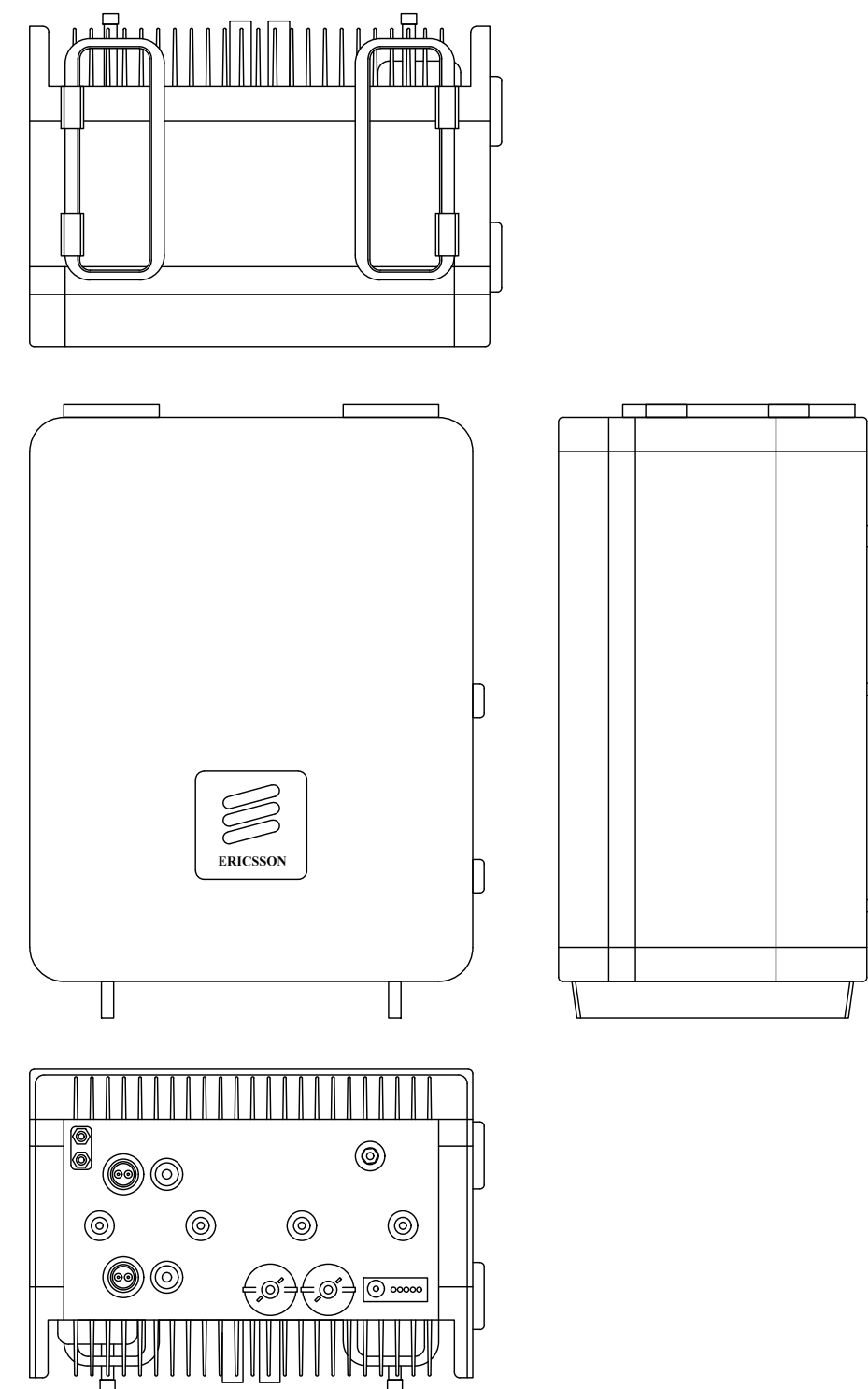
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SHEET NUMBER:
C-4

REVISION:
0



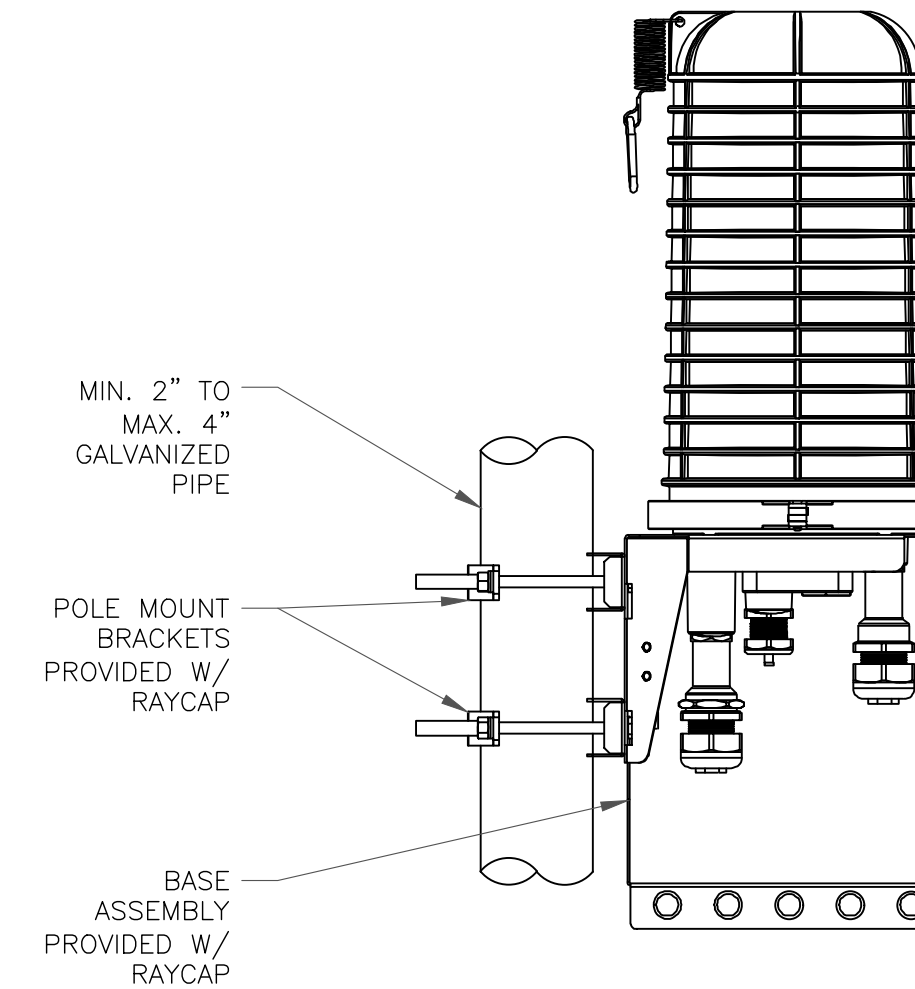
1 RAYCAP-DC9-48-60-24-8C-EV
SCALE: NOT TO SCALE



2 ERICSSON - RADIO 4449 B5/B12
SCALE: NOT TO SCALE

NOTE:

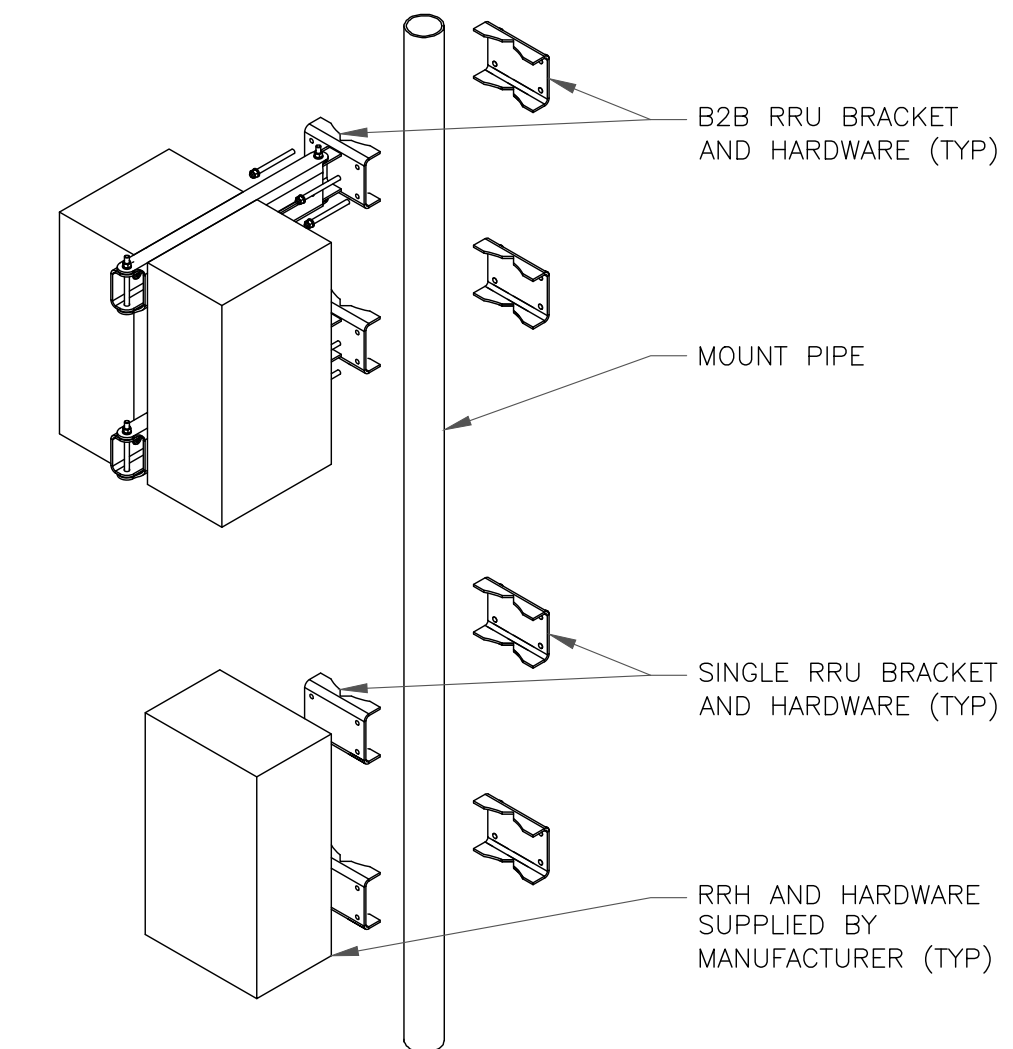
1. RAYCAP TO BE MOUNTED PER MANUFACTURER'S SPECIFICATIONS.
2. CONTRACTOR TO TIGHTEN ALL BOLTS TO A 'SNUG TIGHT' CONDITION AS DEFINED BY AISC.
3. CONTRACTOR SHALL INSTALL RAYCAP DISTRIBUTION UNIT WITHIN 15 FT FROM ALL RRHS.



3 NOT USED
SCALE: NOT TO SCALE

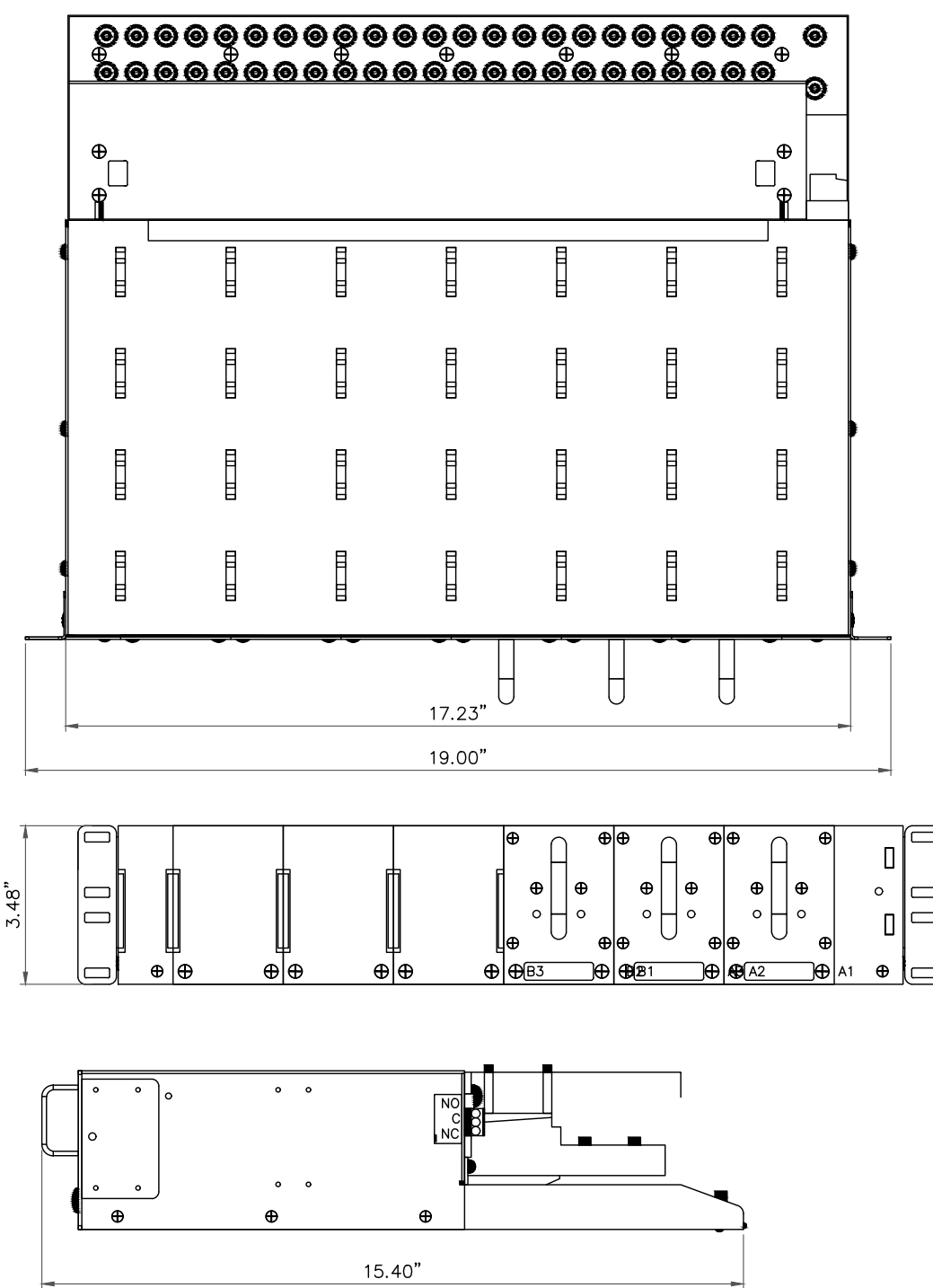
INSTALLER NOTES:

1. COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRHS RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING.
2. DO NOT OPEN RRH PACKAGES IN THE RAIN.
3. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.



4 RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE

ERICSSON - RADIO 4449 B5/B12
WEIGHT: 75.0 LBS
SIZE (HxWxD): 16.50X13.4X5.9 IN.



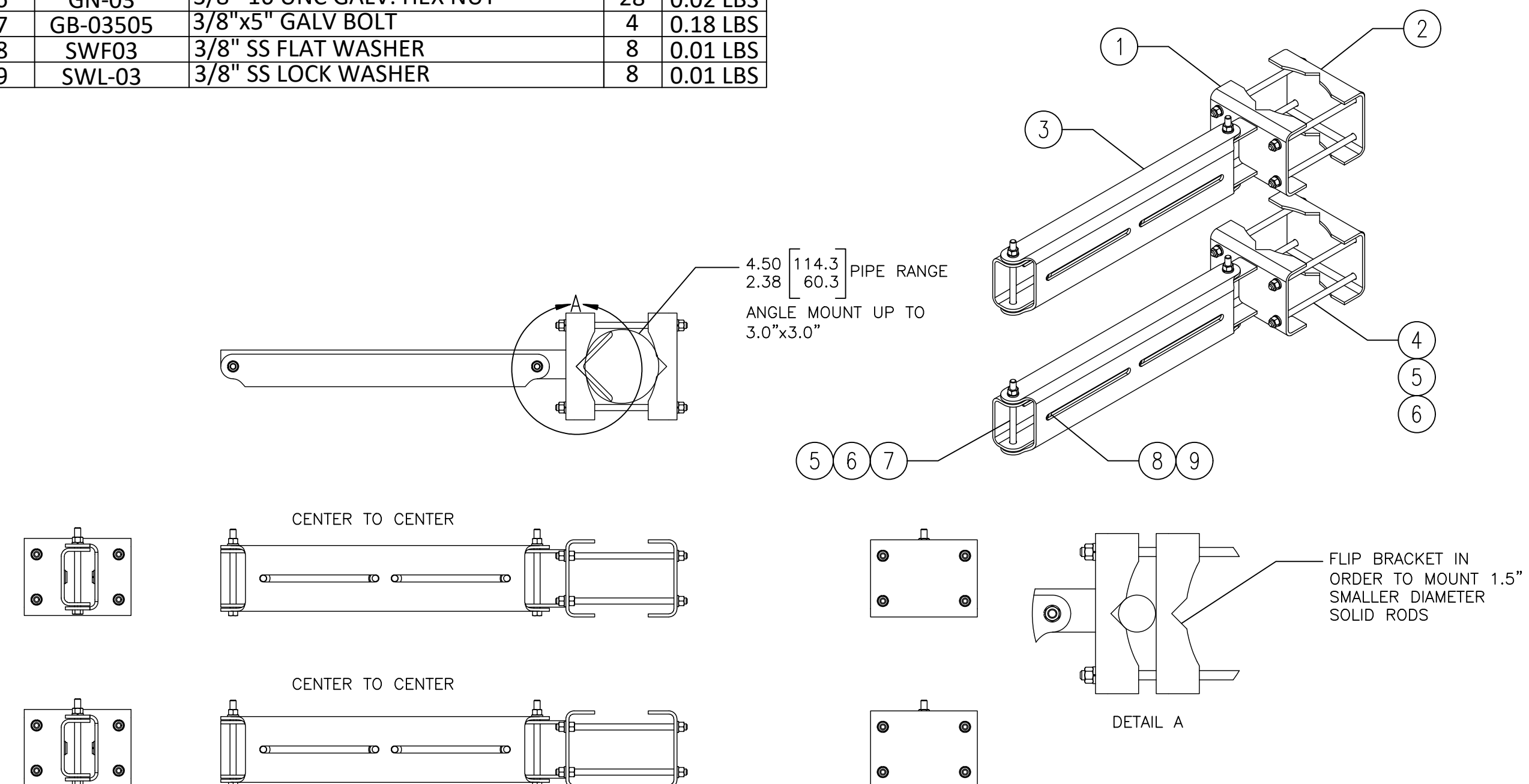
5 RAYCAP - DC12-48-60-RM
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
1	RRUDSM.01	MOUNTING ARM	2	8.92 LBS
2	RRUDSM.02	CLAMP PLATE	2	2.33 LBS
3	RRUDSM.03	SWIVEL MOUNT	2	6.60 LBS
4	GD03800	3/8"-16 UNCx8" GALV THREADED ROD	8	0.25 LBS
5	GWL-03	3/8" GALV LOCK WASHER	20	0.01 LBS
6	GN-03	3/8"-16 UNC GALV. HEX NUT	28	0.02 LBS
7	GB-03505	3/8"x5" GALV BOLT	4	0.18 LBS
8	SWF03	3/8" SS FLAT WASHER	8	0.01 LBS
9	SWL-03	3/8" SS LOCK WASHER	8	0.01 LBS

NOTE:

INSTALL AS NEEDED.



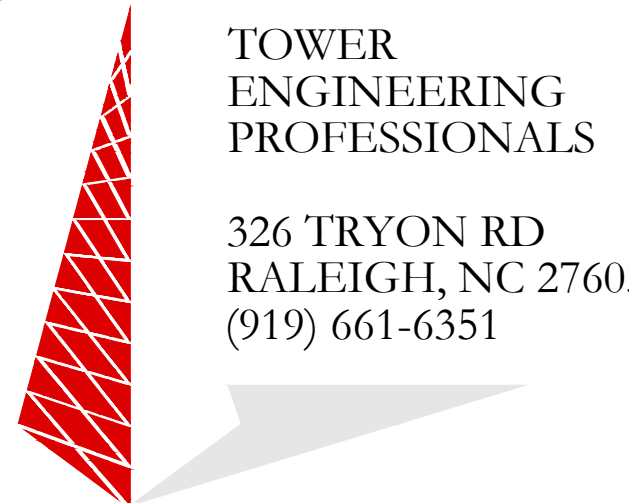
7 ROSENBERGER D220RUDSM DUAL RRH MOUNT
SCALE: NOT TO SCALE



700 BELL STREET
AKRON, OHIO 44307



12 GILL STREET, SUITE 5800
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326 TRYON RD
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(919) 661-6351

TEP JOB #: 61677.633796

AT&T SITE NUMBER:
MA1085

BU #: 806042
BOS ASHLAND 959026

34 ALBERT RAY DRIVE
ASHLAND, MA 01721
(MIDDLESEX COUNTY)

EXISTING 99' MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
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B	02/22/22	SVP	PRELIMINARY	DA
C	04/07/22	SVP	PRELIMINARY	DA
0	05/20/22	SVP	CONSTRUCTION	DA



05/20/22

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SHEET NUMBER:

C-4.1

REVISION:

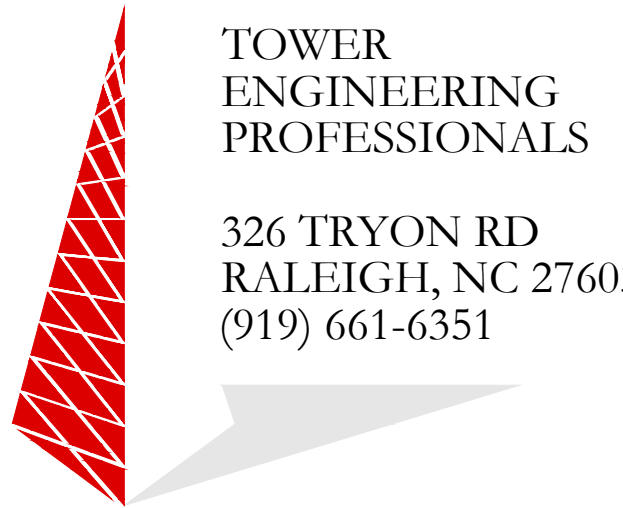
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700 BELL STREET
AKRON, OHIO 44307



12 GILL STREET, SUITE 5800
WOBURN, MA 01801



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SHEET NUMBER:

C-5

REVISION:

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Table 1: E. PA/S. NJ/DE Coax Trunk/Jumper Color Code Definition

Sector	Alpha	Green
	Beta	Blue
	Gamma	White
	Delta	Orange
	Epsilon	Brown
	Psi	Violet
Frequency Band	700 (B/C)	Violet
	850	Yellow
	850 - 2nd Block	Yellow
	1900	Red
	1900 - 2nd Block	Red
	2100 (AWS)	Orange
	2100 (AWS) - 2nd Block	Orange
	2300 (WCS)	Brown
	2300 (WCS) - 2nd Block	Brown
	700 (D/E)	Slate
	700 - FIRSTNET	Violet/ Blue

Table 2 E. PA/S. NJ/DE Coax Trunk/Jumper Color Code Standard

Sector	Technology	Frequency Band	Color Code - Additional Stripe for Sector Split	Color Code - Sector (Amount of Stripes based on Antenna Position)	BOTTOM - Code Code - Frequency Band (RRH JUMPERS ONLY)	45+ Coax	45- Coax	TOP - Low Port (ANTENNA JUMPERS ONLY)	TOP - High Port (ANTENNA JUMPERS ONLY)
A	LTE	700 B/C	Blank	GREEN	VIOLET	YELLOW	Blank	Blank	RED
A	LTE	850	Blank	GREEN	YELLOW	YELLOW	Blank	Blank	RED
A	LTE	850 - 2nd Block	Blank	GREEN	YELLOW	YELLOW	Blank	Blank	RED
A	LTE	1900	Blank	GREEN	RED	YELLOW	Blank	Blank	RED
A	LTE	1900 - 2nd Block	Blank	GREEN	RED	YELLOW	Blank	Blank	RED
A	LTE	2100	Blank	GREEN	ORANGE	YELLOW	Blank	Blank	RED
A	LTE	2100 - 2nd Block	Blank	GREEN	ORANGE	YELLOW	Blank	Blank	RED
A	LTE	700 D/E	Blank	GREEN	SLATE	YELLOW	Blank	Blank	RED
A	LTE	2300	Blank	GREEN	BROWN	YELLOW	Blank	Blank	RED
A	LTE	2300 - 2nd Block	Blank	GREEN	BROWN	YELLOW	Blank	Blank	RED
A	LTE FirstNet	700 - FirstNet	Blank	GREEN	VIOLET BLUE	YELLOW	Blank	Blank	RED
A	UMTS	850	Blank	GREEN	YELLOW	YELLOW	Blank	Blank	RED
A	UMTS	1900	Blank	GREEN	RED	YELLOW	Blank	Blank	RED
B	LTE	700 B/C	Blank	BLUE	VIOLET	YELLOW	Blank	Blank	RED
B	LTE	850	Blank	BLUE	YELLOW	YELLOW	Blank	Blank	RED
B	LTE	850 - 2nd Block	Blank	BLUE	YELLOW	YELLOW	Blank	Blank	RED
B	LTE	1900	Blank	BLUE	RED	YELLOW	Blank	Blank	RED
B	LTE	1900 - 2nd Block	Blank	BLUE	RED	YELLOW	Blank	Blank	RED
B	LTE	2100	Blank	BLUE	ORANGE	YELLOW	Blank	Blank	RED
B	LTE	2100 - 2nd Block	Blank	BLUE	ORANGE	YELLOW	Blank	Blank	RED
B	LTE	700 D/E	Blank	BLUE	SLATE	YELLOW	Blank	Blank	RED
B	LTE	2300	Blank	BLUE	BROWN	YELLOW	Blank	Blank	RED
B	LTE	2300 - 2nd Block	Blank	BLUE	BROWN	YELLOW	Blank	Blank	RED
B	LTE FirstNet	700 - FirstNet	Blank	BLUE	VIOLET BLUE	YELLOW	Blank	Blank	RED
B	UMTS	850	Blank	BLUE	YELLOW	YELLOW	Blank	Blank	RED
B	UMTS	1900	Blank	BLUE	RED	YELLOW	Blank	Blank	RED
C	LTE	700 B/C	Blank	WHITE	VIOLET	YELLOW	Blank	Blank	RED
C	LTE	850	Blank	WHITE	YELLOW	YELLOW	Blank	Blank	RED
C	LTE	850 - 2nd Block	Blank	WHITE	YELLOW	YELLOW	Blank	Blank	RED
C	LTE	1900	Blank	WHITE	RED	YELLOW	Blank	Blank	RED
C	LTE	1900 - 2nd Block	Blank	WHITE	RED	YELLOW	Blank	Blank	RED
C	LTE	2100	Blank	WHITE	ORANGE	YELLOW	Blank	Blank	RED
C	LTE	2100 - 2nd Block	Blank	WHITE	ORANGE	YELLOW	Blank	Blank	RED
C	LTE	700 D/E	Blank	WHITE	SLATE	YELLOW	Blank	Blank	RED
C	LTE	2300	Blank	WHITE	BROWN	YELLOW	Blank	Blank	RED
C	LTE	2300 - 2nd Block	Blank	WHITE	BROWN	YELLOW	Blank	Blank	RED
C	LTE FirstNet	700 - FirstNet	Blank	WHITE	VIOLET BLUE	YELLOW	Blank	Blank	RED
C	UMTS	850	Blank	WHITE	YELLOW	YELLOW	Blank	Blank	RED
C	UMTS	1900	Blank	WHITE	RED	YELLOW	Blank	Blank	RED
D	LTE	700 B/C	Blank	ORANGE	VIOLET	YELLOW	Blank	Blank	RED
D	LTE	850	Blank	ORANGE	YELLOW	YELLOW	Blank	Blank	RED
D	LTE	850 - 2nd Block	Blank	ORANGE	YELLOW	YELLOW	Blank	Blank	RED
D	LTE	1900	Blank	ORANGE	RED	YELLOW	Blank	Blank	RED
D	LTE	1900 - 2nd Block	Blank	ORANGE	RED	YELLOW	Blank	Blank	RED
D	LTE	2100	Blank	ORANGE	ORANGE	YELLOW	Blank	Blank	RED
D	LTE	2100 - 2nd Block	Blank	ORANGE	ORANGE	YELLOW	Blank	Blank	RED
D	LTE	700 D/E	Blank	ORANGE	SLATE	YELLOW	Blank	Blank	RED
D	LTE	2300	Blank	ORANGE	BROWN	YELLOW	Blank	Blank	RED
D	LTE	2300 - 2nd Block	Blank	ORANGE	BROWN	YELLOW	Blank	Blank	RED
D	LTE FirstNet	700 - FirstNet	Blank	ORANGE	VIOLET BLUE	YELLOW	Blank	Blank	RED
D	UMTS	850	Blank	ORANGE	YELLOW	YELLOW	Blank	Blank	RED
D	UMTS	1900	Blank	ORANGE	RED	YELLOW	Blank	Blank	RED

1 COLOR CODE CHART
SCALE: NOT TO SCALE



AT&T SITE NUMBER:
MA1085

BU #: 806042
BOS ASHLAND 959026

34 ALBERT RAY DRIVE
ASHLAND, MA 01721
(MIDDLESEX COUNTY)

EXISTING 99' MONOPOLE

ISSUED FOR:				
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0	05/20/22	SVP	CONSTRUCTION	DA



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SHEET NUMBER: **C-6** REVISION: **0**

3. ATT Naming Convention for "RET NAME"

ATT-002-290-125 (Issue 8, 02/03/14)
Antenna Remote Electrical Tilt (RET) Guidelines

Usage: [USID][CellId1][CellId2][CellId3][AntPos][FrequencyBand][Tech]

USID						CellId 1	CellId 2	CellId 3	AntPos	Freq	Tech
1	2	3	4	5	6	7	8	9	10	11	12

Field	Length	Description	
USID	6	Six characters that define the sites USID. USID's less than 6 characters in length are preceded with 0's (zeros) (example: 003831)	
CellId1	1	Allowed Value	
		Description	
		A	Alpha
		B	Beta
CellId2	1	C	Gamma
		D	Delta
		E	Epsilon
CellId3	1	F	Zeta
		-	No Transmitter connected to this port
AntPos	1	Allowed Value	
		Description	
		1	Antenna Position 1 on this face
		2	Antenna Position 2 on this face
		3	Antenna Position 3 on this face
		4	Antenna Position 4 on this face
FreqBand	1	Allowed Value	
		Description	
		2	2100 MHz (AWS)
		7	700 MHz
		8	850 MHz
		9	1900 MHz
	1	Q	700 MHz D & E Band Only
		W	2300 MHz (WCS)

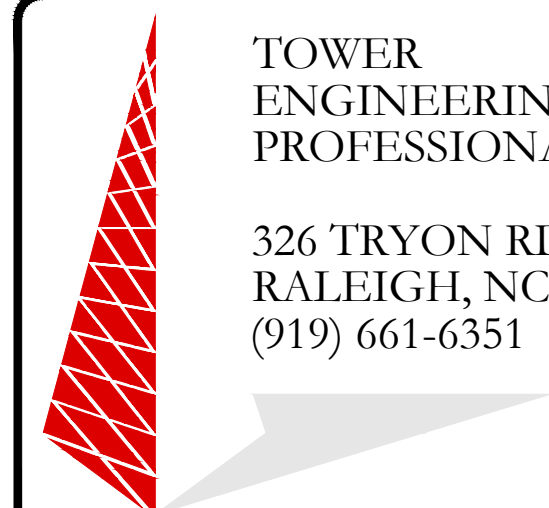
Field	Length	Description				
Tech	1	Allowed Value				
		GSM	UMTS	LTE	Split Sector	
		G	GSM			
		J	GSM	UMTS		
		K	GSM		LTE	
		L			LTE	
		N				
		U		UMTS		
		V		UMTS	LTE	
		Y	GSM	UMTS	LTE	
		H	GSM		Split	
		M	GSM	UMTS	Split	
		P	GSM		LTE	Split
		Q			LTE	Split
		R				Split
		S		UMTS		Split
T		UMTS	LTE	Split		



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(919) 661-6351

TEP JOB #: 61677.633796

AT&T SITE NUMBER:
MA1085

BU #: **806042**
BOS ASHLAND 959026

34 ALBERT RAY DRIVE
ASHLAND, MA 01721
(MIDDLESEX COUNTY)

EXISTING 99' MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	01/05/22	KRS	PRELIMINARY	DA
B	02/22/22	SVP	PRELIMINARY	DA
C	04/07/22	SVP	PRELIMINARY	DA
0	05/20/22	SVP	CONSTRUCTION	DA



05/20/22

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SCOPE:

1. PROVIDE LABOR, MATERIALS, INSPECTION, AND TESTING TO PROVIDE CODE COMPLIANCE FOR ELECTRIC, TELEPHONE, AND GROUNDING/LIGHTNING SYSTEMS.

CODES:

1. THE INSTALLATION SHALL COMPLY WITH APPLICABLE LAWS AND CODES. THESE INCLUDE BUT ARE NOT LIMITED TO THE LATEST ADOPTED EDITIONS OF:
 - A. THE NATIONAL ELECTRICAL SAFETY CODE
 - B. THE NATIONAL ELECTRIC CODE – NFPA-70
 - C. REGULATIONS OF THE SERVING UTILITY COMPANY
 - D. LOCAL AND STATE AMENDMENTS
 - E. THE INTERNATIONAL ELECTRIC CODE – IEC (WHERE APPLICABLE)
2. PERMITS REQUIRED SHALL BE OBTAINED BY THE CONTRACTOR.
3. AFTER COMPLETION AND FINAL INSPECTION OF THE WORK, THE OWNER SHALL BE FURNISHED A CERTIFICATE OF COMPLETION AND APPROVAL.

TESTING:

1. UPON COMPLETION OF THE INSTALLATION, OPERATE AND ADJUST THE EQUIPMENT AND SYSTEMS TO MEET SPECIFIED PERFORMANCE REQUIREMENTS. THE TESTING SHALL BE DONE BY QUALIFIED PERSONNEL.

GUARANTEE:

1. IN ADDITION TO THE GUARANTEE OF THE EQUIPMENT BY THE MANUFACTURER, EACH PIECE OF EQUIPMENT SPECIFIED HEREIN SHALL ALSO BE GUARANTEED FOR DEFECTS OF MATERIAL OR WORKMANSHIP OCCURRING DURING A PERIOD OF ONE (1) YEAR FROM FINAL ACCEPTANCE OF THE WORK BY THE OWNER AND WITHOUT EXPENSE TO THE OWNER.
2. THE WARRANTY CERTIFICATES & GUARANTEES FURNISHED BY THE MANUFACTURERS SHALL BE TURNED OVER TO THE OWNER.

UTILITY CO-ORDINATION:

1. CONTRACTOR SHALL COORDINATE WORK WITH THE POWER AND TELEPHONE COMPANIES AND SHALL COMPLY WITH THE SERVICE REQUIREMENTS OF EACH UTILITY COMPANY.

EXAMINATION OF SITE:

1. PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL VISIT THE SITE OF THE JOB AND SHALL FAMILIARIZE HIMSELF WITH THE CONDITIONS AFFECTING THE PROPOSED ELECTRICAL INSTALLATION AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. FAILURE TO COMPLY WITH THE INTENT OF THIS SECTION WILL IN NO WAY RELIEVE THE CONTRACTOR OF PERFORMING THE WORK NECESSARY FOR A COMPLETE AND WORKING SYSTEM OR SYSTEMS.

CUTTING, PATCHING AND EXCAVATION:

1. COORDINATION OF SLEEVES, CHASES, ETC., BETWEEN SUBCONTRACTORS WILL BE REQUIRED PRIOR TO THE CONSTRUCTION OF ANY PORTION OF THE WORK. CUTTING AND PATCHING OF WALLS, PARTITIONS, FLOORS, AND CHASES IN CONCRETE, WOOD, STEEL OR MASONRY SHALL BE DONE AS PROVIDED ON THE DRAWINGS.
2. NECESSARY EXCAVATIONS AND BACKFILLING INCIDENTAL TO THE ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWING.
3. SEAL PENETRATIONS THROUGH RATED WALLS, FLOORS, ETC., WITH APPROVED METHOD AS LISTED BY UL.

RACEWAYS / CONDUITS GENERAL:

1. CONDUCTORS SHALL BE INSTALLED IN LISTED RACEWAYS. CONDUIT SHALL BE RIGID STEEL, EMT, SCH40 PVC, OR SCH80PVC AS INDICATED ON THE DRAWINGS. THE RACEWAY SYSTEM SHALL BE COMPLETE COMPLETE BEFORE INSTALLING CONDUCTORS.
2. EXTERIOR RACEWAYS AND GROUNDING SLEEVES SHALL BE SEALED AT POINTS OF ENTRANCE AND EXIT. THE RACEWAY SYSTEM SHALL BE BONDED PER NEC.

EXTERIOR CONDUIT:

1. EXPOSED CONDUIT SHALL BE NEATLY INSTALLED AND RUN PARALLEL OR PERPENDICULAR TO STRUCTURAL ELEMENTS. SUPPORTS AND MOUNTING HARDWARE SHALL BE HOT DIPPED GALVANIZED STEEL.
2. THE CONDUIT SHALL BE RIGID STEEL AT GRADE TRANSITIONS OR WHERE EXPOSED TO DAMAGE.
3. UNDERGROUND CONDUITS SHALL BE RIGID STEEL, SCH40 PVC, OR SCH80 PVC AS INDICATED ON THE DRAWINGS.
4. BURIAL DEPTH OF CONDUITS SHALL BE AS REQUIRED BY CODE FOR EACH SPECIFIC CONDUIT TYPE AND APPLICATION, BUT SHALL NOT BE LESS THAN THE FROST DEPTH AT THE SITE.
5. CONDUIT ROUTES ARE SCHEMATIC. CONTRACTOR SHALL FIELD VERIFY ROUTES BEFORE BID. COORDINATE ROUTE WITH WIRELESS CARRIER AND/OR BUILDING OWNER.

INTERIOR CONDUIT:

1. CONCEALED CONDUIT IN WALLS OR INTERIOR SPACES ABOVE GRADE MAY BE EMT OR PVC.
2. CONDUIT RUNS SHALL USE APPROVED COUPLINGS AND CONNECTORS. PROVIDE INSULATED BUSHING FOR ALL CONDUIT TERMINATIONS. CONDUIT RUNS IN A WET LOCATION SHALL HAVE WATERPROOF FITTINGS.
3. PROVIDE SUPPORTS FOR CONDUITS IN ACCORDANCE WITH NEC REQUIREMENTS. CONDUITS SHALL BE SIZED AS REQUIRED BY NEC.

EQUIPMENT:

1. DISCONNECT SWITCHES SHALL BE SERVICE ENTRANCE RATED, HEAVY DUTY TYPE.
2. CONTRACTOR SHALL VERIFY MAXIMUM AVAILABLE FAULT CURRENT AND COORDINATE INSTALLATION WITH THE LOCAL UTILITY BEFORE STARTING WORK. CONTRACTOR WILL VERIFY THAT EXISTING CIRCUIT BREAKERS ARE RATED FOR MORE THAN AVAILABLE FAULT CURRENT AND REPLACE AS NECESSARY.
3. NEW CIRCUIT BREAKERS SHALL BE RATED TO WITHSTAND THE MAXIMUM AVAILABLE FAULT CURRENT AS DETERMINED BY THE LOCAL UTILITY.

CONDUCTORS:

1. FURNISH AND INSTALL CONDUCTORS SPECIFIED IN THE DRAWINGS. CONDUCTORS SHALL BE COPPER AND SHALL HAVE TYPE THWN (MIN) (75° C) INSULATION, RATED FOR 600 VOLTS.
2. THE USE OF ALUMINUM CONDUCTORS SHALL BE LIMITED TO THE SERVICE FEEDERS INSTALLED BY THE UTILITY.
3. CONDUCTORS SHALL BE PROVIDED AND INSTALLED AS FOLLOWS:
 - A. MINIMUM WIRE SIZE SHALL BE #12 AWG.
 - B. CONDUCTORS SIZE #8 AND LARGER SHALL BE STRANDED. CONDUCTORS SIZED #10 AND #12 MAY BE SOLID OR STRANDED.
 - C. CONNECTION FOR #10 AWG #12 AWG SHALL BE BY TWISTING TIGHT AND INSTALLING INSULATED PRESSURE OR WIRE NUT CONNECTIONS.
 - D. CONNECTION FOR #8 AWG AND LARGER SHALL BE BY USE OF STEEL CRIMP-ON SLEEVES WITH NYLON INSULATOR.
3. CONDUCTORS SHALL BE COLOR CODED IN ACCORDANCE WITH NEC STANDARDS.

UL COMPLIANCE:

1. ELECTRICAL MATERIALS, DEVICES, CONDUCTORS, APPLIANCES, AND EQUIPMENT SHALL BE LABELED/LISTED BY UL OR ACCEPTED BY JURISDICTION (I.E., LOCAL COUNTY OR STATE) APPROVED THIRD PARTY TESTING AGENCY.

GROUNDING:

1. ELECTRICAL NEUTRALS, RACEWAYS AND NON-CURRENT CARRYING PARTS OF ELECTRICAL EQUIPMENT AND ASSOCIATED ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH NEC ARTICLE 250. THIS SHALL INCLUDE NEUTRAL CONDUCTORS, CONDUITS, SUPPORTS, CABINETS, BOXES, GROUND BUSSES, ETC. THE NEUTRAL CONDUCTOR FOR EACH SYSTEM SHALL BE GROUNDED AT A SINGLE POINT.
2. PROVIDE GROUND CONDUCTOR IN RACEWAYS PER NEC.
3. PROVIDE BONDING AND GROUND TO MEET NFPA 780 – "LIGHTNING PROTECTION" AS A MINIMUM.
4. PROVIDE GROUNDING SYSTEM AS INDICATED ON THE DRAWINGS, AS REQUIRED BY THE NATIONAL ELECTRIC CODE, RADIO EQUIPMENT MANUFACTURERS, AND MOTOROLA R56 (AS APPLICABLE).

ABBREVIATIONS AND LEGEND

A	– AMPERE	PNLBD	– PANELBOARD
AFG	– ABOVE FINISHED GRADE	PVC	– RIGID NON-METALLIC CONDUIT
ATS	– AUTOMATIC TRANSFER SWITCH	RGS	– RIGID GALVANIZED STEEL CONDUIT
AWG	– AMERICAN WIRE GAUGE	SW	– SWITCH
BCW	– BARE COPPER WIRE	TGB	– TOWER GROUND BAR
BFG	– BELOW FINISHED GRADE	UL	– UNDERWRITERS LABORATORIES
BKR	– BREAKER	V	– VOLTAGE
C	– CONDUIT	W	– WATTS
CKT	– CIRCUIT	XFMR	– TRANSFORMER
DISC	– DISCONNECT	XMTR	– TRANSMITTER
EGR	– EXTERNAL GROUND RING		
EMT	– ELECTRIC METALLIC TUBING		
FSC	– FLEXIBLE STEEL CONDUIT		
GEN	– GENERATOR		
GPS	– GLOBAL POSITIONING SYSTEM		
GRD	– GROUND		
IGB	– ISOLATED GROUND BAR		
IGR	– INTERIOR GROUND RING (HALO)		
KW	– KILOWATTS		
NEC	– NATIONAL ELECTRIC CODE		
PCS	– PERSONAL COMMUNICATION SYSTEM		
PH	– PHASE		
PNL	– PANEL		

— E —	UNDERGROUND ELECTRICAL CONDUIT
— T —	UNDERGROUND TELEPHONE CONDUIT
	KILOWATT-HOUR METER
—	UNDERGROUND BONDING AND GROUNDING CONDUCTOR.
∅	GROUND ROD
●	CADWELD
⊗	GROUND ROD WITH INSPECTION WELL

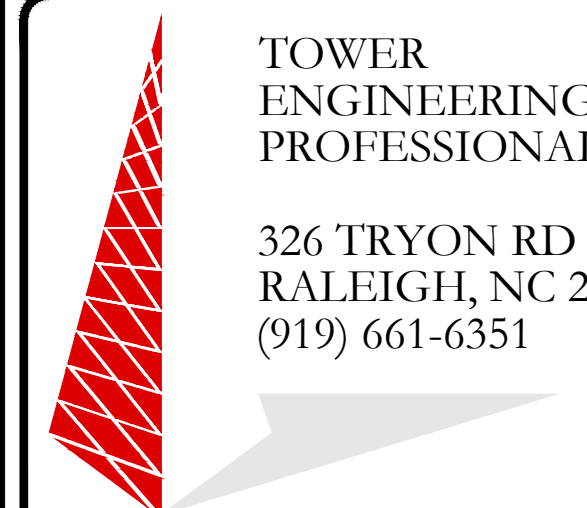
1 ELECTRICAL NOTES
SCALE: NOT TO SCALE



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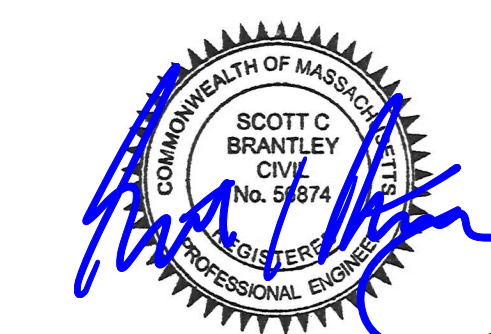
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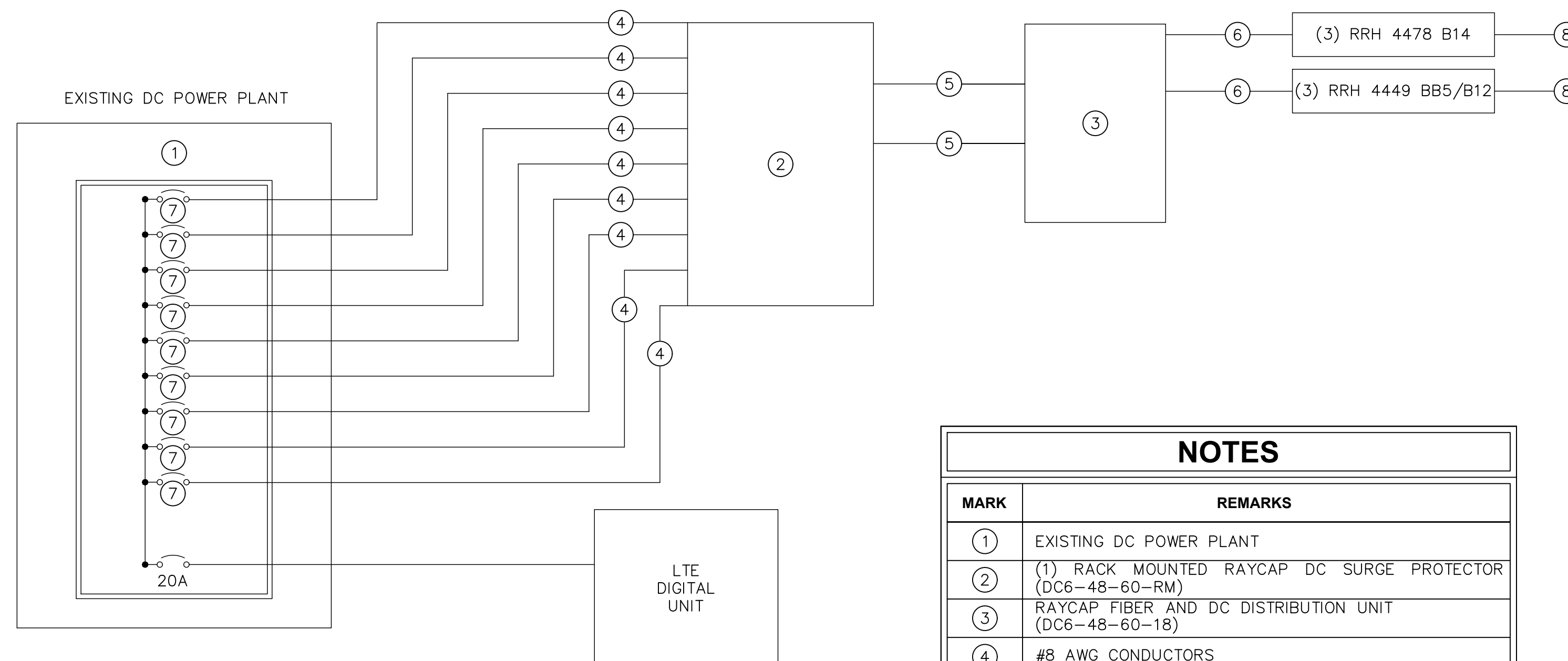
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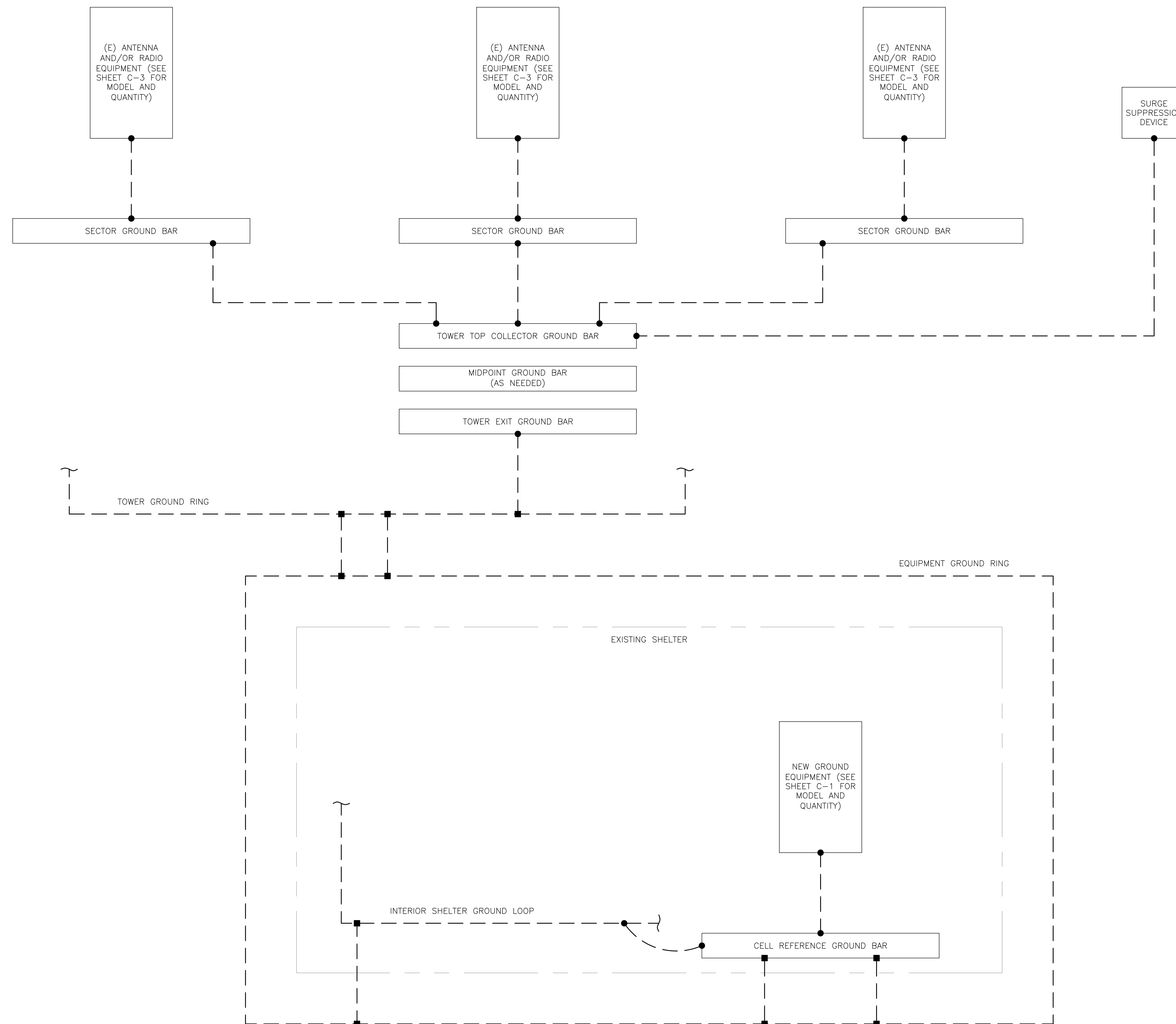
NOTES

MARK	REMARKS
①	EXISTING DC POWER PLANT
②	(1) RACK MOUNTED RAYCAP DC SURGE PROTECTOR (DC6-48-60-RM)
③	RAYCAP FIBER AND DC DISTRIBUTION UNIT (DC6-48-60-1B)
④	#8 AWG CONDUCTORS
⑤	PROVIDE (2) 6-CONDUCTOR #8 AWG BUNDLES FOR DC POWER FROM RACK MOUNTED RAYCAP SURGE PROTECTION UNIT TO THE RAYCAP FIBER AND DISTRIBUTION UNIT ON TOWER
⑥	EXISTING FIBER AND DC CABLE ROUTED TO EXISTING RRH UNITS
⑦	REFER TO BREAKER SCHEDULE FOR BREAKER SIZES
⑧	REFER TO LATEST RFDS FOR RRH TECHNOLOGIES AND QUANTITIES

RRUS BREAKER SCHEDULE

RRU MODEL	BREAKER SIZE	TECHNOLOGY
RRUS 32 B66	30A	AWS (2100)
RRUS 32 B30	20A	WCS (2300)
RRUS 32 B2	30A	PCS (1900)
RRUS 11	25A	VARIOUS BANDS (700 [B12], 850 [B5], 1900 [B2], 2100 [B4])
RRUS 12	25A	VARIOUS BANDS (850 [B5], 1900 [B2], 2100 [B4])
RRUS 4415 B25	25A	1900
RRUS 4426 B66	30A	2100
RRUS 4478 B14	25A	700
RRUS 4478 B5	25A	850
RRUS E2 B29	25A	700
RRUS 4449 B5/B12	(2) 25A	700/850
RRUS 8843 B2/B66	(2) 30A	1900/2100
RRUS 2203 B5	10A	850
RRUS 2205 B46	10A	5 GHz

① EQUIPMENT ONE-LINE DIAGRAM
SCALE: NOT TO SCALE



GROUNDING PLAN LEGEND:

---	GROUND WIRE	⊙	COPPER GROUND ROD
■	EXOTHERMIC WELD	⊗	GROUND ROD W/ TEST WELL
●	MECHANICAL CONNECTION		

CELL REFERENCE GROUND BAR: POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUITS (ATT-TP-76416 7.6.7).

HATCH PLATE GROUND BAR: BOND TO THE INTERIOR GROUND RING WITH (2) #2 STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CELL SITE REFERENCE GROUND BAR MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) #2 STRANDED GREEN INSULATED COPPER CONDUCTORS.

EXTERIOR CABLE ENTRY PORT GROUND BARS: LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE (ATT-TP-76416 7.6.7.2).

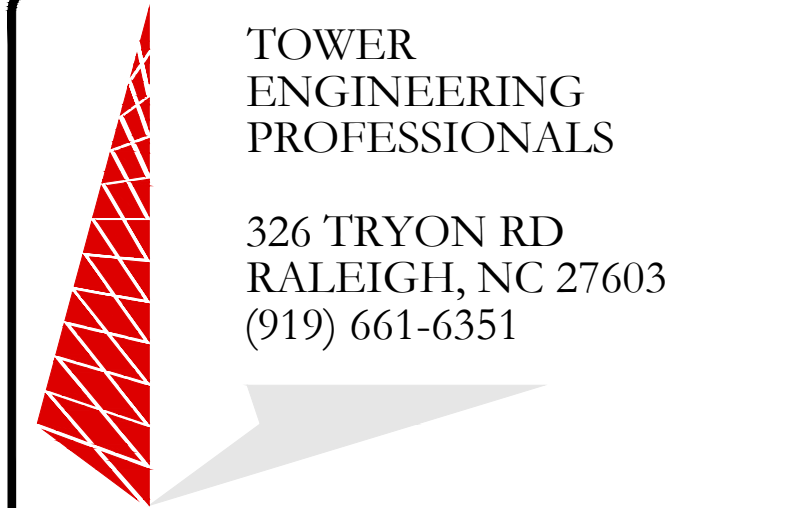
DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICES CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR PER TP76300 SECTION H.6 AND TP76416 FIGURE 7-11 REQUIREMENTS.



