STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

August 2, 2023

Domenica Tatasciore
Site Acquisiton Specialist
Crown Castle
1800 West Park Drive
Westborough, MA 01581
Domenica.Tatasciore@crowncastle.com

RE: **EM-VER-103-220407** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 50 Rockland Road, Norwalk, Connecticut.

Dear Domenica Tatasciore:

The Connecticut Siting Council (Council) is in receipt of the correspondence dated August 2, 2023 regarding a project change for the above-referenced exempt modification request acknowledged by the Council on May 31, 2022.

The request to change the model of the remote radio head (RRH) to B2/66A RRH ORAN and B5/B13 RRH ORAN due to the unavailability of the approved RRH model is hereby approved with the following conditions:

1. Prior to Verizon's antenna installation, antennas and equipment be installed in compliance with the Mount Analysis prepared by Colliers Engineering & Design dated January 10, 2023 and stamped and signed by Dejian Xu;

2. Within 45 days following completion of equipment installation, Verizon Wireless shall provide documentation certified by a Professional Engineer that its installation complied with the recommendations of the Mount Analysis.

This approval applies only to the project change in the correspondence dated August 2, 2023.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/ANM/dll

c: The Honorable Harry W. Rilling, Mayor, City of Norwalk (hrilling@norwalkct.org)

From: Tatasciore, Domenica <Domenica.Tatasciore@crowncastle.com>
Sent: Wednesday, August 2, 2023 12:37 PM
To: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: EM-VER-103-220407 - 50 Rockland Road, Norwalk, CT

Hi Melanie,

This site was approved for tower antenna modification by the CSC on May 31, 2022 and the approval has subsequently been extended.

Now Verizon Wireless should like to change the model number of the RRH with the quantity remaining the same as what was approved.

The RRH number that was approved with this filing are:

- 3- Samsung-B2/B66A RRH-BR049 AND
- 3-Samsung-B5/B13 RRH BR04C

Now, Verizon would like to change the model to:

- 3-Samsung-B2/66A RRH ORAN
- 3-Samsung-B5/B13 RRH ORAN

Please see the attached CSC approval, updated FCDs, SA and MA.

Please let me know if you have any questions and if you need any hardcopies forwarded to your office.

Thank you,

DOMENICA TATASCIORE
Site Acquisition Specialist
T: 508-621-9161

CROWN CASTLE
1800 West Park Drive, Westborough, MA 01581
CrownCastle.com

verizon

VERIZON SITE NUMBER: 468538
VERIZON SITE NAME: NORWALK CT
SITE TYPE: SELF-SUPPORT TOWER
TOWER HEIGHT: 180'-0"

BUSINESS UNIT #: 807133
SITE ADDRESS: 50 ROCKLAND ROAD NORWALK NORWALK, CT 06854
COUNTY: FAIRFIELD
JURISDICTION: CITY OF NORWALK

VERIZON 5G L-SUB6 - CARRIER ADD

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	BRG 134 943057
SITE ADDRESS:	50 ROCKLAND ROAD NORWALK NORWALK, CT 06854
COUNTY:	FAIRFIELD
MAP/PARCEL #:	5-82-58-0
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41° 4' 54.44"
LONGITUDE:	-73° 25' 49.52"
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	63'
CURRENT ZONING:	RESTRICTED INDUSTRIAL
JURISDICTION:	CITY OF NORWALK
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 2000 CORPORATE DRIVE CANONSBURG, PA 15317
TOWER OWNER:	CROWN CASTLE MU LLC 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	VERIZON WIRELESS 180 WASHINGTON VALLEY ROAD BEDMINSTER, NJ 07921
ELECTRIC PROVIDER:	NORTHEAST UTILITIES 800-286-2000
TELCO PROVIDER:	CROWN CASTLE FIBER 855-913-4237

PROJECT TEAM

A&E FIRM:	B+T GROUP 1717 S. BOULDER AVE. TULSA, OK 74119 MARVIN PHILLIPS marvin.phillips@btgrp.com
CROWN CASTLE USA INC. DISTRICT CONTACTS:	1200 MACARTHUR BLVD, SUITE 200 MAHWAH, NJ 07430 PAUL PEDICONE - PROJECT MANAGER PAUL.PEDICONE@CROWNCASTLE.COM JASON D'AMICO - CONSTRUCTION MANAGER JASON.DAMICO@CROWNCASTLE.COM
VERIZON CONTACT:	ANDREW LEONE ALEONE@STRUCTURECONSULTING.NET

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1	SITE PLAN
C-2	TOWER ELEVATION & ANTENNA PLANS
C-3	EQUIPMENT SCHEDULES
C-4	EQUIPMENT DETAILS
C-5	EQUIPMENT DETAILS
C-6	PLUMBING DIAGRAM
G-1	GROUNDING DETAILS
G-2	GROUNDING DETAILS
ATTACHED	MOUNT MODIFICATION DRAWINGS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR FULL SIZE. 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.

APPROVALS

SIGNATURE	DATE

CONTRACTOR PMI REQUIREMENTS

PMI ACCESSED AT	https://pmi.vxwsmart.com
SMART TOOL VENDOR PROJECT NUMBER	10186219
VzW LOCATION CODE (PSLC)	468538

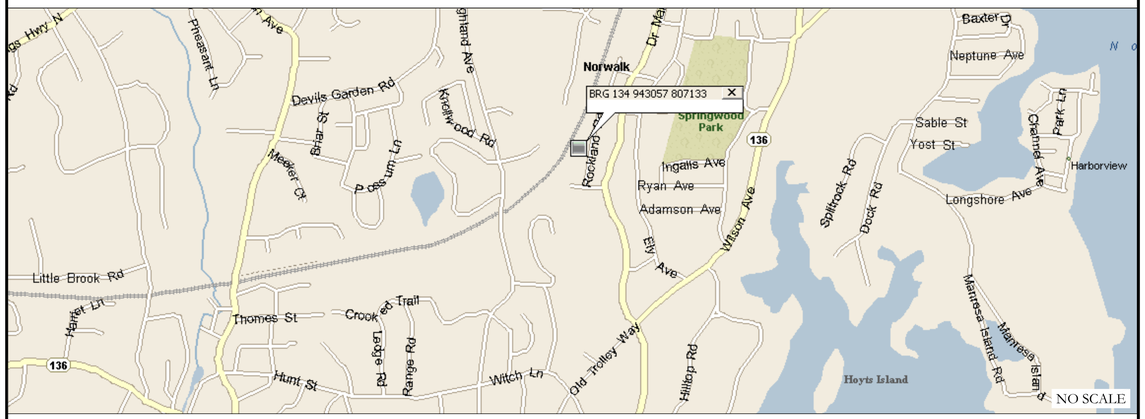
*** PMI AND REQUIREMENTS ALSO EMBEDDED IN MOUNT ANALYSIS REPORT

MOUNT MODIFICATION REQUIRED	**Y**

VzW APPROVED SMART KIT VENDORS

REFER TO MOUNT MODIFICATION DRAWINGS PAGE FOR VzW SMART KIT APPROVED VENDORS

LOCATION MAP



DRIVING DIRECTIONS FROM VERIZON LOCAL OFFICE (180 WASHINGTON VALLEY RD, BEDMINSTER, NJ 07921)

HEAD NORTHWEST. SLIGHT LEFT. TURN RIGHT ONTO US-202 N/US-206 N. TURN RIGHT ONTO SCHLEY MOUNTAIN RD. MERGE WITH I-287 N. USE THE RIGHT 2 LANES TO TAKE EXIT 41A-46 TOWARD 46.KEEP LEFT, FOLLOW SIGNS FOR I-80 E/NEW YORK CITY. KEEP LEFT TO CONTINUE ON EXIT 47 A, FOLLOW SIGNS FOR I-280 E/ORANGES/NEWARK. CONTINUE ONTO I-95 EXPRESS N. ENTERING NEW YORK.CONTINUE ONTO INTERSTATE 95 UPPER LEVEL N/US-1 UPPER LEVEL N. KEEP LEFT TO STAY ON I-95 N. KEEP LEFT TO STAY ON I-95 N.ENTERING CONNECTICUT. TURN LEFT ONTO WITCH LN. TURN LEFT ONTO OLD TROLLEY WAY. TURN LEFT ONTO ROCKLAND RD. TURN RIGHT TO STAY ON ROCKLAND RD. DESTINATION WILL BE ON THE LEFT.

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	2022 CONNECTICUT SBC/2021 IBC
MECHANICAL	2022 CONNECTICUT SBC/2021 IMC
ELECTRICAL	2022 CONNECTICUT SBC/2020 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	B+T GROUP
DATED:	1/10/23
MOUNT ANALYSIS:	COLLIERS ENGINEERING & DESIGN
DATED:	1/10/23
RFDS REVISION:	4
DATED:	10/20/22
ORDER ID:	642704
REVISION:	0

INSTALLER NOTE:

NO PROPOSED LOADING TO BE ADDED UNTIL MOUNT MODIFICATIONS ARE INSTALLED PER MOUNT MODIFICATION DRAWINGS BY COLLIERS ENGINEERING & DESIGN DATED JANUARY 10, 2023.

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

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 (12) ANTENNAS
- REMOVE(9) RRHs
- REMOVE (1) OVP
- REMOVE (1) HYBRID CABLE (1-5/8")
- REMOVE (18) COAX CABLES (1-5/8")
- INSTALL MOUNT MODIFICATIONS PER MOUNT MODIFICATION DRAWINGS BY COLLIERS ENGINEERING & DESIGN DATED JANUARY 10, 2023
- INSTALL (12) ANTENNAS
- INSTALL (6) RRHs
- INSTALL (3) DIPLEXERS
- INSTALL (1) OVP
- INSTALL (1) HYBRID CABLE (1-5/8")

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

verizon
180 WASHINGTON VALLEY ROAD
BEDMINSTER, NJ 07921

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

VERIZON SITE NUMBER:
468538

BU #: **807133**
BRG 134 943057

50 ROCKLAND ROAD
NORWALK
NORWALK, CT 06854

EXISTING 180'-0"
SELF-SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/13/22	MEH	CONSTRUCTION	CV
1	1/9/23	TDG	CONSTRUCTION	CV
2	2/10/23	TDG	CONSTRUCTION	ANP
3	6/12/23	TDG	CONSTRUCTION	MTJ
4	6/29/23	TDG	CONSTRUCTION	MTJ

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
6/29/23

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: T-1
REVISION: 4

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. 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.
2. "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.
3. 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.
4. 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).
5. ALL SITE WORK TO COMPLY WITH QAS–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."
6. 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.
7. 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.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. 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.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. 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.
13. 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.
14. 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.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS 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 ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. 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.
19. 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.
20. 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.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. 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.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
   CARRIER: VERIZON
   TOWER OWNER: CROWN CASTLE USA INC.
2. 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.
3. 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.
4. 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.
5. 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 NOTIFIED AS SOON AS POSSIBLE.
6. 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.
7. 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.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. 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.
11. 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.
12. 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.
13. 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.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. 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.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. 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°f AT TIME OF PLACEMENT.
4. 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.
5. 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
6. 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"
7. 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.

GREENFIELD GROUNDING NOTES:

1. 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.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL–OF–POTENTAL 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON–ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. 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.
20. 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).
21. 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).

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
   4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
   4.2. 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. VERYIFY 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 PRE THE GOVERNING JURISDICTION.
5. 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.
6. 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).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. 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.
10. 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.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. 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.
13. 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).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. 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 CLEAR 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.
24. 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.
25. 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.
26. 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.
27. 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.
28. 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.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "VERIZON".
30. 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
	GROUND	GREEN
277/480V, 3Ø	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
DC VOLTAGE	POS (+)	RED**
	NEG (–)	BLACK**

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

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

ABBREVIATIONS:

ANT	ANTENNA
(E)	EXISTING
FIF	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 TILT
RFDS	RADIO FREQUENCY DATA SHEET
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
SIAD	SMART INTEGRATED DEVICE
TMA	TOWER MOUNTED AMPLIFIER
TYP	TYPICAL
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
W.P.	WORK POINT

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B+T GRP
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SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

VERIZON SITE NUMBER:
468538

BU #: **807133**
BRG 134 943057

50 ROCKLAND ROAD
NORWALK
NORWALK, CT 06854

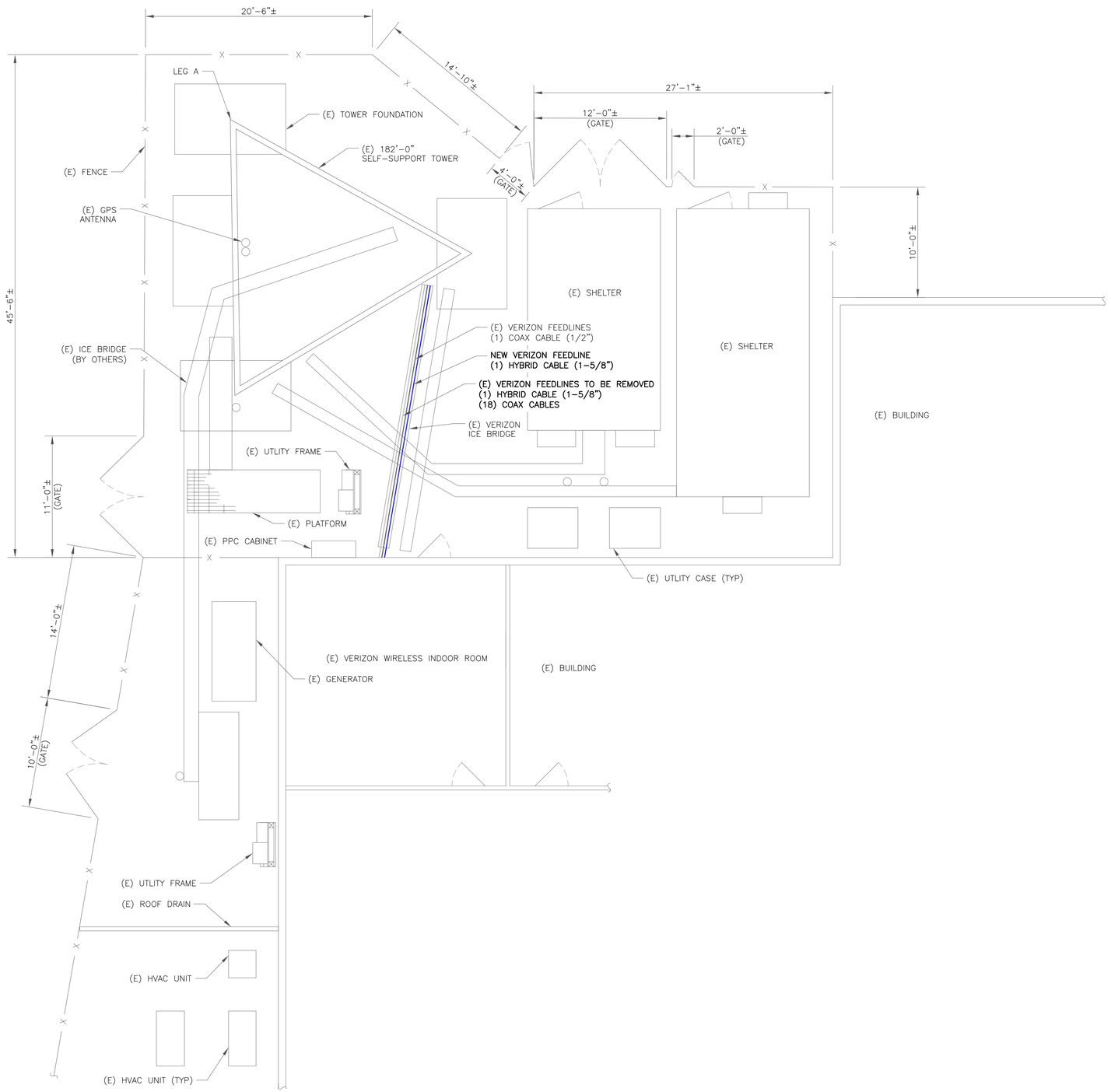
EXISTING 180'-0"
SELF-SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/13/22	MEH	CONSTRUCTION	CV
1	1/9/23	TDG	CONSTRUCTION	CV
2	2/10/23	TDG	CONSTRUCTION	ANP
3	6/12/23	TDG	CONSTRUCTION	MTJ
4	6/29/23	TDG	CONSTRUCTION	MTJ

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: **T-2** REVISION: **4**



1 SITE PLAN

SCALE: 4' 2' 0 4' 3/16"=1'-0" (FULL SIZE) 3/32"=1'-0" (11x17)

N

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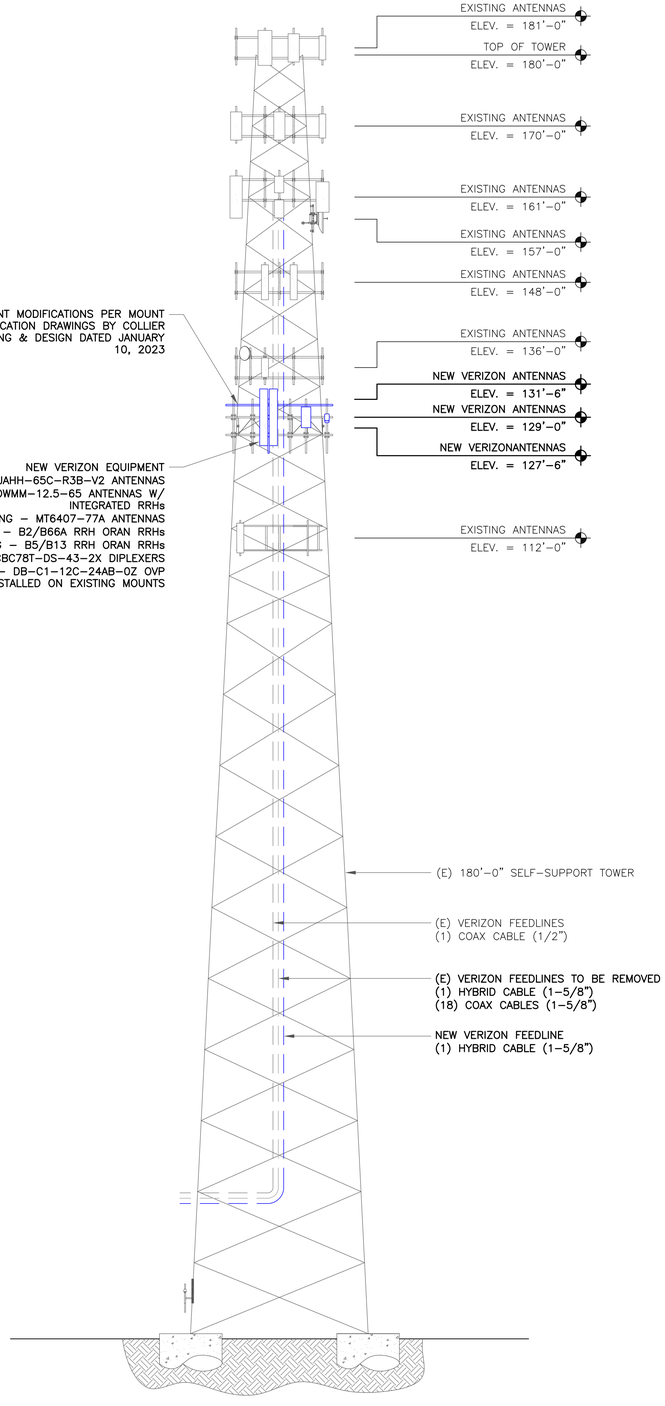
STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
6/29/23

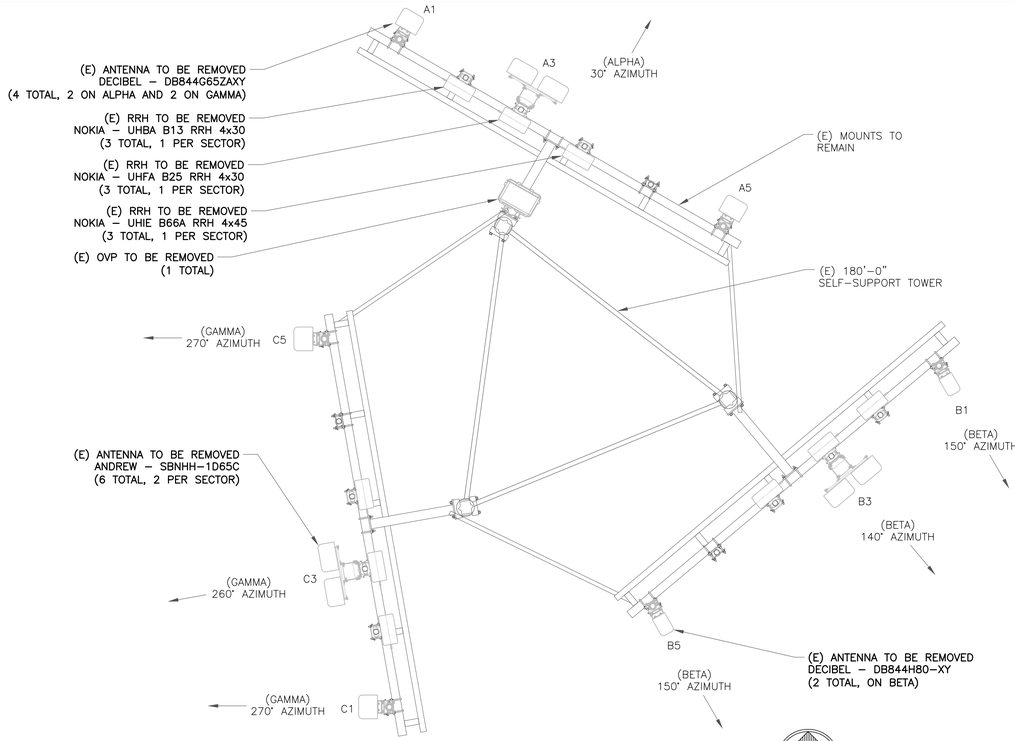
MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: C-1

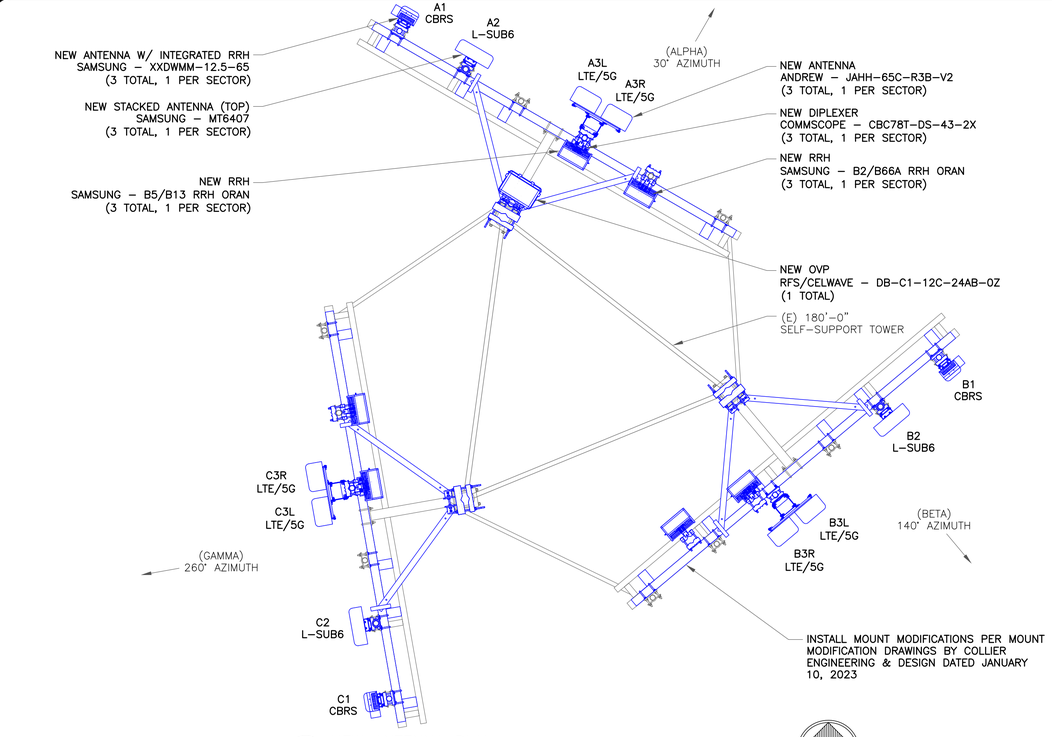
REVISION: 4



1 TOWER ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA PLAN
SCALE: NOT TO SCALE



3 NEW ANTENNA PLAN
SCALE: NOT TO SCALE

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MTS ENGINEERING P.L.L.C.
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Expires 3/31/23

SHEET NUMBER: C-2

REVISION: 4

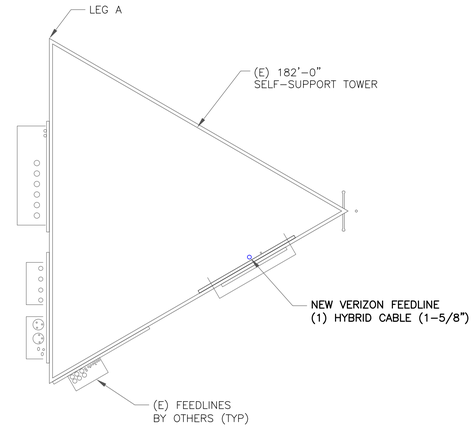
ANTENNA/RRH SCHEDULE

SECTOR	STATUS	ANTENNA MANUFACTURER	ANTENNA MODEL	ANTENNA CENTERLINE	AZIMUTH	MECHANICAL DOWNTILTS	ELECTRICAL DOWNTILTS	TOWER EQUIPMENT MANUFACTURER	TOWER EQUIPMENT QTY/MODEL
A1	NEW	SAMSUNG	XXDWMM-12.5-65	129'-0"	30°	0°	8°	-	INTEGRATED
A2	NEW	SAMSUNG	MT6407-77A	129'-0"	30°	0°	6°	-	INTEGRATED
A3L	NEW	COMMSCOPE	JAHH-65C-R3B-V2	129'-0"	30°	0°	6°/6°/6°	COMMSCOPE SAMSUNG SAMSUNG	(1) CBC78T-DS-43-2X (1) B5/B13 RRH ORAN (1) B2/B66A RRH ORAN
A3R	NEW	COMMSCOPE	JAHH-65C-R3B-V2	129'-0"	30°	0°	4°/4°		
A4	-	-	-	-	-	-	-	RFS/CELWAVE	(1) DB-C1-12C-24AB-0Z
B1	NEW	SAMSUNG	XXDWMM-12.5-65	129'-0"	140°	0°	8°	-	INTEGRATED
B2	NEW	SAMSUNG	MT6407-77A	129'-0"	140°	0°	6°	-	INTEGRATED
B3L	NEW	COMMSCOPE	JAHH-65C-R3B-V2	129'-0"	140°	0°	6°/11°/11°	COMMSCOPE SAMSUNG SAMSUNG	(1) CBC78T-DS-43-2X (1) B5/B13 RRH ORAN (1) B2/B66A RRH ORAN
B3R	NEW	COMMSCOPE	JAHH-65C-R3B-V2	129'-0"	140°	0°	4°/4°		
B4	-	-	-	-	-	-	-	-	-
C1	NEW	SAMSUNG	XXDWMM-12.5-65	129'-0"			8°	-	INTEGRATED
C2	NEW	SAMSUNG	MT6407-77A	129'-0"	260°	0°	6°	-	INTEGRATED
C3L	NEW	COMMSCOPE	JAHH-65C-R3B-V2	129'-0"	260°	0°	4°/6°/6°	COMMSCOPE SAMSUNG SAMSUNG	(1) CBC78T-DS-43-2X (1) B5/B13 RRH ORAN (1) B2/B66A RRH ORAN
C3R	NEW	COMMSCOPE	JAHH-65C-R3B-V2	129'-0"	260°	0°	4°/4°		
C4	-	-	-	-	-	-	-	-	-

1 VERIZON TOWER EQUIPMENT SCHEDULE
SCALE: NOT TO SCALE

CABLE SCHEDULE

STATUS	CABLE TYPE	SIZE	LENGTH	QTY
NEW	HYBRID	1-5/8"	179'-0"±	1
EXISTING	COAX	1/2"	180'-0"±	1
TOTAL CABLE QTY:				2



2 BASE LEVEL DETAIL
SCALE: NOT TO SCALE

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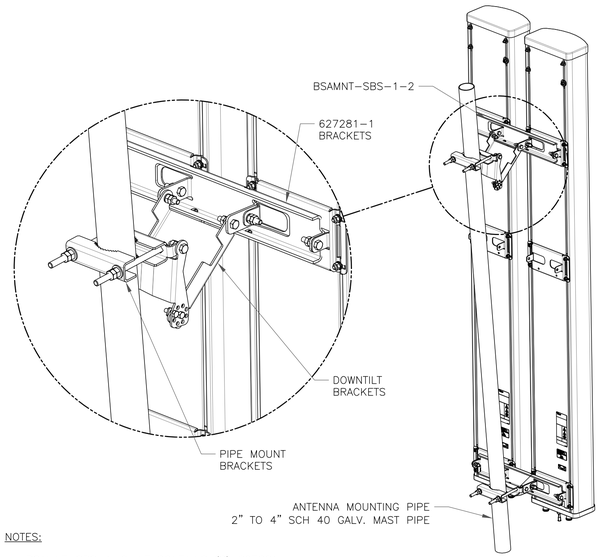
BER:2386985
Expires 3/31/23

SHEET NUMBER: C-3

REVISION: 4

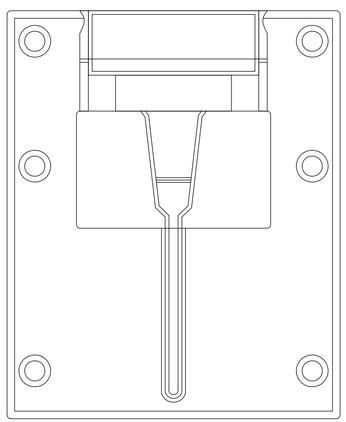


NOTES:

- BSAMNT-SBS-1-2 KIT CONTAINS (2) 627281 MOUNTING BRACKETS.
- TORQUE THE M10 BOLT ASSEMBLY TO 37 N.m. PER MANUFACTURE'S RECOMMENDATIONS.

1 COMMSCOPE – BSAMNT-SBS-1-2
SCALE: NOT TO SCALE

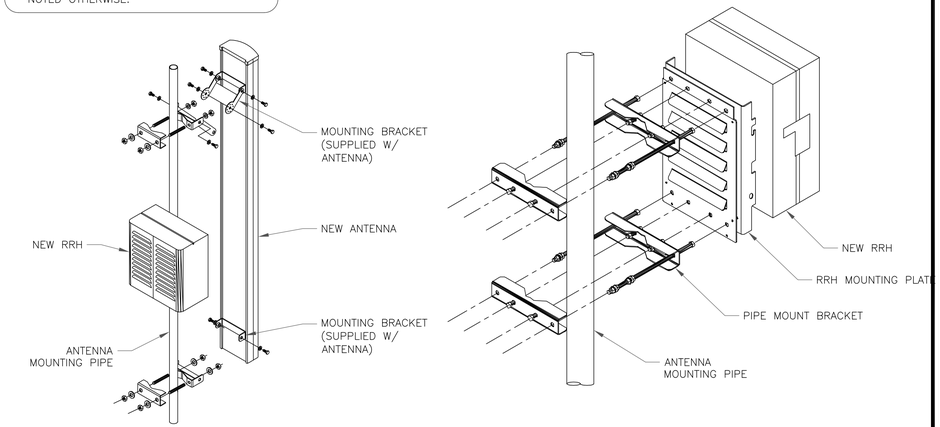
2 NOT USED
SCALE: NOT TO SCALE



3 SAMSUNG – EP97-01585A BRACKET DETAIL
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 ANTENNA WITH RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

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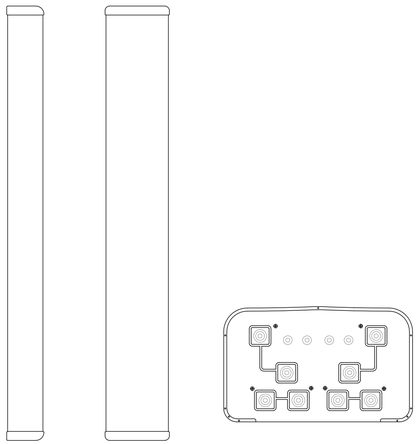
0	10/13/22	MEH	CONSTRUCTION	CV
1	1/9/23	TDG	CONSTRUCTION	CV
2	2/10/23	TDG	CONSTRUCTION	ANP
3	6/12/23	TDG	CONSTRUCTION	MTJ
4	6/29/23	TDG	CONSTRUCTION	MTJ

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
6/29/23

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

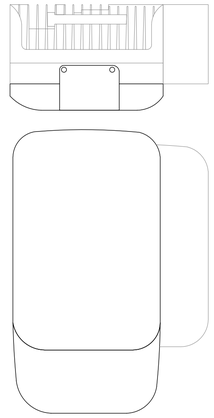
SHEET NUMBER: C-4

REVISION: 4



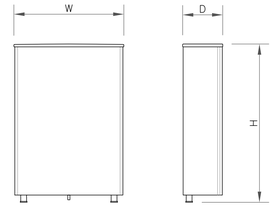
COMMSCOPE – JAHH-65C-R3B-V3
WEIGHT (WITHOUT MOUNTING HARDWARE): 79.4 LBS
SIZE (HxWxD): 95.7x13.8x8.2 IN.
MOUNTING HARDWARE P/N: BSAMNT-3
RATED WIND VELOCITY: 150.0 MPH

1 COMMSCOPE – JAHH-65C-R3B-V3
SCALE: NOT TO SCALE



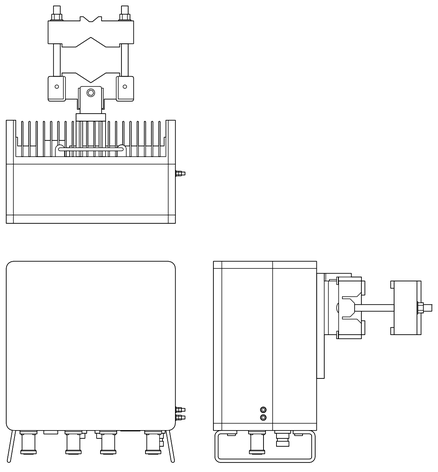
SAMSUNG – XXDWMM-12.5-65-8T-CBRS
W/RRH
WEIGHT (FULLY EQUIPPED): 20.9 LBS
SIZE (HxWxD): 12.3x8.7x5.5 IN.

