



Northeast Site Solutions
Denise Sabo
4 Angela's Way, Burlington CT 06013
203-435-3640
denise@northeastsitesolutions.com

March 8, 2022

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Exempt Modification Application
128 Mather Street, Wilton, CT 06897
Latitude: 41.238333
Longitude: -73.42444
Site #: 806353_Crown_VZW

Dear Ms. Bachman:

Verizon Wireless is requesting to file an exempt modification for an existing tower located at 128 Mather Street, Wilton, CT 06897. Verizon Wireless currently maintains twelve (12) antennas at the 162-foot level of the existing 180-foot tower. The property is owned by the Town of Wilton and the tower is owned by Crown Castle. Verizon now intends to install three (3) antennas. The new antennas would be installed at the 162-foot level of the tower. This modification includes B2, B5 hardware that is both 4G (LTE), and 5G capable.

Verizon Planned Modifications:

Remove: None

Remove and Replace: None

Install New:

(3) Samsung MT6407-77A Antennas

Existing to Remain:

(6) COMMSCOPE Antennas

(6) RFS Antennas

(3) Samsung B2/B66A RRH

(3) Samsung B5/B13 RRH

(3) Samsung CBRS RRH

(1) RFS OVP

(6) Coax 1-5/8"

(1) Hybrid Line 1-5/8"

The facility was approved by the Connecticut Siting Council, Docket No. 94, on May 3, 1988. Please see attached.



NSS **NORTHEAST**
SITE SOLUTIONS
Turnkey Wireless Development

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-SOj-73, a copy of this letter is being sent to Lynne Vanderslice, First Selectwoman and Michael Wrinn, Director of Planning & Land Use for the Town of Wilton. A copy is also being sent to the tower owner and property owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Verizon Wireless respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Denise Sabo
Mobile: 203-435-3640
Fax: 413-521-0558
Office: 4 Angela's Way, Burlington CT 06013
E-mail: denise@northeastsitesolutions.com



NSS **NORTHEAST**
SITE SOLUTIONS
Turnkey Wireless Development

Attachments

Cc: Lynne Vanderslice, First Selectwoman & Property Owner
Town Hall
238 Danbury Road
Wilton, CT 06897

Michael Wrinn, Director of Planning & Land Use
Town Annex
238 Danbury Road
Wilton, CT 06897

Crown Castle – Tower Owner

Exhibit A

Original Facility Approval

DOCKET NO. 94 - AN APPLICATION OF METRO : Connecticut
MOBILE CTS OF FAIRFIELD COUNTY, INC., FOR :
A CERTIFICATE OF ENVIRONMENTAL COMPATI- : Siting
BILITY AND PUBLIC NEED FOR CELLULAR : Council
TELEPHONE ANTENNAS AND ASSOCIATED EQUIP- :
MENT IN THE TOWN OF WILTON, CONNECTICUT. May 3, 1988

DECISION AND ORDER

Pursuant to the foregoing opinion, the Connecticut Siting Council finds that the effects associated with the construction and operation of a cellular monopole structure at the alternative Mather Street site, including effects on the natural environment, ecological balance, public health and safety, scenic, historic and recreational values, forests and parks, air and water purity and fish and wildlife, are not significant either alone or cumulatively with other effects, are not in conflict with the policies of the state concerning such effects, and are not sufficient reason to deny the application, and therefore, directs that a Certificate of Environmental Compatibility and Public Need, as provided by Section 16-50k of the General Statutes of Connecticut (CGS) be issued to Metro Mobile CTS of Fairfield County, Inc. (Metro Mobile) for the construction, operation, and maintenance of a cellular telephone tower site and associated equipment at the "Wilton-D/AA" site on Mather Street in Wilton, Connecticut.

The proposed "D-Wilton" site on Richdale Drive and alternative "D/A Wilton" site on Quail Ridge Road are hereby denied.

The facility shall be constructed, operated, and maintained as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole or lattice tower, as determined by the Council in approving the development and management plan, and be no taller than necessary to provide the proposed service, and in no event shall exceed a total height of 193 feet, including antennas and associated equipment.
2. The facility shall be constructed in accordance with all applicable federal, state, and municipal laws and regulations.

3. Unless necessary to comply with condition number two, above, no lights shall be installed on this tower.
4. The Certificate Holder shall prepare a development and management (d&m) plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies. The d&m plan shall provide monopole and lattice tower foundation design specifications and plans for permanent evergreen screening around the outside perimeter of the eight-foot chain link fence which will surround the site.
5. The Certificate Holder shall provide the Council with the results of additional subsurface reconnaissance at the proposed site prior to the commencement of any construction at this site.
6. The Certificate Holder or its successor shall notify the Council if and when directional antennas or any equipment other than that listed in this application are added to this facility.
7. The Certificate Holder or its successor shall permit public or private entities to share space on the tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
8. If this facility does not provide, or permanently ceases to provide, cellular service following the completion of construction, this Decision and Order shall be void, and the tower and all associated equipment in this application shall be dismantled and removed or reapplication for any new use shall be made to the Council before any such new use is made.
9. The Certificate Holder shall comply with any future radio frequency (RF) standards promulgated by state or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facility granted in this Decision and Order shall be brought into compliance with such standards.

10. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the issuance of this Decision and Order, or within three years of the completion of any appeal taken in this Decision and Order.

Pursuant to Section 16-50p, we hereby direct that a copy of the Decision and Order be served on each person listed below. A notice of issuance shall be published in the Norwalk Hour and the Wilton Bulletin.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of State Agencies.

The parties or intervenors to this proceeding are:

Metro Mobile CTS of Fairfield County, Inc. (Party)
50 Rockland Road
South Norwalk, CT 06854
Attn: Michael Riley

Howard L. Slater, Esq. (Its Attorney)
Jennifer Young Gaudet, Esq.
Byrne, Slater, Sandler,
Shulman & Rouse, P.C.
330 Main Street
Hartford, CT 06103

Fleischman and Walsh, P.C. (Representative)
1725 N. Street, N.W.
Washington, D.C. 20036
Attn: Richard Rubin, Esq.

PEACE, Inc. (Party)

Ann Caggiano (Representative)
President
PEACE, Inc.
33 Honey Hill Trail
Wilton, CT 06897

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Town of Wilton	(Party)
Edward C. Desmond First Selectman Town of Wilton Town Hall 238 Danbury Road Wilton, CT 06897	(Representative)
Joseph C. Lee, Esq. Alice A. Bruno, Esq. Tyler Cooper & Alcorn 205 Church Street P.O. Box 1936 New Haven, CT 06509	(Its Attorney)
Margaret Doheny 21 Richdale Drive Wilton, CT 06897	(Party)
SNET Cellular, Inc.	(Intervenor)
Donald R. Chapman, Vice President Operations SNET Cellular, Inc. 555 Long Wharf Drive New Haven, CT 06511	(Representative)
Peter J. Tyrrell Senior Attorney SNET Cellular, Inc. 227 Church Street Room 1021 New Haven, CT 06506	(Its Attorney)
Ogden Bigelow 25 Hidden Lake Road Wilton, CT 06897	(Intervenor)

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John Jordon
32 Mayapple Road
Wilton, CT 06897

(Party)

Veronica Tella
41 Honey Hill Trail
Wilton, CT 06897

(Party)

Betsy Mitchell
125 Catalpa Road
Wilton, CT 06897
(SERVICE WAIVED)

(Party)

1390E

CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case in Docket 94 or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut the 3rd day of May, 1988.


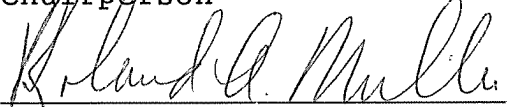
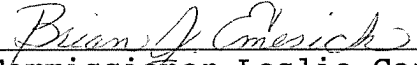
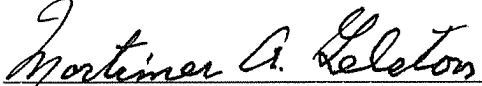
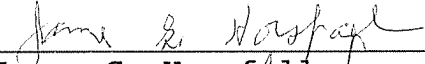
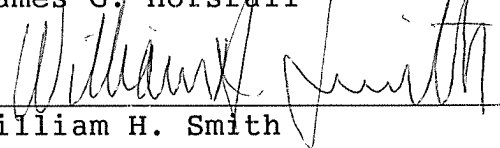
<u>Council Members</u>	<u>Vote Cast</u>
 _____ Gloria Dibble Pond Chairperson	Yes
 _____ Commissioner Peter Boucher Designee: Roland Miller	Yes
 _____ Commissioner Leslie Carothers Designee: Brian Emerick	Yes
 _____ Mortimer A. Gelston	Yes
 _____ James G. Horsfall	Yes
 _____ William H. Smith	Yes
_____ Colin C. Tait	Absent

Exhibit B

Property Card



Town of Wilton, CT

Property Listing Report

Map Block Lot

23-23

Account

006497

Property Information

Property Location	MATHER ST
Owner	WILTON TOWN OF
Co-Owner	
Mailing Address	238 DANBURY RD WILTON CT 06897
Land Use	21V Ex Com MDL-00
Land Class	E
Zoning Code	R-2
Census Tract	
Sub Lot	
Neighborhood	4000
Acreage	74.12
Utilities	
Lot Setting/Desc	Rolling
Survey Map	
Foundation	3

Photo



Sketch



Primary Construction Details

Year Built	0
Stories	
Building Style	
Building Use	
Building Condition	
Floors	Dirt/None
Total Rooms	

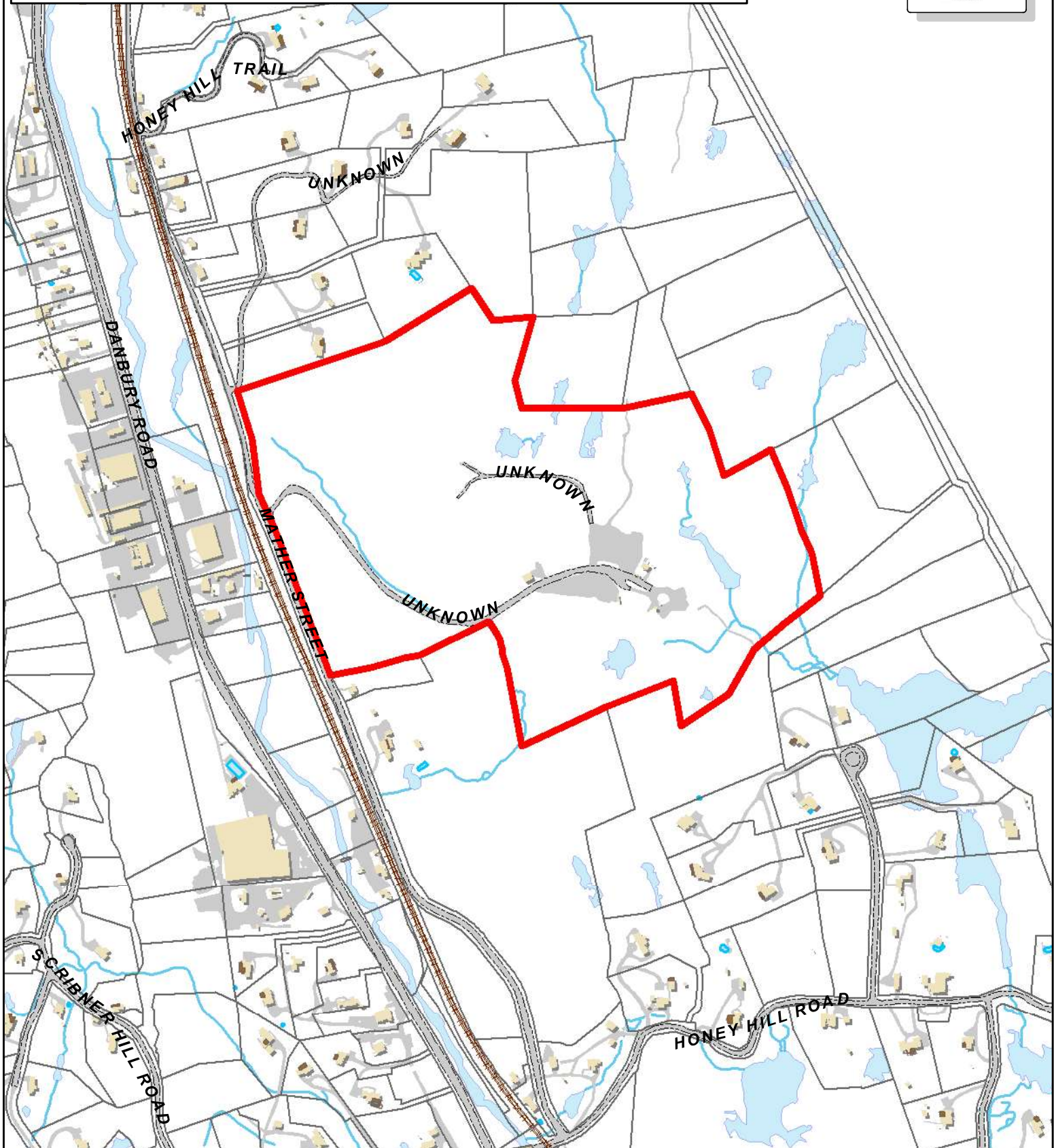
Bedrooms	
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	Gable/Hip
Roof Cover	Enam Mtl Shing

Exterior Walls	Pre-finsh Metl
Interior Walls	Drywall
Heating Type	None
Heating Fuel	None
AC Type	None
Gross Bldg Area	1200
Total Living Area	1200

Town of Wilton, Connecticut - Assessment Parcel Map

MBL: 23-23

Address: MATHER ST



Approximate Scale:
1 inch = 600 feet

Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Wilton and its mapping contractors
assume no legal responsibility for the information contained herein.

Map Grand List Date: Oct 2017
0 350 700 1,050 Feet

Exhibit C

Construction Drawings



VERIZON SITE NUMBER: 325157
VERIZON SITE NAME: WILTON CT
SITE TYPE: SELF SUPPORT
TOWER HEIGHT: 180'-0"

BUSINESS UNIT #: 806353
SITE ADDRESS: 128 MATHER STREET
 WILTON, CT 06897
COUNTY: FAIRFIELD
JURISDICTION: TOWN OF WILTON

VERIZON 5G L-SUB6 - CARRIER ADD / FUZE ID: 16272216



TECHNICAL SOLUTIONS, EXCEPTIONAL SERVICE.
 Tectonic Engineering & Surveying Consultants P.C.
 70 Pleasant Hill Road Phone: (845) 334-5959
 P.O. Box 37 Phone: (800) 825-6531
 Mountainville, NY 10953 www.tectoniceengineering.com
 Project Contact Name: 1278 Route 300
 Newburgh, NY 12550 Phone: (845) 567-6666
 TECTONIC WO: 10545.WILTONCT

VERIZON SITE NUMBER:
325157

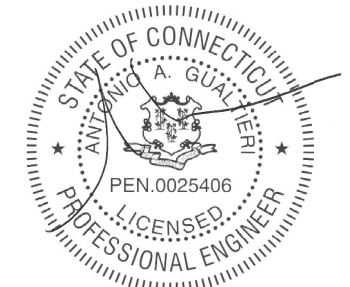
BU #: 806353
BRG 124 943066

128 MATHER STREET
WILTON, CT 06897

EXISTING 180'-0"
SELF-SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	05/03/2021	IJ	PRELIMINARY	---
0	06/15/2021	MJR	CONSTRUCTION	---



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

SHEET NUMBER:

T-1

REVISION:

A

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME: BRG 124 943066
SITE ADDRESS: 128 MATHER STREET
 WILTON, CT 06897
COUNTY: FAIRFIELD
MAP/PARCEL #: 23 - 23
AREA OF CONSTRUCTION: EXISTING
LATITUDE: 41° 14' 18.70" N
LONGITUDE: 73° 25' 26.90" W
LAT/LONG TYPE: NAD83
GROUND ELEVATION: 431'-0" ± AMSL
CURRENT ZONING: R-2
JURISDICTION: TOWN OF WILTON
OCCUPANCY CLASSIFICATION: ---
TYPE OF CONSTRUCTION: ---
A.D.A. COMPLIANCE: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER: TOWN OF WILTON
 238 DANBURY RD
 WILTON, CT 06897
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: CONNECTICUT LIGHT AND POWER CO
 (800) 286-2000
TELCO PROVIDER: CROWN CASTLE FIBER
 (855) 913-4237

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

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11x17. 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	10039584
VzW LOCATION CODE (PSLC)	467241

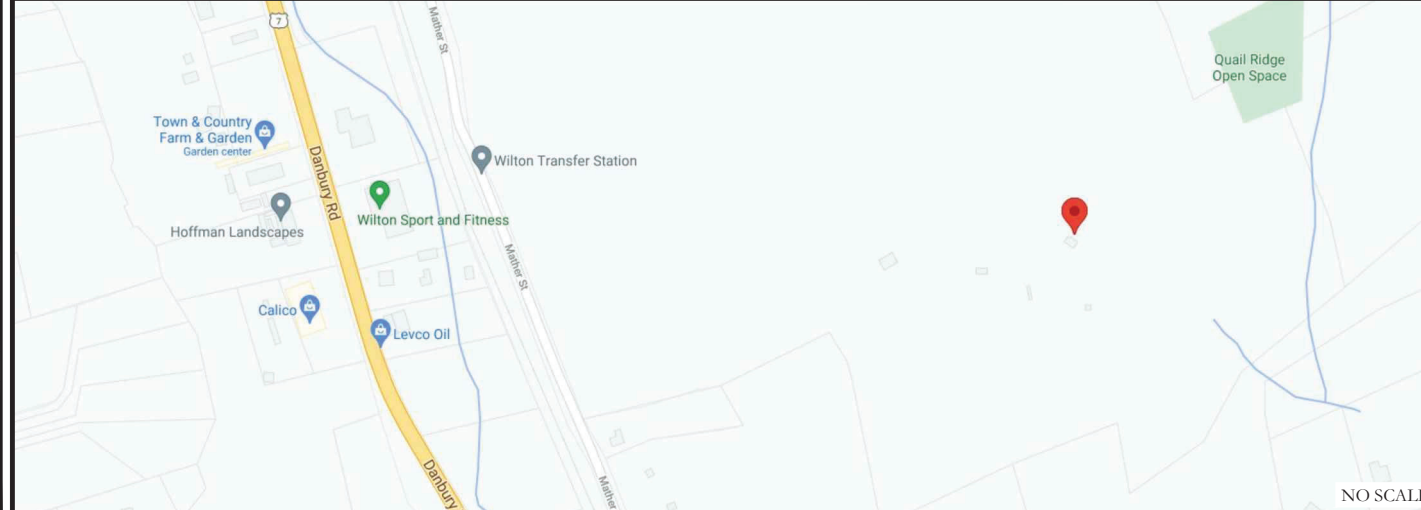
***** PMI AND REQUIREMENTS ALSO EMBEDDED IN MOUNT ANALYSIS REPORT**

MOUNT MODIFICATION REQUIRED N

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. ENTERING NEW YORK. TAKE THE I-87 S/NEW YORK STATE THRUWAY/I-287 EXIT TOWARD GOV MARIO M. CUOMO BR/NEW YORK CITY. MERGE WITH I-287 E/I-87 S. KEEP LEFT AT THE Y JUNCTION TO CONTINUE ON I-287 E. FOLLOW SIGNS FOR WHITE PLAINS/RYE. TAKE EXIT 9 S-N TOWARD HUTCHINSON PKWY/MERRITT PKWY. MERGE WITH WESTCHESTER AVE. USE THE RIGHT LANE TO TAKE THE RAMP TO WESTCHESTER AVE. MERGE WITH HUTCHINSON RIVER PKWY N. KEEP RIGHT AT THE Y JUNCTION TO STAY ON HUTCHINSON RIVER PKWY N. ENTERING CONNECTICU. CONTINUE ONTO CT-15 N. TAKE EXIT 39B TOWARD US-7 N. KEEP LEFT AT THE Y JUNCTION TO CONTINUE TOWARD US-7 N. SLIGHT RIGHT ONTO US-7 N. TURN RIGHT ONTO HONEY HILL RD. TURN LEFT ONTO QUAIL RIDGE RD.