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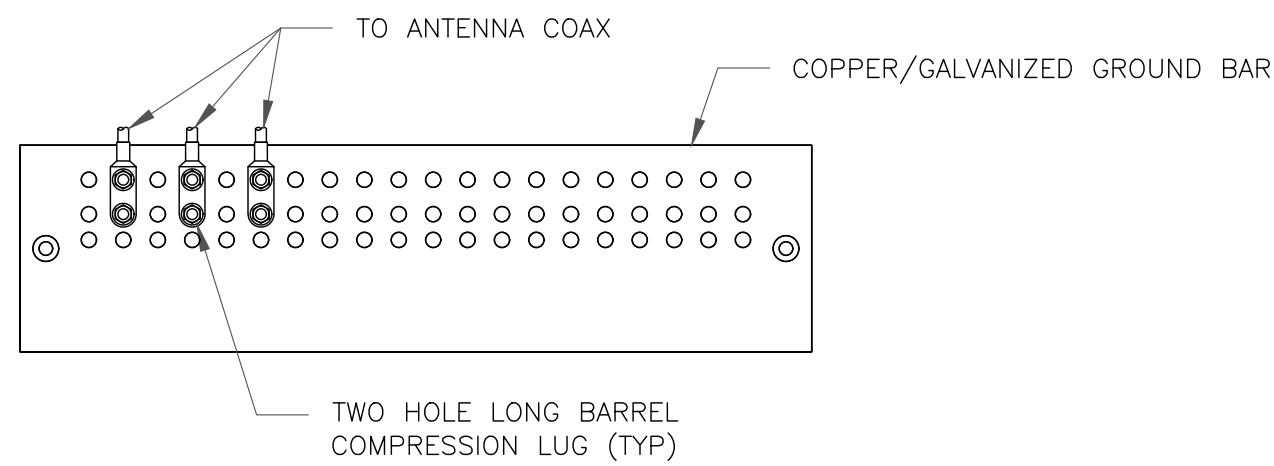
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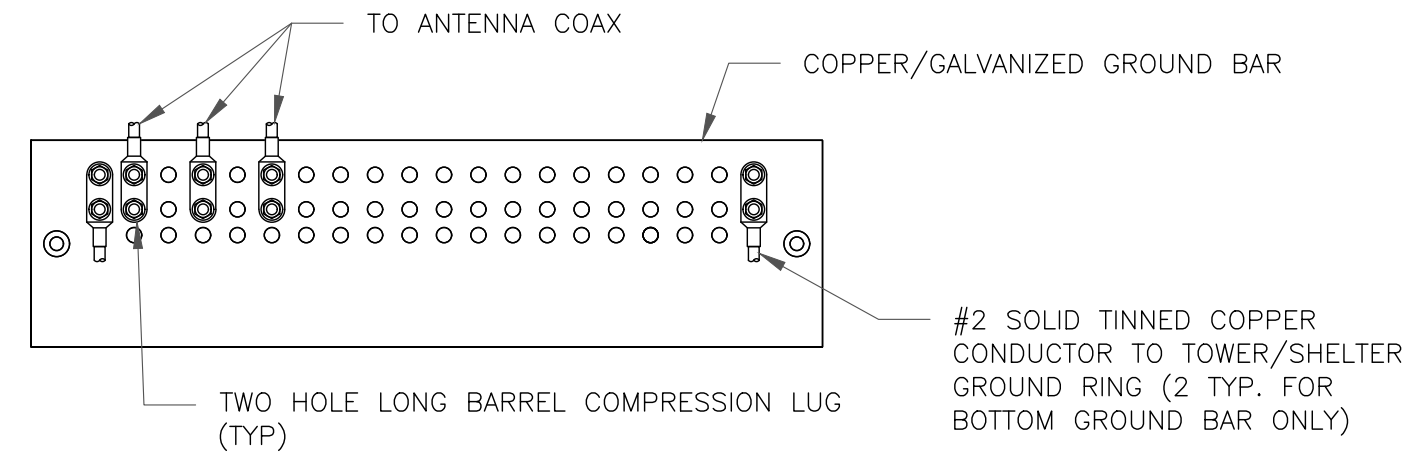
1 TYPICAL GROUNDING SCHEMATIC
SCALE: NOT TO SCALE



NOTES:

- DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
- EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
- GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO ANTENNA MOUNT STEEL.

1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE

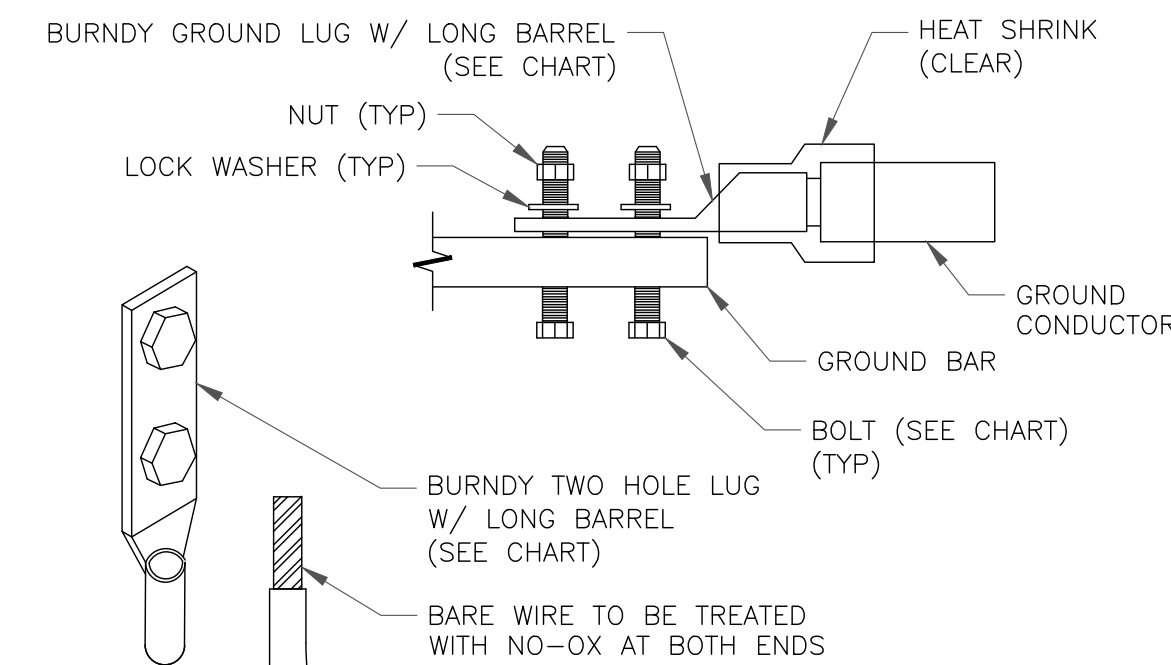


NOTES:

- EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
- GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
- GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE

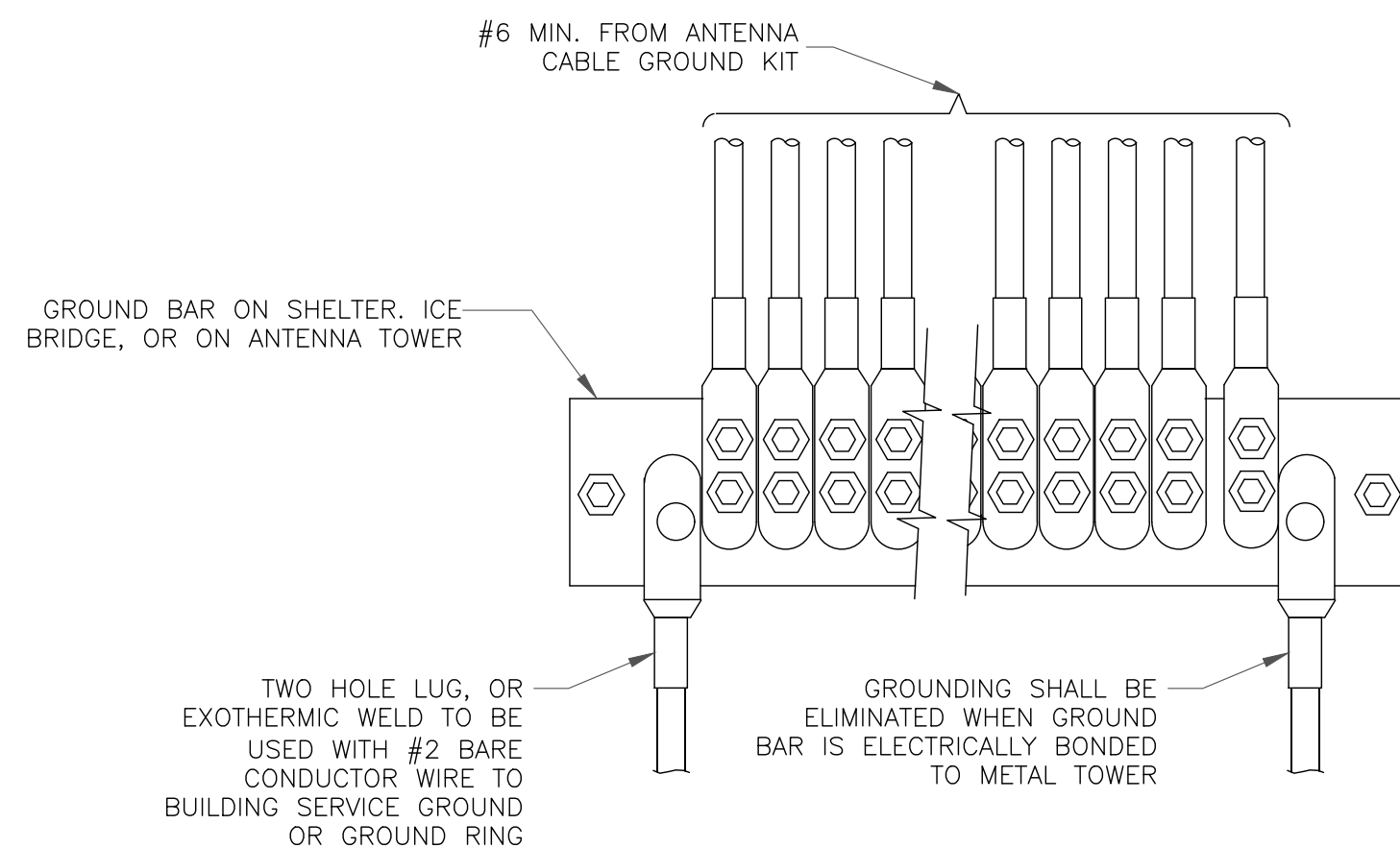
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 SOLID TINNED	YA3C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 STRANDED	YA2C-2TC38	3/8" - 16 NC SS 2 BOLT
#2/0 STRANDED	YA26-2TC38	3/8" - 16 NC SS 2 BOLT
#4/0 STRANDED	YA28-2N	1/2" - 16 NC SS 2 BOLT



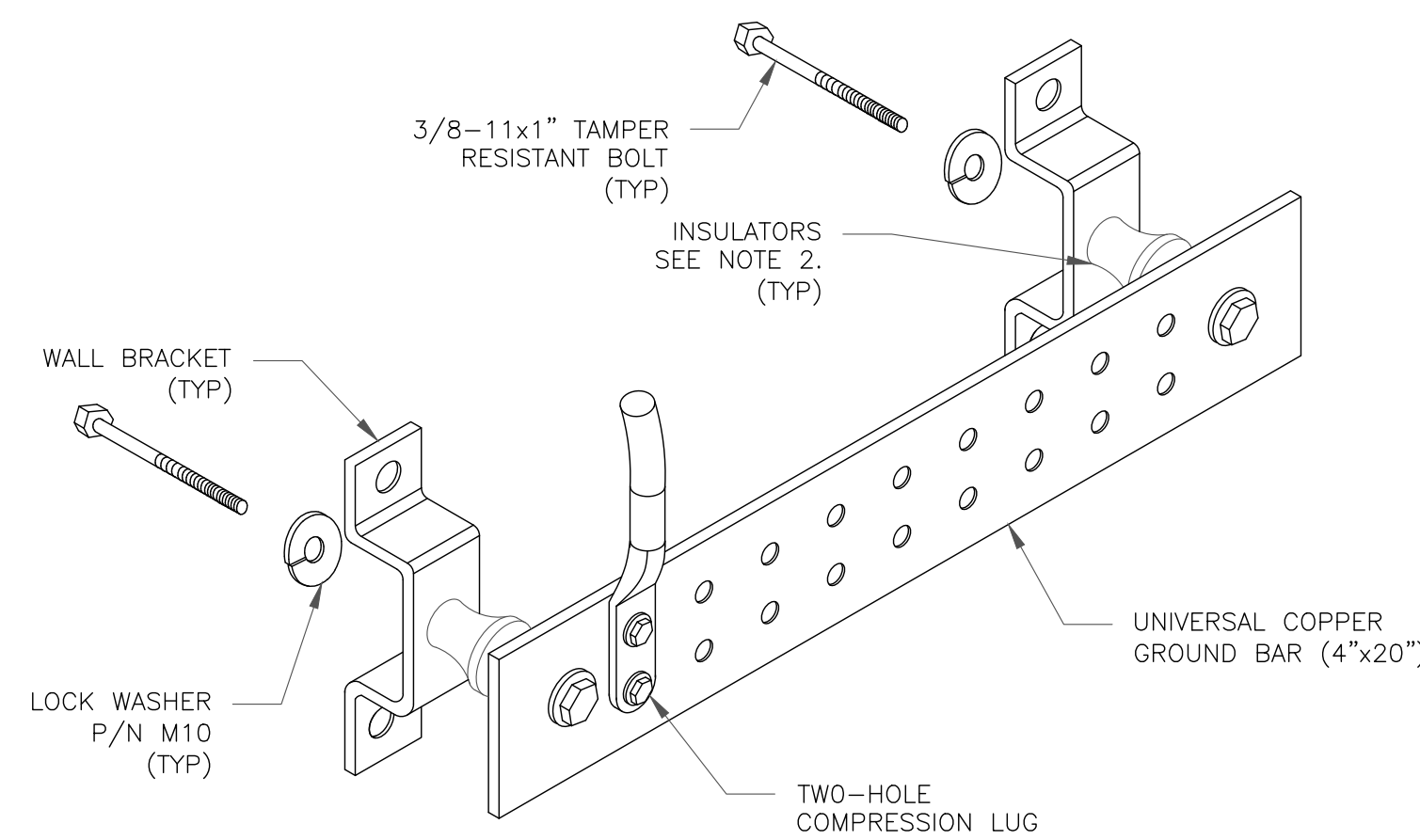
NOTE:

ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER, GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

3 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



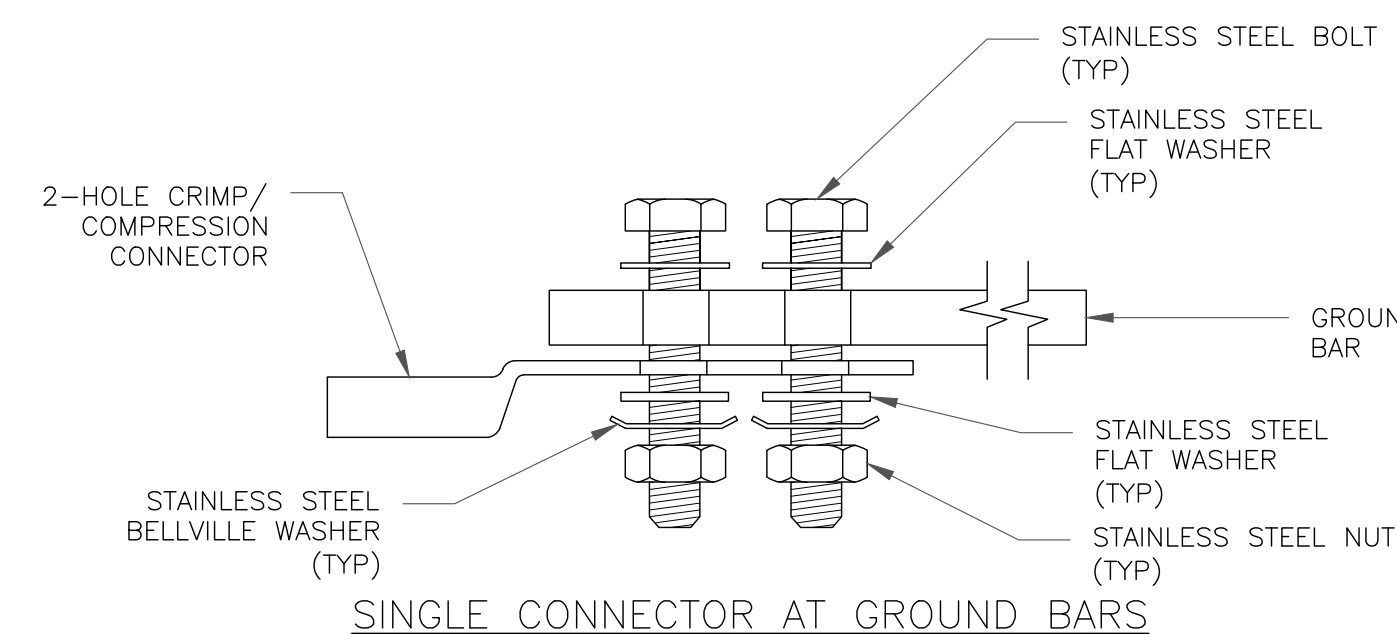
4 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



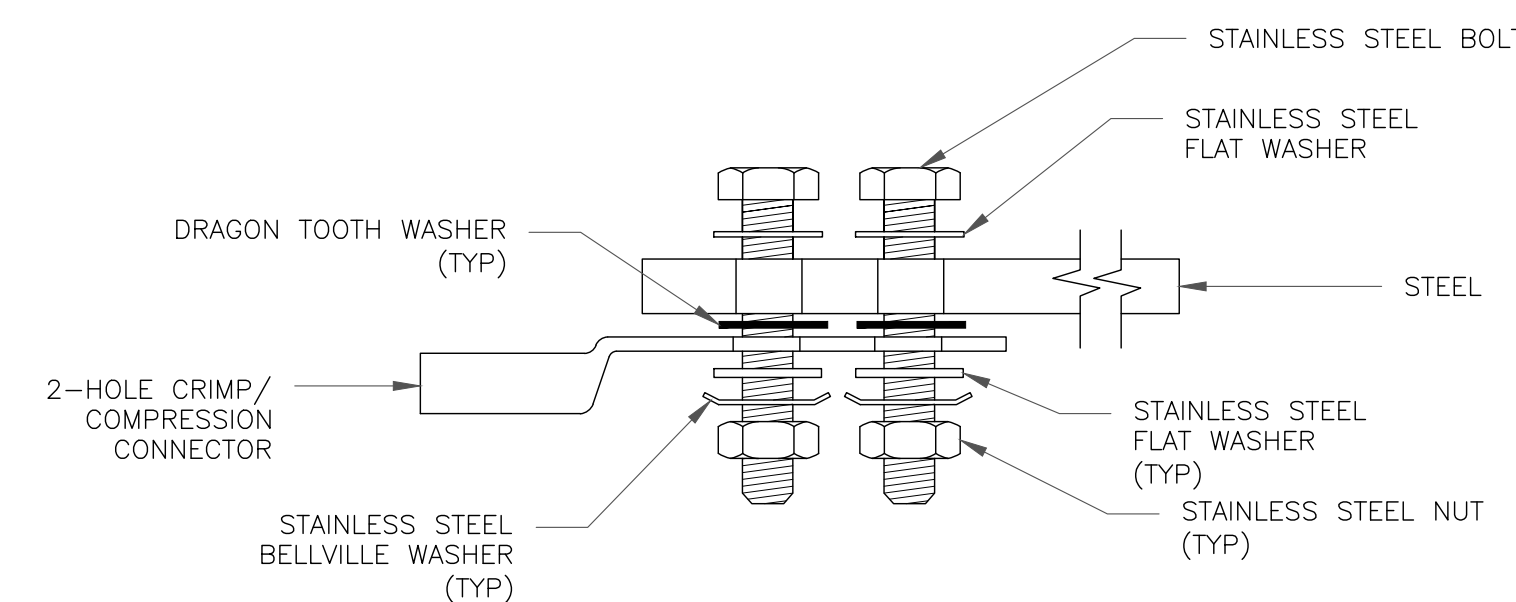
NOTES:

- DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
- OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL. USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

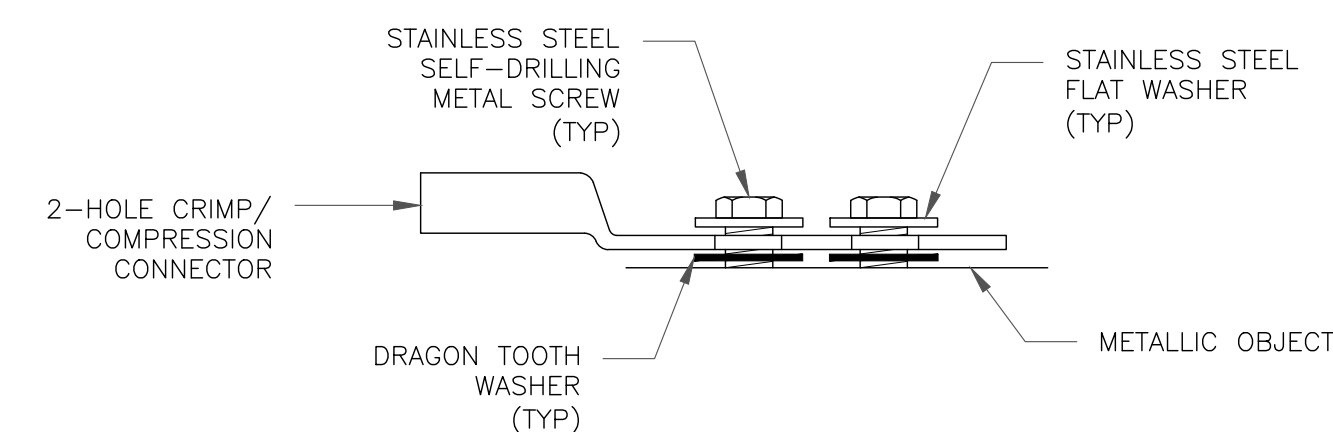
5 GROUND BAR DETAIL
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

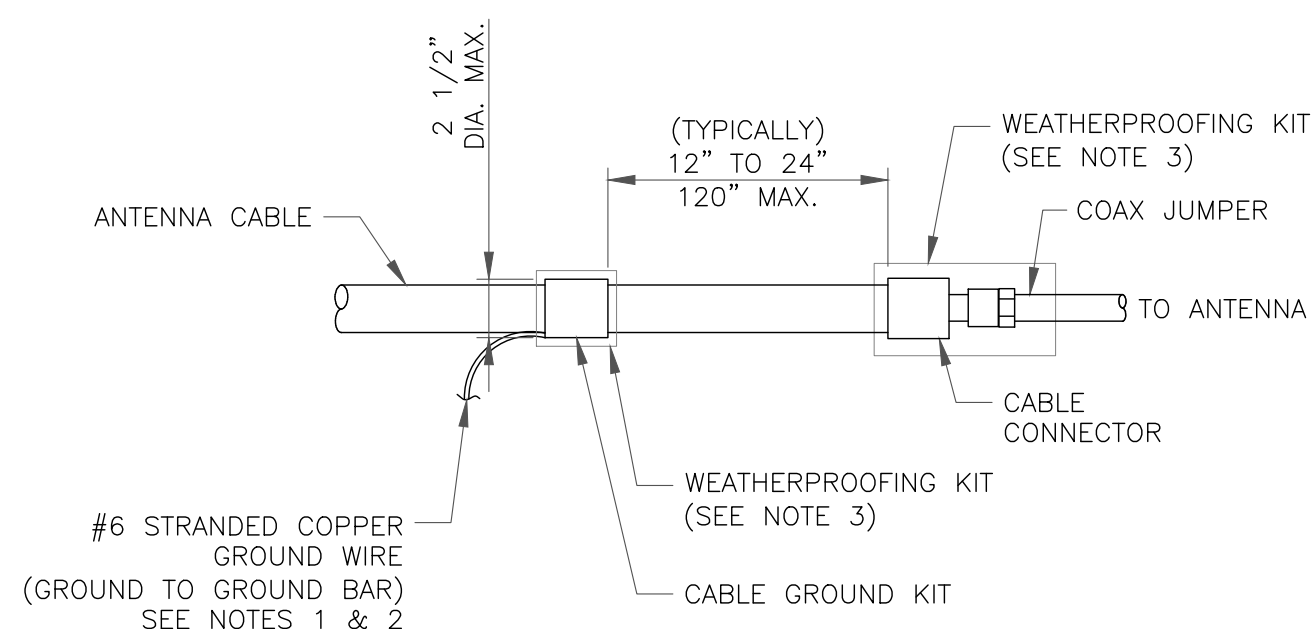


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

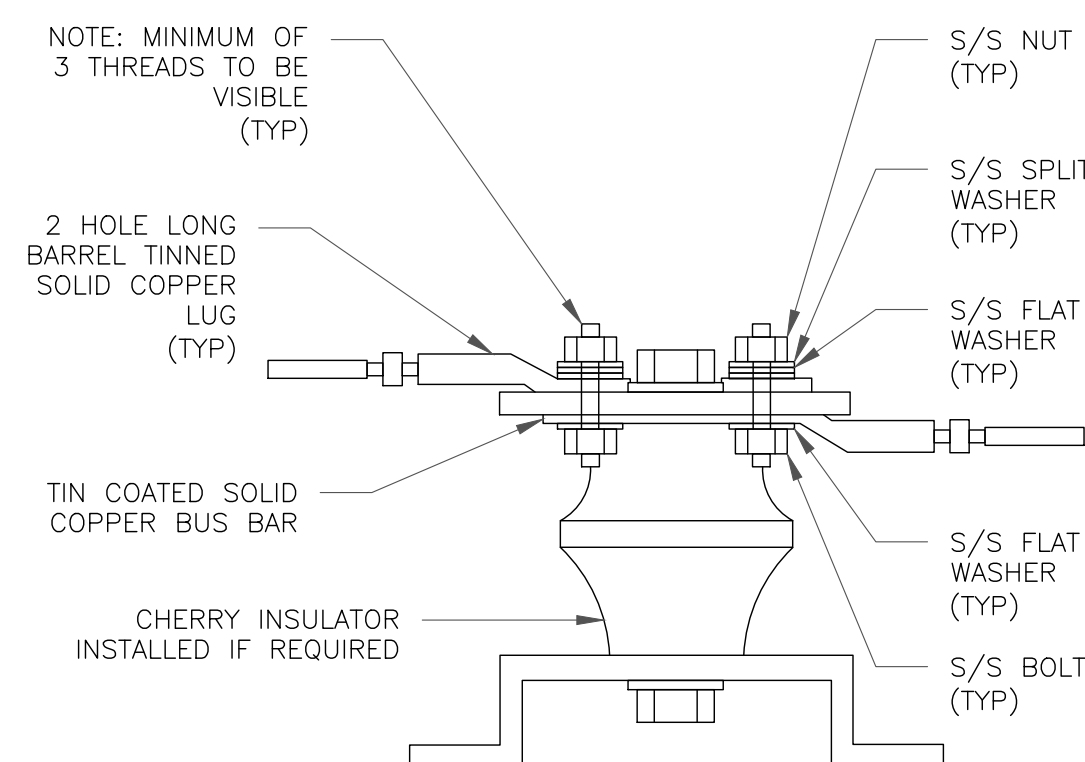
8 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

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

6 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



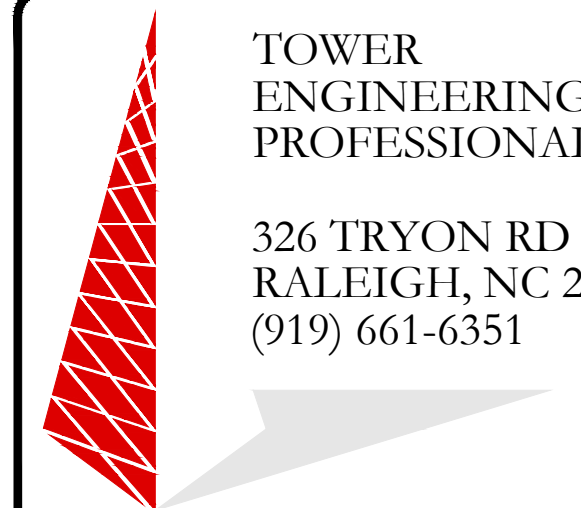
7 LUG DETAIL
SCALE: NOT TO SCALE



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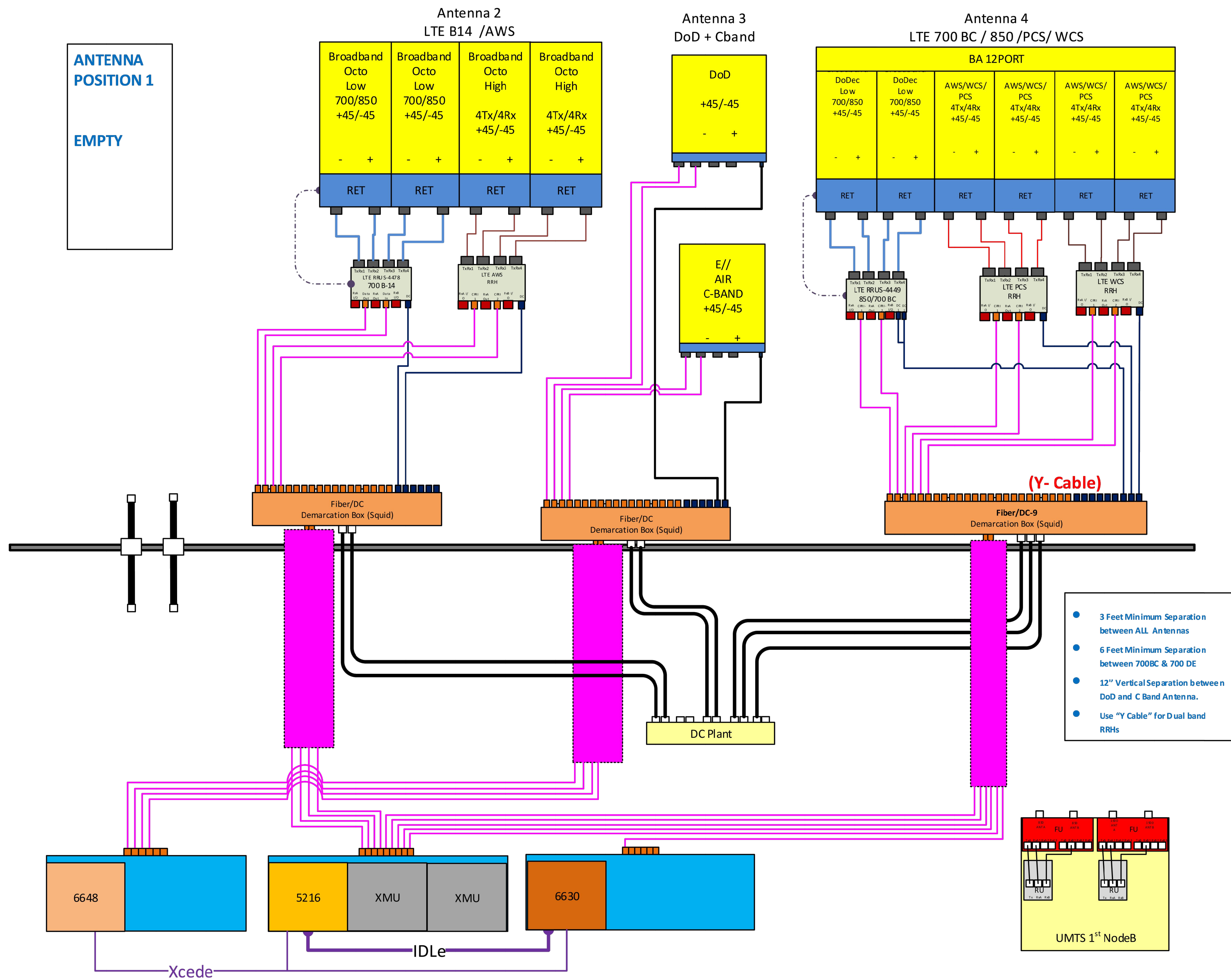
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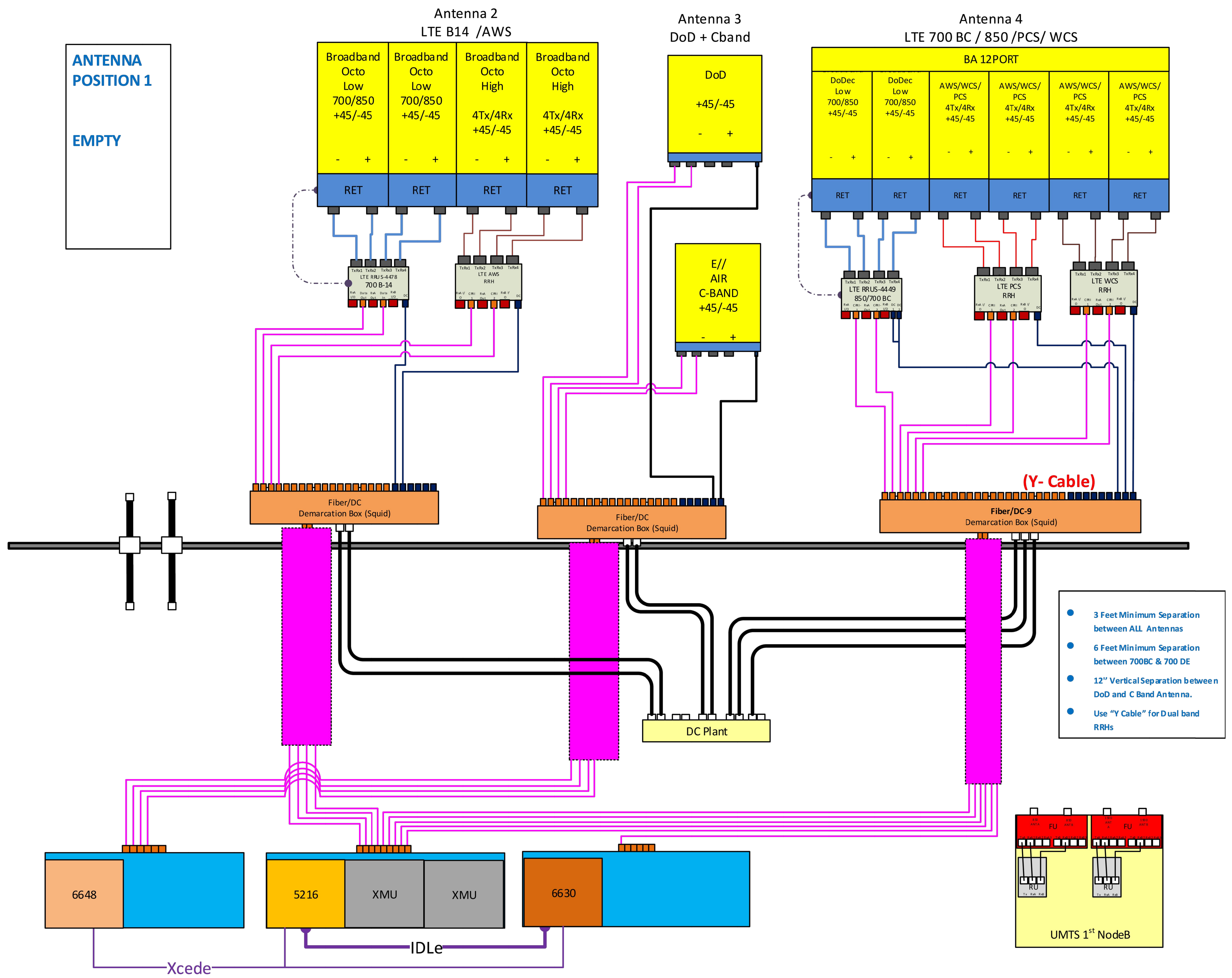
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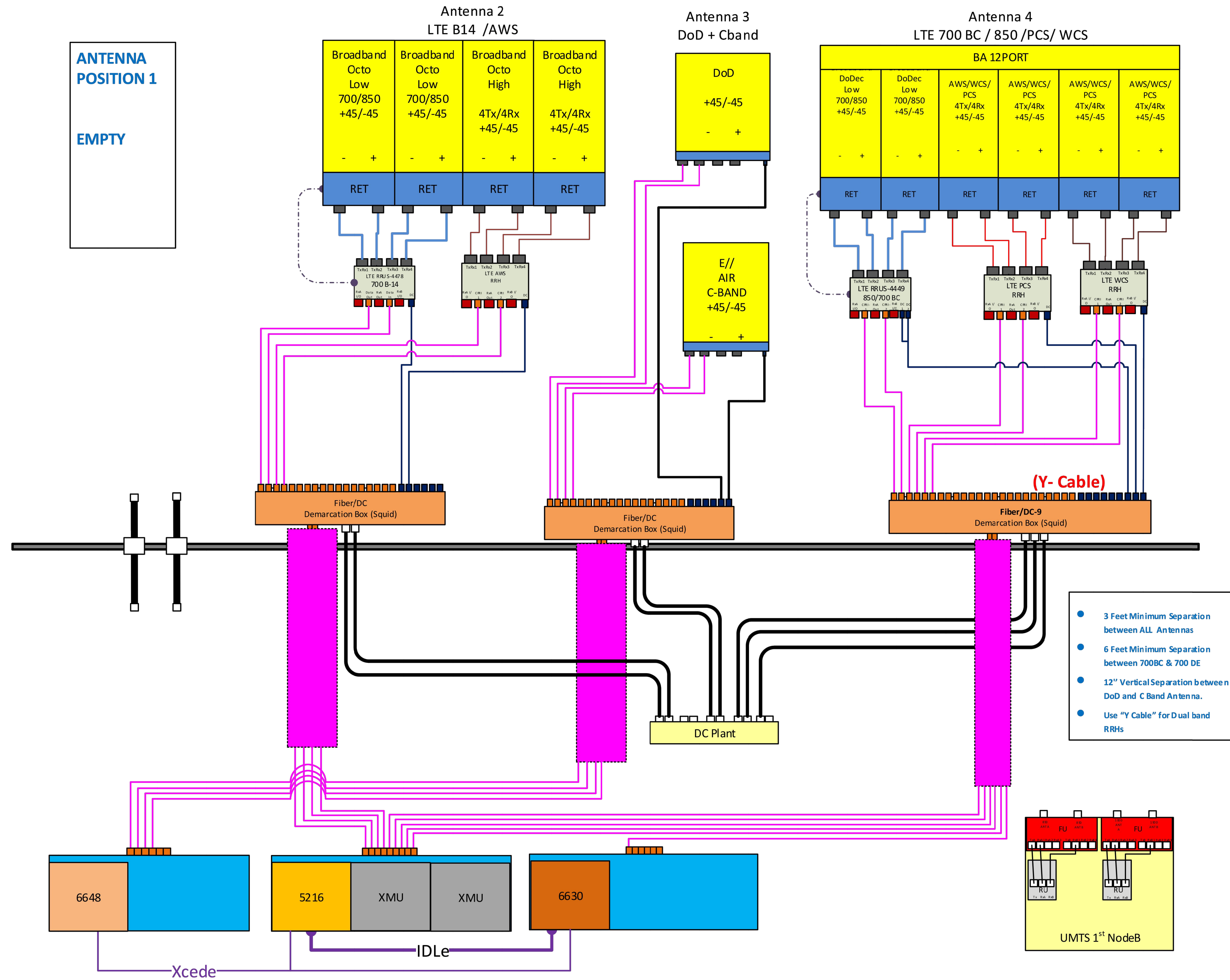
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PLUMBING DIAGRAM



PLUMBING DIAGRAM



PLUMBING DIAGRAM

Date: **February 24, 2022**

Paul J. Ford and Company
250 E. Broad St. Ste 600
Columbus, OH, 43215
614-221-6679

Subject: Structural Analysis Report

Carrier Designation: **AT&T Mobility Co-Locate**
Site Number: MAL01085
Site Name: ASHLAND
FA Number: 10031986

Crown Castle Designation: **BU Number:** 806042
Site Name: BOS ASHLAND 959026
JDE Job Number: 686186
Work Order Number: 2047354
Order Number: 586235 Rev. 0

Engineering Firm Designation: Paul J. Ford and Company Project Number: 37522-0071.001.7805

Site Data: ALBERT RAY DRIVE FOUNTAIN AND GREEN STREETS,
ASHLAND, Middlesex County, MA
Latitude 42° 16' 25.3", Longitude -71° 27' 5.6"
100 Foot - Monopole Tower

Paul J. Ford and Company is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above-mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration

Sufficient Capacity

This analysis utilizes an ultimate 3-second gust wind speed of 127 mph as required by the 2015 International Building Code as amended by the Massachusetts State Building Code, Ninth Edition. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by:


Justin Brown
Structural Designer
jbrown@pauljford.com 

03/03/2022



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1) INTRODUCTION

This tower is a 100 ft Monopole tower designed by ITT MEYER INC. and mapped by AERO Solutions in February of 2008.

The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	127 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
84.0	87.0	3	cci antennas	DMP65R-BU6e w/ Mount Pipe	7 3 6	7/8 3/8 13/16
		3	kathrein	80010965 w/ Mount Pipe		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 32 B30		
		3	ericsson	RRUS 32 B66		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14		
		2	raycap	DC6-48-60-18-8F		
		1	raycap	DC9-48-60-24-8C-EV		
	86.0	3	ericsson	AIR 6419 B77G w/ Mount Pipe		
		3	ericsson	AIR 6449 N77 w/ Mount Pipe		
	84.0	2	tower mounts	T-Arm Mount [TA 602-3]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
102.0	102.0	2	raycap	RVZDC-6627-PF-48	6 2	7/8 1-5/8
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
		6	commscope	NHH-65B-R2B w/ Mount Pipe		
		3	css	X7C-680 w/ Mount Pipe		
		3	samsung telecommunications	MT6407-77A w/ Mount Pipe		
		1	tower mounts	Miscellaneous [NA 507-3]		
		1	tower mounts	Platform Mount [LP 404-1]		
		1	tower mounts	Side Arm Mount [SO 203-3]		
94.0	94.0	3	ericsson	ERICSSON AIR 21 B2A B4P	2	1-5/8
		3	ericsson	ERICSSON AIR 21 B4A B2P	1	1/4
		1	tower mounts	T-Arm Mount [TA 702-3]	6	7/8
74.0	74.0	3	fujitsu	TA08025-B604	1	1-3/8
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	mounts	Commscope_MC-Pk8-DSH_Platform		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1094280	CCISITES
4-FOUNDATION MAPPING	1094282	
4-MANUFACTURING DRAWINGS	2210647	
4-TOWER REINFORCEMENT DRAWINGS	1287595	
4-POST-MODIFICATION INSPECTION	2033623	
4-TOWER REINFORCEMENT DRAWINGS	2217666	
4-POST-MODIFICATION INSPECTION	3672212	
4-TOWER REINFORCEMENT DRAWINGS	3794055	
4-POST-MODIFICATION INSPECTION	3817361	

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are presented in Appendix C.

3.2) Assumptions

- 1) Tower and structures were maintained in accordance with the TIA-222 standard.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 3) The structure was modified in conformance with the referenced modification drawings as shown in the referenced post modification inspection.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	100 - 95	Pole	TP15.79x15x0.19	1	-4.45	586.37	22.1%	Pass
L2	95 - 90	Pole	TP16.59x15.79x0.19	2	-6.64	616.18	37.5%	Pass
L3	90 - 85.5	Pole	TP17.3x16.59x0.19	3	-6.89	643.02	49.7%	Pass
L4	85.5 - 85.25	Pole	TP17.34x17.3x0.6	4	-6.93	1994.61	24.7%	Pass
L5	85.25 - 80.25	Pole	TP18.13x17.34x0.58	5	-10.63	2005.31	37.9%	Pass
L6	80.25 - 75.25	Pole	TP18.93x18.13x0.55	6	-11.32	2007.94	49.1%	Pass
L7	75.25 - 70.25	Pole	TP19.72x18.93x0.54	7	-14.97	2048.57	61.7%	Pass
L8	70.25 - 62.5	Pole	TP20.95x19.72x0.52	8	-15.56	2040.72	70.9%	Pass
L9	62.5 - 61.5	Pole	TP20.73x19.94x0.58	9	-16.87	2292.73	75.6%	Pass
L10	61.5 - 56.5	Pole	TP21.53x20.73x0.56	10	-17.79	2332.69	85.2%	Pass
L11	56.5 - 54.75	Pole	TP21.81x21.53x0.56	11	-18.10	2363.63	88.4%	Pass
L12	54.75 - 54.5	Pole	TP21.85x21.81x0.74	12	-18.18	3079.25	68.2%	Pass
L13	54.5 - 49.5	Pole	TP22.64x21.85x0.71	13	-19.26	3090.38	75.2%	Pass
L14	49.5 - 44.5	Pole	TP23.44x22.64x0.69	14	-20.37	3093.40	81.8%	Pass
L15	44.5 - 39.5	Pole	TP24.23x23.44x0.68	15	-21.51	3144.93	87.9%	Pass
L16	39.5 - 34.5	Pole	TP25.03x24.23x0.65	16	-22.68	3133.82	93.7%	Pass
L17	34.5 - 29	Pole	TP25.9x25.03x0.65	17	-23.02	3164.47	95.4%	Pass
L18	29 - 28	Pole	TP25.55x24.76x0.93	18	-25.22	4505.97	75.8%	Pass
L19	28 - 23.5	Pole	TP26.27x25.55x0.9	19	-26.57	4515.84	79.6%	Pass
L20	23.5 - 23.25	Pole	TP26.31x26.27x0.9	20	-26.67	4522.91	79.2%	Pass
L21	23.25 - 22.75	Pole	TP26.39x26.31x0.9	21	-26.85	4537.04	79.6%	Pass
L22	22.75 - 22.5	Pole	TP26.43x26.39x1.05	22	-26.95	5270.30	73.0%	Pass
L23	22.5 - 17.5	Pole	TP27.22x26.43x1.03	23	-28.85	5310.85	76.7%	Pass
L24	17.5 - 15.75	Pole	TP27.5x27.22x1	24	-29.52	5241.21	77.9%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L25	15.75 - 15.5	Pole	TP27.54x27.5x1.08	25	-29.64	5626.80	68.1%	Pass
L26	15.5 - 12.25	Pole	TP28.05x27.54x1.06	26	-31.00	5672.45	70.2%	Pass
L27	12.25 - 12	Pole	TP28.09x28.05x0.95	27	-31.11	5100.44	78.2%	Pass
L28	12 - 11.75	Pole	TP28.13x28.09x0.95	28	-31.21	5107.89	78.3%	Pass
L29	11.75 - 11.5	Pole	TP28.17x28.13x0.75	29	-31.30	4068.11	90.5%	Pass
L30	11.5 - 6.5	Pole	TP28.97x28.17x0.74	30	-33.16	4117.94	94.0%	Pass
L31	6.5 - 6	Pole	TP29.05x28.97x0.74	31	-33.36	4129.52	94.4%	Pass
L32	6 - 5.75	Pole	TP29.09x29.05x0.75	32	-33.47	4203.55	87.5%	Pass
L33	5.75 - 4.5	Pole	TP29.29x29.09x0.75	33	-33.96	4232.99	88.3%	Pass
L34	4.5 - 4.25	Pole	TP29.33x29.29x0.8	34	-34.08	4513.56	88.4%	Pass
L35	4.25 - 3	Pole	TP29.52x29.33x0.8	35	-34.56	4544.97	89.2%	Pass
L36	3 - 2.75	Pole	TP29.56x29.52x0.8	36	-34.68	4551.25	90.6%	Pass
L37	2.75 - 1.75	Pole	TP29.72x29.56x0.8	37	-35.06	4576.37	91.3%	Pass
L38	1.75 - 1.5	Pole	TP29.76x29.72x0.78	38	-35.16	4443.27	96.7%	Pass
L39	1.5 - 1.25	Pole	TP29.8x29.76x0.78	39	-35.25	4449.36	96.8%	Pass
L40	1.25 - 1	Pole	TP29.84x29.8x0.8	40	-35.34	4595.21	87.8%	Pass
L41	1 - 0	Pole	TP30x29.84x0.8	41	-35.67	4620.34	88.5%	Pass
							Summary	
						Pole	80.2%	Pass
						Reinforcement	96.8%	Pass
						Overall	96.8%	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	82.9	Pass
1,2	Base Plate	0	Sufficient	
1	Base Foundation (Structure)	0	75.4	Pass
1	Base Foundation (Soil Interaction)	0	77.6	Pass

Structure Rating (max from all components) =	96.8%
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Notes:

- All structural ratings are per TIA-222-H Section 15.5
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) The adequacy of the base plate was determined utilizing commercial FEA software

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

- 1) Tower base elevation above sea level: 325.0000 ft.
- 2) Basic wind speed of 127 mph.
- 3) Risk Category II.
- 4) Exposure Category C.
- 5) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- 6) Topographic Category: 1.
- 7) Crest Height: 0.0000 ft.
- 8) Nominal ice thickness of 1.50 in.
- 9) Ice thickness is considered to increase with height.
- 10) Ice density of 56.00 pcf.
- 11) A wind speed of 50 mph is used in combination with ice.
- 12) Temperature drop of 50 °F.
- 13) Deflections calculated using a wind speed of 60 mph.
- 14) A non-linear (P-delta) analysis was used.
- 15) Pressures are calculated at each section.
- 16) Stress ratio used in pole design is 1.
- 17) Tower analysis based on target reliabilities in accordance with Annex S.
- 18) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- 19) Maximum demand-capacity ratio is: 1.05.
- 20) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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 Use Special Wind Profile 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 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 Appurt. 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 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 <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ 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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Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	100.0000- 95.0000	5.0000	0.00	12	15.00	15.79	0.19	0.76	A572-65 (65 ksi)
L2	95.0000- 90.0000	5.0000	0.00	12	15.79	16.59	0.19	0.76	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	90.0000- 85.5000	4.5000	0.00	12	16.59	17.30	0.19	0.76	A572-65 (65 ksi)
L4	85.5000- 85.2500	0.2500	0.00	12	17.30	17.34	0.60	2.41	A572-65 (65 ksi)
L5	85.2500- 80.2500	5.0000	0.00	12	17.34	18.13	0.58	2.31	A572-65 (65 ksi)
L6	80.2500- 75.2500	5.0000	0.00	12	18.13	18.93	0.55	2.21	A572-65 (65 ksi)
L7	75.2500- 70.2500	5.0000	0.00	12	18.93	19.72	0.54	2.16	A572-65 (65 ksi)
L8	70.2500- 62.5000	7.7500	4.00	12	19.72	20.95	0.52	2.09	A572-65 (65 ksi)
L9	62.5000- 61.5000	5.0000	0.00	12	19.94	20.73	0.57	2.30	A572-65 (65 ksi)
L10	61.5000- 56.5000	5.0000	0.00	12	20.73	21.53	0.56	2.25	A572-65 (65 ksi)
L11	56.5000- 54.7500	1.7500	0.00	12	21.53	21.81	0.56	2.25	A572-65 (65 ksi)
L12	54.7500- 54.5000	0.2500	0.00	12	21.81	21.85	0.74	2.95	A572-65 (65 ksi)
L13	54.5000- 49.5000	5.0000	0.00	12	21.85	22.64	0.71	2.85	A572-65 (65 ksi)
L14	49.5000- 44.5000	5.0000	0.00	12	22.64	23.44	0.69	2.75	A572-65 (65 ksi)
L15	44.5000- 39.5000	5.0000	0.00	12	23.44	24.23	0.68	2.70	A572-65 (65 ksi)
L16	39.5000- 34.5000	5.0000	0.00	12	24.23	25.03	0.65	2.60	A572-65 (65 ksi)
L17	34.5000- 29.0000	5.5000	4.00	12	25.03	25.90	0.65	2.60	A572-65 (65 ksi)
L18	29.0000- 28.0000	5.0000	0.00	12	24.76	25.55	0.93	3.70	A572-65 (65 ksi)
L19	28.0000- 23.5000	4.5000	0.00	12	25.55	26.27	0.90	3.60	A572-65 (65 ksi)
L20	23.5000- 23.2500	0.2500	0.00	12	26.27	26.31	0.90	3.60	A572-65 (65 ksi)
L21	23.2500- 22.7500	0.5000	0.00	12	26.31	26.39	0.90	3.60	A572-65 (65 ksi)
L22	22.7500- 22.5000	0.2500	0.00	12	26.39	26.43	1.05	4.20	A572-65 (65 ksi)
L23	22.5000- 17.5000	5.0000	0.00	12	26.43	27.22	1.02	4.10	A572-65 (65 ksi)
L24	17.5000- 15.7500	1.7500	0.00	12	27.22	27.50	1.00	4.00	A572-65 (65 ksi)
L25	15.7500- 15.5000	0.2500	0.00	12	27.50	27.54	1.08	4.30	A572-65 (65 ksi)
L26	15.5000- 12.2500	3.2500	0.00	12	27.54	28.05	1.06	4.25	A572-65 (65 ksi)
L27	12.2500- 12.0000	0.2500	0.00	12	28.05	28.09	0.95	3.80	A572-65 (65 ksi)
L28	12.0000- 11.7500	0.2500	0.00	12	28.09	28.13	0.95	3.80	A572-65 (65 ksi)
L29	11.7500- 11.5000	0.2500	0.00	12	28.13	28.17	0.75	3.00	A572-65 (65 ksi)
L30	11.5000- 6.5000	5.0000	0.00	12	28.17	28.97	0.74	2.95	A572-65 (65 ksi)
L31	6.5000-6.0000	0.5000	0.00	12	28.97	29.05	0.74	2.95	A572-65 (65 ksi)
L32	6.0000-5.7500	0.2500	0.00	12	29.05	29.09	0.75	3.00	A572-65 (65 ksi)
L33	5.7500-4.5000	1.2500	0.00	12	29.09	29.29	0.75	3.00	A572-65 (65 ksi)
L34	4.5000-4.2500	0.2500	0.00	12	29.29	29.33	0.80	3.20	A572-65 (65 ksi)
L35	4.2500-3.0000	1.2500	0.00	12	29.33	29.52	0.80	3.20	A572-65 (65 ksi)
L36	3.0000-2.7500	0.2500	0.00	12	29.52	29.56	0.80	3.20	A572-65 (65 ksi)
L37	2.7500-1.7500	1.0000	0.00	12	29.56	29.72	0.80	3.20	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L38	1.7500-1.5000	0.2500	0.00	12	29.72	29.76	0.78	3.10	(65 ksi) A572-65
L39	1.5000-1.2500	0.2500	0.00	12	29.76	29.80	0.78	3.10	(65 ksi) A572-65
L40	1.2500-1.0000	0.2500	0.00	12	29.80	29.84	0.80	3.20	(65 ksi) A572-65
L41	1.0000-0.0000	1.0000		12	29.84	30.00	0.80	3.20	(65 ksi) A572-65