2 ANTENNA W/RRH SPECS
SCALE: NOT TO SCALE



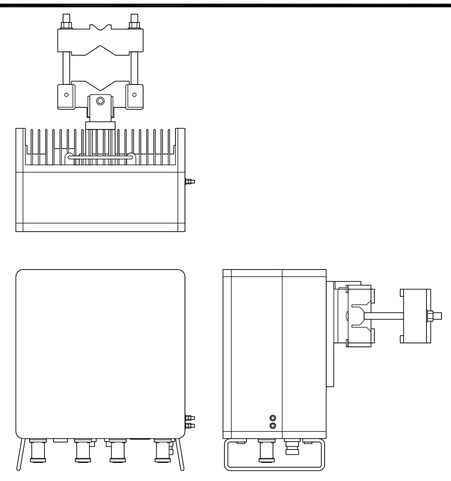
ANTENNA SPECS	
MANUFACTURER	SAMSUNG
MODEL #	MT6407-77A
WIDTH	16.06"
DEPTH	5.51"
HEIGHT	35.06"
WEIGHT	81.57 LBS

1 ANTENNA SPECS
SCALE: NOT TO SCALE



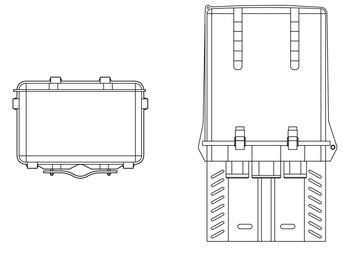
RRU SPECS	
MANUFACTURER	SAMSUNG
MODEL #	B5/B13 RRH ORAN
WIDTH	14.96"
DEPTH	9.06"
HEIGHT	14.96"
WEIGHT	72.50 LBS

4 RRU SPECS
SCALE: NOT TO SCALE



RRU SPECS	
MANUFACTURER	SAMSUNG
MODEL #	B2/B66A RRH ORAN
WIDTH	14.96"
DEPTH	10.04"
HEIGHT	14.96"
WEIGHT	74.70 LBS

5 RRU SPECS
SCALE: NOT TO SCALE



RFS/CELWAVE – DB-C1-12C-24AB-0Z
WEIGHT (WITHOUT MOUNTING HARDWARE): 32.0 LBS
SIZE (HxWxD): 29.5x16.5x12.6 IN.

RATED WIND VELOCITY: 150 MPH (SUSTAINED)
OPERATING TEMPERATURE: -40° C TO +80° C
NOMINAL OPERATING DC VOLTAGE: 48 VDC

6 RFS/CELWAVE – DB-C1-12C-24AB-0Z
SCALE: NOT TO SCALE

verizon
180 WASHINGTON VALLEY ROAD
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CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

VERIZON SITE NUMBER:
468538

BU #: **807133**
BRG 134 943057

50 ROCKLAND ROAD
NORWALK
NORWALK, CT 06854

EXISTING 180'-0"
SELF-SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/13/22	MEH	CONSTRUCTION	CV
1	1/9/23	TDG	CONSTRUCTION	CV
2	2/10/23	TDG	CONSTRUCTION	ANP
3	6/12/23	TDG	CONSTRUCTION	MTJ
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BER:2386985
Expires 3/31/23

SHEET NUMBER: C-5
REVISION: 4

- Port 1 & 2 are for low band (698-787 MHz).
- Port 3 & 4 are for low band (824-894 MHz).
- Port 3,4,5, & 6 are for high band (1695-2360 MHz).
- Antenna Smart Bias Tee (SBT) is through port 1 for low band and port 5 for high band.
- AISG cable is only needed when drawn in the diagrams below, if it is not drawn then SBT is enough to control all RET motors.
- Not all SBT ports are needed to control RET, only green port connection to green port will control RET.

RET DC signal pass for RET
(Port that will control RET)

DC signal capable Port

AISG Cable

RET DC signal pass for RET
(Port that will control RET)

Hybriflex cables

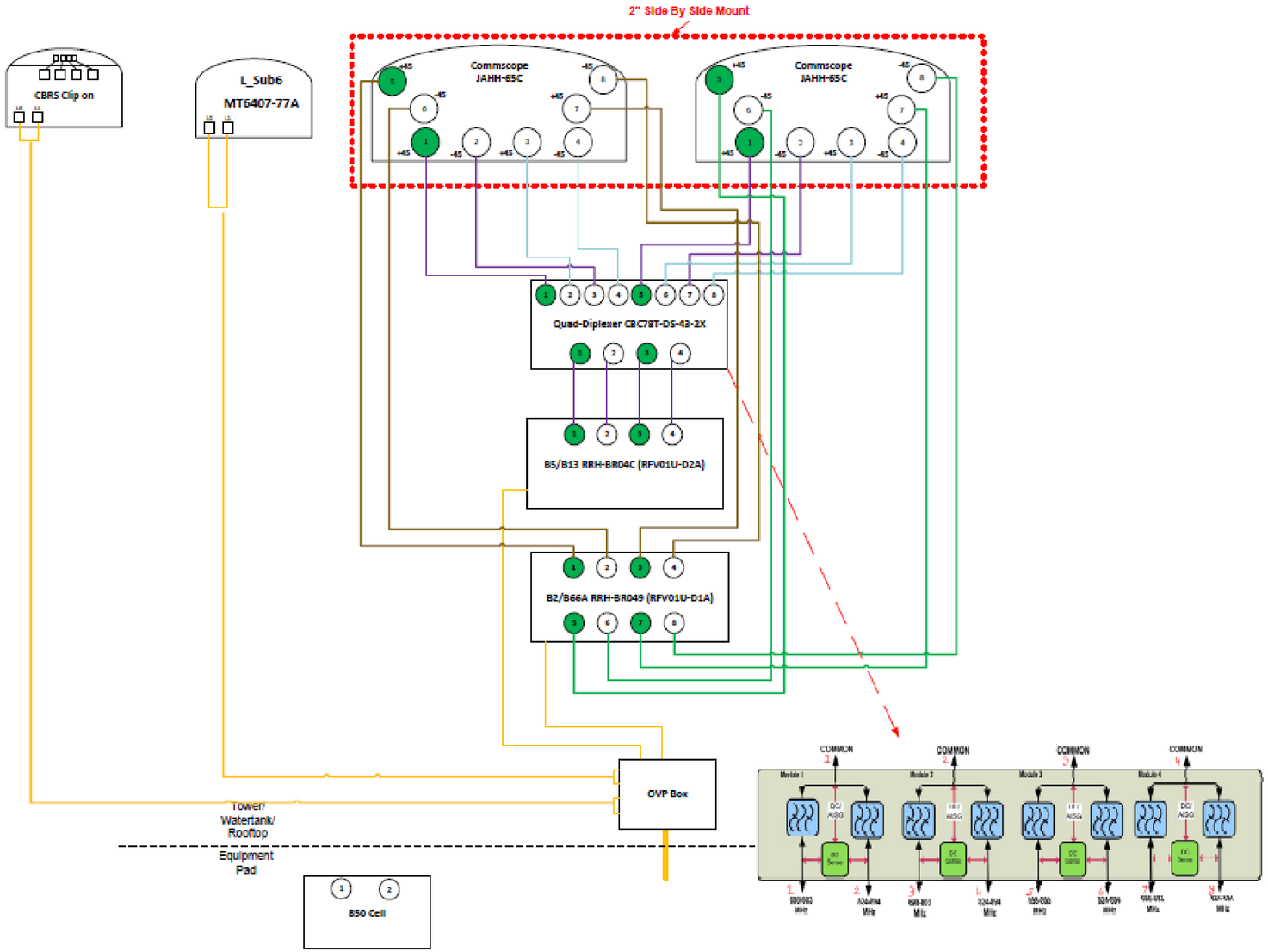
Comments:

Diagram shows configuration as viewed from standing behind the antennas.

Antennas will be installed in that order from left to right.

Cap and weatherproof unused antenna ports.

All plumbing diagram colors are irrelevant except for AISG & Hybriflex cable. (For the coax colors follow Coax Colors guide above)



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

verizon
180 WASHINGTON VALLEY ROAD
BEDMINSTER, NJ 07921

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

B+T GRP
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VERIZON SITE NUMBER:
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50 ROCKLAND ROAD
NORWALK
NORWALK, CT 06854

EXISTING 180'-0"
SELF-SUPPORT TOWER

ISSUED FOR:

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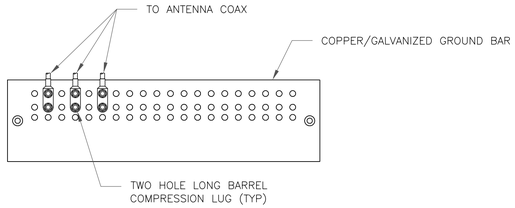
1	1/9/23	TDG	CONSTRUCTION	CV
2	2/10/23	TDG	CONSTRUCTION	ANP
3	6/12/23	TDG	CONSTRUCTION	MTJ
4	6/29/23	TDG	CONSTRUCTION	MTJ

STATE OF CONNECTICUT
DAVID L. OLSON
No. 23924
LICENSED
PROFESSIONAL ENGINEER
6/29/23

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: C-6

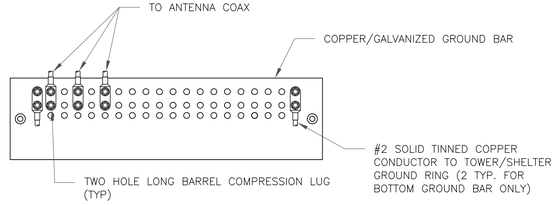
REVISION: 4



NOTES:

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

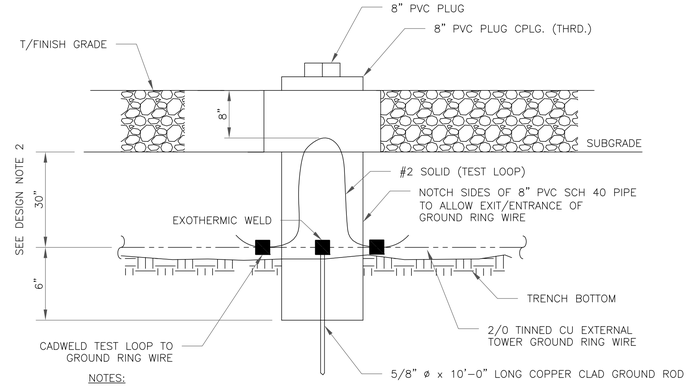
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

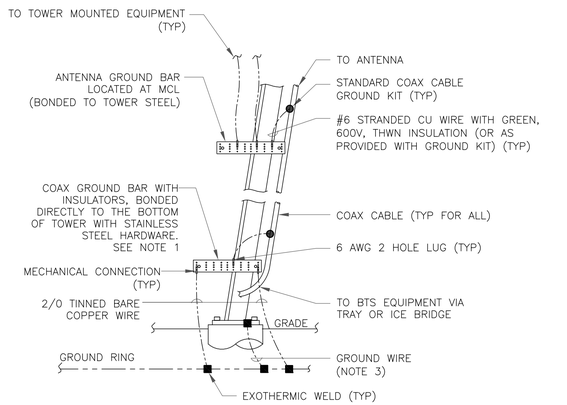
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

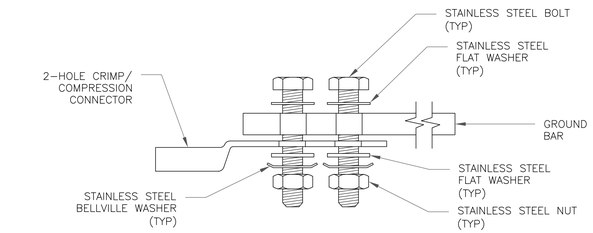
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



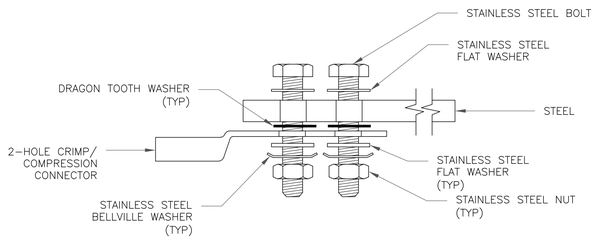
NOTES:

1. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE USA INC. TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

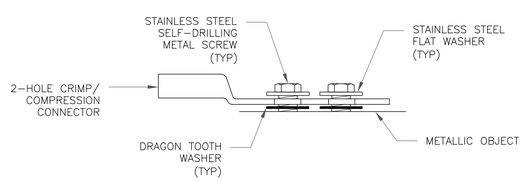
4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

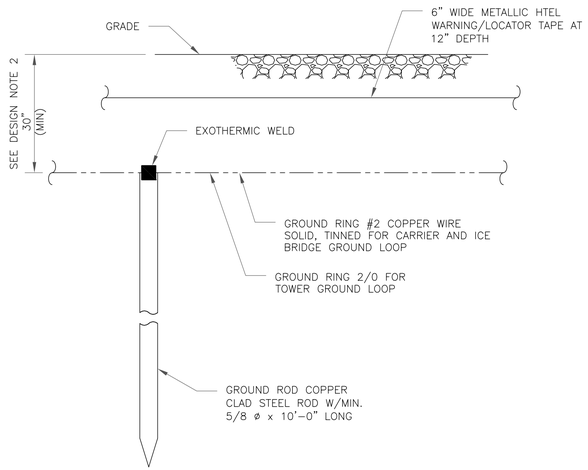


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

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3 CORPORATE PARK DRIVE, SUITE 101
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TULSA, OK 74119
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VERIZON SITE NUMBER:
468538

BU #: **807133**
BRG 134 943057

50 ROCKLAND ROAD
NORWALK
NORWALK, CT 06854

EXISTING 180'-0"
SELF-SUPPORT TOWER

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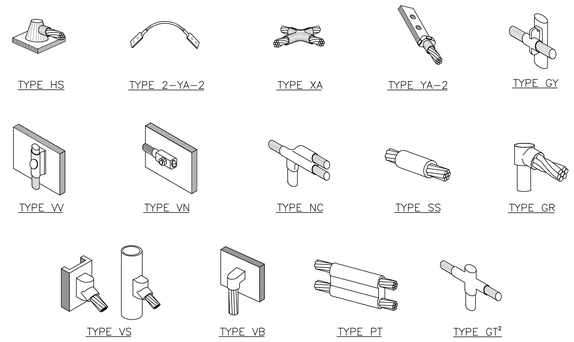
BER:2386985
Expires 3/31/23

SHEET NUMBER: G-1
REVISION: 4

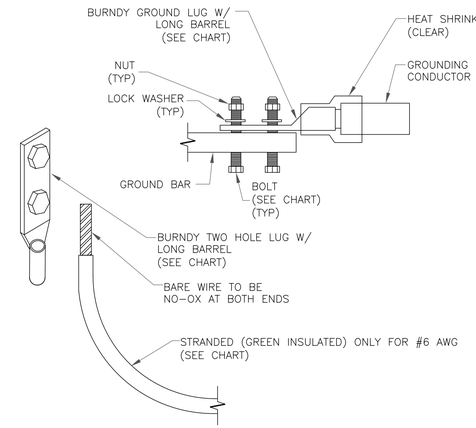


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

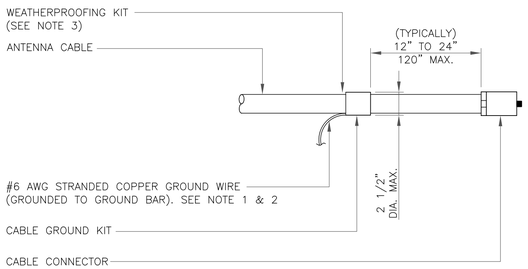
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

1. 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.

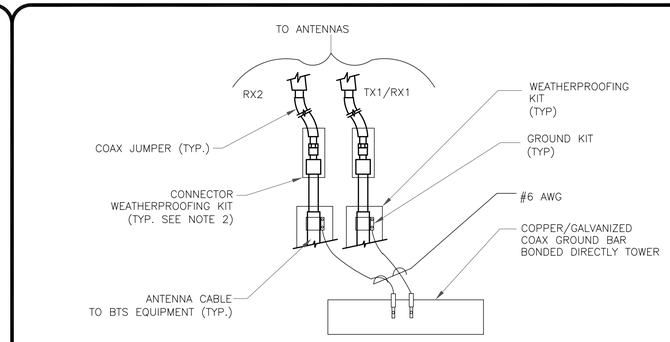
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

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

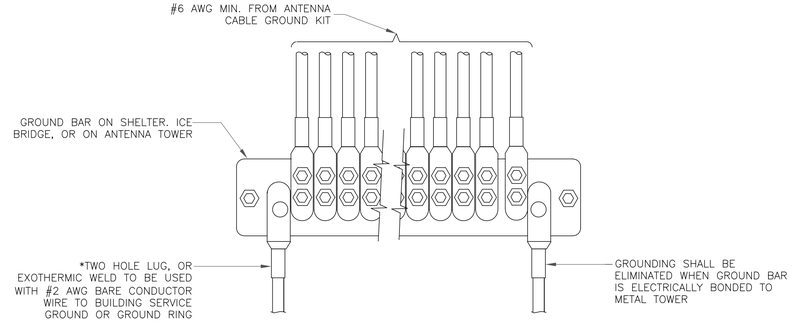
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



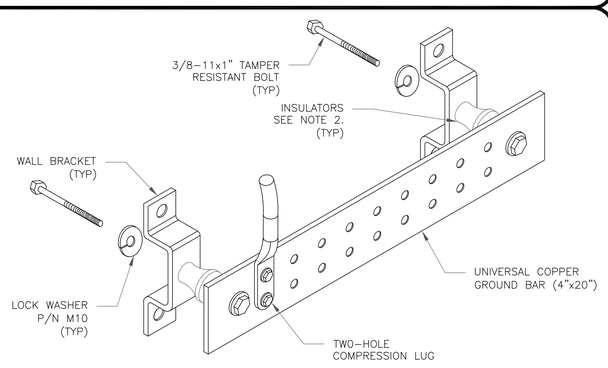
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



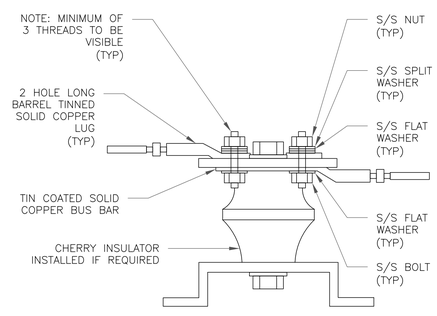
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



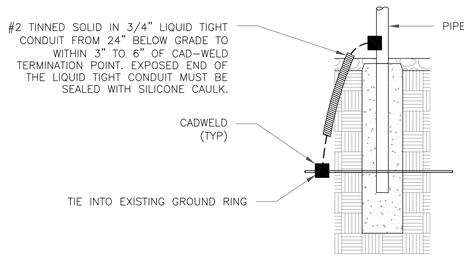
NOTES:

1. 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.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

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180 WASHINGTON VALLEY ROAD
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VERIZON SITE NUMBER:
468538

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BRG 134 943057

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EXISTING 180'-0"
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MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: G-2
REVISION: 4

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MOUNT MODIFICATION DRAWINGS
EXISTING 15.00' T-FRAME

TOWER OWNER: CROWN CASTLE
TOWER OWNER SITE NUMBER: 807133

CARRIER SITE NAME: NORWALK CT
CARRIER SITE NUMBER: 468538
FUZE ID: 16231923

50 ROCKLAND RD
NORWALK, CT 06854
FAIRFIELD COUNTY

LATITUDE: 41.081778° N
LONGITUDE: 73.430417° W

DESIGN CRITERIA

WIND LOADS

BASIC WIND SPEED (3 SECOND GUST), V = 118 MPH
EXPOSURE CATEGORY C
TOPOGRAPHIC CATEGORY: 1
TOPOGRAPHIC FEATURE CONSIDERED: N/A
TOPOGRAPHIC METHOD: N/A

MEAN BASE ELEVATION (AMSL) = 60.78'

ICE LOADS

ICE WIND SPEED (3 SECOND GUST), V = 50 MPH
ICE THICKNESS = 1.00 IN

SEISMIC LOADS

SEISMIC DESIGN CATEGORY B
SHORT TERM MCER GROUND MOTION, S_S = .244
LONG TERM MCER GROUND MOTION, S_1 = .057

PROJECT INFORMATION

APPLICANT/LESSEE

COMPANY: VERIZON WIRELESS

CLIENT REPRESENTATIVE

COMPANY: VERIZON WIRELESS

PROJECT MANAGER

COMPANY: COLLIERS ENGINEERING & DESIGN
CONTACT: PETER ALBANO
PHONE: 856.797.0412
E-MAIL: PETER.ALBANO@COLLIERSENG.COM

CONTRACTOR PMI REQUIREMENTS

PMI LOCATION: HTTPS://PMI.VZWSMART.COM
SMART TOOL PROJECT #: 10186219
VZW LOCATION CODE (PSLC): 468538
ANALYSIS DATE: 1/10/2023

PMI REQUIREMENTS EMBEDDED WITHIN MOUNT MODIFICATION REPORT

SHEET INDEX

Colliers Engineering & Design

www.colliersengineering.com

Doing Business as MASER CONSULTING

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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT:
WWW.CALL811.COM

SCALE :	JOB NUMBER :
AS SHOWN	21777077A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
.	.	.	.	.
.	.	.	.	.
1	1/10/23	ISSUED FOR CONSTRUCTION.	AE	DX
0	06/02/21	ISSUED FOR CONSTRUCTION	JRF	DX

STATE OF CONNECTICUT
DEJIAN XU
No. 33733
LICENSED PROFESSIONAL ENGINEER
01/10/2023

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

SITE NAME:

NORWALK CT
468538

50 ROCKLAND RD
NORWALK, CT 06854
FAIRFIELD COUNTY

Colliers Engineering & Design
MADISON
135 New Road
Madison, CT 06443
Phone: 860.395.0055
COLLIERS ENGINEERING & DESIGN CT, P.C.
DOING BUSINESS AS MASER CONSULTING

SHEET TITLE :
TITLE SHEET

SHEET NUMBER :
ST-1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

BILL OF MATERIALS

SECTION 1 - VZWSMART KITS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
3	VZWSMART	VZWSMART-P40-278X174	174" LONG, PIPE 2.5 SCH40 (2.875"OD X 0.203" THK)		84	252
3		VZWSMART-SFK3	V-BRACING KIT	CONTRACTOR TO VERIFY THE LENGTH REQUIRED AND TRIM AS NECESSARY IN ACCORDANCE WITH THE 'STRUCTURAL STEEL' NOTES ON SHEET SGN-1.	122	366
21		VZWSMART-MSK1	CROSSOVER PLATE		14	294
3		VZWSMART-AL333	CLIP ANGLE		3	9

SECTION 2 - OTHER REQUIRED PARTS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
18	-	-	PROPOSED 21" LONG, L4x4x1/4	GALVANIZED	12	216
3	-	-	PROPOSED 84" LONG, PIPE 2.5 SCH40	GALVANIZED	41	123
-	-	-	1/2 DIA. J429 GR-1 U-BOLTS	GALVANIZED, U-BOLT QUANTITY AND INNER WIDTH ARE TO BE VERIFIED BY CONTRACTOR	-	-

SECTION 3 - REQUIRED SAFETY CLIMB PARTS

QUANTITY	MANUFACTURER	PART NUMBER	DESCRIPTION	NOTES	UNIT WEIGHT (LBS.)	WEIGHT (LBS.)
					TOTAL:	1260

NOTES:

1. THE MANUFACTURERS LISTED ARE THE APPROVED VENDORS FOR THE VZW MOUNT KITS. EACH MANUFACTURER WILL BE AWARE OF WHICH KITS HAVE BEEN THROUGH THE VZW APPROVAL PROCESS AND THEY ARE IN TURN APPROVED TO SELL. PLEASE NOTE THAT THE MATERIAL UTILIZED ON THE MOUNT MODIFICATIONS WILL BE REVIEWED AS A PART OF THE DESKTOP PMI COMPLETED BY THE SMART TOOL VENDOR. IT WILL BE REQUIRED THAT THE VZW KITS SPECIFIED ARE UTILIZED IN THE MODIFICATIONS.

2. ALL MATERIALS REQUIRED FOR THE DESIGNED MODIFICATIONS BUT NOT LISTED IN THIS SHEET ARE ASSUMED TO BE PROVIDED BY THE CONTRACTOR.

VZWSMART KITS - APPROVED VENDORS

COMMSCOPE	
CONTACT	SALVADOR ANGUIANO
PHONE	(817) 304-7492
EMAIL	SALVADOR.ANGUIANO@COMMSCOPE.COM
WEBSITE	WWW.COMMSCOPE.COM

METROSITE FABRICATORS, LLC	
CONTACT	KENT RAMEY
PHONE	(706) 335-7045 (O), (706) 982-9788 (M)
EMAIL	KENT@METROSITELLC.COM
WEBSITE	METROSITEFABRICATORS.COM

PERFECTVISION	
CONTACT	WIRELESS SALES
PHONE	(844) 887-6723
EMAIL	WWW.PERFECT-VISION.COM
WEBSITE	WIRELESSSALES@PERFECT-VISION.COM

SABRE INDUSTRIES, INC.	
CONTACT	ANGIE WELCH
PHONE	(866) 428-6937
EMAIL	AKWELCH@SABREINDUSTRIES.COM
WEBSITE	WWW.SABRESITESOLUTIONS.COM

SITE PRO 1	
CONTACT	PAULA BOSWELL
PHONE	(972) 236-9843
EMAIL	PAULA.BOSWELL@VALMONT.COM
WEBSITE	WWW.SITEPRO1.COM

NEWAVE	
CONTACT	NEWAVE SALES TEAM
PHONE	(971) 239-4762
EMAIL	SALES@NEWAVETC.COM
WEBSITE	WWW.NEWAVETC.COM

BETTER METAL, LLC	
CONTACT	DAVID STANSBERRY
PHONE	(615) 535-0990 (O), (615) 631-2520 (M)
EMAIL	DLS@BETTERMETAL.COM
WEBSITE	WWW.BETTERMETAL.COM

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Phone: 860.395.0055
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SHEET TITLE: BILL OF MATERIALS

SHEET NUMBER: SBOM-1

GENERAL NOTES

1. THESE MODIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF THE TELECOMMUNICATIONS INDUSTRY STANDARD TIA-222-H. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES.
2. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT DAMAGE TO EXISTING STRUCTURES. ANY DAMAGE TO EXISTING STRUCTURES AS A RESULT OF THE CONTRACTOR'S WORK OR FROM DAMAGE DUE TO OTHER CAUSES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
3. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS BEFORE BEGINNING WORK, ORDERING MATERIAL, AND PREPARING OF SHOP DRAWINGS. ANY DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, NOTIFY THE ENGINEER IMMEDIATELY.
4. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE.
5. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.
6. 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/TIA-322 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-322 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.
7. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS IN ACCORDANCE WITH APPLICABLE SAFETY CODES.
8. WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 30-MPH). THE STRUCTURE SHOWN ON THE DRAWINGS IS STRUCTURALLY SOUND ONLY IN THE COMPLETED FORM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRENGTH AND STABILITY OF THE STRUCTURE DURING ERECTION. CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT, SHORING, BRACING AND ANY OTHER STRUCTURAL SYSTEMS AS REQUIRED TO RESIST ALL FORCES THAT MAY OCCUR DURING HANDLING AND ERECTION UNTIL THE STRUCTURE IS FULLY COMPLETED. TEMPORARY SUPPORTS, BRACING AND OTHER STRUCTURAL SYSTEMS REQUIRED DURING CONSTRUCTION SHALL REMAIN THE CONTRACTOR'S PROPERTY AFTER THEIR USE.
9. ALL INSTALLATIONS PERFORMED ON THIS STRUCTURE SHALL BE COMPLETED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF THE STANDARD FOR INSTALLATION, ALTERATION AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS, ANSI/TIA-322.
10. CONTRACTOR SHALL SECURE SITE BACK TO EXISTING CONDITION UNDER SUPERVISION OF OWNER. ALL FENCE, STONE, GEOFABRIC, GROUNDING, AND SURROUNDING GRADE SHALL BE REPLACED AND REPAIRED AS REQUIRED TO ACHIEVE OWNER APPROVAL. POSITIVE DRAINAGE AWAY FROM TOWER SITE SHALL BE MAINTAINED.
11. CONNECTIONS BETWEEN ITEMS SUPPORTED BY THE STRUCTURE AND THE STRUCTURE NOT SPECIFICALLY DETAILED IN THE CONTRACT DOCUMENTS ARE THE RESPONSIBILITY OF THE CONTRACTOR. SUCH CONNECTIONS SHALL BE DESIGNED, COORDINATED AND INSPECTED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF THE PROJECT. SUBMIT SIGNED AND SEALED CALCULATIONS DURING SHOP DRAWING REVIEW.
12. DO NOT SCALE DRAWINGS.
13. DO NOT USE THESE DRAWINGS FOR ANY OTHER SITE.
14. ALL MATERIAL UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS. ANY MATERIAL SUBSTITUTIONS, INCLUDING BUT NOT LIMITED TO ALTERED SIZE AND/OR STRENGTHS, MUST BE APPROVED BY THE OWNER AND ENGINEER IN WRITING.
15. THE MOUNT UNDER NO CIRCUMSTANCES SHOULD BE USED AS A TIE OFF POINT.

STRUCTURAL STEEL

1. DESIGN, DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING PUBLICATIONS EXCEPT AS SPECIFICALLY INDICATED IN THE CONTRACT DOCUMENTS.
   a. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION (15TH EDITION)
   b. SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS
   c. AISC CODE OF STANDARD PRACTICE
2. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING UNLESS OTHERWISE SHOWN:

CHANNELS, ANGLES, PLATES, ETC.	ASTM A36 (GR 36)
STEEL PIPE	ASTM A53 (GR 35)
BOLTS	ASTM A325
NUTS	ASTM A563
LOCK WASHERS	LOCKING STRUCTURAL GRADE

3. ALL SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR VERIFYING THE SUBSTITUTE IS SUITABLE FOR USE AND MEETS ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
4. PROVIDE STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
   a. SUBMIT SHOP DRAWINGS TO

      PETER.ALBANO@COLLIERSENG.COM

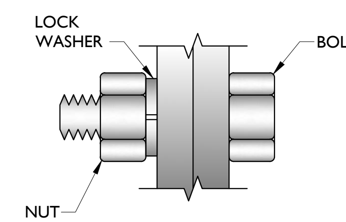
   b. PROVIDE COLLIERS ENGINEERING & DESIGN PROJECT # AND COLLIERS ENGINEERING & DESIGN PROJECT ENGINEER CONTACT IN THE BODY OF THE EMAIL.
5. DRILL NO HOLES IN ANY NEW OR EXISTING STRUCTURAL STEEL MEMBERS OTHER THAN THOSE SHOWN ON STRUCTURAL DRAWINGS WITHOUT THE APPROVAL OF THE ENGINEER OF RECORD.
6. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
7. ALL NEW STEEL SHALL BE HOT BE DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. IN ADDITION ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.
8. ALL BOLT ASSEMBLIES FOR STRUCTURAL MEMBERS REPRESENTED IN THIS DRAWING REQUIRE LOCKING DEVICES TO BE INSTALLED IN ACCORDANCE WITH TIA-222-H SECTION 4.9.2 REQUIREMENTS.
9. WHERE CONNECTIONS ARE NOT FULLY DETAILED ON THESE DRAWINGS, FABRICATOR SHALL DESIGN CONNECTIONS TO RESIST LOADS AND FORCES WHERE SHOWN ON DRAWINGS AND AS OUTLINED IN SPECIFICATIONS.
10. FOR MEMBERS BEING REPLACED, PROVIDE NEW BOLTS AND MATCH EXISTING SIZE AND GRADE. MAINTAIN AISC REQUIREMENTS FOR MINIMUM BOLT DISTANCE AND SPACING.
11. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT IS AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
12. GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
13. ALL NEW STEEL SHALL BE HOT BE DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.
14. ALL EXISTING PAINTED/GALVANIZED SURFACES DAMAGED DURING REHAB INCLUDING AREAS UNDER STIFFENER PLATES SHALL BE WIRE BRUSHED CLEAN, REPAIRED BY COLD GALVANIZING (ZINGA OR ZINC COTE), AND REPAINTED TO MATCH THE EXISTING FINISH (IF APPLICABLE).
15. ALL HOLES IN STEEL MEMBERS SHALL BE SIZED 1/16" LARGER THAN THE BOLT DIAMETER. STANDARD HOLES SHALL BE USED UNLESS NOTED OTHERWISE.