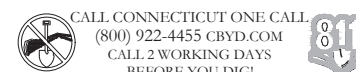
APPLICABLE CODES/REFERENCE DOCUMENTS

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	2018 CT SBC
MECHANICAL	2018 CT SBC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	BY OTHERS
DATED:	
MOUNT ANALYSIS:	MASER CONSULTING
DATED:	05/12/2021
RFDS REVISION:	0
DATED:	02/10/2021
ORDER ID:	552707
REVISION:	0



PROJECT DESCRIPTION

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

TOWER SCOPE OF WORK:
• INSTALL (3) ANTENNAS

GROUND SCOPE OF WORK:
• NONE

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

PROJECT TEAM

A&E FIRM: TECTONIC ENGINEERING AND SURVEYING CONSULTANTS P.C.
 1279 ROUTE 300
 NEWBURGH, NY 12550
 PHONE: (845) 567-6656
CROWN CASTLE USA INC. DISTRICT CONTACTS:
 1200 MACARTHUR BLVD, SUITE 200
 MAHWAH, NJ 07430
 --- - PROJECT MANAGER

 --- - CONSTRUCTION MANAGER

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

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

GREENFIELD GROUNDING NOTES:

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

GENERAL NOTES:

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

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

ELECTRICAL INSTALLATION NOTES:

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
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. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
- EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
- ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (I.E. PANEL BOARD AND CIRCUIT ID'S).
- PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
- ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
- ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
- ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
- ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
- ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
- WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREFOLD SPECMATE WIREWAY).
- SLOTTED WIRING CADD SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
- CONDUIT 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.
- EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
- METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
- NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
- THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
- THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
- INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "VERIZON".
- 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
120/208V, 3Ø	A PHASE	BLACK
	B PHASE	RED
	C PHASE	BLUE
277/480V, 3Ø	NEUTRAL	WHITE
	GROUND	GREEN
	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
DC VOLTAGE	GROUND	GREEN
	POS (+)	RED**
	NEG (-)	BLACK**

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

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

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



VERIZON SITE NUMBER:
325157

BU #: 806353
BRG 124 943066

128 MATHER STREET
WILTON, CT 06897

EXISTING 180'-0"
SELF-SUPPORT TOWER

ISSUED FOR:

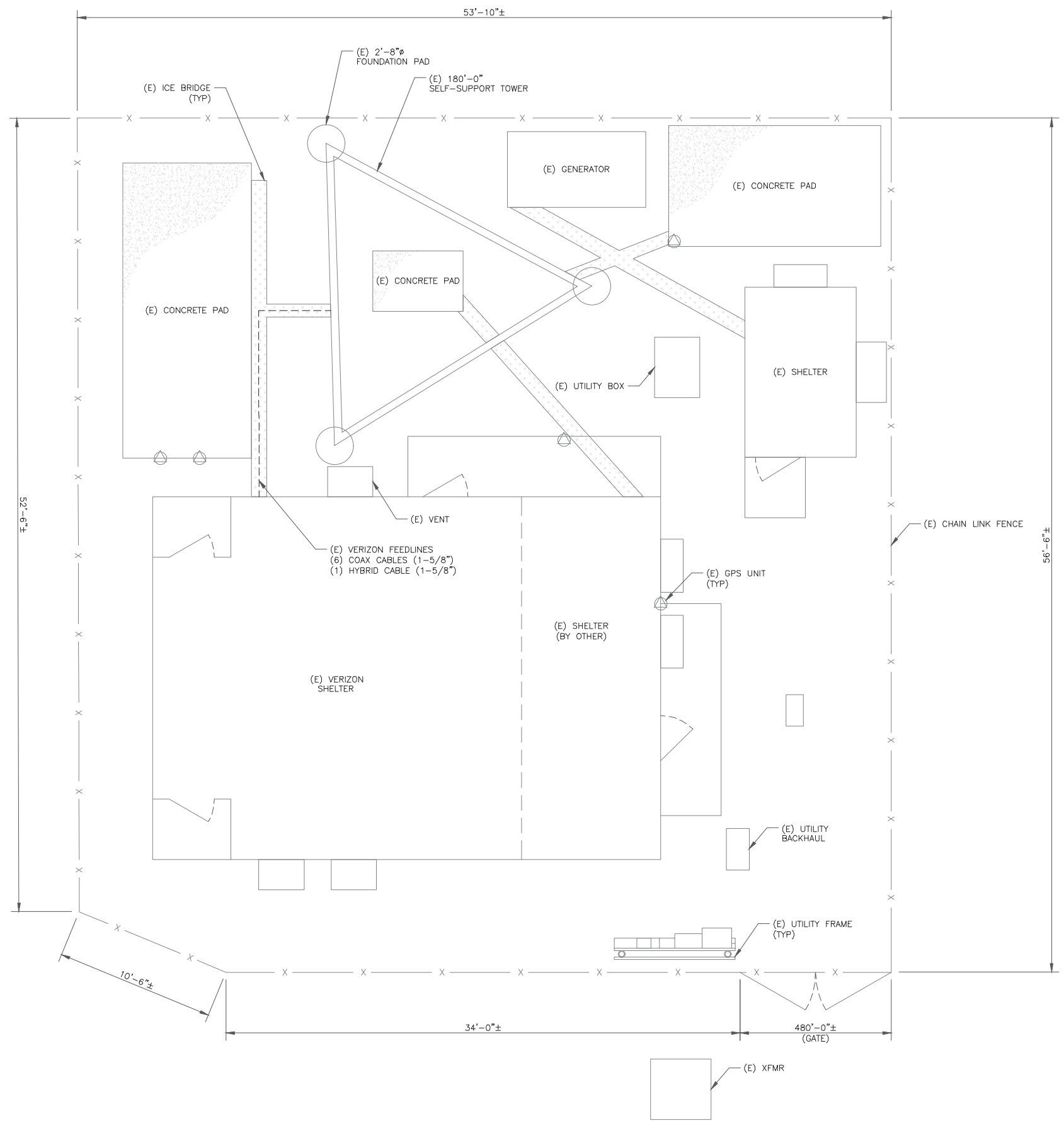
REV	DATE	DRWN	DESCRIPTION	DES./QA
A	05/03/2021	IJ	PRELIMINARY	----
0	06/15/2021	MJR	CONSTRUCTION	----



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

SHEET NUMBER:
T-2

REVISION:
A



verizon
 180 WASHINGTON VALLEY ROAD
 BEDMINSTER, NJ 07921

CROWN CASTLE
 1200 MACARTHUR BLVD, SUITE 200
 MAHWAH, NJ 07430

Tectonic
 PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
 Tectonic Engineering & Surveying Consultants P.C.
 70 Pleasant Hill Road Phone: (845) 334-5959
 P.O. Box 37 Phone: (800) 825-6531
 Mountainville, NY 10953 www.tectoniceengineering.com
 Project Contact Name: 1279 Route 300
 Newburgh, NY 12550 Phone: (845) 567-6868
 TECTONIC WO: 10545.WILTONCT

VERIZON SITE NUMBER:
325157

BU #: 806353
 BRG 124 943066

128 MATHER STREET
 WILTON, CT 06897

EXISTING 180'-0"
 SELF-SUPPORT TOWER

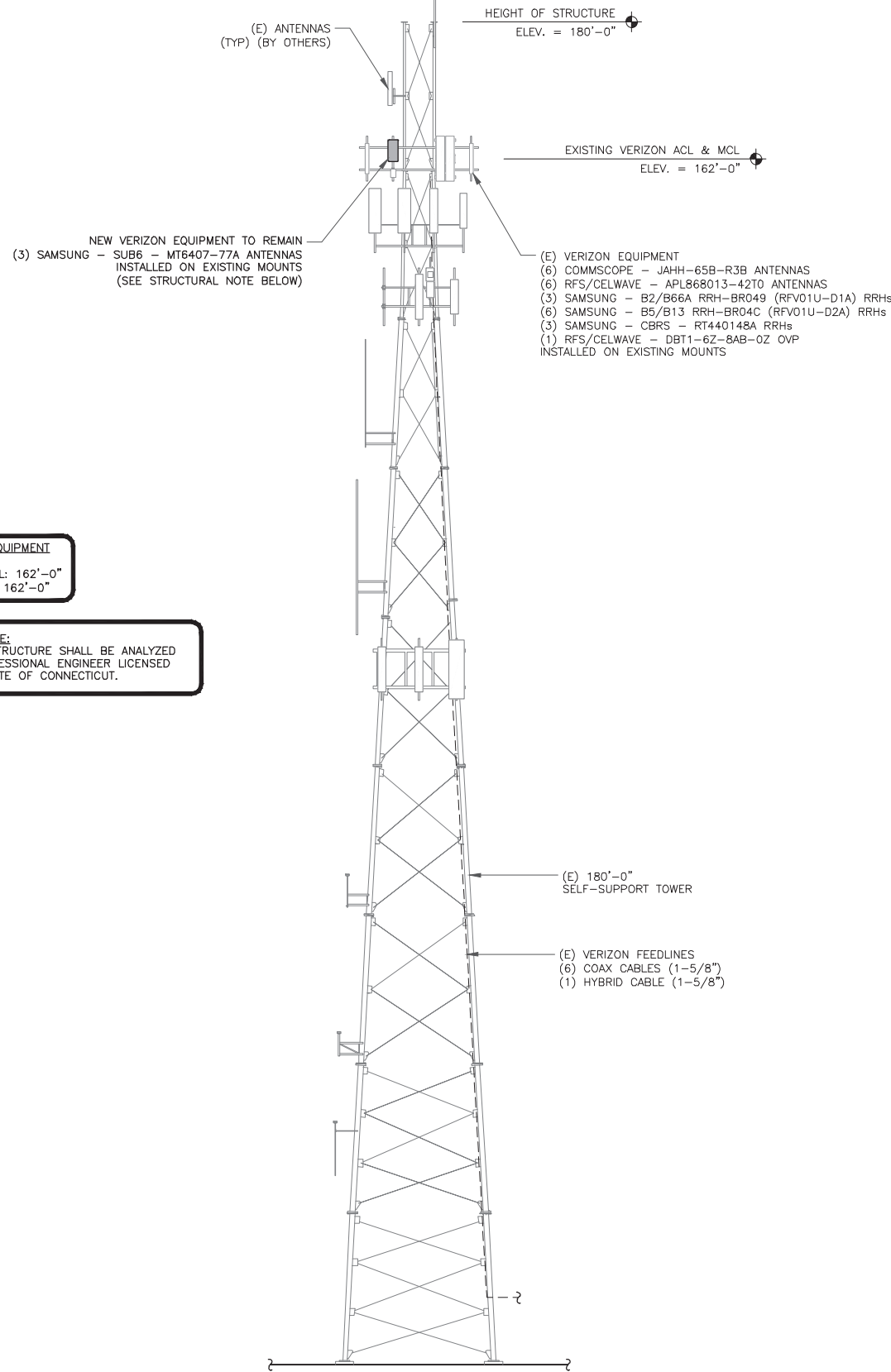
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	05/03/2021	IJ	PRELIMINARY	---
0	06/15/2021	MJR	CONSTRUCTION	---



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 UNLESS THEY ARE ACTING UNDER THE DIRECTION
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 TO ALTER THIS DOCUMENT.

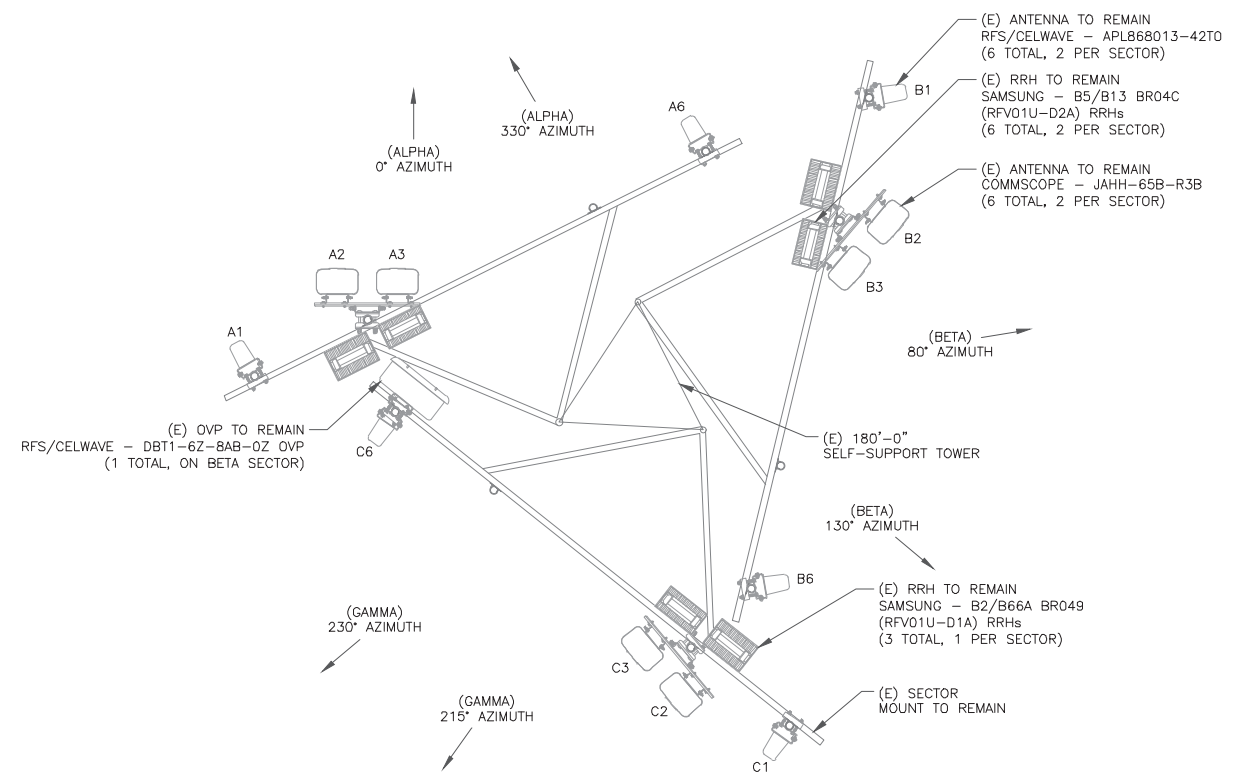
SHEET NUMBER: **C-1** REVISION: **A**



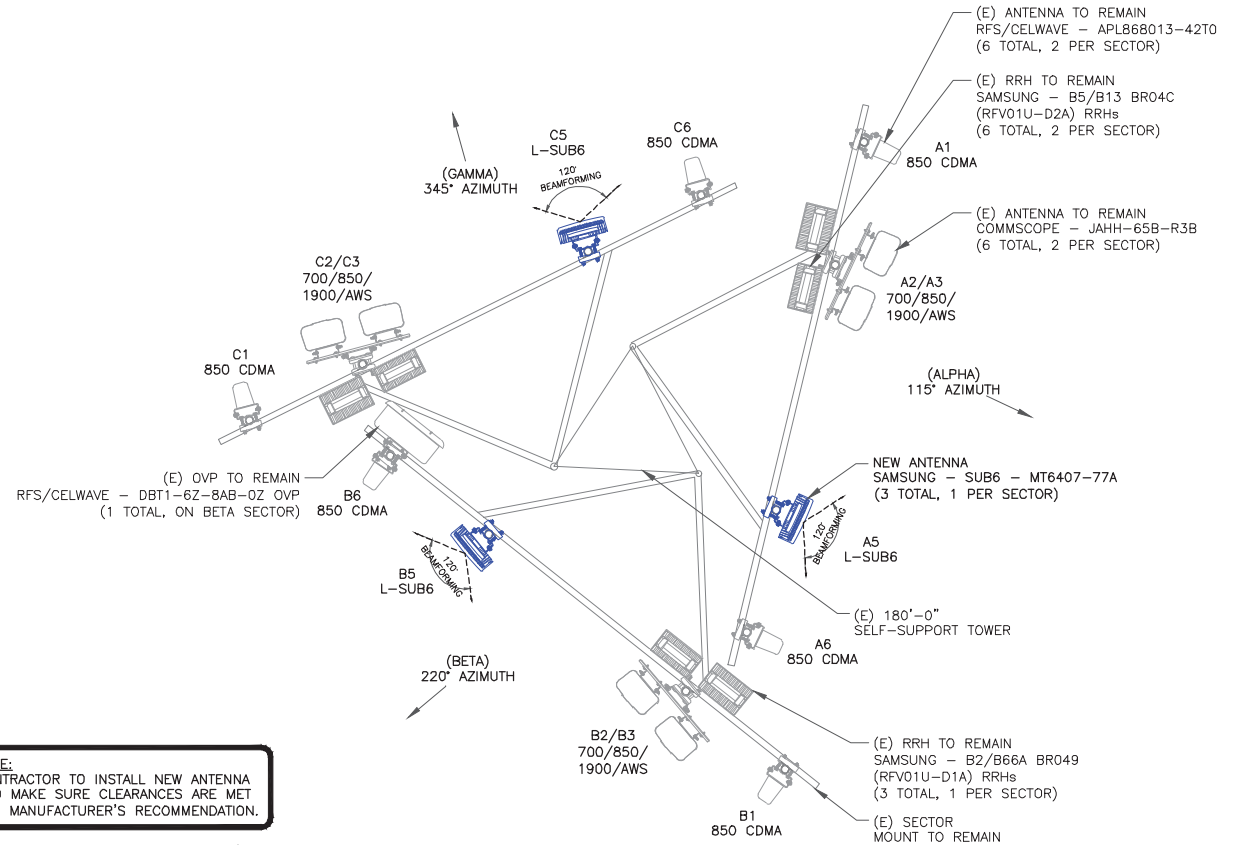
VERIZON EQUIPMENT
 ANTENNA CL: 162'-0"
 MOUNT CL: 162'-0"

TOWER NOTE:
 EXISTING STRUCTURE SHALL BE ANALYZED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT.

1 TOWER ELEVATION
 SCALE: NOT TO SCALE



2 EXISTING ANTENNA PLAN
 SCALE: NOT TO SCALE



NOTE:
 CONTRACTOR TO INSTALL NEW ANTENNA AND MAKE SURE CLEARANCES ARE MET PER MANUFACTURER'S RECOMMENDATION.

STRUCTURAL NOTE:
 NOTE: EXISTING ANTENNA MOUNTS ARE STRUCTURALLY SUFFICIENT PER ANTENNA MOUNT ANALYSIS PREPARED BY MASER CONSULTING CONNECTICUT, DATED MAY 12, 2021.

3 NEW ANTENNA PLAN
 SCALE: NOT TO SCALE

verizon
 180 WASHINGTON VALLEY ROAD
 BEDMINSTER, NJ 07921

CROWN CASTLE
 1200 MACARTHUR BLVD, SUITE 200
 MAHWAH, NJ 07430

Tectonic
 Tectonic Engineering & Surveying Consultants P.C.
 70 Pleasant Hill Road
 P.O. Box 37
 Mountainville, NY 10953
 Phone: (845) 334-5959
 (800) 825-6531
 Project Contact info:
 1279 Route 300
 Newburgh, NY 12550
 Phone: (845) 567-6856
 TECTONIC WO: 10545.WILTONCT

VERIZON SITE NUMBER:
325157

BU #: 806353
 BRG 124 943066

128 MATHER STREET
 WILTON, CT 06897

EXISTING 180'-0"
 SELF-SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	05/03/2021	IJ	PRELIMINARY	---
0	06/15/2021	MJR	CONSTRUCTION	---

STATE OF CONNECTICUT
 ANTONIO A. GUALTERRI
 PEN.0025406
 LICENSED PROFESSIONAL ENGINEER

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SHEET NUMBER: **C-2** REVISION: **A**

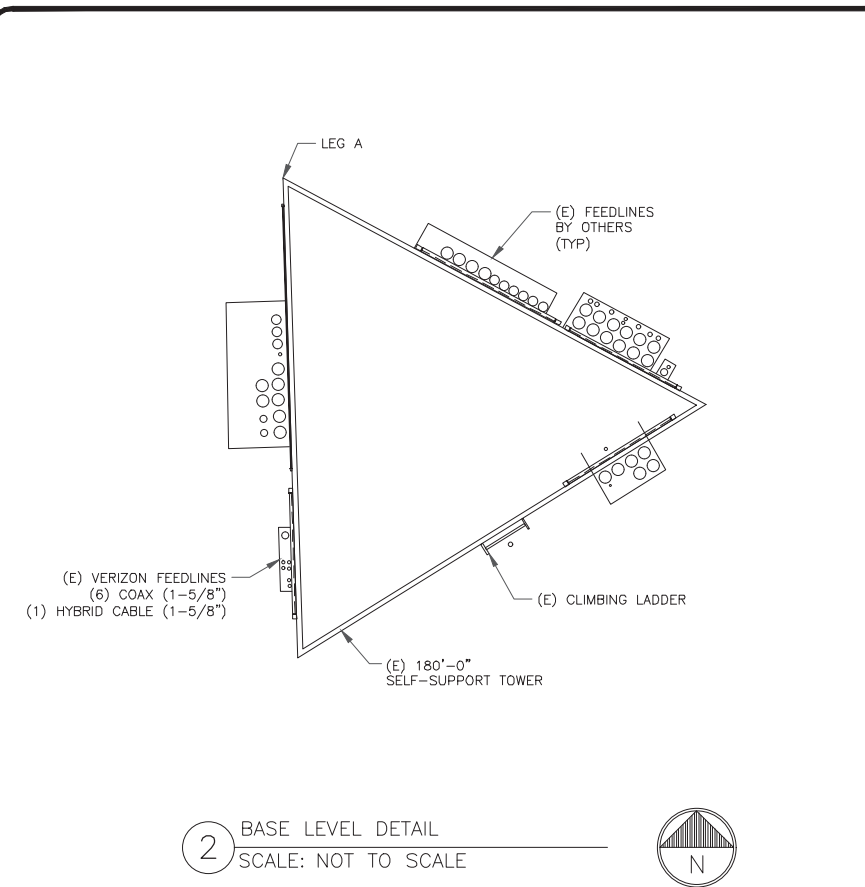
ANTENNA/RRH SCHEDULE

SECTOR	STATUS	ANTENNA MANUFACTURER	ANTENNA MODEL	ANTENNA CENTERLINE	AZIMUTH	MECHANICAL DOWNTILTS	ELECTRICAL DOWNTILTS	TOWER EQUIPMENT MANUFACTURER	TOWER EQUIPMENT QTY/MODEL
A1	EXISTING	RFS	APL868013-42T0	162'-0"	105°	0°	0°	RFS/CELWAVE	(1) DBT1-6Z-8AB-0Z
A2	EXISTING	COMMSCOPE	JAHH-65B-R3B	162'-0"	115°	0°	2°/7°/1°	SAMSUNG	(2) B5/B13 RRH-BR04C (RFV01U-D2A) (1) B2/B66A RRH-BR049 (RFV01U-D1A)
A3	EXISTING	COMMSCOPE	JAHH-65B-R3B	162'-0"	115°	0°	2°/7°/1°	SAMSUNG	
A4	EXISTING	SAMSUNG	XXDWMM-12.5-65-8T CBR5	162'-0"	115°	0°	8°	-	-
A5	NEW	SAMSUNG	MT6407-77A	162'-0"	115°	0°	6°	SAMSUNG	(1) CBR5 RRH RT4401-48A
A6	EXISTING	RFS	APL868013-42T0	162'-0"	105°	0°	0°	-	-
B1	EXISTING	RFS	APL868013-42T0	162'-0"	220°	0°	0°	RFS/CELWAVE	(1) DBT1-6Z-8AB-0Z (SHARED)
B2	EXISTING	COMMSCOPE	JAHH-65B-R3B	162'-0"	220°	0°	5°/6°/1°	SAMSUNG	(2) B5/B13 RRH-BR04C (RFV01U-D2A) (1) B2/B66A RRH-BR049 (RFV01U-D1A)
B3	EXISTING	COMMSCOPE	JAHH-65B-R3B	162'-0"	220°	0°	5°/6°/1°	SAMSUNG	
B4	EXISTING	SAMSUNG	XXDWMM-12.5-65-8T CBR5	162'-0"	220°	0°	8°	-	-
B5	NEW	SAMSUNG	MT6407-77A	162'-0"	220°	0°	6°	SAMSUNG	(1) CBR5 RRH RT4401-48A
B6	EXISTING	RFS	APL868013-42T0	162'-0"	220°	0°	0°	-	-
C1	EXISTING	RFS	APL868013-42T0	162'-0"	335°	0°	0°	RFS/CELWAVE	(1) DBT1-6Z-8AB-0Z (SHARED)
C2	EXISTING	COMMSCOPE	JAHH-65B-R3B	162'-0"	345°	0°	2°/5°/1°	SAMSUNG	(2) B5/B13 RRH-BR04C (RFV01U-D2A) (1) B2/B66A RRH-BR049 (RFV01U-D1A)
C3	EXISTING	COMMSCOPE	JAHH-65B-R3B	162'-0"	345°	0°	2°/5°/1°	SAMSUNG	
C4	EXISTING	SAMSUNG	XXDWMM-12.5-65-8T CBR5	162'-0"	345°	0°	8°	-	-
C5	NEW	SAMSUNG	MT6407-77A	162'-0"	345°	0°	6°	SAMSUNG	(1) CBR5 RRH RT4401-48A
C6	EXISTING	RFS	APL868013-42T0	162'-0"	335°	0°	0°	-	-