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	15.46	9.06	253.67	5.30	7.77	32.65	513.99	4.46	3.51	18.478
	16.28	9.55	296.65	5.59	8.18	36.26	601.10	4.70	3.72	19.597
L2	16.28	9.55	296.65	5.59	8.18	36.26	601.10	4.70	3.72	19.597
	17.10	10.03	344.24	5.87	8.59	40.07	697.52	4.94	3.94	20.716
L3	17.10	10.03	344.24	5.87	8.59	40.07	697.52	4.94	3.94	20.716
	17.84	10.47	391.20	6.13	8.96	43.65	792.67	5.15	4.13	21.723
L4	17.70	32.40	1152.94	5.98	8.96	128.65	2336.16	15.94	3.02	5.016
	17.74	32.47	1161.17	5.99	8.98	129.27	2352.85	15.98	3.03	5.033
L5	17.75	31.17	1117.99	6.00	8.98	124.47	2265.34	15.34	3.10	5.367
	18.57	32.65	1284.35	6.29	9.39	136.73	2602.44	16.07	3.31	5.735
L6	18.58	31.28	1234.01	6.29	9.39	131.37	2500.43	15.39	3.38	6.116
	19.40	32.69	1408.71	6.58	9.80	143.68	2854.42	16.09	3.59	6.501
L7	19.40	31.97	1379.65	6.58	9.80	140.72	2795.54	15.74	3.63	6.713
	20.23	33.35	1566.04	6.87	10.22	153.31	3173.23	16.41	3.84	7.107
L8	20.23	32.22	1516.11	6.87	10.22	148.42	3072.04	15.86	3.89	7.459
	21.51	34.29	1826.47	7.31	10.85	168.31	3700.93	16.88	4.22	8.091
L9	21.10	35.85	1716.18	6.93	10.33	166.15	3477.44	17.65	3.80	6.614
	21.26	37.33	1936.24	7.22	10.74	180.27	3923.35	18.37	4.02	6.984
L10	21.27	36.54	1897.68	7.22	10.74	176.68	3845.21	17.98	4.05	7.199
	22.09	37.98	2130.90	7.51	11.15	191.07	4317.78	18.69	4.26	7.578
L11	22.09	37.98	2130.90	7.51	11.15	191.07	4317.78	18.69	4.26	7.578
	22.38	38.48	2216.83	7.61	11.30	196.24	4491.90	18.94	4.34	7.771
L12	22.32	50.04	2835.28	7.54	11.30	250.99	5745.04	24.63	3.87	5.245
	22.36	50.13	2851.35	7.56	11.32	251.96	5777.60	24.67	3.88	5.259
L13	22.37	48.49	2764.49	7.57	11.32	244.28	5601.61	23.86	3.95	5.538
	23.19	50.31	3088.20	7.85	11.73	263.31	6257.52	24.76	4.16	5.837
L14	23.20	48.60	2990.04	7.86	11.73	254.94	6058.64	23.92	4.23	6.146
	24.02	50.36	3326.62	8.14	12.14	274.02	6740.64	24.79	4.44	6.456
L15	24.03	49.47	3271.52	8.15	12.14	269.48	6628.99	24.35	4.47	6.625
	24.85	51.20	3626.28	8.43	12.55	288.91	7347.83	25.20	4.68	6.941
L16	24.86	49.36	3503.10	8.44	12.55	279.09	7098.24	24.29	4.75	7.311
	25.68	51.02	3869.33	8.73	12.96	298.48	7840.30	25.11	4.96	7.638
L17	25.68	51.02	3869.33	8.73	12.96	298.48	7840.30	25.11	4.96	7.638
	26.58	52.85	4300.70	9.04	13.42	320.56	8714.39	26.01	5.20	7.999
L18	25.96	70.99	5147.89	8.53	12.83	401.37	10431.02	34.94	4.16	4.494
	26.13	73.36	5679.64	8.82	13.24	429.07	11508.49	36.10	4.37	4.724
L19	26.14	71.45	5542.98	8.83	13.24	418.75	11231.58	35.16	4.44	4.929
	26.88	73.52	6039.04	9.08	13.61	443.82	12236.73	36.18	4.63	5.142
L20	26.88	73.52	6039.04	9.08	13.61	443.82	12236.73	36.18	4.63	5.142
	26.92	73.63	6067.43	9.10	13.63	445.23	12294.27	36.24	4.64	5.154
L21	26.92	73.63	6067.43	9.10	13.63	445.23	12294.27	36.24	4.64	5.154
	27.00	73.86	6124.49	9.12	13.67	448.06	12409.88	36.35	4.66	5.178
L22	26.95	85.67	7019.83	9.07	13.67	513.57	14224.07	42.16	4.26	4.055
	26.99	85.80	7052.87	9.09	13.69	515.21	14291.03	42.23	4.27	4.065
L23	27.00	83.84	6905.31	9.09	13.69	504.43	13992.04	41.26	4.34	4.23
	27.82	86.46	7573.23	9.38	14.10	537.09	15345.42	42.55	4.55	4.437
L24	27.83	84.43	7409.69	9.39	14.10	525.49	15014.04	41.56	4.62	4.615
	28.12	85.33	7647.77	9.49	14.24	536.89	15496.45	42.00	4.69	4.69
L25	28.09	91.47	8151.74	9.46	14.24	572.27	16517.64	45.02	4.49	4.176
	28.13	91.60	8188.54	9.47	14.27	574.03	16592.20	45.08	4.50	4.185
L26	28.14	90.58	8104.80	9.48	14.27	568.16	16422.51	44.58	4.53	4.266
	28.67	92.35	8588.01	9.66	14.53	590.96	17401.65	45.45	4.67	4.396

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L27	28.71	82.91	7775.11	9.70	14.53	535.02	15754.47	40.81	4.97	5.234
	28.75	83.04	7809.32	9.72	14.55	536.61	15823.80	40.87	4.98	5.246
L28	28.75	83.04	7809.32	9.72	14.55	536.61	15823.80	40.87	4.98	5.246
	28.79	83.16	7843.63	9.73	14.57	538.21	15893.32	40.93	4.99	5.257
L29	28.86	66.13	6330.02	9.80	14.57	434.35	12826.34	32.55	5.53	7.373
	28.90	66.23	6357.59	9.82	14.59	435.63	12882.20	32.60	5.54	7.387
L30	28.91	65.15	6260.18	9.82	14.59	428.95	12684.83	32.07	5.57	7.558
	29.73	67.04	6819.52	10.11	15.01	454.47	13818.20	33.00	5.79	7.847
L31	29.73	67.04	6819.52	10.11	15.01	454.47	13818.20	33.00	5.79	7.847
	29.81	67.23	6877.22	10.13	15.05	457.06	13935.12	33.09	5.81	7.875
L32	29.81	68.34	6984.52	10.13	15.05	464.20	14152.54	33.63	5.77	7.7
	29.85	68.43	7013.96	10.14	15.07	465.52	14212.19	33.68	5.79	7.714
L33	29.85	68.43	7013.96	10.14	15.07	465.52	14212.19	33.68	5.79	7.714
	30.05	68.91	7162.38	10.22	15.17	472.15	14512.93	33.92	5.84	7.785
L34	30.04	73.38	7599.78	10.20	15.17	500.98	15399.22	36.11	5.70	7.131
	30.08	73.48	7631.60	10.21	15.19	502.40	15463.69	36.17	5.72	7.144
L35	30.08	73.48	7631.60	10.21	15.19	502.40	15463.69	36.17	5.72	7.144
	30.28	73.99	7792.02	10.28	15.29	509.51	15788.74	36.42	5.77	7.21
L36	30.28	73.99	7792.02	10.28	15.29	509.51	15788.74	36.42	5.77	7.21
	30.32	74.09	7824.37	10.30	15.31	510.94	15854.30	36.47	5.78	7.224
L37	30.32	74.09	7824.37	10.30	15.31	510.94	15854.30	36.47	5.78	7.224
	30.49	74.50	7954.67	10.35	15.40	516.67	16118.32	36.67	5.82	7.277
L38	30.50	72.24	7726.09	10.36	15.40	501.82	15655.15	35.55	5.89	7.598
	30.54	72.34	7757.92	10.38	15.42	503.22	15719.64	35.60	5.90	7.612
L39	30.54	72.34	7757.92	10.38	15.42	503.22	15719.64	35.60	5.90	7.612
	30.58	72.44	7789.83	10.39	15.44	504.61	15784.32	35.65	5.91	7.626
L40	30.57	74.71	8020.36	10.38	15.44	519.55	16251.42	36.77	5.84	7.304
	30.61	74.81	8053.34	10.40	15.46	520.99	16318.25	36.82	5.85	7.317
L41	30.61	74.81	8053.34	10.40	15.46	520.99	16318.25	36.82	5.85	7.317
	30.78	75.22	8186.16	10.45	15.54	526.78	16587.38	37.02	5.90	7.37

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 100.0000- 95.0000				1	1	1			
L2 95.0000- 90.0000				1	1	1			
L3 90.0000- 85.5000				1	1	1			
L4 85.5000- 85.2500				1	1	0.845857			
L5 85.2500- 80.2500				1	1	0.856207			
L6 80.2500- 75.2500				1	1	0.86994			
L7 75.2500- 70.2500				1	1	0.867235			
L8 70.2500- 62.5000				1	1	0.88153			
L9 62.5000- 61.5000				1	1	0.896555			
L10 61.5000- 56.5000				1	1	0.898041			
L11 56.5000- 54.7500				1	1	0.892103			
L12 54.7500- 54.5000				1	1	0.854418			
L13 54.5000- 49.5000				1	1	0.864055			
L14 49.5000- 44.5000				1	1	0.875913			
L15 44.5000- 39.5000				1	1	0.874059			
L16 39.5000- 34.5000				1	1	0.889694			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_r	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L17 34.5000-29.0000				1	1	0.884802			
L18 29.0000-28.0000				1	1	0.855953			
L19 28.0000-23.5000				1	1	0.861908			
L20 23.5000-23.2500				1	1	1.0242			
L21 23.2500-22.7500				1	1	1.02187			
L22 22.7500-22.5000				1	1	0.974904			
L23 22.5000-17.5000				1	1	0.974853			
L24 17.5000-15.7500				1	1	0.990425			
L25 15.7500-15.5000				1	1	1.0155			
L26 15.5000-12.2500				1	1	1.01183			
L27 12.2500-12.0000				1	1	1.05755			
L28 12.0000-11.7500				1	1	1.05639			
L29 11.7500-11.5000				1	1	1.1988			
L30 11.5000-6.5000				1	1	1.19383			
L31 6.5000-6.0000				1	1	1.19143			
L32 6.0000-5.7500				1	1	1.26512			
L33 5.7500-4.5000				1	1	1.25864			
L34 4.5000-4.2500				1	1	1.18015			
L35 4.2500-3.0000				1	1	1.17416			
L36 3.0000-2.7500				1	1	1.13918			
L37 2.7500-1.7500				1	1	1.13464			
L38 1.7500-1.5000				1	1	1.05524			
L39 1.5000-1.2500				1	1	1.05424			
L40 1.2500-1.0000				1	1	0.954982			
L41 1.0000-0.0000				1	1	0.951488			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter	Perimeter	Weight plf
								in	in	

MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	B	No	Surface Ar (CaAa)	94.0000 - 0.0000	2	2	-0.420 -0.400	1.63		1.07
FXL 780 PE(7/8)	B	No	Surface Ar (CaAa)	94.0000 - 0.0000	4	4	-0.380 -0.350	1.09		0.25
FXL 780 PE(7/8)	B	No	Surface Ar (CaAa)	94.0000 - 0.0000	2	2	-0.320 -0.300	1.09		0.25

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
LDF1-50A(1/4)	B	No	Surface Ar (CaAa)	94.0000 - 0.0000	1	1	-0.330 -0.330	0.34		0.06

CR 50 1070(7/8)	B	No	Surface Ar (CaAa)	84.0000 - 0.0000	6	6	0.450 0.470	0.00		0.28
FB-L98B-034-XXX(3/8)	C	No	Surface Ar (CaAa)	84.0000 - 0.0000	2	1	-0.400 -0.390	0.00		0.06

CU12PSM9P8XXX(1-3/8)	A	No	Surface Ar (CaAa)	74.0000 - 0.0000	1	1	-0.009 0.009	1.41		1.66

MP3-06	B	No	Surface Af (CaAa)	58.0000 - 1.7500	1	1	-0.226 -0.226	6.89	19.00	0.00
MP3-06	A	No	Surface Af (CaAa)	58.0000 - 1.7500	1	1	-0.226 -0.226	6.89	19.00	0.00
MP3-06	C	No	Surface Af (CaAa)	19.0000 - 1.7500	1	1	0.024 0.024	6.89	19.00	0.00
MP3-06	C	No	Surface Af (CaAa)	58.0000 - 8.5000	1	1	-0.226 -0.226	6.89	19.00	0.00
MP3-05	A	No	Surface Af (CaAa)	35.0000 - 10.0000	1	1	0.274 0.274	5.33	14.84	0.00
MP3-05	C	No	Surface Af (CaAa)	32.0000 - 2.2500	1	1	0.274 0.274	5.33	14.84	0.00
MP3-05	B	No	Surface Af (CaAa)	32.0000 - 2.2500	1	1	0.274 0.274	5.33	14.84	0.00
MP3-05	B	No	Surface Af (CaAa)	88.0000 - 58.0000	1	1	-0.226 -0.226	5.33	14.84	0.00
MP3-05	A	No	Surface Af (CaAa)	88.0000 - 58.0000	1	1	-0.226 -0.226	5.33	14.84	0.00
MP3-05	C	No	Surface Af (CaAa)	88.0000 - 58.0000	1	1	-0.226 -0.226	5.33	14.84	0.00
CCI-065125	B	No	Surface Af (CaAa)	25.5000 - 5.0000	1	1	-0.476 -0.476	6.50	15.50	0.00
CCI-060100	A	No	Surface Af (CaAa)	25.5000 - 4.0000	1	1	-0.476 -0.476	6.00	14.00	0.00
CCI-060100	B	No	Surface Af (CaAa)	25.5000 - 4.0000	1	1	0.024 0.024	6.00	14.00	0.00

Stacked Plate	B	No	Surface Af (CaAa)	71.5000 - 1.5000	1	1	-0.476 -0.476	6.00	17.00	0.00
Stacked Plate	A	No	Surface Af (CaAa)	71.5000 - 1.5000	1	1	-0.476 -0.476	6.00	17.00	0.00
Stacked Plate	B	No	Surface Af (CaAa)	71.5000 - 1.5000	1	1	0.274 0.274	6.00	17.00	0.00
5 x 1.25	B	No	Surface Af (CaAa)	81.5000 - 71.5000	1	1	-0.476 -0.476	5.00	12.50	0.00
5 x 1.25	A	No	Surface Af (CaAa)	81.5000 - 71.5000	1	1	-0.476 -0.476	5.00	12.50	0.00
5 x 1.25	B	No	Surface Af (CaAa)	81.5000 - 71.5000	1	1	0.274 0.274	5.00	12.50	0.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	CAAA ft/ft	Weight plf	
LDF5-50A(7/8)	C	No	No	Inside Pole	100.0000 - 0.0000	6	No Ice 1/2" Ice 1" Ice 2" Ice	0.0000 0.0000 0.0000 0.0000	0.33 0.33 0.33 0.33
HB158-1-08U8-S8J18(1-5/8)	C	No	No	Inside Pole	100.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.0000 0.0000 0.0000 0.0000	1.30 1.30 1.30 1.30
HB158-1-08U8-S8J18(1-5/8)	C	No	No	Inside Pole	100.0000 - 0.0000	1	No Ice 1/2" Ice	0.0000 0.0000	1.30 1.30

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C _{AA} A _A ft ² /ft	Weight plf
FB-L98B-235-XXX(3/8)	C	No	No	Inside Pole	84.0000 - 0.0000	1	1" Ice	1.30
							2" Ice	1.30
							No Ice	0.06
							1/2" Ice	0.06
							1" Ice	0.06
							2" Ice	0.06
PWRT-606-S(7/8)	C	No	No	Inside Pole	84.0000 - 0.0000	1	No Ice	0.89
							1/2" Ice	0.89
							1" Ice	0.89
							2" Ice	0.89
							No Ice	0.89
							1/2" Ice	0.89
PWRT-608-S(13/16)	C	No	No	Inside Pole	84.0000 - 0.0000	6	No Ice	0.62
							1/2" Ice	0.62
							1" Ice	0.62
							2" Ice	0.62
							No Ice	0.62
							1/2" Ice	0.62

Feed Line/Linear Appurtenances Section Areas

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} A _A In Face ft ²	C _{AA} A _A Out Face ft ²	Weight K
L1	100.0000-95.0000	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	0.02
L2	95.0000-90.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	4.054	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.02
L3	90.0000-85.5000	A	0.000	0.000	2.221	0.000	0.00
		B	0.000	0.000	6.782	0.000	0.02
		C	0.000	0.000	2.221	0.000	0.02
L4	85.5000-85.2500	A	0.000	0.000	0.222	0.000	0.00
		B	0.000	0.000	0.475	0.000	0.00
		C	0.000	0.000	0.222	0.000	0.00
L5	85.2500-80.2500	A	0.000	0.000	5.454	0.000	0.00
		B	0.000	0.000	11.533	0.000	0.02
		C	0.000	0.000	4.442	0.000	0.04
L6	80.2500-75.2500	A	0.000	0.000	8.489	0.000	0.00
		B	0.000	0.000	17.604	0.000	0.03
		C	0.000	0.000	4.442	0.000	0.05
L7	75.2500-70.2500	A	0.000	0.000	9.256	0.000	0.01
		B	0.000	0.000	18.080	0.000	0.03
		C	0.000	0.000	4.442	0.000	0.05
L8	70.2500-62.5000	A	0.000	0.000	15.728	0.000	0.01
		B	0.000	0.000	30.239	0.000	0.04
		C	0.000	0.000	6.885	0.000	0.07
L9	62.5000-61.5000	A	0.000	0.000	2.029	0.000	0.00
		B	0.000	0.000	3.902	0.000	0.01
		C	0.000	0.000	0.888	0.000	0.01
L10	61.5000-56.5000	A	0.000	0.000	10.537	0.000	0.01
		B	0.000	0.000	19.899	0.000	0.03
		C	0.000	0.000	4.832	0.000	0.05
L11	56.5000-54.7500	A	0.000	0.000	4.007	0.000	0.00
		B	0.000	0.000	7.283	0.000	0.01
		C	0.000	0.000	2.010	0.000	0.02
L12	54.7500-54.5000	A	0.000	0.000	0.572	0.000	0.00
		B	0.000	0.000	1.040	0.000	0.00
		C	0.000	0.000	0.287	0.000	0.00
L13	54.5000-49.5000	A	0.000	0.000	11.447	0.000	0.01
		B	0.000	0.000	20.809	0.000	0.03
		C	0.000	0.000	5.742	0.000	0.05
L14	49.5000-44.5000	A	0.000	0.000	11.447	0.000	0.01
		B	0.000	0.000	20.809	0.000	0.03
		C	0.000	0.000	5.742	0.000	0.05
L15	44.5000-39.5000	A	0.000	0.000	11.447	0.000	0.01
		B	0.000	0.000	20.809	0.000	0.03
		C	0.000	0.000	5.742	0.000	0.05

Tower Sectio n	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
L16	39.5000-34.5000	A	0.000	0.000	11.891	0.000	0.01
		B	0.000	0.000	20.809	0.000	0.03
		C	0.000	0.000	5.742	0.000	0.05
L17	34.5000-29.0000	A	0.000	0.000	17.478	0.000	0.01
		B	0.000	0.000	25.555	0.000	0.03
		C	0.000	0.000	8.981	0.000	0.05
L18	29.0000-28.0000	A	0.000	0.000	3.178	0.000	0.00
		B	0.000	0.000	5.050	0.000	0.01
		C	0.000	0.000	2.037	0.000	0.01
L19	28.0000-23.5000	A	0.000	0.000	16.300	0.000	0.01
		B	0.000	0.000	26.892	0.000	0.02
		C	0.000	0.000	9.165	0.000	0.04
L20	23.5000-23.2500	A	0.000	0.000	1.044	0.000	0.00
		B	0.000	0.000	1.783	0.000	0.00
		C	0.000	0.000	0.509	0.000	0.00
L21	23.2500-22.7500	A	0.000	0.000	2.089	0.000	0.00
		B	0.000	0.000	3.567	0.000	0.00
		C	0.000	0.000	1.018	0.000	0.00
L22	22.7500-22.5000	A	0.000	0.000	1.044	0.000	0.00
		B	0.000	0.000	1.783	0.000	0.00
		C	0.000	0.000	0.509	0.000	0.00
L23	22.5000-17.5000	A	0.000	0.000	20.889	0.000	0.01
		B	0.000	0.000	35.667	0.000	0.03
		C	0.000	0.000	11.906	0.000	0.05
L24	17.5000-15.7500	A	0.000	0.000	7.311	0.000	0.00
		B	0.000	0.000	12.484	0.000	0.01
		C	0.000	0.000	5.574	0.000	0.02
L25	15.7500-15.5000	A	0.000	0.000	1.044	0.000	0.00
		B	0.000	0.000	1.783	0.000	0.00
		C	0.000	0.000	0.796	0.000	0.00
L26	15.5000-12.2500	A	0.000	0.000	13.578	0.000	0.01
		B	0.000	0.000	23.184	0.000	0.02
		C	0.000	0.000	10.351	0.000	0.03
L27	12.2500-12.0000	A	0.000	0.000	1.044	0.000	0.00
		B	0.000	0.000	1.783	0.000	0.00
		C	0.000	0.000	0.796	0.000	0.00
L28	12.0000-11.7500	A	0.000	0.000	1.044	0.000	0.00
		B	0.000	0.000	1.783	0.000	0.00
		C	0.000	0.000	0.796	0.000	0.00
L29	11.7500-11.5000	A	0.000	0.000	1.044	0.000	0.00
		B	0.000	0.000	1.783	0.000	0.00
		C	0.000	0.000	0.796	0.000	0.00
L30	11.5000-6.5000	A	0.000	0.000	17.780	0.000	0.01
		B	0.000	0.000	35.667	0.000	0.03
		C	0.000	0.000	13.628	0.000	0.05
L31	6.5000-6.0000	A	0.000	0.000	1.645	0.000	0.00
		B	0.000	0.000	3.567	0.000	0.00
		C	0.000	0.000	1.018	0.000	0.00
L32	6.0000-5.7500	A	0.000	0.000	0.822	0.000	0.00
		B	0.000	0.000	1.783	0.000	0.00
		C	0.000	0.000	0.509	0.000	0.00
L33	5.7500-4.5000	A	0.000	0.000	4.112	0.000	0.00
		B	0.000	0.000	8.917	0.000	0.01
		C	0.000	0.000	2.546	0.000	0.01
L34	4.5000-4.2500	A	0.000	0.000	0.822	0.000	0.00
		B	0.000	0.000	1.783	0.000	0.00
		C	0.000	0.000	0.509	0.000	0.00
L35	4.2500-3.0000	A	0.000	0.000	3.112	0.000	0.00
		B	0.000	0.000	7.917	0.000	0.01
		C	0.000	0.000	2.546	0.000	0.01
L36	3.0000-2.7500	A	0.000	0.000	0.572	0.000	0.00
		B	0.000	0.000	1.533	0.000	0.00
		C	0.000	0.000	0.509	0.000	0.00
L37	2.7500-1.7500	A	0.000	0.000	2.289	0.000	0.00
		B	0.000	0.000	5.689	0.000	0.01
		C	0.000	0.000	1.593	0.000	0.01
L38	1.7500-1.5000	A	0.000	0.000	0.285	0.000	0.00
		B	0.000	0.000	1.024	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00

Tower Sectio n	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
L39	1.5000-1.2500	A	0.000	0.000	0.035	0.000	0.00
		B	0.000	0.000	0.524	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L40	1.2500-1.0000	A	0.000	0.000	0.035	0.000	0.00
		B	0.000	0.000	0.524	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L41	1.0000-0.0000	A	0.000	0.000	0.141	0.000	0.00
		B	0.000	0.000	1.555	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.01

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Sectio n	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	100.0000- 95.0000	A	1.421	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	0.02
L2	95.0000-90.0000	A	1.413	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	10.404	0.000	0.11
		C		0.000	0.000	0.000	0.000	0.02
L3	90.0000-85.5000	A	1.406	0.000	0.000	0.000	2.924	0.03
		B		0.000	0.000	14.596	0.000	0.15
		C		0.000	0.000	2.924	0.000	0.05
L4	85.5000-85.2500	A	1.402	0.000	0.000	0.292	0.000	0.00
		B		0.000	0.000	0.940	0.000	0.01
		C		0.000	0.000	0.292	0.000	0.00
L5	85.2500-80.2500	A	1.398	0.000	0.000	7.036	0.000	0.07
		B		0.000	0.000	22.474	0.000	0.23
		C		0.000	0.000	6.888	0.000	0.11
L6	80.2500-75.2500	A	1.389	0.000	0.000	10.613	0.000	0.10
		B		0.000	0.000	30.021	0.000	0.31
		C		0.000	0.000	7.220	0.000	0.12
L7	75.2500-70.2500	A	1.380	0.000	0.000	12.564	0.000	0.13
		B		0.000	0.000	30.748	0.000	0.31
		C		0.000	0.000	7.201	0.000	0.12
L8	70.2500-62.5000	A	1.367	0.000	0.000	22.086	0.000	0.22
		B		0.000	0.000	51.209	0.000	0.50
		C		0.000	0.000	11.123	0.000	0.19
L9	62.5000-61.5000	A	1.358	0.000	0.000	2.850	0.000	0.03
		B		0.000	0.000	6.608	0.000	0.06
		C		0.000	0.000	1.435	0.000	0.02
L10	61.5000-56.5000	A	1.351	0.000	0.000	14.591	0.000	0.14
		B		0.000	0.000	33.284	0.000	0.32
		C		0.000	0.000	7.534	0.000	0.12
L11	56.5000-54.7500	A	1.343	0.000	0.000	5.417	0.000	0.05
		B		0.000	0.000	11.943	0.000	0.12
		C		0.000	0.000	2.950	0.000	0.05
L12	54.7500-54.5000	A	1.341	0.000	0.000	0.773	0.000	0.01
		B		0.000	0.000	1.705	0.000	0.02
		C		0.000	0.000	0.421	0.000	0.01
L13	54.5000-49.5000	A	1.334	0.000	0.000	15.450	0.000	0.15
		B		0.000	0.000	34.041	0.000	0.33
		C		0.000	0.000	8.410	0.000	0.13
L14	49.5000-44.5000	A	1.321	0.000	0.000	15.410	0.000	0.15
		B		0.000	0.000	33.921	0.000	0.32
		C		0.000	0.000	8.383	0.000	0.13
L15	44.5000-39.5000	A	1.306	0.000	0.000	15.365	0.000	0.15
		B		0.000	0.000	33.788	0.000	0.32
		C		0.000	0.000	8.354	0.000	0.13
L16	39.5000-34.5000	A	1.290	0.000	0.000	15.889	0.000	0.15
		B		0.000	0.000	33.640	0.000	0.31
		C		0.000	0.000	8.321	0.000	0.13
L17	34.5000-29.0000	A	1.270	0.000	0.000	23.066	0.000	0.21
		B		0.000	0.000	40.236	0.000	0.37
		C		0.000	0.000	12.537	0.000	0.17
L18	29.0000-28.0000	A	1.256	0.000	0.000	4.194	0.000	0.04
		B		0.000	0.000	7.835	0.000	0.07

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
L19	28.0000-23.5000	C	1.244	0.000	0.000	2.799	0.000	0.03
		A		0.000	0.000	21.275	0.000	0.19
		B		0.000	0.000	40.182	0.000	0.35
L20	23.5000-23.2500	C	1.232	0.000	0.000	12.523	0.000	0.15
		A		0.000	0.000	1.352	0.000	0.01
		B		0.000	0.000	2.584	0.000	0.02
L21	23.2500-22.7500	C	1.230	0.000	0.000	0.694	0.000	0.01
		A		0.000	0.000	2.704	0.000	0.02
		B		0.000	0.000	5.165	0.000	0.04
L22	22.7500-22.5000	C	1.228	0.000	0.000	1.387	0.000	0.02
		A		0.000	0.000	1.351	0.000	0.01
		B		0.000	0.000	2.581	0.000	0.02
L23	22.5000-17.5000	C	1.213	0.000	0.000	0.693	0.000	0.01
		A		0.000	0.000	26.952	0.000	0.22
		B		0.000	0.000	51.443	0.000	0.43
L24	17.5000-15.7500	C	1.191	0.000	0.000	15.832	0.000	0.18
		A		0.000	0.000	9.394	0.000	0.08
		B		0.000	0.000	17.912	0.000	0.15
L25	15.7500-15.5000	C	1.183	0.000	0.000	7.156	0.000	0.08
		A		0.000	0.000	1.340	0.000	0.01
		B		0.000	0.000	2.554	0.000	0.02
L26	15.5000-12.2500	C	1.169	0.000	0.000	1.021	0.000	0.01
		A		0.000	0.000	17.377	0.000	0.14
		B		0.000	0.000	33.099	0.000	0.27
L27	12.2500-12.0000	C	1.154	0.000	0.000	13.241	0.000	0.14
		A		0.000	0.000	1.333	0.000	0.01
		B		0.000	0.000	2.537	0.000	0.02
L28	12.0000-11.7500	C	1.151	0.000	0.000	1.016	0.000	0.01
		A		0.000	0.000	1.332	0.000	0.01
		B		0.000	0.000	2.535	0.000	0.02
L29	11.7500-11.5000	C	1.149	0.000	0.000	1.015	0.000	0.01
		A		0.000	0.000	1.332	0.000	0.01
		B		0.000	0.000	2.534	0.000	0.02
L30	11.5000-6.5000	C	1.120	0.000	0.000	1.015	0.000	0.01
		A		0.000	0.000	22.594	0.000	0.17
		B		0.000	0.000	50.325	0.000	0.39
L31	6.5000-6.0000	C	1.080	0.000	0.000	17.451	0.000	0.18
		A		0.000	0.000	2.077	0.000	0.02
		B		0.000	0.000	4.985	0.000	0.04
L32	6.0000-5.7500	C	1.073	0.000	0.000	1.323	0.000	0.01
		A		0.000	0.000	1.037	0.000	0.01
		B		0.000	0.000	2.488	0.000	0.02
L33	5.7500-4.5000	C	1.058	0.000	0.000	0.661	0.000	0.01
		A		0.000	0.000	5.170	0.000	0.04
		B		0.000	0.000	12.398	0.000	0.09
L34	4.5000-4.2500	C	1.042	0.000	0.000	3.295	0.000	0.04
		A		0.000	0.000	1.031	0.000	0.01
		B		0.000	0.000	2.470	0.000	0.02
L35	4.2500-3.0000	C	1.022	0.000	0.000	0.657	0.000	0.01
		A		0.000	0.000	3.930	0.000	0.03
		B		0.000	0.000	11.085	0.000	0.08
L36	3.0000-2.7500	C	0.999	0.000	0.000	3.272	0.000	0.04
		A		0.000	0.000	0.722	0.000	0.01
		B		0.000	0.000	2.144	0.000	0.02
L37	2.7500-1.7500	C	0.975	0.000	0.000	0.651	0.000	0.01
		A		0.000	0.000	2.874	0.000	0.02
		B		0.000	0.000	7.981	0.000	0.06
L38	1.7500-1.5000	C	0.944	0.000	0.000	2.052	0.000	0.02
		A		0.000	0.000	0.380	0.000	0.00
		B		0.000	0.000	1.510	0.000	0.01
L39	1.5000-1.2500	C	0.928	0.000	0.000	0.047	0.000	0.00
		A		0.000	0.000	0.082	0.000	0.00
		B		0.000	0.000	0.910	0.000	0.01
L40	1.2500-1.0000	C	0.909	0.000	0.000	0.046	0.000	0.00
		A		0.000	0.000	0.081	0.000	0.00
		B		0.000	0.000	0.904	0.000	0.01
L41	1.0000-0.0000	C	0.839	0.000	0.000	0.045	0.000	0.00
		A		0.000	0.000	0.309	0.000	0.00
		B		0.000	0.000	2.890	0.000	0.02

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
		C		0.000	0.000	0.168	0.000	0.01

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	100.0000-95.0000	0.00	0.00	0.00	0.00
L2	95.0000-90.0000	0.91	-3.19	0.98	-3.29
L3	90.0000-85.5000	0.65	-2.28	0.83	-2.77
L4	85.5000-85.2500	0.47	-1.63	0.70	-2.34
L5	85.2500-80.2500	0.32	-1.24	0.86	-1.71
L6	80.2500-75.2500	-0.01	-0.42	0.63	-1.00
L7	75.2500-70.2500	-0.14	-0.44	0.41	-1.06
L8	70.2500-62.5000	-0.22	-0.35	0.29	-0.96
L9	62.5000-61.5000	-0.23	-0.35	0.29	-0.97
L10	61.5000-56.5000	-0.22	-0.34	0.29	-0.97
L11	56.5000-54.7500	-0.22	-0.32	0.28	-0.95
L12	54.7500-54.5000	-0.22	-0.33	0.28	-0.96
L13	54.5000-49.5000	-0.22	-0.33	0.28	-0.97
L14	49.5000-44.5000	-0.23	-0.33	0.29	-0.99
L15	44.5000-39.5000	-0.24	-0.34	0.29	-1.01
L16	39.5000-34.5000	-0.24	-0.47	0.29	-1.13
L17	34.5000-29.0000	-0.21	-0.79	0.26	-1.33
L18	29.0000-28.0000	-0.20	-0.27	0.24	-0.86
L19	28.0000-23.5000	-0.38	-0.36	0.06	-0.89
L20	23.5000-23.2500	-0.57	-0.46	-0.14	-0.92
L21	23.2500-22.7500	-0.57	-0.46	-0.14	-0.92
L22	22.7500-22.5000	-0.57	-0.46	-0.14	-0.92
L23	22.5000-17.5000	-0.60	-0.15	-0.17	-0.67
L24	17.5000-15.7500	-0.64	0.52	-0.22	-0.09
L25	15.7500-15.5000	-0.64	0.52	-0.23	-0.09
L26	15.5000-12.2500	-0.65	0.52	-0.23	-0.09
L27	12.2500-12.0000	-0.66	0.53	-0.24	-0.08
L28	12.0000-11.7500	-0.66	0.53	-0.24	-0.08
L29	11.7500-11.5000	-0.66	0.53	-0.24	-0.08
L30	11.5000-6.5000	-1.05	0.90	-0.56	0.24
L31	6.5000-6.0000	-1.69	0.79	-1.09	0.12
L32	6.0000-5.7500	-1.70	0.79	-1.10	0.12
L33	5.7500-4.5000	-1.70	0.79	-1.10	0.13
L34	4.5000-4.2500	-1.71	0.80	-1.11	0.14
L35	4.2500-3.0000	-2.29	0.17	-1.56	-0.47
L36	3.0000-2.7500	-2.46	-0.02	-1.70	-0.64
L37	2.7500-1.7500	-2.66	-0.63	-1.84	-1.22
L38	1.7500-1.5000	-2.11	-2.59	-1.07	-2.99
L39	1.5000-1.2500	-2.60	-7.24	-0.78	-5.84
L40	1.2500-1.0000	-2.60	-7.25	-0.79	-5.85
L41	1.0000-0.0000	-1.18	-6.07	0.14	-5.06