BOLT SCHEDULE (IN.)

BOLT DIAMETER	STANDARD HOLE	SHORT SLOT	MIN. EDGE DISTANCE	SPACING
1/2	9/16	9/16 x 11/16	7/8	1 1/2
5/8	11/16	11/16 x 7/8	1 1/8	1 7/8
3/4	13/16	13/16 x 1	1 1/4	2 1/4
7/8	15/16	15/16 x 1 1/8	1 1/2	2 5/8
1	1 1/16	1 1/16 x 1 5/16	1 3/4	3

WORKABLE GAGES (IN.)

LEG	GAGE
4	2 1/2
3 1/2	2
3	1 3/4
2 1/2	1 3/8
2	1 1/8

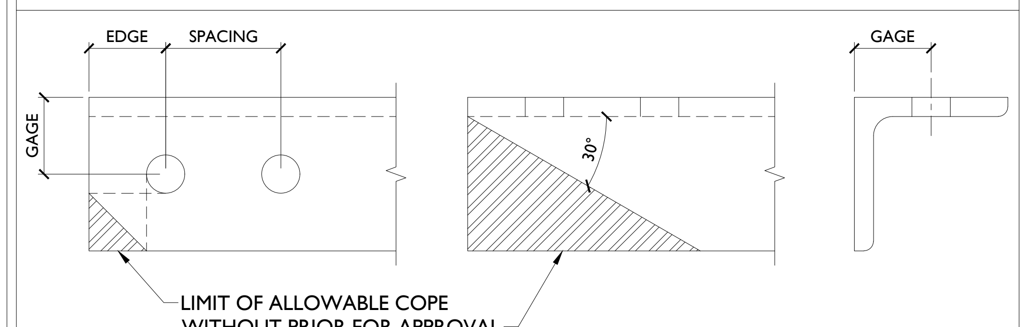


TYP. BOLT ASSEMBLY

NOTES:

1. ALL DIMENSIONS REPRESENTED IN THE ABOVE TABLES ARE AISC MINIMUM REQUIREMENTS. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS IN FIELD AND NOTIFY ENGINEER IF DISTANCES ARE LESS THAN THOSE PROVIDED.
2. THE DIMENSIONS PROVIDED ARE MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS OF PROPOSED MEMBERS WITHIN THESE DRAWINGS MAY VARY FROM THE AISC MINIMUM REQUIREMENTS.
3. SHORT SLOT HOLES SHALL ONLY BE USED WHEN DEPICTED IN THE DRAWINGS
4. MATCH EXISTING GAGES WHEN APPLICABLE, UNLESS MINIMUM EDGE DISTANCES ARE COMPROMISED.

ALLOWABLE COPING



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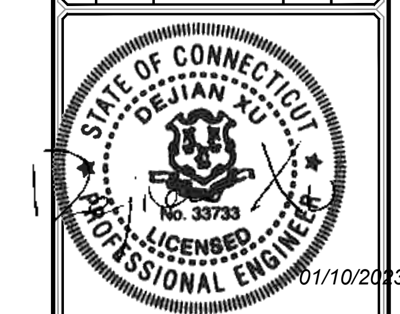

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MADISON
135 New Road
Madison, CT 06443
Phone: 860.395.0055
COLLIERS ENGINEERING & DESIGN CT, P.C.
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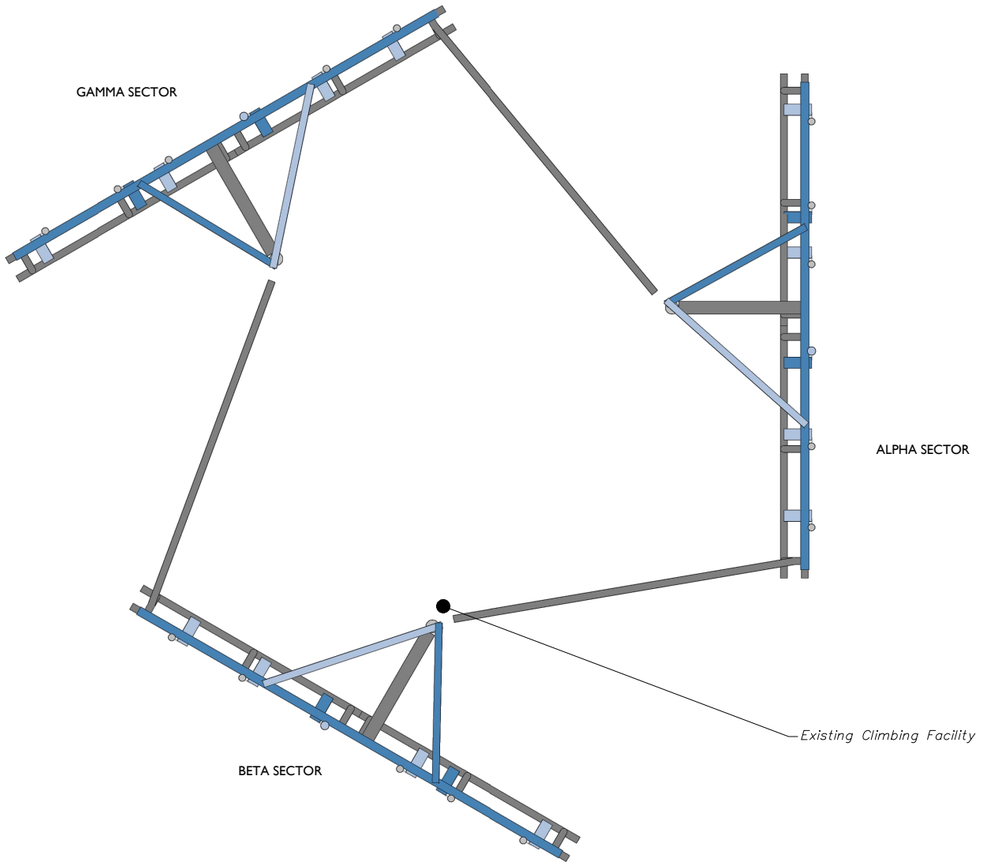
SHEET TITLE :
GENERAL NOTES

SHEET NUMBER :
SGN-1

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



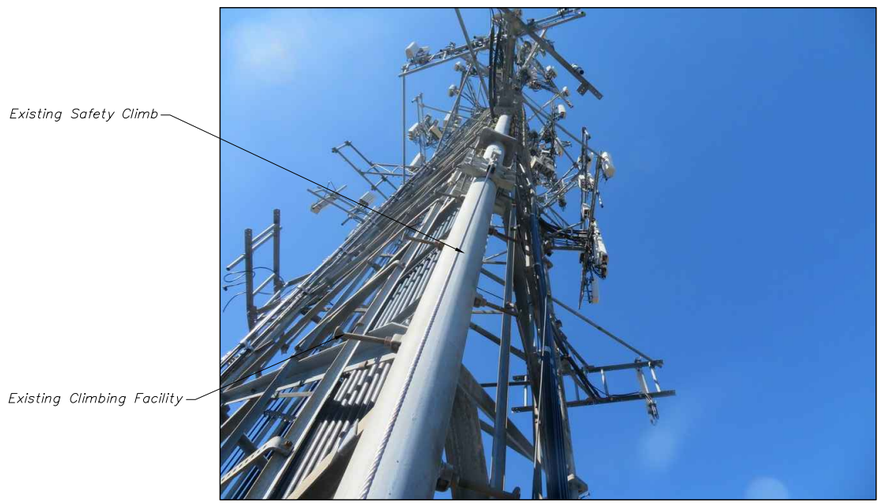
1 CLIMBING FACILITY LOCATION

SCALE : N.T.S.

STRUCTURAL NOTES:

1. PER THE MOUNT MAPPING COMPLETED BY HUDSON DESIGN GROUP LLC. ON 3/8/2021, THE SAFETY CLIMB AND CLIMBING FACILITIES UP TO THE VERIZON MOUNT ELEVATION (128'-0") ARE IN GOOD CONDITION. COLLIERS ENGINEERING & DESIGN DOES NOT WARRANT THIS INFORMATION.

2. INSTALL SHALL NOT CAUSE HARM TO THE STRUCTURE, CLIMBING FACILITY, SAFETY CLIMB, OR ANY SYSTEM INSTALLED ON THE STRUCTURE. TIMELY NOTICE AND DOCUMENTATION SHALL BE PROVIDED BY CONTRACTORS TO THE EOR (OF STRUCTURAL DESIGN) IF AN OBSTRUCTION WAS REQUIRED TO MEET THE RF SYSTEM DESIGN REQUIREMENTS AND PERFORMANCES.



CLIMBING FACILITY PHOTO

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LICENSED PROFESSIONAL ENGINEER
01/10/2023

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SHEET TITLE :

CLIMBING FACILITY DETAIL

SHEET NUMBER :

SCF-1

LEGEND:

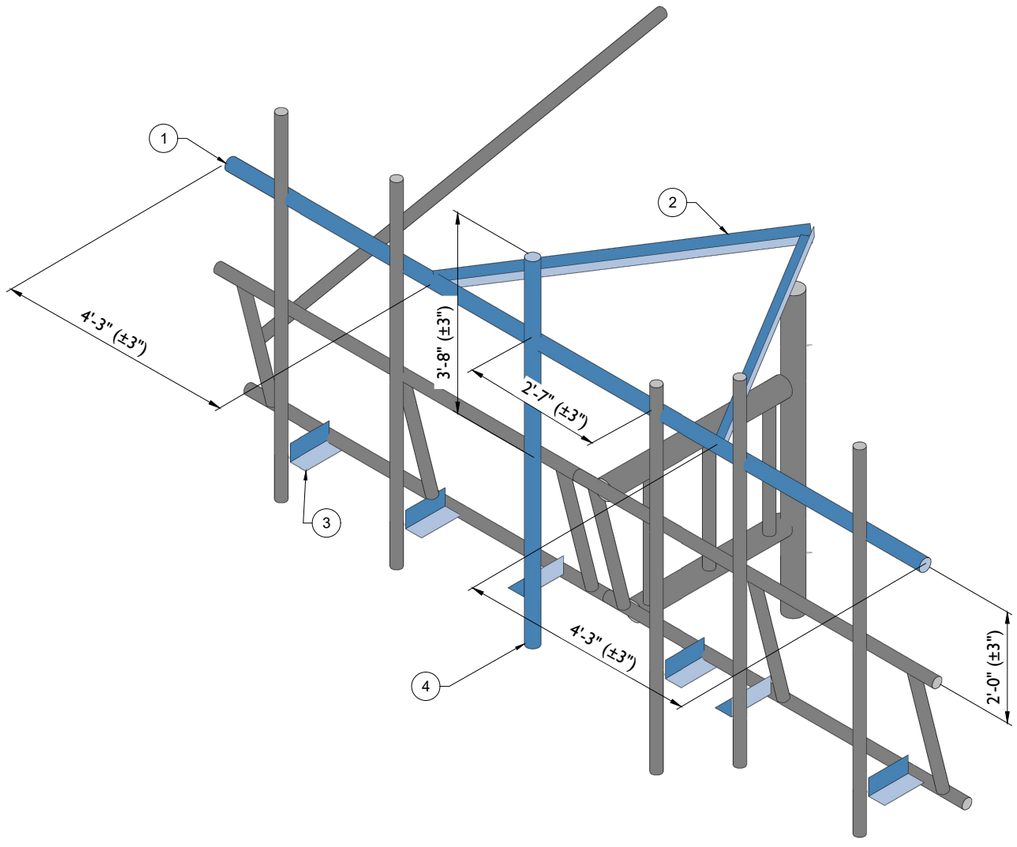
- PROPOSED
- RELOCATED
- EXISTING

MOUNT MODIFICATION SCHEDULE

NO.	ELEVATION	QUANTITY	DESCRIPTION	NOTES
1	128'-0"	3	PROPOSED 174" LONG, PIPE 2.5 SCH40 (PART #: VZWSMART-P40-278X174)	RADIO AND/OR TME POSITIONS SHALL BE ADJUSTED VERTICALLY AS NEEDED IN ORDER TO ACHIEVE INSTALLATION OF HORIZONTAL AS SHOWN. EOR SHALL BE NOTIFIED IF EQUIPMENT NEEDS TO BE RELOCATED TO ANOTHER MOUNT PIPE. CONNECT NEW HORIZONTAL TO ALL VERTICAL MOUNT PIPES WITH CROSSOVER PLATES (PART # VZWSMART-MSK1).
2		3	PROPOSED V-BRACING KIT (PART #: VZWSMART-SFK3)	CONTRACTOR TO VERIFY THE LENGTH REQUIRED AND TRIM AS NECESSARY IN ACCORDANCE WITH THE 'STRUCTURAL STEEL' NOTES ON SHEET SGN-1. SEE GENERAL NOTE A. CONTRACTOR SHALL INSTALL ONE PROPOSED CLIP ANGLE (PART #:VZWSMART-AL333) AT EITHER END OF EACH LONG ANGLE IN THE SFK3 KIT.
3		3	PROPOSED 21" LONG, L4X4X1/4	CONNECTION ANGLE CAN BE INSTALLED ON EITHER SIDE OF MOUNT PIPE IF THERE ARE CLEARANCE ISSUES. CONNECT TO EXISTING HORIZONTAL AND MOUNT PIPES USING (2) 1/2" DIA. J429 GR-I U-BOLTS FOR EACH CONNECTION.
4		18	PROPOSED 84" LONG, P2.5 SCH40 MOUNT PIPE	CONNECT NEW MOUNT PIPE TO EXISTING ROUND FACE HORIZONTAL WITH CROSSOVER PLATES (PART #: VZWSMART-MSK1).

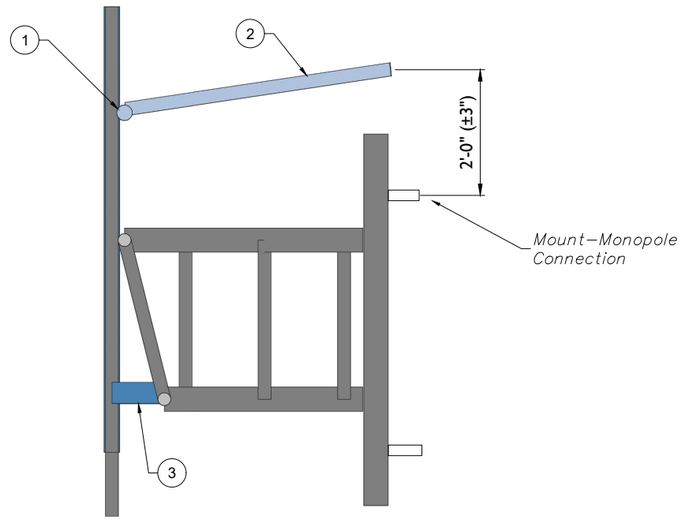
GENERAL NOTES:

A. CONTRACTOR SHALL VERIFY THAT NEW & EXISTING STEEL IS FREE OF CORROSION. VISIBLE MINOR CORROSION SHALL BE WIRE BRUSHED CLEAN AND TREATED WITH COLD GALVANIZATION. REPORT ANY SIGNIFICANT CORROSION TO EOR
B. THREADED ROD FROM PROPOSED KITS SHALL BE TRIMMED TO EXTEND NO MORE THAN 3" BEYOND THE LOCK NUT. TREAT ALL CUT ENDS WITH (2) COATS OF COLD GALVANIZATION (ZINGA OR ZINC KOTE).
C. MOUNT MEMBERS NOT SHOWN FOR CLARITY U.N.O.



1 PROPOSED ISOMETRIC VIEW (TYP. ALL SECTORS)

SCALE : N.T.S.



2 PROPOSED SIDE ELEVATION VIEW (TYP. ALL SECTORS)

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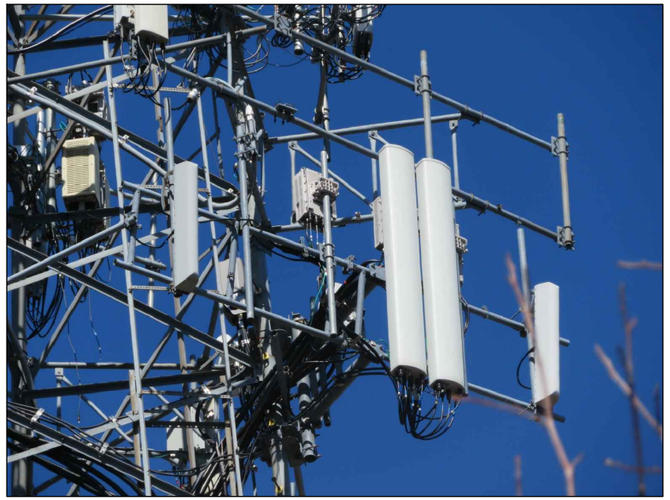
SHEET TITLE :
MODIFICATION DETAILS

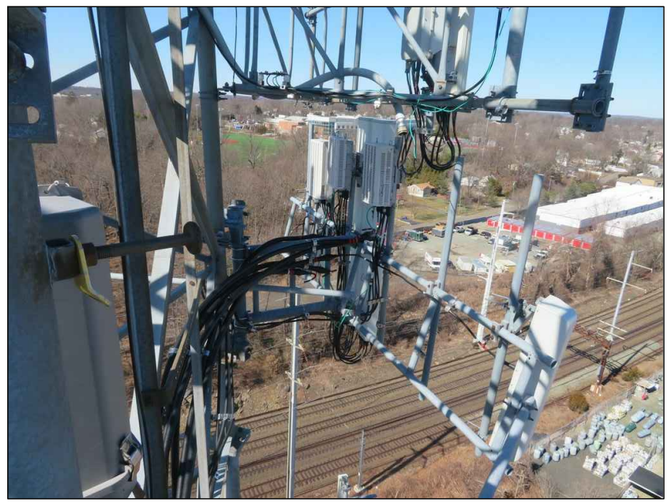
SHEET NUMBER :
SS-1



MOUNT PHOTO 1

MOUNT PHOTO 2

MOUNT PHOTO 3



MOUNT PHOTO 4

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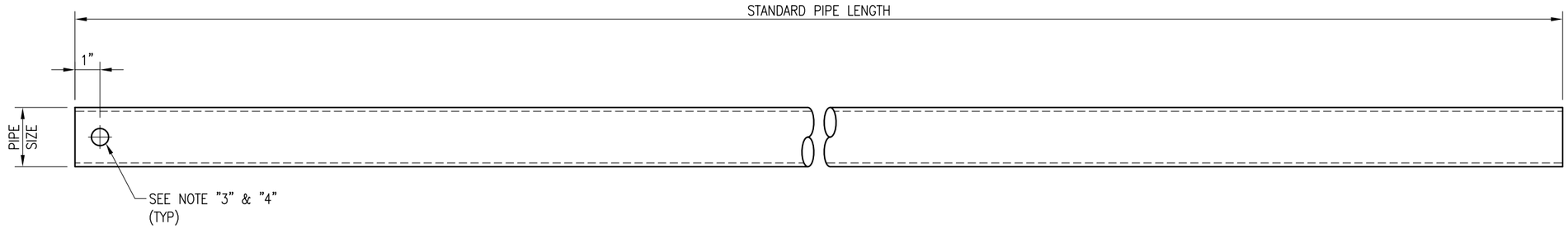
SHEET TITLE: MOUNT PHOTOS

SHEET NUMBER: SS-2



VZWSMART Standard Pipe		
VZWSMART Number	Size	Length
P40-238X048	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	48"
P40-238X072	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	72"
P40-238X096	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	96"
P40-238X120	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	120"
P40-238X126	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	126"
P40-238X150	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	150"
P40-238X174	PIPE 2 SCH40 (2.375" OD x 0.154" THK)	174"
P40-278X048	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	48"
P40-278X072	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	72"
P40-278X096	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	96"
P40-278X120	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	120"
P40-278X126	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	126"
P40-278X150	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	150"
P40-278X174	PIPE 2.5 SCH40 (2.875" OD x 0.203" THK)	174"
P40-312X048	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	48"
P40-312X072	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	72"
P40-312X126	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	126"
P40-312X150	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	150"
P40-312X174	PIPE 3 SCH40 (3.5" OD x 0.216" THK)	174"

NOTE:
APPROVED SMART KIT VENDORS ARE ALLOWED TO SUBSTITUTE AT THEIR DISCRETION PIPES LISTED ON THIS PAGE FOR CUSTOM LENGTH COMPONENTS OF MATCHING SIZE. SUBSTITUTIONS SHALL MEET THE ORIGINAL STRUCTURAL INTENT.

NOTES:
1. ALL PIPE GRADE A53-B OR BETTER.
2. HOT-DIPPED GALVANIZED PER ASTM A123.
3. ALL HOLES ARE 11/16" DIA. U.N.O
4. HOLES MAY OR MAY NOT BE PRESENT, DEPEND UPON MANUFACTURE DISCRETION.
5. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZINGA OR ZINC COTE PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

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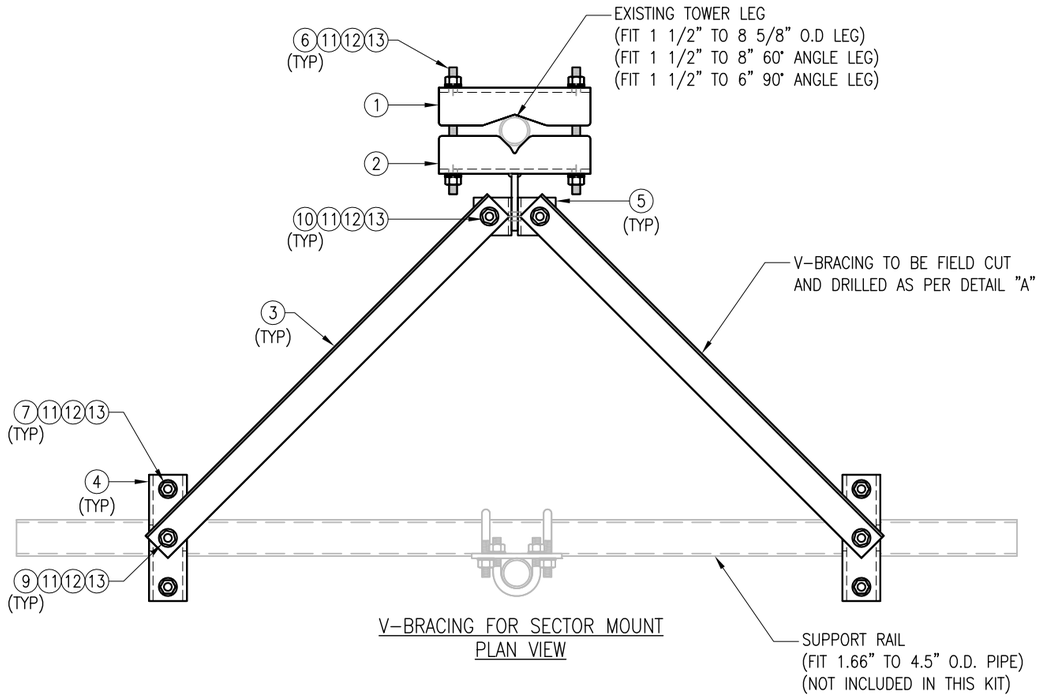
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	BT	08/04/21

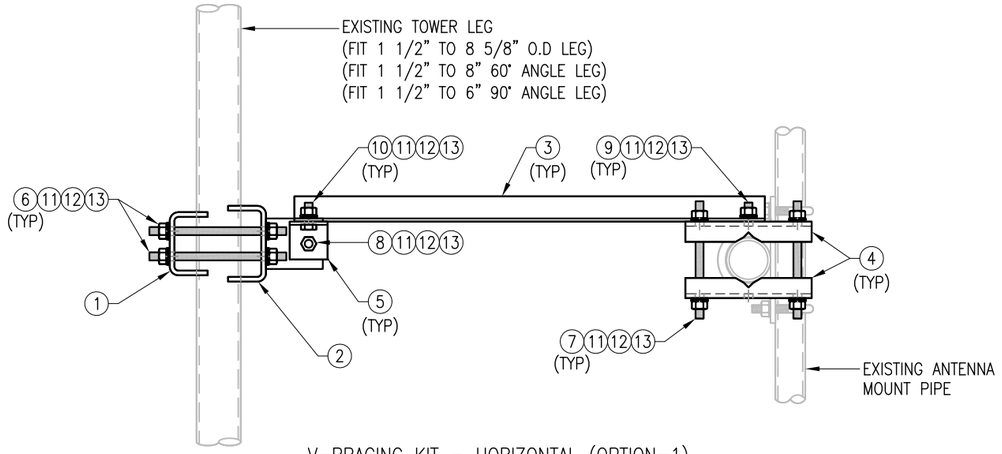
SHEET TITLE:
VZWSMART STANDARD PIPE

SHEET NUMBER: VZWSMART-PIPE

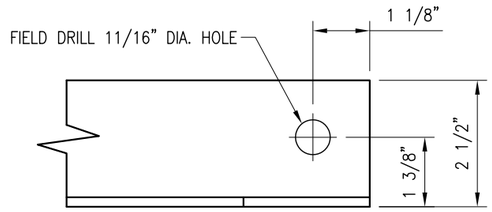
REV #: 0



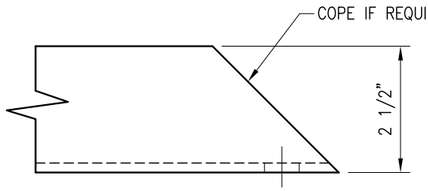
V-BRACING FOR SECTOR MOUNT
PLAN VIEW



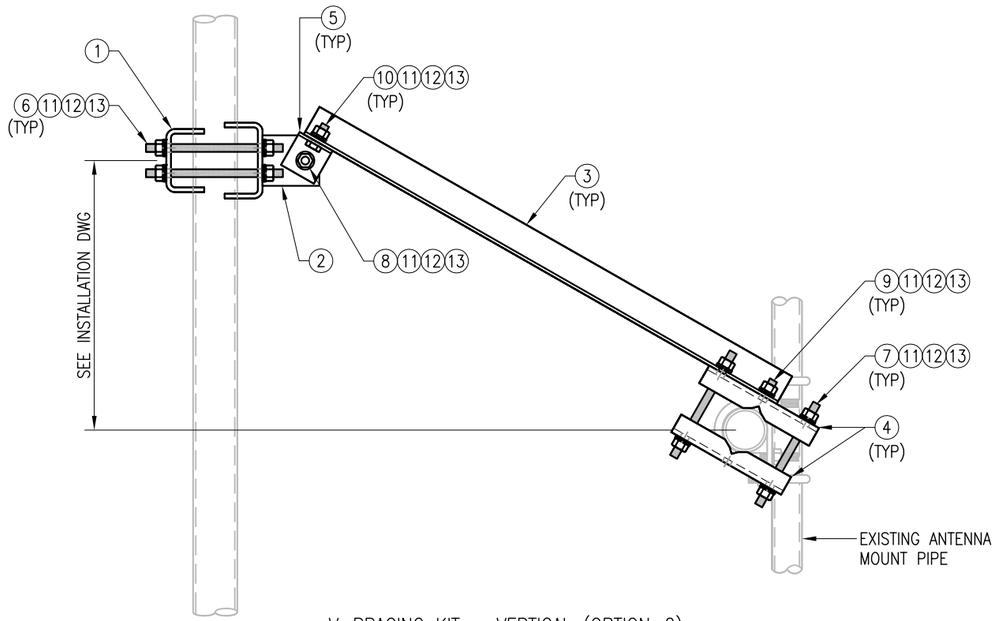
V-BRACING KIT - HORIZONTAL (OPTION-1)
SIDE VIEW



PLAN VIEW



FRONT VIEW
DETAIL "A"



V-BRACING KIT - VERTICAL (OPTION-2)
SIDE VIEW

VZWSMART-SFK3 (V-BRACING KIT)

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	BP9625-12	PL 3/8" X 9 5/8" X 1'-0" A36 BENT PLATE	VBSM-F1	12
2	1	BRKW-VBSM	WELDMENT BRACKET	VBSM-F3	16
3	2	L252525-8	L 2 1/2" X 2 1/2" X 1/4" X 8'-0" A36	VBSM-F5	67
4	4	BP6875-10	PL 3/8" X 6 7/8" X 10" A36 BENT PLATE	VBSM-F2	20
5	2	AL-333	L 3" X 3" X 1/4" X 3" A36	VBSM-F2	3
6	4	---	THREADED ROD 5/8" DIA. X 1'-6" F1554-36 HDG	---	--
7	4	---	THREADED ROD 5/8" DIA. X 10" F1554-36 HDG	---	--
8	1	---	BOLT 5/8" X 2 1/4" A325	---	--
9	2	---	BOLT 5/8" X 2" A325	---	--
10	2	---	BOLT 5/8" X 1 3/4" A325	---	--
11	21	FW-625	5/8" HDG USS FLAT WASHER	---	2
12	21	LW-625	5/8" HDG LOCK WASHER	---	0
13	21	NUT-625	5/8" HDG HEX NUT	---	2
				GALVANIZED WT	122

NOTES:
1. HOT-DIPPED GALVANIZED PER ASTM A123.

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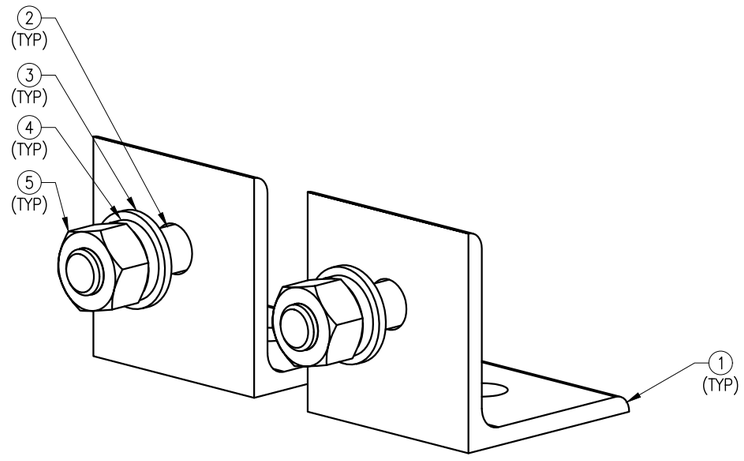
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	H.R.	05/08/20

SHEET TITLE:
VZWSMART-SFK3
V-BRACING KIT

SHEET NUMBER: VZWSMART-SFK3

REV #: 0



CLIP ANGLE
ISOMETRIC VIEW

NOTES:
1. HOT-DIPPED GALVANIZED PER ASTM A123.

VZWSMART-AL333 (CLIP ANGLE)

ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	2	AL-333	L 3" X 3" X 1/4" X 3" A36	AL333-F1	2.50
2	2	---	BOLT 5/8" X 2" FULL THREAD SAE GR-5	---	0.77
3	2	FW-625	5/8" HDG USS FLAT WASHER	---	0
4	2	LW-625	5/8" HDG LOCK WASHER	---	0
5	2	NUT-625	5/8" HDG HEX NUT	---	0
				GALVANIZED WT	3.27

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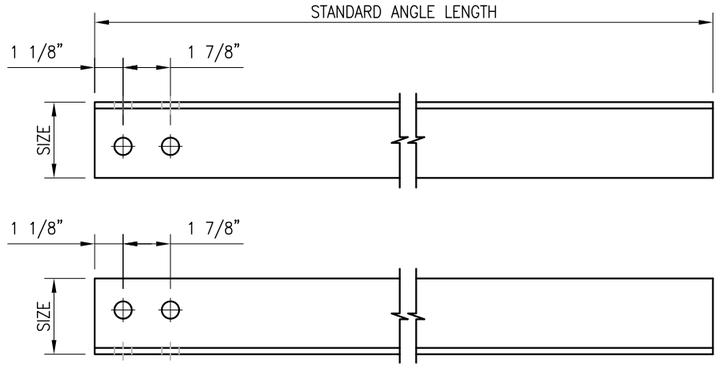
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	JBM	10/08/21

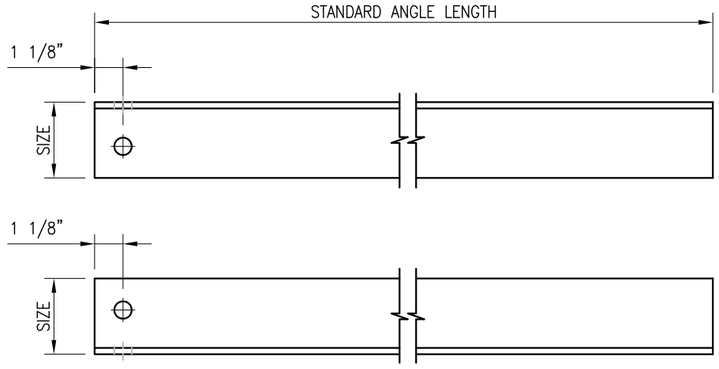
SHEET TITLE:
VZWSMART-AL333
CLIP ANGLE

SHEET NUMBER: VZWSMART-AL333

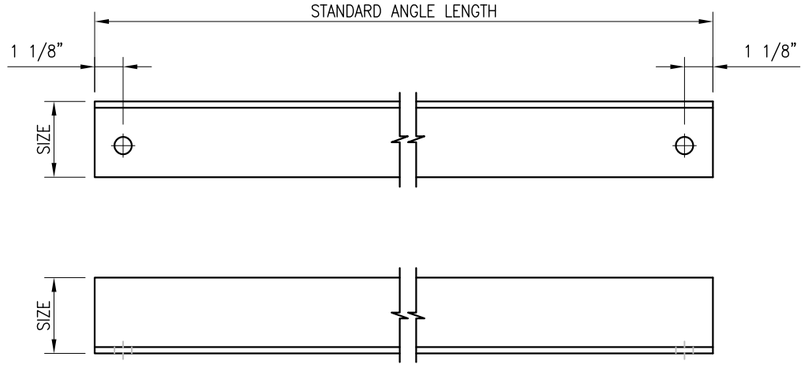
REV #: 0



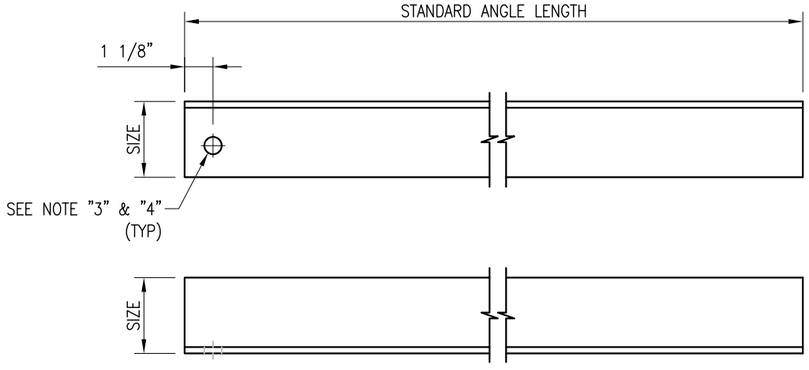
HOLE STYLE "A"



HOLE STYLE "B"



HOLE STYLE "C"



HOLE STYLE "D"

NOTE:
APPROVED SMART KIT VENDORS ARE ALLOWED TO SUBSTITUTE AT THEIR DISCRETION ANGLES LISTED ON THIS PAGE FOR CUSTOM LENGTH COMPONENTS OF MATCHING SIZE. SUBSTITUTIONS SHALL MEET THE ORIGINAL STRUCTURAL INTENT.