1 VERIZON TOWER EQUIPMENT SCHEDULE
SCALE: NOT TO SCALE

CABLE SCHEDULE

STATUS	CABLE TYPE	SIZE	LENGTH	QTY
EXISTING	COAX	1-5/8"	212'-0"±	6
EXISTING	HYBRID	1-5/8"	212'-0"±	1
TOTAL CABLE QTY:				7



2 BASE LEVEL DETAIL
SCALE: NOT TO SCALE

verizon
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CROWN CASTLE
1200 MACARTHUR BLVD, SUITE 200
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Project Contact Name: 1278 Route 300 Newburgh, NY 12550 Phone: (845) 567-6868
TECTONIC WO: 10545.WILTONCT

VERIZON SITE NUMBER:
325157

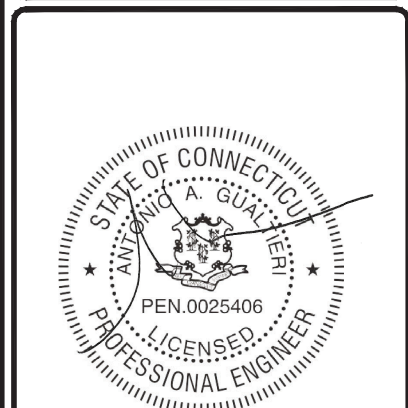
BU #: 806353
BRG 124 943066

128 MATHER STREET
WILTON, CT 06897

EXISTING 180'-0"
SELF-SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	05/03/2021	IJ	PRELIMINARY	---
0	06/15/2021	MJR	CONSTRUCTION	---



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verizon^v
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BEDMINSTER, NJ 07921

CROWN CASTLE
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MAHWAH, NJ 07430

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Newburgh, NY 12550
TECTONIC WO: 10545.WILTONCT

VERIZON SITE NUMBER:
325157

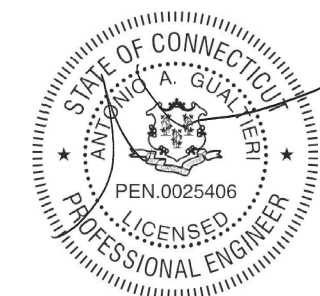
BU #: **806353**
BRG **124 943066**

128 MATHER STREET
WILTON, CT 06897

EXISTING 180'-0"
SELF-SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
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0	06/15/2021	MJR	CONSTRUCTION	---



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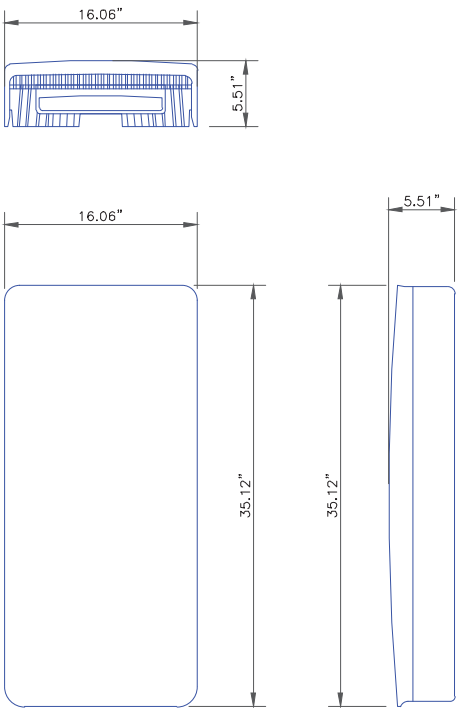
SHEET NUMBER: **C-4** REVISION: **A**

1 NOT USED
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE

3 NOT USED
SCALE: NOT TO SCALE

4 NOT USED
SCALE: NOT TO SCALE



SAMSUNG - MT6407-77A ANTENNA
 WEIGHT(W/O EQUIPMENT): 87.1 LBS
 SIZE (HXWXD): 35.12 X 16.06 X 5.51 IN.

① SAMSUNG - VZS01 ANTENNA
 SCALE: NOT TO SCALE

② NOT USED
 SCALE: NOT TO SCALE

③ NOT USED
 SCALE: NOT TO SCALE

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VERIZON SITE NUMBER:
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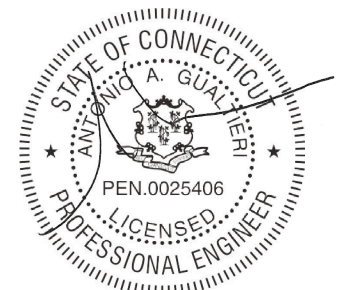
BU #: **806353**
 BRG **124 943066**

128 MATHER STREET
 WILTON, CT 06897

EXISTING 180'-0"
 SELF-SUPPORT TOWER

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REVISION:
A

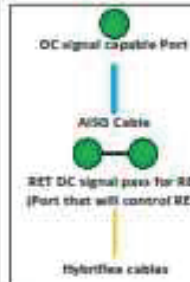
④ NOT USED
 SCALE: NOT TO SCALE

⑤ NOT USED
 SCALE: NOT TO SCALE

⑥ NOT USED
 SCALE: NOT TO SCALE



- 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 (1895-2300 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 part connection to green part will control RET.



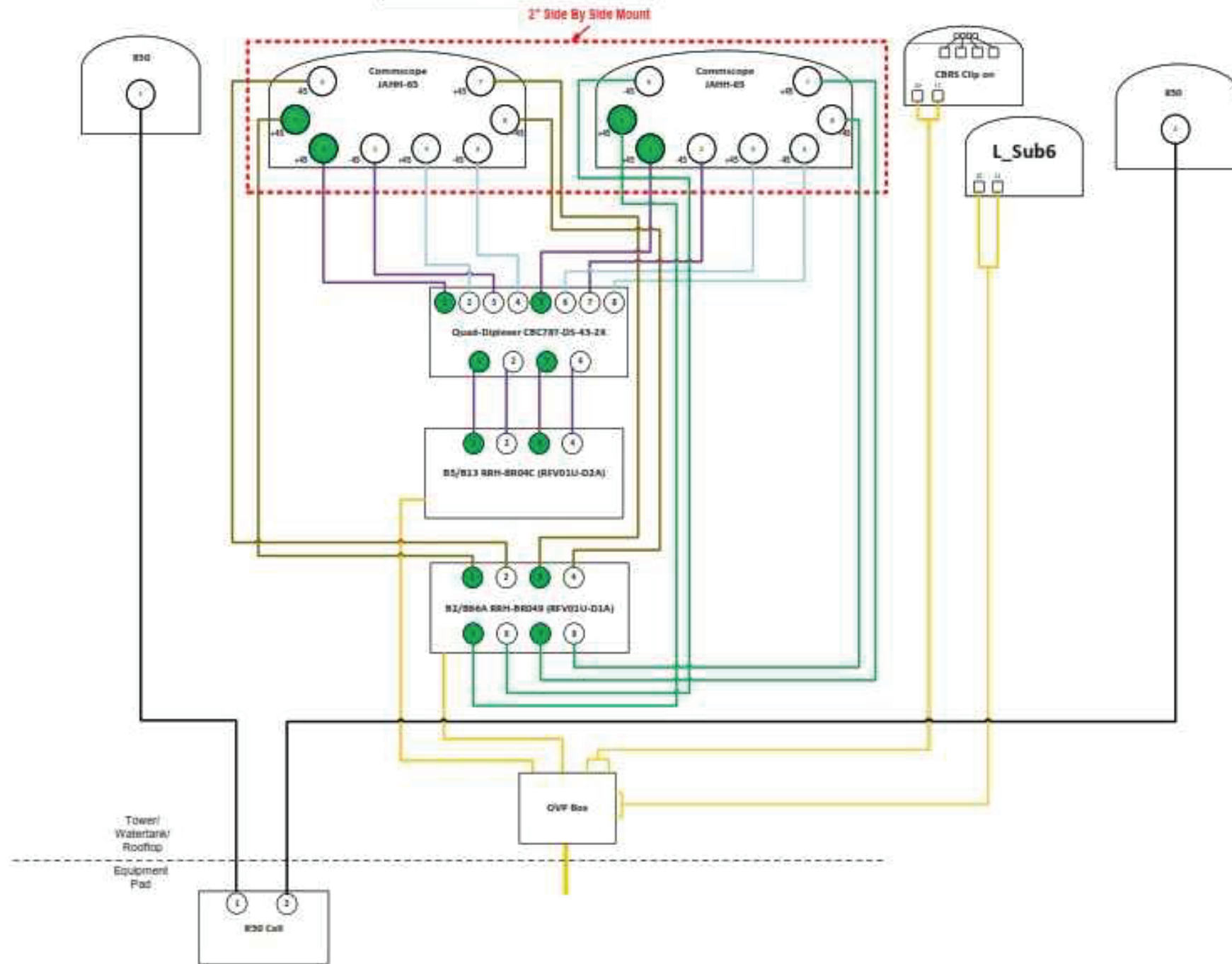
Comments:

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 & Hybridflex cable. (For the coax colors follow Coax Colors guide above!)



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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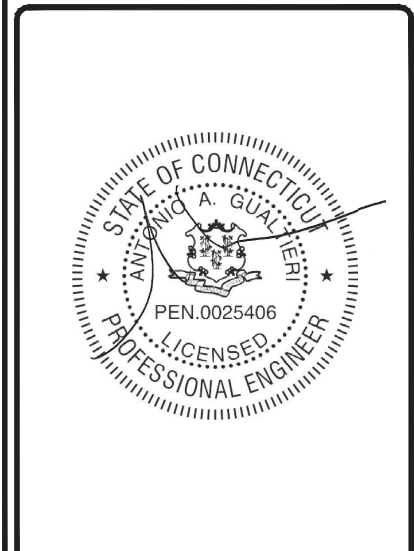
BU #: 806353
BRG 124 943066

128 MATHER STREET
WILTON, CT 06897

EXISTING 180'-0"
SELF-SUPPORT TOWER

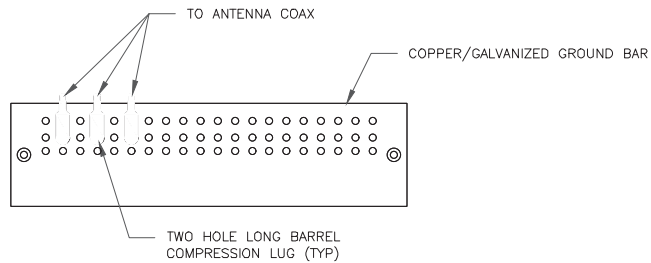
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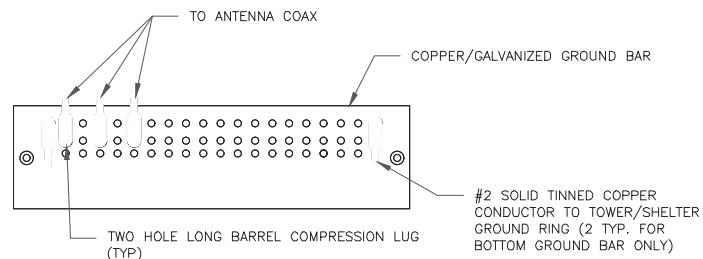
SHEET NUMBER: **C-6** REVISION: **A**



NOTES:

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

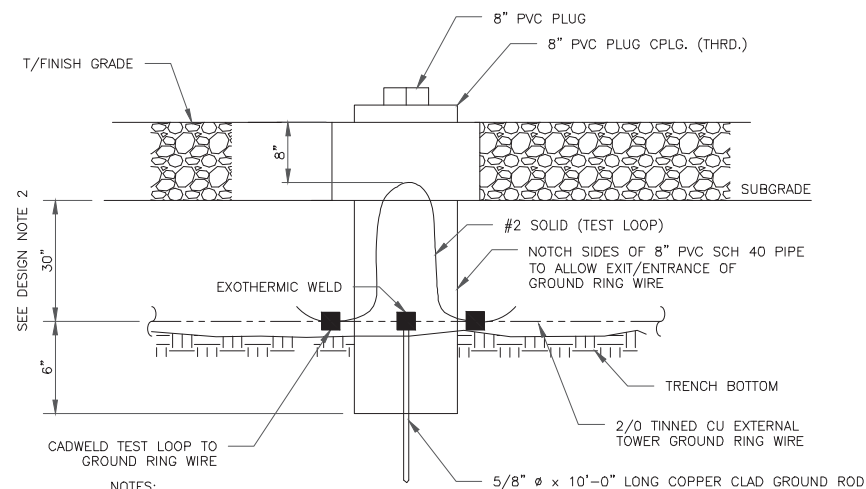
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

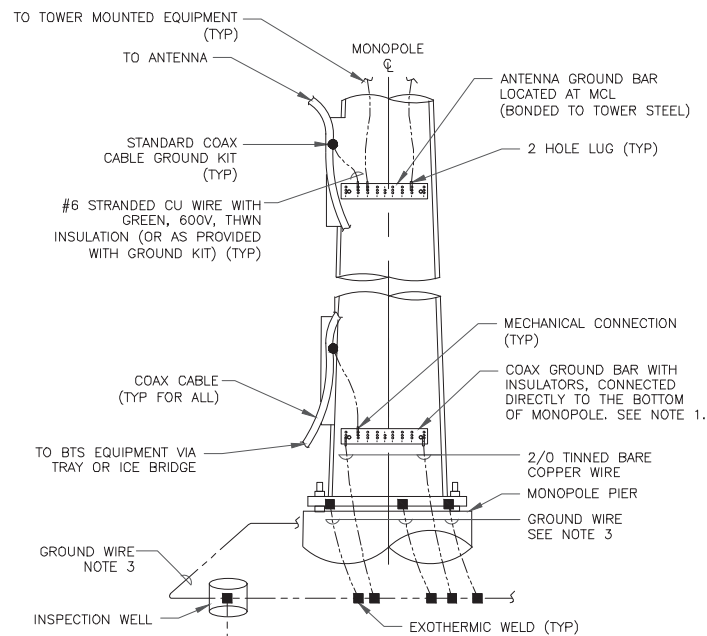
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

- GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL.
- 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)

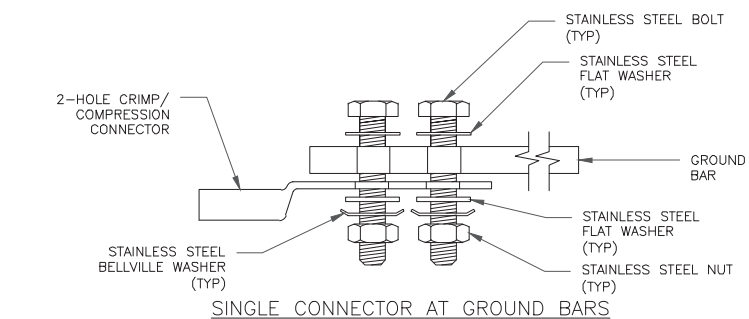
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



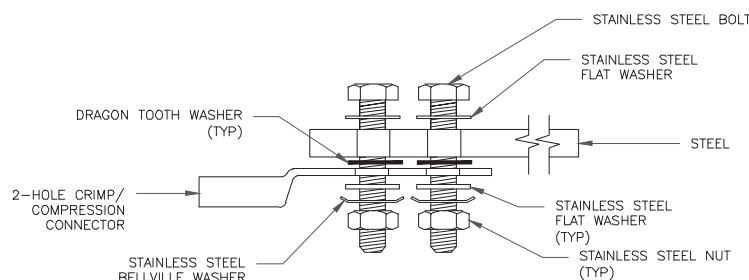
NOTES:

- 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.
- 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.
- ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

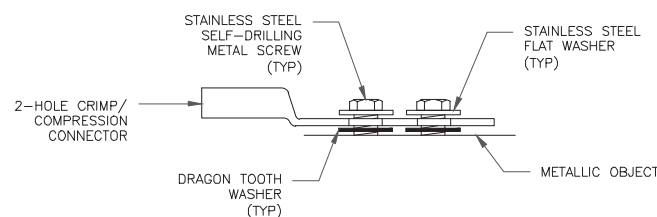
4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

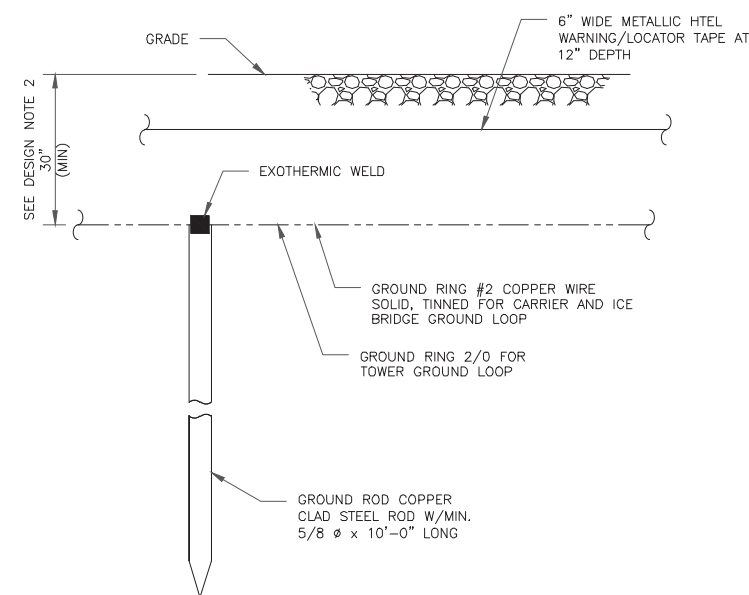


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

- GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL.
- 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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TECTONIC WO: 10545.WILTONCT

VERIZON SITE NUMBER:
325157

BU #: 806353
BRG 124 943066

128 MATHER STREET
WILTON, CT 06897

EXISTING 180'-0"
SELF-SUPPORT TOWER

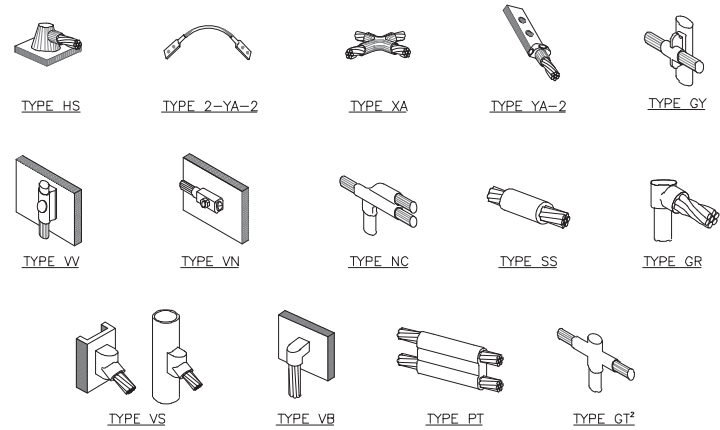
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0	06/15/2021	MJR	CONSTRUCTION	---



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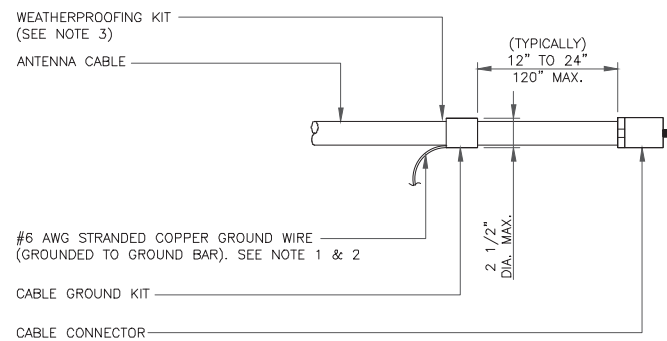
SHEET NUMBER: **G-1** REVISION: **A**



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.

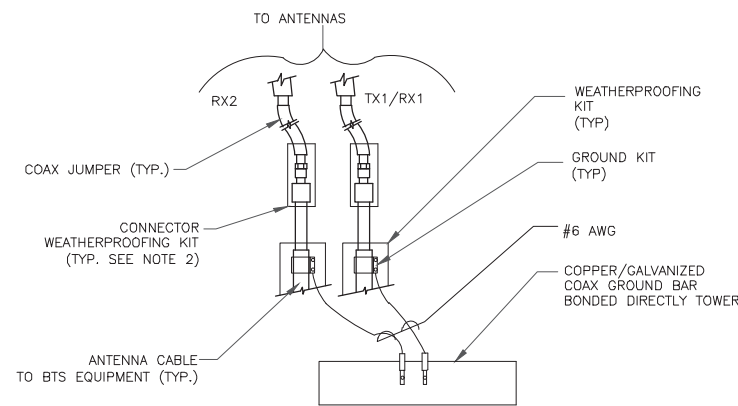
1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE



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.