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L2	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	90.00 - 94.00	1.0000	1.0000
L2	6	FXL 780 PE(7/8)	90.00 - 94.00	1.0000	1.0000
L2	7	FXL 780 PE(7/8)	90.00 - 94.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L2	8	LDF1-50A(1/4)	90.00 - 94.00	1.0000	1.0000
L3	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	85.50 - 90.00	1.0000	1.0000
L3	6	FXL 780 PE(7/8)	85.50 - 90.00	1.0000	1.0000
L3	7	FXL 780 PE(7/8)	85.50 - 90.00	1.0000	1.0000
L3	8	LDF1-50A(1/4)	85.50 - 90.00	1.0000	1.0000
L3	25	MP3-05	85.50 - 88.00	1.0000	1.0000
L3	26	MP3-05	85.50 - 88.00	1.0000	1.0000
L3	27	MP3-05	85.50 - 88.00	1.0000	1.0000
L4	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	85.25 - 85.50	1.0000	1.0000
L4	6	FXL 780 PE(7/8)	85.25 - 85.50	1.0000	1.0000
L4	7	FXL 780 PE(7/8)	85.25 - 85.50	1.0000	1.0000
L4	8	LDF1-50A(1/4)	85.25 - 85.50	1.0000	1.0000
L4	25	MP3-05	85.25 - 85.50	1.0000	1.0000
L4	26	MP3-05	85.25 - 85.50	1.0000	1.0000
L4	27	MP3-05	85.25 - 85.50	1.0000	1.0000
L5	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	80.25 - 85.25	1.0000	1.0000
L5	6	FXL 780 PE(7/8)	80.25 - 85.25	1.0000	1.0000
L5	7	FXL 780 PE(7/8)	80.25 - 85.25	1.0000	1.0000
L5	8	LDF1-50A(1/4)	80.25 - 85.25	1.0000	1.0000
L5	10	CR 50 1070(7/8)	80.25 - 84.00	1.0000	1.0000
L5	11	FB-L98B-034-XXX(3/8)	80.25 - 84.00	1.0000	1.0000
L5	25	MP3-05	80.25 - 85.25	1.0000	1.0000
L5	26	MP3-05	80.25 - 85.25	1.0000	1.0000
L5	27	MP3-05	80.25 - 85.25	1.0000	1.0000
L5	35	5 x 1.25	80.25 - 81.50	1.0000	1.0000
L5	36	5 x 1.25	80.25 - 81.50	1.0000	1.0000
L5	37	5 x 1.25	80.25 - 81.50	1.0000	1.0000
L6	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	75.25 - 80.25	1.0000	1.0000
L6	6	FXL 780 PE(7/8)	75.25 - 80.25	1.0000	1.0000
L6	7	FXL 780 PE(7/8)	75.25 - 80.25	1.0000	1.0000
L6	8	LDF1-50A(1/4)	75.25 - 80.25	1.0000	1.0000
L6	10	CR 50 1070(7/8)	75.25 - 80.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L6	11	FB-L98B-034-XXX(3/8)	75.25 - 80.25	1.0000	1.0000
L6	25	MP3-05	75.25 - 80.25	1.0000	1.0000
L6	26	MP3-05	75.25 - 80.25	1.0000	1.0000
L6	27	MP3-05	75.25 - 80.25	1.0000	1.0000
L6	35	5 x 1.25	75.25 - 80.25	1.0000	1.0000
L6	36	5 x 1.25	75.25 - 80.25	1.0000	1.0000
L6	37	5 x 1.25	75.25 - 80.25	1.0000	1.0000
L7	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	70.25 - 75.25	1.0000	1.0000
L7	6	FXL 780 PE(7/8)	70.25 - 75.25	1.0000	1.0000
L7	7	FXL 780 PE(7/8)	70.25 - 75.25	1.0000	1.0000
L7	8	LDF1-50A(1/4)	70.25 - 75.25	1.0000	1.0000
L7	10	CR 50 1070(7/8)	70.25 - 75.25	1.0000	1.0000
L7	11	FB-L98B-034-XXX(3/8)	70.25 - 75.25	1.0000	1.0000
L7	16	CU12PSM9P8XXX(1-3/8)	70.25 - 74.00	1.0000	1.0000
L7	25	MP3-05	70.25 - 75.25	1.0000	1.0000
L7	26	MP3-05	70.25 - 75.25	1.0000	1.0000
L7	27	MP3-05	70.25 - 75.25	1.0000	1.0000
L7	32	Stacked Plate	70.25 - 71.50	1.0000	1.0000
L7	33	Stacked Plate	70.25 - 71.50	1.0000	1.0000
L7	34	Stacked Plate	70.25 - 71.50	1.0000	1.0000
L7	35	5 x 1.25	71.50 - 75.25	1.0000	1.0000
L7	36	5 x 1.25	71.50 - 75.25	1.0000	1.0000
L7	37	5 x 1.25	71.50 - 75.25	1.0000	1.0000
L8	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	62.50 - 70.25	1.0000	1.0000
L8	6	FXL 780 PE(7/8)	62.50 - 70.25	1.0000	1.0000
L8	7	FXL 780 PE(7/8)	62.50 - 70.25	1.0000	1.0000
L8	8	LDF1-50A(1/4)	62.50 - 70.25	1.0000	1.0000
L8	10	CR 50 1070(7/8)	62.50 - 70.25	1.0000	1.0000
L8	11	FB-L98B-034-XXX(3/8)	62.50 - 70.25	1.0000	1.0000
L8	16	CU12PSM9P8XXX(1-3/8)	62.50 - 70.25	1.0000	1.0000
L8	25	MP3-05	62.50 - 70.25	1.0000	1.0000
L8	26	MP3-05	62.50 - 70.25	1.0000	1.0000
L8	27	MP3-05	62.50 - 70.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L8	32	Stacked Plate	62.50 - 70.25	1.0000	1.0000
L8	33	Stacked Plate	62.50 - 70.25	1.0000	1.0000
L8	34	Stacked Plate	62.50 - 70.25	1.0000	1.0000
L9	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	61.50 - 62.50	1.0000	1.0000
L9	6	FXL 780 PE(7/8)	61.50 - 62.50	1.0000	1.0000
L9	7	FXL 780 PE(7/8)	61.50 - 62.50	1.0000	1.0000
L9	8	LDF1-50A(1/4)	61.50 - 62.50	1.0000	1.0000
L9	10	CR 50 1070(7/8)	61.50 - 62.50	1.0000	1.0000
L9	11	FB-L98B-034-XXX(3/8)	61.50 - 62.50	1.0000	1.0000
L9	16	CU12PSM9P8XXX(1-3/8)	61.50 - 62.50	1.0000	1.0000
L9	25	MP3-05	61.50 - 62.50	1.0000	1.0000
L9	26	MP3-05	61.50 - 62.50	1.0000	1.0000
L9	27	MP3-05	61.50 - 62.50	1.0000	1.0000
L9	32	Stacked Plate	61.50 - 62.50	1.0000	1.0000
L9	33	Stacked Plate	61.50 - 62.50	1.0000	1.0000
L9	34	Stacked Plate	61.50 - 62.50	1.0000	1.0000
L10	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	56.50 - 61.50	1.0000	1.0000
L10	6	FXL 780 PE(7/8)	56.50 - 61.50	1.0000	1.0000
L10	7	FXL 780 PE(7/8)	56.50 - 61.50	1.0000	1.0000
L10	8	LDF1-50A(1/4)	56.50 - 61.50	1.0000	1.0000
L10	10	CR 50 1070(7/8)	56.50 - 61.50	1.0000	1.0000
L10	11	FB-L98B-034-XXX(3/8)	56.50 - 61.50	1.0000	1.0000
L10	16	CU12PSM9P8XXX(1-3/8)	56.50 - 61.50	1.0000	1.0000
L10	18	MP3-06	56.50 - 58.00	1.0000	1.0000
L10	19	MP3-06	56.50 - 58.00	1.0000	1.0000
L10	21	MP3-06	56.50 - 58.00	1.0000	1.0000
L10	25	MP3-05	58.00 - 61.50	1.0000	1.0000
L10	26	MP3-05	58.00 - 61.50	1.0000	1.0000
L10	27	MP3-05	58.00 - 61.50	1.0000	1.0000
L10	32	Stacked Plate	56.50 - 61.50	1.0000	1.0000
L10	33	Stacked Plate	56.50 - 61.50	1.0000	1.0000
L10	34	Stacked Plate	56.50 - 61.50	1.0000	1.0000
L11	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	54.75 - 56.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L11	6	FXL 780 PE(7/8)	54.75 - 56.50	1.0000	1.0000
L11	7	FXL 780 PE(7/8)	54.75 - 56.50	1.0000	1.0000
L11	8	LDF1-50A(1/4)	54.75 - 56.50	1.0000	1.0000
L11	10	CR 50 1070(7/8)	54.75 - 56.50	1.0000	1.0000
L11	11	FB-L98B-034-XXX(3/8)	54.75 - 56.50	1.0000	1.0000
L11	16	CU12PSM9P8XXX(1-3/8)	54.75 - 56.50	1.0000	1.0000
L11	18	MP3-06	54.75 - 56.50	1.0000	1.0000
L11	19	MP3-06	54.75 - 56.50	1.0000	1.0000
L11	21	MP3-06	54.75 - 56.50	1.0000	1.0000
L11	32	Stacked Plate	54.75 - 56.50	1.0000	1.0000
L11	33	Stacked Plate	54.75 - 56.50	1.0000	1.0000
L11	34	Stacked Plate	54.75 - 56.50	1.0000	1.0000
L12	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	54.50 - 54.75	1.0000	1.0000
L12	6	FXL 780 PE(7/8)	54.50 - 54.75	1.0000	1.0000
L12	7	FXL 780 PE(7/8)	54.50 - 54.75	1.0000	1.0000
L12	8	LDF1-50A(1/4)	54.50 - 54.75	1.0000	1.0000
L12	10	CR 50 1070(7/8)	54.50 - 54.75	1.0000	1.0000
L12	11	FB-L98B-034-XXX(3/8)	54.50 - 54.75	1.0000	1.0000
L12	16	CU12PSM9P8XXX(1-3/8)	54.50 - 54.75	1.0000	1.0000
L12	18	MP3-06	54.50 - 54.75	1.0000	1.0000
L12	19	MP3-06	54.50 - 54.75	1.0000	1.0000
L12	21	MP3-06	54.50 - 54.75	1.0000	1.0000
L12	32	Stacked Plate	54.50 - 54.75	1.0000	1.0000
L12	33	Stacked Plate	54.50 - 54.75	1.0000	1.0000
L12	34	Stacked Plate	54.50 - 54.75	1.0000	1.0000
L13	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	49.50 - 54.50	1.0000	1.0000
L13	6	FXL 780 PE(7/8)	49.50 - 54.50	1.0000	1.0000
L13	7	FXL 780 PE(7/8)	49.50 - 54.50	1.0000	1.0000
L13	8	LDF1-50A(1/4)	49.50 - 54.50	1.0000	1.0000
L13	10	CR 50 1070(7/8)	49.50 - 54.50	1.0000	1.0000
L13	11	FB-L98B-034-XXX(3/8)	49.50 - 54.50	1.0000	1.0000
L13	16	CU12PSM9P8XXX(1-3/8)	49.50 - 54.50	1.0000	1.0000
L13	18	MP3-06	49.50 - 54.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L13	19	MP3-06	49.50 - 54.50	1.0000	1.0000
L13	21	MP3-06	49.50 - 54.50	1.0000	1.0000
L13	32	Stacked Plate	49.50 - 54.50	1.0000	1.0000
L13	33	Stacked Plate	49.50 - 54.50	1.0000	1.0000
L13	34	Stacked Plate	49.50 - 54.50	1.0000	1.0000
L14	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	44.50 - 49.50	1.0000	1.0000
L14	6	FXL 780 PE(7/8)	44.50 - 49.50	1.0000	1.0000
L14	7	FXL 780 PE(7/8)	44.50 - 49.50	1.0000	1.0000
L14	8	LDF1-50A(1/4)	44.50 - 49.50	1.0000	1.0000
L14	10	CR 50 1070(7/8)	44.50 - 49.50	1.0000	1.0000
L14	11	FB-L98B-034-XXX(3/8)	44.50 - 49.50	1.0000	1.0000
L14	16	CU12PSM9P8XXX(1-3/8)	44.50 - 49.50	1.0000	1.0000
L14	18	MP3-06	44.50 - 49.50	1.0000	1.0000
L14	19	MP3-06	44.50 - 49.50	1.0000	1.0000
L14	21	MP3-06	44.50 - 49.50	1.0000	1.0000
L14	32	Stacked Plate	44.50 - 49.50	1.0000	1.0000
L14	33	Stacked Plate	44.50 - 49.50	1.0000	1.0000
L14	34	Stacked Plate	44.50 - 49.50	1.0000	1.0000
L15	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	39.50 - 44.50	1.0000	1.0000
L15	6	FXL 780 PE(7/8)	39.50 - 44.50	1.0000	1.0000
L15	7	FXL 780 PE(7/8)	39.50 - 44.50	1.0000	1.0000
L15	8	LDF1-50A(1/4)	39.50 - 44.50	1.0000	1.0000
L15	10	CR 50 1070(7/8)	39.50 - 44.50	1.0000	1.0000
L15	11	FB-L98B-034-XXX(3/8)	39.50 - 44.50	1.0000	1.0000
L15	16	CU12PSM9P8XXX(1-3/8)	39.50 - 44.50	1.0000	1.0000
L15	18	MP3-06	39.50 - 44.50	1.0000	1.0000
L15	19	MP3-06	39.50 - 44.50	1.0000	1.0000
L15	21	MP3-06	39.50 - 44.50	1.0000	1.0000
L15	32	Stacked Plate	39.50 - 44.50	1.0000	1.0000
L15	33	Stacked Plate	39.50 - 44.50	1.0000	1.0000
L15	34	Stacked Plate	39.50 - 44.50	1.0000	1.0000
L16	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	34.50 - 39.50	1.0000	1.0000
L16	6	FXL 780 PE(7/8)	34.50 - 39.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L16	7	FXL 780 PE(7/8)	34.50 - 39.50	1.0000	1.0000
L16	8	LDF1-50A(1/4)	34.50 - 39.50	1.0000	1.0000
L16	10	CR 50 1070(7/8)	34.50 - 39.50	1.0000	1.0000
L16	11	FB-L98B-034-XXX(3/8)	34.50 - 39.50	1.0000	1.0000
L16	16	CU12PSM9P8XXX(1-3/8)	34.50 - 39.50	1.0000	1.0000
L16	18	MP3-06	34.50 - 39.50	1.0000	1.0000
L16	19	MP3-06	34.50 - 39.50	1.0000	1.0000
L16	21	MP3-06	34.50 - 39.50	1.0000	1.0000
L16	22	MP3-05	34.50 - 35.00	1.0000	1.0000
L16	32	Stacked Plate	34.50 - 39.50	1.0000	1.0000
L16	33	Stacked Plate	34.50 - 39.50	1.0000	1.0000
L16	34	Stacked Plate	34.50 - 39.50	1.0000	1.0000
L17	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	29.00 - 34.50	1.0000	1.0000
L17	6	FXL 780 PE(7/8)	29.00 - 34.50	1.0000	1.0000
L17	7	FXL 780 PE(7/8)	29.00 - 34.50	1.0000	1.0000
L17	8	LDF1-50A(1/4)	29.00 - 34.50	1.0000	1.0000
L17	10	CR 50 1070(7/8)	29.00 - 34.50	1.0000	1.0000
L17	11	FB-L98B-034-XXX(3/8)	29.00 - 34.50	1.0000	1.0000
L17	16	CU12PSM9P8XXX(1-3/8)	29.00 - 34.50	1.0000	1.0000
L17	18	MP3-06	29.00 - 34.50	1.0000	1.0000
L17	19	MP3-06	29.00 - 34.50	1.0000	1.0000
L17	21	MP3-06	29.00 - 34.50	1.0000	1.0000
L17	22	MP3-05	29.00 - 34.50	1.0000	1.0000
L17	23	MP3-05	29.00 - 32.00	1.0000	1.0000
L17	24	MP3-05	29.00 - 32.00	1.0000	1.0000
L17	32	Stacked Plate	29.00 - 34.50	1.0000	1.0000
L17	33	Stacked Plate	29.00 - 34.50	1.0000	1.0000
L17	34	Stacked Plate	29.00 - 34.50	1.0000	1.0000
L18	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	28.00 - 29.00	1.0000	1.0000
L18	6	FXL 780 PE(7/8)	28.00 - 29.00	1.0000	1.0000
L18	7	FXL 780 PE(7/8)	28.00 - 29.00	1.0000	1.0000
L18	8	LDF1-50A(1/4)	28.00 - 29.00	1.0000	1.0000
L18	10	CR 50 1070(7/8)	28.00 - 29.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L18	11	FB-L98B-034-XXX(3/8)	28.00 - 29.00	1.0000	1.0000
L18	16	CU12PSM9P8XXX(1-3/8)	28.00 - 29.00	1.0000	1.0000
L18	18	MP3-06	28.00 - 29.00	1.0000	1.0000
L18	19	MP3-06	28.00 - 29.00	1.0000	1.0000
L18	21	MP3-06	28.00 - 29.00	1.0000	1.0000
L18	22	MP3-05	28.00 - 29.00	1.0000	1.0000
L18	23	MP3-05	28.00 - 29.00	1.0000	1.0000
L18	24	MP3-05	28.00 - 29.00	1.0000	1.0000
L18	32	Stacked Plate	28.00 - 29.00	1.0000	1.0000
L18	33	Stacked Plate	28.00 - 29.00	1.0000	1.0000
L18	34	Stacked Plate	28.00 - 29.00	1.0000	1.0000
L19	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	23.50 - 28.00	1.0000	1.0000
L19	6	FXL 780 PE(7/8)	23.50 - 28.00	1.0000	1.0000
L19	7	FXL 780 PE(7/8)	23.50 - 28.00	1.0000	1.0000
L19	8	LDF1-50A(1/4)	23.50 - 28.00	1.0000	1.0000
L19	10	CR 50 1070(7/8)	23.50 - 28.00	1.0000	1.0000
L19	11	FB-L98B-034-XXX(3/8)	23.50 - 28.00	1.0000	1.0000
L19	16	CU12PSM9P8XXX(1-3/8)	23.50 - 28.00	1.0000	1.0000
L19	18	MP3-06	23.50 - 28.00	1.0000	1.0000
L19	19	MP3-06	23.50 - 28.00	1.0000	1.0000
L19	21	MP3-06	23.50 - 28.00	1.0000	1.0000
L19	22	MP3-05	23.50 - 28.00	1.0000	1.0000
L19	23	MP3-05	23.50 - 28.00	1.0000	1.0000
L19	24	MP3-05	23.50 - 28.00	1.0000	1.0000
L19	28	CCI-065125	23.50 - 25.50	1.0000	1.0000
L19	29	CCI-060100	23.50 - 25.50	1.0000	1.0000
L19	30	CCI-060100	23.50 - 25.50	1.0000	1.0000
L19	32	Stacked Plate	23.50 - 28.00	1.0000	1.0000
L19	33	Stacked Plate	23.50 - 28.00	1.0000	1.0000
L19	34	Stacked Plate	23.50 - 28.00	1.0000	1.0000
L20	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	23.25 - 23.50	1.0000	1.0000
L20	6	FXL 780 PE(7/8)	23.25 - 23.50	1.0000	1.0000
L20	7	FXL 780 PE(7/8)	23.25 - 23.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L20	8	LDF1-50A(1/4)	23.25 - 23.50	1.0000	1.0000
L20	10	CR 50 1070(7/8)	23.25 - 23.50	1.0000	1.0000
L20	11	FB-L98B-034-XXX(3/8)	23.25 - 23.50	1.0000	1.0000
L20	16	CU12PSM9P8XXX(1-3/8)	23.25 - 23.50	1.0000	1.0000
L20	18	MP3-06	23.25 - 23.50	1.0000	1.0000
L20	19	MP3-06	23.25 - 23.50	1.0000	1.0000
L20	21	MP3-06	23.25 - 23.50	1.0000	1.0000
L20	22	MP3-05	23.25 - 23.50	1.0000	1.0000
L20	23	MP3-05	23.25 - 23.50	1.0000	1.0000
L20	24	MP3-05	23.25 - 23.50	1.0000	1.0000
L20	28	CCI-065125	23.25 - 23.50	1.0000	1.0000
L20	29	CCI-060100	23.25 - 23.50	1.0000	1.0000
L20	30	CCI-060100	23.25 - 23.50	1.0000	1.0000
L20	32	Stacked Plate	23.25 - 23.50	1.0000	1.0000
L20	33	Stacked Plate	23.25 - 23.50	1.0000	1.0000
L20	34	Stacked Plate	23.25 - 23.50	1.0000	1.0000
L21	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	22.75 - 23.25	1.0000	1.0000
L21	6	FXL 780 PE(7/8)	22.75 - 23.25	1.0000	1.0000
L21	7	FXL 780 PE(7/8)	22.75 - 23.25	1.0000	1.0000
L21	8	LDF1-50A(1/4)	22.75 - 23.25	1.0000	1.0000
L21	10	CR 50 1070(7/8)	22.75 - 23.25	1.0000	1.0000
L21	11	FB-L98B-034-XXX(3/8)	22.75 - 23.25	1.0000	1.0000
L21	16	CU12PSM9P8XXX(1-3/8)	22.75 - 23.25	1.0000	1.0000
L21	18	MP3-06	22.75 - 23.25	1.0000	1.0000
L21	19	MP3-06	22.75 - 23.25	1.0000	1.0000
L21	21	MP3-06	22.75 - 23.25	1.0000	1.0000
L21	22	MP3-05	22.75 - 23.25	1.0000	1.0000
L21	23	MP3-05	22.75 - 23.25	1.0000	1.0000
L21	24	MP3-05	22.75 - 23.25	1.0000	1.0000
L21	28	CCI-065125	22.75 - 23.25	1.0000	1.0000
L21	29	CCI-060100	22.75 - 23.25	1.0000	1.0000
L21	30	CCI-060100	22.75 - 23.25	1.0000	1.0000
L21	32	Stacked Plate	22.75 - 23.25	1.0000	1.0000
L21	33	Stacked Plate	22.75 - 23.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L21	34	Stacked Plate	22.75 - 23.25	1.0000	1.0000
L22	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	22.50 - 22.75	1.0000	1.0000
L22	6	FXL 780 PE(7/8)	22.50 - 22.75	1.0000	1.0000
L22	7	FXL 780 PE(7/8)	22.50 - 22.75	1.0000	1.0000
L22	8	LDF1-50A(1/4)	22.50 - 22.75	1.0000	1.0000
L22	10	CR 50 1070(7/8)	22.50 - 22.75	1.0000	1.0000
L22	11	FB-L98B-034-XXX(3/8)	22.50 - 22.75	1.0000	1.0000
L22	16	CU12PSM9P8XXX(1-3/8)	22.50 - 22.75	1.0000	1.0000
L22	18	MP3-06	22.50 - 22.75	1.0000	1.0000
L22	19	MP3-06	22.50 - 22.75	1.0000	1.0000
L22	21	MP3-06	22.50 - 22.75	1.0000	1.0000
L22	22	MP3-05	22.50 - 22.75	1.0000	1.0000
L22	23	MP3-05	22.50 - 22.75	1.0000	1.0000
L22	24	MP3-05	22.50 - 22.75	1.0000	1.0000
L22	28	CCI-065125	22.50 - 22.75	1.0000	1.0000
L22	29	CCI-060100	22.50 - 22.75	1.0000	1.0000
L22	30	CCI-060100	22.50 - 22.75	1.0000	1.0000
L22	32	Stacked Plate	22.50 - 22.75	1.0000	1.0000
L22	33	Stacked Plate	22.50 - 22.75	1.0000	1.0000
L22	34	Stacked Plate	22.50 - 22.75	1.0000	1.0000
L23	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	17.50 - 22.50	1.0000	1.0000
L23	6	FXL 780 PE(7/8)	17.50 - 22.50	1.0000	1.0000
L23	7	FXL 780 PE(7/8)	17.50 - 22.50	1.0000	1.0000
L23	8	LDF1-50A(1/4)	17.50 - 22.50	1.0000	1.0000
L23	10	CR 50 1070(7/8)	17.50 - 22.50	1.0000	1.0000
L23	11	FB-L98B-034-XXX(3/8)	17.50 - 22.50	1.0000	1.0000
L23	16	CU12PSM9P8XXX(1-3/8)	17.50 - 22.50	1.0000	1.0000
L23	18	MP3-06	17.50 - 22.50	1.0000	1.0000
L23	19	MP3-06	17.50 - 22.50	1.0000	1.0000
L23	20	MP3-06	17.50 - 19.00	1.0000	1.0000
L23	21	MP3-06	17.50 - 22.50	1.0000	1.0000
L23	22	MP3-05	17.50 - 22.50	1.0000	1.0000
L23	23	MP3-05	17.50 - 22.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L23	24	MP3-05	17.50 - 22.50	1.0000	1.0000
L23	28	CCI-065125	17.50 - 22.50	1.0000	1.0000
L23	29	CCI-060100	17.50 - 22.50	1.0000	1.0000
L23	30	CCI-060100	17.50 - 22.50	1.0000	1.0000
L23	32	Stacked Plate	17.50 - 22.50	1.0000	1.0000
L23	33	Stacked Plate	17.50 - 22.50	1.0000	1.0000
L23	34	Stacked Plate	17.50 - 22.50	1.0000	1.0000
L24	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	15.75 - 17.50	1.0000	1.0000
L24	6	FXL 780 PE(7/8)	15.75 - 17.50	1.0000	1.0000
L24	7	FXL 780 PE(7/8)	15.75 - 17.50	1.0000	1.0000
L24	8	LDF1-50A(1/4)	15.75 - 17.50	1.0000	1.0000
L24	10	CR 50 1070(7/8)	15.75 - 17.50	1.0000	1.0000
L24	11	FB-L98B-034-XXX(3/8)	15.75 - 17.50	1.0000	1.0000
L24	16	CU12PSM9P8XXX(1-3/8)	15.75 - 17.50	1.0000	1.0000
L24	18	MP3-06	15.75 - 17.50	1.0000	1.0000
L24	19	MP3-06	15.75 - 17.50	1.0000	1.0000
L24	20	MP3-06	15.75 - 17.50	1.0000	1.0000
L24	21	MP3-06	15.75 - 17.50	1.0000	1.0000
L24	22	MP3-05	15.75 - 17.50	1.0000	1.0000
L24	23	MP3-05	15.75 - 17.50	1.0000	1.0000
L24	24	MP3-05	15.75 - 17.50	1.0000	1.0000
L24	28	CCI-065125	15.75 - 17.50	1.0000	1.0000
L24	29	CCI-060100	15.75 - 17.50	1.0000	1.0000
L24	30	CCI-060100	15.75 - 17.50	1.0000	1.0000
L24	32	Stacked Plate	15.75 - 17.50	1.0000	1.0000
L24	33	Stacked Plate	15.75 - 17.50	1.0000	1.0000
L24	34	Stacked Plate	15.75 - 17.50	1.0000	1.0000
L25	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	15.50 - 15.75	1.0000	1.0000
L25	6	FXL 780 PE(7/8)	15.50 - 15.75	1.0000	1.0000
L25	7	FXL 780 PE(7/8)	15.50 - 15.75	1.0000	1.0000
L25	8	LDF1-50A(1/4)	15.50 - 15.75	1.0000	1.0000
L25	10	CR 50 1070(7/8)	15.50 - 15.75	1.0000	1.0000
L25	11	FB-L98B-034-XXX(3/8)	15.50 - 15.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L25	16	CU12PSM9P8XXX(1-3/8)	15.50 - 15.75	1.0000	1.0000
L25	18	MP3-06	15.50 - 15.75	1.0000	1.0000
L25	19	MP3-06	15.50 - 15.75	1.0000	1.0000
L25	20	MP3-06	15.50 - 15.75	1.0000	1.0000
L25	21	MP3-06	15.50 - 15.75	1.0000	1.0000
L25	22	MP3-05	15.50 - 15.75	1.0000	1.0000
L25	23	MP3-05	15.50 - 15.75	1.0000	1.0000
L25	24	MP3-05	15.50 - 15.75	1.0000	1.0000
L25	28	CCI-065125	15.50 - 15.75	1.0000	1.0000
L25	29	CCI-060100	15.50 - 15.75	1.0000	1.0000
L25	30	CCI-060100	15.50 - 15.75	1.0000	1.0000
L25	32	Stacked Plate	15.50 - 15.75	1.0000	1.0000
L25	33	Stacked Plate	15.50 - 15.75	1.0000	1.0000
L25	34	Stacked Plate	15.50 - 15.75	1.0000	1.0000
L26	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	12.25 - 15.50	1.0000	1.0000
L26	6	FXL 780 PE(7/8)	12.25 - 15.50	1.0000	1.0000
L26	7	FXL 780 PE(7/8)	12.25 - 15.50	1.0000	1.0000
L26	8	LDF1-50A(1/4)	12.25 - 15.50	1.0000	1.0000
L26	10	CR 50 1070(7/8)	12.25 - 15.50	1.0000	1.0000
L26	11	FB-L98B-034-XXX(3/8)	12.25 - 15.50	1.0000	1.0000
L26	16	CU12PSM9P8XXX(1-3/8)	12.25 - 15.50	1.0000	1.0000
L26	18	MP3-06	12.25 - 15.50	1.0000	1.0000
L26	19	MP3-06	12.25 - 15.50	1.0000	1.0000
L26	20	MP3-06	12.25 - 15.50	1.0000	1.0000
L26	21	MP3-06	12.25 - 15.50	1.0000	1.0000
L26	22	MP3-05	12.25 - 15.50	1.0000	1.0000
L26	23	MP3-05	12.25 - 15.50	1.0000	1.0000
L26	24	MP3-05	12.25 - 15.50	1.0000	1.0000
L26	28	CCI-065125	12.25 - 15.50	1.0000	1.0000
L26	29	CCI-060100	12.25 - 15.50	1.0000	1.0000
L26	30	CCI-060100	12.25 - 15.50	1.0000	1.0000
L26	32	Stacked Plate	12.25 - 15.50	1.0000	1.0000
L26	33	Stacked Plate	12.25 - 15.50	1.0000	1.0000
L26	34	Stacked Plate	12.25 - 15.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L27	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	12.00 - 12.25	1.0000	1.0000
L27	6	FXL 780 PE(7/8)	12.00 - 12.25	1.0000	1.0000
L27	7	FXL 780 PE(7/8)	12.00 - 12.25	1.0000	1.0000
L27	8	LDF1-50A(1/4)	12.00 - 12.25	1.0000	1.0000
L27	10	CR 50 1070(7/8)	12.00 - 12.25	1.0000	1.0000
L27	11	FB-L98B-034-XXX(3/8)	12.00 - 12.25	1.0000	1.0000
L27	16	CU12PSM9P8XXX(1-3/8)	12.00 - 12.25	1.0000	1.0000
L27	18	MP3-06	12.00 - 12.25	1.0000	1.0000
L27	19	MP3-06	12.00 - 12.25	1.0000	1.0000
L27	20	MP3-06	12.00 - 12.25	1.0000	1.0000
L27	21	MP3-06	12.00 - 12.25	1.0000	1.0000
L27	22	MP3-05	12.00 - 12.25	1.0000	1.0000
L27	23	MP3-05	12.00 - 12.25	1.0000	1.0000
L27	24	MP3-05	12.00 - 12.25	1.0000	1.0000
L27	28	CCI-065125	12.00 - 12.25	1.0000	1.0000
L27	29	CCI-060100	12.00 - 12.25	1.0000	1.0000
L27	30	CCI-060100	12.00 - 12.25	1.0000	1.0000
L27	32	Stacked Plate	12.00 - 12.25	1.0000	1.0000
L27	33	Stacked Plate	12.00 - 12.25	1.0000	1.0000
L27	34	Stacked Plate	12.00 - 12.25	1.0000	1.0000
L28	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	11.75 - 12.00	1.0000	1.0000
L28	6	FXL 780 PE(7/8)	11.75 - 12.00	1.0000	1.0000
L28	7	FXL 780 PE(7/8)	11.75 - 12.00	1.0000	1.0000
L28	8	LDF1-50A(1/4)	11.75 - 12.00	1.0000	1.0000
L28	10	CR 50 1070(7/8)	11.75 - 12.00	1.0000	1.0000
L28	11	FB-L98B-034-XXX(3/8)	11.75 - 12.00	1.0000	1.0000
L28	16	CU12PSM9P8XXX(1-3/8)	11.75 - 12.00	1.0000	1.0000
L28	18	MP3-06	11.75 - 12.00	1.0000	1.0000
L28	19	MP3-06	11.75 - 12.00	1.0000	1.0000
L28	20	MP3-06	11.75 - 12.00	1.0000	1.0000
L28	21	MP3-06	11.75 - 12.00	1.0000	1.0000
L28	22	MP3-05	11.75 - 12.00	1.0000	1.0000
L28	23	MP3-05	11.75 - 12.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L28	24	MP3-05	11.75 - 12.00	1.0000	1.0000
L28	28	CCI-065125	11.75 - 12.00	1.0000	1.0000
L28	29	CCI-060100	11.75 - 12.00	1.0000	1.0000
L28	30	CCI-060100	11.75 - 12.00	1.0000	1.0000
L28	32	Stacked Plate	11.75 - 12.00	1.0000	1.0000
L28	33	Stacked Plate	11.75 - 12.00	1.0000	1.0000
L28	34	Stacked Plate	11.75 - 12.00	1.0000	1.0000
L29	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	11.50 - 11.75	1.0000	1.0000
L29	6	FXL 780 PE(7/8)	11.50 - 11.75	1.0000	1.0000
L29	7	FXL 780 PE(7/8)	11.50 - 11.75	1.0000	1.0000
L29	8	LDF1-50A(1/4)	11.50 - 11.75	1.0000	1.0000
L29	10	CR 50 1070(7/8)	11.50 - 11.75	1.0000	1.0000
L29	11	FB-L98B-034-XXX(3/8)	11.50 - 11.75	1.0000	1.0000
L29	16	CU12PSM9P8XXX(1-3/8)	11.50 - 11.75	1.0000	1.0000
L29	18	MP3-06	11.50 - 11.75	1.0000	1.0000
L29	19	MP3-06	11.50 - 11.75	1.0000	1.0000
L29	20	MP3-06	11.50 - 11.75	1.0000	1.0000
L29	21	MP3-06	11.50 - 11.75	1.0000	1.0000
L29	22	MP3-05	11.50 - 11.75	1.0000	1.0000
L29	23	MP3-05	11.50 - 11.75	1.0000	1.0000
L29	24	MP3-05	11.50 - 11.75	1.0000	1.0000
L29	28	CCI-065125	11.50 - 11.75	1.0000	1.0000
L29	29	CCI-060100	11.50 - 11.75	1.0000	1.0000
L29	30	CCI-060100	11.50 - 11.75	1.0000	1.0000
L29	32	Stacked Plate	11.50 - 11.75	1.0000	1.0000
L29	33	Stacked Plate	11.50 - 11.75	1.0000	1.0000
L29	34	Stacked Plate	11.50 - 11.75	1.0000	1.0000
L30	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	6.50 - 11.50	1.0000	1.0000
L30	6	FXL 780 PE(7/8)	6.50 - 11.50	1.0000	1.0000
L30	7	FXL 780 PE(7/8)	6.50 - 11.50	1.0000	1.0000
L30	8	LDF1-50A(1/4)	6.50 - 11.50	1.0000	1.0000
L30	10	CR 50 1070(7/8)	6.50 - 11.50	1.0000	1.0000
L30	11	FB-L98B-034-XXX(3/8)	6.50 - 11.50	1.0000	1.0000
L30	16	CU12PSM9P8XXX(1-3/8)	6.50 - 11.50	1.0000	1.0000
L30	18	MP3-06	6.50 - 11.50	1.0000	1.0000
L30	19	MP3-06	6.50 - 11.50	1.0000	1.0000
L30	20	MP3-06	6.50 - 11.50	1.0000	1.0000
L30	21	MP3-06	8.50 - 11.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L30	22	MP3-05	10.00 - 11.50	1.0000	1.0000
L30	23	MP3-05	6.50 - 11.50	1.0000	1.0000
L30	24	MP3-05	6.50 - 11.50	1.0000	1.0000
L30	28	CCI-065125	6.50 - 11.50	1.0000	1.0000
L30	29	CCI-060100	6.50 - 11.50	1.0000	1.0000
L30	30	CCI-060100	6.50 - 11.50	1.0000	1.0000
L30	32	Stacked Plate	6.50 - 11.50	1.0000	1.0000
L30	33	Stacked Plate	6.50 - 11.50	1.0000	1.0000
L30	34	Stacked Plate	6.50 - 11.50	1.0000	1.0000
L31	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	6.00 - 6.50	1.0000	1.0000
L31	6	FXL 780 PE(7/8)	6.00 - 6.50	1.0000	1.0000
L31	7	FXL 780 PE(7/8)	6.00 - 6.50	1.0000	1.0000
L31	8	LDF1-50A(1/4)	6.00 - 6.50	1.0000	1.0000
L31	10	CR 50 1070(7/8)	6.00 - 6.50	1.0000	1.0000
L31	11	FB-L98B-034-XXX(3/8)	6.00 - 6.50	1.0000	1.0000
L31	16	CU12PSM9P8XXX(1-3/8)	6.00 - 6.50	1.0000	1.0000
L31	18	MP3-06	6.00 - 6.50	1.0000	1.0000
L31	19	MP3-06	6.00 - 6.50	1.0000	1.0000
L31	20	MP3-06	6.00 - 6.50	1.0000	1.0000
L31	23	MP3-05	6.00 - 6.50	1.0000	1.0000
L31	24	MP3-05	6.00 - 6.50	1.0000	1.0000
L31	28	CCI-065125	6.00 - 6.50	1.0000	1.0000
L31	29	CCI-060100	6.00 - 6.50	1.0000	1.0000
L31	30	CCI-060100	6.00 - 6.50	1.0000	1.0000
L31	32	Stacked Plate	6.00 - 6.50	1.0000	1.0000
L31	33	Stacked Plate	6.00 - 6.50	1.0000	1.0000
L31	34	Stacked Plate	6.00 - 6.50	1.0000	1.0000
L32	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	5.75 - 6.00	1.0000	1.0000
L32	6	FXL 780 PE(7/8)	5.75 - 6.00	1.0000	1.0000
L32	7	FXL 780 PE(7/8)	5.75 - 6.00	1.0000	1.0000
L32	8	LDF1-50A(1/4)	5.75 - 6.00	1.0000	1.0000
L32	10	CR 50 1070(7/8)	5.75 - 6.00	1.0000	1.0000
L32	11	FB-L98B-034-XXX(3/8)	5.75 - 6.00	1.0000	1.0000
L32	16	CU12PSM9P8XXX(1-3/8)	5.75 - 6.00	1.0000	1.0000
L32	18	MP3-06	5.75 - 6.00	1.0000	1.0000
L32	19	MP3-06	5.75 - 6.00	1.0000	1.0000
L32	20	MP3-06	5.75 - 6.00	1.0000	1.0000
L32	23	MP3-05	5.75 - 6.00	1.0000	1.0000
L32	24	MP3-05	5.75 - 6.00	1.0000	1.0000
L32	28	CCI-065125	5.75 - 6.00	1.0000	1.0000
L32	29	CCI-060100	5.75 - 6.00	1.0000	1.0000
L32	30	CCI-060100	5.75 - 6.00	1.0000	1.0000
L32	32	Stacked Plate	5.75 - 6.00	1.0000	1.0000
L32	33	Stacked Plate	5.75 - 6.00	1.0000	1.0000
L32	34	Stacked Plate	5.75 - 6.00	1.0000	1.0000
L33	5	MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	4.50 - 5.75	1.0000	1.0000
L33	6	FXL 780 PE(7/8)	4.50 - 5.75	1.0000	1.0000
L33	7	FXL 780 PE(7/8)	4.50 - 5.75	1.0000	1.0000
L33	8	LDF1-50A(1/4)	4.50 - 5.75	1.0000	1.0000
L33	10	CR 50 1070(7/8)	4.50 - 5.75	1.0000	1.0000
L33	11	FB-L98B-034-XXX(3/8)	4.50 - 5.75	1.0000	1.0000
L33	16	CU12PSM9P8XXX(1-3/8)	4.50 - 5.75	1.0000	1.0000
L33	18	MP3-06	4.50 - 5.75	1.0000	1.0000
L33	19	MP3-06	4.50 - 5.75	1.0000	1.0000
L33	20	MP3-06	4.50 - 5.75	1.0000	1.0000
L33	23	MP3-05	4.50 - 5.75	1.0000	1.0000
L33	24	MP3-05	4.50 - 5.75	1.0000	1.0000
L33	28	CCI-065125	4.50 - 5.75	1.0000	1.0000
L33	29	CCI-060100	4.50 - 5.75	1.0000	1.0000
L33	30	CCI-060100	4.50 - 5.75	1.0000	1.0000
L33	32	Stacked Plate	4.50 - 5.75	1.0000	1.0000
L33	33	Stacked Plate	4.50 - 5.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L33	34	Stacked Plate	4.50 - 5.75	1.0000	1.0000
L34	5	MLE HYBRID	4.25 - 4.50	1.0000	1.0000
		9POWER/18FIBER RL			
		2(1-5/8)			
L34	6	FXL 780 PE(7/8)	4.25 - 4.50	1.0000	1.0000
L34	7	FXL 780 PE(7/8)	4.25 - 4.50	1.0000	1.0000
L34	8	LDF1-50A(1/4)	4.25 - 4.50	1.0000	1.0000
L34	10	CR 50 1070(7/8)	4.25 - 4.50	1.0000	1.0000
L34	11	FB-L98B-034-XXX(3/8)	4.25 - 4.50	1.0000	1.0000
L34	16	CU12PSM9P8XXX(1-3/8)	4.25 - 4.50	1.0000	1.0000
L34	18	MP3-06	4.25 - 4.50	1.0000	1.0000
L34	19	MP3-06	4.25 - 4.50	1.0000	1.0000
L34	20	MP3-06	4.25 - 4.50	1.0000	1.0000
L34	23	MP3-05	4.25 - 4.50	1.0000	1.0000
L34	24	MP3-05	4.25 - 4.50	1.0000	1.0000
L34	28	CCI-065125	4.25 - 4.50	1.0000	1.0000
L34	29	CCI-060100	4.25 - 4.50	1.0000	1.0000
L34	30	CCI-060100	4.25 - 4.50	1.0000	1.0000
L34	32	Stacked Plate	4.25 - 4.50	1.0000	1.0000
L34	33	Stacked Plate	4.25 - 4.50	1.0000	1.0000
L34	34	Stacked Plate	4.25 - 4.50	1.0000	1.0000
L35	5	MLE HYBRID	3.00 - 4.25	1.0000	1.0000
		9POWER/18FIBER RL			
		2(1-5/8)			
L35	6	FXL 780 PE(7/8)	3.00 - 4.25	1.0000	1.0000
L35	7	FXL 780 PE(7/8)	3.00 - 4.25	1.0000	1.0000
L35	8	LDF1-50A(1/4)	3.00 - 4.25	1.0000	1.0000
L35	10	CR 50 1070(7/8)	3.00 - 4.25	1.0000	1.0000
L35	11	FB-L98B-034-XXX(3/8)	3.00 - 4.25	1.0000	1.0000
L35	16	CU12PSM9P8XXX(1-3/8)	3.00 - 4.25	1.0000	1.0000
L35	18	MP3-06	3.00 - 4.25	1.0000	1.0000
L35	19	MP3-06	3.00 - 4.25	1.0000	1.0000
L35	20	MP3-06	3.00 - 4.25	1.0000	1.0000
L35	23	MP3-05	3.00 - 4.25	1.0000	1.0000
L35	24	MP3-05	3.00 - 4.25	1.0000	1.0000
L35	28	CCI-065125	3.00 - 4.25	1.0000	1.0000
L35	29	CCI-060100	4.00 - 4.25	1.0000	1.0000
L35	30	CCI-060100	4.00 - 4.25	1.0000	1.0000
L35	32	Stacked Plate	3.00 - 4.25	1.0000	1.0000
L35	33	Stacked Plate	3.00 - 4.25	1.0000	1.0000
L35	34	Stacked Plate	3.00 - 4.25	1.0000	1.0000
L36	5	MLE HYBRID	2.75 - 3.00	1.0000	1.0000
		9POWER/18FIBER RL			
		2(1-5/8)			
L36	6	FXL 780 PE(7/8)	2.75 - 3.00	1.0000	1.0000
L36	7	FXL 780 PE(7/8)	2.75 - 3.00	1.0000	1.0000
L36	8	LDF1-50A(1/4)	2.75 - 3.00	1.0000	1.0000
L36	10	CR 50 1070(7/8)	2.75 - 3.00	1.0000	1.0000
L36	11	FB-L98B-034-XXX(3/8)	2.75 - 3.00	1.0000	1.0000
L36	16	CU12PSM9P8XXX(1-3/8)	2.75 - 3.00	1.0000	1.0000
L36	18	MP3-06	2.75 - 3.00	1.0000	1.0000
L36	19	MP3-06	2.75 - 3.00	1.0000	1.0000
L36	20	MP3-06	2.75 - 3.00	1.0000	1.0000
L36	23	MP3-05	2.75 - 3.00	1.0000	1.0000
L36	24	MP3-05	2.75 - 3.00	1.0000	1.0000
L36	28	CCI-065125	2.75 - 3.00	1.0000	1.0000
L36	32	Stacked Plate	2.75 - 3.00	1.0000	1.0000
L36	33	Stacked Plate	2.75 - 3.00	1.0000	1.0000
L36	34	Stacked Plate	2.75 - 3.00	1.0000	1.0000
L37	5	MLE HYBRID	1.75 - 2.75	1.0000	1.0000
		9POWER/18FIBER RL			
		2(1-5/8)			
L37	6	FXL 780 PE(7/8)	1.75 - 2.75	1.0000	1.0000
L37	7	FXL 780 PE(7/8)	1.75 - 2.75	1.0000	1.0000
L37	8	LDF1-50A(1/4)	1.75 - 2.75	1.0000	1.0000
L37	10	CR 50 1070(7/8)	1.75 - 2.75	1.0000	1.0000
L37	11	FB-L98B-034-XXX(3/8)	1.75 - 2.75	1.0000	1.0000
L37	16	CU12PSM9P8XXX(1-3/8)	1.75 - 2.75	1.0000	1.0000
L37	18	MP3-06	1.75 - 2.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L37	19	MP3-06	1.75 - 2.75	1.0000	1.0000
L37	20	MP3-06	1.75 - 2.75	1.0000	1.0000
L37	23	MP3-05	2.25 - 2.75	1.0000	1.0000
L37	24	MP3-05	2.25 - 2.75	1.0000	1.0000
L37	28	CCI-065125	1.75 - 2.75	1.0000	1.0000
L37	32	Stacked Plate	1.75 - 2.75	1.0000	1.0000
L37	33	Stacked Plate	1.75 - 2.75	1.0000	1.0000
L37	34	Stacked Plate	1.75 - 2.75	1.0000	1.0000
L38	5	MLE HYBRID	1.50 - 1.75	1.0000	1.0000
		9POWER/18FIBER RL			
		2(1-5/8)			
L38	6	FXL 780 PE(7/8)	1.50 - 1.75	1.0000	1.0000
L38	7	FXL 780 PE(7/8)	1.50 - 1.75	1.0000	1.0000
L38	8	LDF1-50A(1/4)	1.50 - 1.75	1.0000	1.0000
L38	10	CR 50 1070(7/8)	1.50 - 1.75	1.0000	1.0000
L38	11	FB-L98B-034-XXX(3/8)	1.50 - 1.75	1.0000	1.0000
L38	16	CU12PSM9P8XXX(1-3/8)	1.50 - 1.75	1.0000	1.0000
L38	28	CCI-065125	1.50 - 1.75	1.0000	1.0000
L38	32	Stacked Plate	1.50 - 1.75	1.0000	1.0000
L38	33	Stacked Plate	1.50 - 1.75	1.0000	1.0000
L38	34	Stacked Plate	1.50 - 1.75	1.0000	1.0000
L39	5	MLE HYBRID	1.25 - 1.50	1.0000	1.0000
		9POWER/18FIBER RL			
		2(1-5/8)			
L39	6	FXL 780 PE(7/8)	1.25 - 1.50	1.0000	1.0000
L39	7	FXL 780 PE(7/8)	1.25 - 1.50	1.0000	1.0000
L39	8	LDF1-50A(1/4)	1.25 - 1.50	1.0000	1.0000
L39	10	CR 50 1070(7/8)	1.25 - 1.50	1.0000	1.0000
L39	11	FB-L98B-034-XXX(3/8)	1.25 - 1.50	1.0000	1.0000
L39	16	CU12PSM9P8XXX(1-3/8)	1.25 - 1.50	1.0000	1.0000
L39	28	CCI-065125	1.25 - 1.50	1.0000	1.0000
L40	5	MLE HYBRID	1.00 - 1.25	1.0000	1.0000
		9POWER/18FIBER RL			
		2(1-5/8)			
L40	6	FXL 780 PE(7/8)	1.00 - 1.25	1.0000	1.0000
L40	7	FXL 780 PE(7/8)	1.00 - 1.25	1.0000	1.0000
L40	8	LDF1-50A(1/4)	1.00 - 1.25	1.0000	1.0000
L40	10	CR 50 1070(7/8)	1.00 - 1.25	1.0000	1.0000
L40	11	FB-L98B-034-XXX(3/8)	1.00 - 1.25	1.0000	1.0000
L40	16	CU12PSM9P8XXX(1-3/8)	1.00 - 1.25	1.0000	1.0000
L40	28	CCI-065125	1.00 - 1.25	1.0000	1.0000
L41	5	MLE HYBRID	0.00 - 1.00	1.0000	1.0000
		9POWER/18FIBER RL			
		2(1-5/8)			
L41	6	FXL 780 PE(7/8)	0.00 - 1.00	1.0000	1.0000
L41	7	FXL 780 PE(7/8)	0.00 - 1.00	1.0000	1.0000
L41	8	LDF1-50A(1/4)	0.00 - 1.00	1.0000	1.0000
L41	10	CR 50 1070(7/8)	0.00 - 1.00	1.0000	1.0000
L41	11	FB-L98B-034-XXX(3/8)	0.00 - 1.00	1.0000	1.0000
L41	16	CU12PSM9P8XXX(1-3/8)	0.00 - 1.00	1.0000	1.0000
L41	28	CCI-065125	0.50 - 1.00	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L3	25	MP3-05	85.50 - 88.00	Manual	1.0000
L3	26	MP3-05	85.50 - 88.00	Manual	1.0000
L3	27	MP3-05	85.50 - 88.00	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L4	25	MP3-05	85.25 - 85.50	Manual	1.0000
L4	26	MP3-05	85.25 - 85.50	Manual	1.0000
L4	27	MP3-05	85.25 - 85.50	Manual	1.0000
L5	25	MP3-05	80.25 - 85.25	Manual	1.0000
L5	26	MP3-05	80.25 - 85.25	Manual	1.0000
L5	27	MP3-05	80.25 - 85.25	Manual	1.0000
L5	35	5 x 1.25	80.25 - 81.50	Manual	1.0000
L5	36	5 x 1.25	80.25 - 81.50	Manual	1.0000
L5	37	5 x 1.25	80.25 - 81.50	Manual	1.0000
L6	25	MP3-05	75.25 - 80.25	Manual	1.0000
L6	26	MP3-05	75.25 - 80.25	Manual	1.0000
L6	27	MP3-05	75.25 - 80.25	Manual	1.0000
L6	35	5 x 1.25	75.25 - 80.25	Manual	1.0000
L6	36	5 x 1.25	75.25 - 80.25	Manual	1.0000
L6	37	5 x 1.25	75.25 - 80.25	Manual	1.0000
L7	25	MP3-05	70.25 - 75.25	Manual	1.0000
L7	26	MP3-05	70.25 - 75.25	Manual	1.0000
L7	27	MP3-05	70.25 - 75.25	Manual	1.0000
L7	32	Stacked Plate	70.25 - 71.50	Manual	1.0000
L7	33	Stacked Plate	70.25 - 71.50	Manual	1.0000
L7	34	Stacked Plate	70.25 - 71.50	Manual	1.0000
L7	35	5 x 1.25	71.50 - 75.25	Manual	1.0000
L7	36	5 x 1.25	71.50 - 75.25	Manual	1.0000
L7	37	5 x 1.25	71.50 - 75.25	Manual	1.0000
L8	25	MP3-05	62.50 - 70.25	Manual	1.0000
L8	26	MP3-05	62.50 - 70.25	Manual	1.0000
L8	27	MP3-05	62.50 - 70.25	Manual	1.0000
L8	32	Stacked Plate	62.50 - 70.25	Manual	1.0000
L8	33	Stacked Plate	62.50 - 70.25	Manual	1.0000
L8	34	Stacked Plate	62.50 - 70.25	Manual	1.0000
L9	25	MP3-05	61.50 - 62.50	Manual	1.0000
L9	26	MP3-05	61.50 - 62.50	Manual	1.0000
L9	27	MP3-05	61.50 - 62.50	Manual	1.0000
L9	32	Stacked Plate	61.50 - 62.50	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L9	33	Stacked Plate	61.50 - 62.50	Manual	1.0000
L9	34	Stacked Plate	61.50 - 62.50	Manual	1.0000
L10	18	MP3-06	56.50 - 58.00	Manual	1.0000
L10	19	MP3-06	56.50 - 58.00	Manual	1.0000
L10	21	MP3-06	56.50 - 58.00	Manual	1.0000
L10	25	MP3-05	58.00 - 61.50	Manual	1.0000
L10	26	MP3-05	58.00 - 61.50	Manual	1.0000
L10	27	MP3-05	58.00 - 61.50	Manual	1.0000
L10	32	Stacked Plate	56.50 - 61.50	Manual	1.0000
L10	33	Stacked Plate	56.50 - 61.50	Manual	1.0000
L10	34	Stacked Plate	56.50 - 61.50	Manual	1.0000
L11	18	MP3-06	54.75 - 56.50	Manual	1.0000
L11	19	MP3-06	54.75 - 56.50	Manual	1.0000
L11	21	MP3-06	54.75 - 56.50	Manual	1.0000
L11	32	Stacked Plate	54.75 - 56.50	Manual	1.0000
L11	33	Stacked Plate	54.75 - 56.50	Manual	1.0000
L11	34	Stacked Plate	54.75 - 56.50	Manual	1.0000
L12	18	MP3-06	54.50 - 54.75	Manual	1.0000
L12	19	MP3-06	54.50 - 54.75	Manual	1.0000
L12	21	MP3-06	54.50 - 54.75	Manual	1.0000
L12	32	Stacked Plate	54.50 - 54.75	Manual	1.0000
L12	33	Stacked Plate	54.50 - 54.75	Manual	1.0000
L12	34	Stacked Plate	54.50 - 54.75	Manual	1.0000
L13	18	MP3-06	49.50 - 54.50	Manual	1.0000
L13	19	MP3-06	49.50 - 54.50	Manual	1.0000
L13	21	MP3-06	49.50 - 54.50	Manual	1.0000
L13	32	Stacked Plate	49.50 - 54.50	Manual	1.0000
L13	33	Stacked Plate	49.50 - 54.50	Manual	1.0000
L13	34	Stacked Plate	49.50 - 54.50	Manual	1.0000
L14	18	MP3-06	44.50 - 49.50	Manual	1.0000
L14	19	MP3-06	44.50 - 49.50	Manual	1.0000
L14	21	MP3-06	44.50 - 49.50	Manual	1.0000
L14	32	Stacked Plate	44.50 - 49.50	Manual	1.0000
L14	33	Stacked Plate	44.50 - 49.50	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L14	34	Stacked Plate	44.50 - 49.50	Manual	1.0000
L15	18	MP3-06	39.50 - 44.50	Manual	1.0000
L15	19	MP3-06	39.50 - 44.50	Manual	1.0000
L15	21	MP3-06	39.50 - 44.50	Manual	1.0000
L15	32	Stacked Plate	39.50 - 44.50	Manual	1.0000
L15	33	Stacked Plate	39.50 - 44.50	Manual	1.0000
L15	34	Stacked Plate	39.50 - 44.50	Manual	1.0000
L16	18	MP3-06	34.50 - 39.50	Manual	1.0000
L16	19	MP3-06	34.50 - 39.50	Manual	1.0000
L16	21	MP3-06	34.50 - 39.50	Manual	1.0000
L16	22	MP3-05	34.50 - 35.00	Manual	1.0000
L16	32	Stacked Plate	34.50 - 39.50	Manual	1.0000
L16	33	Stacked Plate	34.50 - 39.50	Manual	1.0000
L16	34	Stacked Plate	34.50 - 39.50	Manual	1.0000
L17	18	MP3-06	29.00 - 34.50	Manual	1.0000
L17	19	MP3-06	29.00 - 34.50	Manual	1.0000
L17	21	MP3-06	29.00 - 34.50	Manual	1.0000
L17	22	MP3-05	29.00 - 34.50	Manual	1.0000
L17	23	MP3-05	29.00 - 32.00	Manual	1.0000
L17	24	MP3-05	29.00 - 32.00	Manual	1.0000
L17	32	Stacked Plate	29.00 - 34.50	Manual	1.0000
L17	33	Stacked Plate	29.00 - 34.50	Manual	1.0000
L17	34	Stacked Plate	29.00 - 34.50	Manual	1.0000
L18	18	MP3-06	28.00 - 29.00	Manual	1.0000
L18	19	MP3-06	28.00 - 29.00	Manual	1.0000
L18	21	MP3-06	28.00 - 29.00	Manual	1.0000
L18	22	MP3-05	28.00 - 29.00	Manual	1.0000
L18	23	MP3-05	28.00 - 29.00	Manual	1.0000
L18	24	MP3-05	28.00 - 29.00	Manual	1.0000
L18	32	Stacked Plate	28.00 - 29.00	Manual	1.0000
L18	33	Stacked Plate	28.00 - 29.00	Manual	1.0000
L18	34	Stacked Plate	28.00 - 29.00	Manual	1.0000
L19	18	MP3-06	23.50 - 28.00	Manual	1.0000
L19	19	MP3-06	23.50 - 28.00	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L19	21	MP3-06	23.50 - 28.00	Manual	1.0000
L19	22	MP3-05	23.50 - 28.00	Manual	1.0000
L19	23	MP3-05	23.50 - 28.00	Manual	1.0000
L19	24	MP3-05	23.50 - 28.00	Manual	1.0000
L19	28	CCI-065125	23.50 - 25.50	Manual	1.0000
L19	29	CCI-060100	23.50 - 25.50	Manual	1.0000
L19	30	CCI-060100	23.50 - 25.50	Manual	1.0000
L19	32	Stacked Plate	23.50 - 28.00	Manual	1.0000
L19	33	Stacked Plate	23.50 - 28.00	Manual	1.0000
L19	34	Stacked Plate	23.50 - 28.00	Manual	1.0000
L20	18	MP3-06	23.25 - 23.50	Manual	1.0000
L20	19	MP3-06	23.25 - 23.50	Manual	1.0000
L20	21	MP3-06	23.25 - 23.50	Manual	1.0000
L20	22	MP3-05	23.25 - 23.50	Manual	1.0000
L20	23	MP3-05	23.25 - 23.50	Manual	1.0000
L20	24	MP3-05	23.25 - 23.50	Manual	1.0000
L20	28	CCI-065125	23.25 - 23.50	Manual	1.0000
L20	29	CCI-060100	23.25 - 23.50	Manual	1.0000
L20	30	CCI-060100	23.25 - 23.50	Manual	1.0000
L20	32	Stacked Plate	23.25 - 23.50	Manual	1.0000
L20	33	Stacked Plate	23.25 - 23.50	Manual	1.0000
L20	34	Stacked Plate	23.25 - 23.50	Manual	1.0000
L21	18	MP3-06	22.75 - 23.25	Manual	1.0000
L21	19	MP3-06	22.75 - 23.25	Manual	1.0000
L21	21	MP3-06	22.75 - 23.25	Manual	1.0000
L21	22	MP3-05	22.75 - 23.25	Manual	1.0000
L21	23	MP3-05	22.75 - 23.25	Manual	1.0000
L21	24	MP3-05	22.75 - 23.25	Manual	1.0000
L21	28	CCI-065125	22.75 - 23.25	Manual	1.0000
L21	29	CCI-060100	22.75 - 23.25	Manual	1.0000
L21	30	CCI-060100	22.75 - 23.25	Manual	1.0000
L21	32	Stacked Plate	22.75 - 23.25	Manual	1.0000
L21	33	Stacked Plate	22.75 - 23.25	Manual	1.0000
L21	34	Stacked Plate	22.75 - 23.25	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L22	18	MP3-06	22.50 - 22.75	Manual	1.0000
L22	19	MP3-06	22.50 - 22.75	Manual	1.0000
L22	21	MP3-06	22.50 - 22.75	Manual	1.0000
L22	22	MP3-05	22.50 - 22.75	Manual	1.0000
L22	23	MP3-05	22.50 - 22.75	Manual	1.0000
L22	24	MP3-05	22.50 - 22.75	Manual	1.0000
L22	28	CCI-065125	22.50 - 22.75	Manual	1.0000
L22	29	CCI-060100	22.50 - 22.75	Manual	1.0000
L22	30	CCI-060100	22.50 - 22.75	Manual	1.0000
L22	32	Stacked Plate	22.50 - 22.75	Manual	1.0000
L22	33	Stacked Plate	22.50 - 22.75	Manual	1.0000
L22	34	Stacked Plate	22.50 - 22.75	Manual	1.0000
L23	18	MP3-06	17.50 - 22.50	Manual	1.0000
L23	19	MP3-06	17.50 - 22.50	Manual	1.0000
L23	20	MP3-06	17.50 - 19.00	Manual	1.0000
L23	21	MP3-06	17.50 - 22.50	Manual	1.0000
L23	22	MP3-05	17.50 - 22.50	Manual	1.0000
L23	23	MP3-05	17.50 - 22.50	Manual	1.0000
L23	24	MP3-05	17.50 - 22.50	Manual	1.0000
L23	28	CCI-065125	17.50 - 22.50	Manual	1.0000
L23	29	CCI-060100	17.50 - 22.50	Manual	1.0000
L23	30	CCI-060100	17.50 - 22.50	Manual	1.0000
L23	32	Stacked Plate	17.50 - 22.50	Manual	1.0000
L23	33	Stacked Plate	17.50 - 22.50	Manual	1.0000
L23	34	Stacked Plate	17.50 - 22.50	Manual	1.0000
L24	18	MP3-06	15.75 - 17.50	Manual	1.0000
L24	19	MP3-06	15.75 - 17.50	Manual	1.0000
L24	20	MP3-06	15.75 - 17.50	Manual	1.0000
L24	21	MP3-06	15.75 - 17.50	Manual	1.0000
L24	22	MP3-05	15.75 - 17.50	Manual	1.0000
L24	23	MP3-05	15.75 - 17.50	Manual	1.0000
L24	24	MP3-05	15.75 - 17.50	Manual	1.0000
L24	28	CCI-065125	15.75 - 17.50	Manual	1.0000
L24	29	CCI-060100	15.75 - 17.50	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L24	30	CCI-060100	15.75 - 17.50	Manual	1.0000
L24	32	Stacked Plate	15.75 - 17.50	Manual	1.0000
L24	33	Stacked Plate	15.75 - 17.50	Manual	1.0000
L24	34	Stacked Plate	15.75 - 17.50	Manual	1.0000
L25	18	MP3-06	15.50 - 15.75	Manual	1.0000
L25	19	MP3-06	15.50 - 15.75	Manual	1.0000
L25	20	MP3-06	15.50 - 15.75	Manual	1.0000
L25	21	MP3-06	15.50 - 15.75	Manual	1.0000
L25	22	MP3-05	15.50 - 15.75	Manual	1.0000
L25	23	MP3-05	15.50 - 15.75	Manual	1.0000
L25	24	MP3-05	15.50 - 15.75	Manual	1.0000
L25	28	CCI-065125	15.50 - 15.75	Manual	1.0000
L25	29	CCI-060100	15.50 - 15.75	Manual	1.0000
L25	30	CCI-060100	15.50 - 15.75	Manual	1.0000
L25	32	Stacked Plate	15.50 - 15.75	Manual	1.0000
L25	33	Stacked Plate	15.50 - 15.75	Manual	1.0000
L25	34	Stacked Plate	15.50 - 15.75	Manual	1.0000
L26	18	MP3-06	12.25 - 15.50	Manual	1.0000
L26	19	MP3-06	12.25 - 15.50	Manual	1.0000
L26	20	MP3-06	12.25 - 15.50	Manual	1.0000
L26	21	MP3-06	12.25 - 15.50	Manual	1.0000
L26	22	MP3-05	12.25 - 15.50	Manual	1.0000
L26	23	MP3-05	12.25 - 15.50	Manual	1.0000
L26	24	MP3-05	12.25 - 15.50	Manual	1.0000
L26	28	CCI-065125	12.25 - 15.50	Manual	1.0000
L26	29	CCI-060100	12.25 - 15.50	Manual	1.0000
L26	30	CCI-060100	12.25 - 15.50	Manual	1.0000
L26	32	Stacked Plate	12.25 - 15.50	Manual	1.0000
L26	33	Stacked Plate	12.25 - 15.50	Manual	1.0000
L26	34	Stacked Plate	12.25 - 15.50	Manual	1.0000
L27	18	MP3-06	12.00 - 12.25	Manual	1.0000
L27	19	MP3-06	12.00 - 12.25	Manual	1.0000
L27	20	MP3-06	12.00 - 12.25	Manual	1.0000
L27	21	MP3-06	12.00 - 12.25	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L27	22	MP3-05	12.00 - 12.25	Manual	1.0000
L27	23	MP3-05	12.00 - 12.25	Manual	1.0000
L27	24	MP3-05	12.00 - 12.25	Manual	1.0000
L27	28	CCI-065125	12.00 - 12.25	Manual	1.0000
L27	29	CCI-060100	12.00 - 12.25	Manual	1.0000
L27	30	CCI-060100	12.00 - 12.25	Manual	1.0000
L27	32	Stacked Plate	12.00 - 12.25	Manual	1.0000
L27	33	Stacked Plate	12.00 - 12.25	Manual	1.0000
L27	34	Stacked Plate	12.00 - 12.25	Manual	1.0000
L28	18	MP3-06	11.75 - 12.00	Manual	1.0000
L28	19	MP3-06	11.75 - 12.00	Manual	1.0000
L28	20	MP3-06	11.75 - 12.00	Manual	1.0000
L28	21	MP3-06	11.75 - 12.00	Manual	1.0000
L28	22	MP3-05	11.75 - 12.00	Manual	1.0000
L28	23	MP3-05	11.75 - 12.00	Manual	1.0000
L28	24	MP3-05	11.75 - 12.00	Manual	1.0000
L28	28	CCI-065125	11.75 - 12.00	Manual	1.0000
L28	29	CCI-060100	11.75 - 12.00	Manual	1.0000
L28	30	CCI-060100	11.75 - 12.00	Manual	1.0000
L28	32	Stacked Plate	11.75 - 12.00	Manual	1.0000
L28	33	Stacked Plate	11.75 - 12.00	Manual	1.0000
L28	34	Stacked Plate	11.75 - 12.00	Manual	1.0000
L29	18	MP3-06	11.50 - 11.75	Manual	1.0000
L29	19	MP3-06	11.50 - 11.75	Manual	1.0000
L29	20	MP3-06	11.50 - 11.75	Manual	1.0000
L29	21	MP3-06	11.50 - 11.75	Manual	1.0000
L29	22	MP3-05	11.50 - 11.75	Manual	1.0000
L29	23	MP3-05	11.50 - 11.75	Manual	1.0000
L29	24	MP3-05	11.50 - 11.75	Manual	1.0000
L29	28	CCI-065125	11.50 - 11.75	Manual	1.0000
L29	29	CCI-060100	11.50 - 11.75	Manual	1.0000
L29	30	CCI-060100	11.50 - 11.75	Manual	1.0000
L29	32	Stacked Plate	11.50 - 11.75	Manual	1.0000
L29	33	Stacked Plate	11.50 - 11.75	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L29	34	Stacked Plate	11.50 - 11.75	Manual	1.0000
L30	18	MP3-06	6.50 - 11.50	Manual	1.0000
L30	19	MP3-06	6.50 - 11.50	Manual	1.0000
L30	20	MP3-06	6.50 - 11.50	Manual	1.0000
L30	21	MP3-06	8.50 - 11.50	Manual	1.0000
L30	22	MP3-05	10.00 - 11.50	Manual	1.0000
L30	23	MP3-05	6.50 - 11.50	Manual	1.0000
L30	24	MP3-05	6.50 - 11.50	Manual	1.0000
L30	28	CCI-065125	6.50 - 11.50	Manual	1.0000
L30	29	CCI-060100	6.50 - 11.50	Manual	1.0000
L30	30	CCI-060100	6.50 - 11.50	Manual	1.0000
L30	32	Stacked Plate	6.50 - 11.50	Manual	1.0000
L30	33	Stacked Plate	6.50 - 11.50	Manual	1.0000
L30	34	Stacked Plate	6.50 - 11.50	Manual	1.0000
L31	18	MP3-06	6.00 - 6.50	Manual	1.0000
L31	19	MP3-06	6.00 - 6.50	Manual	1.0000
L31	20	MP3-06	6.00 - 6.50	Manual	1.0000
L31	23	MP3-05	6.00 - 6.50	Manual	1.0000
L31	24	MP3-05	6.00 - 6.50	Manual	1.0000
L31	28	CCI-065125	6.00 - 6.50	Manual	1.0000
L31	29	CCI-060100	6.00 - 6.50	Manual	1.0000
L31	30	CCI-060100	6.00 - 6.50	Manual	1.0000
L31	32	Stacked Plate	6.00 - 6.50	Manual	1.0000
L31	33	Stacked Plate	6.00 - 6.50	Manual	1.0000
L31	34	Stacked Plate	6.00 - 6.50	Manual	1.0000
L32	18	MP3-06	5.75 - 6.00	Manual	1.0000
L32	19	MP3-06	5.75 - 6.00	Manual	1.0000
L32	20	MP3-06	5.75 - 6.00	Manual	1.0000
L32	23	MP3-05	5.75 - 6.00	Manual	1.0000
L32	24	MP3-05	5.75 - 6.00	Manual	1.0000
L32	28	CCI-065125	5.75 - 6.00	Manual	1.0000
L32	29	CCI-060100	5.75 - 6.00	Manual	1.0000
L32	30	CCI-060100	5.75 - 6.00	Manual	1.0000
L32	32	Stacked Plate	5.75 - 6.00	Manual	1.0000
L32	33	Stacked Plate	5.75 - 6.00	Manual	1.0000
L32	34	Stacked Plate	5.75 - 6.00	Manual	1.0000
L33	18	MP3-06	4.50 - 5.75	Manual	1.0000
L33	19	MP3-06	4.50 - 5.75	Manual	1.0000
L33	20	MP3-06	4.50 - 5.75	Manual	1.0000
L33	23	MP3-05	4.50 - 5.75	Manual	1.0000
L33	24	MP3-05	4.50 - 5.75	Manual	1.0000
L33	28	CCI-065125	4.50 - 5.75	Manual	1.0000
L33	29	CCI-060100	4.50 - 5.75	Manual	1.0000
L33	30	CCI-060100	4.50 - 5.75	Manual	1.0000
L33	32	Stacked Plate	4.50 - 5.75	Manual	1.0000
L33	33	Stacked Plate	4.50 - 5.75	Manual	1.0000
L33	34	Stacked Plate	4.50 - 5.75	Manual	1.0000
L34	18	MP3-06	4.25 - 4.50	Manual	1.0000
L34	19	MP3-06	4.25 - 4.50	Manual	1.0000
L34	20	MP3-06	4.25 - 4.50	Manual	1.0000
L34	23	MP3-05	4.25 - 4.50	Manual	1.0000
L34	24	MP3-05	4.25 - 4.50	Manual	1.0000
L34	28	CCI-065125	4.25 - 4.50	Manual	1.0000
L34	29	CCI-060100	4.25 - 4.50	Manual	1.0000
L34	30	CCI-060100	4.25 - 4.50	Manual	1.0000
L34	32	Stacked Plate	4.25 - 4.50	Manual	1.0000
L34	33	Stacked Plate	4.25 - 4.50	Manual	1.0000
L34	34	Stacked Plate	4.25 - 4.50	Manual	1.0000
L35	18	MP3-06	3.00 - 4.25	Manual	1.0000
L35	19	MP3-06	3.00 - 4.25	Manual	1.0000
L35	20	MP3-06	3.00 - 4.25	Manual	1.0000
L35	23	MP3-05	3.00 - 4.25	Manual	1.0000
L35	24	MP3-05	3.00 - 4.25	Manual	1.0000
L35	28	CCI-065125	3.00 - 4.25	Manual	1.0000
L35	29	CCI-060100	4.00 - 4.25	Manual	1.0000
L35	30	CCI-060100	4.00 - 4.25	Manual	1.0000

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L35	32	Stacked Plate	3.00 - 4.25	Manual	1.0000
L35	33	Stacked Plate	3.00 - 4.25	Manual	1.0000
L35	34	Stacked Plate	3.00 - 4.25	Manual	1.0000
L36	18	MP3-06	2.75 - 3.00	Manual	1.0000
L36	19	MP3-06	2.75 - 3.00	Manual	1.0000
L36	20	MP3-06	2.75 - 3.00	Manual	1.0000
L36	23	MP3-05	2.75 - 3.00	Manual	1.0000
L36	24	MP3-05	2.75 - 3.00	Manual	1.0000
L36	28	CCI-065125	2.75 - 3.00	Manual	1.0000
L36	32	Stacked Plate	2.75 - 3.00	Manual	1.0000
L36	33	Stacked Plate	2.75 - 3.00	Manual	1.0000
L36	34	Stacked Plate	2.75 - 3.00	Manual	1.0000
L37	18	MP3-06	1.75 - 2.75	Manual	1.0000
L37	19	MP3-06	1.75 - 2.75	Manual	1.0000
L37	20	MP3-06	1.75 - 2.75	Manual	1.0000
L37	23	MP3-05	2.25 - 2.75	Manual	1.0000
L37	24	MP3-05	2.25 - 2.75	Manual	1.0000
L37	28	CCI-065125	1.75 - 2.75	Manual	1.0000
L37	32	Stacked Plate	1.75 - 2.75	Manual	1.0000
L37	33	Stacked Plate	1.75 - 2.75	Manual	1.0000
L37	34	Stacked Plate	1.75 - 2.75	Manual	1.0000
L38	28	CCI-065125	1.50 - 1.75	Manual	1.0000
L38	32	Stacked Plate	1.50 - 1.75	Manual	1.0000
L38	33	Stacked Plate	1.50 - 1.75	Manual	1.0000
L38	34	Stacked Plate	1.50 - 1.75	Manual	1.0000
L39	28	CCI-065125	1.25 - 1.50	Manual	1.0000
L40	28	CCI-065125	1.00 - 1.25	Manual	1.0000
L41	28	CCI-065125	0.50 - 1.00	Manual	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft	Azimuth Adjustment t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
8-ft Ladder	C	From Leg	2.0000 0.00 1.00	0.0000	99.0000	No Ice	7.0700	7.0700	0.04
						1/2" Ice	9.7300	9.7300	0.07
						Ice	11.1900	11.1900	0.08
						1" Ice	13.9800	13.9800	0.11
						2" Ice			
Top Hat 15" Diameter x 4' Tall	C	None		0.0000	100.0000	No Ice	2.5778	2.5778	0.20
						1/2" Ice	3.8792	3.8792	0.24
						Ice	4.1898	4.1898	0.29
						1" Ice	4.8389	4.8389	0.40
						2" Ice			

X7C-680 w/ Mount Pipe	A	From Face	4.0000 -4.00 0.00	0.0000	102.0000	No Ice	7.2800	5.9100	0.07
						1/2" Ice	7.9500	6.5700	0.13
						Ice	8.6400	7.2300	0.21
						1" Ice	10.0700	8.6200	0.40
						2" Ice			
X7C-680 w/ Mount Pipe	B	From Face	4.0000 -4.00 0.00	0.0000	102.0000	No Ice	7.2800	5.9100	0.07
						1/2" Ice	7.9500	6.5700	0.13
						Ice	8.6400	7.2300	0.21
						1" Ice	10.0700	8.6200	0.40
						2" Ice			
X7C-680 w/ Mount Pipe	C	From Face	4.0000 -4.00 0.00	0.0000	102.0000	No Ice	7.2800	5.9100	0.07
						1/2" Ice	7.9500	6.5700	0.13
						Ice	8.6400	7.2300	0.21
						1" Ice	10.0700	8.6200	0.40
						2" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
(2) NHH-65B-R2B w/ Mount Pipe	A	From Face	4.0000 4.00 0.00	0.0000	102.0000	2" Ice			
						No Ice	4.0900	3.2900	0.07
						1/2"	4.4800	3.6700	0.13
						Ice	4.8800	4.0600	0.21
(2) NHH-65B-R2B w/ Mount Pipe	B	From Face	4.0000 4.00 0.00	0.0000	102.0000	1" Ice	5.7000	4.8600	0.39
						2" Ice			
						No Ice	4.0900	3.2900	0.07
						1/2"	4.4800	3.6700	0.13
(2) NHH-65B-R2B w/ Mount Pipe	C	From Face	4.0000 4.00 0.00	0.0000	102.0000	Ice	4.8800	4.0600	0.21
						1" Ice	5.7000	4.8600	0.39
						2" Ice			
						No Ice	4.0900	3.2900	0.07
MT6407-77A w/ Mount Pipe	A	From Face	4.0000 8.00 0.00	0.0000	102.0000	1/2"	4.4800	3.6700	0.13
						Ice	4.8800	4.0600	0.21
						1" Ice	5.7000	4.8600	0.39
						2" Ice			
MT6407-77A w/ Mount Pipe	B	From Face	4.0000 8.00 0.00	0.0000	102.0000	No Ice	4.9069	2.6821	0.10
						1/2"	5.2559	3.1450	0.14
						Ice	5.6147	3.6241	0.18
						1" Ice	6.3615	4.6310	0.29
MT6407-77A w/ Mount Pipe	C	From Face	4.0000 8.00 0.00	0.0000	102.0000	2" Ice			
						No Ice	4.9069	2.6821	0.10
						1/2"	5.2559	3.1450	0.14
						Ice	5.6147	3.6241	0.18
RFV01U-D1A	A	From Face	4.0000 0.00 2.00	0.0000	102.0000	1" Ice	6.3615	4.6310	0.29
						2" Ice			
						No Ice	1.8750	1.2500	0.08
						1/2"	2.0454	1.3926	0.10
RFV01U-D1A	B	From Face	4.0000 0.00 2.00	0.0000	102.0000	Ice	2.2231	1.5426	0.12
						1" Ice	2.6009	1.8648	0.18
						2" Ice			
						No Ice	1.8750	1.2500	0.08
RFV01U-D1A	C	From Face	4.0000 0.00 2.00	0.0000	102.0000	1/2"	2.0454	1.3926	0.10
						Ice	2.2231	1.5426	0.12
						1" Ice	2.6009	1.8648	0.18
						2" Ice			
RFV01U-D2A	A	From Centroid-Face	4.0000 0.00 2.00	0.0000	102.0000	No Ice	1.8750	1.0125	0.07
						1/2"	2.0454	1.1445	0.09
						Ice	2.2231	1.2840	0.11
						1" Ice	2.6009	1.5851	0.15
RFV01U-D2A	B	From Face	4.0000 0.00 2.00	0.0000	102.0000	2" Ice			
						No Ice	1.8750	1.0125	0.07
						1/2"	2.0454	1.1445	0.09
						Ice	2.2231	1.2840	0.11
RFV01U-D2A	C	From Face	4.0000 0.00 2.00	0.0000	102.0000	1" Ice	2.6009	1.5851	0.15
						2" Ice			
						No Ice	1.8750	1.0125	0.07
						1/2"	2.0454	1.1445	0.09
RVZDC-6627-PF-48	A	From Face	4.0000 0.00 2.00	0.0000	102.0000	Ice	2.2231	1.2840	0.11
						1" Ice	2.6009	1.5851	0.15
						2" Ice			
						No Ice	3.7922	2.5137	0.03
						1/2"	4.0441	2.7270	0.06
						Ice	4.3033	2.9472	0.10
						1" Ice	4.8439	3.4168	0.18
						2" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
RVZDC-6627-PF-48	A	From Face	4.0000 0.00 2.00	0.0000	102.0000	2" Ice No Ice 1/2" Ice 1" Ice	3.7922 4.0441 4.3033 4.8439	2.5137 2.7270 2.9472 3.4168	0.03 0.06 0.10 0.18
Miscellaneous [NA 507-3]	C	None		0.0000	102.0000	2" Ice No Ice 1/2" Ice 1" Ice	12.1700 16.4700 20.4200 27.6200	12.1700 16.4700 20.4200 27.6200	0.51 0.70 0.95 1.65
Side Arm Mount [SO 203-3]	C	None		0.0000	102.0000	2" Ice No Ice 1/2" Ice 1" Ice	6.6800 8.0500 9.5500 12.8000	6.6800 8.0500 9.5500 12.8000	0.38 0.46 0.57 0.87
Platform Mount [LP 404-1]	C	None		0.0000	102.0000	2" Ice No Ice 1/2" Ice 1" Ice	24.6000 31.6300 38.3700 51.5300	24.6000 31.6300 38.3700 51.5300	2.04 2.60 3.29 5.06