NOTES:
1. ALL ANGLE GRADE A36 OR BETTER.
2. HOT-DIPPED GALVANIZED PER ASTM A123.
3. ALL HOLES ARE 11/16" DIA. U.N.O
4. HOLES MAY OR MAY NOT BE PRESENT, DEPEND UPON MANUFACTURE DISCRETION.
5. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZINGA OR ZINC COTE PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

VZWSMART Standard Angle					
VZWSMART Number	Size	Length	Hole Style	Hole Gage	Also Used In:
A-PLK2-01	L 3" X 3" X 1/4"	96"	A	1-3/4"	VZWSMART-PLK2
A-PLK5-01	L 3"X 3" X 3/16"	96"	B	1-3/4"	VZWSMART-PLK5
A-SFK3-01	L 2-1/2" X 2-1/2" X 1/4"	96"	C	1-3/8"	VZWSMART-SFK3,-SFK3-SL, -PLK6, & -PLK8
A-L25X25X4X120	L 2-1/2" X 2-1/2" X 1/4"	120"	D	1-5/16"	
A-L25X25X4X240	L 2-1/2" X 2-1/2" X 1/4"	240"	D	1-5/16"	
A-L30X30X4X120	L 3" X 3" X 1/4"	120"	D	1-1/2"	
A-L30X30X4X240	L 3" X 3" X 1/4"	240"	D	1-1/2"	
A-L40X40X4X120	L 4" X 4" X 1/4"	120"	D	2"	
A-L40X40X4X240	L 4" X 4" X 1/4"	240"	D	2"	
A-L50X30X6X120	L 5" X 3" X 3/8"	120"	D	2-1/2"	
A-L50X50X6X120	L 5" X 5" X 3/8"	120"	D	2-1/2"	

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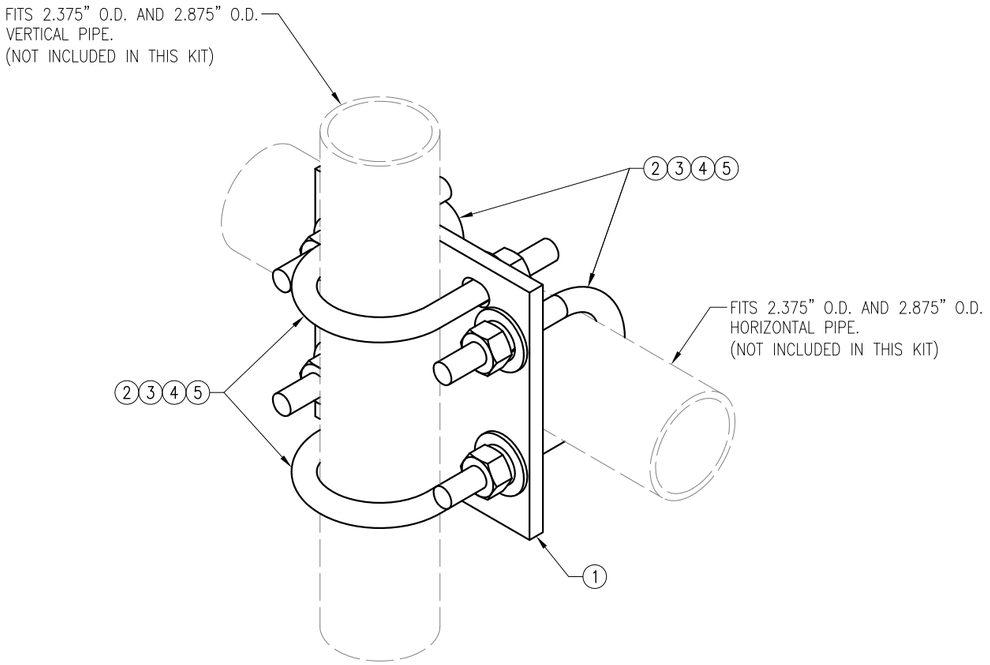
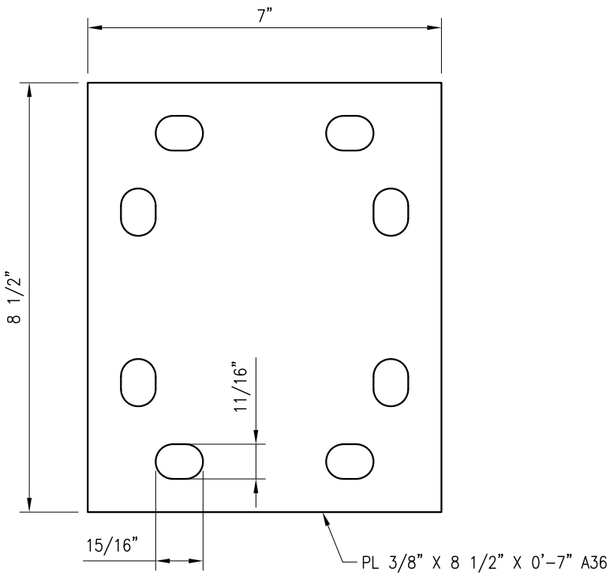
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	BT	08/04/21

SHEET TITLE:
VZWSMART STANDARD ANGLE

SHEET NUMBER: VZWSMART-ANGLE

REV #: 0





PL375-857

VZWSMART-MSK1 (CROSSOVER PLATE)					
ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	PL375-857	PL 3/8" X 8 1/2" X 0'-7" A36	MSK1-F1	6
2	4	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	RBC-1	5
3	8	FW-625	5/8" HDG USS FLAT WASHER	---	1
4	8	LW-625	5/8" HDG LOCK WASHER	---	0
5	8	NUT-625	5/8" HDG HEX NUT	---	1
				GALVANIZED WT	14

NOTES:
1. HOT-DIPPED GALVANIZED PER ASTM A123.

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REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	H.R	05/08/20

SHEET TITLE:
VZWSMART-MSK1
CROSSOVER PLATE

SHEET NUMBER: VZWSMART-MSK1

REV #: 0

Date: **January 10, 2023**

MTS Engineering, P.L.L.C.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Site Number:	468538
	Site Name:	Norwalk CT
Crown Castle Designation:	**BU Number:**	807133
	Site Name:	BRG 134 943057
	JDE Job Number:	738754
	Work Order Number:	2194134
	Order Number:	642704 Rev. 0
Engineering Firm Designation:	**Project Number:**	82164.021.01.0001
Site Data:	**50 Rockland Road Norwalk OFC - MTSO, SO Norwalk, Fairfield County, CT** **Latitude *41° 4' 54.44"*, Longitude *-73° 25' 49.52"*** **180 Foot - Self Support Tower**	

We are pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

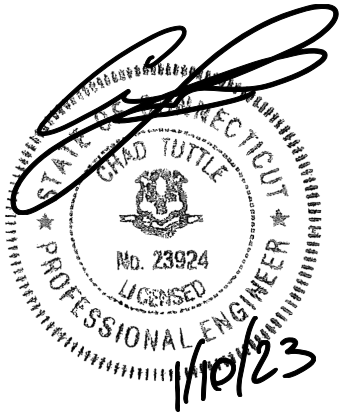
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration **Sufficient Capacity – 81.6%**

This analysis utilizes an ultimate 3-second gust wind speed of 118 mph as required by the 2022 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria

Structural analysis prepared by: John Landon

Respectfully submitted by: MTS Engineering, P.L.L.C.
COA: PEC.0001564 Expires: 2/1/2023



Chad E. Tuttle, P.E.

tnxTower Report - version 8.1.1.0

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 180 ft. Self-Support tower designed by Rohn.
This tower has been modified per reinforcement drawings prepared by Vertical Structures, Inc. in November of 2004. The reinforcement consist of installation of additional diagonal to existing diagonal member from 0' to 20' and 60' to 70' and installation of end bolts for diagonal from 20' to 40'

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	118 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1 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)
126.0	130.0	1	Gps	GPS_A	1 1	1/2 1-5/8
	129.0	3	Commscope	CBC78T-DS-43-2X		
		6	Commscope	JAHH-65C-R3B		
		1	Rfs Celwave	DB-C1-12C-24AB-0Z		
		3	Samsung Telecom.	MT6407-77A		
		3	Samsung Telecom.	RF4439D-25A		
		3	Samsung Telecom.	RF4440D-13A		
		3	Samsung Telecom.	XXDWMM-12.5-65-8T-CBRS		
	126.0	1	--	Sector Mount [SM 411-3]		

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)
181.0	181.0	3	Fujitsu	TA08025-B604	1	1-3/4
		3	Fujitsu	TA08025-B605		
		3	Jma Wireless	MX08FRO665-21		
		1	Raycap	RDIDC-9181-PF-48		
		1	Commscope	MTC3975083 (3)		
170.0	170.0	3	Ericsson	AIR 32 B2A/B66AA	2 4	1-3/8 1-5/8
		3	Ericsson	AIR 3246 B66_T-MOBILE		
		3	Ericsson	AIR6449 B41		
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	Rfs Celwave	APXVAARR24_43-U-NA20		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		1	--	Sector Mount [SM 702-3]		
161.0	163.0	3	Ericsson	AIR 6419 B77G	6 4 4 3	1-5/8 1-1/8 13/16 3/8
	161.0	1	Cci Antennas	DMP65R-BU4D		
		2	Cci Antennas	DMP65R-BU6D		
		3	Ericsson	RRUS 32 B2		
		3	Ericsson	RRUS 32 B30		
		3	Ericsson	RRUS 4426 B66		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 4478 B14		
		1	Quintel Tech.	QD4616-7		
		2	Quintel Tech.	QD6616-7		
		3	Raycap	DC6-48-60-18-8F		
		1	Raycap	DC6-48-60-18-8F		
		1	--	Sector Mount [SM 502-3]		
	159.0	3	Ericsson	AIR 6449 B77D		
157.0	157.0	2	Andrew	VHLP2-18	2	7983A
		2	--	Side Arm Mount [SO 203-1]		
148.0	148.0	3	Alcatel Lucent	800 EXTERNAL NOTCH FILTER	4	1-1/4
		3	Alcatel Lucent	800MHZ 2X50W RRH		
		6	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz		
		9	Rfs Celwave	ACU-A20-N		
		3	Rfs Celwave	APXVSPP18-C-A20		
		3	Rfs Celwave	APXVTM14-ALU-I20		
		1	--	Sector Mount [SM 502-3]		
136.0	138.0	1	Andrew	VHLP2-23	6 1	5/16 1/2
	136.0	3	Argus Tech.	LLPX310R		
		3	Samsung Telecom.	RRH-2WB		
		1	--	Sector Mount [SM 504-3]		
112.0	112.0	3	Kathrein	800 10504	6	1-5/8
		1	--	Sector Mount [SM 104-3]		
5.0	6.0	1	Decibel	ASPP2933	2	1/4
	5.0	1	Gps	GPS_A		
		1	--	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Tower Manufacturer Drawing	392878	CCI Sites
Tower Modification Drawing	1257479	CCI Sites
Post-Modification Inspection	4065020	CCI Sites
Foundation Drawing	821566	CCI Sites
Geotech Report	2311843	CCI Sites
Crown CAD Package	Date: 01/06/2023	CCI Sites

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.

3.2) Assumptions

1) The 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.

This analysis may be affected if any assumptions are not valid or have been made in error. We 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
T1	180 - 160	Leg	ROHN 3 EH	2	-17.563	116.138	15.1	Pass
T2	160 - 153.333	Leg	ROHN 4 EH	35	-25.182	167.901	15.0	Pass
T3	153.333 - 146.667	Leg	ROHN 4 EH	44	-37.054	167.900	22.1	Pass
T4	146.667 - 140	Leg	ROHN 4 EH	56	-48.538	167.901	28.9	Pass
T5	140 - 120	Leg	ROHN 5 EH	68	-89.369	251.347	35.6	Pass
T6	120 - 100	Leg	ROHN 6 EHS	89	-133.267	288.515	46.2	Pass
T7	100 - 80	Leg	ROHN 6 EH	110	-170.971	318.903	53.6	Pass
T8	80 - 70	Leg	ROHN 8 EHS	125	-190.485	405.715	47.0	Pass
T9	70 - 60	Leg	ROHN 8 EHS	134	-210.268	405.715	51.8	Pass
T10	60 - 40	Leg	ROHN 8 EHS	143	-249.072	405.717	61.4	Pass
T11	40 - 20	Leg	ROHN 8 EH	158	-287.210	530.833	54.1	Pass
T12	20 - 0	Leg	ROHN 8 EH	173	-324.986	530.833	61.2	Pass
T1	180 - 160	Diagonal	L2x2x3/16	13	-3.014	10.104	29.8	Pass
T2	160 - 153.333	Diagonal	L2 1/2x2 1/2x1/4	39	-5.203	19.793	26.3	Pass
T3	153.333 - 146.667	Diagonal	L2 1/2x2 1/2x1/4	51	-5.477	17.900	30.6	Pass
T4	146.667 - 140	Diagonal	L2 1/2x2 1/2x1/4	63	-6.300	16.240	38.8	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T5	140 - 120	Diagonal	L2 1/2x2 1/2x1/4	70	-8.227	12.489	65.9	Pass
T6	120 - 100	Diagonal	L3x3x1/4	92	-9.550	17.566	54.4	Pass
T7	100 - 80	Diagonal	L3 1/2x3 1/2x1/4	113	-10.569	18.890	55.9	Pass
T8	80 - 70	Diagonal	L3 1/2x3 1/2x1/4	128	-11.116	17.632	63.0	Pass
T9	70 - 60	Diagonal	2L3 1/2x3 1/2x1/4x3/8	137	-11.927	27.539	43.3	Pass
T10	60 - 40	Diagonal	L4x4x1/4	146	-12.410	20.589	60.3	Pass
T11	40 - 20	Diagonal	L4x4x5/16	161	-13.062	21.559	60.6	Pass
T12	20 - 0	Diagonal	2L4x4x5/16x3/8	176	-14.041	31.656	44.4	Pass
T1	180 - 160	Top Girt	L2x2x1/8	4	-0.473	4.230	11.2	Pass
T3	153.333 - 146.667	Top Girt	L2 1/2x2 1/2x1/8	46	-0.643	4.069	15.8	Pass
T4	146.667 - 140	Top Girt	L2 1/2x2 1/2x1/8	58	-0.842	3.498	24.1	Pass
T1	180 - 160	Mid Girt	L2x2x1/8	9	-0.472	3.097	15.2	Pass
							Summary	
						Leg (T10)	61.4	Pass
						Diagonal (T5)	65.9	Pass
						Top Girt (T4)	24.1	Pass
						Mid Girt (T1)	15.2	Pass
						Bolt Checks	81.6	Pass
						Rating =	81.6	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	47.7	Pass
1	Base Foundation	Base	77.4	Pass

Structure Rating (max from all components) =	81.6%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.
2) Rating per TIA-222-H Section 15.5

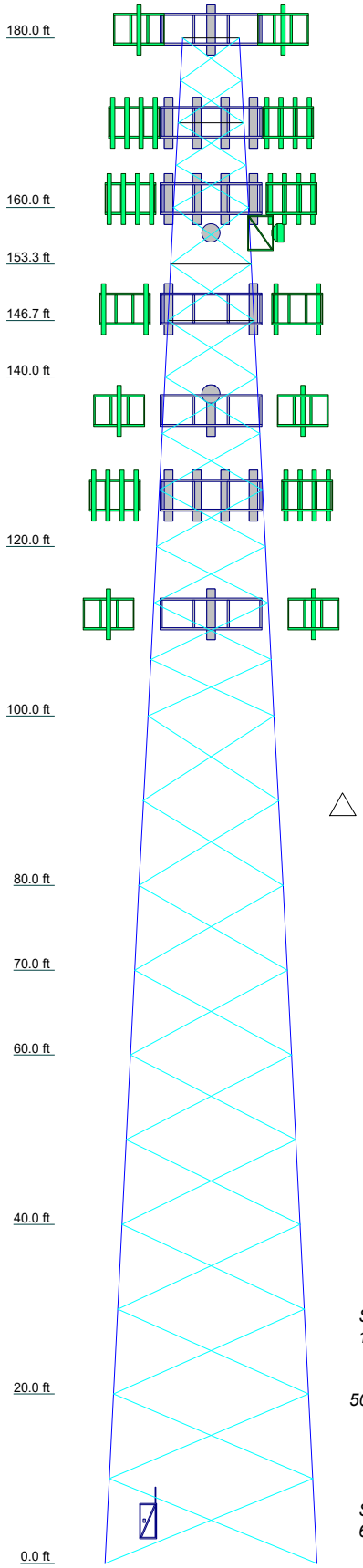
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12
Legs	ROHN 3 EH	ROHN 4 EH			ROHN 5 EH	ROHN 6 EHS	ROHN 6 EH	ROHN 8 EHS			ROHN 8 EH	
Leg Grade	A572-50											
Diagonals	L2x2x3/16				L2 1/2x2 1/2x1/4	L3x3x1/4	L3 1/2x3 1/2x1/4		A	L4x4x1/4	L4x4x5/16	2L4x4x5/16x3/8
Diagonal Grade	A36						A572-50		A36	A572-50		A36
Top Girts	L2x2x1/8	N.A.	L2 1/2x2 1/2x1/8									
Mid Girts	L2x2x1/8							N.A.				
Face Width (ft)	6.6875	8.76042	9.45052	10.1432	10.8333	12.9167	14.8542	16.9896	17.9948	19	21	23
# Panels @ (ft)	4 @ 5	0.6	0.7	0.7	9 @ 6.66667					10 @ 10		
Weight (K)	33.3	1.3	0.6	0.7	0.7	2.4	2.9	3.2	1.8	2.6	3.9	5.2	8.1



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	2L3 1/2x3 1/2x1/4x3/8		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

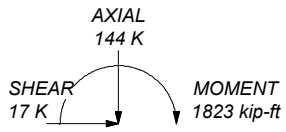
TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 118 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0'
8. TIA-222-H Annex S
9. TOWER RATING: 81.6%

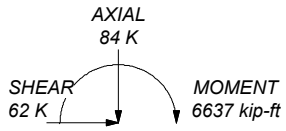
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 334 K
SHEAR: 39 K

UPLIFT: -273 K
SHEAR: 33 K



TORQUE 17 kip-ft
50 mph WIND - 1.000 in ICE



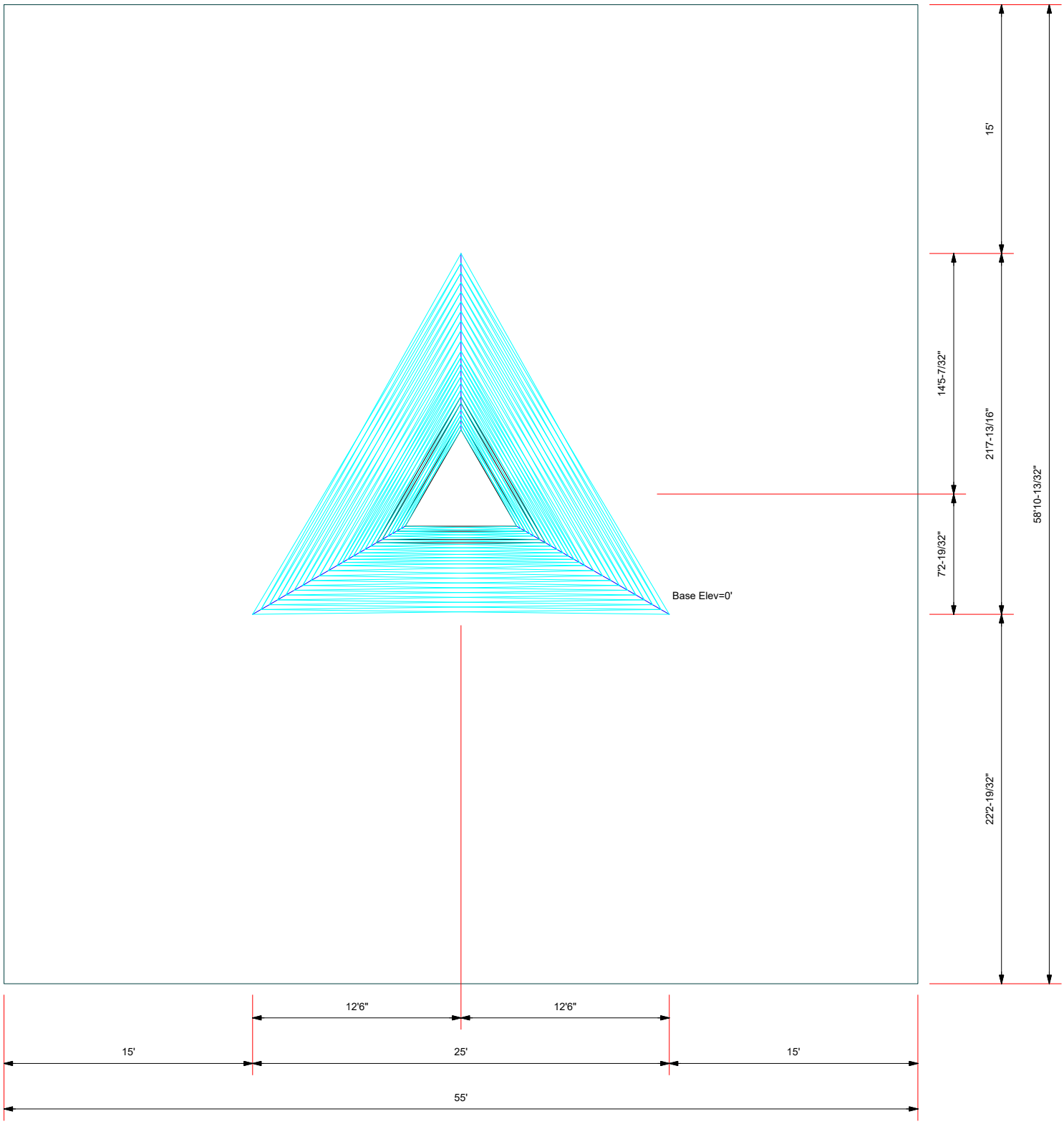
TORQUE 54 kip-ft
REACTIONS - 118 mph WIND

MTS Engineering, P.L.L.C.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 82164.021.01.0001--BRG 134 943057, CT(BU# 80713			
Project:			
Client: Crown Castle	Drawn by: Sudhanva	App'd:	
Code: TIA-222-H	Date: 01/10/23	Scale: NTS	
Path:		Dwg No. E-1	

Plot Plan

Total Area - 0.07 Acres



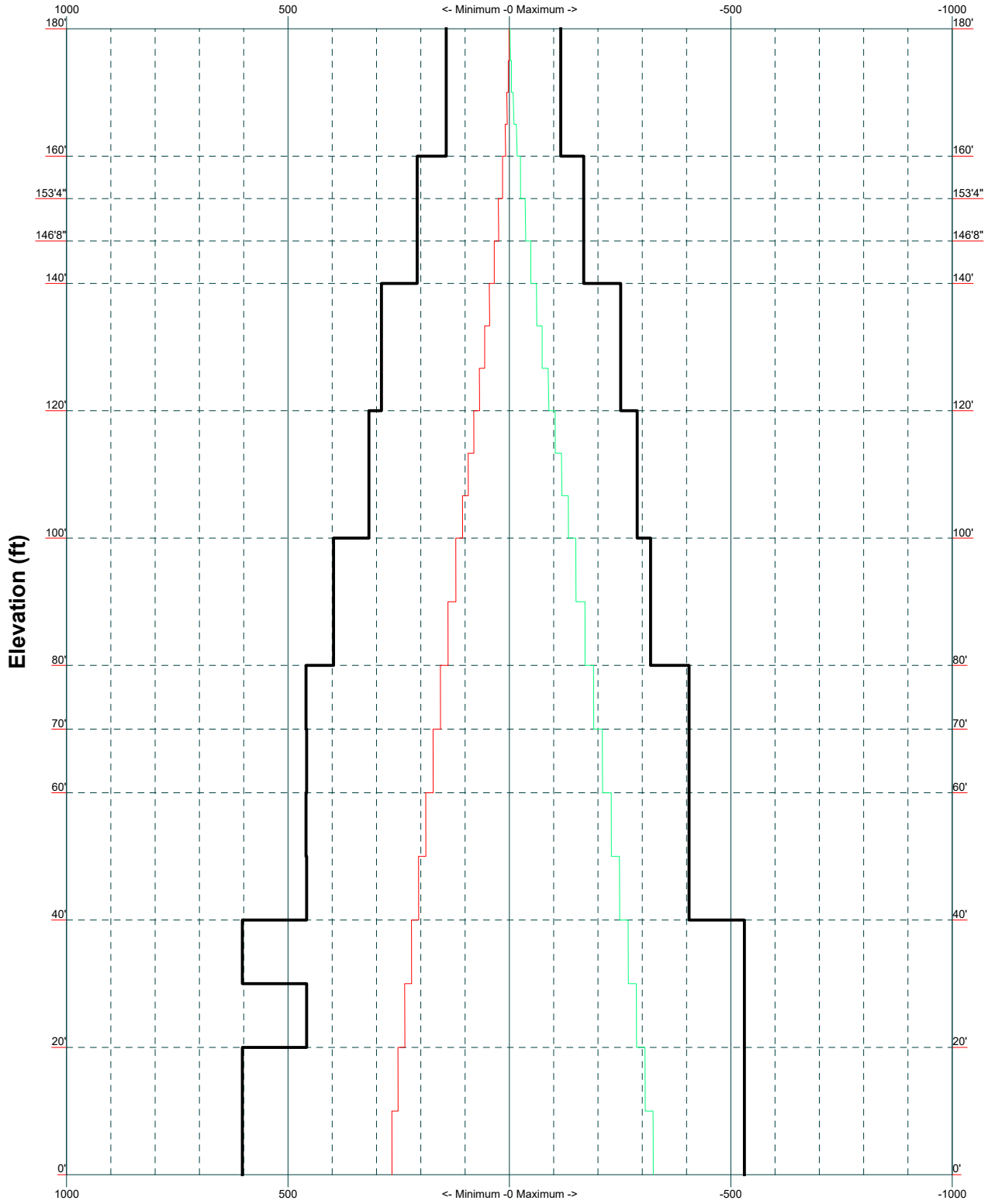
B+T GRP

MTS Engineering, P.L.L.C.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	***82164.021.01.0001--BRG 134 943057, CT(BU# 80713***		
Project:			
Client: Crown Castle	Drawn by: Sudhanva	App'd:	
Code: TIA-222-H	Date: 01/10/23	Scale: NTS	
Path:		Dwg No. E-2	

TIA-222-H - 118 mph/50 mph 1.000 in Ice Exposure C

Leg Capacity ——— **Leg Compression (K)**



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Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	*82164.021.01.0001--BRG 134 943057, CT(BU# 80713*		
Project:			
Client: Crown Castle	Drawn by: Sudhanva	App'd:	
Code: TIA-222-H	Date: 01/10/23	Scale: NTS	
Path:		Dwg No. E-3	

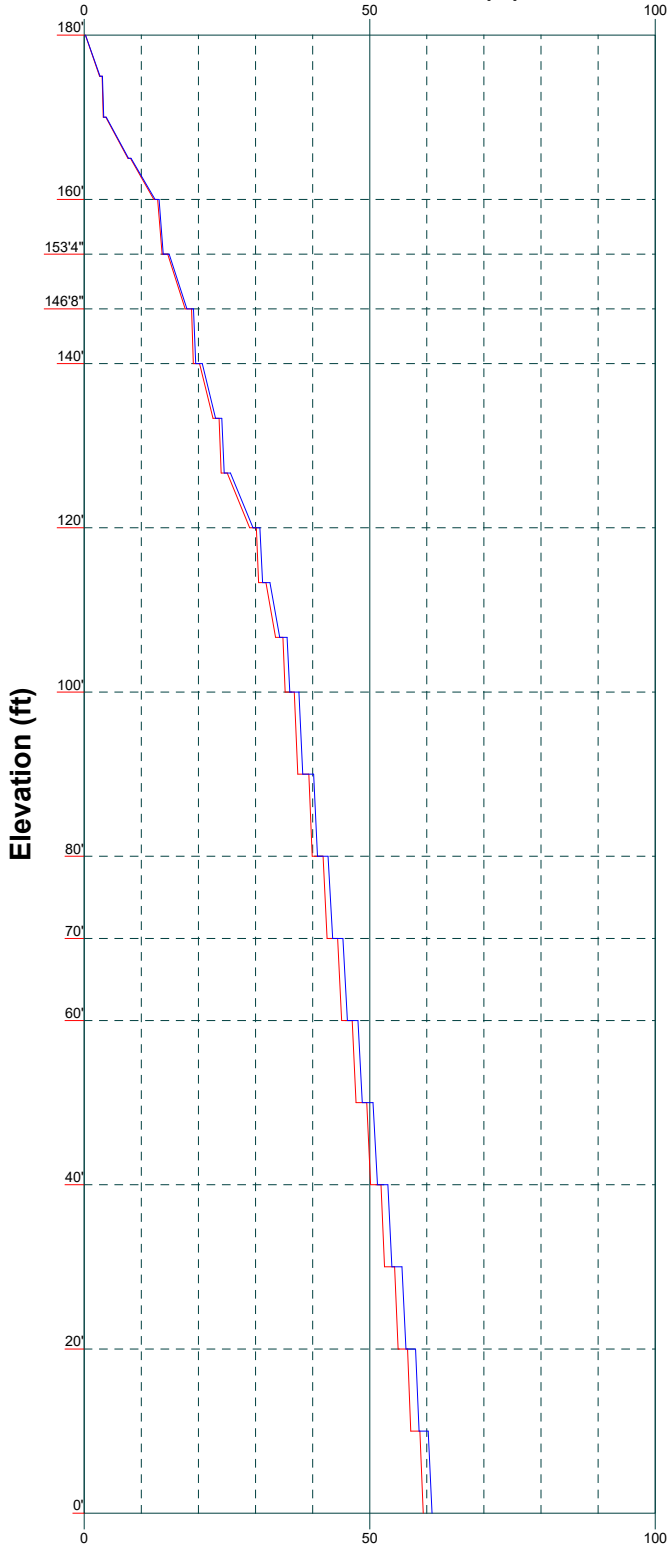
TIA-222-H - 118 mph/50 mph 1.000 in Ice Exposure C