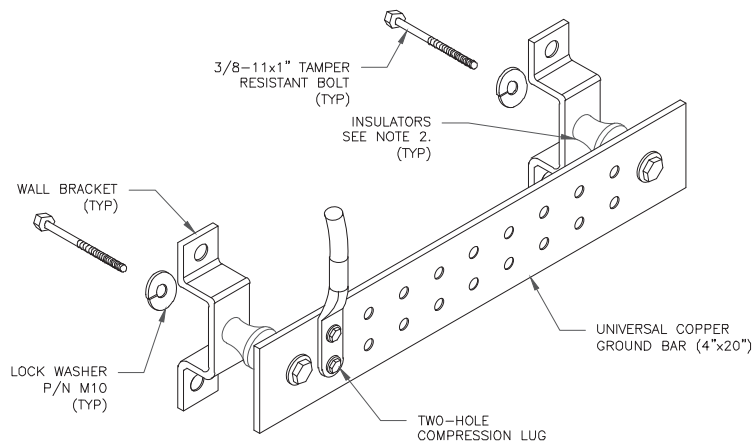
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



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.

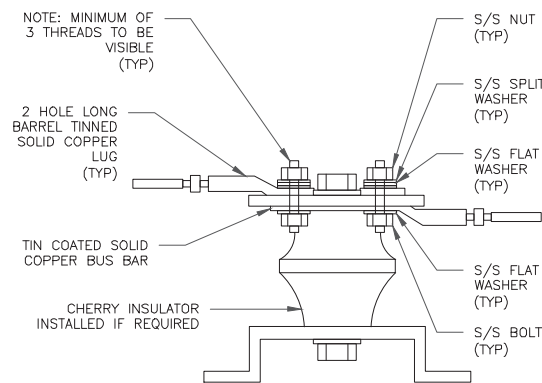
4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



NOTES:

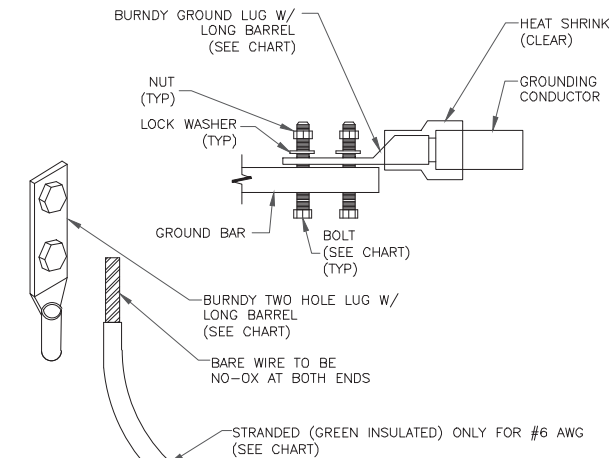
1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY GAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION. CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR 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

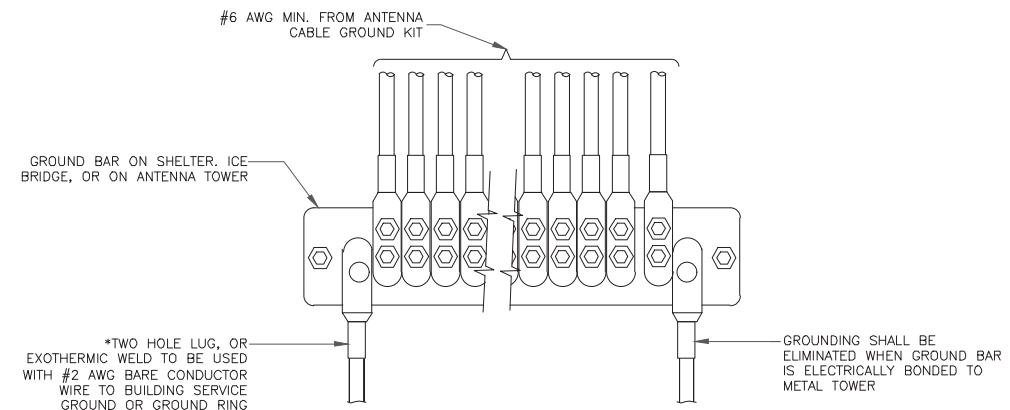
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



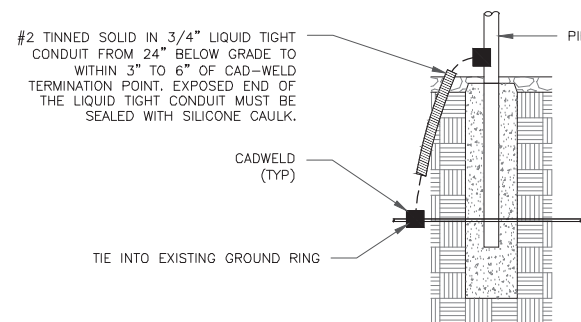
NOTES:

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



5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

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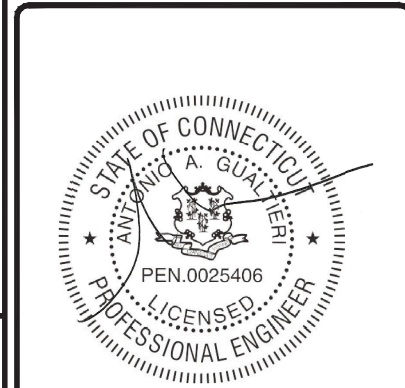
BU #: **806353**
BRG **124 943066**

128 MATHER STREET
WILTON, CT 06897

EXISTING 180'-0"
SELF-SUPPORT TOWER

ISSUED FOR:

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SHEET NUMBER: **G-2** REVISION: **A**

Exhibit D

Structural Analysis Report

Date: **March 1, 2022**



B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

Subject: **Structural Analysis Report**

Carrier Designation: **Verizon Wireless Co-Locate**
Site Number: 467241
Site Name: Wilton CT

Crown Castle Designation: **BU Number:** 806353
Site Name: BRG 124 943066
JDE Job Number: 707657
Work Order Number: 2084075
Order Number: 606853 Rev. 0

Engineering Firm Designation: **B+T Group Project Number:** 102920.011.01

Site Data: **128 Mather Street, Wilton, Fairfield County, CT**
Latitude 41° 14' 18.7", Longitude -73° 25' 26.9"
180 Foot - Self Support Tower

B+T Group is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above-mentioned tower.

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

LC7: Proposed Equipment Configuration

Sufficient Capacity – 99.6%

This analysis utilizes an ultimate 3-second gust wind speed of 116 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Isaac Fulton

Respectfully submitted by: B+T Engineering, Inc.
COA: PEC.0001564; Expires: 02/1/2023



Chad E. Tuttle, P.E.

tnxTower Report - version 8.1.1.0

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1) INTRODUCTION

This tower is a 180 ft. Self-Support tower designed by FWT Inc.

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

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	116 mph
Exposure Category:	B
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)
164.0	166.0	1	Rfs Celwave	DB-T1-6Z-8AB-0Z	7	1-5/8
		3	Samsung Telecomm.	RFV01U-D1A		
		3	Samsung Telecomm.	RFV01U-D2A		
	164.0	1	--	Sector Mount [SM 702-3](16')		
	162.0	6	Commscope	JAHH-65B-R3B		
		6	Rfs Celwave	APL868013		
		3	Samsung Telecomm.	CBRS		
		3	Samsung Telecomm.	MT6407-77A		

Table 2 - Non-Carrier Equipment To Be Removed

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
170.0	171.0	3	Kathrein	800 10504	6 1	1-5/8 1/4
	170.0	3	Kathrein	860 10025		
		1	--	Side Arm Mount [SO 103-3]		

Table 3 - 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)
178.0	184.0	1	Rfs Celwave	PD10017	2	7/8
170.0	170.0	1	Commscope	MTC3975083 (3)	1	1-3/4
		3	Fujitsu	TA08025-B604		
		3	Fujitsu	TA08025-B605		
		3	JMA Wireless	MX08FRO665-21		
		1	Raycap	RDIDC-9181-PF-48		
154.0	158.0	3	CCI Antennas	DMP65R-BU6D	12	1-5/8

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	CCI Antennas	OPA65R-BU6D	6	5/8
		3	Ericsson	RRUS 32 B2	2	3/8
		3	Ericsson	RRUS 32 B30		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 4478 B14		
		3	Kaelus	DBC0061F1V51-2		
		3	Powerwave Tech.	7770.00		
		6	Powerwave Tech.	LGP21401		
		3	Quintel Tech.	QS66512-2		
		3	Raycap	DC6-48-60-18-8F		
	154.0	1	--	Sector Mount [SM 1303-3]		
145.0	146.0	3	Alcatel Lucent	800 External Notch Filter	--	--
		3	Alcatel Lucent	800MHZ 2X50W RRH		
		3	Alcatel Lucent	PCS 1900MHZ 4X45W-65MHZ		
143.0	143.0	3	Site Pro1	VFA12-HD Sector Frames	3	1-5/8
		3	Commscope	VV-65A-R1_TMO		
		3	Ericsson	AIR6449 B41_T-MOBILE		
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	Ericsson	Radio 4480_TMOV2		
		3	Rfs Celwave	APXVAALL24_43-U-NA20_TMO		
124.0	131.0	2	Rfs Celwave	1142-2C	2	1/2
	124.0	2	--	Side Arm Mount [SO 303-1]		
104.0	111.0	1	Rfs Celwave	1142-2C	1	7/8
	108.0	1	Rfs Celwave	220-3BN	1	1/2
	104.0	2	--	Side Arm Mount [SO 303-1]		
93.0	93.0	3	Ericsson	AIR 32 B2a/B66Aa	4 6	1-5/8 1-1/4
		3	Ericsson	ERICSSON AIR 21 B2A B4P		
		3	Ericsson	KRY 112 144/1		
		3	Ericsson	RADIO 4449 B12/B71		
		3	Rfs Celwave	APXVAARR24_43-U-NA20		
		1	--	Sector Mount [SM 404-3]		
62.0	65.0	1	Gps	GPS_A	1	1/2
	62.0	1	--	Side Arm Mount [SO 305-1]		
42.0	44.0	1	Gps	GPS_A	1	1/2
	42.0	1	--	Side Arm Mount [SO 305-1]		
31.0	32.0	1	Gps	GPS_A	1	1/2
	31.0	1	--	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Reference	Source
Tower Manufacturer Drawing	217757	CCI Sites
Tower Modification Drawing	3290324	CCI Sites
Tower Modification Drawing	801524	CCI Sites
Tower Modification Drawing	2434484	CCI Sites
Post Modification Inspection	2575710	CCI Sites
Tower Modification Drawing	6061656	CCI Sites
Post Modification Inspection	6515894	CCI Sites
Foundation Drawing	262285	CCI Sites
Geotech Report	262283	CCI Sites
Crown CAD Package	Date: 02/24/2022	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. B+T Group should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	180 - 168	Leg	P2x0.154	2	-3.050	29.380	10.4	Pass
T2	168 - 160	Leg	P2x0.154 (GR)	26	-12.062	40.351	29.9	Pass
T3	160 - 140	Leg	P3x0.216 (GR)	41	-53.248	91.364	58.3	Pass
T4	140 - 120	Leg	P3.5x.318 (GR)	68	-90.676	128.240	70.7	Pass
T5	120 - 100	Leg	P4x.337 (GR)	89	-122.864	165.049	74.4	Pass
T6	100 - 80	Leg	P5x0.375 (GR)	109	128.813	202.153	63.7	Pass
T7	80 - 60	Leg	P6x0.432	131	-182.112	238.435	76.4	Pass
T8	60 - 40	Leg	P6x0.432	145	-211.110	238.435	88.5	Pass
T9	40 - 20	Leg	P6x0.432	160	-238.772	266.933	89.5	Pass
T10	20 - 0	Leg	P8x.5	181	-267.094	386.074	69.2	Pass
T1	180 - 168	Diagonal	L2x1 1/2x3/16	10	-0.803	15.935	5.0	Pass
T2	168 - 160	Diagonal	L2x1 1/2x3/16	30	-3.027	15.935	19.0	Pass
T3	160 - 140	Diagonal	L2x1 1/2x3/16	46	-4.416	10.157	43.5	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail	
T4	140 - 120	Diagonal	L2x2x3/16	70	-4.917	9.511	51.7	Pass	
T5	120 - 100	Diagonal	L2 1/2x2x3/16	91	-5.020	9.472	53.0	Pass	
T6	100 - 80	Diagonal	L2 1/2x2 1/2x3/16	112	-5.761	10.923	52.7	Pass	
T7	80 - 60	Diagonal	L3x3x3/16	133	-6.800	11.950	56.9	Pass	
T8	60 - 40	Diagonal	L3 1/2x3x1/4	148	-7.188	15.837	45.4	Pass	
T9	40 - 20	Diagonal	L3 1/2x3x1/4	163	-8.326	12.837	64.9	Pass	
T10	20 - 0	Diagonal	L3 1/2x3 1/2x1/4	184	-8.539	14.867	57.4	Pass	
T9	40 - 20	Secondary Horizontal	L3 1/2x3 1/2x1/4	171	-4.141	23.697	17.5	Pass	
T1	180 - 168	Top Girt	L2x1 1/2x3/16	6	-0.143	10.904	1.3	Pass	
							Summary		
							Leg (T9)	89.5	Pass
							Diagonal (T9)	64.9	Pass
							Secondary Horizontal (T9)	17.5	Pass
							Top Girt (T1)	1.3	Pass
							Bolt Checks	87.6	Pass
							Rating =	89.5	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	Base	59.3	Pass
1,2	Base Foundation (Structure)	Base	99.6	Pass
1,2	Base Foundation (Soil Interaction)	Base	90.0	Pass

Structure Rating (max from all components) =	99.6%
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Notes:

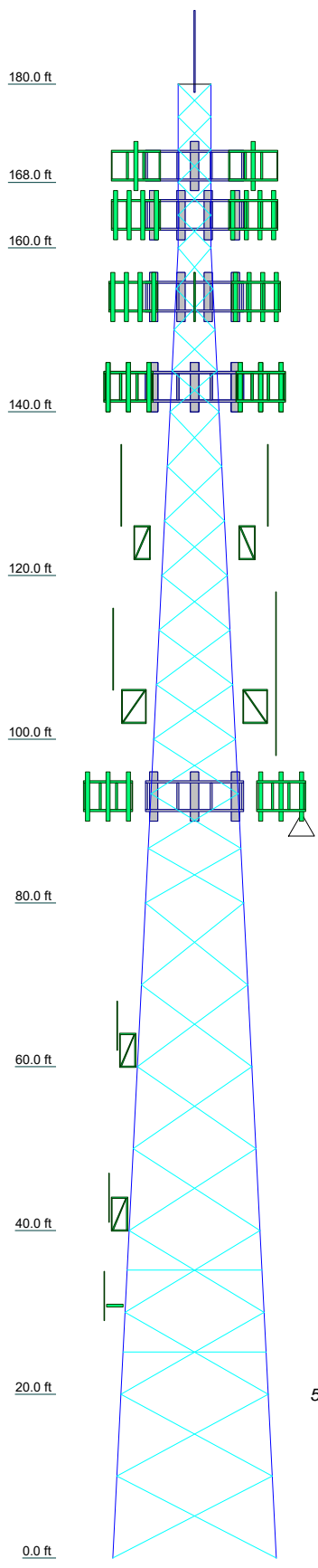
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) Rating per TIA-222-H Section 15.5.

4.1) Recommendations

The tower and its foundation 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
Legs	P2x0.154	A	P3x0.216 (GR)	P3.5x.318 (GR)	P4x.337 (GR)	P5x0.375 (GR)	P6x0.432	P8x.5		
Leg Grade						A53-B-35				
Diagonals						L2 1/2x3/16	L3x3x3/16	L3 1/2x3x1/4	L3 1/2x3 1/2x1/4	L3 1/2x3 1/2x1/4
Diagonal Grade						A36				
Top Girts										
Sec. Horizontals						N.A.				
Face Width (ft)	4	4	6	8	10	12	14	16	18	20
# Panels @ (ft)	5 @ 4	4 @ 5	1.4	1.9	2.4	2.7	3.2	3.9	4.5	24.1
Weight (K)	0.4	0.3								



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	P2x0.154 (GR)		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi	A36	36 ksi	58 ksi

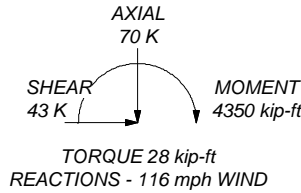
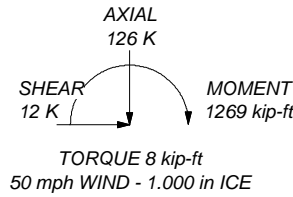
TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 116 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 0.000 ft
8. Grouted pipe Fc is 7.000 ksi
9. TIA-222-H Annex S
10. TOWER RATING: 89.5%

ALL REACTIONS
ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 274 K
SHEAR: 28 K

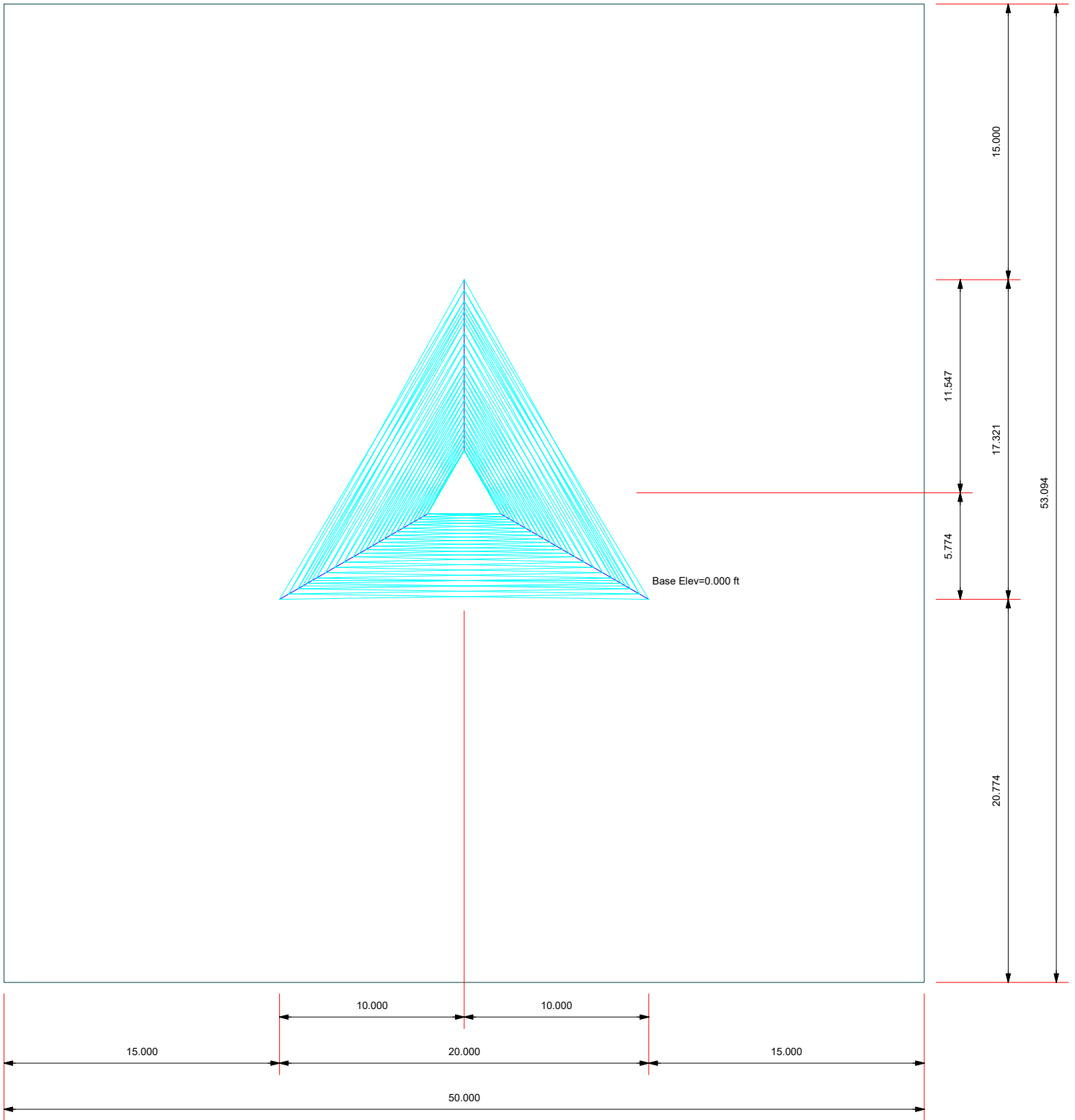
UPLIFT: -229 K
SHEAR: 24 K



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FAX: (918) 295-0265

Job:	102920.011.01 - BRG 124 943066, CT (BU# 80635)		
Project:			
Client:	Crown Castle	Drawn by:	Jayaraj B
Code:	TIA-222-H	Date:	02/26/22
Path:			Scale: NTS
			Dwg No. E-1