ERICSSON AIR 21 B4A B2P	A	From Face	4.0000 4.00 0.00	0.0000	94.0000	No Ice 1/2" Ice 1" Ice 2" Ice	3.1900 3.5200 3.8500 4.5500	1.9800 2.2800 2.5900 3.2500	0.09 0.13 0.18 0.29
ERICSSON AIR 21 B2A B4P	A	From Face	4.0000 -4.00 0.00	0.0000	94.0000	No Ice 1/2" Ice 1" Ice 2" Ice	3.1900 3.5200 3.8500 4.5500	1.9800 2.2800 2.5900 3.2500	0.09 0.13 0.18 0.29
ERICSSON AIR 21 B4A B2P	A	From Face	4.0000 4.00 0.00	0.0000	94.0000	No Ice 1/2" Ice 1" Ice 2" Ice	3.1900 3.5200 3.8500 4.5500	1.9800 2.2800 2.5900 3.2500	0.09 0.13 0.18 0.29
ERICSSON AIR 21 B2A B4P	B	From Face	4.0000 -4.00 0.00	0.0000	94.0000	No Ice 1/2" Ice 1" Ice 2" Ice	3.1900 3.5200 3.8500 4.5500	1.9800 2.2800 2.5900 3.2500	0.09 0.13 0.18 0.29
ERICSSON AIR 21 B4A B2P	A	From Face	4.0000 4.00 0.00	0.0000	94.0000	No Ice 1/2" Ice 1" Ice 2" Ice	3.1900 3.5200 3.8500 4.5500	1.9800 2.2800 2.5900 3.2500	0.09 0.13 0.18 0.29
ERICSSON AIR 21 B2A B4P	C	From Face	4.0000 -4.00 0.00	0.0000	94.0000	No Ice 1/2" Ice 1" Ice 2" Ice	3.1900 3.5200 3.8500 4.5500	1.9800 2.2800 2.5900 3.2500	0.09 0.13 0.18 0.29
T-Arm Mount [TA 702-3]	C	None		0.0000	94.0000	No Ice 1/2" Ice 1" Ice 2" Ice	4.7500 5.8200 6.9800 9.7200	4.7500 5.8200 6.9800 9.7200	0.34 0.43 0.55 0.87

80010965 w/ Mount Pipe	A	From Face	4.0000 -3.00 3.00	0.0000	84.0000	No Ice 1/2" Ice 1" Ice 2" Ice	12.2600 13.0300 13.8000 15.4100	5.7900 6.4700 7.1700 8.6000	0.14 0.23 0.33 0.57
80010965 w/ Mount Pipe	B	From Face	4.0000 -3.00	0.0000	84.0000	No Ice	12.2600 13.0300	5.7900 6.4700	0.14 0.23

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			3.00			1/2" Ice 15.4100	7.1700 8.6000	0.33 0.57	
80010965 w/ Mount Pipe	C	From Face	4.0000 -3.00 3.00	0.0000	84.0000	No Ice 1/2" Ice 13.8000 15.4100	5.7900 6.4700 7.1700 8.6000	0.14 0.23 0.33 0.57	
DMP65R-BU6e w/ Mount Pipe	A	From Face	4.0000 -6.00 3.00	0.0000	84.0000	No Ice 1/2" Ice 14.0900 15.7200	7.4100 8.1200 8.8400 10.3300	0.13 0.22 0.33 0.57	
DMP65R-BU6e w/ Mount Pipe	B	From Face	4.0000 -6.00 3.00	0.0000	84.0000	No Ice 1/2" Ice 14.0900 15.7200	7.4100 8.1200 8.8400 10.3300	0.13 0.22 0.33 0.57	
DMP65R-BU6e w/ Mount Pipe	C	From Face	4.0000 -6.00 3.00	0.0000	84.0000	No Ice 1/2" Ice 14.0900 15.7200	7.4100 8.1200 8.8400 10.3300	0.13 0.22 0.33 0.57	
AIR 6419 B77G w/ Mount Pipe	A	From Face	4.0000 7.00 2.00	0.0000	84.0000	No Ice 1/2" Ice 5.1700 6.0900	2.4900 2.8400 3.2100 4.0000	0.08 0.11 0.15 0.24	
AIR 6419 B77G w/ Mount Pipe	B	From Face	4.0000 7.00 2.00	0.0000	84.0000	No Ice 1/2" Ice 5.1700 6.0900	2.4900 2.8400 3.2100 4.0000	0.08 0.11 0.15 0.24	
AIR 6419 B77G w/ Mount Pipe	C	From Face	4.0000 7.00 2.00	0.0000	84.0000	No Ice 1/2" Ice 5.1700 6.0900	2.4900 2.8400 3.2100 4.0000	0.08 0.11 0.15 0.24	
AIR 6449 N77 w/ Mount Pipe	A	From Face	4.0000 5.00 2.00	0.0000	84.0000	No Ice 1/2" Ice 4.3500 5.1100	2.7200 3.0300 3.3600 4.0500	0.11 0.15 0.20 0.31	
AIR 6449 N77 w/ Mount Pipe	B	From Face	4.0000 5.00 2.00	0.0000	84.0000	No Ice 1/2" Ice 4.3500 5.1100	2.7200 3.0300 3.3600 4.0500	0.11 0.15 0.20 0.31	
AIR 6449 N77 w/ Mount Pipe	C	From Face	4.0000 5.00 2.00	0.0000	84.0000	No Ice 1/2" Ice 4.3500 5.1100	2.7200 3.0300 3.3600 4.0500	0.11 0.15 0.20 0.31	
RRUS 32 B2	A	From Face	4.0000 0.00 3.00	0.0000	84.0000	No Ice 1/2" Ice 3.1941 3.6753	1.6681 1.8552 2.0493 2.4585	0.05 0.07 0.10 0.16	
RRUS 32 B2	B	From Face	4.0000 0.00 3.00	0.0000	84.0000	No Ice 1/2" Ice 3.1941 3.6753	1.6681 1.8552 2.0493 2.4585	0.05 0.07 0.10 0.16	
RRUS 32 B2	C	From Face	4.0000	0.0000	84.0000	No Ice	2.7427	1.6681	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			0.00			1/2"	2.9647	1.8552	0.07
			3.00			Ice	3.1941	2.0493	0.10
						1" Ice	3.6753	2.4585	0.16
						2" Ice			
RRUS 32 B66	A	From Face	4.0000	0.0000	84.0000	No Ice	2.7427	1.6681	0.05
			0.00			1/2"	2.9647	1.8552	0.07
			3.00			Ice	3.1941	2.0493	0.10
						1" Ice	3.6753	2.4585	0.16
						2" Ice			
RRUS 32 B66	B	From Face	4.0000	0.0000	84.0000	No Ice	2.7427	1.6681	0.05
			0.00			1/2"	2.9647	1.8552	0.07
			3.00			Ice	3.1941	2.0493	0.10
						1" Ice	3.6753	2.4585	0.16
						2" Ice			
RRUS 32 B66	C	From Face	4.0000	0.0000	84.0000	No Ice	2.7427	1.6681	0.05
			0.00			1/2"	2.9647	1.8552	0.07
			3.00			Ice	3.1941	2.0493	0.10
						1" Ice	3.6753	2.4585	0.16
						2" Ice			
RRUS 4478 B14	A	From Face	4.0000	0.0000	84.0000	No Ice	2.0212	1.2459	0.06
			0.00			1/2"	2.1999	1.3960	0.08
			3.00			Ice	2.3860	1.5536	0.10
						1" Ice	2.7804	1.8909	0.15
						2" Ice			
RRUS 4478 B14	B	From Face	4.0000	0.0000	84.0000	No Ice	2.0212	1.2459	0.06
			0.00			1/2"	2.1999	1.3960	0.08
			3.00			Ice	2.3860	1.5536	0.10
						1" Ice	2.7804	1.8909	0.15
						2" Ice			
RRUS 4478 B14	C	From Face	4.0000	0.0000	84.0000	No Ice	2.0212	1.2459	0.06
			0.00			1/2"	2.1999	1.3960	0.08
			3.00			Ice	2.3860	1.5536	0.10
						1" Ice	2.7804	1.8909	0.15
						2" Ice			
RRUS 32 B30	A	From Face	4.0000	0.0000	84.0000	No Ice	2.7427	1.6681	0.05
			0.00			1/2"	2.9647	1.8552	0.07
			3.00			Ice	3.1941	2.0493	0.10
						1" Ice	3.6753	2.4585	0.16
						2" Ice			
RRUS 32 B30	B	From Face	4.0000	0.0000	84.0000	No Ice	2.7427	1.6681	0.05
			0.00			1/2"	2.9647	1.8552	0.07
			3.00			Ice	3.1941	2.0493	0.10
						1" Ice	3.6753	2.4585	0.16
						2" Ice			
RRUS 32 B30	C	From Face	4.0000	0.0000	84.0000	No Ice	2.7427	1.6681	0.05
			0.00			1/2"	2.9647	1.8552	0.07
			3.00			Ice	3.1941	2.0493	0.10
						1" Ice	3.6753	2.4585	0.16
						2" Ice			
RRUS 4449 B5/B12	A	From Face	4.0000	0.0000	84.0000	No Ice	1.9675	1.4081	0.07
			0.00			1/2"	2.1439	1.5637	0.09
			3.00			Ice	2.3278	1.7267	0.11
						1" Ice	2.7177	2.0749	0.16
						2" Ice			
RRUS 4449 B5/B12	B	From Face	4.0000	0.0000	84.0000	No Ice	1.9675	1.4081	0.07
			0.00			1/2"	2.1439	1.5637	0.09
			3.00			Ice	2.3278	1.7267	0.11
						1" Ice	2.7177	2.0749	0.16
						2" Ice			
RRUS 4449 B5/B12	C	From Face	4.0000	0.0000	84.0000	No Ice	1.9675	1.4081	0.07
			0.00			1/2"	2.1439	1.5637	0.09
			3.00			Ice	2.3278	1.7267	0.11
						1" Ice	2.7177	2.0749	0.16
						2" Ice			
(2) DC6-48-60-18-8F	A	From Face	4.0000	0.0000	84.0000	No Ice	1.2117	1.2117	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
			0.00			1/2"	1.8924	1.8924	0.05
			3.00			Ice	2.1051	2.1051	0.08
						1" Ice	2.5703	2.5703	0.14
						2" Ice			
DC9-48-60-24-8C-EV	B	From Face	4.0000	0.0000	84.0000	No Ice	2.7366	4.7848	0.03
			0.00			1/2"	2.9630	5.0645	0.06
			3.00			Ice	3.1964	5.3517	0.10
						1" Ice	3.6842	5.9483	0.20
						2" Ice			
(2) T-Arm Mount [TA 602-3]	C	None		0.0000	84.0000	No Ice	13.4000	13.4000	0.77
						1/2"	16.4400	16.4400	1.00
						Ice	19.7000	19.7000	1.29
						1" Ice	25.8600	25.8600	2.05
						2" Ice			

TA08025-B604	A	From Face	4.0000	0.0000	74.0000	No Ice	1.9635	0.9811	0.06
			0.00			1/2"	2.1378	1.1117	0.08
			0.00			Ice	2.3195	1.2496	0.10
						1" Ice	2.7052	1.5477	0.15
						2" Ice			
TA08025-B605	A	From Face	4.0000	0.0000	74.0000	No Ice	1.9635	1.1295	0.08
			0.00			1/2"	2.1378	1.2666	0.09
			0.00			Ice	2.3195	1.4112	0.11
						1" Ice	2.7052	1.7225	0.16
						2" Ice			
TA08025-B604	B	From Face	4.0000	0.0000	74.0000	No Ice	1.9635	0.9811	0.06
			0.00			1/2"	2.1378	1.1117	0.08
			0.00			Ice	2.3195	1.2496	0.10
						1" Ice	2.7052	1.5477	0.15
						2" Ice			
TA08025-B605	B	From Face	4.0000	0.0000	74.0000	No Ice	1.9635	1.1295	0.08
			0.00			1/2"	2.1378	1.2666	0.09
			0.00			Ice	2.3195	1.4112	0.11
						1" Ice	2.7052	1.7225	0.16
						2" Ice			
TA08025-B604	C	From Face	4.0000	0.0000	74.0000	No Ice	1.9635	0.9811	0.06
			0.00			1/2"	2.1378	1.1117	0.08
			0.00			Ice	2.3195	1.2496	0.10
						1" Ice	2.7052	1.5477	0.15
						2" Ice			
TA08025-B605	C	From Face	4.0000	0.0000	74.0000	No Ice	1.9635	1.1295	0.08
			0.00			1/2"	2.1378	1.2666	0.09
			0.00			Ice	2.3195	1.4112	0.11
						1" Ice	2.7052	1.7225	0.16
						2" Ice			
MX08FRO665-21 w/ Mount Pipe	A	From Face	4.0000	0.0000	74.0000	No Ice	8.0100	4.2300	0.11
			0.00			1/2"	8.5200	4.6900	0.19
			0.00			Ice	9.0400	5.1600	0.29
						1" Ice	10.1100	6.1200	0.52
						2" Ice			
MX08FRO665-21 w/ Mount Pipe	B	From Face	4.0000	0.0000	74.0000	No Ice	8.0100	4.2300	0.11
			0.00			1/2"	8.5200	4.6900	0.19
			0.00			Ice	9.0400	5.1600	0.29
						1" Ice	10.1100	6.1200	0.52
						2" Ice			
MX08FRO665-21 w/ Mount Pipe	C	From Face	4.0000	0.0000	74.0000	No Ice	8.0100	4.2300	0.11
			0.00			1/2"	8.5200	4.6900	0.19
			0.00			Ice	9.0400	5.1600	0.29
						1" Ice	10.1100	6.1200	0.52
						2" Ice			
2.375" OD x 6' Mount Pipe	A	From Face	4.0000	0.0000	74.0000	No Ice	1.4250	1.4250	0.03
			4.00			1/2"	1.9250	1.9250	0.04
			0.00			Ice	2.2939	2.2939	0.05
						1" Ice	3.0596	3.0596	0.09
						2" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
2.375" OD x 6' Mount Pipe	A	From Face	4.0000 -4.00 0.00	0.0000	74.0000	No Ice	1.4250	1.4250	0.03
						1/2"	1.9250	1.9250	0.04
						Ice	2.2939	2.2939	0.05
						1" Ice	3.0596	3.0596	0.09
						2" Ice			
2.375" OD x 6' Mount Pipe	B	From Face	4.0000 4.00 0.00	0.0000	74.0000	No Ice	1.4250	1.4250	0.03
						1/2"	1.9250	1.9250	0.04
						Ice	2.2939	2.2939	0.05
						1" Ice	3.0596	3.0596	0.09
						2" Ice			
2.375" OD x 6' Mount Pipe	B	From Face	4.0000 -4.00 0.00	0.0000	74.0000	No Ice	1.4250	1.4250	0.03
						1/2"	1.9250	1.9250	0.04
						Ice	2.2939	2.2939	0.05
						1" Ice	3.0596	3.0596	0.09
						2" Ice			
2.375" OD x 6' Mount Pipe	C	From Face	4.0000 4.00 0.00	0.0000	74.0000	No Ice	1.4250	1.4250	0.03
						1/2"	1.9250	1.9250	0.04
						Ice	2.2939	2.2939	0.05
						1" Ice	3.0596	3.0596	0.09
						2" Ice			
2.375" OD x 6' Mount Pipe	C	From Face	4.0000 -4.00 0.00	0.0000	74.0000	No Ice	1.4250	1.4250	0.03
						1/2"	1.9250	1.9250	0.04
						Ice	2.2939	2.2939	0.05
						1" Ice	3.0596	3.0596	0.09
						2" Ice			
RDIDC-9181-PF-48	C	From Face	4.0000 0.00 0.00	0.0000	74.0000	No Ice	2.0119	1.1682	0.02
						1/2"	2.1886	1.3109	0.04
						Ice	2.3727	1.4611	0.06
						1" Ice	2.7631	1.7837	0.11
						2" Ice			
Commscope_MC-Pk8-DSH_Platform	C	None		0.0000	74.0000	No Ice	34.2400	34.2400	1.75
						1/2"	62.9500	62.9500	2.10
						Ice	91.6600	91.6600	2.45
						1" Ice	149.0800	149.0800	3.15
						2" Ice			

Tower Pressures - No Ice

$G_H = 1.100$

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 _{AA} In Face ft ²	C _{AA} Out Face ft ²
L1 100.0000-95.0000	97.4785	1.259	46.36	6.614	A	0.000	6.614	6.614	100.00	0.000	0.000
					B	0.000	6.614	100.00	0.000	0.000	
					C	0.000	6.614	100.00	0.000	0.000	
L2 95.0000-90.0000	92.4796	1.245	45.85	6.956	A	0.000	6.956	6.956	100.00	0.000	0.000
					B	0.000	6.956	100.00	4.054	0.000	
					C	0.000	6.956	100.00	0.000	0.000	
L3 90.0000-85.5000	87.7342	1.231	45.34	6.553	A	0.000	6.553	6.553	100.00	2.221	0.000
					B	0.000	6.553	100.00	6.782	0.000	
					C	0.000	6.553	100.00	2.221	0.000	
L4 85.5000-85.2500	85.3750	1.224	45.08	0.369	A	0.000	0.369	0.369	100.00	0.222	0.000
					B	0.000	0.369	100.00	0.475	0.000	
					C	0.000	0.369	100.00	0.222	0.000	
L5 85.2500-80.2500	82.7314	1.216	44.79	7.566	A	0.000	7.566	7.566	100.00	5.454	0.000
					B	0.000	7.566	100.00	11.533	0.000	
					C	0.000	7.566	100.00	4.442	0.000	
L6 80.2500-75.2500	77.7322	1.2	44.20	7.912	A	0.000	7.912	7.912	100.00	8.489	0.000
					B	0.000	7.912	100.00	17.604	0.000	
					C	0.000	7.912	100.00	4.442	0.000	

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
L7 75.2500- 70.2500	72.7329	1.184	43.59	8.256	A	0.000	8.256	8.256	100.00	9.256	0.000
					B	0.000	8.256	100.00	18.080	0.000	
					C	0.000	8.256	100.00	4.442	0.000	
L8 70.2500- 62.5000	66.3359	1.161	42.75	13.478	A	0.000	13.478	13.478	100.00	15.728	0.000
					B	0.000	13.478	100.00	30.239	0.000	
					C	0.000	13.478	100.00	6.885	0.000	
L9 62.5000- 61.5000	61.9994	1.144	42.15	1.765	A	0.000	1.765	1.765	100.00	2.029	0.000
					B	0.000	1.765	100.00	3.902	0.000	
					C	0.000	1.765	100.00	0.888	0.000	
L10 61.5000- 56.5000	58.9843	1.132	41.71	9.033	A	0.000	9.033	9.033	100.00	10.537	0.000
					B	0.000	9.033	100.00	19.899	0.000	
					C	0.000	9.033	100.00	4.832	0.000	
L11 56.5000- 54.7500	55.6231	1.119	41.20	3.243	A	0.000	3.243	3.243	100.00	4.007	0.000
					B	0.000	3.243	100.00	7.283	0.000	
					C	0.000	3.243	100.00	2.010	0.000	
L12 54.7500- 54.5000	54.6250	1.114	41.04	0.465	A	0.000	0.465	0.465	100.00	0.572	0.000
					B	0.000	0.465	100.00	1.040	0.000	
					C	0.000	0.465	100.00	0.287	0.000	
L13 54.5000- 49.5000	51.9851	1.103	40.61	9.491	A	0.000	9.491	9.491	100.00	11.447	0.000
					B	0.000	9.491	100.00	20.809	0.000	
					C	0.000	9.491	100.00	5.742	0.000	
L14 49.5000- 44.5000	46.9856	1.08	39.76	9.837	A	0.000	9.837	9.837	100.00	11.447	0.000
					B	0.000	9.837	100.00	20.809	0.000	
					C	0.000	9.837	100.00	5.742	0.000	
L15 44.5000- 39.5000	41.9861	1.054	38.83	10.182	A	0.000	10.182	10.182	100.00	11.447	0.000
					B	0.000	10.182	100.00	20.809	0.000	
					C	0.000	10.182	100.00	5.742	0.000	
L16 39.5000- 34.5000	36.9866	1.027	37.81	10.528	A	0.000	10.528	10.528	100.00	11.891	0.000
					B	0.000	10.528	100.00	20.809	0.000	
					C	0.000	10.528	100.00	5.742	0.000	
L17 34.5000- 29.0000	31.7343	0.994	36.61	11.977	A	0.000	11.977	11.977	100.00	17.478	0.000
					B	0.000	11.977	100.00	25.555	0.000	
					C	0.000	11.977	100.00	8.981	0.000	
L18 29.0000- 28.0000	28.4995	0.972	35.79	2.171	A	0.000	2.171	2.171	100.00	3.178	0.000
					B	0.000	2.171	100.00	5.050	0.000	
					C	0.000	2.171	100.00	2.037	0.000	
L19 28.0000- 23.5000	25.7397	0.951	35.03	9.940	A	0.000	9.940	9.940	100.00	16.300	0.000
					B	0.000	9.940	100.00	26.892	0.000	
					C	0.000	9.940	100.00	9.165	0.000	
L20 23.5000- 23.2500	23.3750	0.932	34.32	0.560	A	0.000	0.560	0.560	100.00	1.044	0.000
					B	0.000	0.560	100.00	1.783	0.000	
					C	0.000	0.560	100.00	0.509	0.000	
L21 23.2500- 22.7500	22.9999	0.929	34.21	1.123	A	0.000	1.123	1.123	100.00	2.089	0.000
					B	0.000	1.123	100.00	3.567	0.000	
					C	0.000	1.123	100.00	1.018	0.000	
L22 22.7500- 22.5000	22.6250	0.926	34.09	0.562	A	0.000	0.562	0.562	100.00	1.044	0.000
					B	0.000	0.562	100.00	1.783	0.000	
					C	0.000	0.562	100.00	0.509	0.000	
L23 22.5000- 17.5000	19.9877	0.902	33.21	11.420	A	0.000	11.420	11.420	100.00	20.889	0.000
					B	0.000	11.420	100.00	35.667	0.000	
					C	0.000	11.420	100.00	11.906	0.000	
L24 17.5000- 15.7500	16.6235	0.867	31.95	4.079	A	0.000	4.079	4.079	100.00	7.311	0.000
					B	0.000	4.079	100.00	12.484	0.000	
					C	0.000	4.079	100.00	5.574	0.000	
L25 15.7500- 15.5000	15.6250	0.856	31.53	0.586	A	0.000	0.586	0.586	100.00	1.044	0.000
					B	0.000	0.586	100.00	1.783	0.000	
					C	0.000	0.586	100.00	0.796	0.000	
L26 15.5000- 12.2500	13.8700	0.85	31.30	7.692	A	0.000	7.692	7.692	100.00	13.578	0.000
					B	0.000	7.692	100.00	23.184	0.000	
					C	0.000	7.692	100.00	10.351	0.000	
L27 12.2500- 12.0000	12.1250	0.85	31.30	0.599	A	0.000	0.599	0.599	100.00	1.044	0.000
					B	0.000	0.599	100.00	1.783	0.000	
					C	0.000	0.599	100.00	0.796	0.000	
L28 12.0000- 11.7500	11.8750	0.85	31.30	0.599	A	0.000	0.599	0.599	100.00	1.044	0.000
					B	0.000	0.599	100.00	1.783	0.000	
					C	0.000	0.599	100.00	0.796	0.000	
L29 11.7500- 11.5000	11.6250	0.85	31.30	0.602	A	0.000	0.602	0.602	100.00	1.044	0.000
					B	0.000	0.602	100.00	1.783	0.000	
					C	0.000	0.602	100.00	0.796	0.000	

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
L30 11.5000- 6.5000	8.9884	0.85	31.30	12.216	C	0.000	0.602	12.216	100.00	0.796	0.000
					A	0.000	12.216		100.00	17.780	0.000
					B	0.000	12.216		100.00	35.667	0.000
L31 6.5000- 6.0000	6.2499	0.85	31.30	1.240	C	0.000	12.216	1.240	100.00	13.628	0.000
					A	0.000	1.240		100.00	1.645	0.000
					B	0.000	1.240		100.00	3.567	0.000
L32 6.0000- 5.7500	5.8750	0.85	31.30	0.621	C	0.000	1.240	0.621	100.00	1.018	0.000
					A	0.000	0.621		100.00	0.822	0.000
					B	0.000	0.621		100.00	1.783	0.000
L33 5.7500- 4.5000	5.1243	0.85	31.30	3.120	C	0.000	0.621	3.120	100.00	0.509	0.000
					A	0.000	3.120		100.00	4.112	0.000
					B	0.000	3.120		100.00	8.917	0.000
L34 4.5000- 4.2500	4.3750	0.85	31.30	0.626	C	0.000	3.120	0.626	100.00	2.546	0.000
					A	0.000	0.626		100.00	0.822	0.000
					B	0.000	0.626		100.00	1.783	0.000
L35 4.2500- 3.0000	3.6243	0.85	31.30	3.144	C	0.000	0.626	3.144	100.00	0.509	0.000
					A	0.000	3.144		100.00	3.112	0.000
					B	0.000	3.144		100.00	7.917	0.000
L36 3.0000- 2.7500	2.8750	0.85	31.30	0.631	C	0.000	3.144	0.631	100.00	2.546	0.000
					A	0.000	0.631		100.00	0.572	0.000
					B	0.000	0.631		100.00	1.533	0.000
L37 2.7500- 1.7500	2.2496	0.85	31.30	2.534	C	0.000	0.631	2.534	100.00	0.509	0.000
					A	0.000	2.534		100.00	2.289	0.000
					B	0.000	2.534		100.00	5.689	0.000
L38 1.7500- 1.5000	1.6250	0.85	31.30	0.636	C	0.000	2.534	0.636	100.00	1.593	0.000
					A	0.000	0.636		100.00	0.285	0.000
					B	0.000	0.636		100.00	1.024	0.000
L39 1.5000- 1.2500	1.3750	0.85	31.30	0.637	C	0.000	0.636	0.637	100.00	0.000	0.000
					A	0.000	0.637		100.00	0.035	0.000
					B	0.000	0.637		100.00	0.524	0.000
L40 1.2500- 1.0000	1.1250	0.85	31.30	0.637	C	0.000	0.637	0.637	100.00	0.000	0.000
					A	0.000	0.637		100.00	0.035	0.000
					B	0.000	0.637		100.00	0.524	0.000
L41 1.0000- 0.0000	0.4996	0.85	31.30	2.558	C	0.000	0.637	2.558	100.00	0.000	0.000
					A	0.000	2.558		100.00	0.141	0.000
					B	0.000	2.558		100.00	1.555	0.000

Tower Pressure - With Ice

$G_H = 1.100$

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
L1 100.0000- 95.0000	97.4785	1.259	7.19	1.42	7.798	A	0.000	7.798	7.798	100.00	0.000	0.000
						B	0.000	7.798		100.00	0.000	0.000
						C	0.000	7.798		100.00	0.000	0.000
L2 95.0000- 90.0000	92.4796	1.245	7.11	1.41	8.134	A	0.000	8.134	8.134	100.00	0.000	0.000
						B	0.000	8.134		100.00	10.404	0.000
						C	0.000	8.134		100.00	0.000	0.000
L3 90.0000- 85.5000	87.7342	1.231	7.03	1.41	7.607	A	0.000	7.607	7.607	100.00	2.924	0.000
						B	0.000	7.607		100.00	14.596	0.000
						C	0.000	7.607		100.00	2.924	0.000
L4 85.5000- 85.2500	85.3750	1.224	6.99	1.40	0.428	A	0.000	0.428	0.428	100.00	0.292	0.000
						B	0.000	0.428		100.00	0.940	0.000
						C	0.000	0.428		100.00	0.292	0.000
L5 85.2500- 80.2500	82.7314	1.216	6.94	1.40	8.731	A	0.000	8.731	8.731	100.00	7.036	0.000
						B	0.000	8.731		100.00	22.474	0.000
						C	0.000	8.731		100.00	6.888	0.000
L6 80.2500- 75.2500	77.7322	1.2	6.85	1.39	9.070	A	0.000	9.070	9.070	100.00	10.613	0.000
						B	0.000	9.070		100.00	30.021	0.000
						C	0.000	9.070		100.00	7.220	0.000
L7 75.2500- 70.2500	72.7329	1.184	6.76	1.38	9.406	A	0.000	9.406	9.406	100.00	12.564	0.000
						B	0.000	9.406		100.00	30.748	0.000
						C	0.000	9.406		100.00	7.201	0.000

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
L8 70.2500- 62.5000	66.3359	1.161	6.63	1.37	15.244	A	0.000	15.244	15.244	100.00	22.086	0.000
						B	0.000	15.244	100.00	51.209	0.000	
						C	0.000	15.244	100.00	11.123	0.000	
L9 62.5000- 61.5000	61.9994	1.144	6.53	1.36	1.993	A	0.000	1.993	1.993	100.00	2.850	0.000
						B	0.000	1.993	100.00	6.608	0.000	
						C	0.000	1.993	100.00	1.435	0.000	
L10 61.5000- 56.5000	58.9843	1.132	6.46	1.35	10.159	A	0.000	10.159	10.159	100.00	14.591	0.000
						B	0.000	10.159	100.00	33.284	0.000	
						C	0.000	10.159	100.00	7.534	0.000	
L11 56.5000- 54.7500	55.6231	1.119	6.39	1.34	3.634	A	0.000	3.634	3.634	100.00	5.417	0.000
						B	0.000	3.634	100.00	11.943	0.000	
						C	0.000	3.634	100.00	2.950	0.000	
L12 54.7500- 54.5000	54.6250	1.114	6.36	1.34	0.521	A	0.000	0.521	0.521	100.00	0.773	0.000
						B	0.000	0.521	100.00	1.705	0.000	
						C	0.000	0.521	100.00	0.421	0.000	
L13 54.5000- 49.5000	51.9851	1.103	6.30	1.33	10.603	A	0.000	10.603	10.603	100.00	15.450	0.000
						B	0.000	10.603	100.00	34.041	0.000	
						C	0.000	10.603	100.00	8.410	0.000	
L14 49.5000- 44.5000	46.9856	1.08	6.16	1.32	10.938	A	0.000	10.938	10.938	100.00	15.410	0.000
						B	0.000	10.938	100.00	33.921	0.000	
						C	0.000	10.938	100.00	8.383	0.000	
L15 44.5000- 39.5000	41.9861	1.054	6.02	1.31	11.270	A	0.000	11.270	11.270	100.00	15.365	0.000
						B	0.000	11.270	100.00	33.788	0.000	
						C	0.000	11.270	100.00	8.354	0.000	
L16 39.5000- 34.5000	36.9866	1.027	5.86	1.29	11.603	A	0.000	11.603	11.603	100.00	15.889	0.000
						B	0.000	11.603	100.00	33.640	0.000	
						C	0.000	11.603	100.00	8.321	0.000	
L17 34.5000- 29.0000	31.7343	0.994	5.67	1.27	13.141	A	0.000	13.141	13.141	100.00	23.066	0.000
						B	0.000	13.141	100.00	40.236	0.000	
						C	0.000	13.141	100.00	12.537	0.000	
L18 29.0000- 28.0000	28.4995	0.972	5.55	1.26	2.382	A	0.000	2.382	2.382	100.00	4.194	0.000
						B	0.000	2.382	100.00	7.835	0.000	
						C	0.000	2.382	100.00	2.799	0.000	
L19 28.0000- 23.5000	25.7397	0.951	5.43	1.24	10.873	A	0.000	10.873	10.873	100.00	21.275	0.000
						B	0.000	10.873	100.00	40.182	0.000	
						C	0.000	10.873	100.00	12.523	0.000	
L20 23.5000- 23.2500	23.3750	0.932	5.32	1.23	0.612	A	0.000	0.612	0.612	100.00	1.352	0.000
						B	0.000	0.612	100.00	2.584	0.000	
						C	0.000	0.612	100.00	0.694	0.000	
L21 23.2500- 22.7500	22.9999	0.929	5.30	1.23	1.226	A	0.000	1.226	1.226	100.00	2.704	0.000
						B	0.000	1.226	100.00	5.165	0.000	
						C	0.000	1.226	100.00	1.387	0.000	
L22 22.7500- 22.5000	22.6250	0.926	5.28	1.23	0.613	A	0.000	0.613	0.613	100.00	1.351	0.000
						B	0.000	0.613	100.00	2.581	0.000	
						C	0.000	0.613	100.00	0.693	0.000	
L23 22.5000- 17.5000	19.9877	0.902	5.15	1.21	12.431	A	0.000	12.431	12.431	100.00	26.952	0.000
						B	0.000	12.431	100.00	51.443	0.000	
						C	0.000	12.431	100.00	15.832	0.000	
L24 17.5000- 15.7500	16.6235	0.867	4.95	1.19	4.427	A	0.000	4.427	4.427	100.00	9.394	0.000
						B	0.000	4.427	100.00	17.912	0.000	
						C	0.000	4.427	100.00	7.156	0.000	
L25 15.7500- 15.5000	15.6250	0.856	4.89	1.18	0.635	A	0.000	0.635	0.635	100.00	1.340	0.000
						B	0.000	0.635	100.00	2.554	0.000	
						C	0.000	0.635	100.00	1.021	0.000	
L26 15.5000- 12.2500	13.8700	0.85	4.85	1.17	8.326	A	0.000	8.326	8.326	100.00	17.377	0.000
						B	0.000	8.326	100.00	33.099	0.000	
						C	0.000	8.326	100.00	13.241	0.000	
L27 12.2500- 12.0000	12.1250	0.85	4.85	1.15	0.647	A	0.000	0.647	0.647	100.00	1.333	0.000
						B	0.000	0.647	100.00	2.537	0.000	
						C	0.000	0.647	100.00	1.016	0.000	
L28 12.0000- 11.7500	11.8750	0.85	4.85	1.15	0.647	A	0.000	0.647	0.647	100.00	1.332	0.000
						B	0.000	0.647	100.00	2.535	0.000	
						C	0.000	0.647	100.00	1.015	0.000	
L29 11.7500- 11.5000	11.6250	0.85	4.85	1.15	0.650	A	0.000	0.650	0.650	100.00	1.332	0.000
						B	0.000	0.650	100.00	2.534	0.000	
						C	0.000	0.650	100.00	1.015	0.000	
L30 11.5000- 6.5000	8.9884	0.85	4.85	1.12	13.149	A	0.000	13.149	13.149	100.00	22.594	0.000
						B	0.000	13.149	100.00	50.325	0.000	
						C	0.000	13.149	100.00			

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
L31 6.5000-6.0000	6.2499	0.85	4.85	1.08	1.330	C	0.000	13.149		100.00	17.451	0.000
						A	0.000	1.330	1.330	100.00	2.077	0.000
						B	0.000	1.330	1.330	100.00	4.985	0.000
L32 6.0000-5.7500	5.8750	0.85	4.85	1.07	0.666	C	0.000	1.330		100.00	1.323	0.000
						A	0.000	0.666	0.666	100.00	1.037	0.000
						B	0.000	0.666	0.666	100.00	2.488	0.000
L33 5.7500-4.5000	5.1243	0.85	4.85	1.06	3.340	C	0.000	0.666		100.00	0.661	0.000
						A	0.000	3.340	3.340	100.00	5.170	0.000
						B	0.000	3.340	3.340	100.00	12.398	0.000
L34 4.5000-4.2500	4.3750	0.85	4.85	1.04	0.670	C	0.000	3.340		100.00	3.295	0.000
						A	0.000	0.670	0.670	100.00	1.031	0.000
						B	0.000	0.670	0.670	100.00	2.470	0.000
L35 4.2500-3.0000	3.6243	0.85	4.85	1.02	3.357	C	0.000	0.670		100.00	0.657	0.000
						A	0.000	3.357	3.357	100.00	3.930	0.000
						B	0.000	3.357	3.357	100.00	11.085	0.000
L36 3.0000-2.7500	2.8750	0.85	4.85	1.00	0.673	C	0.000	3.357		100.00	3.272	0.000
						A	0.000	0.673	0.673	100.00	0.722	0.000
						B	0.000	0.673	0.673	100.00	2.144	0.000
L37 2.7500-1.7500	2.2496	0.85	4.85	0.97	2.696	C	0.000	0.673		100.00	0.651	0.000
						A	0.000	2.696	2.696	100.00	2.874	0.000
						B	0.000	2.696	2.696	100.00	7.981	0.000
L38 1.7500-1.5000	1.6250	0.85	4.85	0.94	0.675	C	0.000	2.696		100.00	2.052	0.000
						A	0.000	0.675	0.675	100.00	0.380	0.000
						B	0.000	0.675	0.675	100.00	1.510	0.000
L39 1.5000-1.2500	1.3750	0.85	4.85	0.93	0.675	C	0.000	0.675		100.00	0.047	0.000
						A	0.000	0.675	0.675	100.00	0.082	0.000
						B	0.000	0.675	0.675	100.00	0.910	0.000
L40 1.2500-1.0000	1.1250	0.85	4.85	0.91	0.675	C	0.000	0.675		100.00	0.046	0.000
						A	0.000	0.675	0.675	100.00	0.081	0.000
						B	0.000	0.675	0.675	100.00	0.904	0.000
L41 1.0000-0.0000	0.4996	0.85	4.85	0.84	2.698	C	0.000	0.675		100.00	0.045	0.000
						A	0.000	2.698	2.698	100.00	0.309	0.000
						B	0.000	2.698	2.698	100.00	2.890	0.000
						C	0.000	2.698		100.00	0.168	0.000

Tower Pressure - Service

$G_H = 1.100$

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
L1 100.0000-95.0000	97.4785	1.259	9.75	6.614	A	0.000	6.614	6.614	100.00	0.000	0.000
					B	0.000	6.614	6.614	100.00	0.000	0.000
					C	0.000	6.614	6.614	100.00	0.000	0.000
L2 95.0000-90.0000	92.4796	1.245	9.64	6.956	A	0.000	6.956	6.956	100.00	0.000	0.000
					B	0.000	6.956	6.956	100.00	4.054	0.000
					C	0.000	6.956	6.956	100.00	0.000	0.000
L3 90.0000-85.5000	87.7342	1.231	9.53	6.553	A	0.000	6.553	6.553	100.00	2.221	0.000
					B	0.000	6.553	6.553	100.00	6.782	0.000
					C	0.000	6.553	6.553	100.00	2.221	0.000
L4 85.5000-85.2500	85.3750	1.224	9.48	0.369	A	0.000	0.369	0.369	100.00	0.222	0.000
					B	0.000	0.369	0.369	100.00	0.475	0.000
					C	0.000	0.369	0.369	100.00	0.222	0.000
L5 85.2500-80.2500	82.7314	1.216	9.42	7.566	A	0.000	7.566	7.566	100.00	5.454	0.000
					B	0.000	7.566	7.566	100.00	11.533	0.000
					C	0.000	7.566	7.566	100.00	4.442	0.000
L6 80.2500-75.2500	77.7322	1.2	9.29	7.912	A	0.000	7.912	7.912	100.00	8.489	0.000
					B	0.000	7.912	7.912	100.00	17.604	0.000
					C	0.000	7.912	7.912	100.00	4.442	0.000
L7 75.2500-70.2500	72.7329	1.184	9.16	8.256	A	0.000	8.256	8.256	100.00	9.256	0.000
					B	0.000	8.256	8.256	100.00	18.080	0.000
					C	0.000	8.256	8.256	100.00	4.442	0.000
L8 70.2500-62.5000	66.3359	1.161	8.99	13.478	A	0.000	13.478	13.478	100.00	15.728	0.000
					B	0.000	13.478	13.478	100.00	30.239	0.000

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
L9 62.5000- 61.5000	61.9994	1.144	8.86	1.765	C	0.000	13.478	1.765	100.00	6.885	0.000
					A	0.000	1.765		100.00	2.029	0.000
					B	0.000	1.765		100.00	3.902	0.000
L10 61.5000- 56.5000	58.9843	1.132	8.77	9.033	C	0.000	1.765	9.033	100.00	0.888	0.000
					A	0.000	9.033		100.00	10.537	0.000
					B	0.000	9.033		100.00	19.899	0.000
L11 56.5000- 54.7500	55.6231	1.119	8.66	3.243	C	0.000	3.243	3.243	100.00	4.832	0.000
					A	0.000	3.243		100.00	4.007	0.000
					B	0.000	3.243		100.00	7.283	0.000
L12 54.7500- 54.5000	54.6250	1.114	8.63	0.465	C	0.000	3.243	0.465	100.00	2.010	0.000
					A	0.000	0.465		100.00	0.572	0.000
					B	0.000	0.465		100.00	1.040	0.000
L13 54.5000- 49.5000	51.9851	1.103	8.54	9.491	C	0.000	0.465	9.491	100.00	0.287	0.000
					A	0.000	9.491		100.00	11.447	0.000
					B	0.000	9.491		100.00	20.809	0.000
L14 49.5000- 44.5000	46.9856	1.08	8.36	9.837	C	0.000	9.491	9.837	100.00	5.742	0.000
					A	0.000	9.837		100.00	11.447	0.000
					B	0.000	9.837		100.00	20.809	0.000
L15 44.5000- 39.5000	41.9861	1.054	8.16	10.182	C	0.000	9.837	10.182	100.00	5.742	0.000
					A	0.000	10.182		100.00	11.447	0.000
					B	0.000	10.182		100.00	20.809	0.000
L16 39.5000- 34.5000	36.9866	1.027	7.95	10.528	C	0.000	10.182	10.528	100.00	5.742	0.000
					A	0.000	10.528		100.00	11.891	0.000
					B	0.000	10.528		100.00	20.809	0.000
L17 34.5000- 29.0000	31.7343	0.994	7.70	11.977	C	0.000	10.528	11.977	100.00	5.742	0.000
					A	0.000	11.977		100.00	17.478	0.000
					B	0.000	11.977		100.00	25.555	0.000
L18 29.0000- 28.0000	28.4995	0.972	7.52	2.171	C	0.000	11.977	2.171	100.00	8.981	0.000
					A	0.000	2.171		100.00	3.178	0.000
					B	0.000	2.171		100.00	5.050	0.000
L19 28.0000- 23.5000	25.7397	0.951	7.36	9.940	C	0.000	2.171	9.940	100.00	2.037	0.000
					A	0.000	9.940		100.00	16.300	0.000
					B	0.000	9.940		100.00	26.892	0.000
L20 23.5000- 23.2500	23.3750	0.932	7.22	0.560	C	0.000	9.940	0.560	100.00	9.165	0.000
					A	0.000	0.560		100.00	1.044	0.000
					B	0.000	0.560		100.00	1.783	0.000
L21 23.2500- 22.7500	22.9999	0.929	7.19	1.123	C	0.000	0.560	1.123	100.00	0.509	0.000
					A	0.000	1.123		100.00	2.089	0.000
					B	0.000	1.123		100.00	3.567	0.000
L22 22.7500- 22.5000	22.6250	0.926	7.17	0.562	C	0.000	1.123	0.562	100.00	1.018	0.000
					A	0.000	0.562		100.00	1.044	0.000
					B	0.000	0.562		100.00	1.783	0.000
L23 22.5000- 17.5000	19.9877	0.902	6.98	11.420	C	0.000	0.562	11.420	100.00	0.509	0.000
					A	0.000	11.420		100.00	20.889	0.000
					B	0.000	11.420		100.00	35.667	0.000
L24 17.5000- 15.7500	16.6235	0.867	6.72	4.079	C	0.000	11.420	4.079	100.00	11.906	0.000
					A	0.000	4.079		100.00	7.311	0.000
					B	0.000	4.079		100.00	12.484	0.000
L25 15.7500- 15.5000	15.6250	0.856	6.63	0.586	C	0.000	4.079	0.586	100.00	5.574	0.000
					A	0.000	0.586		100.00	1.044	0.000
					B	0.000	0.586		100.00	1.783	0.000
L26 15.5000- 12.2500	13.8700	0.85	6.58	7.692	C	0.000	0.586	7.692	100.00	0.796	0.000
					A	0.000	7.692		100.00	13.578	0.000
					B	0.000	7.692		100.00	23.184	0.000
L27 12.2500- 12.0000	12.1250	0.85	6.58	0.599	C	0.000	7.692	0.599	100.00	10.351	0.000
					A	0.000	0.599		100.00	1.044	0.000
					B	0.000	0.599		100.00	1.783	0.000
L28 12.0000- 11.7500	11.8750	0.85	6.58	0.599	C	0.000	0.599	0.599	100.00	0.796	0.000
					A	0.000	0.599		100.00	1.044	0.000
					B	0.000	0.599		100.00	1.783	0.000
L29 11.7500- 11.5000	11.6250	0.85	6.58	0.602	C	0.000	0.599	0.602	100.00	0.796	0.000
					A	0.000	0.602		100.00	1.044	0.000
					B	0.000	0.602		100.00	1.783	0.000
L30 11.5000- 6.5000	8.9884	0.85	6.58	12.216	C	0.000	0.602	12.216	100.00	0.796	0.000
					A	0.000	12.216		100.00	17.780	0.000
					B	0.000	12.216		100.00	35.667	0.000
					C	0.000	12.216		100.00	13.628	0.000

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
L31 6.5000- 6.0000	6.2499	0.85	6.58	1.240	A	0.000	1.240	1.240	100.00	1.645	0.000
					B	0.000	1.240	100.00	3.567	0.000	
					C	0.000	1.240	100.00	1.018	0.000	
L32 6.0000- 5.7500	5.8750	0.85	6.58	0.621	A	0.000	0.621	0.621	100.00	0.822	0.000
					B	0.000	0.621	100.00	1.783	0.000	
					C	0.000	0.621	100.00	0.509	0.000	
L33 5.7500- 4.5000	5.1243	0.85	6.58	3.120	A	0.000	3.120	3.120	100.00	4.112	0.000
					B	0.000	3.120	100.00	8.917	0.000	
					C	0.000	3.120	100.00	2.546	0.000	
L34 4.5000- 4.2500	4.3750	0.85	6.58	0.626	A	0.000	0.626	0.626	100.00	0.822	0.000
					B	0.000	0.626	100.00	1.783	0.000	
					C	0.000	0.626	100.00	0.509	0.000	
L35 4.2500- 3.0000	3.6243	0.85	6.58	3.144	A	0.000	3.144	3.144	100.00	3.112	0.000
					B	0.000	3.144	100.00	7.917	0.000	
					C	0.000	3.144	100.00	2.546	0.000	
L36 3.0000- 2.7500	2.8750	0.85	6.58	0.631	A	0.000	0.631	0.631	100.00	0.572	0.000
					B	0.000	0.631	100.00	1.533	0.000	
					C	0.000	0.631	100.00	0.509	0.000	
L37 2.7500- 1.7500	2.2496	0.85	6.58	2.534	A	0.000	2.534	2.534	100.00	2.289	0.000
					B	0.000	2.534	100.00	5.689	0.000	
					C	0.000	2.534	100.00	1.593	0.000	
L38 1.7500- 1.5000	1.6250	0.85	6.58	0.636	A	0.000	0.636	0.636	100.00	0.285	0.000
					B	0.000	0.636	100.00	1.024	0.000	
					C	0.000	0.636	100.00	0.000	0.000	
L39 1.5000- 1.2500	1.3750	0.85	6.58	0.637	A	0.000	0.637	0.637	100.00	0.035	0.000
					B	0.000	0.637	100.00	0.524	0.000	
					C	0.000	0.637	100.00	0.000	0.000	
L40 1.2500- 1.0000	1.1250	0.85	6.58	0.637	A	0.000	0.637	0.637	100.00	0.035	0.000
					B	0.000	0.637	100.00	0.524	0.000	
					C	0.000	0.637	100.00	0.000	0.000	
L41 1.0000- 0.0000	0.4996	0.85	6.58	2.558	A	0.000	2.558	2.558	100.00	0.141	0.000
					B	0.000	2.558	100.00	1.555	0.000	
					C	0.000	2.558	100.00	0.000	0.000	

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

Comb. No.	Description
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

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 - 95	Pole	Max Tension	26	0.00	-0.00	-0.00
			Max. Compression	26	-12.04	1.33	0.57
			Max. Mx	20	-4.91	49.02	0.67
			Max. My	2	-4.94	0.71	48.10
			Max. Vy	20	-7.25	49.02	0.67
			Max. Vx	2	-7.17	0.71	48.10
			Max. Torque	2			1.88
L2	95 - 90	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-14.75	2.79	4.94
			Max. Mx	20	-6.10	90.87	2.94
			Max. My	2	-6.15	1.94	90.44
			Max. Vy	20	-8.62	90.87	2.94
			Max. Vx	2	-8.45	1.94	90.44
			Max. Torque	18			-3.00
L3	90 - 85.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15.31	2.73	5.07
			Max. Mx	20	-6.35	130.47	3.55
			Max. My	2	-6.40	2.52	129.10
			Max. Vy	20	-9.00	130.47	3.55
			Max. Vx	14	8.83	-0.87	-125.30
			Max. Torque	18			-2.99
L4	85.5 - 85.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15.37	2.73	5.07
			Max. Mx	20	-6.38	132.72	3.58
			Max. My	2	-6.44	2.55	131.29
			Max. Vy	20	-9.02	132.72	3.58
			Max. Vx	14	8.85	-0.90	-127.51
			Max. Torque	18			-2.99
L5	85.25 - 80.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.50	2.95	6.11
			Max. Mx	20	-10.98	215.51	4.72
			Max. My	2	-11.06	3.63	212.78
			Max. Vy	20	-15.91	215.51	4.72
			Max. Vx	14	15.64	-1.59	-208.96
			Max. Torque	18			-3.38
L6	80.25 - 75.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.79	2.86	6.31
			Max. Mx	20	-11.64	296.75	5.61
			Max. My	2	-11.73	4.47	291.74
			Max. Vy	20	-16.61	296.75	5.61

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L7	75.25 - 70.25	Pole	Max. Vx	14	16.18	-2.43	-288.48
			Max. Torque	18			-3.38
			Max Tension	1	0.00	0.00	0.00
L8	70.25 - 62.5	Pole	Max. Compression	26	-34.76	2.79	6.14
			Max. Mx	20	-15.26	394.47	6.42
			Max. My	2	-15.38	5.32	386.29
			Max. Vy	20	-20.77	394.47	6.42
			Max. Vx	14	20.21	-3.26	-383.89
			Max. Torque	18			-3.38
			Max Tension	1	0.00	0.00	0.00
L9	62.5 - 61.5	Pole	Max. Compression	26	-35.80	2.73	6.31
			Max. Mx	20	-15.83	473.29	7.09
			Max. My	2	-15.94	5.95	462.44
			Max. Vy	20	-21.30	473.29	7.09
			Max. Vx	14	20.71	-3.89	-460.56
			Max. Torque	18			-3.15
			Max Tension	1	0.00	0.00	0.00
L10	61.5 - 56.5	Pole	Max. Compression	26	-37.90	2.65	6.55
			Max. Mx	20	-17.11	581.76	7.99
			Max. My	2	-17.22	6.80	567.15
			Max. Vy	20	-22.10	581.76	7.99
			Max. Vx	14	21.47	-4.73	-565.98
			Max. Torque	18			-3.15
			Max Tension	1	0.00	0.00	0.00
L11	56.5 - 54.75	Pole	Max. Compression	26	-39.38	2.57	6.77
			Max. Mx	20	-18.00	693.89	8.88
			Max. My	2	-18.11	7.64	675.32
			Max. Vy	20	-22.79	693.89	8.88
			Max. Vx	14	22.13	-5.57	-674.88
			Max. Torque	18			-3.14
			Max Tension	1	0.00	0.00	0.00
L12	54.75 - 54.5	Pole	Max. Compression	26	-39.91	2.54	6.85
			Max. Mx	20	-18.31	733.95	9.19
			Max. My	2	-18.42	7.93	713.95
			Max. Vy	20	-23.04	733.95	9.19
			Max. Vx	14	22.37	-5.87	-713.77
			Max. Torque	18			-3.14
			Max Tension	1	0.00	0.00	0.00
L13	54.5 - 49.5	Pole	Max. Compression	26	-40.00	2.53	6.86
			Max. Mx	20	-18.39	739.71	9.24
			Max. My	2	-18.50	7.97	719.50
			Max. Vy	20	-23.06	739.71	9.24
			Max. Vx	14	22.38	-5.91	-719.36
			Max. Torque	18			-3.14
			Max Tension	1	0.00	0.00	0.00
L14	49.5 - 44.5	Pole	Max. Compression	26	-41.69	2.43	7.07
			Max. Mx	20	-19.45	856.76	10.12
			Max. My	14	-19.54	-6.75	-832.97
			Max. Vy	20	-23.79	856.76	10.12
			Max. Vx	14	23.09	-6.75	-832.97
			Max. Torque	18			-3.14
			Max Tension	1	0.00	0.00	0.00
L15	44.5 - 39.5	Pole	Max. Compression	26	-43.39	2.33	7.28
			Max. Mx	20	-20.56	977.34	10.99
			Max. My	14	-20.64	-7.59	-949.99
			Max. Vy	20	-24.49	977.34	10.99
			Max. Vx	14	23.76	-7.59	-949.99
			Max. Torque	18			-3.14
			Max Tension	1	0.00	0.00	0.00
L16	39.5 - 34.5	Pole	Max. Compression	26	-45.11	2.22	7.48
			Max. Mx	20	-21.70	1101.36	11.86
			Max. My	14	-21.77	-8.42	-1070.33
			Max. Vy	20	-25.16	1101.36	11.86
			Max. Vx	14	24.41	-8.42	-1070.33
			Max. Torque	18			-3.14
			Max Tension	1	0.00	0.00	0.00
L16	39.5 - 34.5	Pole	Max. Compression	26	-46.83	2.12	7.68
			Max. Mx	20	-22.87	1228.68	12.72

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L17	34.5 - 29	Pole	Max. My	14	-22.93	-9.26	-1193.87
			Max. Vy	20	-25.81	1228.68	12.72
			Max. Vx	14	25.05	-9.26	-1193.87
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.38	2.09	7.75
			Max. Mx	20	-23.22	1267.51	12.97
			Max. My	14	-23.28	-9.51	-1231.56
			Max. Vy	20	-26.02	1267.51	12.97
			Max. Vx	14	25.25	-9.51	-1231.56
L18	29 - 28	Pole	Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.48	1.98	7.95
			Max. Mx	20	-25.42	1399.44	13.82
			Max. My	14	-25.47	-10.34	-1359.70
			Max. Vy	20	-26.79	1399.44	13.82
			Max. Vx	14	26.04	-10.34	-1359.70
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.52	1.87	8.15
L19	28 - 23.5	Pole	Max. Mx	20	-26.78	1521.26	14.58
			Max. My	14	-26.83	-11.09	-1478.22
			Max. Vy	20	-27.40	1521.26	14.58
			Max. Vx	14	26.68	-11.09	-1478.22
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.52	1.87	8.15
			Max. Mx	20	-26.78	1521.26	14.58
			Max. My	14	-26.83	-11.09	-1478.22
			Max. Vy	20	-27.40	1521.26	14.58
L20	23.5 - 23.25	Pole	Max. Vx	14	26.68	-11.09	-1478.22
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.65	1.87	8.16
			Max. Mx	20	-26.89	1528.11	14.63
			Max. My	14	-26.93	-11.13	-1484.89
			Max. Vy	20	-27.42	1528.11	14.63
			Max. Vx	14	26.70	-11.13	-1484.89
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
L21	23.25 - 22.75	Pole	Max. Compression	26	-52.91	1.86	8.19
			Max. Mx	20	-27.06	1541.84	14.71
			Max. My	14	-27.10	-11.21	-1498.25
			Max. Vy	20	-27.50	1541.84	14.71
			Max. Vx	14	26.78	-11.21	-1498.25
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.05	1.85	8.20
			Max. Mx	20	-27.16	1548.71	14.75
			Max. My	14	-27.20	-11.26	-1504.95
L22	22.75 - 22.5	Pole	Max. Vy	20	-27.53	1548.71	14.75
			Max. Vx	14	26.81	-11.26	-1504.95
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.81	1.73	8.44
			Max. Mx	20	-29.08	1688.07	15.59
			Max. My	14	-29.11	-12.08	-1640.71
			Max. Vy	20	-28.25	1688.07	15.59
			Max. Vx	14	27.52	-12.08	-1640.71
			Max. Torque	18			-3.13
L23	22.5 - 17.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.81	1.73	8.44
			Max. Mx	20	-29.08	1688.07	15.59
			Max. My	14	-29.11	-12.08	-1640.71
			Max. Vy	20	-28.25	1688.07	15.59
			Max. Vx	14	27.52	-12.08	-1640.71
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.79	1.69	8.49
			Max. Mx	20	-29.75	1737.68	15.88
L24	17.5 - 15.75	Pole	Max. My	14	-29.78	-12.37	-1689.04
			Max. Vy	20	-28.51	1737.68	15.88
			Max. Vx	14	27.77	-12.37	-1689.04
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.94	1.68	8.50
			Max. Mx	20	-29.88	1744.80	15.92
			Max. My	14	-29.91	-12.41	-1695.98
			Max. Vy	20	-28.52	1744.80	15.92
			Max. Vx	14	27.78	-12.41	-1695.98
L25	15.75 - 15.5	Pole	Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.94	1.68	8.50
			Max. Mx	20	-29.88	1744.80	15.92
			Max. My	14	-29.91	-12.41	-1695.98
			Max. Vy	20	-28.52	1744.80	15.92
			Max. Vx	14	27.78	-12.41	-1695.98
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.94	1.68	8.50
L26	15.5 - 12.25	Pole	Max. Mx	20	-29.88	1744.80	15.92
			Max. My	14	-29.91	-12.41	-1695.98
			Max. Vy	20	-28.52	1744.80	15.92
			Max. Vx	14	27.78	-12.41	-1695.98
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.94	1.68	8.50
			Max. Mx	20	-29.88	1744.80	15.92
			Max. My	14	-29.91	-12.41	-1695.98
			Max. Vy	20	-28.52	1744.80	15.92