Vx Vz

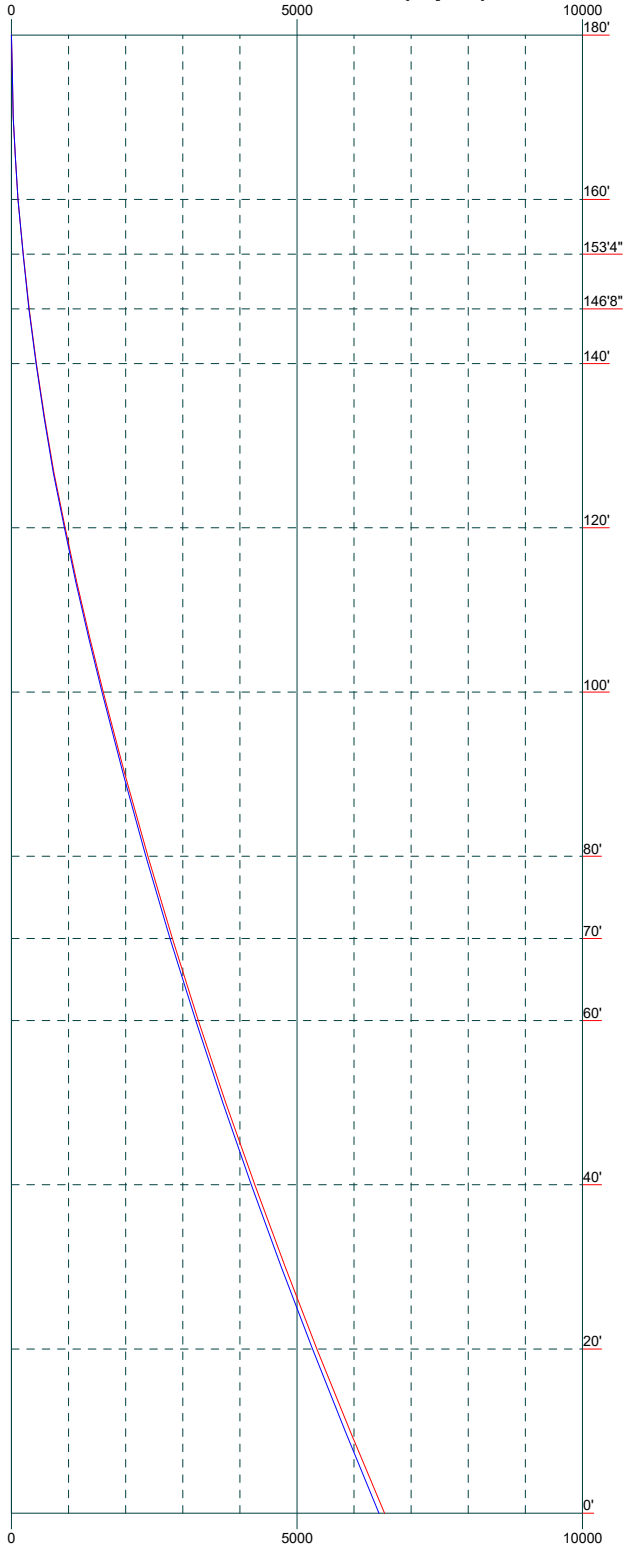
Maximum Values

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



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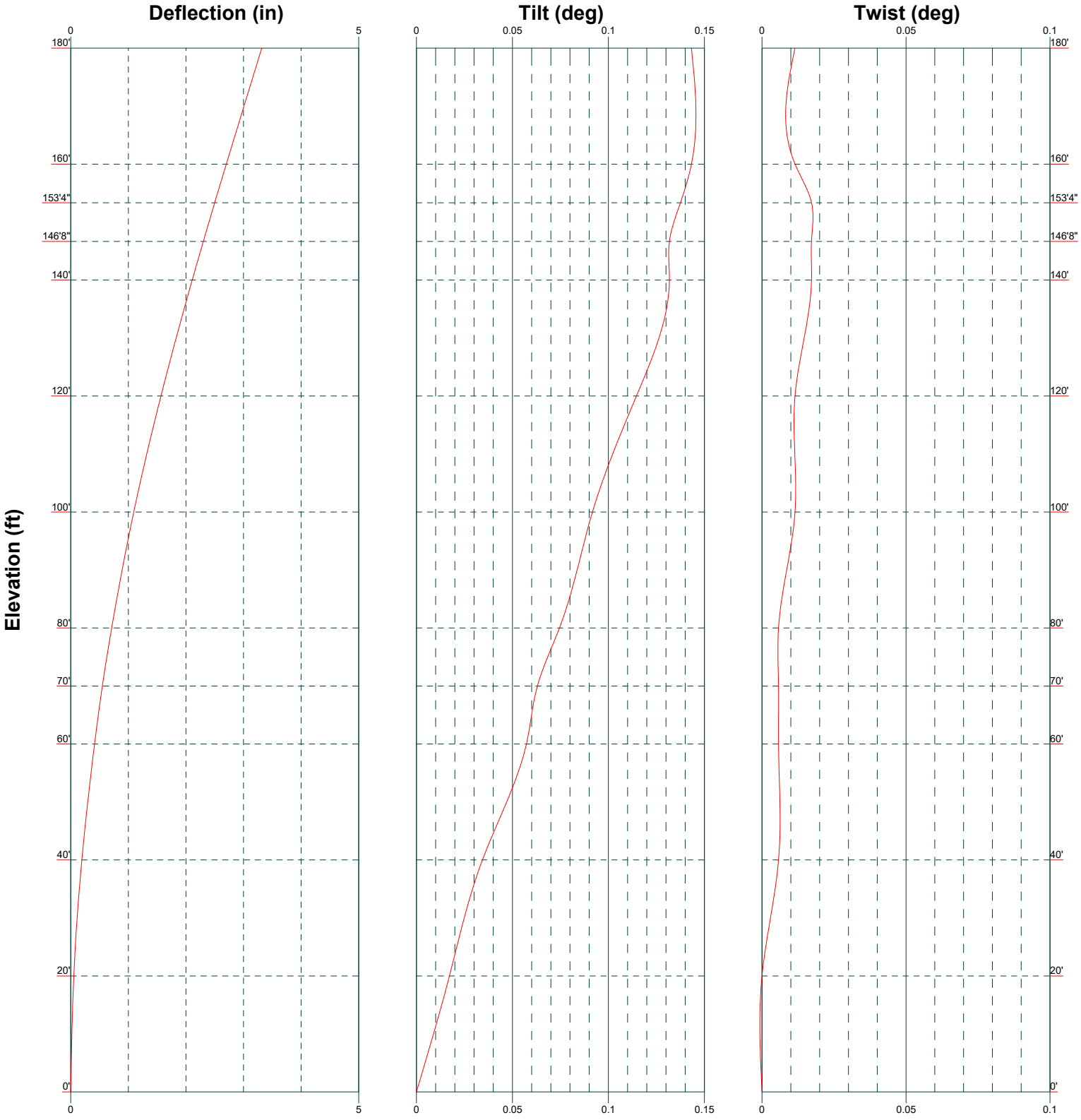
Job:	***82164.021.01.0001--BRG 134 943057, CT(BU# 80713***		
Project:			
Client: Crown Castle	Drawn by: Sudhanva	App'd:	
Code: TIA-222-H	Date: 01/10/23	Scale: NTS	
Path:		Dwg No. E-4	

TIA-222-H - Service - 60 mph

Maximum Values



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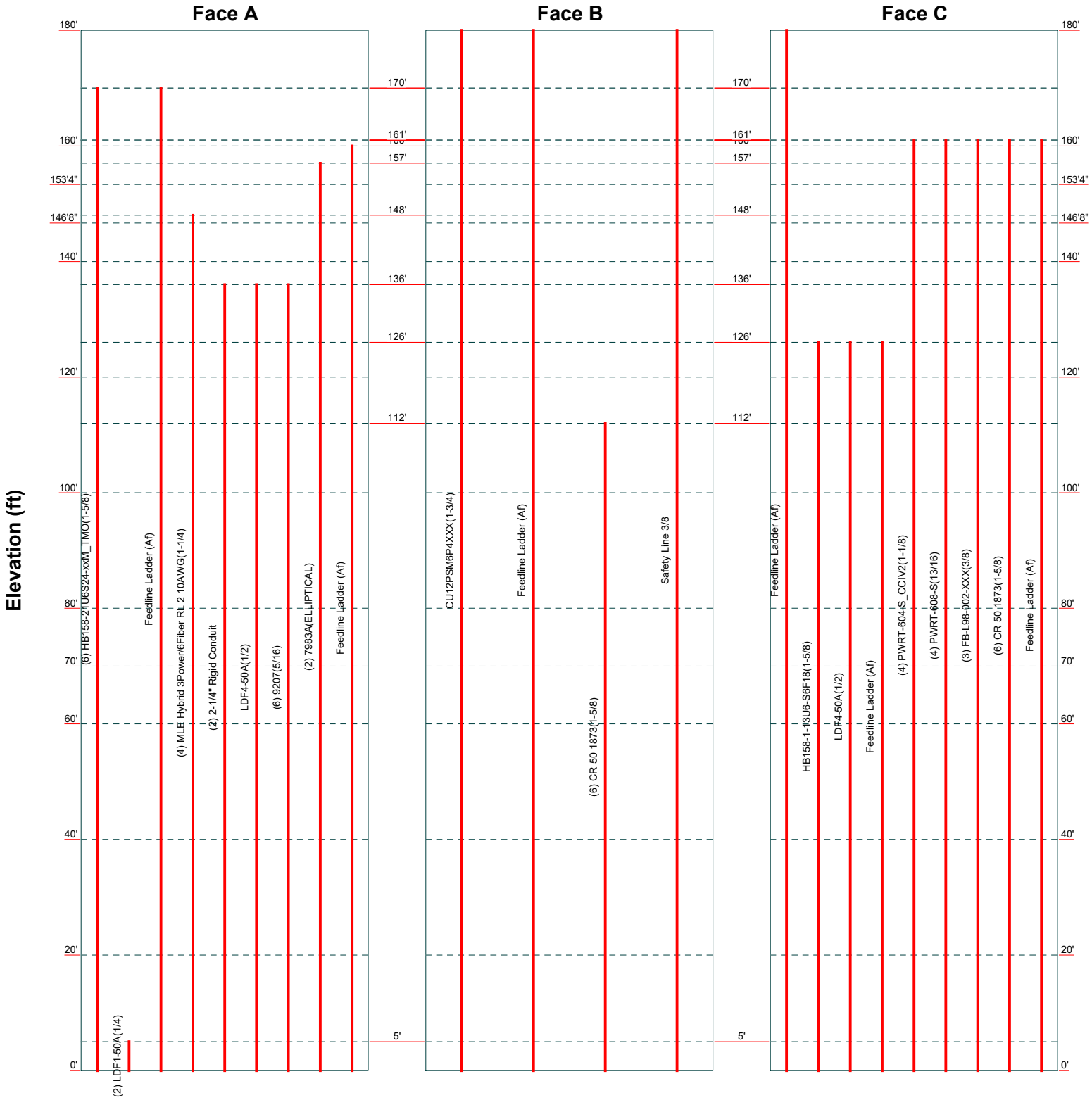
Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	***82164.021.01.0001--BRG 134 943057, CT(BU# 80713***		
Project:			
Client: Crown Castle	Drawn by: Sudhanva	App'd:	
Code: TIA-222-H	Date: 01/10/23	Scale: NTS	
Path:		Dwg No. E-5	

Feed Line Distribution Chart
0' - 180'

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



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Phone: (918) 587-4630
FAX: (918) 295-0265

Job:	***82164.021.01.0001--BRG 134 943057, CT(BU# 80713***		
Project:			
Client: Crown Castle	Drawn by: Sudhanva	App'd:	
Code: TIA-222-H	Date: 01/10/23	Scale: NTS	
Path:		Dwg No. E-7	

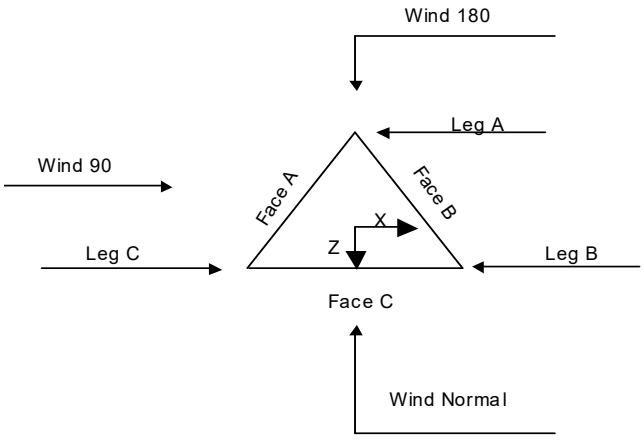
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180' above the ground line.
The base of the tower is set at an elevation of 0' above the ground line.
The face width of the tower is 6'8-1/4" at the top and 25' at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in Fairfield County, Connecticut.
Tower base elevation above sea level: 61'.
Basic wind speed of 118 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0'.
Nominal ice thickness of 1.000 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
TIA-222-H Annex S.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180'-160'			6'8-1/4"	1	20'
T2	160'-153'4"			8'9-1/8"	1	6'8"
T3	153'4"-146'8"			9'5-13/32"	1	6'8"
T4	146'8"-140'			10'1-23/32"	1	6'8"
T5	140'-120'			10'10"	1	20'
T6	120'-100'			12'11"	1	20'
T7	100'-80'			14'10-1/4"	1	20'
T8	80'-70'			16'11-7/8"	1	10'
T9	70'-60'			17'11-15/16"	1	10'
T10	60'-40'			19'	1	20'
T11	40'-20'			21'	1	20'
T12	20'-0'			23'	1	20'

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	180'-160'	5'	X Brace	No	No	0.000	0.000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T2	160'-153'4"	6'8"	X Brace	No	No	0.000	0.000
T3	153'4"-146'8"	6'8"	X Brace	No	No	0.000	0.000
T4	146'8"-140'	6'8"	X Brace	No	No	0.000	0.000
T5	140'-120'	6'8"	X Brace	No	No	0.000	0.000
T6	120'-100'	6'8"	X Brace	No	No	0.000	0.000
T7	100'-80'	10'	X Brace	No	No	0.000	0.000
T8	80'-70'	10'	X Brace	No	No	0.000	0.000
T9	70'-60'	10'	X Brace	No	No	0.000	0.000
T10	60'-40'	10'	X Brace	No	No	0.000	0.000
T11	40'-20'	10'	X Brace	No	No	0.000	0.000
T12	20'-0'	10'	X Brace	No	No	0.000	0.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180'-160'	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T2 160'-153'4"	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T3 153'4"-146'8"	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T4 146'8"-140'	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T5 140'-120'	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T6 120'-100'	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Single Angle	L3x3x1/4	A572-50 (50 ksi)
T7 100'-80'	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T8 80'-70'	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T9 70'-60'	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4x3/8	A36 (36 ksi)
T10 60'-40'	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Single Angle	L4x4x1/4	A572-50 (50 ksi)
T11 40'-20'	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Single Angle	L4x4x5/16	A572-50 (50 ksi)
T12 20'-0'	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Double Equal Angle	2L4x4x5/16x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 180'-160'	Equal Angle	L2x2x1/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T3 153'4"-146'8"	Equal Angle	L2 1/2x2 1/2x1/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T4 146'8"-140'	Single Angle	L2 1/2x2 1/2x1/8	A36	Single Angle		A36

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
			(36 ksi)			(36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 180'-160'	1	Equal Angle	L2x2x1/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 180'-160'	0.000	0.250	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T2 160'-153'4"	0.000	0.250	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T3 153'4"-146'8"	0.000	0.250	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T4 146'8"-140'	0.000	0.250	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T5 140'-120'	0.000	0.250	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T6 120'-100'	0.000	0.250	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T7 100'-80'	0.000	0.375	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T8 80'-70'	0.000	0.375	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T9 70'-60'	0.000	0.375	A36 (36 ksi)	1.03	1	1.05	120.000	Mid-Pt	Mid-Pt
T10 60'-40'	0.000	0.375	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T11 40'-20'	0.000	0.375	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T12 20'-0'	0.000	0.375	A36 (36 ksi)	1.03	1	1.05	152.750	Mid-Pt	Mid-Pt

Tower Section Geometry *(cont'd)*

K Factors[1]

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 180'-160'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T2 160'-153'4"	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T3 153'4"-146'8"	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T4 146'8"-140'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T5 140'-120'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T6 120'-100'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T7 100'-80'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T8 80'-70'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T9 70'-60'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T10 60'-40'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T11 40'-20'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T12 20'-0'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 180'-160'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 160'-153'4"	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T3 153'4"-146'8"	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T4 146'8"-140'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T5 140'-120'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T6 120'-100'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T7 100'-80'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T8 80'-70'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T9 70'-60'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 60'-40'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T11 40'-20'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T12 20'-0'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 180'-160'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 160'-153'4"	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T3 153'4"-146'8"	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T4 146'8"-140'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T5 140'-120'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T6 120'-100'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T7 100'-80'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T8 80'-70'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T9 70'-60'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 60'-40'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T11 40'-20'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T12 20'-0'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 180'-160'	Flange	0.875 A325N	4	0.625 A325N	1	0.625 A325N	1	0.000 A325X	0	0.625 A325N	1	0.625 A325X	0	0.625 A325N	0
T2 160'-153'4"	Flange	0.000 A325N	0	0.625 A325N	1	0.000 A325N	0	0.000 A325X	0	0.625 A325X	0	0.625 A325X	0	0.625 A325N	0
T3 153'4"-146'8"	Flange	0.000 A325N	0	0.625 A325N	1	0.625 A325N	1	0.000 A325X	0	0.625 A325X	0	0.625 A325X	0	0.625 A325N	0
T4 146'8"-140'	Flange	1.000 A325N	4	0.625 A325N	1	0.625 A325N	1	0.000 A325X	0	0.625 A325X	0	0.625 A325X	0	0.625 A325N	0
T5 140'-120'	Flange	1.000 A325N	6	0.625 A325N	1	0.000 A325N	0	0.000 A325X	0	0.625 A325X	0	0.625 A325X	0	0.625 A325N	0
T6 120'-100'	Flange	1.000 A325N	6	0.625 A325N	1	0.000 A325N	0	0.000 A325X	0	0.625 A325X	0	0.625 A325X	0	0.625 A325N	0
T7 100'-80'	Flange	1.000 A325N	8	0.750 A325N	1	0.000 A325N	0	0.000 A325X	0	0.625 A325X	0	0.625 A325X	0	0.625 A325N	0
T8 80'-70'	Flange	0.000 A325N	0	0.750 A325N	1	0.000 A325N	0	0.000 A325X	0	0.625 A325X	0	0.625 A325X	0	0.625 A325N	0
T9 70'-60'	Flange	1.000 A325N	8	0.750 A325N	1	0.000 A325N	0	0.000 A325X	0	0.625 A325X	0	0.625 A325X	0	0.625 A325N	0
T10 60'-40'	Flange	1.000 A325N	8	0.750 A325N	1	0.000 A325N	0	0.000 A325X	0	0.625 A325X	0	0.625 A325X	0	0.625 A325N	0
T11 40'-20'	Flange	1.000 A325N	8	0.750 A325N	1	0.000 A325N	0	0.000 A325X	0	0.625 A325X	0	0.625 A325X	0	0.625 A325N	0
T12 20'-0'	Flange	1.000 A449	0	0.750 A325N	1	0.000 A325N	0	0.000 A325X	0	0.625 A325X	0	0.625 A325X	0	0.625 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
CU12PSM6P4XXX(1-3/4)	B	No	No	Ar (CaAa)	180' - 0'	0.000	0.48	1	1	0.850 0.750	1.750		0.003
Feedline Ladder (Af) *	B	No	No	Af (CaAa)	180' - 0'	0.000	0.38	1	1	3.000	3.000		0.008
CR 50 1873(1-5/8) *	B	No	No	Ar (CaAa)	112' - 0'	0.000	0.4	6	6	0.850 0.750	1.980		0.001
HB158-21U6S24-xxM_TMO(1-5/8)	A	No	No	Ar (CaAa)	170' - 0'	0.000	0.08	6	6	0.850 0.750	1.996		0.003
LDF1-50A(1/4)	A	No	No	Ar (CaAa)	5' - 0'	0.000	0.15	2	2	0.345	0.345		0.000
Feedline Ladder (Af) *	A	No	No	Af (CaAa)	170' - 0'	0.000	0.05	1	1	3.000	3.000		0.008
MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4) *	A	No	No	Ar (CaAa)	148' - 0'	0.000	-0.35	4	4	1.250	1.250		0.000
2-1/4" Rigid Conduit	A	No	No	Ar (CaAa)	136' - 0'	0.000	-0.38	2	2	0.850 0.750	2.250		0.003
LDF4-50A(1/2)	A	No	No	Ar (CaAa)	136' - 0'	0.000	-0.395	1	1	0.630	0.630		0.000
9207(5/16)	A	No	No	Ar (CaAa)	136' - 0'	0.000	-0.38	6	6	0.200	0.330		0.001
7983A(ELLIPTICAL)	A	No	No	Ar (CaAa)	157' - 0'	0.000	-0.405	2	1	0.500	0.573		0.000
Feedline Ladder (Af) *	A	No	No	Af (CaAa)	160' - 0'	0.000	-0.36	1	1	3.000	3.000		0.008
Feedline Ladder (Af) *	C	No	No	Af (CaAa)	180' - 0'	0.000	-0.4	1	1	3.000	3.000		0.008
HB158-1-13U6-S6F18(1-5/8)	C	No	No	Ar (CaAa)	126' - 0'	-1.000	-0.4	1	1	0.850 0.750	1.980		0.002
LDF4-50A(1/2)	C	No	No	Ar (CaAa)	126' - 0'	-1.000	-0.41	1	1	0.500	0.630		0.000
Feedline Ladder (Af) * *	C	No	No	Af (CaAa)	126' - 0'	-1.000	-0.4	1	1	3.000	3.000		0.008
PWRT-604-S_CCIV2(1-1/8)	C	No	No	Ar (CaAa)	161' - 0'	0.000	0.29	4	2	0.850 0.750	1.159		0.001
PWRT-608-S(13/16)	C	No	No	Ar (CaAa)	161' - 0'	0.000	0.31	4	4	0.820	0.820		0.001
FB-L98-002-XXX(3/8)	C	No	No	Ar (CaAa)	161' - 0'	2.000	0.31	3	3	0.394	0.394		0.000
CR 50 1873(1-5/8)	C	No	No	Ar (CaAa)	161' - 0'	0.000	0.34	6	3	0.850 0.750	1.980		0.001
Feedline Ladder (Af) *	C	No	No	Af (CaAa)	161' - 0'	0.000	0.38	1	1	3.000	3.000		0.008
Safety Line 3/8 *	B	No	No	Ar (CaAa)	180' - 0'	0.000	0.5	1	1	0.375	0.375		0.000

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight klf
*								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180'-160'	A	0.000	0.000	16.976	0.000	0.234
		B	0.000	0.000	14.250	0.000	0.227
		C	0.000	0.000	12.598	0.000	0.189
T2	160'-153'4"	A	0.000	0.000	15.071	0.000	0.213
		B	0.000	0.000	4.750	0.000	0.076
		C	0.000	0.000	20.651	0.000	0.196
T3	153'4"-146'8"	A	0.000	0.000	16.081	0.000	0.216
		B	0.000	0.000	4.750	0.000	0.076
		C	0.000	0.000	20.651	0.000	0.196
T4	146'8"-140'	A	0.000	0.000	18.748	0.000	0.225
		B	0.000	0.000	4.750	0.000	0.076
		C	0.000	0.000	20.651	0.000	0.196
T5	140'-120'	A	0.000	0.000	67.620	0.000	0.832
		B	0.000	0.000	14.250	0.000	0.227
		C	0.000	0.000	66.520	0.000	0.652
T6	120'-100'	A	0.000	0.000	70.464	0.000	0.871
		B	0.000	0.000	28.506	0.000	0.287
		C	0.000	0.000	77.174	0.000	0.798
T7	100'-80'	A	0.000	0.000	70.464	0.000	0.871
		B	0.000	0.000	38.010	0.000	0.326
		C	0.000	0.000	77.174	0.000	0.798
T8	80'-70'	A	0.000	0.000	35.232	0.000	0.436
		B	0.000	0.000	19.005	0.000	0.163
		C	0.000	0.000	38.587	0.000	0.399
T9	70'-60'	A	0.000	0.000	35.232	0.000	0.436
		B	0.000	0.000	19.005	0.000	0.163
		C	0.000	0.000	38.587	0.000	0.399
T10	60'-40'	A	0.000	0.000	70.464	0.000	0.871
		B	0.000	0.000	38.010	0.000	0.326
		C	0.000	0.000	77.174	0.000	0.798
T11	40'-20'	A	0.000	0.000	70.464	0.000	0.871
		B	0.000	0.000	38.010	0.000	0.326
		C	0.000	0.000	77.174	0.000	0.798
T12	20'-0'	A	0.000	0.000	70.809	0.000	0.872
		B	0.000	0.000	38.010	0.000	0.326
		C	0.000	0.000	77.174	0.000	0.798

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180'-160'	A	1.001	0.000	0.000	30.331	0.000	0.493
		B		0.000	0.000	26.267	0.000	0.451
		C		0.000	0.000	18.690	0.000	0.353
T2	160'-153'4"	A	0.993	0.000	0.000	26.888	0.000	0.438
		B		0.000	0.000	8.723	0.000	0.149
		C		0.000	0.000	35.801	0.000	0.506
T3	153'4"-146'8"	A	0.989	0.000	0.000	30.391	0.000	0.466
		B		0.000	0.000	8.706	0.000	0.149
		C		0.000	0.000	35.750	0.000	0.504
T4	146'8"-140'	A	0.984	0.000	0.000	37.819	0.000	0.531
		B		0.000	0.000	8.688	0.000	0.149
		C		0.000	0.000	35.697	0.000	0.503
T5	140'-120'	A	0.975	0.000	0.000	145.033	0.000	1.949
		B		0.000	0.000	25.949	0.000	0.443
		C		0.000	0.000	114.830	0.000	1.632
T6	120'-100'	A	0.959	0.000	0.000	152.271	0.000	2.020
		B		0.000	0.000	53.450	0.000	0.725
		C		0.000	0.000	132.909	0.000	1.918
T7	100'-80'	A	0.940	0.000	0.000	151.422	0.000	1.996
		B		0.000	0.000	71.572	0.000	0.904
		C		0.000	0.000	132.009	0.000	1.896
T8	80'-70'	A	0.923	0.000	0.000	75.333	0.000	0.988
		B		0.000	0.000	35.634	0.000	0.447
		C		0.000	0.000	65.603	0.000	0.938
T9	70'-60'	A	0.910	0.000	0.000	75.041	0.000	0.980
		B		0.000	0.000	35.516	0.000	0.443
		C		0.000	0.000	65.294	0.000	0.930
T10	60'-40'	A	0.886	0.000	0.000	149.035	0.000	1.931
		B		0.000	0.000	70.611	0.000	0.872
		C		0.000	0.000	129.475	0.000	1.833
T11	40'-20'	A	0.842	0.000	0.000	147.074	0.000	1.878
		B		0.000	0.000	69.820	0.000	0.846
		C		0.000	0.000	127.392	0.000	1.782
T12	20'-0'	A	0.754	0.000	0.000	145.160	0.000	1.784
		B		0.000	0.000	68.253	0.000	0.795
		C		0.000	0.000	123.264	0.000	1.684

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	180'-160'	3.725	1.289	5.684	2.348
T2	160'-153'4"	-8.278	5.265	-8.671	7.088
T3	153'4"-146'8"	-8.324	5.232	-9.238	7.225
T4	146'8"-140'	-9.856	5.961	-10.912	8.154
T5	140'-120'	-12.031	8.313	-12.628	10.744
T6	120'-100'	-7.607	11.348	-8.075	14.085
T7	100'-80'	-6.948	13.845	-7.716	16.857
T8	80'-70'	-7.225	14.438	-8.045	17.567
T9	70'-60'	-7.493	15.021	-8.372	18.265
T10	60'-40'	-7.497	15.189	-8.587	18.781
T11	40'-20'	-7.925	16.147	-9.153	19.873
T12	20'-0'	-8.359	16.938	-9.822	20.346