Plot Plan
Total Area - 0.06 Acres

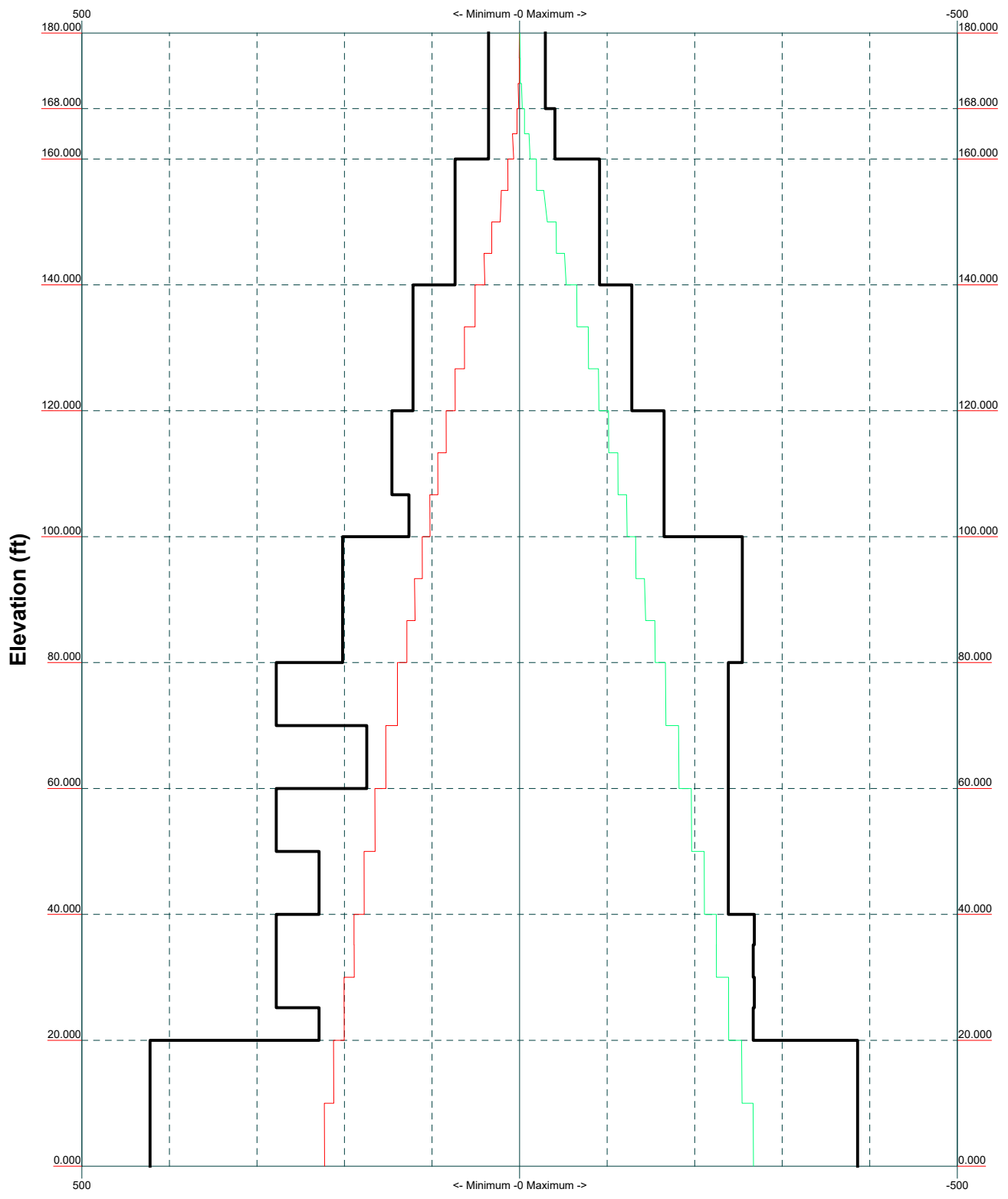


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Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 02/26/22	Scale: NTS
Path:	Dwg No. E-2	

TIA-222-H - 116 mph/50 mph 1.000 in Ice Exposure B

Leg Capacity ———
Leg Compression (K)



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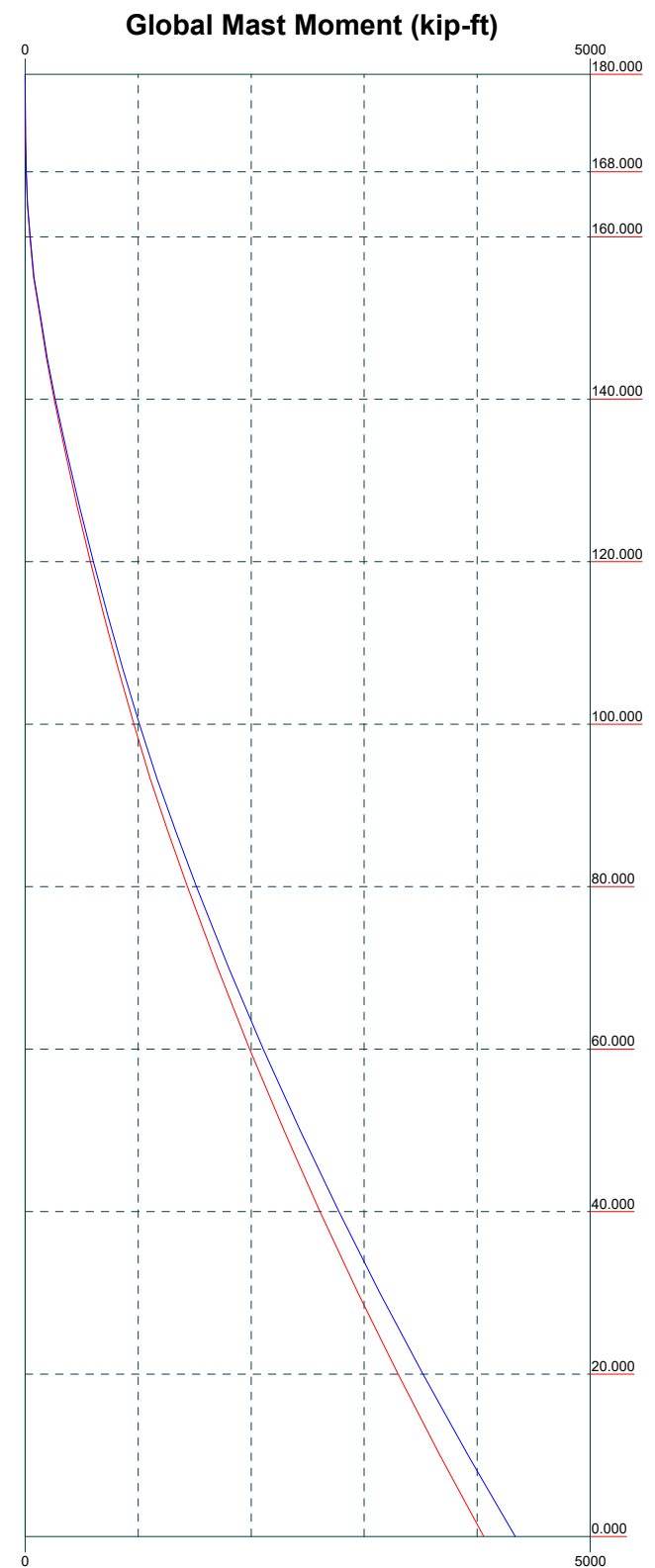
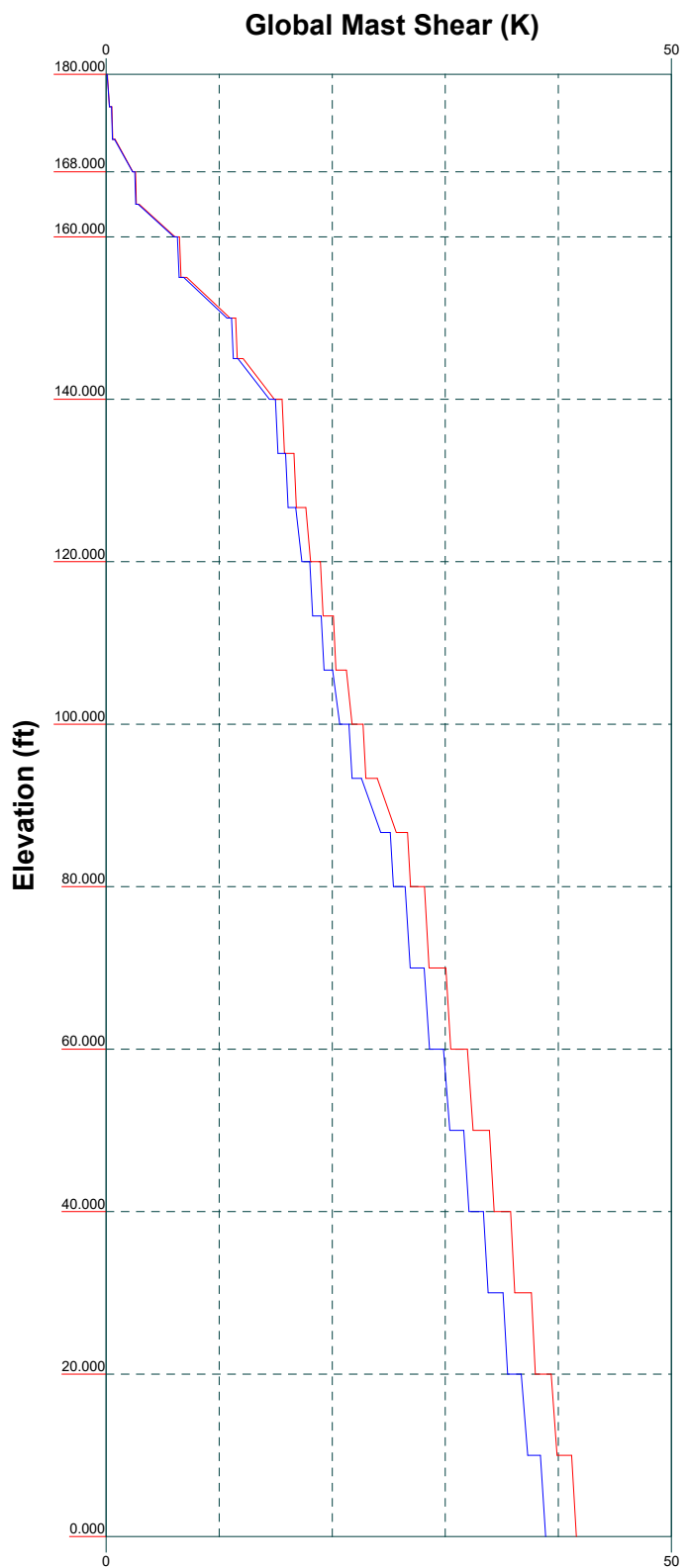
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Job: 102920.011.01 - BRG 124 943066, CT (BU# 80635)		
Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 02/26/22	Scale: NTS
Path:		Dwg No. E-3

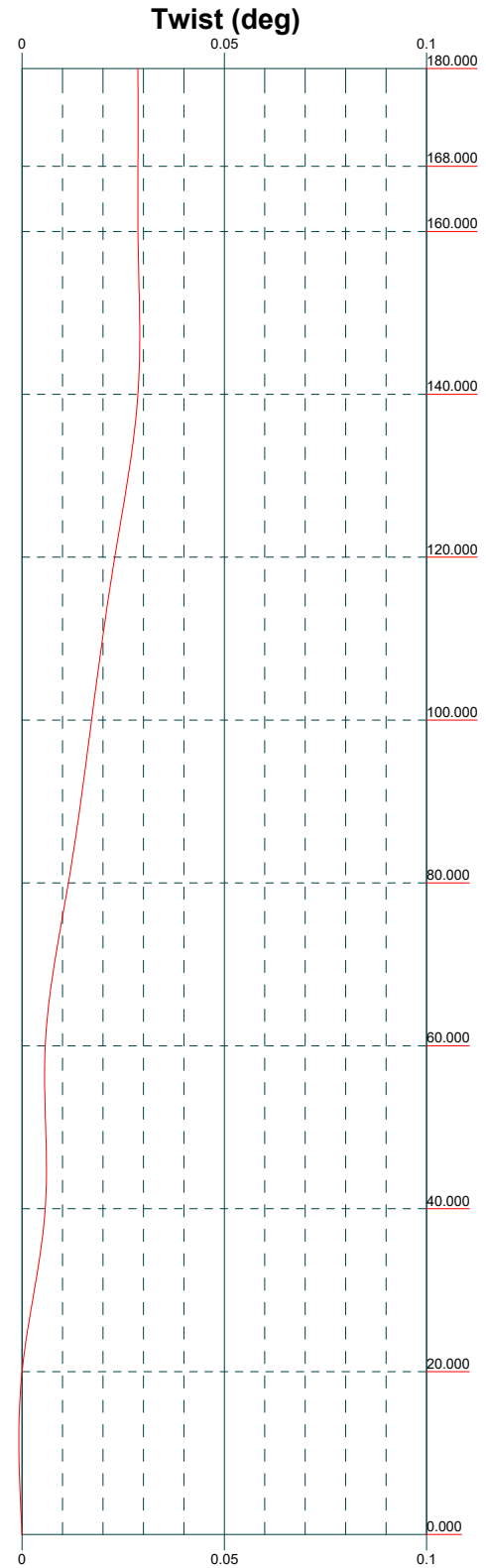
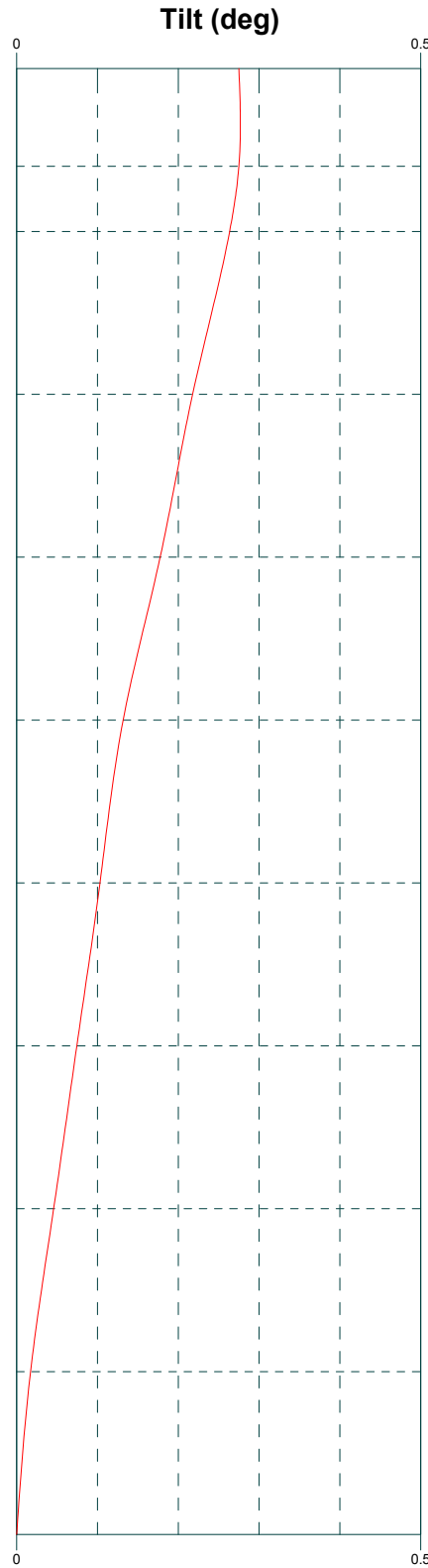
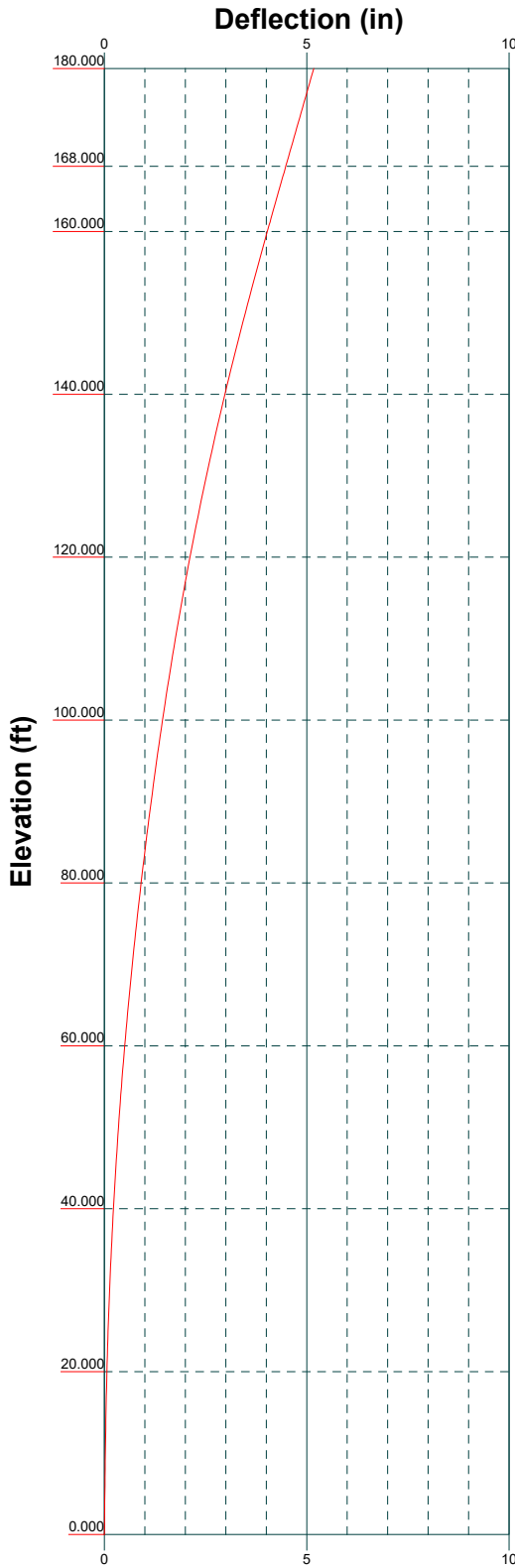
Vx Vz

Mx Mz



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Job: 102920.011.01 - BRG 124 943066, CT (BU# 80635)		
Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 02/26/22	Scale: NTS
Path:	Dwg No. E-4	



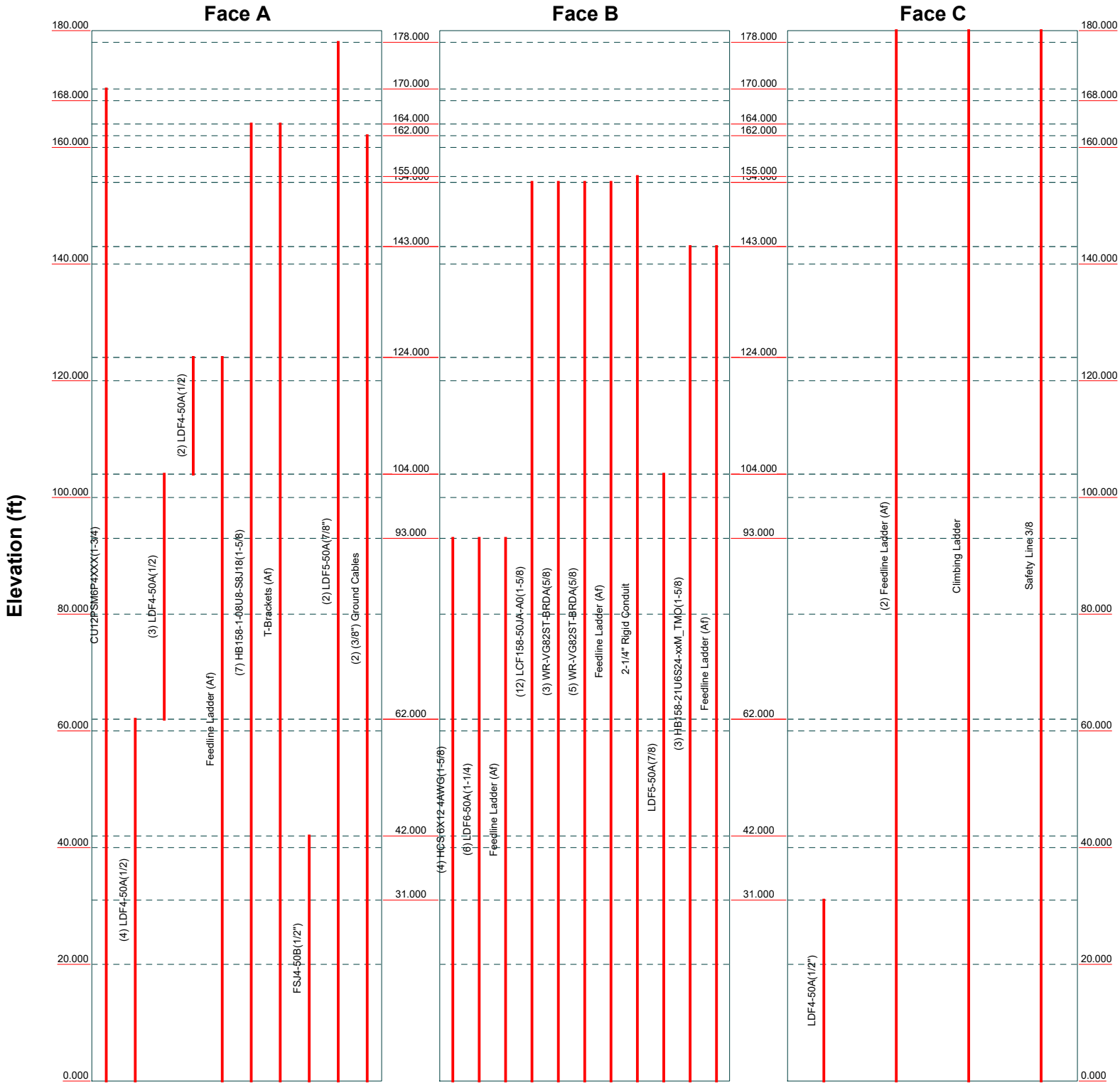
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Job: 102920.011.01 - BRG 124 943066, CT (BU# 80635)		
Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 02/26/22	Scale: NTS
Path:	Dwg No. E-5	

Feed Line Distribution Chart

0' - 180'

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



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Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 02/26/22	Scale: NTS
Path:		Dwg No. E-7

tnxTower B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job 102920.011.01 - BRG 124 943066, CT (BU# 806353)	Page 1 of 35
	Project	Date 16:25:45 02/26/22
	Client Crown Castle	Designed by Jayaraj B

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.000 ft above the ground line.

The base of the tower is set at an elevation of 0.000 ft above the ground line.

The face width of the tower is 4.000 ft at the top and 20.000 ft at the base.

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

The following design criteria apply:

Tower is located in Fairfield County, Connecticut.

Tower base elevation above sea level: 427.000 ft.

Basic wind speed of 116 mph.

Risk Category II.

Exposure Category B.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.000 ft.

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.

Grouted pipe f'_c is 7.000 ksi.

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: $K_{cs}(F_w) = 0.95$, $K_{cs}(t_i) = 0.85$.

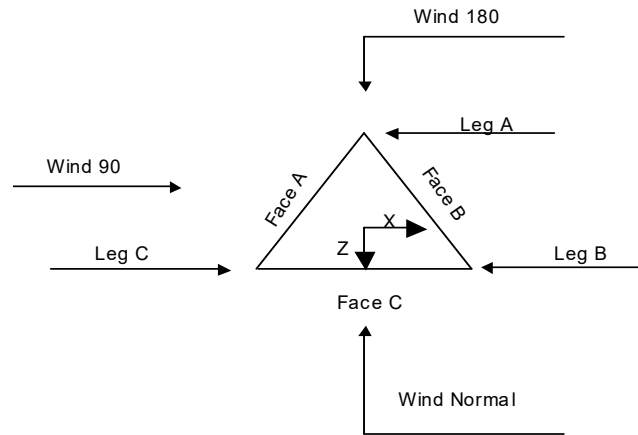
Maximum demand-capacity ratio is: 1.05.