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L27	12.25 - 12	Pole	Max. Compression	26	-58.86	1.60	8.60
			Max. Mx	20	-31.25	1838.20	16.47
			Max. My	14	-31.28	-12.95	-1786.93
			Max. Vy	20	-28.99	1838.20	16.47
			Max. Vx	14	28.22	-12.95	-1786.93
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.00	1.60	8.61
			Max. Mx	20	-31.36	1845.45	16.51
			Max. My	14	-31.39	-12.99	-1793.99
L28	12 - 11.75	Pole	Max. Vy	20	-29.01	1845.45	16.51
			Max. Vx	14	28.24	-12.99	-1793.99
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.14	1.59	8.61
			Max. Mx	20	-31.47	1852.70	16.55
			Max. My	14	-31.49	-13.03	-1801.05
			Max. Vy	20	-29.04	1852.70	16.55
			Max. Vx	14	28.27	-13.03	-1801.05
			Max. Torque	18			-3.13
L29	11.75 - 11.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.28	1.58	8.62
			Max. Mx	20	-31.56	1859.96	16.59
			Max. My	14	-31.59	-13.07	-1808.12
			Max. Vy	20	-29.08	1859.96	16.59
			Max. Vx	14	28.31	-13.07	-1808.12
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.86	1.45	8.76
			Max. Mx	20	-33.46	2006.84	17.41
L30	11.5 - 6.5	Pole	Max. My	14	-33.47	-13.89	-1951.06
			Max. Vy	20	-29.71	2006.84	17.41
			Max. Vx	14	28.91	-13.89	-1951.06
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.11	1.44	8.78
			Max. Mx	20	-33.66	2021.70	17.49
			Max. My	14	-33.68	-13.97	-1965.51
			Max. Vy	20	-29.76	2021.70	17.49
			Max. Vx	14	28.95	-13.97	-1965.51
L31	6.5 - 6	Pole	Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.25	1.44	8.79
			Max. Mx	20	-33.77	2029.14	17.53
			Max. My	14	-33.78	-14.02	-1972.75
			Max. Vy	20	-29.78	2029.14	17.53
			Max. Vx	14	28.98	-14.02	-1972.75
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.91	1.41	8.83
L32	6 - 5.75	Pole	Max. Mx	20	-34.27	2066.45	17.74
			Max. My	14	-34.28	-14.22	-2009.05
			Max. Vy	20	-29.96	2066.45	17.74
			Max. Vx	14	29.15	-14.22	-2009.05
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.04	1.40	8.84
			Max. Mx	20	-34.39	2073.93	17.78
			Max. My	14	-34.40	-14.26	-2016.33
			Max. Vy	20	-29.96	2073.93	17.78
L33	5.75 - 4.5	Pole	Max. Vx	14	29.15	-14.22	-2016.33
			Max. Torque	18			-3.13
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.68	1.37	8.87
			Max. Mx	20	-34.89	2111.46	17.98
			Max. My	14	-34.90	-14.46	-2052.84
			Max. Vy	20	-30.13	2111.46	17.98
			Max. Vx	14	29.32	-14.46	-2052.84
			Max. Torque	18			-3.13
			L34	4.5 - 4.25	Pole	Max. Compression	26
Max. Mx	20	-34.89				2111.46	17.98
Max. My	14	-34.90				-14.46	-2052.84
Max. Vy	20	-30.13				2111.46	17.98
Max. Vx	14	29.32				-14.46	-2052.84
Max. Torque	18						-3.13
Max Tension	1	0.00				0.00	0.00
Max. Compression	26	-63.68				1.37	8.87
Max. Mx	20	-34.89				2111.46	17.98
Max. My	14	-34.90				-14.46	-2052.84
L35	4.25 - 3	Pole	Max. Vy	20	-30.13	2111.46	17.98
			Max. Vx	14	29.32	-14.46	-2052.84
			Max. Torque	18			-3.13

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L36	3 - 2.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.81	1.36	8.88
			Max. Mx	20	-35.01	2118.98	18.02
			Max. My	14	-35.02	-14.50	-2060.17
			Max. Vy	20	-30.13	2118.98	18.02
			Max. Vx	14	29.32	-14.50	-2060.17
			Max. Torque	18			-3.13
L37	2.75 - 1.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.29	1.34	8.92
			Max. Mx	20	-35.40	2149.16	18.18
			Max. My	14	-35.40	-14.67	-2089.53
			Max. Vy	20	-30.26	2149.16	18.18
			Max. Vx	14	29.45	-14.67	-2089.53
			Max. Torque	18			-3.13
L38	1.75 - 1.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.40	1.33	8.92
			Max. Mx	20	-35.51	2156.72	18.22
			Max. My	14	-35.51	-14.71	-2096.89
			Max. Vy	20	-30.26	2156.72	18.22
			Max. Vx	14	29.45	-14.71	-2096.89
			Max. Torque	18			-3.13
L39	1.5 - 1.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.49	1.32	8.93
			Max. Mx	20	-35.60	2164.29	18.26
			Max. My	14	-35.60	-14.75	-2104.25
			Max. Vy	20	-30.27	2164.29	18.26
			Max. Vx	14	29.46	-14.75	-2104.25
			Max. Torque	18			-3.13
L40	1.25 - 1	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.59	1.32	8.94
			Max. Mx	20	-35.69	2171.85	18.30
			Max. My	14	-35.69	-14.79	-2111.61
			Max. Vy	20	-30.28	2171.85	18.30
			Max. Vx	14	29.48	-14.79	-2111.61
			Max. Torque	18			-3.13
L41	1 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.95	1.30	8.96
			Max. Mx	20	-36.02	2202.14	18.46
			Max. My	14	-36.02	-14.95	-2141.10
			Max. Vy	20	-30.33	2202.14	18.46
			Max. Vx	14	29.53	-14.95	-2141.10
			Max. Torque	18			-3.13

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	37	64.95	6.26	3.62
	Max. H _x	21	27.03	30.31	0.16
	Max. H _z	3	27.03	0.16	29.28
	Max. M _x	2	2130.67	0.16	29.28
	Max. M _z	8	2170.44	-29.81	-0.16
	Max. Torsion	6	3.09	-23.50	13.45
	Min. Vert	7	27.03	-23.50	13.45
	Min. H _x	9	27.03	-29.81	-0.16
	Min. H _z	14	36.04	-0.16	-29.51
	Min. M _x	14	-2141.10	-0.16	-29.51
	Min. M _z	20	-2202.14	30.31	0.16
	Min. Torsion	18	-3.13	23.62	-13.52

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
Dead Only	30.04	-0.00	-0.00	-2.18	0.70	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	36.04	-0.16	-29.28	-2130.67	16.65	-1.87
0.9 Dead+1.0 Wind 0 deg - No Ice	27.03	-0.16	-29.28	-2104.66	16.21	-1.84
1.2 Dead+1.0 Wind 30 deg - No Ice	36.04	13.53	-23.54	-1783.58	-1022.07	-2.79
0.9 Dead+1.0 Wind 30 deg - No Ice	27.03	13.53	-23.54	-1761.37	-1009.96	-2.74
1.2 Dead+1.0 Wind 60 deg - No Ice	36.04	23.50	-13.45	-1018.59	-1781.23	-3.09
0.9 Dead+1.0 Wind 60 deg - No Ice	27.03	23.50	-13.45	-1005.62	-1759.91	-3.03
1.2 Dead+1.0 Wind 90 deg - No Ice	36.04	29.81	0.16	13.14	-2170.44	-2.65
0.9 Dead+1.0 Wind 90 deg - No Ice	27.03	29.81	0.16	13.63	-2144.84	-2.59
1.2 Dead+1.0 Wind 120 deg - No Ice	36.04	26.55	15.39	1116.17	-1927.87	-1.43
0.9 Dead+1.0 Wind 120 deg - No Ice	27.03	26.55	15.39	1103.61	-1905.23	-1.39
1.2 Dead+1.0 Wind 150 deg - No Ice	36.04	14.15	24.30	1809.71	-1058.48	0.22
0.9 Dead+1.0 Wind 150 deg - No Ice	27.03	14.15	24.30	1788.62	-1045.95	0.23
1.2 Dead+1.0 Wind 180 deg - No Ice	36.04	0.16	29.51	2141.10	-14.95	1.84
0.9 Dead+1.0 Wind 180 deg - No Ice	27.03	0.16	29.51	2116.35	-14.97	1.82
1.2 Dead+1.0 Wind 210 deg - No Ice	36.04	-13.54	23.55	1773.21	1020.87	2.80
0.9 Dead+1.0 Wind 210 deg - No Ice	27.03	-13.54	23.55	1752.51	1008.34	2.75
1.2 Dead+1.0 Wind 240 deg - No Ice	36.04	-23.62	13.52	1014.59	1785.25	3.13
0.9 Dead+1.0 Wind 240 deg - No Ice	27.03	-23.62	13.52	1003.06	1763.48	3.07
1.2 Dead+1.0 Wind 270 deg - No Ice	36.04	-30.31	-0.16	-18.46	2202.14	2.67
0.9 Dead+1.0 Wind 270 deg - No Ice	27.03	-30.31	-0.16	-17.54	2175.80	2.62
1.2 Dead+1.0 Wind 300 deg - No Ice	36.04	-26.45	-15.33	-1119.81	1926.66	1.42
0.9 Dead+1.0 Wind 300 deg - No Ice	27.03	-26.45	-15.33	-1105.84	1903.56	1.38
1.2 Dead+1.0 Wind 330 deg - No Ice	36.04	-13.75	-23.61	-1777.36	1038.43	-0.26
0.9 Dead+1.0 Wind 330 deg - No Ice	27.03	-13.75	-23.61	-1755.19	1025.63	-0.26
1.2 Dead+1.0 Ice+1.0 Temp	64.95	-0.00	-0.00	-8.96	1.30	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	64.95	-0.03	-6.68	-537.00	4.09	-0.53
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	64.95	3.02	-5.25	-446.05	-250.09	-0.76
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	64.95	5.24	-3.01	-259.15	-435.91	-0.79
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	64.95	7.07	0.03	-6.22	-550.95	-0.69
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	64.95	6.28	3.63	274.19	-487.57	-0.36
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	64.95	3.17	5.46	434.83	-257.22	0.16
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	64.95	0.03	6.70	520.51	-1.48	0.53
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	64.95	-3.03	5.26	428.27	252.83	0.76
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	64.95	-5.28	3.03	242.05	440.10	0.78

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	64.95	-7.16	-0.03	-11.79	558.70	0.69
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	64.95	-6.26	-3.62	-291.90	489.68	0.36
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	64.95	-3.11	-5.35	-447.17	256.56	-0.17
Dead+Wind 0 deg - Service	30.04	-0.03	-6.16	-447.02	4.02	-0.40
Dead+Wind 30 deg - Service	30.04	2.85	-4.95	-374.42	-213.07	-0.60
Dead+Wind 60 deg - Service	30.04	4.94	-2.83	-214.54	-371.73	-0.67
Dead+Wind 90 deg - Service	30.04	6.27	0.03	1.08	-453.16	-0.57
Dead+Wind 120 deg - Service	30.04	5.58	3.24	231.68	-402.49	-0.30
Dead+Wind 150 deg - Service	30.04	2.98	5.11	376.59	-220.70	0.06
Dead+Wind 180 deg - Service	30.04	0.03	6.21	445.89	-2.58	0.40
Dead+Wind 210 deg - Service	30.04	-2.85	4.95	368.93	213.89	0.60
Dead+Wind 240 deg - Service	30.04	-4.97	2.84	210.39	373.65	0.67
Dead+Wind 270 deg - Service	30.04	-6.37	-0.03	-5.52	460.88	0.57
Dead+Wind 300 deg - Service	30.04	-5.56	-3.22	-235.76	403.31	0.30
Dead+Wind 330 deg - Service	30.04	-2.89	-4.97	-373.12	217.56	-0.06

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	-30.04	0.00	0.00	30.04	0.00	0.000%
2	-0.16	-36.04	-29.28	0.16	36.04	29.28	0.000%
3	-0.16	-27.03	-29.28	0.16	27.03	29.28	0.000%
4	13.53	-36.04	-23.54	-13.53	36.04	23.54	0.000%
5	13.53	-27.03	-23.54	-13.53	27.03	23.54	0.000%
6	23.50	-36.04	-13.45	-23.50	36.04	13.45	0.000%
7	23.50	-27.03	-13.45	-23.50	27.03	13.45	0.000%
8	29.81	-36.04	0.16	-29.81	36.04	-0.16	0.000%
9	29.81	-27.03	0.16	-29.81	27.03	-0.16	0.000%
10	26.55	-36.04	15.39	-26.55	36.04	-15.39	0.000%
11	26.55	-27.03	15.39	-26.55	27.03	-15.39	0.000%
12	14.15	-36.04	24.30	-14.15	36.04	-24.30	0.000%
13	14.15	-27.03	24.30	-14.15	27.03	-24.30	0.000%
14	0.16	-36.04	29.51	-0.16	36.04	-29.51	0.000%
15	0.16	-27.03	29.51	-0.16	27.03	-29.51	0.000%
16	-13.54	-36.04	23.55	13.54	36.04	-23.55	0.000%
17	-13.54	-27.03	23.55	13.54	27.03	-23.55	0.000%
18	-23.62	-36.04	13.52	23.62	36.04	-13.52	0.000%
19	-23.62	-27.03	13.52	23.62	27.03	-13.52	0.000%
20	-30.31	-36.04	-0.16	30.31	36.04	0.16	0.000%
21	-30.31	-27.03	-0.16	30.31	27.03	0.16	0.000%
22	-26.45	-36.04	-15.33	26.45	36.04	15.33	0.000%
23	-26.45	-27.03	-15.33	26.45	27.03	15.33	0.000%
24	-13.75	-36.04	-23.61	13.75	36.04	23.61	0.000%
25	-13.75	-27.03	-23.61	13.75	27.03	23.61	0.000%
26	0.00	-64.95	0.00	0.00	64.95	0.00	0.000%
27	-0.03	-64.95	-6.68	0.03	64.95	6.68	0.000%
28	3.02	-64.95	-5.25	-3.02	64.95	5.25	0.000%
29	5.24	-64.95	-3.01	-5.24	64.95	3.01	0.000%
30	7.07	-64.95	0.03	-7.07	64.95	-0.03	0.000%
31	6.28	-64.95	3.63	-6.28	64.95	-3.63	0.000%
32	3.17	-64.95	5.46	-3.17	64.95	-5.46	0.000%
33	0.03	-64.95	6.70	-0.03	64.95	-6.70	0.000%
34	-3.03	-64.95	5.26	3.03	64.95	-5.26	0.000%
35	-5.28	-64.95	3.03	5.28	64.95	-3.03	0.000%
36	-7.16	-64.95	-0.03	7.16	64.95	0.03	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
37	-6.26	-64.95	-3.62	6.26	64.95	3.62	0.000%
38	-3.11	-64.95	-5.35	3.11	64.95	5.35	0.000%
39	-0.03	-30.04	-6.16	0.03	30.04	6.16	0.000%
40	2.85	-30.04	-4.95	-2.85	30.04	4.95	0.000%
41	4.94	-30.04	-2.83	-4.94	30.04	2.83	0.000%
42	6.27	-30.04	0.03	-6.27	30.04	-0.03	0.000%
43	5.58	-30.04	3.24	-5.58	30.04	-3.24	0.000%
44	2.98	-30.04	5.11	-2.98	30.04	-5.11	0.000%
45	0.03	-30.04	6.21	-0.03	30.04	-6.21	0.000%
46	-2.85	-30.04	4.95	2.85	30.04	-4.95	0.000%
47	-4.97	-30.04	2.84	4.97	30.04	-2.84	0.000%
48	-6.37	-30.04	-0.03	6.37	30.04	0.03	0.000%
49	-5.56	-30.04	-3.22	5.56	30.04	3.22	0.000%
50	-2.89	-30.04	-4.97	2.89	30.04	4.97	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000503
2	Yes	6	0.00000001	0.00007943
3	Yes	5	0.00000001	0.00062548
4	Yes	6	0.00000001	0.00067825
5	Yes	6	0.00000001	0.00020696
6	Yes	6	0.00000001	0.00079938
7	Yes	6	0.00000001	0.00024949
8	Yes	6	0.00000001	0.00007907
9	Yes	5	0.00000001	0.00061808
10	Yes	6	0.00000001	0.00076009
11	Yes	6	0.00000001	0.00022615
12	Yes	6	0.00000001	0.00074338
13	Yes	6	0.00000001	0.00022697
14	Yes	5	0.00000001	0.00080917
15	Yes	5	0.00000001	0.00036117
16	Yes	6	0.00000001	0.00078237
17	Yes	6	0.00000001	0.00024459
18	Yes	6	0.00000001	0.00066514
19	Yes	6	0.00000001	0.00020336
20	Yes	6	0.00000001	0.00011329
21	Yes	5	0.00000001	0.00088337
22	Yes	6	0.00000001	0.00082968
23	Yes	6	0.00000001	0.00024860
24	Yes	6	0.00000001	0.00074586
25	Yes	6	0.00000001	0.00022894
26	Yes	5	0.00000001	0.00015432
27	Yes	6	0.00000001	0.00060030
28	Yes	6	0.00000001	0.00069313
29	Yes	6	0.00000001	0.00071868
30	Yes	6	0.00000001	0.00059967
31	Yes	6	0.00000001	0.00073226
32	Yes	6	0.00000001	0.00066810
33	Yes	6	0.00000001	0.00056346
34	Yes	6	0.00000001	0.00068699
35	Yes	6	0.00000001	0.00066513
36	Yes	6	0.00000001	0.00061826
37	Yes	6	0.00000001	0.00081257
38	Yes	6	0.00000001	0.00072760
39	Yes	5	0.00000001	0.00006429
40	Yes	5	0.00000001	0.00014209
41	Yes	5	0.00000001	0.00022381
42	Yes	5	0.00000001	0.00008685
43	Yes	5	0.00000001	0.00016733
44	Yes	5	0.00000001	0.00016203
45	Yes	5	0.00000001	0.00005738
46	Yes	5	0.00000001	0.00021007
47	Yes	5	0.00000001	0.00013724
48	Yes	5	0.00000001	0.00009505
49	Yes	5	0.00000001	0.00022327
50	Yes	5	0.00000001	0.00017303

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	100 - 95	16.2764	49	1.4830	0.0144
L2	95 - 90	14.7389	49	1.4485	0.0128
L3	90 - 85.5	13.2558	49	1.3789	0.0099
L4	85.5 - 85.25	11.9954	49	1.2932	0.0072
L5	85.25 - 80.25	11.9277	49	1.2915	0.0072
L6	80.25 - 75.25	10.5978	49	1.2462	0.0062
L7	75.25 - 70.25	9.3233	49	1.1863	0.0052
L8	70.25 - 62.5	8.1178	49	1.1146	0.0044
L9	66.5 - 61.5	7.2667	49	1.0519	0.0039
L10	61.5 - 56.5	6.1892	49	0.9981	0.0035
L11	56.5 - 54.75	5.1940	49	0.9017	0.0029

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L12	54.75 - 54.5	4.8697	49	0.8675	0.0027
L13	54.5 - 49.5	4.8244	49	0.8635	0.0027
L14	49.5 - 44.5	3.9633	49	0.7807	0.0023
L15	44.5 - 39.5	3.1916	49	0.6927	0.0019
L16	39.5 - 34.5	2.5139	49	0.6014	0.0015
L17	34.5 - 29	1.9341	49	0.5058	0.0012
L18	33 - 28	1.7797	49	0.4770	0.0011
L19	28 - 23.5	1.3027	49	0.4285	0.0010
L20	23.5 - 23.25	0.9311	49	0.3599	0.0008
L21	23.25 - 22.75	0.9124	49	0.3561	0.0008
L22	22.75 - 22.5	0.8755	49	0.3486	0.0007
L23	22.5 - 17.5	0.8573	49	0.3452	0.0007
L24	17.5 - 15.75	0.5312	49	0.2777	0.0006
L25	15.75 - 15.5	0.4337	49	0.2541	0.0005
L26	15.5 - 12.25	0.4205	49	0.2509	0.0005
L27	12.25 - 12	0.2641	49	0.2087	0.0004
L28	12 - 11.75	0.2532	49	0.2052	0.0004
L29	11.75 - 11.5	0.2426	49	0.2016	0.0004
L30	11.5 - 6.5	0.2321	49	0.1972	0.0004
L31	6.5 - 6	0.0724	49	0.1080	0.0002
L32	6 - 5.75	0.0616	49	0.0991	0.0002
L33	5.75 - 4.5	0.0565	49	0.0948	0.0002
L34	4.5 - 4.25	0.0345	49	0.0732	0.0001
L35	4.25 - 3	0.0308	49	0.0691	0.0001
L36	3 - 2.75	0.0153	49	0.0488	0.0001
L37	2.75 - 1.75	0.0129	49	0.0448	0.0001
L38	1.75 - 1.5	0.0052	49	0.0286	0.0001
L39	1.5 - 1.25	0.0038	49	0.0244	0.0000
L40	1.25 - 1	0.0026	49	0.0202	0.0000
L41	1 - 0	0.0017	49	0.0161	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
102.0000	X7C-680 w/ Mount Pipe	49	16.2764	1.4830	0.0144	5516
100.0000	Top Hat 15" Diameter x 4' Tall	49	16.2764	1.4830	0.0144	5516
99.0000	8-ft Ladder	49	15.9670	1.4771	0.0140	5516
94.0000	ERICSSON AIR 21 B4A B2P	49	14.4366	1.4388	0.0124	4778
84.0000	80010965 w/ Mount Pipe	49	11.5910	1.2821	0.0070	4970
74.0000	TA08025-B604	49	9.0148	1.1701	0.0050	4097

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	100 - 95	77.2440	22	7.0082	0.0678
L2	95 - 90	70.0061	22	6.8478	0.0598
L3	90 - 85.5	63.0140	22	6.5349	0.0460
L4	85.5 - 85.25	57.0535	22	6.1438	0.0335
L5	85.25 - 80.25	56.7331	22	6.1356	0.0333
L6	80.25 - 75.25	50.4313	22	5.9261	0.0286
L7	75.25 - 70.25	44.3857	22	5.6458	0.0242
L8	70.25 - 62.5	38.6609	22	5.3079	0.0205
L9	66.5 - 61.5	34.6162	22	5.0115	0.0179
L10	61.5 - 56.5	29.4921	22	4.7567	0.0161
L11	56.5 - 54.75	24.7568	22	4.2989	0.0134
L12	54.75 - 54.5	23.2132	22	4.1360	0.0125
L13	54.5 - 49.5	22.9974	22	4.1174	0.0124
L14	49.5 - 44.5	18.8964	22	3.7233	0.0105
L15	44.5 - 39.5	15.2199	22	3.3040	0.0088
L16	39.5 - 34.5	11.9897	22	2.8691	0.0072

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L17	34.5 - 29	9.2252	22	2.4131	0.0056
L18	33 - 28	8.4890	22	2.2756	0.0052
L19	28 - 23.5	6.2141	22	2.0444	0.0045
L20	23.5 - 23.25	4.4420	22	1.7173	0.0037
L21	23.25 - 22.75	4.3525	22	1.6992	0.0036
L22	22.75 - 22.5	4.1765	22	1.6630	0.0035
L23	22.5 - 17.5	4.0899	22	1.6473	0.0035
L24	17.5 - 15.75	2.5340	22	1.3251	0.0027
L25	15.75 - 15.5	2.0690	22	1.2122	0.0024
L26	15.5 - 12.25	2.0059	22	1.1969	0.0024
L27	12.25 - 12	1.2597	22	0.9959	0.0020
L28	12 - 11.75	1.2080	22	0.9789	0.0019
L29	11.75 - 11.5	1.1572	22	0.9619	0.0019
L30	11.5 - 6.5	1.1074	22	0.9409	0.0018
L31	6.5 - 6	0.3454	22	0.5150	0.0010
L32	6 - 5.75	0.2937	22	0.4728	0.0009
L33	5.75 - 4.5	0.2695	22	0.4520	0.0008
L34	4.5 - 4.25	0.1646	22	0.3491	0.0006
L35	4.25 - 3	0.1468	22	0.3296	0.0006
L36	3 - 2.75	0.0731	22	0.2329	0.0004
L37	2.75 - 1.75	0.0614	22	0.2135	0.0004
L38	1.75 - 1.5	0.0248	22	0.1362	0.0002
L39	1.5 - 1.25	0.0182	22	0.1163	0.0002
L40	1.25 - 1	0.0126	22	0.0963	0.0002
L41	1 - 0	0.0081	22	0.0769	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
102.0000	X7C-680 w/ Mount Pipe	22	77.2440	7.0082	0.0681	1246
100.0000	Top Hat 15" Diameter x 4' Tall	22	77.2440	7.0082	0.0681	1246
99.0000	8-ft Ladder	22	75.7878	6.9802	0.0666	1246
94.0000	ERICSSON AIR 21 B4A B2P	22	68.5820	6.8044	0.0588	1083
84.0000	80010965 w/ Mount Pipe	22	55.1382	6.0926	0.0328	1105
74.0000	TA08025-B604	22	42.9210	5.5695	0.0236	890

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 P _u / φP _n
L1	100 - 99	TP15.79x15x0.19	5.0000	0.0000	0.0	9.16	-4.73	535.73	0.009
	99 - 98					9.25	-4.77	541.41	0.009
	98 - 97					9.35	-4.81	547.09	0.009
	97 - 96					9.45	-4.85	552.77	0.009
	96 - 95					9.55	-4.89	558.45	0.009
L2	95 - 94	TP16.59x15.79x0.19	5.0000	0.0000	0.0	9.64	-4.94	564.13	0.009
	94 - 93					9.74	-5.93	569.80	0.010
	93 - 92					9.84	-5.98	575.48	0.010
	92 - 91					9.93	-6.03	581.16	0.010
	91 - 90					10.03	-6.08	586.84	0.010
L3	90 - 88.875	TP17.3x16.59x0.19	4.5000	0.0000	0.0	10.14	-6.13	593.23	0.010
	88.875 - 87.75					10.25	-6.19	599.62	0.010
	87.75 - 86.625					10.36	-6.25	606.01	0.010
	86.625 - 85.5					10.47	-6.31	612.40	0.010

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
L4	85.5 - 85.25 (4)	TP17.34x17.3x0.6	0.2500	0.0000	0.0	32.47	-6.35	1899.63	0.003
L5	85.25 - 84.25 84.25 - 83.25 83.25 - 82.25 82.25 - 81.25 81.25 - 80.25	TP18.13x17.34x0.58	5.0000	0.0000	0.0	31.47 31.76 32.06 32.35 32.65	-6.46 -10.54 -10.67 -10.79 -10.92	1840.78 1858.04 1875.30 1892.56 1909.82	0.004 0.006 0.006 0.006 0.006
L6	80.25 - 79.25 79.25 - 78.25 78.25 - 77.25 77.25 - 76.25 76.25 - 75.25	TP18.93x18.13x0.55	5.0000	0.0000	0.0	31.56 31.84 32.12 32.41 32.69	-11.05 -11.18 -11.31 -11.45 -11.58	1846.26 1862.78 1879.29 1895.80 1912.32	0.006 0.006 0.006 0.006 0.006
L7	75.25 - 74.25 74.25 - 73.25 73.25 - 72.25 72.25 - 71.25 71.25 - 70.25	TP19.72x18.93x0.54	5.0000	0.0000	0.0	32.25 32.52 32.80 33.07 33.35	-11.72 -14.77 -14.91 -15.06 -15.21	1886.46 1902.60 1918.74 1934.88 1951.02	0.006 0.008 0.008 0.008 0.008
L8	70.25 - 69 69 - 67.75 67.75 - 66.5 66.5 - 62.5	TP20.95x19.72x0.52	7.7500	0.0000	0.0	32.56 32.89 33.22 34.29	-15.39 -15.58 -15.78 -8.12	1904.59 1924.06 1943.54 2005.86	0.008 0.008 0.008 0.004
L9	66.5 - 62.5 62.5 - 61.5	TP20.73x19.94x0.58	5.0000	0.0000	0.0	37.03 37.33	-8.75 -17.06	2166.33 2183.55	0.004 0.008
L10	61.5 - 60.5 60.5 - 59.5 59.5 - 58.5 58.5 - 57.5 57.5 - 56.5	TP21.53x20.73x0.56	5.0000	0.0000	0.0	36.82 37.11 37.40 37.69 37.98	-17.24 -17.42 -17.60 -17.78 -17.96	2154.25 2171.09 2187.93 2204.77 2221.61	0.008 0.008 0.008 0.008 0.008
L11	56.5 - 54.75 (11)	TP21.81x21.53x0.56	1.7500	0.0000	0.0	38.48	-18.27	2251.08	0.008
L12	54.75 - 54.5 (12)	TP21.85x21.81x0.74	0.2500	0.0000	0.0	50.13	-18.35	2932.62	0.006
L13	54.5 - 53.5 53.5 - 52.5 52.5 - 51.5 51.5 - 50.5 50.5 - 49.5	TP22.64x21.85x0.71	5.0000	0.0000	0.0	48.85 49.22 49.58 49.95 50.31	-18.55 -18.77 -18.98 -19.20 -19.42	2857.90 2879.23 2900.56 2921.89 2943.22	0.006 0.007 0.007 0.007 0.007
L14	49.5 - 48.5 48.5 - 47.5 47.5 - 46.5 46.5 - 45.5 45.5 - 44.5	TP23.44x22.64x0.69	5.0000	0.0000	0.0	48.95 49.31 49.66 50.01 50.36	-19.64 -19.86 -20.08 -20.30 -20.53	2863.77 2884.35 2904.93 2925.52 2946.10	0.007 0.007 0.007 0.007 0.007
L15	44.5 - 43.5 43.5 - 42.5 42.5 - 41.5 41.5 - 40.5 40.5 - 39.5	TP24.23x23.44x0.68	5.0000	0.0000	0.0	49.82 50.16 50.51 50.85 51.20	-20.75 -20.98 -21.21 -21.44 -21.67	2914.33 2934.54 2954.75 2974.96 2995.17	0.007 0.007 0.007 0.007 0.007
L16	39.5 - 38.5 38.5 - 37.5 37.5 - 36.5 36.5 - 35.5 35.5 - 34.5	TP25.03x24.23x0.65	5.0000	0.0000	0.0	49.69 50.02 50.35 50.69 51.02	-21.90 -22.14 -22.37 -22.61 -22.85	2906.75 2926.21 2945.67 2965.13 2984.59	0.008 0.008 0.008 0.008 0.008
L17	34.5 - 33 33 - 29	TP25.9x25.03x0.65	5.5000	0.0000	0.0	51.52 52.85	-23.20 -10.57	3013.78 3091.62	0.008 0.003
L18	33 - 29 29 - 28	TP25.55x24.76x0.93	5.0000	0.0000	0.0	72.88 73.36	-14.51 -25.40	4263.73 4291.40	0.003 0.006
L19	28 - 26.875 26.875 - 25.75 25.75 - 24.625	TP26.27x25.55x0.9	4.5000	0.0000	0.0	71.96 72.48 73.00	-25.74 -26.08 -26.42	4209.94 4240.23 4270.51	0.006 0.006 0.006
L20	24.625 - 23.5 23.5 - 23.25 (20)	TP26.31x26.27x0.9	0.2500	0.0000	0.0	73.52 73.63	-26.76 -26.87	4300.80 4307.53	0.006 0.006
L21	23.25 - 22.75 (21)	TP26.39x26.31x0.9	0.5000	0.0000	0.0	73.86	-27.04	4320.99	0.006
L22	22.75 - 22.5 (22)	TP26.43x26.39x1.05	0.2500	0.0000	0.0	85.80	-27.15	5019.33	0.005
L23	22.5 - 21.5	TP27.22x26.43x1.03	5.0000	0.0000	0.0	84.36	-27.51	4935.31	0.006

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
	21.5 - 20.5					84.89	-27.90	4965.97	0.006
	20.5 - 19.5					85.41	-28.28	4996.63	0.006
	19.5 - 18.5					85.94	-28.67	5027.29	0.006
	18.5 - 17.5					86.46	-29.06	5057.95	0.006
L24	17.5 - 15.75 (24)	TP27.5x27.22x1	1.7500	0.0000	0.0	85.33	-29.74	4991.63	0.006
L25	15.75 - 15.5 (25)	TP27.54x27.5x1.08	0.2500	0.0000	0.0	91.60	-29.87	5358.86	0.006
L26	15.5 - 14.4167 14.4167 - 13.3333 13.3333 - 12.25	TP28.05x27.54x1.06	3.2500	0.0000	0.0	91.17	-30.31	5333.48	0.006
						91.76	-30.77	5367.90	0.006
						92.35	-31.24	5402.33	0.006
L27	12.25 - 12 (27)	TP28.09x28.05x0.95	0.2500	0.0000	0.0	83.04	-31.35	4857.56	0.006
L28	12 - 11.75 (28)	TP28.13x28.09x0.95	0.2500	0.0000	0.0	83.16	-31.45	4864.66	0.006
L29	11.75 - 11.5 (29)	TP28.17x28.13x0.75	0.2500	0.0000	0.0	66.23	-31.55	3874.39	0.008
L30	11.5 - 10.5 10.5 - 9.5 9.5 - 8.5 8.5 - 7.5 7.5 - 6.5	TP28.97x28.17x0.74	5.0000	0.0000	0.0	65.53	-31.91	3833.61	0.008
						65.91	-32.29	3855.67	0.008
						66.29	-32.68	3877.73	0.008
						66.66	-33.06	3899.79	0.008
						67.04	-33.45	3921.85	0.009
L31	6.5 - 6 (31)	TP29.05x28.97x0.74	0.5000	0.0000	0.0	67.23	-33.66	3932.88	0.009
L32	6 - 5.75 (32)	TP29.09x29.05x0.75	0.2500	0.0000	0.0	68.43	-33.77	4003.38	0.008
L33	5.75 - 4.5 (33)	TP29.29x29.09x0.75	1.2500	0.0000	0.0	68.91	-34.26	4031.42	0.008
L34	4.5 - 4.25 (34)	TP29.33x29.29x0.8	0.2500	0.0000	0.0	73.48	-34.39	4298.63	0.008
L35	4.25 - 3 (35)	TP29.52x29.33x0.8	1.2500	0.0000	0.0	73.99	-34.89	4328.54	0.008
L36	3 - 2.75 (36)	TP29.56x29.52x0.8	0.2500	0.0000	0.0	74.09	-35.01	4334.52	0.008
L37	2.75 - 1.75 (37)	TP29.72x29.56x0.8	1.0000	0.0000	0.0	74.50	-35.40	4358.45	0.008
L38	1.75 - 1.5 (38)	TP29.76x29.72x0.78	0.2500	0.0000	0.0	72.34	-35.50	4231.69	0.008
L39	1.5 - 1.25 (39)	TP29.8x29.76x0.78	0.2500	0.0000	0.0	72.44	-35.60	4237.49	0.008
L40	1.25 - 1 (40)	TP29.84x29.8x0.8	0.2500	0.0000	0.0	74.81	-35.69	4376.39	0.008
L41	1 - 0 (41)	TP30x29.84x0.8	1.0000	0.0000	0.0	75.22	-36.02	4400.32	0.008

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux}	φM _{rx}	Ratio	M _{uy}	φM _{ry}	Ratio
			kip-ft	kip-ft	<u>M_{ux}</u>	kip-ft	kip-ft	<u>M_{uy}</u>
					<u>φM_{rx}</u>			<u>φM_{ry}</u>
L1	100 - 99	TP15.79x15x0.19	20.31	204.88	0.099	0.00	204.88	0.000
	99 - 98		27.78	209.27	0.133	0.00	209.27	0.000
	98 - 97		34.91	213.71	0.163	0.00	213.71	0.000
	97 - 96		42.10	218.20	0.193	0.00	218.20	0.000
	96 - 95		49.36	222.74	0.222	0.00	222.74	0.000
L2	95 - 94	TP16.59x15.79x0.19	56.69	226.58	0.250	0.00	226.58	0.000
	94 - 93		66.68	230.50	0.289	0.00	230.50	0.000
	93 - 92		75.21	234.44	0.321	0.00	234.44	0.000
	92 - 91		83.82	238.40	0.352	0.00	238.40	0.000
	91 - 90		92.50	242.38	0.382	0.00	242.38	0.000
L3	90 - 88.875	TP17.3x16.59x0.19	102.38	246.87	0.415	0.00	246.87	0.000
	88.875 - 87.75		112.40	251.38	0.447	0.00	251.38	0.000
	87.75 - 86.625		122.56	255.92	0.479	0.00	255.92	0.000
	86.625 - 85.5		132.86	260.48	0.510	0.00	260.48	0.000
L4	85.5 - 85.25 (4)	TP17.34x17.3x0.6	135.17	794.06	0.170	0.00	794.06	0.000
L5	85.25 - 84.25	TP18.13x17.34x0.58	144.48	779.31	0.185	0.00	779.31	0.000
	84.25 - 83.25		171.57	794.24	0.216	0.00	794.24	0.000
	83.25 - 82.25		187.44	809.31	0.232	0.00	809.31	0.000
	82.25 - 81.25		203.45	824.52	0.247	0.00	824.52	0.000
	81.25 - 80.25		219.60	839.88	0.261	0.00	839.88	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{rx} kip-ft	Ratio	M_{uy} kip-ft	ϕM_{ry} kip-ft	Ratio
					M_{ux}			M_{uy}
L6	80.25 - 79.25	TP18.93x18.13x0.55	235.88	821.81	0.287	0.00	821.81	0.000
	79.25 - 78.25		252.30	836.80	0.302	0.00	836.80	0.000
	78.25 - 77.25		268.86	851.92	0.316	0.00	851.92	0.000
	77.25 - 76.25		285.56	867.18	0.329	0.00	867.18	0.000
	76.25 - 75.25		302.40	882.58	0.343	0.00	882.58	0.000
L7	75.25 - 74.25	TP19.72x18.93x0.54	319.38	879.58	0.363	0.00	879.58	0.000
	74.25 - 73.25		339.05	894.90	0.379	0.00	894.90	0.000
	73.25 - 72.25		359.78	910.37	0.395	0.00	910.37	0.000
	72.25 - 71.25		380.65	925.96	0.411	0.00	925.96	0.000
	71.25 - 70.25		401.65	941.68	0.427	0.00	941.68	0.000
L8	70.25 - 69	TP20.95x19.72x0.52	428.10	930.84	0.460	0.00	930.84	0.000
	69 - 67.75		454.77	950.23	0.479	0.00	950.23	0.000
	67.75 - 66.5		481.64	969.81	0.497	0.00	969.81	0.000
L9	66.5 - 62.5	TP20.73x19.94x0.58	279.97	1033.82	0.271	0.00	1033.82	0.000
	62.5 - 61.5		289.32	1089.70	0.266	0.00	1089.70	0.000
	61.5 - 60.5		591.59	1107.33	0.534	0.00	1107.33	0.000
L10	60.5 - 59.5	TP21.53x20.73x0.56	614.03	1102.68	0.557	0.00	1102.68	0.000
	59.5 - 58.5		636.60	1120.22	0.568	0.00	1120.22	0.000
	58.5 - 57.5		659.31	1137.90	0.579	0.00	1137.90	0.000
	57.5 - 56.5		682.15	1155.72	0.590	0.00	1155.72	0.000
L11	56.5 - 54.75 (11)	TP21.81x21.53x0.56	705.12	1173.68	0.601	0.00	1173.68	0.000
L12	54.75 - 54.5 (12)	TP21.85x21.81x0.74	745.66	1205.43	0.619	0.00	1205.43	0.000
L13	54.5 - 53.5	TP22.64x21.85x0.71	774.87	1523.52	0.509	0.00	1523.52	0.000
	53.5 - 52.5		798.40	1546.72	0.516	0.00	1546.72	0.000
	52.5 - 51.5		822.08	1570.09	0.524	0.00	1570.09	0.000
	51.5 - 50.5		845.89	1593.64	0.531	0.00	1593.64	0.000
	50.5 - 49.5		869.85	1617.37	0.538	0.00	1617.37	0.000
L14	49.5 - 48.5	TP23.44x22.64x0.69	893.95	1589.06	0.563	0.00	1589.06	0.000
	48.5 - 47.5		918.18	1612.33	0.569	0.00	1612.33	0.000
	47.5 - 46.5		942.56	1635.78	0.576	0.00	1635.78	0.000
	46.5 - 45.5		967.08	1659.38	0.583	0.00	1659.38	0.000
	45.5 - 44.5		991.73	1683.16	0.589	0.00	1683.16	0.000
L15	44.5 - 43.5	TP24.23x23.44x0.68	1016.51	1678.82	0.605	0.00	1678.82	0.000
	43.5 - 42.5		1041.43	1702.52	0.612	0.00	1702.52	0.000
	42.5 - 41.5		1066.48	1726.38	0.618	0.00	1726.38	0.000
	41.5 - 40.5		1091.67	1750.41	0.624	0.00	1750.41	0.000
	40.5 - 39.5		1116.99	1774.61	0.629	0.00	1774.61	0.000
L16	39.5 - 38.5	TP25.03x24.23x0.65	1142.44	1737.83	0.657	0.00	1737.83	0.000
	38.5 - 37.5		1168.02	1761.48	0.663	0.00	1761.48	0.000
	37.5 - 36.5		1193.72	1785.30	0.669	0.00	1785.30	0.000
	36.5 - 35.5		1219.56	1809.28	0.674	0.00	1809.28	0.000
	35.5 - 34.5		1245.53	1833.42	0.679	0.00	1833.42	0.000
L17	34.5 - 33	TP25.9x25.03x0.65	1284.72	1869.93	0.687	0.00	1869.93	0.000
	33 - 29		606.52	1969.04	0.308	0.00	1969.04	0.000
L18	33 - 29	TP25.55x24.76x0.93	784.41	2601.11	0.302	0.00	2601.11	0.000
	29 - 28		1417.88	2635.59	0.538	0.00	2635.59	0.000
L19	28 - 26.875	TP26.27x25.55x0.9	1448.37	2610.25	0.555	0.00	2610.25	0.000
	26.875 - 25.75		1479.04	2648.60	0.558	0.00	2648.60	0.000
	25.75 - 24.625		1509.89	2687.23	0.562	0.00	2687.23	0.000
	24.625 - 23.5		1540.93	2726.14	0.565	0.00	2726.14	0.000
L20	23.5 - 23.25 (20)	TP26.31x26.27x0.9	1547.84	2734.82	0.566	0.00	2734.82	0.000
L21	23.25 - 22.75 (21)	TP26.39x26.31x0.9	1561.71	2752.23	0.567	0.00	2752.23	0.000
L22	22.75 - 22.5 (22)	TP26.43x26.39x1.05	1568.66	3164.68	0.496	0.00	3164.68	0.000
L23	22.5 - 21.5	TP27.22x26.43x1.03	1596.54	3138.07	0.509	0.00	3138.07	0.000
	21.5 - 20.5		1624.56	3177.94	0.511	0.00	3177.94	0.000
	20.5 - 19.5		1652.72	3218.06	0.514	0.00	3218.06	0.000
	19.5 - 18.5		1681.03	3258.43	0.516	0.00	3258.43	0.000
	18.5 - 17.5		1709.49	3299.05	0.518	0.00	3299.05	0.000
L24	17.5 - 15.75 (24)	TP27.5x27.22x1	1759.62	3297.86	0.534	0.00	3297.86	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{rx} kip-ft	Ratio	M_{uy} kip-ft	ϕM_{ry} kip-ft	Ratio
					$\frac{M_{ux}}{\phi M_{rx}}$			$\frac{M_{uy}}{\phi M_{ry}}$
L25	15.75 - 15.5 (25)	TP27.54x27.5x1.08	1766.82	3525.96	0.501	0.00	3525.96	0.000
L26	15.5 - 14.4167	TP28.05x27.54x1.06	1798.10	3536.28	0.508	0.00	3536.28	0.000
	14.4167 - 13.3333		1829.54	3582.96	0.511	0.00	3582.96	0.000
	13.3333 - 12.25		1861.15	3629.95	0.513	0.00	3629.95	0.000
	12.25 - 12		1868.47	3296.15	0.567	0.00	3296.15	0.000
L27	12.25 - 12 (27)	TP28.09x28.05x0.95	1868.47	3296.15	0.567	0.00	3296.15	0.000
L28	12 - 11.75 (28)	TP28.13x28.09x0.95	1875.79	3305.96	0.567	0.00	3305.96	0.000
L29	11.75 - 11.5 (29)	TP28.17x28.13x0.75	1883.13	2675.84	0.704	0.00	2675.84	0.000
L30	11.5 - 10.5	TP28.97x28.17x0.74	1912.53	2665.83	0.717	0.00	2665.83	0.000
	10.5 - 9.5		1942.06	2697.00	0.720	0.00	2697.00	0.000
	9.5 - 8.5		1971.72	2728.35	0.723	0.00	2728.35	0.000
	8.5 - 7.5		2001.49	2759.88	0.725	0.00	2759.88	0.000
	7.5 - 6.5		2031.39	2791.60	0.728	0.00	2791.60	0.000
L31	6.5 - 6 (31)	TP29.05x28.97x0.74	2046.38	2807.53	0.729	0.00	2807.53	0.000
L32	6 - 5.75 (32)	TP29.09x29.05x0.75	2053.89	2859.43	0.718	0.00	2859.43	0.000
L33	5.75 - 4.5 (33)	TP29.29x29.09x0.75	2091.54	2900.15	0.721	0.00	2900.15	0.000
L34	4.5 - 4.25 (34)	TP29.33x29.29x0.8	2099.09	3085.97	0.680	0.00	3085.97	0.000
L35	4.25 - 3 (35)	TP29.52x29.33x0.8	2136.96	3129.65	0.683	0.00	3129.65	0.000
L36	3 - 2.75 (36)	TP29.56x29.52x0.8	2144.56	3138.43	0.683	0.00	3138.43	0.000
L37	2.75 - 1.75 (37)	TP29.72x29.56x0.8	2175.01	3173.64	0.685	0.00	3173.64	0.000
	1.75 - 1.5 (38)		2182.63	3091.02	0.706	0.00	3091.02	0.000
L39	1.5 - 1.25 (39)	TP29.8x29.76x0.78	2190.27	3099.60	0.707	0.00	3099.60	0.000
L40	1.25 - 1 (40)	TP29.84x29.8x0.8	2197.90	3200.18	0.687	0.00	3200.18	0.000
L41	1 - 0 (41)	TP30x29.84x0.8	2228.45	3235.75	0.689	0.00	3235.75	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual	ϕV_n	Ratio	Actual	ϕT_n	Ratio
			V_u K	K	$\frac{V_u}{\phi V_n}$	T_u kip-ft	$\frac{T_u}{\phi T_n}$	
L1	100 - 99	TP15.79x15x0.19	6.66	160.72	0.041	0.01	211.62	0.000
	99 - 98		7.09	162.42	0.044	0.84	216.13	0.004
	98 - 97		7.16	164.13	0.044	0.84	220.69	0.004
	97 - 96		7.23	165.83	0.044	0.84	225.29	0.004
	96 - 95		7.29	167.53	0.044	0.84	229.94	0.004
L2	95 - 94	TP16.59x15.79x0.19	7.37	169.24	0.044	0.84	234.64	0.004
	94 - 93		8.50	170.94	0.050	0.85	239.39	0.004
	93 - 92		8.58	172.65	0.050	0.85	244.19	0.003
	92 - 91		8.65	174.35	0.050	0.85	249.03	0.003
	91 - 90		8.73	176.05	0.050	0.85	253.92	0.003
L3	90 - 88.875	TP17.3x16.59x0.19	8.85	177.97	0.050	0.86	259.48	0.003
	88.875 - 87.75		8.97	179.89	0.050	0.87	265.10	0.003
	87.75 - 86.625		9.10	181.80	0.050	0.88	270.78	0.003
L4	86.625 - 85.5	TP17.34x17.3x0.6 (4)	9.22	183.72	0.050	0.89	276.52	0.003
	85.5 - 85.25		9.26	569.89	0.016	0.89	839.05	0.001
L5	85.25 - 84.25	TP18.13x17.34x0.58	9.39	552.24	0.017	0.89	821.98	0.001
	84.25 - 83.25		15.82	557.41	0.028	1.67	837.47	0.002
	83.25 - 82.25		15.95	562.59	0.028	1.67	853.10	0.002
	82.25 - 81.25		16.09	567.77	0.028	1.68	868.88	0.002
	81.25 - 80.25		16.22	572.95	0.028	1.68	884.80	0.002
L6	80.25 - 79.25	TP18.93x18.13x0.55	16.36	553.88	0.030	1.68	864.30	0.002
	79.25 - 78.25		16.50	558.83	0.030	1.69	879.83	0.002
	78.25 - 77.25		16.64	563.79	0.030	1.69	895.50	0.002
	77.25 - 76.25		16.78	568.74	0.030	1.69	911.30	0.002
	76.25 - 75.25		16.92	573.70	0.029	1.69	927.25	0.002
L7	75.25 - 74.25	TP19.72x18.93x0.54	17.06	565.94	0.030	1.69	923.23	0.002

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $V_u / \phi V_n$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $T_u / \phi T_n$
	74.25 - 73.25		20.68	570.78	0.036	1.69	939.10	0.002
	73.25 - 72.25		20.81	575.62	0.036	1.46	955.10	0.002
	72.25 - 71.25		20.95	580.46	0.036	1.46	971.23	0.002
	71.25 - 70.25		21.09	585.31	0.036	1.46	987.50	0.001
L8	70.25 - 69	TP20.95x19.72x0.52	21.26	571.38	0.037	1.46	974.92	0.002
	69 - 67.75		21.43	577.22	0.037	1.46	994.95	0.001
	67.75 - 66.5		21.60	583.06	0.037	1.46	1015.19	0.001
	66.5 - 62.5		11.10	601.76	0.018	0.72	1081.34	0.001
L9	66.5 - 62.5	TP20.73x19.94x0.58	11.16	649.90	0.017	0.74	1143.38	0.001
	62.5 - 61.5		22.39	655.07	0.034	1.47	1161.63	0.001
L10	61.5 - 60.5	TP21.53x20.73x0.56	22.52	646.27	0.035	1.47	1155.78	0.001
	60.5 - 59.5		22.65	651.33	0.035	1.47	1173.93	0.001
	59.5 - 58.5		22.79	656.38	0.035	1.47	1192.21	0.001
	58.5 - 57.5		22.92	661.43	0.035	1.47	1210.63	0.001
	57.5 - 56.5		23.06	666.48	0.035	1.47	1229.19	0.001
L11	56.5 - 54.75	TP21.81x21.53x0.56	23.31	675.32	0.035	1.47	1262.03	0.001
	(11)							
L12	54.75 - 54.5	TP21.85x21.81x0.74	23.33	879.79	0.027	1.47	1633.65	0.001
	(12)							
L13	54.5 - 53.5	TP22.64x21.85x0.71	23.47	857.37	0.027	1.47	1605.89	0.001
	53.5 - 52.5		23.62	863.77	0.027	1.47	1629.96	0.001
	52.5 - 51.5		23.76	870.17	0.027	1.47	1654.20	0.001
	51.5 - 50.5		23.90	876.57	0.027	1.47	1678.62	0.001
	50.5 - 49.5		24.05	882.97	0.027	1.47	1703.22	0.001
L14	49.5 - 48.5	TP23.44x22.64x0.69	24.18	859.13	0.028	1.47	1671.14	0.001
	48.5 - 47.5		24.32	865.31	0.028	1.47	1695.25	0.001
	47.5 - 46.5		24.46	871.48	0.028	1.47	1719.53	0.001
	46.5 - 45.5		24.60	877.65	0.028	1.47	1743.98	0.001
	45.5 - 44.5		24.74	883.83	0.028	1.47	1768.61	0.001
L15	44.5 - 43.5	TP24.23x23.44x0.68	24.87	874.30	0.028	1.48	1762.72	0.001
	43.5 - 42.5		25.00	880.36	0.028	1.48	1787.25	0.001
	42.5 - 41.5		25.14	886.42	0.028	1.48	1811.95	0.001
	41.5 - 40.5		25.27	892.49	0.028	1.48	1836.83	0.001
	40.5 - 39.5		25.41	898.55	0.028	1.48	1861.86	0.001
L16	39.5 - 38.5	TP25.03x24.23x0.65	25.53	872.03	0.029	1.48	1821.01	0.001
	38.5 - 37.5		25.66	877.86	0.029	1.48	1845.47	0.001
	37.5 - 36.5		25.79	883.70	0.029	1.48	1870.10	0.001
	36.5 - 35.5		25.92	889.54	0.029	1.48	1894.89	0.001
	35.5 - 34.5		26.05	895.38	0.029	1.48	1919.85	0.001
L17	34.5 - 33	TP25.9x25.03x0.65	26.25	904.13	0.029	1.48	1957.58	0.001
	33 - 29		11.92	927.49	0.013	0.65	2060.01	0.000
L18	33 - 29	TP25.55x24.76x0.93	15.00	1279.12	0.012	0.84	2753.27	0.000
	29 - 28		27.04	1287.42	0.021	1.49	2789.11	0.001
L19	28 - 26.875	TP26.27x25.55x0.9	27.20	1262.98	0.022	1.50	2758.79	0.001
	26.875 - 25.75		27.36	1272.07	0.022	1.50	2798.63	0.001
	25.75 - 24.625		27.52	1281.15	0.021	1.50	2838.74	0.001
	24.625 - 23.5		27.69	1290.24	0.021	1.50	2879.15	0.001
L20	23.5 - 23.25	TP26.31x26.27x0.9	27.71	1292.26	0.021	1.50	2888.17	0.001
	(20)							
L21	23.25 - 22.75	TP26.39x26.31x0.9	27.78	1296.30	0.021	1.50	2906.25	0.001
	(21)							
L22	22.75 - 22.5	TP26.43x26.39x1.05	27.81	1505.80	0.018	1.50	3361.33	0.000
	(22)							
L23	22.5 - 21.5	TP27.22x26.43x1.03	27.97	1480.59	0.019	1.50	3329.01	0.000
	21.5 - 20.5		28.11	1489.79	0.019	1.50	3370.49	0.000
	20.5 - 19.5		28.25	1498.99	0.019	1.50	3412.24	0.000
	19.5 - 18.5		28.40	1508.19	0.019	1.49	3454.24	0.000
	18.5 - 17.5		28.54	1517.38	0.019	1.49	3496.50	0.000
L24	17.5 - 15.75	TP27.5x27.22x1	28.80	1497.49	0.019	1.49	3490.56	0.000
	(24)							
L25	15.75 - 15.5	TP27.54x27.5x1.08	28.81	1607.66	0.018	1.49	3742.36	0.000
	(25)							
L26	15.5 - 14.4167	TP28.05x27.54x1.06	28.97	1600.04	0.018	1.49	3750.60	0.000
	14.4167 - 13.3333		29.12	1610.37	0.018	1.48	3799.18	0.000