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	CU12PSM6P4XXX(1-3/4)	160.00 - 180.00	0.6000	0.6000
T1	2	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T1	7	HB158-21U6S24-xxM_TMO (1-5/8)	160.00 - 170.00	0.6000	0.6000
T1	12	Feedline Ladder (Af)	160.00 - 170.00	0.6000	0.6000
T1	23	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T1	37	PWRT-604-S_CCIV2(1-1/8)	160.00 - 161.00	0.6000	0.6000
T1	38	PWRT-608-S(13/16)	160.00 - 161.00	0.6000	0.6000
T1	39	FB-L98-002-XXX(3/8)	160.00 - 161.00	0.6000	0.6000
T1	40	CR 50 1873(1-5/8)	160.00 - 161.00	0.6000	0.6000
T1	41	Feedline Ladder (Af)	160.00 - 161.00	0.6000	0.6000
T1	46	Safety Line 3/8	160.00 - 180.00	0.6000	0.6000
T2	1	CU12PSM6P4XXX(1-3/4)	153.33 - 160.00	0.6000	0.6000
T2	2	Feedline Ladder (Af)	153.33 - 160.00	0.6000	0.6000
T2	7	HB158-21U6S24-xxM_TMO (1-5/8)	153.33 - 160.00	0.6000	0.6000
T2	12	Feedline Ladder (Af)	153.33 - 160.00	0.6000	0.6000
T2	20	7983A(ELLIPTICAL)	153.33 - 157.00	0.6000	0.6000
T2	21	Feedline Ladder (Af)	153.33 - 160.00	0.6000	0.6000
T2	23	Feedline Ladder (Af)	153.33 - 160.00	0.6000	0.6000
T2	37	PWRT-604-S_CCIV2(1-1/8)	153.33 - 160.00	0.6000	0.6000
T2	38	PWRT-608-S(13/16)	153.33 - 160.00	0.6000	0.6000
T2	39	FB-L98-002-XXX(3/8)	153.33 - 160.00	0.6000	0.6000
T2	40	CR 50 1873(1-5/8)	153.33 - 160.00	0.6000	0.6000
T2	41	Feedline Ladder (Af)	153.33 - 160.00	0.6000	0.6000
T2	46	Safety Line 3/8	153.33 - 160.00	0.6000	0.6000
T3	1	CU12PSM6P4XXX(1-3/4)	146.67 - 153.33	0.6000	0.6000
T3	2	Feedline Ladder (Af)	146.67 - 153.33	0.6000	0.6000
T3	7	HB158-21U6S24-xxM_TMO (1-5/8)	146.67 - 153.33	0.6000	0.6000
T3	12	Feedline Ladder (Af)	146.67 - 153.33	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	15	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4)	146.67 - 148.00	0.6000	0.6000
T3	20	7983A(ELLIPTICAL)	146.67 - 153.33	0.6000	0.6000
T3	21	Feedline Ladder (Af)	146.67 - 153.33	0.6000	0.6000
T3	23	Feedline Ladder (Af)	146.67 - 153.33	0.6000	0.6000
T3	37	PWRT-604-S_CCIV2(1-1/8)	146.67 - 153.33	0.6000	0.6000
T3	38	PWRT-608-S(13/16)	146.67 - 153.33	0.6000	0.6000
T3	39	FB-L98-002-XXX(3/8)	146.67 - 153.33	0.6000	0.6000
T3	40	CR 50 1873(1-5/8)	146.67 - 153.33	0.6000	0.6000
T3	41	Feedline Ladder (Af)	146.67 - 153.33	0.6000	0.6000
T3	46	Safety Line 3/8	146.67 - 153.33	0.6000	0.6000
T4	1	CU12PSM6P4XXX(1-3/4)	140.00 - 146.67	0.6000	0.6000
T4	2	Feedline Ladder (Af)	140.00 - 146.67	0.6000	0.6000
T4	7	HB158-21U6S24-xxM_TMO (1-5/8)	140.00 - 146.67	0.6000	0.6000
T4	12	Feedline Ladder (Af)	140.00 - 146.67	0.6000	0.6000
T4	15	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4)	140.00 - 146.67	0.6000	0.6000
T4	20	7983A(ELLIPTICAL)	140.00 - 146.67	0.6000	0.6000
T4	21	Feedline Ladder (Af)	140.00 - 146.67	0.6000	0.6000
T4	23	Feedline Ladder (Af)	140.00 - 146.67	0.6000	0.6000
T4	37	PWRT-604-S_CCIV2(1-1/8)	140.00 - 146.67	0.6000	0.6000
T4	38	PWRT-608-S(13/16)	140.00 - 146.67	0.6000	0.6000
T4	39	FB-L98-002-XXX(3/8)	140.00 - 146.67	0.6000	0.6000
T4	40	CR 50 1873(1-5/8)	140.00 - 146.67	0.6000	0.6000
T4	41	Feedline Ladder (Af)	140.00 - 146.67	0.6000	0.6000
T4	46	Safety Line 3/8	140.00 - 146.67	0.6000	0.6000
T5	1	CU12PSM6P4XXX(1-3/4)	120.00 - 140.00	0.6000	0.6000
T5	2	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T5	7	HB158-21U6S24-xxM_TMO (1-5/8)	120.00 - 140.00	0.6000	0.6000
T5	12	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T5	15	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4)	120.00 - 140.00	0.6000	0.6000
T5	17	2-1/4" Rigid Conduit	120.00 - 136.00	0.6000	0.6000
T5	18	LDF4-50A(1/2)	120.00 - 136.00	0.0000	0.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	19	9207(5/16)	120.00 - 136.00	0.0000	0.0000
T5	20	7983A(ELLIPTICAL)	120.00 - 140.00	0.6000	0.6000
T5	21	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T5	23	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T5	26	HB158-1-13U6-S6F18(1-5/8)	120.00 - 126.00	0.6000	0.6000
T5	27	LDF4-50A(1/2)	120.00 - 126.00	0.6000	0.6000
T5	28	Feedline Ladder (Af)	120.00 - 126.00	0.6000	0.6000
T5	37	PWRT-604-S_CCIV2(1-1/8)	120.00 - 140.00	0.6000	0.6000
T5	38	PWRT-608-S(13/16)	120.00 - 140.00	0.6000	0.6000
T5	39	FB-L98-002-XXX(3/8)	120.00 - 140.00	0.6000	0.6000
T5	40	CR 50 1873(1-5/8)	120.00 - 140.00	0.6000	0.6000
T5	41	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T5	46	Safety Line 3/8	120.00 - 140.00	0.6000	0.6000
T6	1	CU12PSM6P4XXX(1-3/4)	100.00 - 120.00	0.6000	0.6000
T6	2	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T6	4	CR 50 1873(1-5/8)	100.00 - 112.00	0.6000	0.6000
T6	7	HB158-21U6S24-xxM_TMO (1-5/8)	100.00 - 120.00	0.6000	0.6000
T6	12	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T6	15	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4)	100.00 - 120.00	0.6000	0.6000
T6	17	2-1/4" Rigid Conduit	100.00 - 120.00	0.6000	0.6000
T6	18	LDF4-50A(1/2)	100.00 - 120.00	0.0000	0.0000
T6	19	9207(5/16)	100.00 - 120.00	0.0000	0.0000
T6	20	7983A(ELLIPTICAL)	100.00 - 120.00	0.6000	0.6000
T6	21	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T6	23	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T6	26	HB158-1-13U6-S6F18(1-5/8)	100.00 - 120.00	0.6000	0.6000
T6	27	LDF4-50A(1/2)	100.00 - 120.00	0.6000	0.6000
T6	28	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T6	37	PWRT-604-S_CCIV2(1-1/8)	100.00 - 120.00	0.6000	0.6000
T6	38	PWRT-608-S(13/16)	100.00 - 120.00	0.6000	0.6000
T6	39	FB-L98-002-XXX(3/8)	100.00 - 120.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	40	CR 50 1873(1-5/8)	100.00 - 120.00	0.6000	0.6000
T6	41	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T6	46	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T7	1	CU12PSM6P4XXX(1-3/4)	80.00 - 100.00	0.6000	0.6000
T7	2	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T7	4	CR 50 1873(1-5/8)	80.00 - 100.00	0.6000	0.6000
T7	7	HB158-21U6S24-xxM_TMO (1-5/8)	80.00 - 100.00	0.6000	0.6000
T7	12	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T7	15	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4)	80.00 - 100.00	0.6000	0.6000
T7	17	2-1/4" Rigid Conduit	80.00 - 100.00	0.6000	0.6000
T7	18	LDF4-50A(1/2)	80.00 - 100.00	0.0000	0.0000
T7	19	9207(5/16)	80.00 - 100.00	0.0000	0.0000
T7	20	7983A(ELLIPTICAL)	80.00 - 100.00	0.6000	0.6000
T7	21	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T7	23	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T7	26	HB158-1-13U6-S6F18(1-5/8)	80.00 - 100.00	0.6000	0.6000
T7	27	LDF4-50A(1/2)	80.00 - 100.00	0.6000	0.6000
T7	28	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T7	37	PWRT-604-S_CCIV2(1-1/8)	80.00 - 100.00	0.6000	0.6000
T7	38	PWRT-608-S(13/16)	80.00 - 100.00	0.6000	0.6000
T7	39	FB-L98-002-XXX(3/8)	80.00 - 100.00	0.6000	0.6000
T7	40	CR 50 1873(1-5/8)	80.00 - 100.00	0.6000	0.6000
T7	41	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T7	46	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T8	1	CU12PSM6P4XXX(1-3/4)	70.00 - 80.00	0.6000	0.6000
T8	2	Feedline Ladder (Af)	70.00 - 80.00	0.6000	0.6000
T8	4	CR 50 1873(1-5/8)	70.00 - 80.00	0.6000	0.6000
T8	7	HB158-21U6S24-xxM_TMO (1-5/8)	70.00 - 80.00	0.6000	0.6000
T8	12	Feedline Ladder (Af)	70.00 - 80.00	0.6000	0.6000
T8	15	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4)	70.00 - 80.00	0.6000	0.6000
T8	17	2-1/4" Rigid Conduit	70.00 - 80.00	0.6000	0.6000
T8	18	LDF4-50A(1/2)	70.00 - 80.00	0.0000	0.0000
T8	19	9207(5/16)	70.00 - 80.00	0.0000	0.0000
T8	20	7983A(ELLIPTICAL)	70.00 - 80.00	0.6000	0.6000
T8	21	Feedline Ladder (Af)	70.00 - 80.00	0.6000	0.6000
T8	23	Feedline Ladder (Af)	70.00 - 80.00	0.6000	0.6000
T8	26	HB158-1-13U6-S6F18(1-5/8)	70.00 - 80.00	0.6000	0.6000
T8	27	LDF4-50A(1/2)	70.00 - 80.00	0.6000	0.6000
T8	28	Feedline Ladder (Af)	70.00 - 80.00	0.6000	0.6000
T8	37	PWRT-604-S_CCIV2(1-1/8)	70.00 - 80.00	0.6000	0.6000
T8	38	PWRT-608-S(13/16)	70.00 - 80.00	0.6000	0.6000
T8	39	FB-L98-002-XXX(3/8)	70.00 - 80.00	0.6000	0.6000
T8	40	CR 50 1873(1-5/8)	70.00 - 80.00	0.6000	0.6000
T8	41	Feedline Ladder (Af)	70.00 - 80.00	0.6000	0.6000
T8	46	Safety Line 3/8	70.00 - 80.00	0.6000	0.6000
T9	1	CU12PSM6P4XXX(1-3/4)	60.00 - 70.00	0.6000	0.6000
T9	2	Feedline Ladder (Af)	60.00 - 70.00	0.6000	0.6000
T9	4	CR 50 1873(1-5/8)	60.00 - 70.00	0.6000	0.6000
T9	7	HB158-21U6S24-xxM_TMO (1-5/8)	60.00 - 70.00	0.6000	0.6000
T9	12	Feedline Ladder (Af)	60.00 - 70.00	0.6000	0.6000
T9	15	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4)	60.00 - 70.00	0.6000	0.6000
T9	17	2-1/4" Rigid Conduit	60.00 - 70.00	0.6000	0.6000
T9	18	LDF4-50A(1/2)	60.00 - 70.00	0.0000	0.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	19	9207(5/16)	60.00 - 70.00	0.0000	0.0000
T9	20	7983A(ELLIPTICAL)	60.00 - 70.00	0.6000	0.6000
T9	21	Feedline Ladder (Af)	60.00 - 70.00	0.6000	0.6000
T9	23	Feedline Ladder (Af)	60.00 - 70.00	0.6000	0.6000
T9	26	HB158-1-13U6-S6F18(1-5/8)	60.00 - 70.00	0.6000	0.6000
T9	27	LDF4-50A(1/2)	60.00 - 70.00	0.6000	0.6000
T9	28	Feedline Ladder (Af)	60.00 - 70.00	0.6000	0.6000
T9	37	PWRT-604-S_CCIV2(1-1/8)	60.00 - 70.00	0.6000	0.6000
T9	38	PWRT-608-S(13/16)	60.00 - 70.00	0.6000	0.6000
T9	39	FB-L98-002-XXX(3/8)	60.00 - 70.00	0.6000	0.6000
T9	40	CR 50 1873(1-5/8)	60.00 - 70.00	0.6000	0.6000
T9	41	Feedline Ladder (Af)	60.00 - 70.00	0.6000	0.6000
T9	46	Safety Line 3/8	60.00 - 70.00	0.6000	0.6000
T10	1	CU12PSM6P4XXX(1-3/4)	40.00 - 60.00	0.6000	0.6000
T10	2	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T10	4	CR 50 1873(1-5/8)	40.00 - 60.00	0.6000	0.6000
T10	7	HB158-21U6S24-xxM_TMO (1-5/8)	40.00 - 60.00	0.6000	0.6000
T10	12	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T10	15	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4)	40.00 - 60.00	0.6000	0.6000
T10	17	2-1/4" Rigid Conduit	40.00 - 60.00	0.6000	0.6000
T10	18	LDF4-50A(1/2)	40.00 - 60.00	0.0000	0.0000
T10	19	9207(5/16)	40.00 - 60.00	0.0000	0.0000
T10	20	7983A(ELLIPTICAL)	40.00 - 60.00	0.6000	0.6000
T10	21	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T10	23	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T10	26	HB158-1-13U6-S6F18(1-5/8)	40.00 - 60.00	0.6000	0.6000
T10	27	LDF4-50A(1/2)	40.00 - 60.00	0.6000	0.6000
T10	28	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T10	37	PWRT-604-S_CCIV2(1-1/8)	40.00 - 60.00	0.6000	0.6000
T10	38	PWRT-608-S(13/16)	40.00 - 60.00	0.6000	0.6000
T10	39	FB-L98-002-XXX(3/8)	40.00 - 60.00	0.6000	0.6000
T10	40	CR 50 1873(1-5/8)	40.00 - 60.00	0.6000	0.6000
T10	41	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T10	46	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T11	1	CU12PSM6P4XXX(1-3/4)	20.00 - 40.00	0.6000	0.6000
T11	2	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T11	4	CR 50 1873(1-5/8)	20.00 - 40.00	0.6000	0.6000
T11	7	HB158-21U6S24-xxM_TMO (1-5/8)	20.00 - 40.00	0.6000	0.6000
T11	12	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T11	15	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4)	20.00 - 40.00	0.6000	0.6000
T11	17	2-1/4" Rigid Conduit	20.00 - 40.00	0.6000	0.6000
T11	18	LDF4-50A(1/2)	20.00 - 40.00	0.0000	0.0000
T11	19	9207(5/16)	20.00 - 40.00	0.0000	0.0000
T11	20	7983A(ELLIPTICAL)	20.00 - 40.00	0.6000	0.6000
T11	21	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T11	23	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T11	26	HB158-1-13U6-S6F18(1-5/8)	20.00 - 40.00	0.6000	0.6000
T11	27	LDF4-50A(1/2)	20.00 - 40.00	0.6000	0.6000
T11	28	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T11	37	PWRT-604-S_CCIV2(1-1/8)	20.00 - 40.00	0.6000	0.6000
T11	38	PWRT-608-S(13/16)	20.00 - 40.00	0.6000	0.6000
T11	39	FB-L98-002-XXX(3/8)	20.00 - 40.00	0.6000	0.6000
T11	40	CR 50 1873(1-5/8)	20.00 - 40.00	0.6000	0.6000
T11	41	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T11	46	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T12	1	CU12PSM6P4XXX(1-3/4)	0.00 - 20.00	0.6000	0.6000
T12	2	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T12	4	CR 50 1873(1-5/8)	0.00 - 20.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T12	7	HB158-21U6S24-xxM_TMO (1-5/8)	0.00 - 20.00	0.6000	0.6000
T12	11	LDF1-50A(1/4)	0.00 - 5.00	0.6000	0.6000
T12	12	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T12	15	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4)	0.00 - 20.00	0.6000	0.6000
T12	17	2-1/4" Rigid Conduit	0.00 - 20.00	0.6000	0.6000
T12	18	LDF4-50A(1/2)	0.00 - 20.00	0.0000	0.0000
T12	19	9207(5/16)	0.00 - 20.00	0.0000	0.0000
T12	20	7983A(ELLIPTICAL)	0.00 - 20.00	0.6000	0.6000
T12	21	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T12	23	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T12	26	HB158-1-13U6-S6F18(1-5/8)	0.00 - 20.00	0.6000	0.6000
T12	27	LDF4-50A(1/2)	0.00 - 20.00	0.6000	0.6000
T12	28	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T12	37	PWRT-604-S_CCIV2(1-1/8)	0.00 - 20.00	0.6000	0.6000
T12	38	PWRT-608-S(13/16)	0.00 - 20.00	0.6000	0.6000
T12	39	FB-L98-002-XXX(3/8)	0.00 - 20.00	0.6000	0.6000
T12	40	CR 50 1873(1-5/8)	0.00 - 20.00	0.6000	0.6000
T12	41	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T12	46	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
*									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000 0' 0'	0.000	181'	No Ice 1/2" Ice 1" Ice	8.009 8.518 9.038	4.233 4.689 5.156	0.108 0.194 0.292
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.000 0' 0'	0.000	181'	No Ice 1/2" Ice 1" Ice	8.009 8.518 9.038	4.233 4.689 5.156	0.108 0.194 0.292
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.000 0' 0'	0.000	181'	No Ice 1/2" Ice 1" Ice	8.009 8.518 9.038	4.233 4.689 5.156	0.108 0.194 0.292
TA08025-B605	A	From Leg	4.000 0' 0'	0.000	181'	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	1.129 1.267 1.411	0.075 0.093 0.114
TA08025-B605	B	From Leg	4.000 0' 0'	0.000	181'	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	1.129 1.267 1.411	0.075 0.093 0.114
TA08025-B605	C	From Leg	4.000 0' 0'	0.000	181'	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	1.129 1.267 1.411	0.075 0.093 0.114
TA08025-B604	A	From Leg	4.000 0' 0'	0.000	181'	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	0.981 1.112 1.250	0.064 0.081 0.100
TA08025-B604	B	From Leg	4.000 0'	0.000	181'	No Ice 1/2" Ice	1.964 2.138	0.981 1.112	0.064 0.081

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0'			1" Ice	2.320	1.250	0.100
TA08025-B604	C	From Leg	4.000	0.000	181'	No Ice	1.964	0.981	0.064
			0'			1/2" Ice	2.138	1.112	0.081
			0'			1" Ice	2.320	1.250	0.100
RDIDC-9181-PF-48	A	From Leg	2.000	0.000	181'	No Ice	2.012	1.168	0.022
			0'			1/2" Ice	2.189	1.311	0.040
			0'			1" Ice	2.373	1.461	0.060
6' x 2" Mount Pipe	A	From Leg	2.000	0.000	181'	No Ice	1.425	1.425	0.022
			0'			1/2" Ice	1.925	1.925	0.033
			0'			1" Ice	2.294	2.294	0.048
(2) 8' x 2" Mount Pipe	A	From Leg	4.000	0.000	181'	No Ice	1.900	1.900	0.029
			0'			1/2" Ice	2.728	2.728	0.044
			0'			1" Ice	3.401	3.401	0.063
(2) 8' x 2" Mount Pipe	B	From Leg	4.000	0.000	181'	No Ice	1.900	1.900	0.029
			0'			1/2" Ice	2.728	2.728	0.044
			0'			1" Ice	3.401	3.401	0.063
(2) 8' x 2" Mount Pipe	C	From Leg	4.000	0.000	181'	No Ice	1.900	1.900	0.029
			0'			1/2" Ice	2.728	2.728	0.044
			0'			1" Ice	3.401	3.401	0.063
Commscope MTC3975083 (3)	C	None		0.000	181'	No Ice	23.850	23.850	1.260
						1/2" Ice	34.120	34.120	1.803
						1" Ice	44.390	44.390	2.345
*									
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.000	0.000	170'	No Ice	3.763	3.146	0.194
			0'			1/2" Ice	4.117	3.489	0.252
			0'			1" Ice	4.480	3.842	0.320
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.000	0.000	170'	No Ice	3.763	3.146	0.194
			0'			1/2" Ice	4.117	3.489	0.252
			0'			1" Ice	4.480	3.842	0.320
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.000	0.000	170'	No Ice	3.763	3.146	0.194
			0'			1/2" Ice	4.117	3.489	0.252
			0'			1" Ice	4.480	3.842	0.320
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.000	0.000	170'	No Ice	14.694	6.873	0.186
			0'			1/2" Ice	15.455	7.554	0.315
			0'			1" Ice	16.230	8.247	0.458
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.000	0.000	170'	No Ice	14.694	6.873	0.186
			0'			1/2" Ice	15.455	7.554	0.315
			0'			1" Ice	16.230	8.247	0.458
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.000	0.000	170'	No Ice	14.694	6.873	0.186
			0'			1/2" Ice	15.455	7.554	0.315
			0'			1" Ice	16.230	8.247	0.458
AIR 3246 B66_T-MOBILE w/ Mount Pipe	A	From Leg	4.000	0.000	170'	No Ice	7.308	5.457	0.248
			0'			1/2" Ice	7.891	6.008	0.313
			0'			1" Ice	8.489	6.574	0.389
AIR 3246 B66_T-MOBILE w/ Mount Pipe	B	From Leg	4.000	0.000	170'	No Ice	7.308	5.457	0.248
			0'			1/2" Ice	7.891	6.008	0.313
			0'			1" Ice	8.489	6.574	0.389
AIR 3246 B66_T-MOBILE w/ Mount Pipe	C	From Leg	4.000	0.000	170'	No Ice	7.308	5.457	0.248
			0'			1/2" Ice	7.891	6.008	0.313
			0'			1" Ice	8.489	6.574	0.389
AIR6449 B41 w/ Mount Pipe	A	From Leg	4.000	0.000	170'	No Ice	5.185	2.715	0.118
			0'			1/2" Ice	5.591	3.046	0.164
			0'			1" Ice	6.011	3.392	0.216
AIR6449 B41 w/ Mount Pipe	B	From Leg	4.000	0.000	170'	No Ice	5.185	2.715	0.118
			0'			1/2" Ice	5.591	3.046	0.164
			0'			1" Ice	6.011	3.392	0.216
AIR6449 B41 w/ Mount Pipe	C	From Leg	4.000	0.000	170'	No Ice	5.185	2.715	0.118

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0'			1/2" Ice	5.591	3.046	0.164
			0'			1" Ice	6.011	3.392	0.216
RADIO 4460 B2/B25	A	From Leg	4.000	0.000	170'	No Ice	2.139	1.686	0.109
B66_TMO			0'			1/2" Ice	2.321	1.850	0.131
			0'			1" Ice	2.511	2.022	0.156
RADIO 4460 B2/B25	B	From Leg	4.000	0.000	170'	No Ice	2.139	1.686	0.109
B66_TMO			0'			1/2" Ice	2.321	1.850	0.131
			0'			1" Ice	2.511	2.022	0.156
RADIO 4460 B2/B25	C	From Leg	4.000	0.000	170'	No Ice	2.139	1.686	0.109
B66_TMO			0'			1/2" Ice	2.321	1.850	0.131
			0'			1" Ice	2.511	2.022	0.156
RADIO 4449 B71	A	From Leg	4.000	0.000	170'	No Ice	1.970	1.587	0.073
B85A_T-MOBILE			0'			1/2" Ice	2.147	1.749	0.093
			0'			1" Ice	2.331	1.918	0.116
RADIO 4449 B71	B	From Leg	4.000	0.000	170'	No Ice	1.970	1.587	0.073
B85A_T-MOBILE			0'			1/2" Ice	2.147	1.749	0.093
			0'			1" Ice	2.331	1.918	0.116
RADIO 4449 B71	C	From Leg	4.000	0.000	170'	No Ice	1.970	1.587	0.073
B85A_T-MOBILE			0'			1/2" Ice	2.147	1.749	0.093
			0'			1" Ice	2.331	1.918	0.116
Sector Mount [SM 702-3]	C	None		0.000	170'	No Ice	38.890	38.890	1.551
						1/2" Ice	50.400	50.400	2.279
						1" Ice	61.770	61.770	3.217
*									
RRUS 32 B2	A	From Leg	4.000	0.000	161'	No Ice	2.731	1.668	0.053
			0'			1/2" Ice	2.953	1.855	0.074
			0'			1" Ice	3.182	2.049	0.098
RRUS 32 B2	B	From Leg	4.000	0.000	161'	No Ice	2.731	1.668	0.053
			0'			1/2" Ice	2.953	1.855	0.074
			0'			1" Ice	3.182	2.049	0.098
RRUS 32 B2	C	From Leg	4.000	0.000	161'	No Ice	2.731	1.668	0.053
			0'			1/2" Ice	2.953	1.855	0.074
			0'			1" Ice	3.182	2.049	0.098
RRUS 4426 B66	A	From Leg	4.000	0.000	161'	No Ice	1.644	0.725	0.048
			0'			1/2" Ice	1.804	0.842	0.061
			0'			1" Ice	1.972	0.969	0.076
RRUS 4426 B66	B	From Leg	4.000	0.000	161'	No Ice	1.644	0.725	0.048
			0'			1/2" Ice	1.804	0.842	0.061
			0'			1" Ice	1.972	0.969	0.076
RRUS 4426 B66	C	From Leg	4.000	0.000	161'	No Ice	1.644	0.725	0.048
			0'			1/2" Ice	1.804	0.842	0.061
			0'			1" Ice	1.972	0.969	0.076
RRUS 32 B30	A	From Leg	4.000	0.000	161'	No Ice	2.692	1.573	0.060
			0'			1/2" Ice	2.912	1.756	0.080
			0'			1" Ice	3.138	1.945	0.104
RRUS 32 B30	B	From Leg	4.000	0.000	161'	No Ice	2.692	1.573	0.060
			0'			1/2" Ice	2.912	1.756	0.080
			0'			1" Ice	3.138	1.945	0.104
RRUS 32 B30	C	From Leg	4.000	0.000	161'	No Ice	2.692	1.573	0.060
			0'			1/2" Ice	2.912	1.756	0.080
			0'			1" Ice	3.138	1.945	0.104
DC6-48-60-18-8F	A	From Leg	4.000	0.000	161'	No Ice	0.850	0.850	0.019
			0'			1/2" Ice	1.356	1.356	0.036
			0'			1" Ice	1.532	1.532	0.055
DC6-48-60-18-8F	B	From Leg	4.000	0.000	161'	No Ice	0.850	0.850	0.019
			0'			1/2" Ice	1.356	1.356	0.036
			0'			1" Ice	1.532	1.532	0.055

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
DC6-48-60-18-8F	C	From Leg	4.000 0' 0'	0.000	161'	No Ice 1/2" Ice 1" Ice	0.850 1.356 1.532	0.850 1.356 1.532	0.019 0.036 0.055
AIR 6419 B77G w/ Mount Pipe	A	From Leg	4.000 0' 2'	0.000	161'	No Ice 1/2" Ice 1" Ice	4.325 4.740 5.173	2.492 2.841 3.209	0.078 0.110 0.147
AIR 6419 B77G w/ Mount Pipe	B	From Leg	4.000 0' 2'	0.000	161'	No Ice 1/2" Ice 1" Ice	4.325 4.740 5.173	2.492 2.841 3.209	0.078 0.110 0.147
AIR 6419 B77G w/ Mount Pipe	C	From Leg	4.000 0' 2'	0.000	161'	No Ice 1/2" Ice 1" Ice	4.325 4.740 5.173	2.492 2.841 3.209	0.078 0.110 0.147
AIR 6449 B77D w/ Mount Pipe	A	From Leg	4.000 0' -2'	0.000	161'	No Ice 1/2" Ice 1" Ice	3.583 3.920 4.272	2.307 2.602 2.912	0.095 0.130 0.173
AIR 6449 B77D w/ Mount Pipe	B	From Leg	4.000 0' -2'	0.000	161'	No Ice 1/2" Ice 1" Ice	3.583 3.920 4.272	2.307 2.602 2.912	0.095 0.130 0.173
AIR 6449 B77D w/ Mount Pipe	C	From Leg	4.000 0' -2'	0.000	161'	No Ice 1/2" Ice 1" Ice	3.583 3.920 4.272	2.307 2.602 2.912	0.095 0.130 0.173
DMP65R-BU6D w/ Mount Pipe	A	From Leg	4.000 0' 0'	0.000	161'	No Ice 1/2" Ice 1" Ice	11.961 12.703 13.461	5.969 6.627 7.300	0.115 0.201 0.298
DMP65R-BU6D w/ Mount Pipe	B	From Leg	4.000 0' 0'	0.000	161'	No Ice 1/2" Ice 1" Ice	11.961 12.703 13.461	5.969 6.627 7.300	0.115 0.201 0.298
DMP65R-BU4D w/ Mount Pipe	C	From Leg	4.000 0' 0'	0.000	161'	No Ice 1/2" Ice 1" Ice	7.526 8.043 8.574	3.789 4.228 4.681	0.095 0.156 0.225
QD6616-7 w/ Mount Pipe	A	From Leg	4.000 0' 0'	0.000	161'	No Ice 1/2" Ice 1" Ice	12.562 13.305 14.063	6.931 7.596 8.276	0.156 0.252 0.360
QD6616-7 w/ Mount Pipe	B	From Leg	4.000 0' 0'	0.000	161'	No Ice 1/2" Ice 1" Ice	12.562 13.305 14.063	6.931 7.596 8.276	0.156 0.252 0.360
QD4616-7 w/ Mount Pipe	C	From Leg	4.000 0' 0'	0.000	161'	No Ice 1/2" Ice 1" Ice	8.877 9.451 10.039	4.921 5.418 5.930	0.128 0.200 0.281
RRUS 4449 B5/B12	A	From Leg	4.000 0' 0'	0.000	161'	No Ice 1/2" Ice 1" Ice	1.968 2.144 2.328	1.408 1.564 1.727	0.071 0.090 0.111
RRUS 4449 B5/B12	B	From Leg	4.000 0' 0'	0.000	161'	No Ice 1/2" Ice 1" Ice	1.968 2.144 2.328	1.408 1.564 1.727	0.071 0.090 0.111
RRUS 4449 B5/B12	C	From Leg	4.000 0' 0'	0.000	161'	No Ice 1/2" Ice 1" Ice	1.968 2.144 2.328	1.408 1.564 1.727	0.071 0.090 0.111
RRUS 4478 B14	A	From Leg	4.000 0' 0'	0.000	161'	No Ice 1/2" Ice 1" Ice	1.843 2.012 2.190	1.059 1.197 1.342	0.060 0.076 0.094
RRUS 4478 B14	B	From Leg	4.000 0' 0'	0.000	161'	No Ice 1/2" Ice 1" Ice	1.843 2.012 2.190	1.059 1.197 1.342	0.060 0.076 0.094
RRUS 4478 B14	C	From Leg	4.000 0' 0'	0.000	161'	No Ice 1/2" Ice 1" Ice	1.843 2.012 2.190	1.059 1.197 1.342	0.060 0.076 0.094

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
DC6-48-60-18-8F	A	From Leg	4.000 0'	0.000	161'	No Ice 1/2" Ice	0.850 1.356	0.850 1.356	0.019 0.036
			0'			1" Ice	1.532	1.532	0.055
(2) 6' x 2" Mount Pipe	A	From Leg	4.000 0'	0.000	161'	No Ice 1/2" Ice	1.425 1.925	1.425 1.925	0.022 0.033
			0'			1" Ice	2.294	2.294	0.048
(2) 6' x 2" Mount Pipe	B	From Leg	4.000 0'	0.000	161'	No Ice 1/2" Ice	1.425 1.925	1.425 1.925	0.022 0.033
			0'			1" Ice	2.294	2.294	0.048
(2) 6' x 2" Mount Pipe	C	From Leg	4.000 0'	0.000	161'	No Ice 1/2" Ice	1.425 1.925	1.425 1.925	0.022 0.033
			0'			1" Ice	2.294	2.294	0.048
Sector Mount [SM 502-3]	C	None		0.000	161'	No Ice 1/2" Ice	29.820 42.210	29.820 42.210	1.673 2.266
*						1" Ice	54.430	54.430	3.052
Side Arm Mount [SO 203-1]	A	From Leg	1.500 0'	0.000	157'	No Ice 1/2" Ice	1.780 2.240	3.790 4.470	0.125 0.153
			0'			1" Ice	2.750	5.210	0.189
Side Arm Mount [SO 203-1]	B	From Leg	1.500 0'	0.000	157'	No Ice 1/2" Ice	1.780 2.240	3.790 4.470	0.125 0.153
			0'			1" Ice	2.750	5.210	0.189
*									
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	4.000 0'	0.000	148'	No Ice 1/2" Ice	4.091 4.480	2.862 3.229	0.077 0.127
			0'			1" Ice	4.880	3.607	0.185
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	4.000 0'	0.000	148'	No Ice 1/2" Ice	4.091 4.480	2.862 3.229	0.077 0.127
			0'			1" Ice	4.880	3.607	0.185
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	4.000 0'	0.000	148'	No Ice 1/2" Ice	4.091 4.480	2.862 3.229	0.077 0.127
			0'			1" Ice	4.880	3.607	0.185
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.000 0'	0.000	148'	No Ice 1/2" Ice	4.601 5.045	4.011 4.448	0.095 0.160
			0'			1" Ice	5.500	4.894	0.235
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.000 0'	0.000	148'	No Ice 1/2" Ice	4.601 5.045	4.011 4.448	0.095 0.160
			0'			1" Ice	5.500	4.894	0.235
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000 0'	0.000	148'	No Ice 1/2" Ice	4.601 5.045	4.011 4.448	0.095 0.160
			0'			1" Ice	5.500	4.894	0.235
800 EXTERNAL NOTCH FILTER	A	From Leg	4.000 0'	0.000	148'	No Ice 1/2" Ice	0.660 0.763	0.321 0.398	0.011 0.017
			0'			1" Ice	0.873	0.483	0.024
800 EXTERNAL NOTCH FILTER	B	From Leg	4.000 0'	0.000	148'	No Ice 1/2" Ice	0.660 0.763	0.321 0.398	0.011 0.017
			0'			1" Ice	0.873	0.483	0.024
800 EXTERNAL NOTCH FILTER	C	From Leg	4.000 0'	0.000	148'	No Ice 1/2" Ice	0.660 0.763	0.321 0.398	0.011 0.017
			0'			1" Ice	0.873	0.483	0.024
(3) ACU-A20-N	A	From Leg	4.000 0'	0.000	148'	No Ice 1/2" Ice	0.067 0.104	0.117 0.162	0.001 0.002
			0'			1" Ice	0.148	0.215	0.004
(3) ACU-A20-N	B	From Leg	4.000 0'	0.000	148'	No Ice 1/2" Ice	0.067 0.104	0.117 0.162	0.001 0.002
			0'			1" Ice	0.148	0.215	0.004
(3) ACU-A20-N	C	From Leg	4.000	0.000	148'	No Ice	0.067	0.117	0.001

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0'			1/2" Ice	0.104	0.162	0.002
			0'			1" Ice	0.148	0.215	0.004
(2) PCS 1900MHz 4x45W-65MHz	A	From Leg	4.000	0.000	148'	No Ice	2.322	2.238	0.060
			0'			1/2" Ice	2.527	2.441	0.083
			0'			1" Ice	2.739	2.651	0.110
(2) PCS 1900MHz 4x45W-65MHz	B	From Leg	4.000	0.000	148'	No Ice	2.322	2.238	0.060
			0'			1/2" Ice	2.527	2.441	0.083
			0'			1" Ice	2.739	2.651	0.110
(2) PCS 1900MHz 4x45W-65MHz	C	From Leg	4.000	0.000	148'	No Ice	2.322	2.238	0.060
			0'			1/2" Ice	2.527	2.441	0.083
			0'			1" Ice	2.739	2.651	0.110
800MHZ 2X50W RRH	A	From Leg	4.000	0.000	148'	No Ice	2.134	1.773	0.053
			0'			1/2" Ice	2.320	1.946	0.074
			0'			1" Ice	2.512	2.127	0.098
800MHZ 2X50W RRH	B	From Leg	4.000	0.000	148'	No Ice	2.134	1.773	0.053
			0'			1/2" Ice	2.320	1.946	0.074
			0'			1" Ice	2.512	2.127	0.098
800MHZ 2X50W RRH	C	From Leg	4.000	0.000	148'	No Ice	2.134	1.773	0.053
			0'			1/2" Ice	2.320	1.946	0.074
			0'			1" Ice	2.512	2.127	0.098
(2) 6' x 2" Mount Pipe	A	From Leg	4.000	0.000	148'	No Ice	1.425	1.425	0.022
			0'			1/2" Ice	1.925	1.925	0.033
			0'			1" Ice	2.294	2.294	0.048
(2) 6' x 2" Mount Pipe	B	From Leg	4.000	0.000	148'	No Ice	1.425	1.425	0.022
			0'			1/2" Ice	1.925	1.925	0.033
			0'			1" Ice	2.294	2.294	0.048
(2) 6' x 2" Mount Pipe	C	From Leg	4.000	0.000	148'	No Ice	1.425	1.425	0.022
			0'			1/2" Ice	1.925	1.925	0.033
			0'			1" Ice	2.294	2.294	0.048
(2) 6' x 3.5" Mount Pipe	A	From Leg	2.000	0.000	148'	No Ice	1.872	1.872	0.030
			0'			1/2" Ice	2.293	2.293	0.046
			0'			1" Ice	2.667	2.667	0.065
(2) 6' x 3.5" Mount Pipe	B	From Leg	2.000	0.000	148'	No Ice	1.872	1.872	0.030
			0'			1/2" Ice	2.293	2.293	0.046
			0'			1" Ice	2.667	2.667	0.065
(2) 6' x 3.5" Mount Pipe	C	From Leg	2.000	0.000	148'	No Ice	1.872	1.872	0.030
			0'			1/2" Ice	2.293	2.293	0.046
			0'			1" Ice	2.667	2.667	0.065
Sector Mount [SM 502-3]	C	None		0.000	148'	No Ice	29.820	29.820	1.673
						1/2" Ice	42.210	42.210	2.266
						1" Ice	54.430	54.430	3.052
*									
LLPX310R w/ Mount Pipe	A	From Leg	4.000	0.000	136'	No Ice	3.882	2.355	0.057
			0'			1/2" Ice	4.291	2.729	0.091
			0'			1" Ice	4.716	3.117	0.133
LLPX310R w/ Mount Pipe	B	From Leg	4.000	0.000	136'	No Ice	3.882	2.355	0.057
			0'			1/2" Ice	4.291	2.729	0.091
			0'			1" Ice	4.716	3.117	0.133
LLPX310R w/ Mount Pipe	C	From Leg	4.000	0.000	136'	No Ice	3.882	2.355	0.057
			0'			1/2" Ice	4.291	2.729	0.091
			0'			1" Ice	4.716	3.117	0.133
RRH-2WB	A	From Leg	4.000	0.000	136'	No Ice	2.305	0.783	0.044
			0'			1/2" Ice	2.496	0.917	0.059
			0'			1" Ice	2.695	1.058	0.077
RRH-2WB	B	From Leg	4.000	0.000	136'	No Ice	2.305	0.783	0.044
			0'			1/2" Ice	2.496	0.917	0.059
			0'			1" Ice	2.695	1.058	0.077