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

Options

<ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section √ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric 	<ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs 	<ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA √ SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque √ Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <li style="text-align: center;">Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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tnxTower B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job 102920.011.01 - BRG 124 943066, CT (BU# 806353)	Page 2 of 35
	Project	Date 16:25:45 02/26/22
	Client Crown Castle	Designed by Jayaraj B



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180.000-168.000			4.000	1	12.000
T2	168.000-160.000			4.000	1	8.000
T3	160.000-140.000			4.000	1	20.000
T4	140.000-120.000			6.000	1	20.000
T5	120.000-100.000			8.000	1	20.000
T6	100.000-80.000			10.000	1	20.000
T7	80.000-60.000			12.000	1	20.000
T8	60.000-40.000			14.000	1	20.000
T9	40.000-20.000			16.000	1	20.000
T10	20.000-0.000			18.000	1	20.000

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	180.000-168.000	4.000	X Brace	No	No	0.000	0.000
T2	168.000-160.000	4.000	X Brace	No	No	0.000	0.000

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	Project	Date 16:25:45 02/26/22
	Client Crown Castle	Designed by Jayaraj B

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
T3	160.000-140.000	5.000	X Brace	No	No	0.000	0.000
T4	140.000-120.000	6.667	X Brace	No	No	0.000	0.000
T5	120.000-100.000	6.667	X Brace	No	No	0.000	0.000
T6	100.000-80.000	6.667	X Brace	No	No	0.000	0.000
T7	80.000-60.000	10.000	X Brace	No	No	0.000	0.000
T8	60.000-40.000	10.000	X Brace	No	No	0.000	0.000
T9	40.000-20.000	10.000	X Brace	No	Yes	0.000	0.000
T10	20.000-0.000	10.000	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 180.000-168.000	Pipe	P2x0.154	A53-B-35 (35 ksi)	Single Angle	L2x1 1/2x3/16	A36 (36 ksi)
T2 168.000-160.000	Grouted Pipe	P2x0.154	A53-B-35 (35 ksi)	Single Angle	L2x1 1/2x3/16	A36 (36 ksi)
T3 160.000-140.000	Grouted Pipe	P3x0.216	A53-B-35 (35 ksi)	Single Angle	L2x1 1/2x3/16	A36 (36 ksi)
T4 140.000-120.000	Grouted Pipe	P3.5x.318	A53-B-35 (35 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T5 120.000-100.000	Grouted Pipe	P4x.337	A53-B-35 (35 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T6 100.000-80.000	Grouted Pipe	P5x0.375	A53-B-35 (35 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 80.000-60.000	Pipe	P6x0.432	A53-B-35 (35 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T8 60.000-40.000	Pipe	P6x0.432	A53-B-35 (35 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T9 40.000-20.000	Pipe	P6x0.432	A53-B-35 (35 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T10 20.000-0.000	Pipe	P8x.5	A53-B-35 (35 ksi)	Single Angle	L3 1/2x3 1/2x1/4	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 180.000-168.000	Single Angle	L2x1 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry (cont'd)

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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
T9 40.000-20.000	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 20.000-0.000	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 180.000-168.000	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 168.000-160.000	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 160.000-140.000	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 140.000-120.000	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 120.000-100.000	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 100.000-80.000	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 80.000-60.000	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 60.000-40.000	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 40.000-20.000	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 20.000-0.000	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 180.000-168.000	Flange	0.000 A325N	0	0.625 A325N	1	0.625 A325N	1	0.000 A325N	0	0.625 A325N	0	0.000 A325N	0	0.000 A325N	0

tnxTower

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
HCS 6X12 4AWG(1-5/8)	B	No	No	Ar (CaAa)	93.000 - 0.000	0.000	0.05	4	2	0.850 0.750	1.660		0.002
LDF6-50A(1- 1/4)	B	No	No	Ar (CaAa)	93.000 - 0.000	0.000	0.15	6	6	0.850 0.750	1.550		0.001
Feedline Ladder (Af) *	B	No	No	Af (CaAa)	93.000 - 0.000	0.000	0.1	1	1	3.000	3.000		0.008
LCF158-50JA -A0(1-5/8)	B	No	No	Ar (CaAa)	154.000 - 0.000	0.000	0.3	12	6	0.850 0.750	1.980		0.001
WR-VG82ST- BRDA(5/8)	B	No	No	Ar (CaAa)	154.000 - 0.000	0.000	0.365	3	2	0.500	0.645		0.000
WR-VG82ST- BRDA(5/8)	B	No	No	Ar (CaAa)	154.000 - 0.000	5.500	0.3	5	5	1.500 1.000	0.645		0.000
Feedline Ladder (Af)	B	No	No	Af (CaAa)	154.000 - 0.000	0.000	0.32	1	1	3.000	3.000		0.008
2-1/4" Rigid Conduit *	B	No	No	Ar (CaAa)	155.000 - 0.000	0.000	0.385	1	1	0.850 0.750	2.250		0.003
LDF5-50A(7/ 8) *	B	No	No	Ar (CaAa)	104.000 - 0.000	0.000	0.345	1	1	0.850 0.750	1.090		0.000
CU12PSM6P4 XXX(1-3/4)	A	No	No	Ar (CaAa)	170.000 - 0.000	0.000	-0.09	1	1	0.850 0.750	1.750		0.003
LDF4-50A(1/ 2)	A	No	No	Ar (CaAa)	62.000 - 0.000	0.000	-0.1	4	2	0.500	0.630		0.000
LDF4-50A(1/ 2)	A	No	No	Ar (CaAa)	104.000 - 62.000	0.000	-0.1	3	2	0.500	0.630		0.000
LDF4-50A(1/ 2)	A	No	No	Ar (CaAa)	124.000 - 104.000	0.000	-0.1	2	2	0.500	0.630		0.000
Feedline Ladder (Af) *	A	No	No	Af (CaAa)	124.000 - 0.000	0.000	0	1	1	3.000	3.000		0.008
HB158-1-08U 8-S8J18(1-5/8)	A	No	No	Ar (CaAa)	164.000 - 0.000	0.000	0.1	7	4	0.850 0.750	1.980		0.001
T-Brackets (Af) *	A	No	No	Af (CaAa)	164.000 - 0.000	0.000	0.1	1	1	1.000	1.000		0.008
FSJ4-50B(1/2") *	A	No	No	Ar (CaAa)	42.000 - 0.000	0.000	0.03	1	1	0.850 0.750	0.520		0.000
HB158-21U6S 24-xxM_TMO (1-5/8)	B	No	No	Ar (CaAa)	143.000 - 0.000	0.000	-0.4	3	3	0.850 0.750	1.996		0.003
Feedline Ladder (Af) *	B	No	No	Af (CaAa)	143.000 - 0.000	0.000	-0.4	1	1	3.000	3.000		0.008
LDF5-50A(7/ 8") *	A	No	No	Ar (CaAa)	178.000 - 0.000	5.500	0.1	2	2	0.850 0.750	1.090		0.000
(3/8") Ground Cables * * *	A	No	No	Ar (CaAa)	162.000 - 0.000	0.000	-0.15	2	2	0.500	0.440		0.000

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Feed Line/Linear Appurtenances - Entered As Area

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

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
T1	180.000-168.000	A	0.000	0.000	2.530	0.000	0.012
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	18.450	0.000	0.305
T2	168.000-160.000	A	0.000	0.000	9.531	0.000	0.097
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	12.300	0.000	0.203
T3	160.000-140.000	A	0.000	0.000	40.673	0.000	0.421
		B	0.000	0.000	54.159	0.000	0.379
		C	0.000	0.000	30.750	0.000	0.508
T4	140.000-120.000	A	0.000	0.000	43.177	0.000	0.456
		B	0.000	0.000	94.316	0.000	0.787
		C	0.000	0.000	30.750	0.000	0.508
T5	120.000-100.000	A	0.000	0.000	53.445	0.000	0.595
		B	0.000	0.000	94.752	0.000	0.788
		C	0.000	0.000	30.750	0.000	0.508
T6	100.000-80.000	A	0.000	0.000	54.453	0.000	0.598
		B	0.000	0.000	123.718	0.000	1.075
		C	0.000	0.000	30.750	0.000	0.508
T7	80.000-60.000	A	0.000	0.000	54.579	0.000	0.598
		B	0.000	0.000	138.376	0.000	1.226
		C	0.000	0.000	30.750	0.000	0.508
T8	60.000-40.000	A	0.000	0.000	55.817	0.000	0.601
		B	0.000	0.000	138.376	0.000	1.226
		C	0.000	0.000	30.750	0.000	0.508
T9	40.000-20.000	A	0.000	0.000	56.753	0.000	0.604
		B	0.000	0.000	138.376	0.000	1.226
		C	0.000	0.000	31.443	0.000	0.510
T10	20.000-0.000	A	0.000	0.000	56.753	0.000	0.604
		B	0.000	0.000	138.376	0.000	1.226
		C	0.000	0.000	32.010	0.000	0.511

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
T1	180.000-168.000	A	1.004	0.000	0.000	8.143	0.000	0.064
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	28.086	0.000	0.547

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
T2	168.000-160.000	A	0.998	0.000	0.000	18.477	0.000	0.255
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	18.686	0.000	0.364
T3	160.000-140.000	A	0.989	0.000	0.000	75.099	0.000	1.070
		B		0.000	0.000	85.365	0.000	1.208
		C		0.000	0.000	46.573	0.000	0.905
T4	140.000-120.000	A	0.975	0.000	0.000	79.736	0.000	1.131
		B		0.000	0.000	152.305	0.000	2.201
		C		0.000	0.000	46.348	0.000	0.897
T5	120.000-100.000	A	0.959	0.000	0.000	99.617	0.000	1.403
		B		0.000	0.000	152.895	0.000	2.191
		C		0.000	0.000	46.090	0.000	0.889
T6	100.000-80.000	A	0.940	0.000	0.000	100.316	0.000	1.403
		B		0.000	0.000	205.322	0.000	2.887
		C		0.000	0.000	45.785	0.000	0.880
T7	80.000-60.000	A	0.916	0.000	0.000	99.390	0.000	1.384
		B		0.000	0.000	230.016	0.000	3.208
		C		0.000	0.000	45.412	0.000	0.868
T8	60.000-40.000	A	0.886	0.000	0.000	98.646	0.000	1.374
		B		0.000	0.000	228.229	0.000	3.151
		C		0.000	0.000	44.927	0.000	0.853
T9	40.000-20.000	A	0.842	0.000	0.000	100.847	0.000	1.365
		B		0.000	0.000	225.629	0.000	3.070
		C		0.000	0.000	46.766	0.000	0.850
T10	20.000-0.000	A	0.754	0.000	0.000	97.027	0.000	1.289
		B		0.000	0.000	220.477	0.000	2.913
		C		0.000	0.000	47.097	0.000	0.819

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
T1	180.000-168.000	0.618	4.016	0.373	3.670
T2	168.000-160.000	-1.194	1.804	-1.696	1.557
T3	160.000-140.000	3.850	1.266	3.374	1.233
T4	140.000-120.000	6.505	-1.128	5.977	-1.372
T5	120.000-100.000	6.036	-1.576	5.335	-1.896
T6	100.000-80.000	9.593	-2.072	9.141	-2.271
T7	80.000-60.000	12.227	-2.534	11.775	-2.741
T8	60.000-40.000	12.771	-2.700	12.695	-2.971
T9	40.000-20.000	12.151	-2.598	12.360	-2.910
T10	20.000-0.000	14.720	-2.923	14.545	-3.041

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	4	Feedline Ladder (Af)	168.00 - 180.00	0.6000	0.5970
T1	6	Climbing Ladder	168.00 -	0.6000	0.5970

tnxTower

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	7	Safety Line 3/8	180.00 168.00 - 180.00	0.6000	0.5970
T1	23	CU12PSM6P4XXX(1-3/4)	168.00 - 170.00	0.6000	0.5970
T1	39	LDF5-50A(7/8")	168.00 - 178.00	0.6000	0.5970
T2	4	Feedline Ladder (Af)	160.00 - 168.00	0.6000	0.6000
T2	6	Climbing Ladder	160.00 - 168.00	0.6000	0.6000
T2	7	Safety Line 3/8	160.00 - 168.00	0.6000	0.6000
T2	23	CU12PSM6P4XXX(1-3/4)	160.00 - 168.00	0.6000	0.6000
T2	30	HB158-1-08U8-S8J18(1-5/8)	160.00 - 164.00	0.6000	0.6000
T2	31	T-Brackets (Af)	160.00 - 164.00	0.6000	0.6000
T2	39	LDF5-50A(7/8")	160.00 - 168.00	0.6000	0.6000
T2	41	(3/8") Ground Cables	160.00 - 162.00	0.6000	0.6000
T3	4	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T3	6	Climbing Ladder	140.00 - 160.00	0.6000	0.6000
T3	7	Safety Line 3/8	140.00 - 160.00	0.6000	0.6000
T3	13	LCF158-50JA-A0(1-5/8)	140.00 - 154.00	0.6000	0.6000
T3	14	WR-VG82ST-BRDA(5/8)	140.00 - 154.00	0.6000	0.6000
T3	16	WR-VG82ST-BRDA(5/8)	140.00 - 154.00	0.6000	0.6000
T3	18	Feedline Ladder (Af)	140.00 - 154.00	0.6000	0.6000
T3	19	2-1/4" Rigid Conduit	140.00 - 155.00	0.6000	0.6000
T3	23	CU12PSM6P4XXX(1-3/4)	140.00 - 160.00	0.6000	0.6000
T3	30	HB158-1-08U8-S8J18(1-5/8)	140.00 - 160.00	0.6000	0.6000
T3	31	T-Brackets (Af)	140.00 - 160.00	0.6000	0.6000
T3	36	HB158-21U6S24-xxM_TMO (1-5/8)	140.00 - 143.00	0.6000	0.6000
T3	37	Feedline Ladder (Af)	140.00 - 143.00	0.6000	0.6000
T3	39	LDF5-50A(7/8")	140.00 - 160.00	0.6000	0.6000
T3	41	(3/8") Ground Cables	140.00 - 160.00	0.6000	0.6000
T4	4	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	6	Climbing Ladder	120.00 - 140.00	0.6000	0.6000
T4	7	Safety Line 3/8	120.00 - 140.00	0.6000	0.6000
T4	13	LCF158-50JA-A0(1-5/8)	120.00 - 140.00	0.6000	0.6000
T4	14	WR-VG82ST-BRDA(5/8)	120.00 -	0.6000	0.6000

tnxTower

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T4	16	WR-VG82ST-BRDA(5/8)	140.00 120.00 - 140.00	0.6000	0.6000
T4	18	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	19	2-1/4" Rigid Conduit	120.00 - 140.00	0.6000	0.6000
T4	23	CU12PSM6P4XXX(1-3/4)	120.00 - 140.00	0.6000	0.6000
T4	26	LDF4-50A(1/2)	120.00 - 124.00	0.6000	0.6000
T4	27	Feedline Ladder (Af)	120.00 - 124.00	0.6000	0.6000
T4	30	HB158-1-08U8-S8J18(1-5/8)	120.00 - 140.00	0.6000	0.6000
T4	31	T-Brackets (Af)	120.00 - 140.00	0.6000	0.6000
T4	36	HB158-21U6S24-xxM_TMO (1-5/8)	120.00 - 140.00	0.6000	0.6000
T4	37	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	39	LDF5-50A(7/8")	120.00 - 140.00	0.6000	0.6000
T4	41	(3/8") Ground Cables	120.00 - 140.00	0.6000	0.6000
T5	4	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	6	Climbing Ladder	100.00 - 120.00	0.6000	0.6000
T5	7	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T5	13	LCF158-50JA-A0(1-5/8)	100.00 - 120.00	0.6000	0.6000
T5	14	WR-VG82ST-BRDA(5/8)	100.00 - 120.00	0.6000	0.6000
T5	16	WR-VG82ST-BRDA(5/8)	100.00 - 120.00	0.6000	0.6000
T5	18	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	19	2-1/4" Rigid Conduit	100.00 - 120.00	0.6000	0.6000
T5	21	LDF5-50A(7/8)	100.00 - 104.00	0.6000	0.6000
T5	23	CU12PSM6P4XXX(1-3/4)	100.00 - 120.00	0.6000	0.6000
T5	25	LDF4-50A(1/2)	100.00 - 104.00	0.6000	0.6000
T5	26	LDF4-50A(1/2)	104.00 - 120.00	0.6000	0.6000
T5	27	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	30	HB158-1-08U8-S8J18(1-5/8)	100.00 - 120.00	0.6000	0.6000
T5	31	T-Brackets (Af)	100.00 - 120.00	0.6000	0.6000
T5	36	HB158-21U6S24-xxM_TMO (1-5/8)	100.00 - 120.00	0.6000	0.6000
T5	37	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	39	LDF5-50A(7/8")	100.00 - 120.00	0.6000	0.6000
T5	41	(3/8") Ground Cables	100.00 -	0.6000	0.6000

tnxTower

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job

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Project

Date

16:25:45 02/26/22

Client

Crown Castle

Designed by

Jayaraj B

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			120.00		
T6	4	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	6	Climbing Ladder	80.00 - 100.00	0.6000	0.6000
T6	7	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T6	9	HCS 6X12 4AWG(1-5/8)	80.00 - 93.00	0.6000	0.6000
T6	10	LDF6-50A(1-1/4)	80.00 - 93.00	0.6000	0.6000
T6	11	Feedline Ladder (Af)	80.00 - 93.00	0.6000	0.6000
T6	13	LCF158-50JA-A0(1-5/8)	80.00 - 100.00	0.6000	0.6000
T6	14	WR-VG82ST-BRDA(5/8)	80.00 - 100.00	0.6000	0.6000
T6	16	WR-VG82ST-BRDA(5/8)	80.00 - 100.00	0.6000	0.6000
T6	18	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	19	2-1/4" Rigid Conduit	80.00 - 100.00	0.6000	0.6000
T6	21	LDF5-50A(7/8)	80.00 - 100.00	0.6000	0.6000
T6	23	CU12PSM6P4XXX(1-3/4)	80.00 - 100.00	0.6000	0.6000
T6	25	LDF4-50A(1/2)	80.00 - 100.00	0.6000	0.6000
T6	27	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	30	HB158-1-08U8-S8J18(1-5/8)	80.00 - 100.00	0.6000	0.6000
T6	31	T-Brackets (Af)	80.00 - 100.00	0.6000	0.6000
T6	36	HB158-21U6S24-xxM_TMO (1-5/8)	80.00 - 100.00	0.6000	0.6000
T6	37	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	39	LDF5-50A(7/8")	80.00 - 100.00	0.6000	0.6000
T6	41	(3/8") Ground Cables	80.00 - 100.00	0.6000	0.6000
T7	4	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	6	Climbing Ladder	60.00 - 80.00	0.6000	0.6000
T7	7	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T7	9	HCS 6X12 4AWG(1-5/8)	60.00 - 80.00	0.6000	0.6000
T7	10	LDF6-50A(1-1/4)	60.00 - 80.00	0.6000	0.6000
T7	11	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	13	LCF158-50JA-A0(1-5/8)	60.00 - 80.00	0.6000	0.6000
T7	14	WR-VG82ST-BRDA(5/8)	60.00 - 80.00	0.6000	0.6000
T7	16	WR-VG82ST-BRDA(5/8)	60.00 - 80.00	0.6000	0.6000
T7	18	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	19	2-1/4" Rigid Conduit	60.00 - 80.00	0.6000	0.6000
T7	21	LDF5-50A(7/8)	60.00 - 80.00	0.6000	0.6000
T7	23	CU12PSM6P4XXX(1-3/4)	60.00 - 80.00	0.6000	0.6000
T7	24	LDF4-50A(1/2)	60.00 - 62.00	0.6000	0.6000
T7	25	LDF4-50A(1/2)	62.00 - 80.00	0.6000	0.6000
T7	27	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	30	HB158-1-08U8-S8J18(1-5/8)	60.00 - 80.00	0.6000	0.6000
T7	31	T-Brackets (Af)	60.00 - 80.00	0.6000	0.6000
T7	36	HB158-21U6S24-xxM_TMO (1-5/8)	60.00 - 80.00	0.6000	0.6000
T7	37	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	39	LDF5-50A(7/8")	60.00 - 80.00	0.6000	0.6000
T7	41	(3/8") Ground Cables	60.00 - 80.00	0.6000	0.6000
T8	4	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	6	Climbing Ladder	40.00 - 60.00	0.6000	0.6000
T8	7	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T8	9	HCS 6X12 4AWG(1-5/8)	40.00 - 60.00	0.6000	0.6000
T8	10	LDF6-50A(1-1/4)	40.00 - 60.00	0.6000	0.6000
T8	11	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	13	LCF158-50JA-A0(1-5/8)	40.00 - 60.00	0.6000	0.6000
T8	14	WR-VG82ST-BRDA(5/8)	40.00 - 60.00	0.6000	0.6000
T8	16	WR-VG82ST-BRDA(5/8)	40.00 - 60.00	0.6000	0.6000
T8	18	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	19	2-1/4" Rigid Conduit	40.00 - 60.00	0.6000	0.6000
T8	21	LDF5-50A(7/8)	40.00 - 60.00	0.6000	0.6000
T8	23	CU12PSM6P4XXX(1-3/4)	40.00 - 60.00	0.6000	0.6000
T8	24	LDF4-50A(1/2)	40.00 - 60.00	0.6000	0.6000
T8	27	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	30	HB158-1-08U8-S8J18(1-5/8)	40.00 - 60.00	0.6000	0.6000

tnxTower

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
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Job	102920.011.01 - BRG 124 943066, CT (BU# 806353)	Page	14 of 35
Project		Date	16:25:45 02/26/22
Client	Crown Castle	Designed by	Jayaraj B