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 $\frac{T_u}{\phi T_n}$
	13.3333 - 12.25		29.27	1620.70	0.018	1.48	3848.07	0.000
L27	12.25 - 12 (27)	TP28.09x28.05x0.95	29.29	1457.27	0.020	1.48	3479.54	0.000
L28	12 - 11.75 (28)	TP28.13x28.09x0.95	29.32	1459.40	0.020	1.47	3489.72	0.000
L29	11.75 - 11.5 (29)	TP28.17x28.13x0.75	29.35	1162.32	0.025	1.47	2803.84	0.001
L30	11.5 - 10.5	TP28.97x28.17x0.74	29.49	1150.08	0.026	1.47	2791.66	0.001
	10.5 - 9.5		29.62	1156.70	0.026	1.47	2823.88	0.001
	9.5 - 8.5		29.74	1163.32	0.026	1.46	2856.28	0.001
	8.5 - 7.5		29.86	1169.94	0.026	1.46	2888.88	0.001
	7.5 - 6.5		29.98	1176.55	0.025	1.45	2921.65	0.000
L31	6.5 - 6 (31)	TP29.05x28.97x0.74	30.03	1179.86	0.025	1.44	2938.11	0.000
L32	6 - 5.75 (32)	TP29.09x29.05x0.75	30.05	1201.01	0.025	1.44	2993.65	0.000
L33	5.75 - 4.5 (33)	TP29.29x29.09x0.75	30.23	1209.43	0.025	1.44	3035.73	0.000
L34	4.5 - 4.25 (34)	TP29.33x29.29x0.8	30.23	1289.59	0.023	1.43	3235.78	0.000
L35	4.25 - 3 (35)	TP29.52x29.33x0.8	30.40	1298.56	0.023	1.43	3280.97	0.000
L36	3 - 2.75 (36)	TP29.56x29.52x0.8	30.40	1300.36	0.023	1.42	3290.04	0.000
L37	2.75 - 1.75 (37)	TP29.72x29.56x0.8	30.53	1307.53	0.023	1.42	3326.47	0.000
L38	1.75 - 1.5 (38)	TP29.76x29.72x0.78	30.53	1269.51	0.024	1.42	3236.95	0.000
L39	1.5 - 1.25 (39)	TP29.8x29.76x0.78	30.53	1271.25	0.024	1.42	3245.82	0.000
L40	1.25 - 1 (40)	TP29.84x29.8x0.8	30.54	1312.92	0.023	1.42	3353.92	0.000
L41	1 - 0 (41)	TP30x29.84x0.8	30.60	1320.10	0.023	1.42	3390.69	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
L1	100 - 99	0.009	0.099	0.000	0.041	0.000	0.110	1.050	4.8.2
	99 - 98	0.009	0.133	0.000	0.044	0.004	0.144	1.050	4.8.2
	98 - 97	0.009	0.163	0.000	0.044	0.004	0.174	1.050	4.8.2
	97 - 96	0.009	0.193	0.000	0.044	0.004	0.204	1.050	4.8.2
	96 - 95	0.009	0.222	0.000	0.044	0.004	0.233	1.050	4.8.2
L2	95 - 94	0.009	0.250	0.000	0.044	0.004	0.261	1.050	4.8.2
	94 - 93	0.010	0.289	0.000	0.050	0.004	0.303	1.050	4.8.2
	93 - 92	0.010	0.321	0.000	0.050	0.003	0.334	1.050	4.8.2
	92 - 91	0.010	0.352	0.000	0.050	0.003	0.365	1.050	4.8.2
	91 - 90	0.010	0.382	0.000	0.050	0.003	0.395	1.050	4.8.2
L3	90 - 88.875	0.010	0.415	0.000	0.050	0.003	0.428	1.050	4.8.2
	88.875 - 87.75	0.010	0.447	0.000	0.050	0.003	0.460	1.050	4.8.2
	87.75 - 86.625	0.010	0.479	0.000	0.050	0.003	0.492	1.050	4.8.2
	86.625 - 85.5	0.010	0.510	0.000	0.050	0.003	0.523	1.050	4.8.2
L4	85.5 - 85.25 (4)	0.003	0.170	0.000	0.016	0.001	0.174	1.050	4.8.2
L5	85.25 - 84.25	0.004	0.185	0.000	0.017	0.001	0.189	1.050	4.8.2
	84.25 - 83.25	0.006	0.216	0.000	0.028	0.002	0.223	1.050	4.8.2
	83.25 - 82.25	0.006	0.232	0.000	0.028	0.002	0.238	1.050	4.8.2
	82.25 - 81.25	0.006	0.247	0.000	0.028	0.002	0.253	1.050	4.8.2
	81.25 - 80.25	0.006	0.261	0.000	0.028	0.002	0.268	1.050	4.8.2
L6	80.25 - 79.25	0.006	0.287	0.000	0.030	0.002	0.294	1.050	4.8.2
	79.25 - 78.25	0.006	0.302	0.000	0.030	0.002	0.308	1.050	4.8.2
	78.25 - 77.25	0.006	0.316	0.000	0.030	0.002	0.323	1.050	4.8.2
	77.25 - 76.25	0.006	0.329	0.000	0.030	0.002	0.336	1.050	4.8.2
	76.25 - 75.25	0.006	0.343	0.000	0.029	0.002	0.350	1.050	4.8.2
L7	75.25 - 74.25	0.006	0.363	0.000	0.030	0.002	0.370	1.050	4.8.2
	74.25 - 73.25	0.008	0.379	0.000	0.036	0.002	0.388	1.050	4.8.2
	73.25 - 72.25	0.008	0.395	0.000	0.036	0.002	0.404	1.050	4.8.2
	72.25 - 71.25	0.008	0.411	0.000	0.036	0.002	0.420	1.050	4.8.2
	71.25 - 70.25	0.008	0.427	0.000	0.036	0.001	0.436	1.050	4.8.2
L8	70.25 - 69	0.008	0.460	0.000	0.037	0.002	0.469	1.050	4.8.2

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u	M_{ux}	M_{uy}	V_u	T_u			
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
	69 - 67.75	0.008	0.479	0.000	0.037	0.001	0.488	1.050	4.8.2
	67.75 - 66.5	0.008	0.497	0.000	0.037	0.001	0.506	1.050	4.8.2
	66.5 - 62.5	0.004	0.271	0.000	0.018	0.001	0.275	1.050	4.8.2
L9	66.5 - 62.5	0.004	0.266	0.000	0.017	0.001	0.270	1.050	4.8.2
	62.5 - 61.5	0.008	0.534	0.000	0.034	0.001	0.543	1.050	4.8.2
L10	61.5 - 60.5	0.008	0.557	0.000	0.035	0.001	0.566	1.050	4.8.2
	60.5 - 59.5	0.008	0.568	0.000	0.035	0.001	0.578	1.050	4.8.2
	59.5 - 58.5	0.008	0.579	0.000	0.035	0.001	0.589	1.050	4.8.2
	58.5 - 57.5	0.008	0.590	0.000	0.035	0.001	0.600	1.050	4.8.2
	57.5 - 56.5	0.008	0.601	0.000	0.035	0.001	0.610	1.050	4.8.2
L11	56.5 - 54.75	0.008	0.619	0.000	0.035	0.001	0.628	1.050	4.8.2
	(11)								
L12	54.75 - 54.5	0.006	0.486	0.000	0.027	0.001	0.493	1.050	4.8.2
	(12)								
L13	54.5 - 53.5	0.006	0.509	0.000	0.027	0.001	0.516	1.050	4.8.2
	53.5 - 52.5	0.007	0.516	0.000	0.027	0.001	0.524	1.050	4.8.2
	52.5 - 51.5	0.007	0.524	0.000	0.027	0.001	0.531	1.050	4.8.2
	51.5 - 50.5	0.007	0.531	0.000	0.027	0.001	0.538	1.050	4.8.2
	50.5 - 49.5	0.007	0.538	0.000	0.027	0.001	0.545	1.050	4.8.2
L14	49.5 - 48.5	0.007	0.563	0.000	0.028	0.001	0.570	1.050	4.8.2
	48.5 - 47.5	0.007	0.569	0.000	0.028	0.001	0.577	1.050	4.8.2
	47.5 - 46.5	0.007	0.576	0.000	0.028	0.001	0.584	1.050	4.8.2
	46.5 - 45.5	0.007	0.583	0.000	0.028	0.001	0.591	1.050	4.8.2
	45.5 - 44.5	0.007	0.589	0.000	0.028	0.001	0.597	1.050	4.8.2
L15	44.5 - 43.5	0.007	0.605	0.000	0.028	0.001	0.613	1.050	4.8.2
	43.5 - 42.5	0.007	0.612	0.000	0.028	0.001	0.620	1.050	4.8.2
	42.5 - 41.5	0.007	0.618	0.000	0.028	0.001	0.626	1.050	4.8.2
	41.5 - 40.5	0.007	0.624	0.000	0.028	0.001	0.632	1.050	4.8.2
	40.5 - 39.5	0.007	0.629	0.000	0.028	0.001	0.638	1.050	4.8.2
L16	39.5 - 38.5	0.008	0.657	0.000	0.029	0.001	0.666	1.050	4.8.2
	38.5 - 37.5	0.008	0.663	0.000	0.029	0.001	0.672	1.050	4.8.2
	37.5 - 36.5	0.008	0.669	0.000	0.029	0.001	0.677	1.050	4.8.2
	36.5 - 35.5	0.008	0.674	0.000	0.029	0.001	0.683	1.050	4.8.2
	35.5 - 34.5	0.008	0.679	0.000	0.029	0.001	0.688	1.050	4.8.2
L17	34.5 - 33	0.008	0.687	0.000	0.029	0.001	0.696	1.050	4.8.2
	33 - 29	0.003	0.308	0.000	0.013	0.000	0.312	1.050	4.8.2
L18	33 - 29	0.003	0.302	0.000	0.012	0.000	0.305	1.050	4.8.2
	29 - 28	0.006	0.538	0.000	0.021	0.001	0.544	1.050	4.8.2
L19	28 - 26.875	0.006	0.555	0.000	0.022	0.001	0.561	1.050	4.8.2
	26.875 - 25.75	0.006	0.558	0.000	0.022	0.001	0.565	1.050	4.8.2
	25.75 - 24.625	0.006	0.562	0.000	0.021	0.001	0.569	1.050	4.8.2
	24.625 - 23.5	0.006	0.565	0.000	0.021	0.001	0.572	1.050	4.8.2
L20	23.5 - 23.25	0.006	0.566	0.000	0.021	0.001	0.573	1.050	4.8.2
	(20)								
L21	23.25 - 22.75	0.006	0.567	0.000	0.021	0.001	0.574	1.050	4.8.2
	(21)								
L22	22.75 - 22.5	0.005	0.496	0.000	0.018	0.000	0.501	1.050	4.8.2
	(22)								
L23	22.5 - 21.5	0.006	0.509	0.000	0.019	0.000	0.515	1.050	4.8.2
	21.5 - 20.5	0.006	0.511	0.000	0.019	0.000	0.517	1.050	4.8.2
	20.5 - 19.5	0.006	0.514	0.000	0.019	0.000	0.520	1.050	4.8.2
	19.5 - 18.5	0.006	0.516	0.000	0.019	0.000	0.522	1.050	4.8.2
	18.5 - 17.5	0.006	0.518	0.000	0.019	0.000	0.524	1.050	4.8.2
L24	17.5 - 15.75	0.006	0.534	0.000	0.019	0.000	0.540	1.050	4.8.2
	(24)								
L25	15.75 - 15.5	0.006	0.501	0.000	0.018	0.000	0.507	1.050	4.8.2
	(25)								
L26	15.5 - 14.4167	0.006	0.508	0.000	0.018	0.000	0.514	1.050	4.8.2
	14.4167 - 13.3333	0.006	0.511	0.000	0.018	0.000	0.517	1.050	4.8.2
	13.3333 - 12.25	0.006	0.513	0.000	0.018	0.000	0.519	1.050	4.8.2
L27	12.25 - 12	0.006	0.567	0.000	0.020	0.000	0.574	1.050	4.8.2
	(27)								
L28	12 - 11.75	0.006	0.567	0.000	0.020	0.000	0.574	1.050	4.8.2
	(28)								

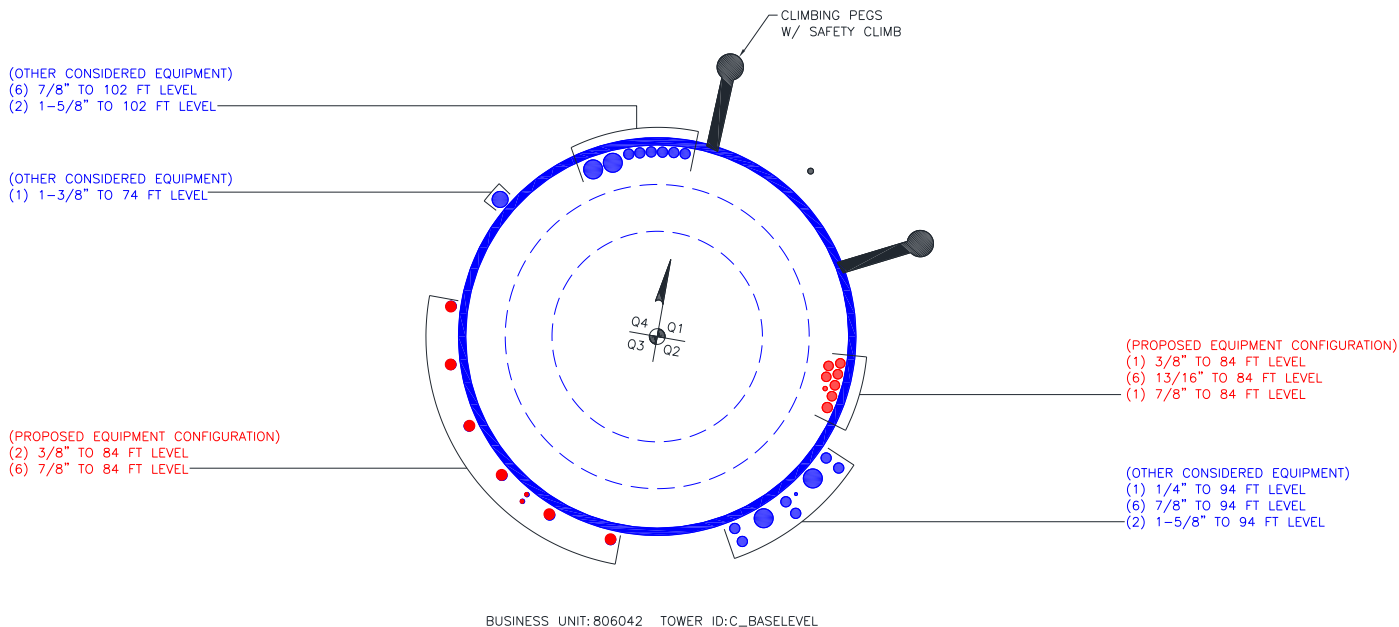
Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u	M_{ux}	M_{uy}	V_u	T_u			
L29	11.75 - 11.5 (29)	0.008	0.704	0.000	0.025	0.001	0.713	1.050	4.8.2
L30	11.5 - 10.5	0.008	0.717	0.000	0.026	0.001	0.726	1.050	4.8.2
	10.5 - 9.5	0.008	0.720	0.000	0.026	0.001	0.729	1.050	4.8.2
	9.5 - 8.5	0.008	0.723	0.000	0.026	0.001	0.732	1.050	4.8.2
	8.5 - 7.5	0.008	0.725	0.000	0.026	0.001	0.734	1.050	4.8.2
	7.5 - 6.5	0.009	0.728	0.000	0.025	0.000	0.737	1.050	4.8.2
L31	6.5 - 6 (31)	0.009	0.729	0.000	0.025	0.000	0.738	1.050	4.8.2
L32	6 - 5.75 (32)	0.008	0.718	0.000	0.025	0.000	0.727	1.050	4.8.2
L33	5.75 - 4.5 (33)	0.008	0.721	0.000	0.025	0.000	0.730	1.050	4.8.2
L34	4.5 - 4.25 (34)	0.008	0.680	0.000	0.023	0.000	0.689	1.050	4.8.2
L35	4.25 - 3 (35)	0.008	0.683	0.000	0.023	0.000	0.691	1.050	4.8.2
L36	3 - 2.75 (36)	0.008	0.683	0.000	0.023	0.000	0.692	1.050	4.8.2
L37	2.75 - 1.75 (37)	0.008	0.685	0.000	0.023	0.000	0.694	1.050	4.8.2
L38	1.75 - 1.5 (38)	0.008	0.706	0.000	0.024	0.000	0.715	1.050	4.8.2
L39	1.5 - 1.25 (39)	0.008	0.707	0.000	0.024	0.000	0.716	1.050	4.8.2
L40	1.25 - 1 (40)	0.008	0.687	0.000	0.023	0.000	0.696	1.050	4.8.2
L41	1 - 0 (41)	0.008	0.689	0.000	0.023	0.000	0.697	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	100 - 95	Pole	TP15.79x15x0.19	1	-4.89	586.37	22.2	Pass
L2	95 - 90	Pole	TP16.59x15.79x0.19	2	-6.08	616.18	37.6	Pass
L3	90 - 85.5	Pole	TP17.3x16.59x0.19	3	-6.31	643.02	49.8	Pass
L4	85.5 - 85.25	Pole	TP17.34x17.3x0.6	4	-6.35	1994.61	16.6	Pass
L5	85.25 - 80.25	Pole	TP18.13x17.34x0.58	5	-10.92	2005.31	25.5	Pass
L6	80.25 - 75.25	Pole	TP18.93x18.13x0.55	6	-11.58	2007.94	33.3	Pass
L7	75.25 - 70.25	Pole	TP19.72x18.93x0.54	7	-15.21	2048.57	41.5	Pass
L8	70.25 - 62.5	Pole	TP20.95x19.72x0.52	8	-15.78	2040.72	48.2	Pass
L9	62.5 - 61.5	Pole	TP20.73x19.94x0.58	9	-17.06	2292.73	51.7	Pass
L10	61.5 - 56.5	Pole	TP21.53x20.73x0.56	10	-17.96	2332.69	58.1	Pass
L11	56.5 - 54.75	Pole	TP21.81x21.53x0.56	11	-18.27	2363.63	59.8	Pass
L12	54.75 - 54.5	Pole	TP21.85x21.81x0.74	12	-18.35	3079.25	46.9	Pass
L13	54.5 - 49.5	Pole	TP22.64x21.85x0.71	13	-19.42	3090.38	51.9	Pass
L14	49.5 - 44.5	Pole	TP23.44x22.64x0.69	14	-20.53	3093.40	56.9	Pass
L15	44.5 - 39.5	Pole	TP24.23x23.44x0.68	15	-21.67	3144.93	60.7	Pass
L16	39.5 - 34.5	Pole	TP25.03x24.23x0.65	16	-22.85	3133.82	65.5	Pass
L17	34.5 - 29	Pole	TP25.9x25.03x0.65	17	-23.20	3164.47	66.2	Pass
L18	29 - 28	Pole	TP25.55x24.76x0.93	18	-25.40	4505.97	51.8	Pass
L19	28 - 23.5	Pole	TP26.27x25.55x0.9	19	-26.76	4515.84	54.5	Pass
L20	23.5 - 23.25	Pole	TP26.31x26.27x0.9	20	-26.87	4522.91	54.5	Pass
L21	23.25 - 22.75	Pole	TP26.39x26.31x0.9	21	-27.04	4537.04	54.7	Pass
L22	22.75 - 22.5	Pole	TP26.43x26.39x1.05	22	-27.15	5270.30	47.8	Pass
L23	22.5 - 17.5	Pole	TP27.22x26.43x1.03	23	-29.06	5310.85	49.9	Pass
L24	17.5 - 15.75	Pole	TP27.5x27.22x1	24	-29.74	5241.21	51.4	Pass
L25	15.75 - 15.5	Pole	TP27.54x27.5x1.08	25	-29.87	5626.80	48.3	Pass
L26	15.5 - 12.25	Pole	TP28.05x27.54x1.06	26	-31.24	5672.45	49.4	Pass
L27	12.25 - 12	Pole	TP28.09x28.05x0.95	27	-31.35	5100.44	54.6	Pass
L28	12 - 11.75	Pole	TP28.13x28.09x0.95	28	-31.45	5107.89	54.7	Pass
L29	11.75 - 11.5	Pole	TP28.17x28.13x0.75	29	-31.55	4068.11	67.9	Pass
L30	11.5 - 6.5	Pole	TP28.97x28.17x0.74	30	-33.45	4117.94	70.2	Pass
L31	6.5 - 6	Pole	TP29.05x28.97x0.74	31	-33.66	4129.52	70.3	Pass
L32	6 - 5.75	Pole	TP29.09x29.05x0.75	32	-33.77	4203.55	69.3	Pass
L33	5.75 - 4.5	Pole	TP29.29x29.09x0.75	33	-34.26	4232.99	69.6	Pass
L34	4.5 - 4.25	Pole	TP29.33x29.29x0.8	34	-34.39	4513.56	65.6	Pass
L35	4.25 - 3	Pole	TP29.52x29.33x0.8	35	-34.89	4544.97	65.9	Pass
L36	3 - 2.75	Pole	TP29.56x29.52x0.8	36	-35.01	4551.25	65.9	Pass
L37	2.75 - 1.75	Pole	TP29.72x29.56x0.8	37	-35.40	4576.37	66.1	Pass
L38	1.75 - 1.5	Pole	TP29.76x29.72x0.78	38	-35.50	4443.27	68.1	Pass
L39	1.5 - 1.25	Pole	TP29.8x29.76x0.78	39	-35.60	4449.36	68.2	Pass
L40	1.25 - 1	Pole	TP29.84x29.8x0.8	40	-35.69	4595.21	66.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L41	1 - 0	Pole	TP30x29.84x0.8	41	-36.02	4620.34	66.4	Pass	
							Summary		
							Pole (L31)	70.3	Pass
							RATING =	70.3	Pass

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	100	37.5	4	12	15	20.95	0.19	Auto	A572-65
2	66.5	37.5	4	12	19.94	25.9	0.25	Auto	A572-65
3	33	33	0	12	24.76	30	0.25	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	1.75	54.75	channel	MP3-06 (1.1875")	2	o				o							
2	1.75	15.75	channel	MP3-06 (1.1875")	1								o				
3	11.75	54.75	channel	MP3-06 (1.1875")	1									o			
4	0	1.75	plate	FP 1.25 x 2.75_1	5	c			c			c	c				c
5	12.25	32.75	channel	MP3-05 (1.1875")	1			o									
6	4.5	29.75	channel	MP3-05 (1.1875")	2							o				o	
7	54.75	85.5	channel	MP3-05 (1.1875")	3	o				o				o			
8	1.25	4.5	plate	FP 1.25 x 4.5_1	2						c				c		
9	1.25	3	plate	FP 1.25 x 4.5_1	1		c										
10	3	22.75	plate	6.5 x 1.25; (1) (1.1875)	1		o										
11	6	23.5	plate	FP 6 x 1; (1) (1.1875)	2						o						o
12	0	6	plate	FP 1.25 x 7.375_1	2						o						o
13	0	1.25	solid round	Round; (2.25 Max); (2	3		c				c				c		
14																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in ²)	Bolt Hole Size (in)	Reinforcement Material
1	6.89	2.61	8.47	0.93	PC 8.8 - M20 (100)	41	PC 8.8 - M20 (100)	41.000	24.000	7.670	1.1875	A572-65
2	6.89	2.61	8.47	0.93	PC 8.8 - M20 (100)	41	PC 8.8 - M20 (100)	41.000	24.000	7.670	1.1875	A572-65
3	6.89	2.61	8.47	0.93	PC 8.8 - M20 (100)	41	PC 8.8 - M20 (100)	41.000	24.000	7.670	1.1875	A572-65
4	1.25	2.75	3.4375	1.375	None	n/a	None	n/a	0.000	3.438	0.0000	A572-65
5	5.33	2.09	5.65	0.79	PC 8.8 - M20 (100)	29	PC 8.8 - M20 (100)	29.000	18.000	5.025	1.1875	A572-65
6	5.33	2.09	5.65	0.79	PC 8.8 - M20 (100)	29	PC 8.8 - M20 (100)	29.000	18.000	5.025	1.1875	A572-65
7	5.33	2.09	5.65	0.79	PC 8.8 - M20 (100)	29	PC 8.8 - M20 (100)	29.000	18.000	5.025	1.1875	A572-65
8	1.25	4.5	5.625	2.25	None	n/a	None	n/a	0.000	5.625	0.0000	A572-65
9	1.25	4.5	5.625	2.25	None	n/a	None	n/a	0.000	5.625	0.0000	A572-65
10	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.250	6.563	1.1875	A572-65
11	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.375	4.750	1.1875	A572-65
12	1.25	7.375	9.21875	3.6875	None	n/a	None	n/a	0.000	9.219	0.0000	A572-65
13	-	-	3.97608	6.875	Capacity Input	n/a	Capacity Input	n/a	0.000	3.976	0.0000	A193 Gr B7

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
FP 1.25 x 2.75_1	Top	-	-	-	-	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-
FP 1.25 x 4.5_1	Top	-	-	-	-	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-
FP 6.5 x 1.25; (1) (1.1875)_1	Top	11	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	11	N	3	3	-	-	-	-	-	-	-	-	-
FP 6 x 1; (1) (1.1875)_1	Top	8	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	8	N	3	3	-	-	-	-	-	-	-	-	-
FP 1.25 x 7.375_1	Top	-	-	-	-	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-
2.25 Solid Round; (2.25 Max); (2.25	Top	-	-	-	-	-	-	-	-	-	-	-	-	325
	Bottom	-	-	-	-	-	-	-	-	-	-	-	-	325

TNX Geometry Input

Increment (ft): [Export to TNX](#)

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	100 - 95	5		12	15.000	15.793	0.19	A572-65	1.000
2	95 - 90	5		12	15.793	16.587	0.19	A572-65	1.000
3	90 - 85.5	4.5		12	16.587	17.301	0.19	A572-65	1.000
4	85.5 - 85.25	0.25		12	17.301	17.340	0.6025	A572-65	0.846
5	85.25 - 80.25	5		12	17.340	18.134	0.5775	A572-65	0.856
6	80.25 - 75.25	5		12	18.134	18.927	0.5525	A572-65	0.870
7	75.25 - 70.25	5		12	18.927	19.720	0.54	A572-65	0.867
8	70.25 - 66.5	7.75	4	12	19.720	20.950	0.52125	A572-65	0.882
9	66.5 - 61.5	5		12	19.940	20.735	0.575	A572-65	0.897
10	61.5 - 56.5	5		12	20.735	21.529	0.5625	A572-65	0.898
11	56.5 - 54.75	1.75		12	21.529	21.807	0.5625	A572-65	0.892
12	54.75 - 54.5	0.25		12	21.807	21.847	0.7375	A572-65	0.854
13	54.5 - 49.5	5		12	21.847	22.642	0.7125	A572-65	0.864
14	49.5 - 44.5	5		12	22.642	23.437	0.6875	A572-65	0.876
15	44.5 - 39.5	5		12	23.437	24.231	0.675	A572-65	0.874
16	39.5 - 34.5	5		12	24.231	25.026	0.65	A572-65	0.890
17	34.5 - 33	5.5	4	12	25.026	25.900	0.65	A572-65	0.885
18	33 - 28	5		12	24.760	25.554	0.925	A572-65	0.856
19	28 - 23.5	4.5		12	25.554	26.268	0.9	A572-65	0.862
20	23.5 - 23.25	0.25		12	26.268	26.308	0.9	A572-65	1.024
21	23.25 - 22.75	0.5		12	26.308	26.388	0.9	A572-65	1.022
22	22.75 - 22.5	0.25		12	26.388	26.427	1.05	A572-65	0.975
23	22.5 - 17.5	5		12	26.427	27.221	1.025	A572-65	0.975
24	17.5 - 15.75	1.75		12	27.221	27.499	1	A572-65	0.990
25	15.75 - 15.5	0.25		12	27.499	27.539	1.075	A572-65	1.015
26	15.5 - 12.25	3.25		12	27.539	28.055	1.0625	A572-65	1.012
27	12.25 - 12	0.25		12	28.055	28.095	0.95	A572-65	1.058
28	12 - 11.75	0.25		12	28.095	28.134	0.95	A572-65	1.056
29	11.75 - 11.5	0.25		12	28.134	28.174	0.75	A572-65	1.199
30	11.5 - 6.5	5		12	28.174	28.968	0.7375	A572-65	1.194
31	6.5 - 6	0.5		12	28.968	29.047	0.7375	A572-65	1.191
32	6 - 5.75	0.25		12	29.047	29.087	0.75	A572-65	1.265
33	5.75 - 4.5	1.25		12	29.087	29.285	0.75	A572-65	1.259
34	4.5 - 4.25	0.25		12	29.285	29.325	0.8	A572-65	1.180
35	4.25 - 3	1.25		12	29.325	29.524	0.8	A572-65	1.174
36	3 - 2.75	0.25		12	29.524	29.563	0.8	A572-65	1.139
37	2.75 - 1.75	1		12	29.563	29.722	0.8	A572-65	1.135
38	1.75 - 1.5	0.25		12	29.722	29.762	0.775	A572-65	1.055
39	1.5 - 1.25	0.25		12	29.762	29.802	0.775	A572-65	1.054
40	1.25 - 1	0.25		12	29.802	29.841	0.8	A572-65	0.955
41	1 - 0	1		12	29.841	30.000	0.8	A572-65	0.951

TNX Section Forces

Increment (ft):		TNX Output			
	5	Section Height (ft)	P _u (K)	M _{ux} (kip-ft)	V _u (K)
1		100 - 95	4.89	49.36	7.29
2		95 - 90	6.08	92.50	8.73
3		90 - 85.5	6.31	132.86	9.22
4		85.5 - 85.25	6.35	135.17	9.26
5		85.25 - 80.25	10.92	219.60	16.22
6		80.25 - 75.25	11.58	302.40	16.92
7		75.25 - 70.25	15.21	401.65	21.09
8		70.25 - 66.5	15.78	481.64	21.60
9		66.5 - 61.5	17.06	591.59	22.39
10		61.5 - 56.5	17.96	705.12	23.06
11		56.5 - 54.75	18.27	745.66	23.31
12		54.75 - 54.5	18.35	751.49	23.33
13		54.5 - 49.5	19.42	869.85	24.05
14		49.5 - 44.5	20.53	991.72	24.74
15		44.5 - 39.5	21.67	1116.99	25.41
16		39.5 - 34.5	22.85	1245.52	26.05
17		34.5 - 33	23.20	1284.71	26.25
18		33 - 28	25.40	1417.88	27.04
19		28 - 23.5	26.76	1540.92	27.69
20		23.5 - 23.25	26.87	1547.84	27.71
21		23.25 - 22.75	27.04	1561.71	27.78
22		22.75 - 22.5	27.15	1568.66	27.81
23		22.5 - 17.5	29.06	1709.49	28.54
24		17.5 - 15.75	29.74	1759.62	28.80
25		15.75 - 15.5	29.87	1766.82	28.81
26		15.5 - 12.25	31.24	1861.15	29.27
27		12.25 - 12	31.35	1868.47	29.29
28		12 - 11.75	31.45	1875.79	29.32
29		11.75 - 11.5	31.55	1883.12	29.35
30		11.5 - 6.5	33.45	2031.39	29.98
31		6.5 - 6	33.66	2046.38	30.03
32		6 - 5.75	33.77	2053.89	30.05
33		5.75 - 4.5	34.26	2091.54	30.23
34		4.5 - 4.25	34.39	2099.09	30.23
35		4.25 - 3	34.89	2136.96	30.40
36		3 - 2.75	35.01	2144.56	30.40
37		2.75 - 1.75	35.40	2175.01	30.53
38		1.75 - 1.5	35.50	2182.63	30.53
39		1.5 - 1.25	35.60	2190.26	30.53
40		1.25 - 1	35.69	2197.90	30.54
41		1 - 0	36.02	2228.45	30.60

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
100 - 95	Pole	TP15.793x15x0.19	Pole	22.1%	Pass
95 - 90	Pole	TP16.587x15.793x0.19	Pole	37.5%	Pass
90 - 85.5	Pole	TP17.301x16.587x0.19	Pole	49.7%	Pass
85.5 - 85.25	Pole + Reinf.	TP17.34x17.301x0.6025	Reinf. 7 Tension Rupture	24.7%	Pass
85.25 - 80.25	Pole + Reinf.	TP18.134x17.34x0.5775	Reinf. 7 Tension Rupture	37.9%	Pass
80.25 - 75.25	Pole + Reinf.	TP18.927x18.134x0.5525	Reinf. 7 Tension Rupture	49.1%	Pass
75.25 - 70.25	Pole + Reinf.	TP19.72x18.927x0.54	Reinf. 7 Tension Rupture	61.7%	Pass
70.25 - 66.5	Pole + Reinf.	TP20.95x19.72x0.5213	Reinf. 7 Tension Rupture	70.9%	Pass
66.5 - 61.5	Pole + Reinf.	TP20.735x19.94x0.575	Reinf. 7 Tension Rupture	75.6%	Pass
61.5 - 56.5	Pole + Reinf.	TP21.529x20.735x0.5625	Reinf. 7 Tension Rupture	85.2%	Pass
56.5 - 54.75	Pole + Reinf.	TP21.807x21.529x0.5625	Reinf. 7 Tension Rupture	88.4%	Pass
54.75 - 54.5	Pole + Reinf.	TP21.847x21.807x0.7375	Reinf. 3 Tension Rupture	68.2%	Pass
54.5 - 49.5	Pole + Reinf.	TP22.642x21.847x0.7125	Reinf. 3 Tension Rupture	75.2%	Pass
49.5 - 44.5	Pole + Reinf.	TP23.437x22.642x0.6875	Reinf. 3 Tension Rupture	81.8%	Pass
44.5 - 39.5	Pole + Reinf.	TP24.231x23.437x0.675	Reinf. 3 Tension Rupture	87.9%	Pass
39.5 - 34.5	Pole + Reinf.	TP25.026x24.231x0.65	Reinf. 3 Tension Rupture	93.7%	Pass
34.5 - 33	Pole + Reinf.	TP25.9x25.026x0.65	Reinf. 3 Tension Rupture	95.4%	Pass
33 - 28	Pole + Reinf.	TP25.554x24.76x0.925	Reinf. 5 Tension Rupture	75.8%	Pass
28 - 23.5	Pole + Reinf.	TP26.268x25.554x0.9	Reinf. 5 Tension Rupture	79.6%	Pass
23.5 - 23.25	Pole + Reinf.	TP26.308x26.268x0.9	Reinf. 5 Tension Rupture	79.2%	Pass
23.25 - 22.75	Pole + Reinf.	TP26.388x26.308x0.9	Reinf. 5 Tension Rupture	79.6%	Pass
22.75 - 22.5	Pole + Reinf.	TP26.427x26.388x1.05	Reinf. 3 Tension Rupture	73.0%	Pass
22.5 - 17.5	Pole + Reinf.	TP27.221x26.427x1.025	Reinf. 3 Tension Rupture	76.7%	Pass
17.5 - 15.75	Pole + Reinf.	TP27.499x27.221x1	Reinf. 3 Tension Rupture	77.9%	Pass
15.75 - 15.5	Pole + Reinf.	TP27.539x27.499x1.075	Reinf. 6 Tension Rupture	68.1%	Pass
15.5 - 12.25	Pole + Reinf.	TP28.055x27.539x1.0625	Reinf. 6 Tension Rupture	70.2%	Pass
12.25 - 12	Pole + Reinf.	TP28.095x28.055x0.95	Reinf. 1 Tension Rupture	78.2%	Pass
12 - 11.75	Pole + Reinf.	TP28.134x28.095x0.95	Reinf. 1 Tension Rupture	78.3%	Pass
11.75 - 11.5	Pole + Reinf.	TP28.174x28.134x0.75	Reinf. 6 Tension Rupture	90.5%	Pass
11.5 - 6.5	Pole + Reinf.	TP28.968x28.174x0.7375	Reinf. 6 Tension Rupture	94.0%	Pass
6.5 - 6	Pole + Reinf.	TP29.047x28.968x0.7375	Reinf. 6 Tension Rupture	94.4%	Pass
6 - 5.75	Pole + Reinf.	TP29.087x29.047x0.75	Reinf. 10 Tension Rupture	87.5%	Pass
5.75 - 4.5	Pole + Reinf.	TP29.285x29.087x0.75	Reinf. 10 Tension Rupture	88.3%	Pass
4.5 - 4.25	Pole + Reinf.	TP29.325x29.285x0.8	Reinf. 8 Tension Yield	88.4%	Pass
4.25 - 3	Pole + Reinf.	TP29.524x29.325x0.8	Reinf. 8 Tension Yield	89.2%	Pass
3 - 2.75	Pole + Reinf.	TP29.563x29.524x0.8	Reinf. 9 Tension Yield	90.6%	Pass
2.75 - 1.75	Pole + Reinf.	TP29.722x29.563x0.8	Reinf. 9 Tension Yield	91.3%	Pass
1.75 - 1.5	Pole + Reinf.	TP29.762x29.722x0.775	Reinf. 9 Tension Yield	96.7%	Pass
1.5 - 1.25	Pole + Reinf.	TP29.802x29.762x0.775	Reinf. 9 Tension Yield	96.8%	Pass
1.25 - 1	Pole + Reinf.	TP29.841x29.802x0.8	Reinf. 4 Tension Yield	87.8%	Pass
1 - 0	Pole + Reinf.	TP30x29.841x0.8	Reinf. 4 Tension Yield	88.5%	Pass
				Summary	
			Pole	80.2%	Pass
			Reinforcement	96.8%	Pass
			Overall	96.8%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity*														
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	
100 - 95	297	n/a	297	9.53	n/a	9.53	22.1%														
95 - 90	345	n/a	345	10.02	n/a	10.02	37.5%														
90 - 85.5	392	n/a	392	10.45	n/a	10.45	49.7%														
85.5 - 85.25	394	769	1164	10.48	16.95	27.43	16.5%							24.7%							
85.25 - 80.25	452	834	1286	10.96	16.95	27.91	25.8%							37.9%							
80.25 - 75.25	514	902	1416	11.45	16.95	28.40	34.1%							49.1%							
75.25 - 70.25	583	972	1555	11.93	16.95	28.88	43.6%							61.7%							
70.25 - 66.5	637	1027	1664	12.30	16.95	29.25	50.8%							70.9%							
66.5 - 61.5	884	1066	1950	16.47	16.95	33.42	49.7%							75.6%							
61.5 - 56.5	991	1142	2134	17.11	16.95	34.06	56.7%							85.2%							
56.5 - 54.75	1031	1170	2200	17.33	16.95	34.28	59.1%							88.4%							
54.75 - 54.5	1036	1811	2847	17.36	25.41	42.77	46.2%	68.2%		68.2%											
54.5 - 49.5	1155	1932	3088	18.00	25.41	43.41	51.6%	75.2%		75.2%											
49.5 - 44.5	1283	2058	3341	18.64	25.41	44.05	56.9%	81.8%		81.8%											
44.5 - 39.5	1419	2188	3607	19.28	25.41	44.69	62.1%	87.9%		87.9%											
39.5 - 34.5	1565	2322	3886	19.92	25.41	45.33	67.1%	93.7%		93.7%											
34.5 - 33	1610	2362	3973	20.11	25.41	45.52	68.6%	95.4%		95.4%											
33 - 28	1667	3983	5650	20.34	42.36	62.70	54.1%	74.8%		74.8%		75.8%	75.8%								
28 - 23.5	1812	4193	6005	20.91	42.36	63.27	57.5%	78.5%		78.5%		79.6%	79.6%								
23.5 - 23.25	1821	4240	6061	20.95	54.36	75.31	57.2%	64.0%		78.1%		79.2%	64.9%						62.2%		
23.25 - 22.75	1837	4264	6101	21.01	54.36	75.37	57.6%	64.3%		78.5%		79.6%	65.2%						62.5%		
22.75 - 22.5	1871	5220	7091	21.04	62.49	83.53	55.0%	62.4%		73.0%		63.4%	65.9%					59.5%	63.0%		
22.5 - 17.5	2046	5515	7561	21.68	62.49	84.17	58.5%	65.6%		76.7%		66.7%	69.3%					62.6%	66.3%		
17.5 - 15.75	2110	5620	7730	21.90	62.49	84.39	59.8%	66.6%		77.9%		67.8%	70.4%					63.7%	67.5%		
15.75 - 15.5	2091	6175	8266	21.94	70.96	92.89	52.7%	67.3%	53.5%	62.8%		64.2%	68.1%					58.0%	64.2%		
15.5 - 12.25	2212	6393	8605	22.35	70.96	93.31	54.8%	69.3%	55.2%	64.7%		66.2%	70.2%					59.8%	66.1%		
12.25 - 12	2232	5646	7878	22.38	65.31	87.69	63.2%	78.2%	58.9%	70.4%			72.0%					73.2%	69.3%		
12 - 11.75	2242	5661	7903	22.41	65.31	87.72	63.4%	78.3%	59.1%	70.6%			72.2%					73.3%	69.4%		
11.75 - 11.5	2244	4186	6430	22.45	56.84	79.28	75.7%	84.1%	83.0%				90.5%					83.1%	72.3%		
11.5 - 6.5	2441	4408	6849	23.08	56.84	79.92	79.8%	87.4%	86.3%				94.0%					86.6%	75.4%		
6.5 - 6	2461	4431	6892	23.15	56.84	79.98	80.2%	87.8%	86.7%				94.4%					86.9%	75.7%		
6 - 5.75	2472	4629	7101	23.18	63.27	86.45	77.1%	77.0%	87.1%				82.8%					87.5%		58.6%	
5.75 - 4.5	2523	4688	7211	23.34	63.27	86.61	78.1%	77.7%	87.9%				83.7%					88.3%		59.1%	
4.5 - 4.25	2534	5096	7630	23.37	63.22	86.59	76.7%	71.3%	84.7%					88.4%				86.8%		55.9%	
4.25 - 3	2586	5158	7743	23.53	63.22	86.75	77.7%	72.0%	85.5%					89.2%				87.6%		56.4%	
3 - 2.75	2593	5255	7847	23.56	60.72	84.29	73.9%	68.9%	83.7%						85.7%	90.6%				57.1%	
2.75 - 1.75	2635	5306	7941	23.69	60.72	84.41	74.6%	69.5%	84.3%						86.3%	91.3%				57.6%	
1.75 - 1.5	2645	5074	7719	23.72	52.50	76.22	77.3%				92.0%				89.5%	96.7%				61.0%	
1.5 - 1.25	2655	5087	7742	23.75	52.50	76.25	77.5%				92.2%				89.7%	96.8%				61.1%	
1.25 - 1	2666	5416	8082	23.79	47.55	71.34	73.7%				87.8%									58.7%	83.4%
1 - 0	2709	5462	8171	23.91	47.55	71.47	74.5%				88.5%									59.2%	84.0%

Note: Section capacity checked assuming all reinforcements are effective and using 5 degree increments.
Rating per TIA-222-H Section 15.5.

Base Plate FEA Results & Discussion

Analysis Software Information: ANSYS, Inc. Products Release 19.R2

RESULTS SUMMARY

ELEMENT	MATERIAL	DESIGNATION
Base Plate	Gr. 60	Sufficient

ANALYSIS APPROACH

Finite Element Analysis

This analysis has been completed by means of computer based finite element analysis (FEA). To establish the basic behavior of the connection, a finite element model (FEM) was developed with elastic material properties. If results of the elastic analysis prove to be unsatisfactory, the connection will be further analyzed with plastic (non-linear) material properties to allow for stress redistribution.

Loading

The loading applied to the connection has been done by means of three applied loads: Axial, Shear, and Moment. All loads are calculated through tnxTower. The value of the moment has been adjusted to account for the moment induced by the shear component. The applied loads within the model are a set distance from the base plate. Loading has been applied in a direction that results in the highest stresses in the connection. The applied moment has been increased by a factor of 1.11 to consider a Phi equal to 0.9.

Loading Direction:

Eight loading directions were considered in this analysis:

D1-D8) Load applied every 45° around the base plate, with the 0° datum chosen to ensure load into the corners of the base plate is considered.

Modeling Notes

- All welded surfaces have been modeled using bonded contact definitions.
- All non-welded surfaces in contact have been conservatively modeled with frictionless contact definitions.
- The bolts have been modeled using deformable ANSYS one-dimensional beam elements.
- All other structural members are modeled as ANSYS two-dimensional shell elements or three-dimensional solid elements.
- The base plate is appropriately constrained at the anchor rod locations. A compression constraint is applied to the underside of the base plate to allow for proper bending.
- The load is applied at the top of the pole section. The length of the pole section modeled is chosen to allow for proper flexural behavior of the connection.

PJF Project:	37522-0071.001.7805
Engineer:	RMF
Date:	3/1/2022
Site Number:	806042
Site Name:	BOS ASHLAND 959026
Work Order Number:	2047354
Order Number:	586235 Rev 0

Load Conversions For ANSYS Input (Version v1.6 - Effective Date 08/11/2020)

Analysis Levels:

Loading					
#	Elevation (ft)	Offset (in)	Load Type	Load From TNX (kip, kip-ft)	Load To ANSYS (lb, lb-in)
1	0.00	348.00	Moment ¹	2228.45	19,063,866.67
			Axial	36.02	36,020.00
			Shear	30.60	30,600.00

Axial/Shear Resultant: 47263.10

1. Moment accounts for $\Phi=0.9$ as well as inherent moment caused by the shear load being applied at an offset.

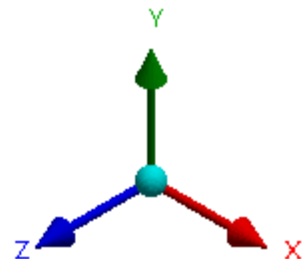
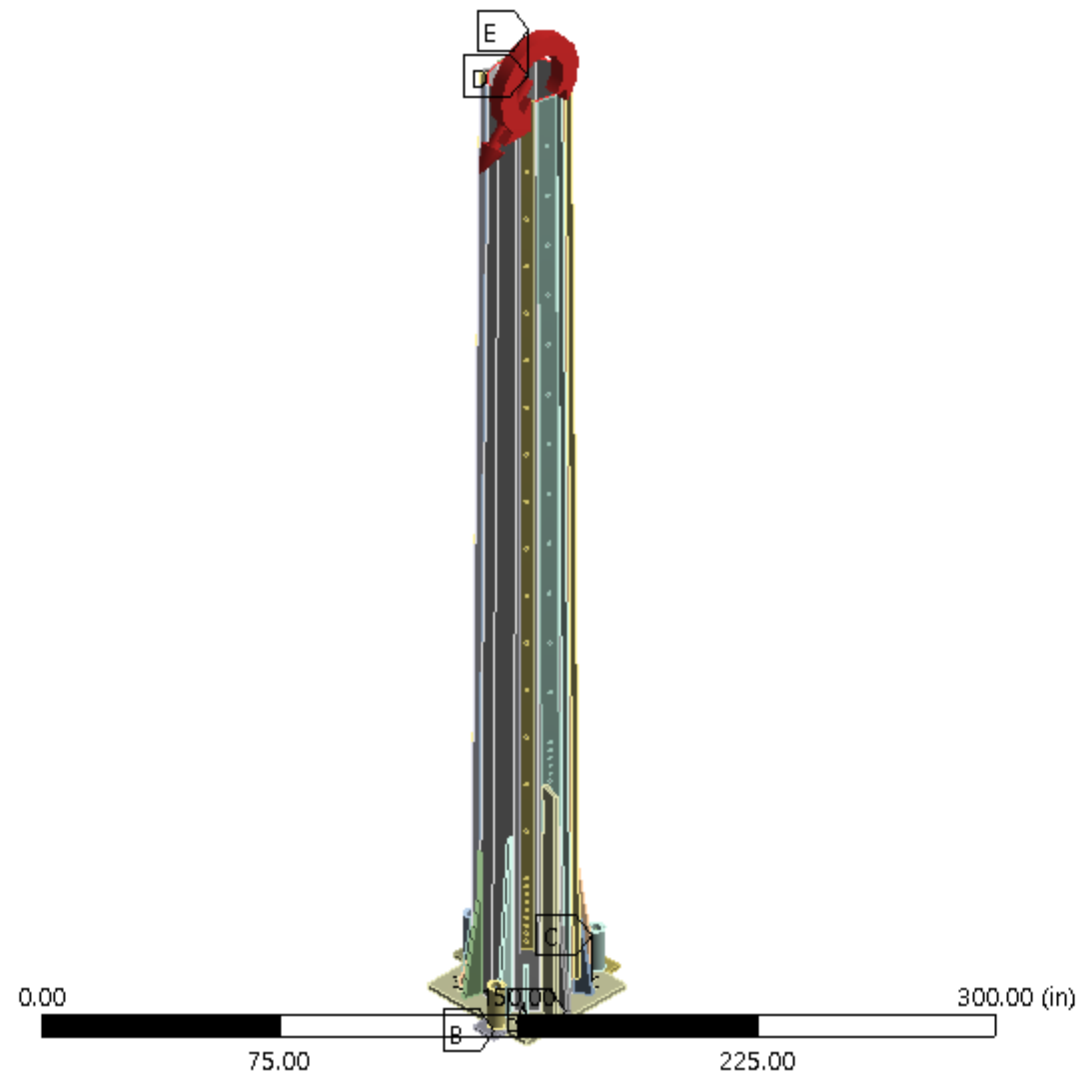
B: 0

0

Time: 1. s

3/1/2022 2:56 PM

- A** Compression Only Support
- B** Compression Only Support 2
- C** Fixed Support
- D** Moment: $1.9064e+007$ lbf-in
- E** Remote Force: 47263 lbf



E: 225

Base Plate

Type: Equivalent (von-Mises) Stress

Unit: psi

Time: 1

3/1/2022 2:57 PM

65389 Max

60000

52500

45000

37500

30000

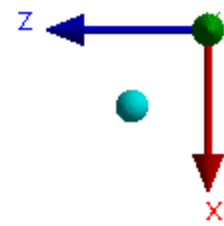
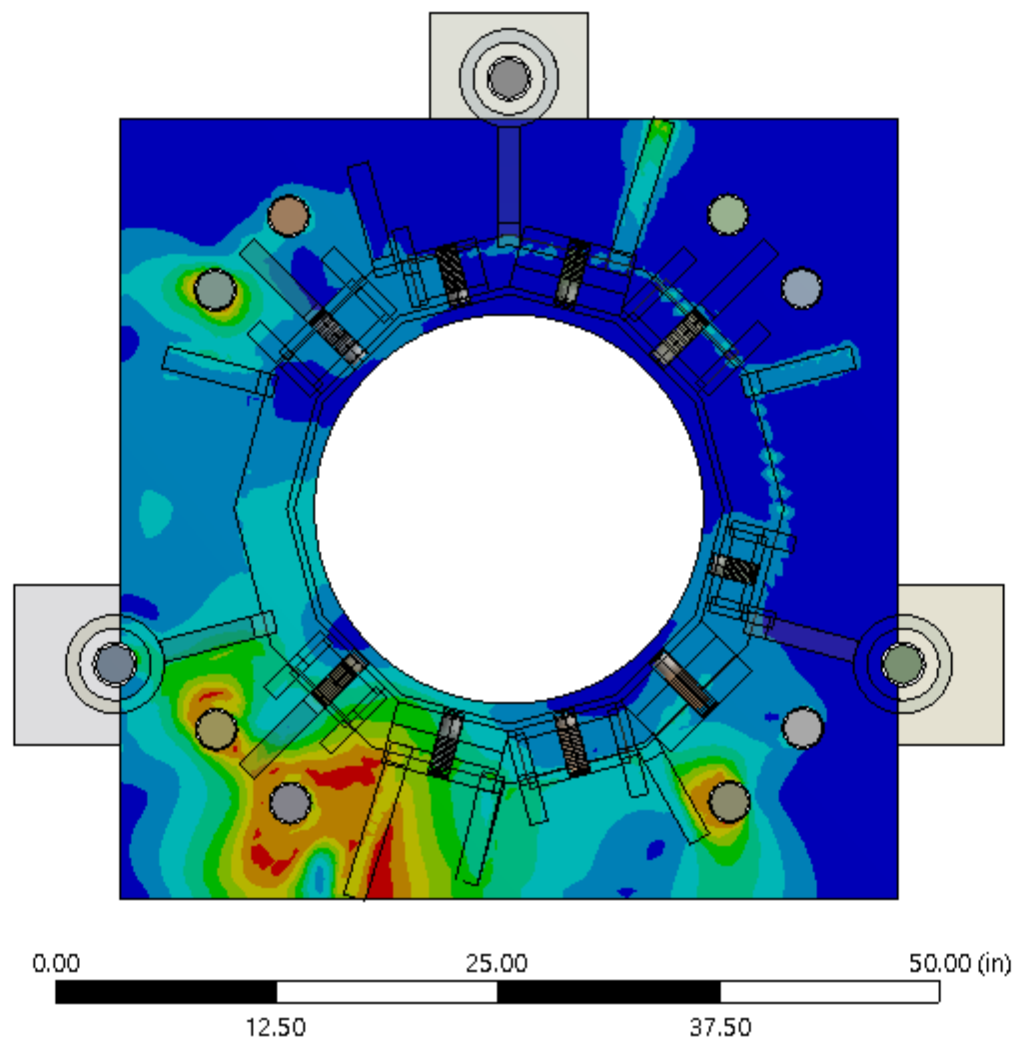
22500

15000

7500

4.6088 Min

0



F: 270

Base Plate

Type: Equivalent (von-Mises) Stress

Unit: psi

Time: 1

3/1/2022 2:58 PM

65484 Max

60000

52500

45000

37500

30000

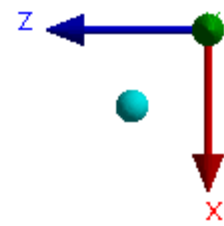
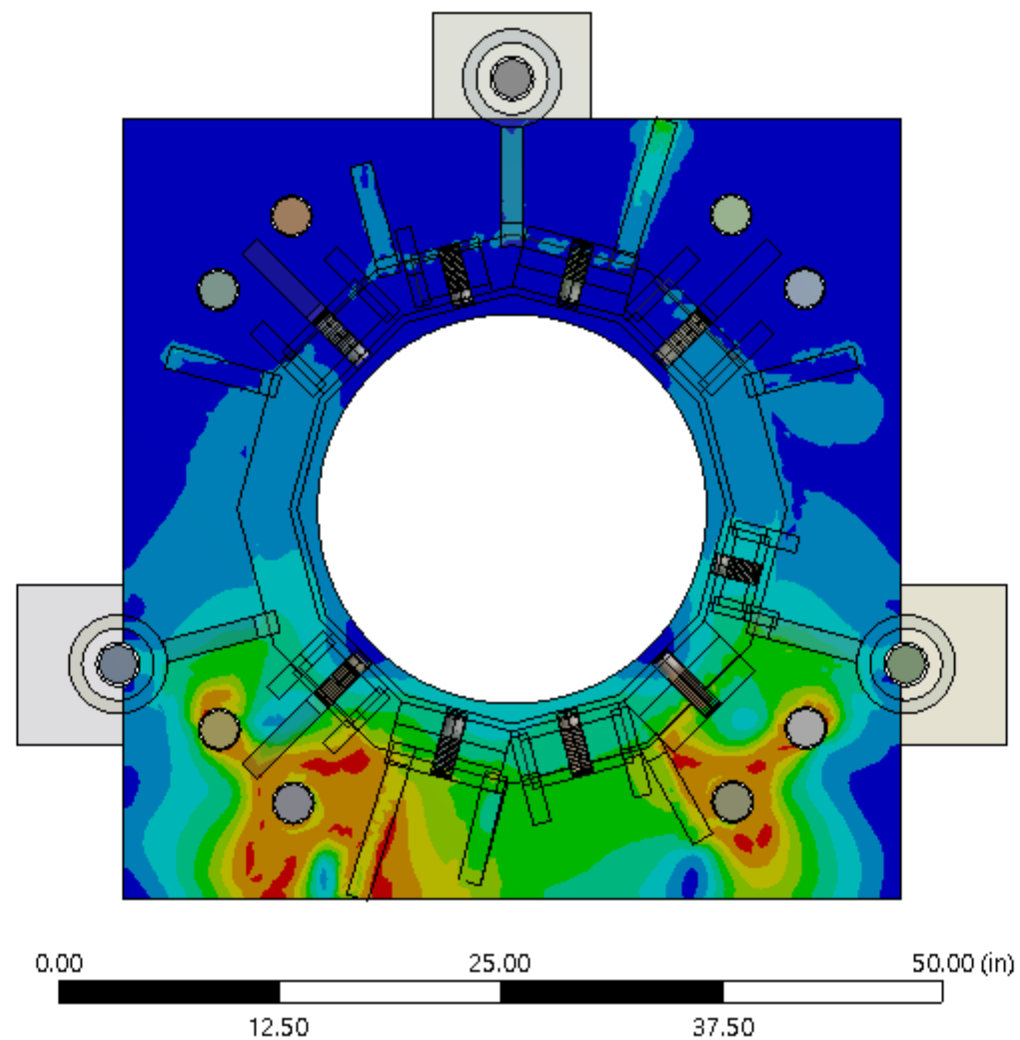
22500