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRH-2WB	C	From Leg	4.000 0' 0'	0.000	136'	No Ice 1/2" Ice 1" Ice	2.305 2.496 2.695	0.783 0.917 1.058	0.044 0.059 0.077
J - Box	C	From Leg	0.500 0' 0'	0.000	136'	No Ice 1/2" Ice 1" Ice	0.667 0.770 0.881	0.500 0.593 0.693	0.020 0.027 0.036
(3) 6' x 2" Mount Pipe	A	From Leg	4.000 0' 0'	0.000	136'	No Ice 1/2" Ice 1" Ice	1.425 1.925 2.294	1.425 1.925 2.294	0.022 0.033 0.048
(3) 6' x 2" Mount Pipe	B	From Leg	4.000 0' 0'	0.000	136'	No Ice 1/2" Ice 1" Ice	1.425 1.925 2.294	1.425 1.925 2.294	0.022 0.033 0.048
(3) 6' x 2" Mount Pipe	C	From Leg	4.000 0' 0'	0.000	136'	No Ice 1/2" Ice 1" Ice	1.425 1.925 2.294	1.425 1.925 2.294	0.022 0.033 0.048
6' x 3" Mount Pipe	A	From Leg	4.000 0' 0'	0.000	136'	No Ice 1/2" Ice 1" Ice	1.767 2.129 2.501	1.767 2.129 2.501	0.030 0.044 0.061
6' x 3" Mount Pipe	C	From Leg	4.000 0' 0'	0.000	136'	No Ice 1/2" Ice 1" Ice	1.767 2.129 2.501	1.767 2.129 2.501	0.030 0.044 0.061
Sector Mount [SM 504-3]	C	None		0.000	136'	No Ice 1/2" Ice 1" Ice	31.050 43.830 56.440	31.050 43.830 56.440	1.708 2.326 3.143
*									
GPS_A	B	From Leg	4.000 0' 4'	0.000	126'	No Ice 1/2" Ice 1" Ice	0.255 0.320 0.393	0.255 0.320 0.393	0.001 0.005 0.010
MT6407-77A w/ Mount Pipe	A	From Leg	4.000 0' 3'	0.000	126'	No Ice 1/2" Ice 1" Ice	4.907 5.256 5.615	2.682 3.145 3.624	0.096 0.136 0.180
MT6407-77A w/ Mount Pipe	B	From Leg	4.000 0' 3'	0.000	126'	No Ice 1/2" Ice 1" Ice	4.907 5.256 5.615	2.682 3.145 3.624	0.096 0.136 0.180
MT6407-77A w/ Mount Pipe	C	From Leg	4.000 0' 3'	0.000	126'	No Ice 1/2" Ice 1" Ice	4.907 5.256 5.615	2.682 3.145 3.624	0.096 0.136 0.180
JAHH-65C-R3B w/ Mount Pipe	A	From Leg	4.000 0' 3'	0.000	126'	No Ice 1/2" Ice 1" Ice	6.599 7.142 7.694	5.107 5.634 6.171	0.118 0.210 0.316
JAHH-65C-R3B w/ Mount Pipe	B	From Leg	4.000 0' 3'	0.000	126'	No Ice 1/2" Ice 1" Ice	6.599 7.142 7.694	5.107 5.634 6.171	0.118 0.210 0.316
JAHH-65C-R3B w/ Mount Pipe	C	From Leg	4.000 0' 3'	0.000	126'	No Ice 1/2" Ice 1" Ice	6.599 7.142 7.694	5.107 5.634 6.171	0.118 0.210 0.316
JAHH-65C-R3B	A	From Leg	4.000 0' 3'	0.000	126'	No Ice 1/2" Ice 1" Ice	6.460 7.000 7.550	3.860 4.370 4.890	0.085 0.161 0.245
JAHH-65C-R3B	B	From Leg	4.000 0' 3'	0.000	126'	No Ice 1/2" Ice 1" Ice	6.460 7.000 7.550	3.860 4.370 4.890	0.085 0.161 0.245
JAHH-65C-R3B	C	From Leg	4.000 0' 3'	0.000	126'	No Ice 1/2" Ice 1" Ice	6.460 7.000 7.550	3.860 4.370 4.890	0.085 0.161 0.245
XXDWMM-12.5-65-8T-CBRS w/ Mount Pipe	A	From Leg	4.000 0'	0.000	126'	No Ice 1/2" Ice	1.183 1.377	1.027 1.279	0.031 0.046

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			3'			1" Ice	1.582	1.547	0.064
XXDWMM-12.5-65-8T-CBR S w/ Mount Pipe	B	From Leg	4.000 0'	0.000	126'	No Ice 1/2" Ice	1.183 1.377	1.027 1.279	0.031 0.046
			3'			1" Ice	1.582	1.547	0.064
XXDWMM-12.5-65-8T-CBR S w/ Mount Pipe	C	From Leg	4.000 0'	0.000	126'	No Ice 1/2" Ice	1.183 1.377	1.027 1.279	0.031 0.046
			3'			1" Ice	1.582	1.547	0.064
RF4440D-13A	A	From Leg	4.000 0'	0.000	126'	No Ice 1/2" Ice	1.865 2.035	1.129 1.267	0.073 0.090
			3'			1" Ice	2.212	1.411	0.110
(2) RF4440D-13A	B	From Leg	4.000 0'	0.000	126'	No Ice 1/2" Ice	1.865 2.035	1.129 1.267	0.073 0.090
			3'			1" Ice	2.212	1.411	0.110
(2) CBC78T-DS-43-2X	A	From Leg	4.000 0'	0.000	126'	No Ice 1/2" Ice	0.368 0.446	0.512 0.605	0.021 0.027
			3'			1" Ice	0.531	0.705	0.035
CBC78T-DS-43-2X	C	From Leg	4.000 0'	0.000	126'	No Ice 1/2" Ice	0.368 0.446	0.512 0.605	0.021 0.027
			3'			1" Ice	0.531	0.705	0.035
RF4439D-25A	A	From Leg	4.000 0'	0.000	126'	No Ice 1/2" Ice	1.865 2.035	1.252 1.394	0.075 0.093
			3'			1" Ice	2.212	1.544	0.114
RF4439D-25A	B	From Leg	4.000 0'	0.000	126'	No Ice 1/2" Ice	1.865 2.035	1.252 1.394	0.075 0.093
			3'			1" Ice	2.212	1.544	0.114
RF4439D-25A	C	From Leg	4.000 0'	0.000	126'	No Ice 1/2" Ice	1.865 2.035	1.252 1.394	0.075 0.093
			3'			1" Ice	2.212	1.544	0.114
DB-C1-12C-24AB-0Z	C	From Leg	4.000 0'	0.000	126'	No Ice 1/2" Ice	4.056 4.316	3.098 3.335	0.032 0.068
			3'			1" Ice	4.582	3.580	0.109
(3) 6' x 2" Mount Pipe	A	From Leg	4.000 0'	0.000	126'	No Ice 1/2" Ice	1.425 1.925	1.425 1.925	0.022 0.033
			0'			1" Ice	2.294	2.294	0.048
(3) 6' x 2" Mount Pipe	B	From Leg	4.000 0'	0.000	126'	No Ice 1/2" Ice	1.425 1.925	1.425 1.925	0.022 0.033
			0'			1" Ice	2.294	2.294	0.048
(3) 6' x 2" Mount Pipe	C	From Leg	4.000 0'	0.000	126'	No Ice 1/2" Ice	1.425 1.925	1.425 1.925	0.022 0.033
			0'			1" Ice	2.294	2.294	0.048
Sector Mount [SM 411-3]	C	None		0.000	126'	No Ice 1/2" Ice 1" Ice	20.530 28.620 36.630	20.530 28.620 36.630	1.069 1.457 1.972
Mount Reinforcement Specification	C	None		0.000	126'	No Ice 1/2" Ice 1" Ice	28.630 37.310 45.800	28.630 37.310 45.800	0.280 0.670 0.940
*									
800 10504 w/ Mount Pipe	A	From Leg	4.000 0'	0.000	112'	No Ice 1/2" Ice	2.685 3.116	2.257 2.681	0.038 0.067
			0'			1" Ice	3.561	3.118	0.105
800 10504 w/ Mount Pipe	B	From Leg	4.000 0'	0.000	112'	No Ice 1/2" Ice	2.685 3.116	2.257 2.681	0.038 0.067
			0'			1" Ice	3.561	3.118	0.105
800 10504 w/ Mount Pipe	C	From Leg	4.000 0'	0.000	112'	No Ice 1/2" Ice	2.685 3.116	2.257 2.681	0.038 0.067
			0'			1" Ice	3.561	3.118	0.105
6' x 2" Mount Pipe	A	From Leg	4.000	0.000	112'	No Ice	1.425	1.425	0.022

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0'			1/2" Ice	1.925	1.925	0.033
			0'			1" Ice	2.294	2.294	0.048
6' x 2" Mount Pipe	B	From Leg	4.000	0.000	112'	No Ice	1.425	1.425	0.022
			0'			1/2" Ice	1.925	1.925	0.033
			0'			1" Ice	2.294	2.294	0.048
6' x 2" Mount Pipe	C	From Leg	4.000	0.000	112'	No Ice	1.425	1.425	0.022
			0'			1/2" Ice	1.925	1.925	0.033
			0'			1" Ice	2.294	2.294	0.048
Sector Mount [SM 104-3]	C	None		0.000	112'	No Ice	30.210	30.210	0.953
						1/2" Ice	38.120	38.120	1.432
						1" Ice	46.010	46.010	2.031
*									
GPS_A	A	From Face	2.000	0.000	5'	No Ice	0.255	0.255	0.001
			0'			1/2" Ice	0.320	0.320	0.005
			0'			1" Ice	0.393	0.393	0.010
ASPP2933	A	From Face	0.500	0.000	5'	No Ice	0.196	0.196	0.004
			0'			1/2" Ice	0.320	0.320	0.006
			1'			1" Ice	0.453	0.453	0.009
3' x 2" Pipe Mount	A	From Face	2.000	0.000	5'	No Ice	0.583	0.583	0.011
			0'			1/2" Ice	0.770	0.770	0.017
			0'			1" Ice	0.967	0.967	0.024
Side Arm Mount [SO 701-1]	A	From Face	1.500	0.000	5'	No Ice	0.850	1.670	0.065
			0'			1/2" Ice	1.140	2.340	0.079
			0'			1" Ice	1.430	3.010	0.093
*									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP2-18	A	Paraboloid w/Shroud (HP)	From Leg	3.000	-10.000		157'	2.175	No Ice	3.720	0.031
				0'					1/2" Ice	4.010	0.050
				0'					1" Ice	4.300	0.070
VHLP2-18	B	Paraboloid w/Shroud (HP)	From Leg	3.000	-40.000		157'	2.175	No Ice	3.720	0.031
				0'					1/2" Ice	4.010	0.050
				0'					1" Ice	4.300	0.070
*											
VHLP2-23	A	Paraboloid w/Shroud (HP)	From Leg	4.000	50.000		136'	2.175	No Ice	3.720	0.030
				0'					1/2" Ice	4.000	0.030
				2'					1" Ice	4.310	0.040
*											

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
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
T1	180 - 160	Leg	Max Tension	15	9.509	-0.196	0.011
			Max. Compression	10	-17.563	0.673	0.043
			Max. Mx	22	6.986	-0.759	-0.037

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	17	-3.894	-0.033	0.616
			Max. Vy	22	-1.318	0.033	0.003
			Max. Vx	16	1.185	0.010	-0.126
		Diagonal	Max Tension	24	3.100	0.000	0.000
			Max. Compression	25	-3.014	0.000	0.000
			Max. Mx	32	0.419	0.022	0.003
			Max. My	34	0.776	0.020	0.003
			Max. Vy	27	0.021	0.020	-0.003
			Max. Vx	34	-0.001	0.000	0.000
		Top Girt	Max Tension	3	0.418	0.000	0.000
			Max. Compression	14	-0.473	0.000	0.000
			Max. Mx	26	-0.066	-0.038	0.000
			Max. My	26	-0.064	0.000	0.001
			Max. Vy	26	-0.023	0.000	0.000
			Max. Vx	26	0.001	0.000	0.000
		Mid Girt	Max Tension	18	0.478	0.000	0.000
			Max. Compression	23	-0.472	0.000	0.000
			Max. Mx	26	0.010	-0.050	0.000
			Max. My	26	0.008	0.000	0.002
			Max. Vy	26	0.026	0.000	0.000
			Max. Vx	26	-0.001	0.000	0.000
T2	160 - 153.333	Leg	Max Tension	7	15.381	-0.732	-0.009
			Max. Compression	10	-25.182	0.204	-0.019
			Max. Mx	22	14.074	-0.759	-0.037
			Max. My	17	-3.925	-0.033	0.616
			Max. Vy	22	-0.214	-0.759	-0.037
			Max. Vx	16	0.213	-0.044	0.616
		Diagonal	Max Tension	13	4.958	0.000	0.000
			Max. Compression	12	-5.203	0.000	0.000
			Max. Mx	30	1.023	0.037	0.005
			Max. My	32	-1.475	0.034	0.006
			Max. Vy	29	0.031	0.036	0.004
			Max. Vx	32	-0.002	0.000	0.000
T3	153.333 - 146.667	Leg	Max Tension	23	24.953	-0.229	0.030
			Max. Compression	10	-37.054	0.532	-0.043
			Max. Mx	6	22.166	0.624	-0.012
			Max. My	20	-6.906	-0.011	0.645
			Max. Vy	6	0.895	-0.555	-0.012
			Max. Vx	12	0.842	-0.023	-0.460
		Diagonal	Max Tension	13	5.104	0.000	0.000
			Max. Compression	12	-5.477	0.000	0.000
			Max. Mx	31	0.765	0.042	-0.006
			Max. My	28	0.823	0.040	-0.006
			Max. Vy	29	0.033	0.040	-0.006
			Max. Vx	28	0.002	0.000	0.000
		Top Girt	Max Tension	22	0.963	0.000	0.000
			Max. Compression	11	-0.544	0.000	0.000
			Max. Mx	26	0.449	-0.090	0.000
			Max. My	26	0.437	0.000	0.003
			Max. Vy	26	0.038	0.000	0.000
			Max. Vx	26	0.001	0.000	0.000
T4	146.667 - 140	Leg	Max Tension	23	34.277	-0.549	0.040
			Max. Compression	10	-48.538	0.146	-0.028
			Max. Mx	6	32.098	-0.555	-0.012
			Max. My	12	-7.276	-0.023	-0.460
			Max. Vy	2	0.117	0.534	0.037
			Max. Vx	13	-0.115	-0.017	-0.460
		Diagonal	Max Tension	13	6.123	0.000	0.000
			Max. Compression	12	-6.300	0.000	0.000
			Max. Mx	31	1.206	0.046	-0.006

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	35	-1.726	0.036	0.007
			Max. Vy	33	0.035	0.043	0.006
			Max. Vx	35	-0.002	0.000	0.000
		Top Girt	Max Tension	6	0.462	0.000	0.000
			Max. Compression	11	-0.128	0.000	0.000
			Max. Mx	26	0.358	-0.103	0.000
			Max. My	26	0.353	0.000	0.003
			Max. Vy	26	-0.041	0.000	0.000
			Max. Vx	26	-0.001	0.000	0.000
T5	140 - 120	Leg	Max Tension	23	67.877	-0.429	0.043
			Max. Compression	10	-89.369	0.569	-0.043
			Max. Mx	6	41.569	0.761	0.021
			Max. My	12	-11.694	-0.006	-0.840
			Max. Vy	22	-1.156	-0.439	0.044
			Max. Vx	24	1.116	-0.042	0.321
		Diagonal	Max Tension	20	8.213	0.000	0.000
			Max. Compression	20	-8.227	0.000	0.000
			Max. Mx	35	1.812	0.062	0.008
			Max. My	37	-2.039	0.057	0.009
			Max. Vy	33	0.042	0.062	-0.008
			Max. Vx	37	-0.002	0.000	0.000
T6	120 - 100	Leg	Max Tension	23	105.843	-0.496	0.024
			Max. Compression	10	-133.267	0.866	-0.086
			Max. Mx	11	-129.833	0.869	-0.087
			Max. My	12	-12.097	-0.006	-0.840
			Max. Vy	6	-0.449	-0.628	-0.027
			Max. Vx	24	0.430	-0.025	0.468
		Diagonal	Max Tension	8	9.579	0.000	0.000
			Max. Compression	8	-9.550	0.000	0.000
			Max. Mx	35	2.175	0.095	0.011
			Max. My	37	-2.156	0.082	0.012
			Max. Vy	33	0.057	0.093	-0.011
			Max. Vx	38	-0.003	0.000	0.000
T7	100 - 80	Leg	Max Tension	23	138.720	-0.567	0.098
			Max. Compression	10	-170.971	0.637	-0.057
			Max. Mx	11	-146.449	0.869	-0.087
			Max. My	12	-16.096	-0.033	-0.892
			Max. Vy	6	-0.140	-0.837	-0.062
			Max. Vx	12	-0.186	-0.033	-0.892
		Diagonal	Max Tension	8	10.641	0.000	0.000
			Max. Compression	8	-10.569	0.000	0.000
			Max. Mx	35	2.353	0.151	0.021
			Max. My	38	2.543	0.148	0.021
			Max. Vy	33	0.075	0.150	0.019
			Max. Vx	38	-0.004	0.000	0.000
T8	80 - 70	Leg	Max Tension	23	155.682	-0.678	0.064
			Max. Compression	10	-190.485	2.267	-0.192
			Max. Mx	10	-190.485	2.267	-0.192
			Max. My	12	-17.747	0.054	-2.099
			Max. Vy	2	-0.286	2.253	0.110
			Max. Vx	12	0.322	0.054	-2.099
		Diagonal	Max Tension	8	10.990	0.000	0.000
			Max. Compression	8	-11.116	0.000	0.000
			Max. Mx	33	1.934	0.169	-0.021
			Max. My	38	2.305	0.167	0.022
			Max. Vy	33	0.079	0.169	-0.021
			Max. Vx	38	-0.004	0.000	0.000
T9	70 - 60	Leg	Max Tension	23	172.404	-2.061	0.204
			Max. Compression	10	-210.268	0.347	0.041
			Max. Mx	10	-209.816	2.267	-0.192
			Max. My	12	-18.528	0.054	-2.099

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	2	0.313	2.253	0.110
			Max. Vx	24	0.329	0.054	2.093
		Diagonal	Max Tension	8	11.748	0.000	0.000
			Max. Compression	8	-11.927	0.000	0.000
			Max. Mx	33	2.463	-0.301	-0.034
			Max. My	37	-2.510	-0.254	-0.043
			Max. Vy	33	-0.140	-0.301	-0.034
			Max. Vx	31	-0.008	0.000	0.000
T10	60 - 40	Leg	Max Tension	23	205.055	-1.305	0.086
			Max. Compression	10	-249.072	1.690	-0.109
			Max. Mx	37	23.174	-2.491	0.053
			Max. My	12	-21.210	-0.034	-1.457
			Max. Vy	29	0.378	-2.479	-0.039
			Max. Vx	24	-0.259	-0.034	1.446
		Diagonal	Max Tension	8	12.111	0.000	0.000
			Max. Compression	8	-12.410	0.000	0.000
			Max. Mx	35	2.208	0.233	0.028
			Max. My	38	3.082	0.223	0.031
			Max. Vy	33	0.100	0.225	0.028
			Max. Vx	38	-0.005	0.000	0.000
T11	40 - 20	Leg	Max Tension	23	236.373	-0.913	0.025
			Max. Compression	10	-287.210	2.752	-0.205
			Max. Mx	37	26.867	-5.869	0.064
			Max. My	12	-24.113	-0.211	-1.534
			Max. Vy	29	0.977	-5.846	-0.054
			Max. Vx	12	-0.200	-0.211	-1.534
		Diagonal	Max Tension	8	12.746	0.000	0.000
			Max. Compression	8	-13.062	0.000	0.000
			Max. Mx	33	1.037	0.324	-0.035
			Max. My	38	5.053	0.245	0.039
			Max. Vy	33	0.120	0.324	-0.035
			Max. Vx	38	-0.006	0.000	0.000
T12	20 - 0	Leg	Max Tension	23	265.424	-1.137	0.055
			Max. Compression	10	-324.986	0.000	0.000
			Max. Mx	37	33.647	-5.869	0.064
			Max. My	12	-28.127	-0.294	-2.914
			Max. Vy	29	-1.151	-5.846	-0.054
			Max. Vx	12	-0.438	-0.294	-2.914
		Diagonal	Max Tension	8	13.792	0.000	0.000
			Max. Compression	8	-14.041	0.000	0.000
			Max. Mx	33	-1.528	-0.749	0.063
			Max. My	12	11.343	-0.509	0.094
			Max. Vy	33	-0.231	-0.749	0.063
			Max. Vx	32	-0.012	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	331.288	34.065	-18.748
	Max. H_x	18	331.288	34.065	-18.748
	Max. H_z	7	-266.186	-28.549	15.608
	Min. Vert	7	-266.186	-28.549	15.608
	Min. H_x	7	-266.186	-28.549	15.608
	Min. H_z	18	331.288	34.065	-18.748
Leg B	Max. Vert	10	334.384	-34.643	-18.710

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H_x	23	-272.511	29.198	15.642
	Max. H_z	23	-272.511	29.198	15.642
	Min. Vert	23	-272.511	29.198	15.642
	Min. H_x	10	334.384	-34.643	-18.710
	Min. H_z	10	334.384	-34.643	-18.710
Leg A	Max. Vert	2	329.169	-0.608	38.881
	Max. H_x	21	19.358	3.681	1.809
	Max. H_z	2	329.169	-0.608	38.881
	Min. Vert	15	-271.008	0.585	-32.723
	Min. H_x	8	26.097	-3.707	2.454
	Min. H_z	15	-271.008	0.585	-32.723

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	69.608	0.000	0.000	33.055	16.240	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	83.529	0.061	-61.715	-6523.897	12.107	-25.417
0.9 Dead+1.0 Wind 0 deg - No Ice	62.647	0.061	-61.715	-6533.814	7.235	-25.417
1.2 Dead+1.0 Wind 30 deg - No Ice	83.529	28.858	-49.975	-5329.108	-3079.698	20.946
0.9 Dead+1.0 Wind 30 deg - No Ice	62.647	28.858	-49.975	-5339.024	-3084.570	20.946
1.2 Dead+1.0 Wind 60 deg - No Ice	83.529	50.379	-29.126	-3085.845	-5384.502	33.568
0.9 Dead+1.0 Wind 60 deg - No Ice	62.647	50.379	-29.126	-3095.761	-5389.374	33.568
1.2 Dead+1.0 Wind 90 deg - No Ice	83.529	60.088	-0.025	37.795	-6389.157	37.805
0.9 Dead+1.0 Wind 90 deg - No Ice	62.647	60.088	-0.025	27.878	-6394.029	37.805
1.2 Dead+1.0 Wind 120 deg - No Ice	83.529	54.097	31.245	3359.244	-5724.056	46.673
0.9 Dead+1.0 Wind 120 deg - No Ice	62.647	54.097	31.245	3349.327	-5728.928	46.673
1.2 Dead+1.0 Wind 150 deg - No Ice	83.529	30.006	52.014	5630.928	-3205.770	53.297
0.9 Dead+1.0 Wind 150 deg - No Ice	62.647	30.006	52.014	5621.011	-3210.642	53.297
1.2 Dead+1.0 Wind 180 deg - No Ice	83.529	-0.069	58.398	6329.526	27.679	25.691
0.9 Dead+1.0 Wind 180 deg - No Ice	62.647	-0.069	58.398	6319.609	22.807	25.691
1.2 Dead+1.0 Wind 210 deg - No Ice	83.529	-28.912	50.033	5416.976	3126.662	-20.808
0.9 Dead+1.0 Wind 210 deg - No Ice	62.647	-28.912	50.033	5407.059	3121.790	-20.808
1.2 Dead+1.0 Wind 240 deg - No Ice	83.529	-53.341	30.854	3312.293	5673.774	-33.610
0.9 Dead+1.0 Wind 240 deg - No Ice	62.647	-53.341	30.854	3302.376	5668.902	-33.610
1.2 Dead+1.0 Wind 270 deg - No Ice	83.529	-60.150	0.036	42.915	6437.397	-37.727
0.9 Dead+1.0 Wind 270 deg -	62.647	-60.150	0.036	32.999	6432.525	-37.727

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
No Ice 1.2 Dead+1.0 Wind 300 deg - No Ice	83.529	-51.217	-29.521	-3133.202	5525.018	-46.755
0.9 Dead+1.0 Wind 300 deg - No Ice	62.647	-51.217	-29.521	-3143.118	5520.146	-46.755
1.2 Dead+1.0 Wind 330 deg - No Ice	83.529	-30.006	-51.978	-5545.765	3244.962	-53.549
0.9 Dead+1.0 Wind 330 deg - No Ice	62.647	-30.006	-51.978	-5555.682	3240.090	-53.549
1.2 Dead+1.0 Ice+1.0 Temp	144.100	0.000	0.000	91.874	53.678	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	144.100	0.015	-16.307	-1648.669	51.889	-7.514
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	144.100	7.834	-13.564	-1362.116	-786.004	6.184
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	144.100	13.621	-7.873	-749.885	-1402.346	12.552
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	144.100	16.304	-0.008	91.228	-1680.983	13.216
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	144.100	14.680	8.476	990.632	-1502.297	15.979
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	144.100	8.159	14.142	1606.601	-820.277	16.800
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	144.100	-0.017	15.758	1788.156	55.636	7.570
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	144.100	-7.845	13.576	1547.635	895.017	-6.155
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	144.100	-14.114	8.162	957.893	1550.785	-12.561
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	144.100	-16.317	0.010	92.807	1790.261	-13.199
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	144.100	-14.204	-8.189	-782.708	1571.118	-15.996
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	144.100	-8.160	-14.135	-1421.643	927.678	-16.852
Dead+Wind 0 deg - Service	69.608	0.017	-17.301	-1788.506	14.231	-6.917
Dead+Wind 30 deg - Service	69.608	8.106	-14.038	-1458.615	-844.846	5.698
Dead+Wind 60 deg - Service	69.608	14.148	-8.179	-835.195	-1485.014	9.131
Dead+Wind 90 deg - Service	69.608	16.858	-0.007	32.546	-1763.159	10.284
Dead+Wind 120 deg - Service	69.608	15.160	8.756	954.122	-1577.425	12.698
Dead+Wind 150 deg - Service	69.608	8.419	14.593	1585.276	-879.157	14.502
Dead+Wind 180 deg - Service	69.608	-0.019	16.398	1780.126	18.469	6.992
Dead+Wind 210 deg - Service	69.608	-8.121	14.054	1527.048	879.500	-5.660
Dead+Wind 240 deg - Service	69.608	-14.954	8.649	941.344	1585.613	-9.143
Dead+Wind 270 deg - Service	69.608	-16.875	0.010	33.939	1798.161	-10.262
Dead+Wind 300 deg - Service	69.608	-14.376	-8.287	-848.084	1545.129	-12.720
Dead+Wind 330 deg - Service	69.608	-8.419	-14.583	-1517.579	911.696	-14.571

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-69.608	0.000	0.000	69.608	0.000	0.000%
2	0.061	-83.529	-61.715	-0.061	83.529	61.715	0.000%
3	0.061	-62.647	-61.715	-0.061	62.647	61.715	0.000%
4	28.858	-83.529	-49.975	-28.858	83.529	49.975	0.000%
5	28.858	-62.647	-49.975	-28.858	62.647	49.975	0.000%
6	50.379	-83.529	-29.126	-50.379	83.529	29.126	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
7	50.379	-62.647	-29.126	-50.379	62.647	29.126	0.000%
8	60.088	-83.529	-0.025	-60.088	83.529	0.025	0.000%
9	60.088	-62.647	-0.025	-60.088	62.647	0.025	0.000%
10	54.097	-83.529	31.245	-54.097	83.529	-31.245	0.000%
11	54.097	-62.647	31.245	-54.097	62.647	-31.245	0.000%
12	30.006	-83.529	52.014	-30.006	83.529	-52.014	0.000%
13	30.006	-62.647	52.014	-30.006	62.647	-52.014	0.000%
14	-0.069	-83.529	58.398	0.069	83.529	-58.398	0.000%
15	-0.069	-62.647	58.398	0.069	62.647	-58.398	0.000%
16	-28.912	-83.529	50.033	28.912	83.529	-50.033	0.000%
17	-28.912	-62.647	50.033	28.912	62.647	-50.033	0.000%
18	-53.341	-83.529	30.854	53.341	83.529	-30.854	0.000%
19	-53.341	-62.647	30.854	53.341	62.647	-30.854	0.000%
20	-60.150	-83.529	0.036	60.150	83.529	-0.036	0.000%
21	-60.150	-62.647	0.036	60.150	62.647	-0.036	0.000%
22	-51.217	-83.529	-29.521	51.217	83.529	29.521	0.000%
23	-51.217	-62.647	-29.521	51.217	62.647	29.521	0.000%
24	-30.006	-83.529	-51.978	30.006	83.529	51.978	0.000%
25	-30.006	-62.647	-51.978	30.006	62.647	51.978	0.000%
26	0.000	-144.100	0.000	0.000	144.100	0.000	0.000%
27	0.015	-144.100	-16.307	-0.015	144.100	16.307	0.000%
28	7.834	-144.100	-13.564	-7.834	144.100	13.564	0.000%
29	13.621	-144.100	-7.873	-13.621	144.100	7.873	0.000%
30	16.304	-144.100	-0.008	-16.304	144.100	0.008	0.000%
31	14.680	-144.100	8.476	-14.680	144.100	-8.476	0.000%
32	8.159	-144.100	14.142	-8.159	144.100	-14.142	0.000%
33	-0.017	-144.100	15.758	0.017	144.100	-15.758	0.000%
34	-7.845	-144.100	13.576	7.845	144.100	-13.576	0.000%
35	-14.114	-144.100	8.162	14.114	144.100	-8.162	0.000%
36	-16.317	-144.100	0.010	16.317	144.100	-0.010	0.000%
37	-14.204	-144.100	-8.189	14.204	144.100	8.189	0.000%
38	-8.160	-144.100	-14.135	8.160	144.100	14.135	0.000%
39	0.017	-69.608	-17.301	-0.017	69.608	17.301	0.000%
40	8.106	-69.608	-14.038	-8.106	69.608	14.038	0.000%
41	14.148	-69.608	-8.179	-14.148	69.608	8.179	0.000%
42	16.858	-69.608	-0.007	-16.858	69.608	0.007	0.000%
43	15.160	-69.608	8.756	-15.160	69.608	-8.756	0.000%
44	8.419	-69.608	14.593	-8.419	69.608	-14.593	0.000%
45	-0.019	-69.608	16.398	0.019	69.608	-16.398	0.000%
46	-8.121	-69.608	14.054	8.121	69.608	-14.054	0.000%
47	-14.954	-69.608	8.649	14.954	69.608	-8.649	0.000%
48	-16.875	-69.608	0.010	16.875	69.608	-0.010	0.000%
49	-14.376	-69.608	-8.287	14.376	69.608	8.287	0.000%
50	-8.419	-69.608	-14.583	8.419	69.608	14.583	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	3.317	43	0.145	0.014
T2	160 - 153.333	2.701	43	0.141	0.014
T3	153.333 - 146.667	2.499	43	0.138	0.015
T4	146.667 - 140	2.302	43	0.134	0.015
T5	140 - 120	2.109	43	0.129	0.015
T6	120 - 100	1.566	43	0.114	0.013

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T7	100 - 80	1.094	43	0.094	0.011
T8	80 - 70	0.711	43	0.074	0.008
T9	70 - 60	0.549	43	0.065	0.007
T10	60 - 40	0.414	43	0.055	0.006
T11	40 - 20	0.193	43	0.034	0.003
T12	20 - 0	0.053	43	0.018	0.001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
181'	MX08FRO665-21 w/ Mount Pipe	43	3.317	0.145	0.014	Inf
170'	AIR 32 B2A/B66AA w/ Mount Pipe	43	3.008	0.144	0.014	626283
161'	RRUS 32 B2	43	2.732	0.141	0.014	283075
157'	VHLP2-18	43	2.610	0.140	0.014	138382
148'	APXVTM14-ALU-I20 w/ Mount Pipe	43	2.341	0.135	0.015	135800
138'	VHLP2-23	43	2.052	0.127	0.015	89339
136'	LLPX310R w/ Mount Pipe	43	1.996	0.126	0.014	86334
126'	GPS_A	43	1.723	0.118	0.014	77418
112'	800 10504 w/ Mount Pipe	43	1.367	0.106	0.012	59453
5'	GPS_A	43	0.009	0.005	0.000	177314

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	12.020	10	0.526	0.050
T2	160 - 153.333	9.783	10	0.512	0.052
T3	153.333 - 146.667	9.050	10	0.502	0.054
T4	146.667 - 140	8.334	10	0.487	0.054
T5	140 - 120	7.633	10	0.468	0.054
T6	120 - 100	5.662	10	0.412	0.048
T7	100 - 80	3.948	10	0.339	0.039
T8	80 - 70	2.562	10	0.268	0.030
T9	70 - 60	1.977	10	0.234	0.025
T10	60 - 40	1.489	10	0.198	0.022
T11	40 - 20	0.693	10	0.124	0.013
T12	20 - 0	0.192	10	0.064	0.004

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
181'	MX08FRO665-21 w/ Mount Pipe	10	12.020	0.526	0.050	363026
170'	AIR 32 B2A/B66AA w/ Mount Pipe	10	10.898	0.521	0.051	181512

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
161'	RRUS 32 B2	10	9.894	0.513	0.052	80955
157'	VHLP2-18	10	9.451	0.508	0.053	38427
148'	APXVTM14-ALU-I20 w/ Mount Pipe	10	8.476	0.491	0.054	37534
138'	VHLP2-23	10	7.427	0.463	0.054	24360
136'	LLPX310R w/ Mount Pipe	10	7.222	0.457	0.053	23531
126'	GPS_A	10	6.230	0.430	0.050	21087
112'	800 10504 w/ Mount Pipe	10	4.940	0.384	0.044	16240
5'	GPS_A	10	0.033	0.016	0.001	49259