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T8	31	T-Brackets (Af)	40.00 - 60.00	0.6000	0.6000
T8	33	FSJ4-50B(1/2")	40.00 - 42.00	0.6000	0.6000
T8	36	HB158-21U6S24-xxM_TMO (1-5/8)	40.00 - 60.00	0.6000	0.6000
T8	37	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	39	LDF5-50A(7/8")	40.00 - 60.00	0.6000	0.6000
T8	41	(3/8") Ground Cables	40.00 - 60.00	0.6000	0.6000
T9	3	LDF4-50A(1/2")	20.00 - 31.00	0.6000	0.6000
T9	4	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	6	Climbing Ladder	20.00 - 40.00	0.6000	0.6000
T9	7	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T9	9	HCS 6X12 4AWG(1-5/8)	20.00 - 40.00	0.6000	0.6000
T9	10	LDF6-50A(1-1/4)	20.00 - 40.00	0.6000	0.6000
T9	11	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	13	LCF158-50JA-A0(1-5/8)	20.00 - 40.00	0.6000	0.6000
T9	14	WR-VG82ST-BRDA(5/8)	20.00 - 40.00	0.6000	0.6000
T9	16	WR-VG82ST-BRDA(5/8)	20.00 - 40.00	0.6000	0.6000
T9	18	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	19	2-1/4" Rigid Conduit	20.00 - 40.00	0.6000	0.6000
T9	21	LDF5-50A(7/8)	20.00 - 40.00	0.6000	0.6000
T9	23	CU12PSM6P4XXX(1-3/4)	20.00 - 40.00	0.6000	0.6000
T9	24	LDF4-50A(1/2)	20.00 - 40.00	0.6000	0.6000
T9	27	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	30	HB158-1-08U8-S8J18(1-5/8)	20.00 - 40.00	0.6000	0.6000
T9	31	T-Brackets (Af)	20.00 - 40.00	0.6000	0.6000
T9	33	FSJ4-50B(1/2")	20.00 - 40.00	0.6000	0.6000
T9	36	HB158-21U6S24-xxM_TMO (1-5/8)	20.00 - 40.00	0.6000	0.6000
T9	37	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	39	LDF5-50A(7/8")	20.00 - 40.00	0.6000	0.6000
T9	41	(3/8") Ground Cables	20.00 - 40.00	0.6000	0.6000
T10	3	LDF4-50A(1/2")	0.00 - 20.00	0.6000	0.6000
T10	4	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	6	Climbing Ladder	0.00 - 20.00	0.6000	0.6000
T10	7	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000
T10	9	HCS 6X12 4AWG(1-5/8)	0.00 - 20.00	0.6000	0.6000
T10	10	LDF6-50A(1-1/4)	0.00 - 20.00	0.6000	0.6000
T10	11	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	13	LCF158-50JA-A0(1-5/8)	0.00 - 20.00	0.6000	0.6000
T10	14	WR-VG82ST-BRDA(5/8)	0.00 - 20.00	0.6000	0.6000
T10	16	WR-VG82ST-BRDA(5/8)	0.00 - 20.00	0.6000	0.6000
T10	18	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	19	2-1/4" Rigid Conduit	0.00 - 20.00	0.6000	0.6000
T10	21	LDF5-50A(7/8)	0.00 - 20.00	0.6000	0.6000
T10	23	CU12PSM6P4XXX(1-3/4)	0.00 - 20.00	0.6000	0.6000
T10	24	LDF4-50A(1/2)	0.00 - 20.00	0.6000	0.6000
T10	27	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	30	HB158-1-08U8-S8J18(1-5/8)	0.00 - 20.00	0.6000	0.6000
T10	31	T-Brackets (Af)	0.00 - 20.00	0.6000	0.6000
T10	33	FSJ4-50B(1/2")	0.00 - 20.00	0.6000	0.6000
T10	36	HB158-21U6S24-xxM_TMO (1-5/8)	0.00 - 20.00	0.6000	0.6000
T10	37	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	39	LDF5-50A(7/8")	0.00 - 20.00	0.6000	0.6000
T10	41	(3/8") Ground Cables	0.00 - 20.00	0.6000	0.6000

tnxTower B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job 102920.011.01 - BRG 124 943066, CT (BU# 806353)	Page 15 of 35
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	Client Crown Castle	Designed by Jayaraj B

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Vert						
			ft	ft	°	ft	ft ²	ft ²	K	
PD10017	A	From Leg	0.500	0.000	0.000	178.000	No Ice	4.114	4.114	0.025
			0.000				1/2" Ice	5.641	5.641	0.055
			6.000				1" Ice	7.185	7.185	0.095
*										
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	170.000	No Ice	8.010	4.230	0.108
			0.000				1/2" Ice	8.520	4.690	0.194
			0.000				1" Ice	9.040	5.160	0.292
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	170.000	No Ice	8.010	4.230	0.108
			0.000				1/2" Ice	8.520	4.690	0.194
			0.000				1" Ice	9.040	5.160	0.292
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	170.000	No Ice	8.010	4.230	0.108
			0.000				1/2" Ice	8.520	4.690	0.194
			0.000				1" Ice	9.040	5.160	0.292
TA08025-B604	A	From Leg	4.000	0.000	0.000	170.000	No Ice	1.964	0.981	0.064
			0.000				1/2" Ice	2.138	1.112	0.081
			0.000				1" Ice	2.320	1.250	0.100
TA08025-B604	B	From Leg	4.000	0.000	0.000	170.000	No Ice	1.964	0.981	0.064
			0.000				1/2" Ice	2.138	1.112	0.081
			0.000				1" Ice	2.320	1.250	0.100
TA08025-B604	C	From Leg	4.000	0.000	0.000	170.000	No Ice	1.964	0.981	0.064
			0.000				1/2" Ice	2.138	1.112	0.081
			0.000				1" Ice	2.320	1.250	0.100
TA08025-B605	A	From Leg	4.000	0.000	0.000	170.000	No Ice	1.964	1.129	0.075
			0.000				1/2" Ice	2.138	1.267	0.093
			0.000				1" Ice	2.320	1.411	0.114
TA08025-B605	B	From Leg	4.000	0.000	0.000	170.000	No Ice	1.964	1.129	0.075
			0.000				1/2" Ice	2.138	1.267	0.093
			0.000				1" Ice	2.320	1.411	0.114
TA08025-B605	C	From Leg	4.000	0.000	0.000	170.000	No Ice	1.964	1.129	0.075
			0.000				1/2" Ice	2.138	1.267	0.093
			0.000				1" Ice	2.320	1.411	0.114
RDIDC-9181-PF-48	A	From Leg	4.000	0.000	0.000	170.000	No Ice	2.012	1.168	0.022
			0.000				1/2" Ice	2.189	1.311	0.040
			0.000				1" Ice	2.373	1.461	0.060
(2) 8' x 2" Mount Pipe	A	From Leg	4.000	0.000	0.000	170.000	No Ice	1.900	1.900	0.029
			0.000				1/2" Ice	2.728	2.728	0.044
			0.000				1" Ice	3.401	3.401	0.063
(2) 8' x 2" Mount Pipe	B	From Leg	4.000	0.000	0.000	170.000	No Ice	1.900	1.900	0.029
			0.000				1/2" Ice	2.728	2.728	0.044
			0.000				1" Ice	3.401	3.401	0.063
(2) 8' x 2" Mount Pipe	C	From Leg	4.000	0.000	0.000	170.000	No Ice	1.900	1.900	0.029
			0.000				1/2" Ice	2.728	2.728	0.044
			0.000				1" Ice	3.401	3.401	0.063
Commscope MTC3975083 (3)	C	None			0.000	170.000	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
*										
*										
(2) RFV01U-D1A	A	From Leg	4.000	0.000	0.000	164.000	No Ice	1.875	1.250	0.084
			0.000				1/2" Ice	2.045	1.393	0.103
			2.000				1" Ice	2.223	1.543	0.124
RFV01U-D1A	B	From Leg	4.000	0.000	0.000	164.000	No Ice	1.875	1.250	0.084
			0.000				1/2" Ice	2.045	1.393	0.103
			2.000				1" Ice	2.223	1.543	0.124

tnxTower B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job	Page	
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	Project	Date	16:25:45 02/26/22
Client	Crown Castle	Designed by Jayaraj B	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz	Lateral			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	K	
RFV01U-D2A	A	From Leg	4.000	0.000	0.000	164.000	No Ice	1.875	1.013	0.070
			0.000				1/2" Ice	2.045	1.145	0.087
			2.000				1" Ice	2.223	1.284	0.106
(2) RFV01U-D2A	B	From Leg	4.000	0.000	0.000	164.000	No Ice	1.875	1.013	0.070
			0.000				1/2" Ice	2.045	1.145	0.087
			2.000				1" Ice	2.223	1.284	0.106
DB-T1-6Z-8AB-0Z	B	From Leg	4.000	0.000	0.000	164.000	No Ice	4.800	2.000	0.044
			0.000				1/2" Ice	5.070	2.193	0.080
			2.000				1" Ice	5.348	2.393	0.120
(2) APL868013 w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	164.000	No Ice	2.630	4.130	0.030
			0.000				1/2" Ice	3.070	4.600	0.064
			-2.000				1" Ice	3.530	5.090	0.106
(2) APL868013 w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	164.000	No Ice	2.630	4.130	0.030
			0.000				1/2" Ice	3.070	4.600	0.064
			-2.000				1" Ice	3.530	5.090	0.106
(2) APL868013 w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	164.000	No Ice	2.630	4.130	0.030
			0.000				1/2" Ice	3.070	4.600	0.064
			-2.000				1" Ice	3.530	5.090	0.106
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	164.000	No Ice	5.500	4.380	0.096
			0.000				1/2" Ice	5.970	4.840	0.169
			-2.000				1" Ice	6.450	5.300	0.254
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	164.000	No Ice	5.500	4.380	0.096
			0.000				1/2" Ice	5.970	4.840	0.169
			-2.000				1" Ice	6.450	5.300	0.254
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	164.000	No Ice	5.500	4.380	0.096
			0.000				1/2" Ice	5.970	4.840	0.169
			-2.000				1" Ice	6.450	5.300	0.254
CBRS w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	164.000	No Ice	1.450	0.990	0.032
			0.000				1/2" Ice	1.670	1.180	0.048
			-2.000				1" Ice	1.900	1.390	0.068
CBRS w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	164.000	No Ice	1.450	0.990	0.032
			0.000				1/2" Ice	1.670	1.180	0.048
			-2.000				1" Ice	1.900	1.390	0.068
CBRS w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	164.000	No Ice	1.450	0.990	0.032
			0.000				1/2" Ice	1.670	1.180	0.048
			-2.000				1" Ice	1.900	1.390	0.068
MT6407-77A w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	164.000	No Ice	4.907	2.682	0.096
			0.000				1/2" Ice	5.256	3.145	0.136
			-2.000				1" Ice	5.615	3.624	0.180
MT6407-77A w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	164.000	No Ice	4.907	2.682	0.096
			0.000				1/2" Ice	5.256	3.145	0.136
			-2.000				1" Ice	5.615	3.624	0.180
MT6407-77A w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	164.000	No Ice	4.907	2.682	0.096
			0.000				1/2" Ice	5.256	3.145	0.136
			-2.000				1" Ice	5.615	3.624	0.180
(2) 6' x 2" Mount Pipe	A	From Leg	4.000	0.000	0.000	164.000	No Ice	1.425	1.425	0.022
			0.000				1/2" Ice	1.925	1.925	0.033
			0.000				1" Ice	2.294	2.294	0.048
(2) 6' x 2" Mount Pipe	B	From Leg	4.000	0.000	0.000	164.000	No Ice	1.425	1.425	0.022
			0.000				1/2" Ice	1.925	1.925	0.033
			0.000				1" Ice	2.294	2.294	0.048
(2) 6' x 2" Mount Pipe	C	From Leg	4.000	0.000	0.000	164.000	No Ice	1.425	1.425	0.022
			0.000				1/2" Ice	1.925	1.925	0.033
			0.000				1" Ice	2.294	2.294	0.048
Sector Mount [SM 702-3](16')	C	None		0.000	0.000	164.000	No Ice	47.865	47.865	1.909
							1/2" Ice	62.031	62.031	2.805
							1" Ice	76.025	76.025	3.959

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	Client Crown Castle	Designed by Jayaraj B

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
*									
7770.00 w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	154.000	No Ice 5.746	4.254	0.055
			0.000				1/2" Ice 6.179	5.014	0.103
			4.000				1" Ice 6.607	5.711	0.157
7770.00 w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	154.000	No Ice 5.746	4.254	0.055
			0.000				1/2" Ice 6.179	5.014	0.103
			4.000				1" Ice 6.607	5.711	0.157
7770.00 w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	154.000	No Ice 5.746	4.254	0.055
			0.000				1/2" Ice 6.179	5.014	0.103
			4.000				1" Ice 6.607	5.711	0.157
QS66512-2 w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	154.000	No Ice 4.040	4.180	0.137
			0.000				1/2" Ice 4.420	4.570	0.206
			4.000				1" Ice 4.820	4.970	0.287
QS66512-2 w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	154.000	No Ice 4.040	4.180	0.137
			0.000				1/2" Ice 4.420	4.570	0.206
			4.000				1" Ice 4.820	4.970	0.287
QS66512-2 w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	154.000	No Ice 4.040	4.180	0.137
			0.000				1/2" Ice 4.420	4.570	0.206
			4.000				1" Ice 4.820	4.970	0.287
OPA65R-BU6D w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	154.000	No Ice 12.250	6.050	0.089
			0.000				1/2" Ice 13.000	6.710	0.176
			4.000				1" Ice 13.760	7.390	0.275
OPA65R-BU6D w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	154.000	No Ice 12.250	6.050	0.089
			0.000				1/2" Ice 13.000	6.710	0.176
			4.000				1" Ice 13.760	7.390	0.275
OPA65R-BU6D w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	154.000	No Ice 12.250	6.050	0.089
			0.000				1/2" Ice 13.000	6.710	0.176
			4.000				1" Ice 13.760	7.390	0.275
DMP65R-BU6D w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	154.000	No Ice 11.960	5.970	0.115
			0.000				1/2" Ice 12.700	6.630	0.201
			4.000				1" Ice 13.460	7.300	0.298
DMP65R-BU6D w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	154.000	No Ice 11.960	5.970	0.115
			0.000				1/2" Ice 12.700	6.630	0.201
			4.000				1" Ice 13.460	7.300	0.298
DMP65R-BU6D w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	154.000	No Ice 11.960	5.970	0.115
			0.000				1/2" Ice 12.700	6.630	0.201
			4.000				1" Ice 13.460	7.300	0.298
(2) LGP21401	A	From Leg	4.000	0.000	0.000	154.000	No Ice 1.104	0.207	0.014
			0.000				1/2" Ice 1.239	0.274	0.021
			4.000				1" Ice 1.381	0.348	0.030
(2) LGP21401	B	From Leg	4.000	0.000	0.000	154.000	No Ice 1.104	0.207	0.014
			0.000				1/2" Ice 1.239	0.274	0.021
			4.000				1" Ice 1.381	0.348	0.030
(2) LGP21401	C	From Leg	4.000	0.000	0.000	154.000	No Ice 1.104	0.207	0.014
			0.000				1/2" Ice 1.239	0.274	0.021
			4.000				1" Ice 1.381	0.348	0.030
RRUS 32 B30	A	From Leg	4.000	0.000	0.000	154.000	No Ice 2.692	1.573	0.060
			0.000				1/2" Ice 2.912	1.756	0.080
			4.000				1" Ice 3.138	1.945	0.104
RRUS 32 B30	B	From Leg	4.000	0.000	0.000	154.000	No Ice 2.692	1.573	0.060
			0.000				1/2" Ice 2.912	1.756	0.080
			4.000				1" Ice 3.138	1.945	0.104
RRUS 32 B30	C	From Leg	4.000	0.000	0.000	154.000	No Ice 2.692	1.573	0.060
			0.000				1/2" Ice 2.912	1.756	0.080
			4.000				1" Ice 3.138	1.945	0.104
RRUS 32 B2	A	From Leg	4.000	0.000	0.000	154.000	No Ice 2.731	1.668	0.053
			0.000				1/2" Ice 2.953	1.855	0.074

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	Client		Crown Castle		Designed by		Jayaraj B	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight					
			Horz	Lateral						Vert	°	ft	ft ²	ft ²
RRUS 32 B2	B	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	2.731	1.668	0.053
			0.000								1/2" Ice	2.953	1.855	0.074
RRUS 32 B2	C	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	2.731	1.668	0.053
			0.000								1/2" Ice	2.953	1.855	0.074
DBC0061F1V51-2	A	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	0.433	0.413	0.025
			0.000								1/2" Ice	0.518	0.496	0.031
DBC0061F1V51-2	B	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	0.433	0.413	0.025
			0.000								1/2" Ice	0.518	0.496	0.031
DBC0061F1V51-2	C	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	0.433	0.413	0.025
			0.000								1/2" Ice	0.518	0.496	0.031
RRUS 4478 B14	A	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	1.843	1.059	0.060
			0.000								1/2" Ice	2.012	1.197	0.076
RRUS 4478 B14	B	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	1.843	1.059	0.060
			0.000								1/2" Ice	2.012	1.197	0.076
RRUS 4478 B14	C	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	1.843	1.059	0.060
			0.000								1/2" Ice	2.012	1.197	0.076
RRUS 4449 B5/B12	A	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	1.968	1.408	0.071
			0.000								1/2" Ice	2.144	1.564	0.090
RRUS 4449 B5/B12	B	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	1.968	1.408	0.071
			0.000								1/2" Ice	2.144	1.564	0.090
RRUS 4449 B5/B12	C	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	1.968	1.408	0.071
			0.000								1/2" Ice	2.144	1.564	0.090
(3) DC6-48-60-18-8F	A	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	0.850	0.850	0.019
			0.000								1/2" Ice	1.356	1.356	0.036
(2) 5' x 2" Pipe Mount	A	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	1.188	1.188	0.018
			0.000								1/2" Ice	1.496	1.496	0.027
(2) 5' x 2" Pipe Mount	B	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	1.188	1.188	0.018
			0.000								1/2" Ice	1.496	1.496	0.027
(2) 5' x 2" Pipe Mount	C	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	1.188	1.188	0.018
			0.000								1/2" Ice	1.496	1.496	0.027
12.5' x 2.375" Horizontal Mount Pipe	A	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	2.980	0.010	0.046
			0.000								1/2" Ice	4.250	0.050	0.068
12.5' x 2.375" Horizontal Mount Pipe	B	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	2.980	0.010	0.046
			0.000								1/2" Ice	4.250	0.050	0.068
12.5' x 2.375" Horizontal Mount Pipe	C	From Leg	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			4.000								No Ice	2.980	0.010	0.046
			0.000								1/2" Ice	4.250	0.050	0.068
Sector Mount [SM 1303-3]	C	None	4.000		0.000	154.000	1" Ice	3.182	2.049	0.098				
			0.000								No Ice	38.780	38.780	1.104
							1/2" Ice	46.780	46.780	1.763				

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Client	Crown Castle		Designed by Jayaraj B

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
Pipe Mount [PM 601-3]	C	None			0.000	154.000	1" Ice 54.730 No Ice 3.170 1/2" Ice 3.790 1" Ice 4.420	54.730 3.170 3.790 4.420	2.567 0.195 0.232 0.279
*									
800 EXTERNAL NOTCH FILTER	A	From Leg	1.000 0.000 1.000		0.000	145.000	No Ice 0.660 1/2" Ice 0.763 1" Ice 0.873	0.321 0.398 0.483	0.011 0.017 0.024
800 EXTERNAL NOTCH FILTER	B	From Leg	1.000 0.000 1.000		0.000	145.000	No Ice 0.660 1/2" Ice 0.763 1" Ice 0.873	0.321 0.398 0.483	0.011 0.017 0.024
800 EXTERNAL NOTCH FILTER	C	From Leg	1.000 0.000 1.000		0.000	145.000	No Ice 0.660 1/2" Ice 0.763 1" Ice 0.873	0.321 0.398 0.483	0.011 0.017 0.024
PCS 1900MHZ 4X45W-65MHZ	A	From Leg	1.000 0.000 1.000		0.000	145.000	No Ice 2.322 1/2" Ice 2.527 1" Ice 2.739	2.238 2.441 2.651	0.060 0.083 0.110
PCS 1900MHZ 4X45W-65MHZ	B	From Leg	1.000 0.000 1.000		0.000	145.000	No Ice 2.322 1/2" Ice 2.527 1" Ice 2.739	2.238 2.441 2.651	0.060 0.083 0.110
PCS 1900MHZ 4X45W-65MHZ	C	From Leg	1.000 0.000 1.000		0.000	145.000	No Ice 2.322 1/2" Ice 2.527 1" Ice 2.739	2.238 2.441 2.651	0.060 0.083 0.110
800MHZ 2X50W RRH	A	From Leg	1.000 0.000 1.000		0.000	145.000	No Ice 2.134 1/2" Ice 2.320 1" Ice 2.512	1.773 1.946 2.127	0.053 0.074 0.098
800MHZ 2X50W RRH	B	From Leg	1.000 0.000 1.000		0.000	145.000	No Ice 2.134 1/2" Ice 2.320 1" Ice 2.512	1.773 1.946 2.127	0.053 0.074 0.098
800MHZ 2X50W RRH	C	From Leg	1.000 0.000 1.000		0.000	145.000	No Ice 2.134 1/2" Ice 2.320 1" Ice 2.512	1.773 1.946 2.127	0.053 0.074 0.098
*									
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.000 0.000 0.000		0.000	143.000	No Ice 14.690 1/2" Ice 15.460 1" Ice 16.230	6.870 7.550 8.250	0.183 0.311 0.453
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.000 0.000 0.000		0.000	143.000	No Ice 14.690 1/2" Ice 15.460 1" Ice 16.230	6.870 7.550 8.250	0.183 0.311 0.453
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.000 0.000 0.000		0.000	143.000	No Ice 14.690 1/2" Ice 15.460 1" Ice 16.230	6.870 7.550 8.250	0.183 0.311 0.453
VV-65A-R1_TMO w/ Mount Pipe	A	From Leg	4.000 0.000 0.000		0.000	143.000	No Ice 4.460 1/2" Ice 4.910 1" Ice 5.360	2.690 3.100 3.520	0.054 0.097 0.149
VV-65A-R1_TMO w/ Mount Pipe	B	From Leg	4.000 0.000 0.000		0.000	143.000	No Ice 4.460 1/2" Ice 4.910 1" Ice 5.360	2.690 3.100 3.520	0.054 0.097 0.149
VV-65A-R1_TMO w/ Mount Pipe	C	From Leg	4.000 0.000 0.000		0.000	143.000	No Ice 4.460 1/2" Ice 4.910 1" Ice 5.360	2.690 3.100 3.520	0.054 0.097 0.149
AIR6449 B41_T-MOBILE	A	From Leg	4.000 0.000 0.000		0.000	143.000	No Ice 5.270 1/2" Ice 5.700 1" Ice 6.140	2.030 2.360 2.700	0.115 0.154 0.197
AIR6449 B41_T-MOBILE	B	From Leg	4.000 0.000 0.000		0.000	143.000	No Ice 5.270 1/2" Ice 5.700 1" Ice 6.140	2.030 2.360 2.700	0.115 0.154 0.197