15000

7500

2.3007 Min

0



G: 315

Base Plate

Type: Equivalent (von-Mises) Stress

Unit: psi

Time: 1

3/1/2022 2:58 PM

64093 Max

60000

52500

45000

37500

30000

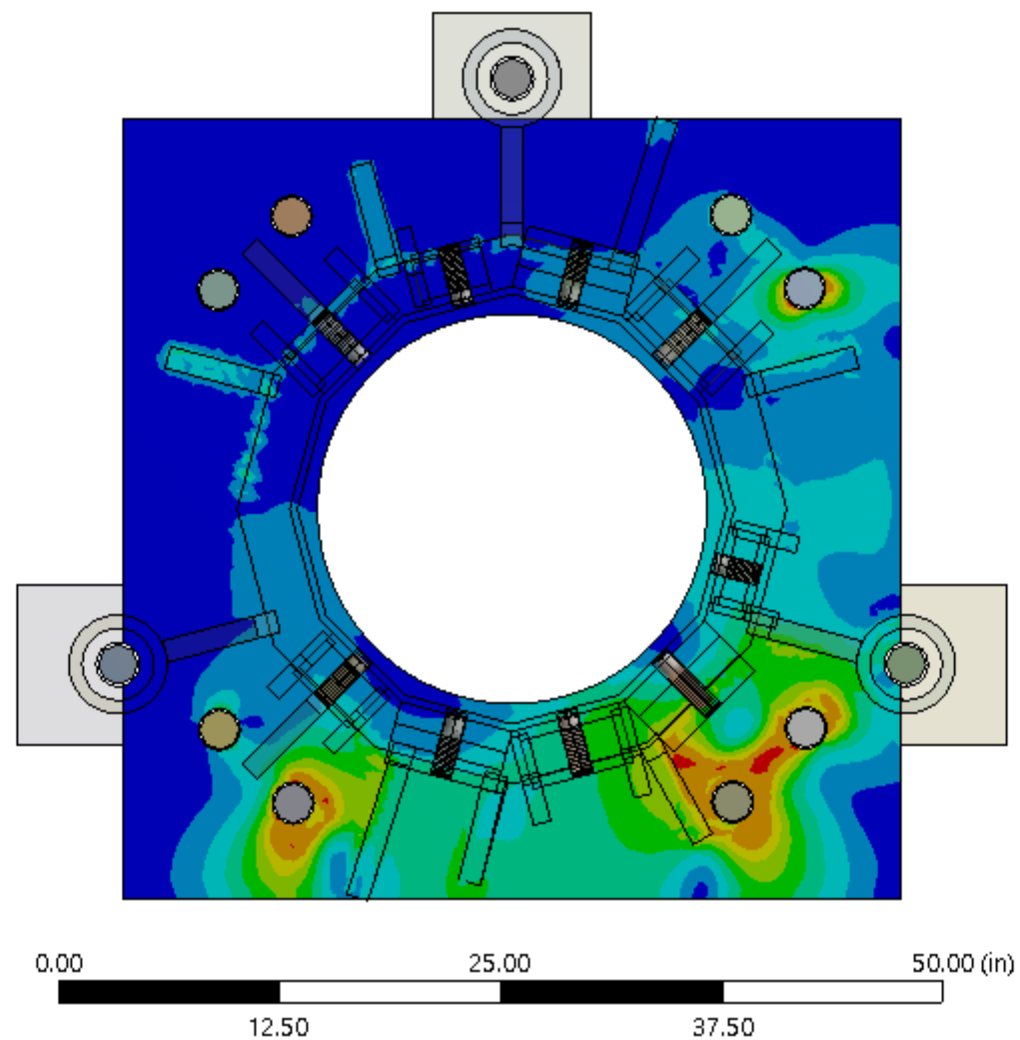
22500

15000

7500

3.2838 Min

0



Monopole Base Plate Connection

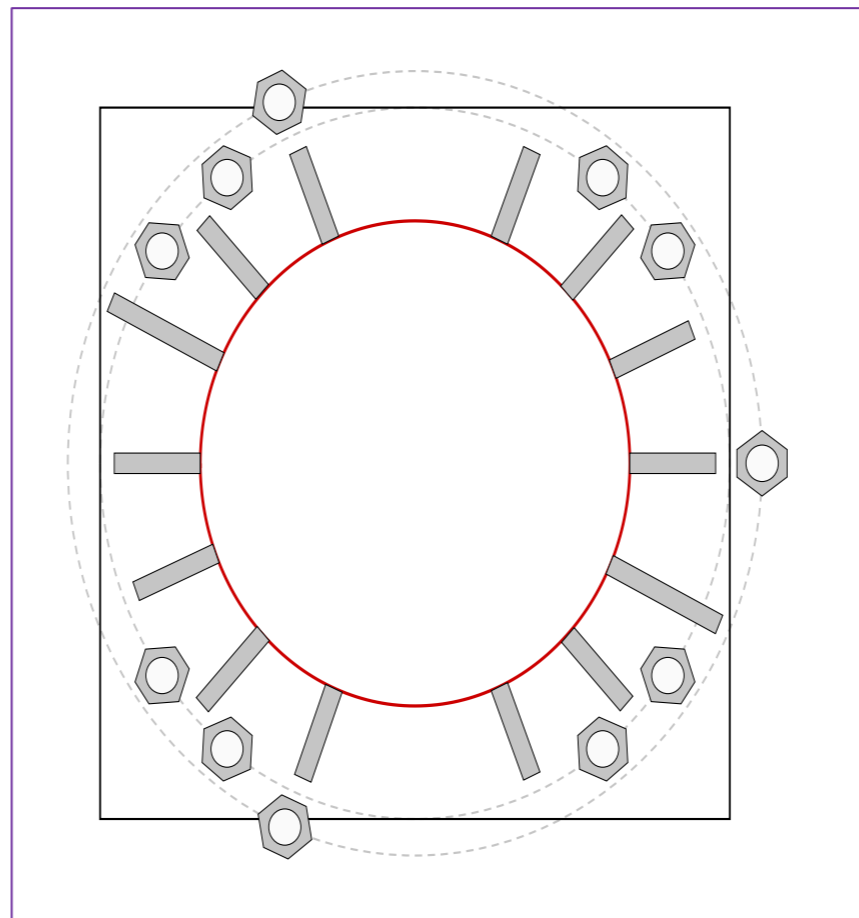


Site Info	
BU #	806042
Site Name	BOS ASHLAND 959026
Order #	586235 REV 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	Yes
l_{ar} (in)	1.75

Applied Loads	
Moment (kip-ft)	2228.45
Axial Force (kips)	36.02
Shear Force (kips)	30.60

*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results																																													
<p>Anchor Rod Data</p> <p>GROUP 1: (8) 2-1/4" ϕ bolts (A615-75 X; $F_y=75$ ksi, $F_u=100$ ksi) on 44" BC Anchor Spacing: 6.428 in</p> <p>GROUP 2: (3) 2-1/4" ϕ bolts (F1554-105 X; $F_y=105$ ksi, $F_u=125$ ksi) on 48.5" BC</p> <p>Base Plate Data</p> <p>44" W x 2" Plate (A572-60; $F_y=60$ ksi, $F_u=75$ ksi); Clip: 0 in</p> <p>Stiffener Data</p> <p>Group 1: (4) 18"H x 6"W x 1.25"T, Notch: 0.75" plate: $F_y=50$ ksi ; weld: $F_y=70$ ksi horiz. weld: 0.5" groove, 45° dbl bevel, 0.5" fillet vert. weld: 0.3125" fillet</p> <p>Group 2: (3) 54"H x 6"W x 1.25"T, Notch: 0.75" plate: $F_y=50$ ksi ; weld: $F_y=70$ ksi horiz. weld: 0.5" groove, 45° dbl bevel, 0.5" fillet vert. weld: 0.3125" fillet</p> <p>Group 3: (2) 36"H x 6"W x 1.25"T, Notch: 0.75" plate: $F_y=50$ ksi ; weld: $F_y=70$ ksi horiz. weld: 0.5" groove, 45° dbl bevel, 0.5" fillet vert. weld: 0.3125" fillet</p> <p>Group 4: (3) 48"H x 6"W x 1.25"T, Notch: 0.75" plate: $F_y=50$ ksi ; weld: $F_y=80$ ksi horiz. weld: 0.625" groove, 45° dbl bevel, 0.625" fillet vert. weld: 0.707" fillet</p> <p>Group 5: (2) 87"H x 8.4375"W x 1.25"T, Notch: 0.75" plate: $F_y=50$ ksi ; weld: $F_y=80$ ksi horiz. weld: 0.625" groove, 45° dbl bevel, 0.625" fillet vert. weld: 0.375" fillet</p> <p>Pole Data</p> <p>30" x 0.8" 12-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)</p>	<p>Anchor Rod Summary (units of kips, kip-in)</p> <p>GROUP 1:</p> <table border="0"> <tr> <td>$P_{u,t} = 212.17$</td> <td>$\phi P_{n,t} = 243.75$</td> <td>Stress Rating</td> </tr> <tr> <td>$V_u = 3.82$</td> <td>$\phi V_n = 149.1$</td> <td>82.9%</td> </tr> <tr> <td>$M_u = n/a$</td> <td>$\phi M_n = n/a$</td> <td>Pass</td> </tr> </table> <p>GROUP 2:</p> <table border="0"> <tr> <td>$P_{u,t} = 235.38$</td> <td>$\phi P_{n,t} = 304.69$</td> <td>Stress Rating</td> </tr> <tr> <td>$V_u = 0$</td> <td>$\phi V_n = 186.38$</td> <td>73.6%</td> </tr> <tr> <td>$M_u = n/a$</td> <td>$\phi M_n = n/a$</td> <td>Pass</td> </tr> </table> <p>Base Plate Summary</p> <table border="0"> <tr> <td>Max Stress (ksi):</td> <td>109.97</td> <td>(Flexural)</td> </tr> <tr> <td>Allowable Stress (ksi):</td> <td>54</td> <td></td> </tr> <tr> <td>Stress Rating:</td> <td>See FEA Output</td> <td>Acceptable</td> </tr> </table> <p>Stiffener Summary</p> <table border="0"> <tr> <td>Horizontal Weld:</td> <td>53.6%</td> <td>Pass</td> </tr> <tr> <td>Vertical Weld:</td> <td>42.8%</td> <td>Pass</td> </tr> <tr> <td>Plate Flexure+Shear:</td> <td>7.1%</td> <td>Pass</td> </tr> <tr> <td>Plate Tension+Shear:</td> <td>32.4%</td> <td>Pass</td> </tr> <tr> <td>Plate Compression:</td> <td>34.0%</td> <td>Pass</td> </tr> </table> <p>Pole Summary</p> <table border="0"> <tr> <td>Punching Shear:</td> <td>4.5%</td> <td>Pass</td> </tr> </table>	$P_{u,t} = 212.17$	$\phi P_{n,t} = 243.75$	Stress Rating	$V_u = 3.82$	$\phi V_n = 149.1$	82.9%	$M_u = n/a$	$\phi M_n = n/a$	Pass	$P_{u,t} = 235.38$	$\phi P_{n,t} = 304.69$	Stress Rating	$V_u = 0$	$\phi V_n = 186.38$	73.6%	$M_u = n/a$	$\phi M_n = n/a$	Pass	Max Stress (ksi):	109.97	(Flexural)	Allowable Stress (ksi):	54		Stress Rating:	See FEA Output	Acceptable	Horizontal Weld:	53.6%	Pass	Vertical Weld:	42.8%	Pass	Plate Flexure+Shear:	7.1%	Pass	Plate Tension+Shear:	32.4%	Pass	Plate Compression:	34.0%	Pass	Punching Shear:	4.5%	Pass
$P_{u,t} = 212.17$	$\phi P_{n,t} = 243.75$	Stress Rating																																												
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Plate Compression:	34.0%	Pass																																												
Punching Shear:	4.5%	Pass																																												

Drilled Pier Foundation

BU # :	806042
Site Name:	BOS ASHLAND 959026
Order Number:	586235 REV 0
TIA-222 Revision:	H
Tower Type:	Monopole



Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	2228.45	
Axial Force (kips)	36.04	
Shear Force (kips)	30.57	

Material Properties			Rebar 2, Fy Override (ksi)
Concrete Strength, f'c:	3	ksi	
Rebar Strength, Fy:	60	ksi	
Tie Yield Strength, Fyt:	40	ksi	

Pier Design Data		
Depth	21.25	ft
Ext. Above Grade	0.25	ft
Pier Section 1		
<i>From 0.25' above grade to 21.25' below grade</i>		
Pier Diameter	6	ft
Rebar Quantity	46	
Rebar Size	8	
Clear Cover to Ties	4	in
Tie Size	4	
Tie Spacing		in

Rebar & Pier Options
Embedded Pole Inputs
Belled Pier Inputs

Analysis Results		
Soil Lateral Check		
	Compression	Uplift
D _{v=0} (ft from TOC)	6.70	-
Soil Safety Factor	1.63	-
Max Moment (kip-ft)	2425.84	-
Rating*	77.6%	-
Soil Vertical Check		
	Compression	Uplift
Skin Friction (kips)	282.78	-
End Bearing (kips)	424.12	-
Weight of Concrete (kips)	85.59	-
Total Capacity (kips)	706.89	-
Axial (kips)	121.63	-
Rating*	16.4%	-
Reinforced Concrete Flexure		
	Compression	Uplift
Critical Depth (ft from TOC)	6.64	-
Critical Moment (kip-ft)	2425.80	-
Critical Moment Capacity	4665.41	-
Rating*	49.5%	-
Reinforced Concrete Shear		
	Compression	Uplift
Critical Depth (ft from TOC)	15.40	-
Critical Shear (kip)	343.92	-
Critical Shear Capacity	434.53	-
Rating*	75.4%	-

Structural Foundation Rating*	75.4%
Soil Interaction Rating*	77.6%

*Rating per TIA-222-H Section 15.5

Check Limitation	
Apply TIA-222-H Section 15.5:	<input checked="" 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	10	# of Layers	3	

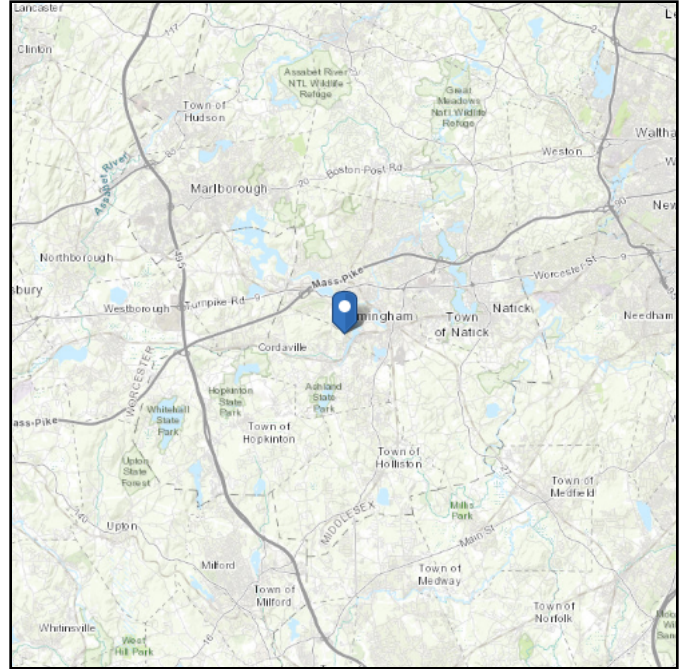
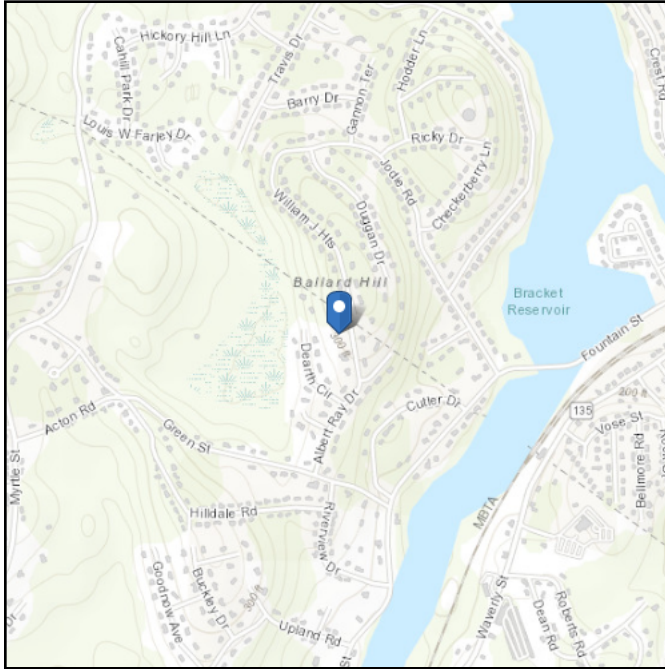
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ _{soil} (pcf)	γ _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	5	5	100	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	5	10	5	120	150		32	0.904	0.904				58	Cohesionless
3	10	21.25	11.25	57.6	87.6		32	1.376	1.376			20	58	Cohesionless

ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 324.94 ft (NAVD 88)
Latitude: 42.273694
Longitude: -71.451556

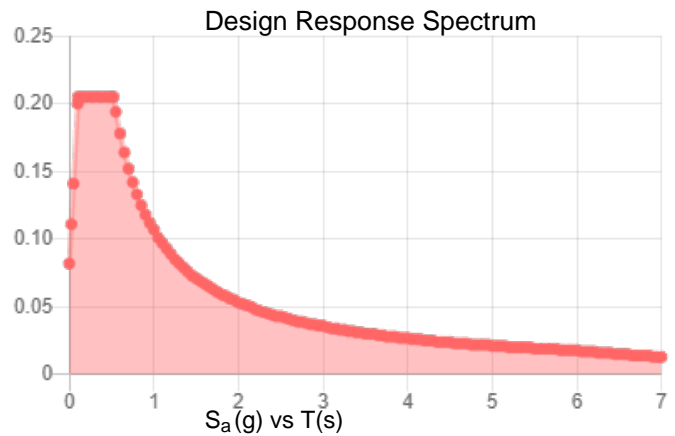
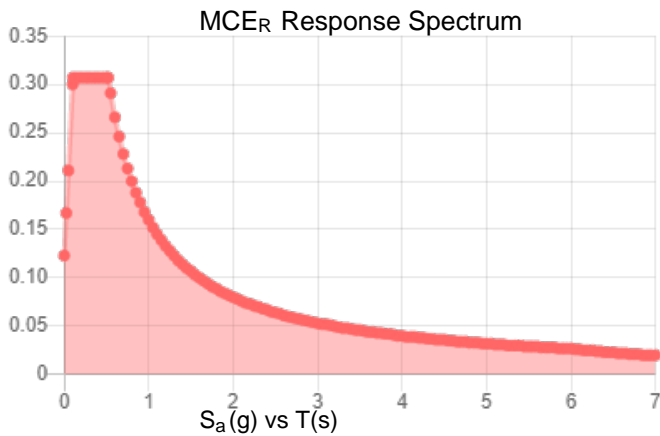


Site Soil Class: D - Stiff Soil

Results:

S_S :	0.192	S_{DS} :	0.205
S_1 :	0.067	S_{D1} :	0.107
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.098
S_{MS} :	0.307	PGA _M :	0.157
S_{M1} :	0.16	F _{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed: Thu Feb 24 2022

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness: 0.75 in.
Concurrent Temperature: 15 F
Gust Speed 50 mph

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

Date Accessed: Thu Feb 24 2022

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 50-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.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Radio Frequency Safety Survey Report Predictive (RFSSRP) Prepared For AT&T



Site Name:	ASHLAND
FA#	10031986
USID:	54669
Site ID:	MA1085
Address:	34 ALBERT RAY DRIVE, ASHLAND, MA 01721
County:	MIDDLESEX
Latitude:	42.2737131
Longitude:	-71.4516111
Structure Type:	MONOPOLE
Property Owner:	CROWN ATLANTIC COMPANY LLC
Pace Job:	MRCTB053860
RFDS Technology:	5G NR 1SR CBAND

Report Information

Report Writer: Monti Kumar

Report Generated Date: 08-01-2022

Compliance Statement

AT&T Mobility Compliance Statement: Based on the information collected, AT&T Mobility will be Compliant when the remediation recommended in section 5 or appropriate remediation determined by AT&T is implemented

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1. Executive Summary

1.1 Site Summary

Max Predictive Spatial Average MPE% & Location on Site (General Public)	513302.0% on Antennas Centerline Level & at AT&T Sec-A antenna no. #A2B
Max Predictive Spatial Average MPE% at Ground Level (General Public)	2.8%
AT&T Mobility Site Compliance	AT&T Mobility will be Compliant by implementing remediation recommended as per section 5 in this report.

TABLE 1: Site Summary

1.2 Signage Summary (Proposed)

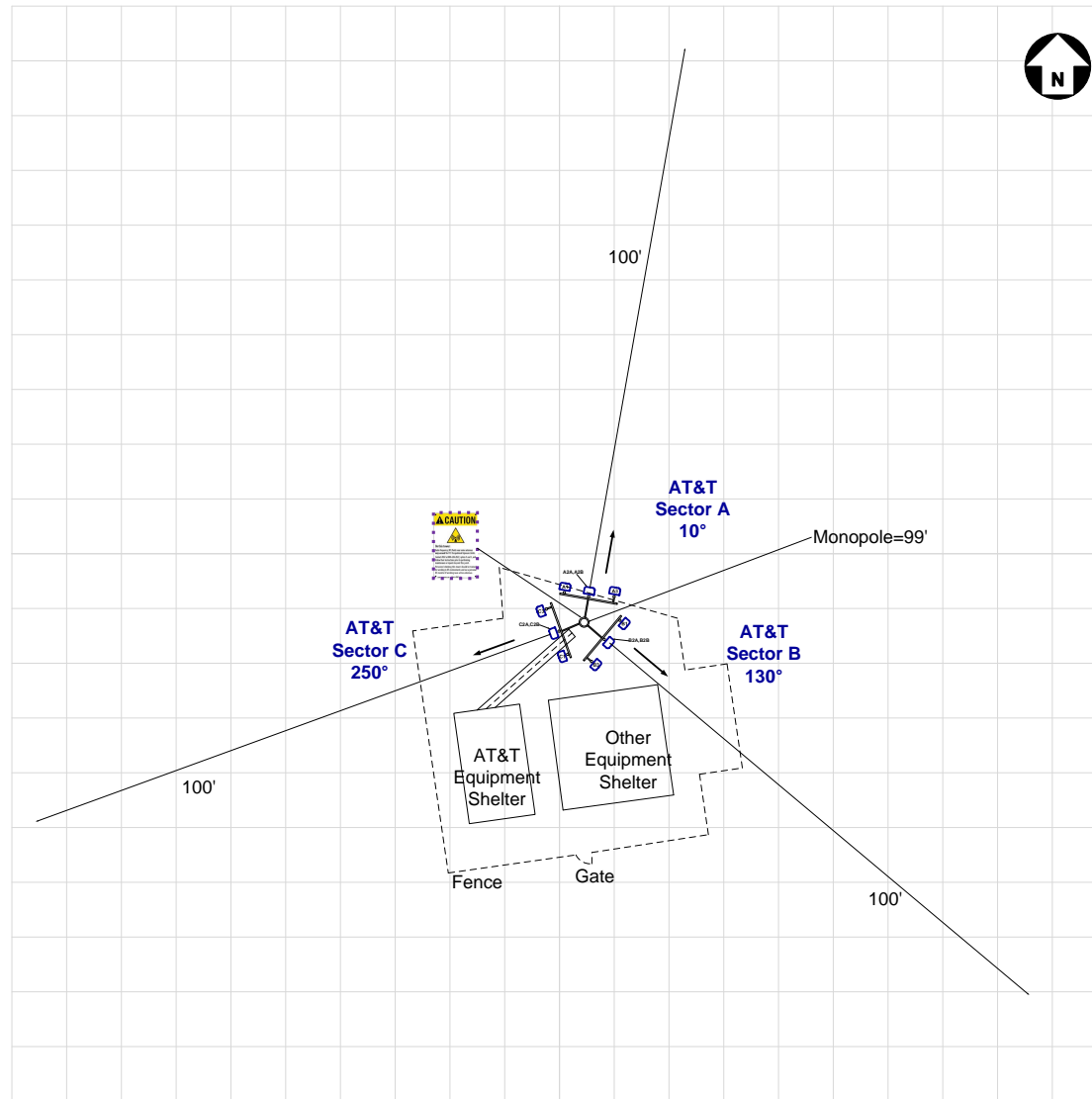
AT&T Signage Locations	Sign Type									
	Safety Instructions	Notice Sign 2	Caution Sign 2	Caution Sign 2B	Caution Sign 2C	Caution 7"x7"	Warning Sign 1B	RF Exposure Map	Lock	Barriers
Access Point(s)				1						
Alpha										
Beta										
Gamma										

TABLE 2: Signage Summary (Proposed)

1.3 List of Documents used to prepare this Report

- 806042_586232_CD
- NEW-ENGLAND_BOSTON_MA1085_2021-5G-NR-Radio_5G-NR-1SR-CBAND_mh705r_PTN_10031986_54669_09-27-2021_Preliminary-Approved_v1.00

2. Site Scale Map



AT&T Antenna		Proposed		Proposed Signage							Map Scale = 10 ft	
	Panel		Barrier									
	OMNI		Posts									

3. Antenna Inventory

Ant ID	Operator	Antenna Mfg	Antenna Model	Antenna Type	FREQ. (MHz)	TECH.	AZ. (0)	H B W (0)	Antenna Gain (dBd)	Antenna Aperture (ft)	Transmitter Power (Watts)	Total Loss (dB)	Total ERP (Watts)	Total EIRP (Watts)
A1	AT&T	Kathrein	80010965	Panel	700	LTE(FN)	10	62	12.65	6.5	120.00	0.5	1968.71	3229.84
A1	AT&T	Kathrein	80010965	Panel	2100	LTE/5G	10	62	16.15	6.5	120.00	0.5	4407.39	7230.72
A2A	AT&T	Ericsson	AIR 6419 B77G^	Panel	3450	5G	10	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
A2B	AT&T	Ericsson	AIR 6449 B77D^	Panel	3840	5G	10	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
A3	AT&T	CCI	DMP65R-BU6EA-K	Panel	700	LTE(B12)	10	73	11.95	6	120.00	0.5	1675.64	2749.04
A3	AT&T	CCI	DMP65R-BU6EA-K	Panel	850	5G	10	62	12.45	6	120.00	0.5	1880.10	3084.47
A3	AT&T	CCI	DMP65R-BU6EA-K	Panel	1900	LTE/5G	10	71	15.75	6	120.00	0.5	4019.59	6594.49
A3	AT&T	CCI	DMP65R-BU6EA-K	Panel	2300	LTE	10	52	16.15	6	75.00	0.5	2754.62	4519.20
B1	AT&T	Kathrein	80010965	Panel	700	LTE(FN)	130	62	12.65	6.5	120.00	0.5	1968.71	3229.84
B1	AT&T	Kathrein	80010965	Panel	2100	LTE/5G	130	62	16.15	6.5	120.00	0.5	4407.39	7230.72
B2A	AT&T	Ericsson	AIR 6419 B77G^	Panel	3450	5G	130	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
B2B	AT&T	Ericsson	AIR 6449 B77D^	Panel	3840	5G	130	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
B3	AT&T	CCI	DMP65R-BU6EA-K	Panel	700	LTE(B12)	130	73	11.95	6	120.00	0.5	1675.64	2749.04
B3	AT&T	CCI	DMP65R-BU6EA-K	Panel	850	5G	130	62	12.45	6	120.00	0.5	1880.10	3084.47
B3	AT&T	CCI	DMP65R-BU6EA-K	Panel	1900	LTE/5G	130	71	15.75	6	120.00	0.5	4019.59	6594.49
B3	AT&T	CCI	DMP65R-BU6EA-K	Panel	2300	LTE	130	52	16.15	6	75.00	0.5	2754.62	4519.20
C1	AT&T	Kathrein	80010965	Panel	700	LTE(FN)	250	62	12.65	6.5	120.00	0.5	1968.71	3229.84
C1	AT&T	Kathrein	80010965	Panel	2100	LTE/5G	250	62	16.15	6.5	120.00	0.5	4407.39	7230.72
C2A	AT&T	Ericsson	AIR 6419 B77G^	Panel	3450	5G	250	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
C2B	AT&T	Ericsson	AIR 6449 B77D^	Panel	3840	5G	250	11	23.5	2.55	108.44*	0	24277.05*	39828.68*
C3	AT&T	CCI	DMP65R-BU6EA-K	Panel	700	LTE(B12)	250	73	11.95	6	120.00	0.5	1675.64	2749.04
C3	AT&T	CCI	DMP65R-BU6EA-K	Panel	850	5G	250	62	12.45	6	120.00	0.5	1880.10	3084.47
C3	AT&T	CCI	DMP65R-BU6EA-K	Panel	1900	LTE/5G	250	71	15.75	6	120.00	0.5	4019.59	6594.49
C3	AT&T	CCI	DMP65R-BU6EA-K	Panel	2300	LTE	250	52	16.15	6	75.00	0.5	2754.62	4519.20

Table 3.1: Antenna Inventory Table

Note: ^ **Mechanical Tilt value of "0°" MUST be retained for C-BAND and/or DoD AAS antenna(s) at all times to ensure that "EME (Predictive) Study" shall remain valid.**

* 75% TDD duty Cycle, 1.5dB Power Tolerance & 0.32 Power Reduction factor¹ are used to calculate Transmitter Power & ERP/EIRP

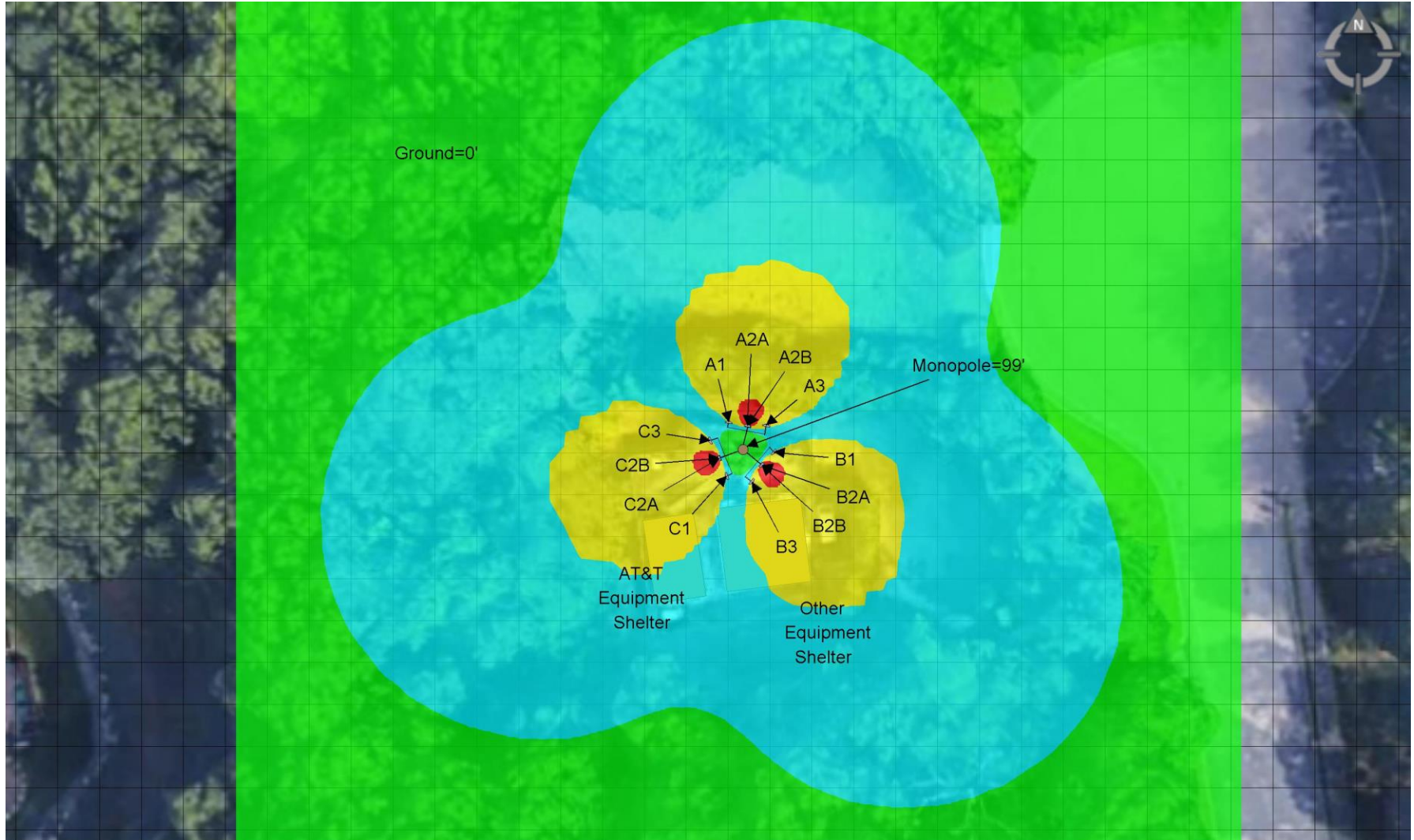
Antenna Heights (Z)

Ant ID	Operator	Antenna Radiation Centerline	Z-Height from Ground
A1	AT&T	87.00	83.75
A2A	AT&T	89.50	88.23
A2B	AT&T	86.00	84.73
A3	AT&T	87.00	84.00
B1	AT&T	87.00	83.75
B2A	AT&T	89.50	88.23
B2B	AT&T	86.00	84.73
B3	AT&T	87.00	84.00
C1	AT&T	87.00	83.75
C2A	AT&T	89.50	88.23
C2B	AT&T	86.00	84.73
C3	AT&T	87.00	84.00

Table 3.2: Antenna Height(s) Summary Table

4. Predicted Emission

4.1 Predictive Cumulative MPE Contribution from All Sources at Antennas Centerline Level (86 ft.)



Max. Predictive Spatial Average MPE% = **513302.0%**

% of FCC General Public Exposure Limit (Predictive Spatial Average)

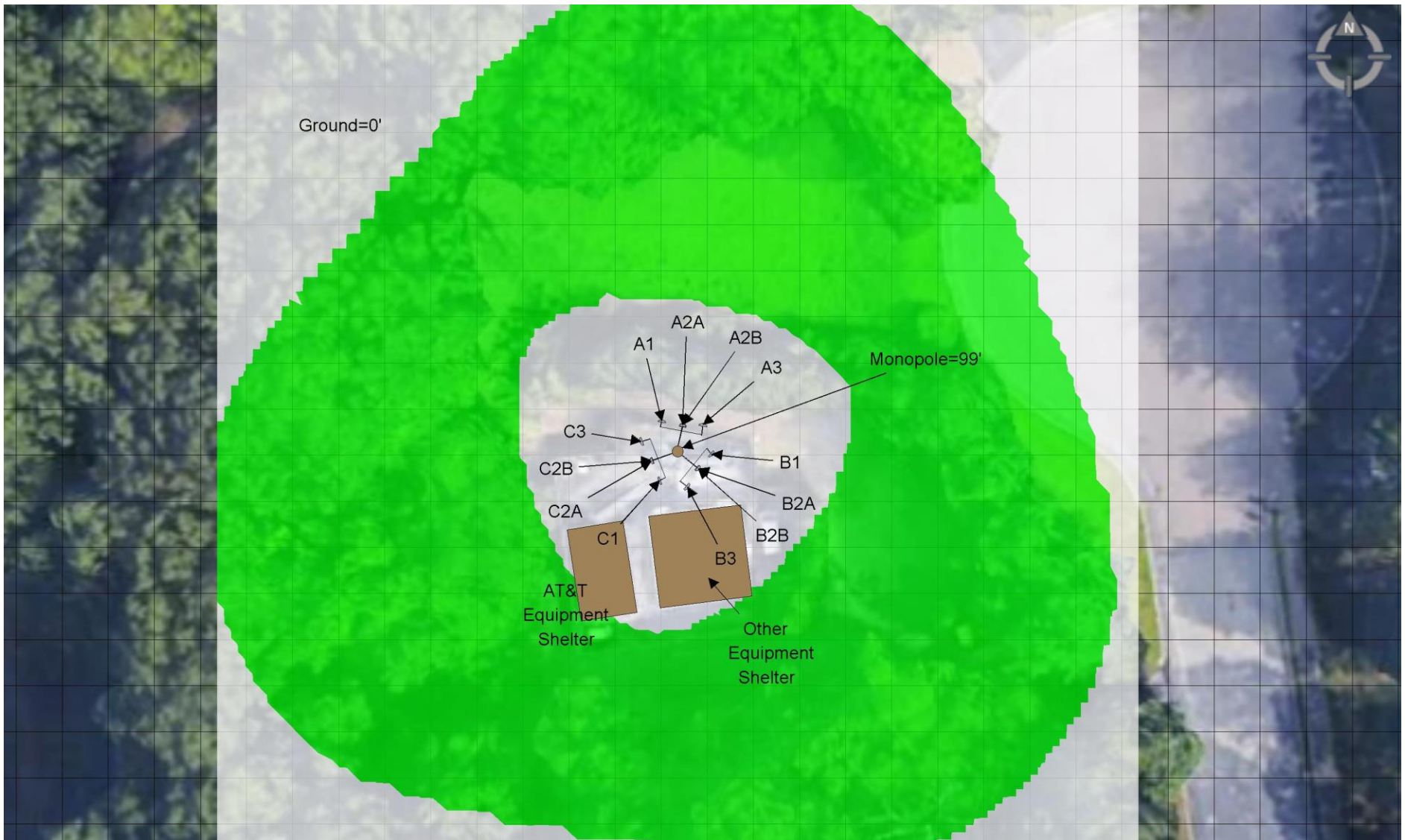
Non-Simulated	0-1	1-100	100-500	500-5000	>5000

Proposed Barrier

Proposed Posts

Map Scale = 10 ft

4.2 Predictive Cumulative MPE Contribution from All Sources at Ground Level (0 ft.)



Max. Predictive Spatial Average MPE% = **2.8%**

% of FCC General Public Exposure Limit (Predictive Spatial Average)

Proposed Barrier
 Proposed Posts

Non-Simulated	0-1	1-100	100-500	500-5000	>5000

Map Scale = 10 ft

5. Statement of Compliance

5.1 *Statement of AT&T Mobility Compliance*

At the time of our Analysis, AT&T Mobility is required to take action to fulfill their Obligations to comply with the FCC's mandate as defined in OET-65

Recommendations

AT&T Alpha Sector:

- No Action Required.

AT&T Beta Sector:

- No Action Required.

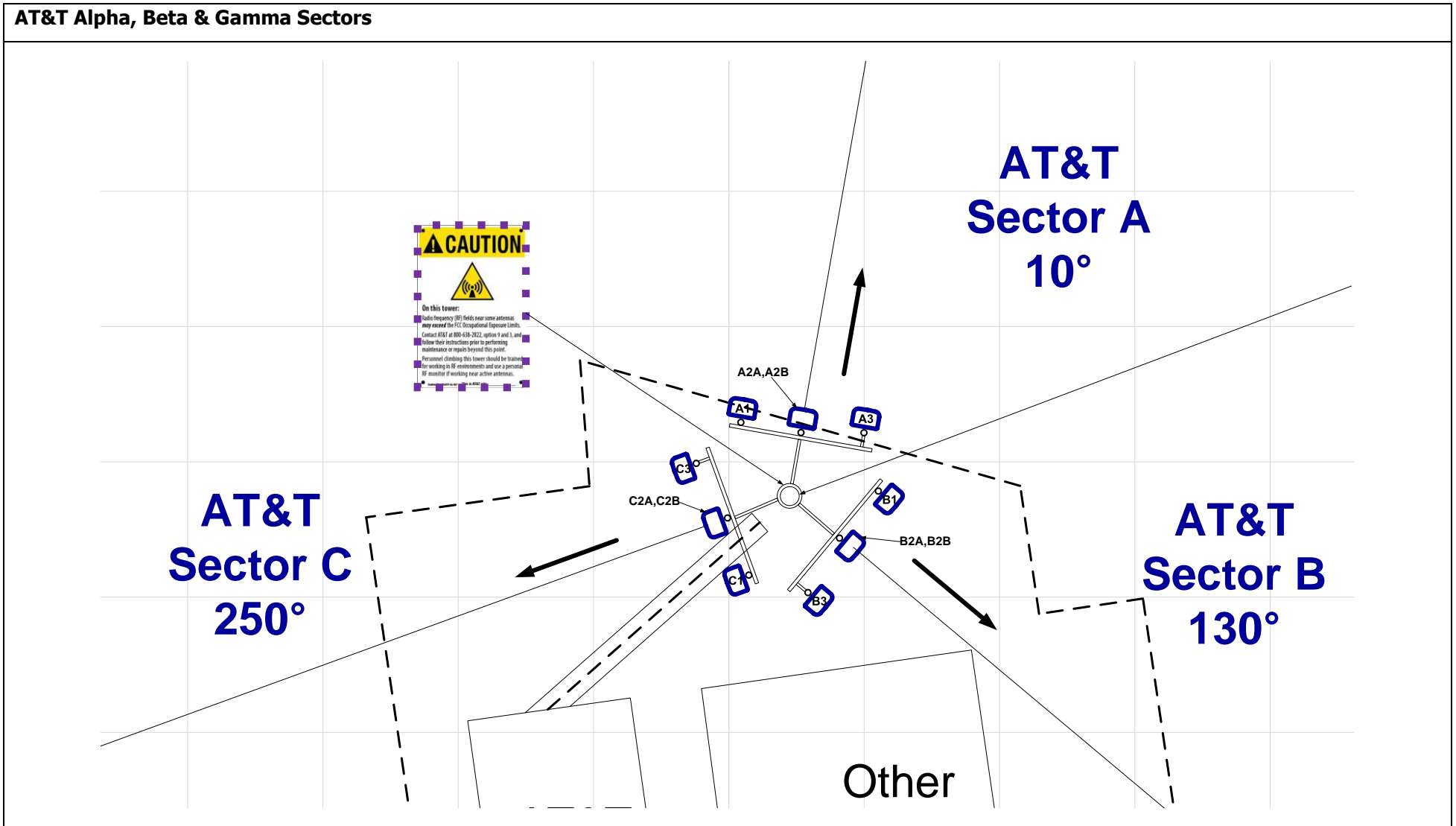
AT&T Gamma Sector:

- No Action Required.

Monopole:

- One Caution 2B Sign to be posted at Climbing Access, facing outwards so approaching people can see as shown in "Recommendations Map – Detailed View" on page 10. (1 Total Sign)

Recommendations Map – Detailed View



AT&T Antenna Panel OMNI		Proposed Barrier Posts		Proposed Signage								Map Scale = 10 ft
		Safety Instructions	Notice 2	Caution 2	Caution 2B	Caution 2C	Caution 7"x7"	Warning 1B	RF Exposure Map	Lock		

Appendix A – Statement of Limiting Conditions

General Model Assumptions

In this site compliance report, it is assumed that all antennas are operating at full power at all times. AT&T has further recommended to assume a 75% duty cycle of maximum radiated power for all LTE & 5G carriers (& consider 100% duty cycle for all UMTS carriers).

In this site compliance report, it is assumed that Mechanical Tilt value of “0°” MUST be retained for C-BAND and/or DoD AAS[^] antenna(s) at all times to ensure that “EME (Predictive) Study” shall remain valid.

AT&T recommended to consider - For C-BAND and/or DoD AAS[^] antenna(s) 75% TDD duty Cycle, 1.5dB Power Tolerance & 0.32 Power Reduction factor¹ are used to calculate Transmitter Power & ERP/EIRP.

AT&T recommended to use worst-case tilts for the simulations.

¹ **Power Reduction Factor:** IEC Standard 62232: 2017 allows for a statistically conservative power density model to more realistically define the RF exposure area. AT&T recommends a “0.32” factor to calculate the “Actual Maximum” (time averaged) power value, which accounts for “Beam Scanning,” “Scheduling,” and “RBS Utilization” This recommended value is a conservative figure modelled and supported by other vendors and through measurements published in scientific articles and white papers by IEEE and others. Those publication are listed below:

1. IEEE Access, *Time-Averaged Realistic Maximum Power Levels for the Assessment of RF Exposure for 5G Radio Base Stations Using Massive MIMO* (Published Sept. 18, 2017 / BJÖRN THORS, ANDERS FURUSKÅR, DAVIDE COLOMBI, AND CHRISTER TÖRNEVIK)
2. IEEE Explore, *A Statistical Approach for RF Exposure Compliance Boundary Assessment in Massive MIMO Systems* (Published Jan. 25, 2018 / Paolo Baracca, Andreas Weber, Thorsten Wild, Christophe Grangeat)
3. IEEE Access, *In-situ Measurement Methodology for the Assessment of 5G NR Massive MIMO Base Station Exposure at Sub-6 GHz Frequencies* (Published Dec. 20, 2019 / SAM AERTS, LEEN VERLOOCK, MATTHIAS VAN DEN BOSSCHE, DAVIDE COLOMBI, LUC MARTENS, CHRISTER TÖRNEVIK AND WOUT JOSEPH)
4. Applied Sciences, *Analysis of the Actual Power and EMF Exposure from Base Stations in a Commercial 5G Network* (Published July 30, 2020 / Davide Colombi, Paramananda Joshi, Bo Xu, Fatemeh Ghasemifard, Vignesh Narasaraju and Christer Törnevik)
5. Ofcom Technical Report, *Electromagnetic Field (EMF) measurements near 5G mobile phone base stations* (Published Feb. 21, 2020 / Davide Colombi, Paramananda Joshi, Bo Xu, Fatemeh Ghasemifard, Vignesh Narasaraju and Christer Törnevik)

MobileComm believes these areas to be safe for entry by occupationally trained personnel utilizing appropriate personal protective equipment (in most cases, a personal monitor). Thus, at any time, if power density measurements were made, we believe the real time measurements would indicate levels below those depicted in the RF emission diagram(s) in this report. By modelling in this way, MobileComm has conservatively shown exclusion areas – areas that should not be entered without the use of a personal monitor, carriers reducing power, or performing real-time measurements to indicate real-time exposure levels.

Use of Generic Antennas

For the purposes of this report, the use of “Generic” as an antenna model, or “Other Carrier” for an operator means the information about a carrier, their FCC license and/or antenna information was not provided and could not be obtained while on site. In the event of unknown information, MobileComm will use our industry specific knowledge of equipment, antenna models, and transmit power to model the site. Information about similar facilities is used when the service is identified and associated with a particular antenna. If no information is available regarding the transmitting service associated with an unidentified antenna, using the antenna manufacturer’s published data regarding the antenna’s physical characteristics makes more conservative assumptions.

Where the frequency is unknown, MobileComm uses the closest frequency in the antenna’s range that corresponds to the highest Maximum Exposure Limit (MPE), resulting in a conservative analysis.

Appendix B – FCC Guidelines and Emissions Threshold Limits

All power density values used in this report were analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limit for the 700 and 800 MHz Bands is approximately 467 $\mu\text{W}/\text{cm}^2$ and 567 $\mu\text{W}/\text{cm}^2$ respectively, and the general population exposure limit for the 1900 MHz PCS and 2100 MHz AWS bands is 1000 $\mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/Controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure, have been properly trained in RF safety and can exercise control over their exposure. Occupational/Controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure, have been trained in RF safety and can exercise control over his or her exposure by leaving the area or by some other appropriate means. The Occupational/Controlled exposure limits all utilized frequency bands is five (5) times the FCC's General Public / Uncontrolled exposure limit.

Additional details can be found in FCC OET 65.

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

Appendix C – Rules & Regulations

Explanation of Applicable Rules and Regulations

FCC has set forth guidelines in OET Bulletin 65 for human exposure to radio frequency electromagnetic fields. Currently, there are two different levels of MPE - General Public MPE and Occupational MPE. An individual classified as Occupational can be defined as an individual who has received appropriate RF training and meets the conditions outlined below. General Public is defined as anyone who does not meet the conditions of being Occupational. FCC Rules and Regulations define compliance in terms of total exposure to total RF energy, regardless of location of or proximity to the sources of energy.

It is the responsibility of all licensees to ensure these guidelines are maintained at all times. It is the ongoing responsibility of all licensees composing the site to maintain ongoing compliance with FCC rules and regulations.

A building owner or site manager can use this report as part of an overall RF Health and Safety Policy. It is important for building owners/site managers to identify areas in excess of the General Population MPE and ensure that only persons qualified as Occupational are granted access to those areas.

Occupational Environment Explained

The FCC definition of Occupational exposure limits apply to persons who:

- *are exposed to RF energy as a consequence of their employment;*
- *have been made aware of the possibility of exposure; and*
- *can exercise control over their exposure.*

FCC guidelines go further to state that persons must complete RF Safety Awareness training and must be trained in the use of appropriate personal protective equipment.

In order to consider this site an Occupational Environment, the site must be controlled to prevent access by any individuals classified as the General Public. Compliance is also maintained when any non-occupational individuals (the General Public) are prevented from accessing areas indicated as Red or Yellow in the attached RF Emissions diagram. In addition, a person must be aware of the RF environment into which they are entering. This can be accomplished by an RF Safety Awareness class, and by appropriate written documentation such as this Site Compliance Report.

Appendix D – General Safety Recommendations

The following are general recommendations appropriate for any site with accessible areas in excess of 100% General Public MPE. These recommendations are not specific to this site. These are safety recommendations appropriate for typical site management, building management, and other tenant operations.

1. All individuals needing access to the main site should be instructed to read and obey all posted placards and signs.
2. The site should be routinely inspected and this or similar report updated with the addition of any antennas or upon any changes to the RF environment including:
 - adding new antennas that may have been located on the site
 - removing of any existing antennas
 - changes in the radiating power or number of RF emitters
3. Post the appropriate SAFETY INSTRUCTIONS, NOTICE, CAUTION & WARNING sign at the main site access point(s) and other locations as required. Note: Please refer to RF Exposure Diagrams in the report section above, to inform everyone who has access to this site that beyond posted signs there may be levels in excess of the limits prescribed by the FCC. The signs below are examples of signs meeting FCC guidelines.



4. Ensure that the site door remains locked (or appropriately controlled) to deny access to the general public if deemed as policy by the building/site owner.
5. For a General Public environment the five color levels identified in measured RF emission diagram can be interpreted in the following manner:
 - White represents areas predicted to be greater than or equal to 0% and less than 1% of the MPE general public limits
 - Green represents areas predicted to be greater than or equal to 1% and less than 100% of the MPE general public limits
 - Blue represents areas predicted to be greater than or equal to 100% and lesser than 500% of the MPE general public limits.
 - Yellow represents areas predicted to be greater than or equal to 500% and lesser than 5000% of the MPE general public limits.
 - Red areas indicates predicted levels greater than or equal to 5000% of the MPE general public limits.

Appendix E – References

1 - FCC Definition

FCC defines an Occupational or Controlled environment as one where persons are exposed to RF fields as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Typical criteria for an Occupational or Controlled environment is restricted access (i.e. locked doors, gates, etc.) to areas where antennas are located coupled with proper RF warning signage.

FCC defines a site as a General Public or Uncontrolled environment when human exposure to RF fields occurs to the general public or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over the exposure. Typical criteria for a General Public or Uncontrolled environment are unrestricted access (i.e. unlocked or no restrictions) to areas where antennas are located without proper RF warning signage being posted.

2 - Physical Testing measurement procedure and Tools

The Narda Broadband Field Meter NBM-550 can make rapid conformance measurements with evaluation in the time domain when used in conjunction EA5091 probe. This probe is a so-called Shaped Probe, i.e. it is frequency weighted so that it automatically takes account of the FCC Occupational limit values. To collect data, the probe is pointed towards the potential source(s) of EME radiation and moved slowly from ground level up to slightly above head height (approx. 6 ft).

Spatial Average Measurement A technique used to average a minimum of ten (10) measurements taken in a ten (10) second interval from zero (0) to six (6) feet. This measurement is intended to model the average energy an average sized human body will absorb while present in an electromagnetic field of energy.

3 - Site Safety Procedures

The following items are general safety recommendations that should be administered on a site by site basis as needed by the carrier.

General Maintenance Work: *Any maintenance personnel required to work immediately in front of antennas and / or in areas indicated as above 100% of the Occupational MPE limits should coordinate with the wireless operators to disable transmitters during their work activities.*

Training and Qualification Verification: *All personnel accessing areas indicated as exceeding the General Population MPE limits should have a basic understanding of EME awareness and RF Safety procedures when working around transmitting antennas. Awareness training increases a workers understanding to potential RF exposure scenarios. Awareness can be achieved in a number of ways (e.g. videos, formal classroom lecture or internet based courses).*

Physical Access Control: *Access restrictions to transmitting antennas locations is the primary element in a site safety plan. Examples of access restrictions are as follows:*

- *Locked door or gate*
- *Alarmed door*
- *Locked ladder access*
- *Restrictive Barrier at antenna locations (e.g. Chain link with posted RF Sign)*

RF Signage: *Everyone should obey all posted signs at all times. RF signs play an important role in properly warning a worker prior to entering into a potential RF Exposure area.*

Assume all antennas are active: *Due to the nature of telecommunications transmissions, an antenna transmits intermittently. Always assume an antenna is transmitting. Never stop in front of an antenna. If you have to pass by an antenna, move through as quickly and safely as possible thereby reducing any exposure to a minimum.*

Maintain a 3 foot clearance from all antennas: *There is a direct correlation between the strength of an EME field and the distance from the transmitting antenna. The further away from an antenna, the lower the corresponding EME field is.*

Rooftop RF Emissions Diagram: *Section 4 of this report contains an RF Emissions Diagram that outlines various theoretical Maximum Permissible Exposure (MPE) areas on the rooftop. This analysis is all theoretical and assumes a duty cycle of 75% for each transmitting antenna at full power. This analysis is a worst case scenario. This analysis is based on one of two access control criteria: General Public criteria means the access to the site is uncontrolled and anyone can gain access. Occupational criteria means the access is restricted and only properly trained individuals can gain access to the antenna locations.*

4 - Definitions

Compliance- *The determination of whether a site is safe or not with regards to Human Exposure to Radio Frequency Radiation from transmitting antennas.*

Decibel (dB) – *A unit for measuring power or strength of a signal.*

Duty Cycle – *The percent of pulse duration to the pulse period of a periodic pulse train. Also, may be a measure of the temporal transmission characteristic of an intermittently transmitting RF source such as a paging antenna by dividing average transmission duration by the average period for transmission. A duty cycle of 75% corresponds to continuous operation.*

Effective (or Equivalent) Isotropic Radiated Power (EIRP) – *The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna, this product is divided by the cable losses*

Effective Radiated Power (ERP) – *In a given direction, the relative gain of a transmitting antenna with respect to the maximum directivity of a half wave dipole multiplied by the net power accepted by the antenna from the connecting transmitter.*

Gain (of an antenna in dbd) – *The ratio of the maximum intensity in a given direction to the maximum radiation in the same direction from a reference dipole. Gain is a measure of the relative efficiency of a directional antennas as compared to a reference dipole.*

General Population/Uncontrolled Environment – *Defined by the FCC, as an area where RFR exposure may occur to persons who are unaware of the potential for exposure and who have no control of their exposure. General Population is also referenced as General Public.*

Generic Antenna – *For the purposes of this report, the use of “Generic” as an antenna model means the antenna information was not provided and could not be obtained while on site. In the event of unknown information, MobileComm will use our industry specific knowledge of antenna models to select a worst case scenario antenna to model the site.*

Isotropic Antenna – *An antenna that is completely non-directional. In other words, an antenna that radiates energy equally in all directions.*

Maximum Measurement – *This measurement represents the single largest measurement recorded when performing a spatial average measurement.*

Maximum Exposure Limit (MPE) – *The RMS and peak electric and magnetic field strength, their squares, or the plane-wave equivalent power densities associated with these fields to which a person may be exposed without harmful effect and with acceptable safety factor.*

Occupational/Controlled Environment – *Defined by the FCC, as an area where Radio Frequency Radiation (RFR) exposure may occur to persons who are aware of the potential for exposure as a condition of employment or specific activity and can exercise control over their exposure.*

Radio Frequency Radiation – *Electromagnetic waves that are propagated from antennas through space.*

Spatial Average Measurement – *A technique used to average a minimum of ten (10) measurements taken in a ten (10) second interval from zero (0) to six (6) feet. This measurement is intended to model the average energy an average sized human body will absorb while present in an electromagnetic field of energy.*

Transmitter Power Output (TPO) – *The radio frequency output power of a transmitter's final radio frequency stage as measured at the output terminal while connected to a load.*

Appendix F – Proprietary Statement

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