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	180	Leg	A325N	0.875	4	2.377	41.556	0.057 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	3.100	8.135	0.381 ✔	1.05	Member Block Shear
		Top Girt	A325N	0.625	1	0.418	5.423	0.077 ✔	1.05	Member Block Shear
		Mid Girt	A325N	0.625	1	0.478	5.423	0.088 ✔	1.05	Member Block Shear
T2	160	Diagonal	A325N	0.625	1	4.958	11.310	0.438 ✔	1.05	Member Bearing
T3	153.333	Diagonal	A325N	0.625	1	5.104	11.310	0.451 ✔	1.05	Member Bearing
		Top Girt	A325N	0.625	1	0.963	5.655	0.170 ✔	1.05	Member Bearing
T4	146.667	Leg	A325N	1.000	4	8.569	54.517	0.157 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	6.123	11.310	0.541 ✔	1.05	Member Bearing
		Top Girt	A325N	0.625	1	0.842	5.655	0.149 ✔	1.05	Member Bearing
T5	140	Leg	A325N	1.000	6	11.313	54.517	0.208 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	8.213	11.310	0.726 ✔	1.05	Member Bearing
T6	120	Leg	A325N	1.000	6	17.640	54.517	0.324 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	9.579	12.675	0.756 ✔	1.05	Member Bearing
T7	100	Leg	A325N	1.000	8	17.340	54.517	0.318 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.750	1	10.641	14.137	0.753 ✔	1.05	Member Bearing
T8	80	Diagonal	A325N	0.750	1	10.990	14.137	0.777 ✔	1.05	Member Bearing
T9	70	Leg	A325N	1.000	8	21.551	54.517	0.395 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.750	1	11.748	20.227	0.581 ✔	1.05	Gusset Bearing
T10	60	Leg	A325N	1.000	8	25.632	54.517	0.470 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.750	1	12.111	14.137	0.857 ✔	1.05	Member Bearing
T11	40	Leg	A325N	1.000	8	29.547	54.517	0.542 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.750	1	12.746	17.672	0.721 ✔	1.05	Member Bearing
T12	20	Diagonal	A325N	0.750	1	13.792	20.227	0.682 ✔	1.05	Gusset Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	ROHN 3 EH	20'7/16"	5'3/32"	52.9 K=1.00	3.016	-17.563	110.608	0.159 [1] ✔
T2	160 - 153.333	ROHN 4 EH	6'8-5/32"	6'8-5/32"	54.3 K=1.00	4.407	-25.182	159.906	0.157 [1] ✔
T3	153.333 - 146.667	ROHN 4 EH	6'8-5/32"	6'8-5/32"	54.3 K=1.00	4.407	-37.054	159.905	0.232 [1] ✔
T4	146.667 - 140	ROHN 4 EH	6'8-5/32"	6'8-5/32"	54.3 K=1.00	4.407	-48.538	159.906	0.304 [1] ✔
T5	140 - 120	ROHN 5 EH	20'7/16"	6'8-5/32"	43.6 K=1.00	6.112	-89.369	239.378	0.373 [1] ✔
T6	120 - 100	ROHN 6 EHS	20'3/8"	6'8-1/8"	36.0 K=1.00	6.713	-133.267	274.776	0.485 [1] ✔
T7	100 - 80	ROHN 6 EH	20'15/32"	10'7/32"	54.8 K=1.00	8.405	-170.971	303.717	0.563 [1] ✔
T8	80 - 70	ROHN 8 EHS	10'7/32"	10'7/32"	41.2 K=1.00	9.719	-190.485	386.395	0.493 [1] ✔
T9	70 - 60	ROHN 8 EHS	10'7/32"	10'7/32"	41.2 K=1.00	9.719	-210.268	386.395	0.544 [1] ✔
T10	60 - 40	ROHN 8 EHS	20'13/32"	10'7/32"	41.2 K=1.00	9.719	-249.072	386.397	0.645 [1] ✔
T11	40 - 20	ROHN 8 EH	20'13/32"	10'7/32"	41.8 K=1.00	12.763	-287.210	505.555	0.568 [1] ✔
T12	20 - 0	ROHN 8 EH	20'13/32"	10'7/32"	41.8 K=1.00	12.763	-324.986	505.555	0.643 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L2x2x3/16	9'10-3/8"	4'9-15/32"	145.8 K=1.00	0.715	-3.014	9.623	0.313 [1] ✔
T2	160 - 153.333	L2 1/2x2 1/2x1/4	11'3-7/16"	5'6"	134.4 K=1.00	1.190	-5.203	18.851	0.276 [1] ✔
T3	153.333 - 146.667	L2 1/2x2 1/2x1/4	11'10-7/32"	5'9-13/32"	141.4 K=1.00	1.190	-5.477	17.047	0.321 [1] ✔
T4	146.667 - 140	L2 1/2x2 1/2x1/4	12'5-5/32"	6'7/8"	148.4 K=1.00	1.190	-6.300	15.466	0.407 [1] ✔
T5	140 - 120	L2 1/2x2 1/2x1/4	14'2-3/4'	6'11-3/3	169.2	1.190	-8.227	11.895	0.692 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	120 - 100	L3x3x1/4	15'11-7/8"	7'8-29/32"	157.0 K=1.00	1.440	-9.550	16.730	0.571 [1]
T7	100 - 80	L3 1/2x3 1/2x1/4	19'3-3/32"	9'5-25/32"	164.0 K=1.00	1.690	-10.569	17.990	0.587 [1]
T8	80 - 70	L3 1/2x3 1/2x1/4	20'1-13/16"	9'9-25/32"	169.7 K=1.00	1.690	-11.116	16.792	0.662 [1]
T9	70 - 60	2L3 1/2x3 1/2x1/4x3/8 2L 'a' > 58.773 in - 137	21'11/32"	10'3-3/32"	189.4 K=1.00	3.380	-11.927	26.228	0.455 [1]
T10	60 - 40	L4x4x1/4	22'9-23/32"	11'1-25/32"	168.3 K=1.00	1.940	-12.410	19.609	0.633 [1]
T11	40 - 20	L4x4x5/16	24'7-1/2"	12'11/16"	182.9 K=1.00	2.400	-13.062	20.532	0.636 [1]
T12	20 - 0	2L4x4x5/16x3/8 2L 'a' > 74.511 in - 176	26'5-9/16"	12'11-3/4"	211.6 K=1.00	4.800	-14.041	30.149	0.466 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L2x2x1/8	6'8-1/4"	6'1-3/4"	185.5 K=1.00	0.484	-0.473	4.028	0.118 [1]
T3	153.333 - 146.667	L2 1/2x2 1/2x1/8 KL/R > 200 (C) - 46	9'5-13/32"	8'9-29/32"	212.2 K=1.00	0.609	-0.643	3.875	0.166 [1]
T4	146.667 - 140	L2 1/2x2 1/2x1/8 KL/R > 200 (C) - 58	10'1-23/32"	9'6-7/32"	228.8 K=1.00	0.609	-0.842	3.331	0.253 [1]

[1] P_u / ϕP_n controls

Mid Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L2x2x1/8 KL/R > 200 (C) - 9	7'8-11/16"	7'2-3/16"	216.8 K=1.00	0.484	-0.472	2.950	0.160 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	ROHN 3 EH	20'7/16"	5'3/32"	52.9	3.016	9.509	135.717	0.070 [1] ✔
T2	160 - 153.333	ROHN 4 EH	6'8-5/32' '	6'8-5/32' '	54.3	4.407	15.381	198.335	0.078 [1] ✔
T3	153.333 - 146.667	ROHN 4 EH	6'8-5/32' '	6'8-5/32' '	54.3	4.407	24.953	198.335	0.126 [1] ✔
T4	146.667 - 140	ROHN 4 EH	6'8-5/32' '	6'8-5/32' '	54.3	4.407	34.277	198.335	0.173 [1] ✔
T5	140 - 120	ROHN 5 EH	20'7/16"	6'8-5/32' '	43.6	6.112	67.877	275.039	0.247 [1] ✔
T6	120 - 100	ROHN 6 EHS	20'3/8"	6'8-1/8"	36.0	6.713	105.843	302.097	0.350 [1] ✔
T7	100 - 80	ROHN 6 EH	20'15/32 "	10'7/32"	54.8	8.405	138.720	378.222	0.367 [1] ✔
T8	80 - 70	ROHN 8 EHS	10'7/32"	10'7/32"	41.2	9.719	155.682	437.369	0.356 [1] ✔
T9	70 - 60	ROHN 8 EHS	10'7/32"	10'7/32"	41.2	9.719	172.404	437.369	0.394 [1] ✔
T10	60 - 40	ROHN 8 EHS	20'13/32 "	10'7/32"	41.2	9.719	205.055	437.369	0.469 [1] ✔
T11	40 - 20	ROHN 8 EH	20'13/32 "	10'7/32"	41.8	12.763	236.373	574.322	0.412 [1] ✔
T12	20 - 0	ROHN 8 EH	20'13/32 "	10'7/32"	41.8	12.763	265.424	574.322	0.462 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L2x2x3/16	9'10-3/8' '	4'9-15/32"	95.6	0.431	3.100	18.739	0.165 [1] ✔
T2	160 - 153.333	L2 1/2x2 1/2x1/4	11'3-7/16"	5'6"	87.8	0.752	4.958	32.707	0.152 [1] ✔
T3	153.333 - 146.667	L2 1/2x2 1/2x1/4	11'10-7/32"	5'9-13/32"	92.2	0.752	5.104	32.707	0.156 [1] ✔
T4	146.667 - 140	L2 1/2x2 1/2x1/4	12'5-5/32"	6'7/8"	96.7	0.752	6.123	32.707	0.187 [1] ✔
T5	140 - 120	L2 1/2x2 1/2x1/4	14'2-3/4'	6'11-3/3	110.0	0.752	8.213	32.707	0.251 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	120 - 100	L3x3x1/4	15'11-7/8"	7'8-29/32"	101.5	0.939	9.579	45.794	0.209 [1] ✔
T7	100 - 80	L3 1/2x3 1/2x1/4	19'3-3/32"	9'5-25/32"	105.9	1.103	10.641	53.793	0.198 [1] ✔
T8	80 - 70	L3 1/2x3 1/2x1/4	20'1-13/16"	9'9-25/32"	109.6	1.103	10.990	53.793	0.204 [1] ✔
T9	70 - 60	2L3 1/2x3 1/2x1/4x3/8 2L 'a' > 58.773 in - 136	21'11/32"	10'3-3/32"	114.4	2.207	11.748	95.999	0.122 [1] ✔
T10	60 - 40	L4x4x1/4	22'9-23/32"	11'1-25/32"	108.3	1.291	12.111	62.933	0.192 [1] ✔
T11	40 - 20	L4x4x5/16	23'8-9/16"	11'7-1/4"	113.6	1.595	12.746	77.752	0.164 [1] ✔
T12	20 - 0	2L4x4x5/16x3/8 2L 'a' > 74.511 in - 175	26'5-9/16"	12'11-3/4"	126.9	3.190	13.792	138.758	0.099 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L2x2x1/8	6'8-1/4"	6'1-3/4"	122.6	0.293	0.418	12.744	0.033 [1] ✔
T3	153.333 - 146.667	L2 1/2x2 1/2x1/8	9'5-13/32"	8'9-29/32"	138.3	0.387	0.963	16.822	0.057 [1] ✔
T4	146.667 - 140	L2 1/2x2 1/2x1/8	10'1-23/32"	9'6-7/32"	148.9	0.387	0.842	16.822	0.050 [1] ✔

[1] P_u / ϕP_n controls

Mid Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L2x2x1/8	7'8-11/16"	7'2-3/16"	142.4	0.293	0.478	12.744	0.038 [1] ✔

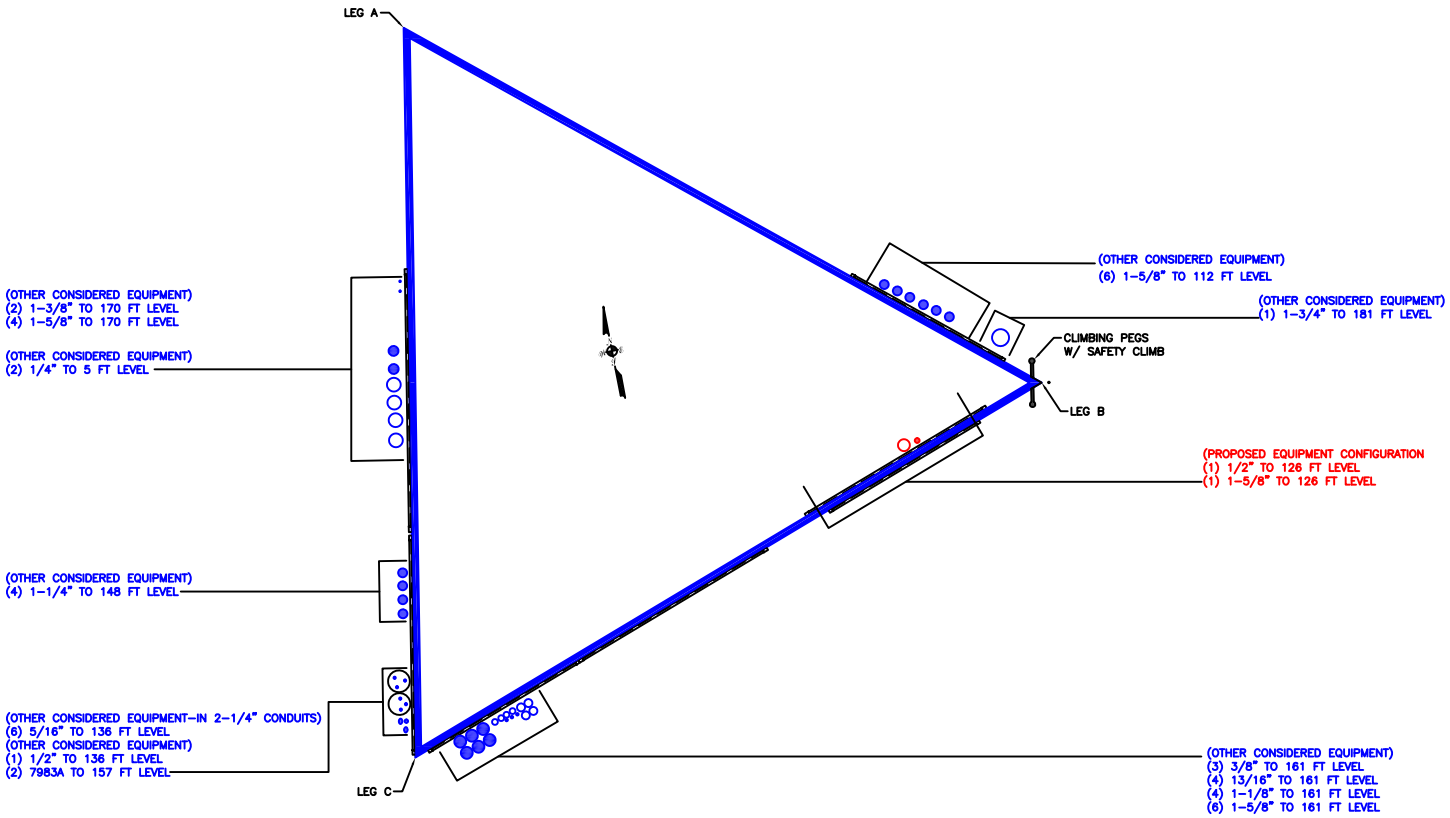
[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	180 - 160	Leg	ROHN 3 EH	2	-17.563	116.138	15.1	Pass
T2	160 - 153.333	Leg	ROHN 4 EH	35	-25.182	167.901	15.0	Pass
T3	153.333 - 146.667	Leg	ROHN 4 EH	44	-37.054	167.900	22.1	Pass
T4	146.667 - 140	Leg	ROHN 4 EH	56	-48.538	167.901	28.9	Pass
T5	140 - 120	Leg	ROHN 5 EH	68	-89.369	251.347	35.6	Pass
T6	120 - 100	Leg	ROHN 6 EHS	89	-133.267	288.515	46.2	Pass
T7	100 - 80	Leg	ROHN 6 EH	110	-170.971	318.903	53.6	Pass
T8	80 - 70	Leg	ROHN 8 EHS	125	-190.485	405.715	47.0	Pass
T9	70 - 60	Leg	ROHN 8 EHS	134	-210.268	405.715	51.8	Pass
T10	60 - 40	Leg	ROHN 8 EHS	143	-249.072	405.717	61.4	Pass
T11	40 - 20	Leg	ROHN 8 EH	158	-287.210	530.833	54.1	Pass
T12	20 - 0	Leg	ROHN 8 EH	173	-324.986	530.833	61.2	Pass
T1	180 - 160	Diagonal	L2x2x3/16	13	-3.014	10.104	29.8	Pass
T2	160 - 153.333	Diagonal	L2 1/2x2 1/2x1/4	39	-5.203	19.793	26.3	Pass
T3	153.333 - 146.667	Diagonal	L2 1/2x2 1/2x1/4	51	-5.477	17.900	30.6	Pass
T4	146.667 - 140	Diagonal	L2 1/2x2 1/2x1/4	63	-6.300	16.240	38.8	Pass
T5	140 - 120	Diagonal	L2 1/2x2 1/2x1/4	70	-8.227	12.489	65.9	Pass
T6	120 - 100	Diagonal	L3x3x1/4	92	-9.550	17.566	54.4	Pass
T7	100 - 80	Diagonal	L3 1/2x3 1/2x1/4	113	-10.569	18.890	55.9	Pass
T8	80 - 70	Diagonal	L3 1/2x3 1/2x1/4	128	-11.116	17.632	63.0	Pass
T9	70 - 60	Diagonal	2L3 1/2x3 1/2x1/4x3/8	137	-11.927	27.539	43.3	Pass
T10	60 - 40	Diagonal	L4x4x1/4	146	-12.410	20.589	60.3	Pass
T11	40 - 20	Diagonal	L4x4x5/16	161	-13.062	21.559	60.6	Pass
T12	20 - 0	Diagonal	2L4x4x5/16x3/8	176	-14.041	31.656	44.4	Pass
T1	180 - 160	Top Girt	L2x2x1/8	4	-0.473	4.230	11.2	Pass
T3	153.333 - 146.667	Top Girt	L2 1/2x2 1/2x1/8	46	-0.643	4.069	15.8	Pass
T4	146.667 - 140	Top Girt	L2 1/2x2 1/2x1/8	58	-0.842	3.498	24.1	Pass
T1	180 - 160	Mid Girt	L2x2x1/8	9	-0.472	3.097	15.2	Pass
							Summary	
						Leg (T10)	61.4	Pass
						Diagonal (T5)	65.9	Pass
						Top Girt (T4)	24.1	Pass
						Mid Girt (T1)	15.2	Pass
						Bolt Checks	81.6	Pass
						RATING =	**81.6**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT:807133

APPENDIX C

ADDITIONAL CALCULATIONS

Self Support Anchor Rod Capacity

Site Info	
BU #	807133
Site Name	BRG 134 943057, CT
Order #	642704 Rev# 0

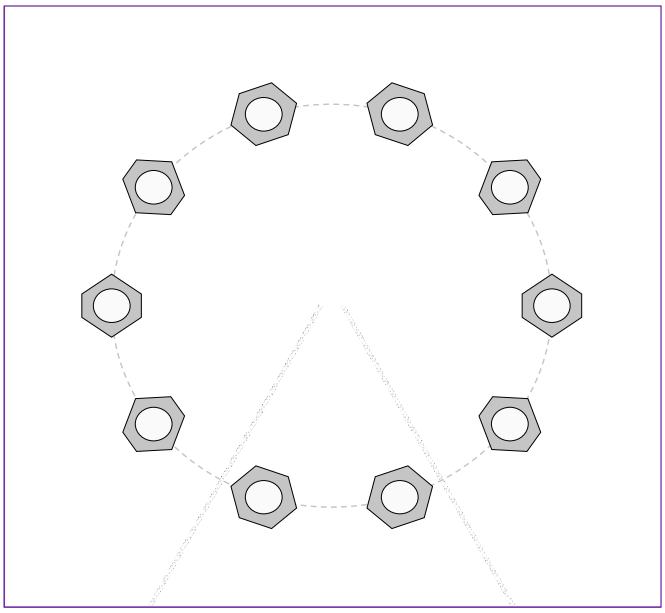
Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	Yes
l_{ar} (in)	0

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	334.00	273.00
Shear Force (kips)	39.00	33.00

**TIA-222-H Section 15.5 Applied*

Considered Eccentricity	
Leg Mod Eccentricity (in)	0.000
Anchor Rod N.A Shift (in)	0.000
Total Eccentricity (in)	0.000

**Anchor Rod Eccentricity Applied*



Connection Properties

Anchor Rod Data

(10) 1" ø bolts (A449 N; Fy=92 ksi, Fu=120 ksi)

l_{ar} (in): 0

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

Pu_t = 27.3	ϕPn_t = 54.54	**Stress Rating**
Vu = 3.3	ϕVn = 35.34	**47.7%**
Mu = n/a	ϕMn = n/a	**Pass**

Foundation Analysis-Rock Anchors

BU#: 807133
Site Name: BRG 134 943057,CT
Project Number: 82164.021.01.0001

Tnx Reactions

Uplift	273	k
Comp.	334	k

U.Shear	33	k
C. Shear	39	k

Applied Loads

dpier	9	ft
bpier	6.25	ft
Lpier	9	ft
n	4	

Wt.conc =γ x Lpier x dpier x bpier= 75.9375 k

Ru =Uplift-0.9 x Wt.conc = 204.6563 k

Rc =Comp.+1.2 x Wt.conc = 425.125 k

Compression Analysis:

qult	30	ksf
φ	0.75	

Ultimate Bearing Capacity
Strength Reduction Factor

Mu	351	K-ft	
e	0.8256395	ft	
B/6	1.0416667	ft	
S	58.59375	ft3	Since e<B/6
qc	13.548178	Ksf	

Comp.= $\frac{qc}{\varphi qu}$ = 0.602141 **60.21 %**

Bearing stress rating **RevH** **57.35 %**

Lateral Analysis:

μ	0.3	
φ	0.75	
Rv	39	k

Rc= 425.125

Rs= Rc x μ = 127.5375 k

φ x Rs = 95.653125 k -----Lateral Resistance

Lateral= $\frac{Rv}{\varphi Rs}$ = 0.407723 **40.77 %**

Lateral Stress Rating **RevH 38.83 %**

Uplift Analysis:

a.Steel Anchor Nominal Tensile Strength:

Fu	90	Ksi	A615 Gr. 60 Rebar
Anet	1.56	in^2	#11 Rebar

Ru= 204.65625

Rn_steel= Fu x Anet= 140.4 k

b. Steel-to-Grout Nominal Bonding Strength:

L	8	ft	Embedded Length in concrete
d rebar	1.41	in	
θ	0	degrees	Batter Angle
fc	4000	psi	Grout Compressive Strength (Assumed)

As =Pi()x d rebar x (L/cos(θ)) = 425.246 in^2 Rebar Surface Area

Fs_g= 6 x √(fc) x√(psi) = 379.4733 psi --Steel-to-Grout Bond Strength

Rn_steel_to_grout= As x fs_g = 161.3695 k --Nominal Steel-to-Grout Bond Strength per Anchor

c. Grout-Rock Nominal Bonding Strength:

L_Sand	9	ft	Length of Embedment Into Sand below 10' below grade
dhole	2.25	in	
θ	0	degrees	
Fr_g	110	psi	Grout-Rock Bond Strength

Ab =Pi()x dhole x (L_Sand/cos(θ)) = 763.407 in^2 Grout Surface Area

Rn_rock_grout= Fr_g x Ab= 83.975 kip--Nominal Grout-Rock Bond Strength per Anchor

d. Nominal Weight of Rock Prism:

Leff	9.5	ft	--Effective Embedment Length = 5'-10' rock below grade + 9'/2 Sand
danchors	2	ft	--Spacing between anchors
φrock	40	degrees	
γ rock	140	pcf	
hsoil	5	ft	--Soil Layer Height
φsoil	40	degrees	
γ soil	135	pcf	--Unit Weight of Soil

d1= danchors= 2 ft

d2= 2 x Leff x tan(φrock)+danchors = 17.943 ft--Dia @ Top of Rock Layer

d3= d2+2 x hsoil x tan(φsoil) = 26.33 ft--Dia @ Top of Soil Layer

$$V_{rock} := \frac{\pi \cdot L_{eff}}{3} \cdot \left[\left(\frac{d_2}{2} \right)^2 + \left(\frac{d_2}{2} \right) \left(\frac{d_1}{2} \right) + \left(\frac{d_1}{2} \right)^2 \right]$$ = 899.9132 ft^3

$$V_{soil} := \frac{\pi \cdot h_{soil}}{3} \cdot \left[\left(\frac{d_3}{2} \right)^2 + \left(\frac{d_3}{2} \right) \left(\frac{d_2}{2} \right) + \left(\frac{d_2}{2} \right)^2 \right]$$ = 1947.692 ft^3

Wrock=γ rock x Vrock = 125.9879 k

Wsoil=γ soil x Vsoil = 262.9385 k

Overlapped concrete block on soil cone 42.1875 K

Rn_rock=Wrock+Wsoil= 346.7388 k

Rn_rock per pile 86.6847 K

$R_n := \min(R_{n\_steel}, R_{n\_steel\_to\_grout}, R_{n\_rock\_grout}, R_{n\_rock}) =$ 83.975 k

Dowel Capacity

Bit diameter for Dowel as per CCI_821566 0.875 in

Based on Bit diameter, the rebar size is assumed to be #6

(1) #6 Shear capacity 14.256 K

There are total of (15) dowel per face, meaning 7.5 dowels per anchor

Dowel capacity per anchor 106.920 K

φRn= 62.981079 k

n*φRn= 251.92431

Ru= 204.656

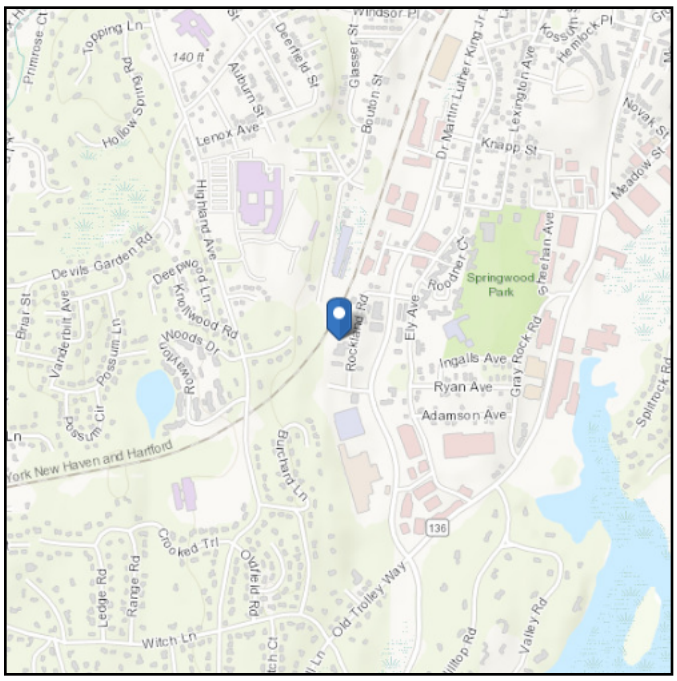
Uplift = Ru/(n*φRn)= 0.812372 **81.24 %**

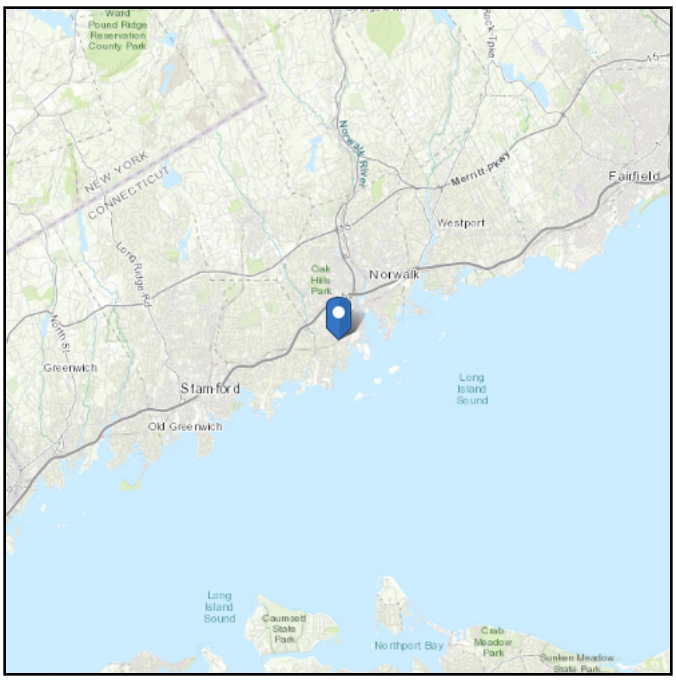
RevH **77.37 %**

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Latitude:**	41.081789
Risk Category:	II	**Longitude:**	-73.430422
Soil Class:	D - Default (see Section 11.4.3)	**Elevation:**	60.78 ft (NAVD 88)





Wind

Results:

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

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Mon Jan 09 2023

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

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

Seismic

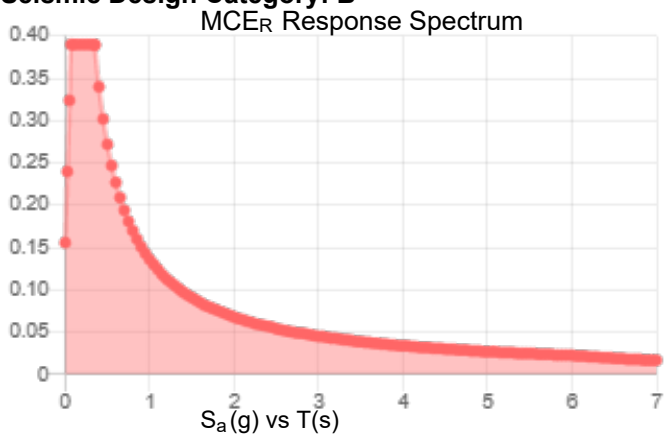
D - Default (see Section 11.4.3)

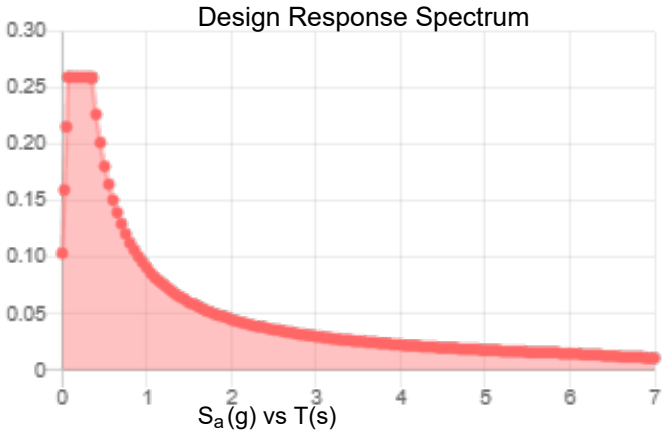
Site Soil Class:

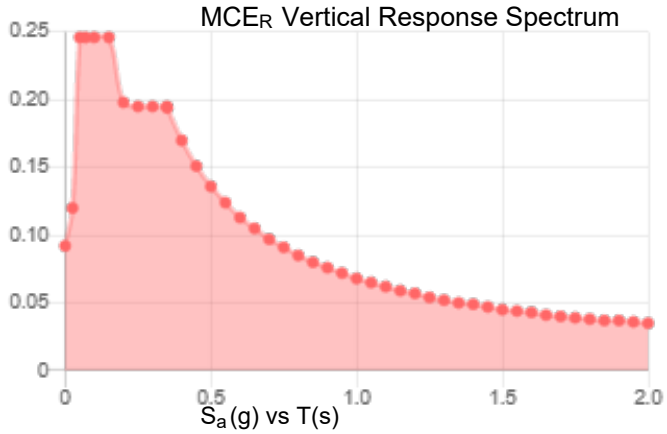
Results:

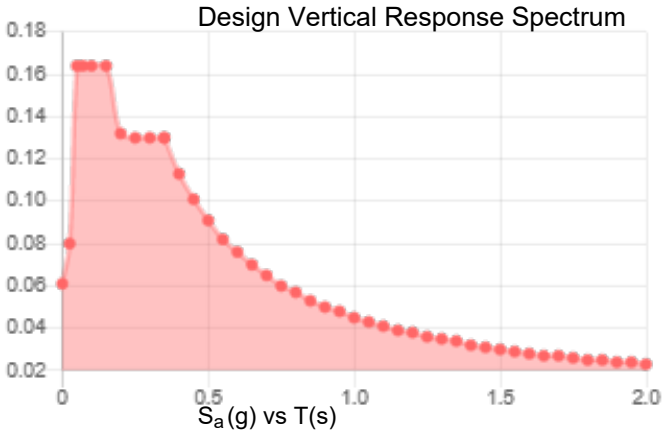
S_S :	0.244	S_{D1} :	0.091
S_1 :	0.057	T_L :	6
F_a :	1.6	PGA :	0.144
F_v :	2.4	PGA_M :	0.218
S_{MS} :	0.39	F_{PGA} :	1.511
S_{M1} :	0.136	I_e :	1
S_{DS} :	0.26	C_v :	0.788

Seismic Design Category: B









Data Accessed: **Mon Jan 09 2023**

Date Source:

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Mon Jan 09 2023

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

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