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	Client		Crown Castle		Designed by		Jayaraj B	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA}		Weight K
			Horz Lateral ft	Vert ft			Front ft ²	Side ft ²	
AIR6449 B41_T-MOBILE	C	From Leg	4.000	0.000	0.000	143.000	No Ice 5.270	2.030	0.115
			0.000				1/2" Ice 5.700	2.360	0.154
			0.000				1" Ice 6.140	2.700	0.197
Radio 4480_TMOV2	A	From Leg	4.000	0.000	0.000	143.000	No Ice 2.878	1.397	0.081
			0.000				1/2" Ice 3.091	1.558	0.103
			0.000				1" Ice 3.312	1.727	0.128
Radio 4480_TMOV2	B	From Leg	4.000	0.000	0.000	143.000	No Ice 2.878	1.397	0.081
			0.000				1/2" Ice 3.091	1.558	0.103
			0.000				1" Ice 3.312	1.727	0.128
Radio 4480_TMOV2	C	From Leg	4.000	0.000	0.000	143.000	No Ice 2.878	1.397	0.081
			0.000				1/2" Ice 3.091	1.558	0.103
			0.000				1" Ice 3.312	1.727	0.128
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.000	0.000	0.000	143.000	No Ice 2.139	1.686	0.109
			0.000				1/2" Ice 2.321	1.850	0.131
			0.000				1" Ice 2.511	2.022	0.156
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.000	0.000	0.000	143.000	No Ice 2.139	1.686	0.109
			0.000				1/2" Ice 2.321	1.850	0.131
			0.000				1" Ice 2.511	2.022	0.156
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.000	0.000	0.000	143.000	No Ice 2.139	1.686	0.109
			0.000				1/2" Ice 2.321	1.850	0.131
			0.000				1" Ice 2.511	2.022	0.156
(2) 8' x 2" Mount Pipe	A	From Leg	4.000	0.000	0.000	143.000	No Ice 1.900	1.900	0.029
			0.000				1/2" Ice 2.728	2.728	0.044
			0.000				1" Ice 3.401	3.401	0.063
(2) 8' x 2" Mount Pipe	B	From Leg	4.000	0.000	0.000	143.000	No Ice 1.900	1.900	0.029
			0.000				1/2" Ice 2.728	2.728	0.044
			0.000				1" Ice 3.401	3.401	0.063
(2) 8' x 2" Mount Pipe	C	From Leg	4.000	0.000	0.000	143.000	No Ice 1.900	1.900	0.029
			0.000				1/2" Ice 2.728	2.728	0.044
			0.000				1" Ice 3.401	3.401	0.063
Site Pro1 VFA12-HD Mount	A	From Leg	2.000	0.000	0.000	143.000	No Ice 13.200	13.200	0.658
			0.000				1/2" Ice 19.500	19.500	0.804
			0.000				1" Ice 25.800	25.800	1.015
Site Pro1 VFA12-HD Mount	B	From Leg	2.000	0.000	0.000	143.000	No Ice 13.200	13.200	0.658
			0.000				1/2" Ice 19.500	19.500	0.804
			0.000				1" Ice 25.800	25.800	1.015
Site Pro1 VFA12-HD Mount	C	From Leg	2.000	0.000	0.000	143.000	No Ice 13.200	13.200	0.658
			0.000				1/2" Ice 19.500	19.500	0.804
			0.000				1" Ice 25.800	25.800	1.015
* 1142-2C	B	From Leg	6.000	0.000	0.000	124.000	No Ice 2.092	2.092	0.024
			0.000				1/2" Ice 3.374	3.374	0.041
			7.000				1" Ice 4.673	4.673	0.066
1142-2C	C	From Leg	6.000	0.000	0.000	124.000	No Ice 2.092	2.092	0.024
			0.000				1/2" Ice 3.374	3.374	0.041
			7.000				1" Ice 4.673	4.673	0.066
Side Arm Mount [SO 303-1]	B	From Leg	3.000	0.000	0.000	124.000	No Ice 1.080	5.310	0.115
			0.000				1/2" Ice 1.630	7.570	0.158
			0.000				1" Ice 2.210	9.930	0.217
Side Arm Mount [SO 303-1]	C	From Leg	3.000	0.000	0.000	124.000	No Ice 1.080	5.310	0.115
			0.000				1/2" Ice 1.630	7.570	0.158
			0.000				1" Ice 2.210	9.930	0.217
* 220-3BN	B	From Leg	6.000	0.000	0.000	104.000	No Ice 5.720	5.720	0.024
			0.000				1/2" Ice 7.831	7.831	0.066
			4.000				1" Ice 9.959	9.959	0.120
1142-2C	C	From Leg	6.000	0.000	0.000	104.000	No Ice 2.092	2.092	0.024

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	Project				Date		16:25:45 02/26/22	
	Client		Crown Castle		Designed by		Jayaraj B	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz Lateral	Vert						°
			0.000							
			7.000							
Side Arm Mount [SO 303-1]	B	From Leg	3.000		0.000	104.000	No Ice	1.080	5.310	0.115
			0.000				1/2" Ice	1.630	7.570	0.158
			0.000				1" Ice	2.210	9.930	0.217
Side Arm Mount [SO 303-1]	C	From Leg	3.000		0.000	104.000	No Ice	1.080	5.310	0.115
			0.000				1/2" Ice	1.630	7.570	0.158
			0.000				1" Ice	2.210	9.930	0.217
* APXVAARR24_43-U-NA20	A	From Leg	4.000		0.000	93.000	No Ice	14.670	5.320	0.153
			0.000				1/2" Ice	15.430	5.990	0.266
			0.000				1" Ice	16.210	6.680	0.387
APXVAARR24_43-U-NA20	B	From Leg	4.000		0.000	93.000	No Ice	14.670	5.320	0.153
			0.000				1/2" Ice	15.430	5.990	0.266
			0.000				1" Ice	16.210	6.680	0.387
APXVAARR24_43-U-NA20	C	From Leg	4.000		0.000	93.000	No Ice	14.670	5.320	0.153
			0.000				1/2" Ice	15.430	5.990	0.266
			0.000				1" Ice	16.210	6.680	0.387
AIR 32 B2a/B66Aa	A	From Leg	4.000		0.000	93.000	No Ice	3.860	2.510	0.172
			0.000				1/2" Ice	4.230	2.860	0.220
			0.000				1" Ice	4.610	3.220	0.273
AIR 32 B2a/B66Aa	B	From Leg	4.000		0.000	93.000	No Ice	3.860	2.510	0.172
			0.000				1/2" Ice	4.230	2.860	0.220
			0.000				1" Ice	4.610	3.220	0.273
AIR 32 B2a/B66Aa	C	From Leg	4.000		0.000	93.000	No Ice	3.860	2.510	0.172
			0.000				1/2" Ice	4.230	2.860	0.220
			0.000				1" Ice	4.610	3.220	0.273
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.000		0.000	93.000	No Ice	3.140	2.590	0.112
			0.000				1/2" Ice	3.450	2.880	0.164
			0.000				1" Ice	3.770	3.190	0.225
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.000		0.000	93.000	No Ice	3.140	2.590	0.112
			0.000				1/2" Ice	3.450	2.880	0.164
			0.000				1" Ice	3.770	3.190	0.225
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.000		0.000	93.000	No Ice	3.140	2.590	0.112
			0.000				1/2" Ice	3.450	2.880	0.164
			0.000				1" Ice	3.770	3.190	0.225
KRY 112 144/1	A	From Leg	4.000		0.000	93.000	No Ice	0.350	0.175	0.011
			0.000				1/2" Ice	0.426	0.234	0.014
			0.000				1" Ice	0.509	0.301	0.019
KRY 112 144/1	B	From Leg	4.000		0.000	93.000	No Ice	0.350	0.175	0.011
			0.000				1/2" Ice	0.426	0.234	0.014
			0.000				1" Ice	0.509	0.301	0.019
KRY 112 144/1	C	From Leg	4.000		0.000	93.000	No Ice	0.350	0.175	0.011
			0.000				1/2" Ice	0.426	0.234	0.014
			0.000				1" Ice	0.509	0.301	0.019
RADIO 4449 B12/B71	A	From Leg	4.000		0.000	93.000	No Ice	1.650	1.163	0.074
			0.000				1/2" Ice	1.810	1.301	0.090
			0.000				1" Ice	1.978	1.447	0.109
RADIO 4449 B12/B71	B	From Leg	4.000		0.000	93.000	No Ice	1.650	1.163	0.074
			0.000				1/2" Ice	1.810	1.301	0.090
			0.000				1" Ice	1.978	1.447	0.109
RADIO 4449 B12/B71	C	From Leg	4.000		0.000	93.000	No Ice	1.650	1.163	0.074
			0.000				1/2" Ice	1.810	1.301	0.090
			0.000				1" Ice	1.978	1.447	0.109
Sector Mount [SM 404-3]	C	None			0.000	93.000	No Ice	20.430	20.430	0.920
							1/2" Ice	28.680	28.680	1.311
							1" Ice	36.800	36.800	1.839

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						
			ft	ft	°	ft	ft ²	ft ²	K	
*										
GPS_A	C	From Leg	3.000	0.000	0.000	62.000	No Ice	0.255	0.255	0.001
			0.000				1/2" Ice	0.320	0.320	0.005
			3.000				1" Ice	0.393	0.393	0.010
Side Arm Mount [SO 305-1]	C	From Leg	1.500	0.000	0.000	62.000	No Ice	0.530	1.520	0.030
			0.000				1/2" Ice	0.780	2.070	0.044
			0.000				1" Ice	1.060	2.660	0.064
*										
GPS_A	C	From Leg	3.000	0.000	0.000	42.000	No Ice	0.255	0.255	0.001
			0.000				1/2" Ice	0.320	0.320	0.005
			2.000				1" Ice	0.393	0.393	0.010
Side Arm Mount [SO 305-1]	C	From Leg	1.500	0.000	0.000	42.000	No Ice	0.530	1.520	0.030
			0.000				1/2" Ice	0.780	2.070	0.044
			0.000				1" Ice	1.060	2.660	0.064
*										
GPS_A	C	From Leg	3.000	0.000	0.000	31.000	No Ice	0.255	0.255	0.001
			0.000				1/2" Ice	0.320	0.320	0.005
			1.000				1" Ice	0.393	0.393	0.010
Side Arm Mount [SO 701-1]	C	From Leg	1.500	0.000	0.000	31.000	No Ice	0.850	1.670	0.065
			0.000				1/2" Ice	1.140	2.340	0.079
			0.000				1" Ice	1.430	3.010	0.093
*										
(2) 3'x8" Knife Plate	A	From Leg	0.000	0.000	0.000	20.000	No Ice	2.333	0.250	0.048
			0.000				1/2" Ice	2.625	0.500	0.054
			0.000				1" Ice	2.917	0.750	0.060
(2) 3'x8" Knife Plate	B	From Leg	0.000	0.000	0.000	20.000	No Ice	2.333	0.250	0.048
			0.000				1/2" Ice	2.625	0.500	0.054
			0.000				1" Ice	2.917	0.750	0.060
(2) 3'x8" Knife Plate	C	From Leg	0.000	0.000	0.000	20.000	No Ice	2.333	0.250	0.048
			0.000				1/2" Ice	2.625	0.500	0.054
			0.000				1" Ice	2.917	0.750	0.060
(2) 3'x8" Knife Plate	A	From Leg	0.000	0.000	0.000	60.000	No Ice	2.333	0.250	0.048
			0.000				1/2" Ice	2.625	0.500	0.054
			0.000				1" Ice	2.917	0.750	0.060
(2) 3'x8" Knife Plate	B	From Leg	0.000	0.000	0.000	60.000	No Ice	2.333	0.250	0.048
			0.000				1/2" Ice	2.625	0.500	0.054
			0.000				1" Ice	2.917	0.750	0.060
(2) 3'x8" Knife Plate	C	From Leg	0.000	0.000	0.000	60.000	No Ice	2.333	0.250	0.048
			0.000				1/2" Ice	2.625	0.500	0.054
			0.000				1" Ice	2.917	0.750	0.060
*										

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

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Comb. No.	Description
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 - 168	Leg	Max Tension	7	1.670	-0.151	0.085
			Max. Compression	10	-3.050	-0.149	-0.096
			Max. Mx	8	-1.005	0.345	0.008
			Max. My	14	1.553	-0.001	0.349
			Max. Vy	20	-0.300	0.250	0.008
		Diagonal	Max. Vx	14	0.291	0.027	-0.232
			Max Tension	13	0.695	0.000	0.000
			Max. Compression	24	-0.803	0.000	0.000

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft	
T2	168 - 160	Top Girt	Max. Mx	16	0.260	0.011	0.001	
			Max. My	24	0.670	0.007	-0.003	
			Max. Vy	34	-0.011	0.011	0.000	
			Max. Vx	24	-0.001	0.005	-0.003	
			Max Tension	18	0.185	0.000	0.000	
			Max. Compression	23	-0.143	0.000	0.000	
		Leg	Max. Mx	26	0.048	-0.014	0.000	
			Max. Vy	26	0.014	0.000	0.000	
			Max Tension	7	8.141	-0.005	0.002	
			Max. Compression	10	-12.062	0.008	0.000	
			Max. Mx	20	-1.247	0.250	0.008	
			Max. My	14	-3.250	0.027	-0.232	
			Max. Vy	20	1.029	-0.020	0.052	
			Max. Vx	2	1.068	0.061	-0.088	
Diagonal	Max Tension	25	2.870	0.000	0.000			
	Max. Compression	12	-3.027	0.000	0.000			
	Max. Mx	8	-1.806	-0.021	0.002			
	Max. My	24	2.846	0.017	-0.005			
	Max. Vy	33	-0.014	0.019	0.001			
	Max. Vx	24	-0.002	0.009	-0.005			
T3	160 - 140	Leg	Max Tension	7	40.727	-0.441	-0.013	
			Max. Compression	10	-53.248	0.424	0.005	
			Max. Mx	14	35.885	0.598	0.016	
			Max. My	20	-5.113	-0.018	0.743	
		Diagonal	Max. Vy	14	-1.041	-0.536	0.010	
			Max. Vx	8	0.993	-0.031	0.253	
			Max Tension	25	4.317	0.000	0.000	
			Max. Compression	24	-4.416	0.000	0.000	
			Max. Mx	10	3.215	0.027	0.002	
			Max. My	24	-3.963	-0.011	-0.004	
			Max. Vy	31	-0.015	0.020	-0.001	
			Max. Vx	24	0.001	0.000	0.000	
			Leg	Max Tension	7	73.720	-0.292	-0.059
				Max. Compression	10	-90.676	0.312	-0.028
Max. Mx	22	48.733		-0.521	-0.008			
Max. My	4	-7.563		-0.053	-0.583			
Max. Vy	22	-0.097		-0.521	-0.008			
Max. Vx	19	0.146		-0.151	0.327			
Diagonal	Max Tension	20	5.269	0.000	0.000			
	Max. Compression	20	-5.298	0.000	0.000			
	Max. Mx	10	4.151	0.028	-0.001			
	Max. My	28	1.088	0.022	-0.003			
	Max. Vy	31	-0.020	0.027	-0.003			
	Max. Vx	28	0.001	0.000	0.000			
	T4	140 - 120	Leg	Max Tension	7	102.479	-0.354	-0.073
				Max. Compression	10	-122.864	0.455	-0.022
				Max. Mx	2	-116.832	0.459	-0.049
				Max. My	4	-10.818	-0.016	-0.559
Diagonal			Max. Vy	3	-0.104	0.459	-0.049	
			Max. Vx	4	-0.185	-0.037	-0.483	
			Max Tension	20	4.963	0.000	0.000	
			Max. Compression	20	-5.020	0.000	0.000	
			Max. Mx	10	4.117	0.043	-0.002	
			Max. My	28	1.040	0.035	-0.005	
			Max. Vy	31	-0.027	0.042	-0.004	
			Max. Vx	28	0.002	0.000	0.000	
			Leg	Max Tension	7	128.813	-0.471	-0.011
				Max. Compression	10	-154.896	0.825	0.037
Max. Mx	18	-154.101		0.839	0.046			
Max. My	4	-14.018		0.011	-0.695			
Max. Vy	22	-0.571		-0.567	-0.028			
Max. Vx	22	-0.571		-0.567	-0.028			

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft			
T7	80 - 60	Diagonal	Max. Vx	16	0.515	-0.013	0.418			
			Max Tension	20	5.797	0.000	0.000			
			Max. Compression	20	-5.803	0.000	0.000			
			Max. Mx	31	1.376	0.049	0.006			
			Max. My	29	-1.272	0.039	-0.007			
			Max. Vy	29	0.035	0.048	-0.006			
		Leg	Max. Vx	29	0.002	0.000	0.000			
			Max Tension	7	152.811	-0.701	-0.033			
			Max. Compression	10	-182.112	1.088	0.050			
			Max. Mx	18	-181.766	1.108	0.069			
			Max. My	8	-14.701	-0.092	1.081			
			Max. Vy	18	-0.125	1.108	0.069			
			Max. Vx	4	0.153	-0.093	-1.078			
			Diagonal	Max Tension	20	6.755	0.000	0.000		
Max. Compression	20	-6.800		0.000	0.000					
Max. Mx	31	1.543		0.086	0.011					
Max. My	34	1.679		0.082	0.012					
Max. Vy	29	0.047		0.083	-0.012					
Max. Vx	34	-0.003		0.000	0.000					
T8	60 - 40	Leg	Max Tension	7	177.613	-0.939	-0.032			
			Max. Compression	18	-211.110	-0.135	0.029			
			Max. Mx	18	-196.215	1.108	0.069			
			Max. My	8	-16.337	-0.074	0.979			
			Max. Vy	22	-0.175	-0.952	-0.044			
			Max. Vx	4	0.130	-0.074	-0.977			
		Diagonal	Max Tension	20	7.123	0.000	0.000			
			Max. Compression	20	-7.188	0.000	0.000			
			Max. Mx	18	5.541	0.133	0.012			
			Max. My	28	1.759	0.119	-0.017			
			Max. Vy	29	0.064	0.120	0.016			
			Max. Vx	28	0.004	0.000	0.000			
			T9	40 - 20	Leg	Max Tension	7	200.524	1.533	-0.021
						Max. Compression	18	-238.772	-0.418	0.030
Max. Mx	18	-224.722				3.371	-0.011			
Max. My	8	-18.624				-0.451	1.990			
Max. Vy	18	-1.191				3.303	-0.012			
Max. Vx	4	0.483				-0.460	-1.917			
Diagonal	Max Tension	21			7.427	0.103	-0.003			
	Max. Compression	18			-8.326	0.000	0.000			
Secondary Horizontal			Max. Mx	31	1.055	0.160	-0.011			
			Max. My	4	-5.189	0.021	-0.015			
			Max. Vy	29	0.069	0.130	-0.011			
			Max. Vx	28	-0.003	0.000	0.000			
			Max Tension	8	1.286	0.057	0.003			
			Max. Compression	9	-1.063	0.051	0.020			
			Max. Mx	36	0.015	0.135	0.027			
			Max. My	30	0.255	0.102	0.029			
			Max. Vy	36	-0.072	0.135	0.027			
			Max. Vx	30	-0.005	0.000	0.000			
T10	20 - 0	Leg	Max Tension	7	223.041	-1.739	-0.029			
			Max. Compression	18	-267.094	0.000	-0.000			
			Max. Mx	35	-106.346	4.100	-0.012			
			Max. My	8	-21.630	-0.156	2.485			
			Max. Vy	31	-0.729	-3.083	-0.001			
			Max. Vx	4	-0.346	-0.156	-2.400			
		Diagonal	Max Tension	20	7.910	0.000	0.000			
			Max. Compression	18	-8.539	0.000	0.000			
			Max. Mx	29	0.010	0.206	-0.021			
			Max. My	28	3.675	0.124	-0.025			
			Max. Vy	29	0.080	0.206	-0.021			

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	28	0.004	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	274.132	24.327	-13.357
	Max. H _x	18	274.132	24.327	-13.357
	Max. H _z	7	-228.572	-20.906	11.405
	Min. Vert	7	-228.572	-20.906	11.405
	Min. H _x	7	-228.572	-20.906	11.405
	Min. H _z	18	274.132	24.327	-13.357
Leg B	Max. Vert	10	271.976	-23.167	-13.849
	Max. H _x	23	-220.580	19.685	11.793
	Max. H _z	23	-220.580	19.685	11.793
	Min. Vert	23	-220.580	19.685	11.793
	Min. H _x	10	271.976	-23.167	-13.849
	Min. H _z	10	271.976	-23.167	-13.849
Leg A	Max. Vert	2	257.803	0.650	25.544
	Max. H _x	20	24.347	2.744	1.764
	Max. H _z	2	257.803	0.650	25.544
	Min. Vert	15	-208.387	-0.590	-21.536
	Min. H _x	9	17.360	-2.684	1.246
	Min. H _z	15	-208.387	-0.590	-21.536

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	58.689	0.000	0.000	-5.159	-27.793	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	70.426	-0.070	-39.440	-4058.675	-24.438	21.253
0.9 Dead+1.0 Wind 0 deg - No Ice	52.820	-0.070	-39.440	-4057.127	-16.101	21.253
1.2 Dead+1.0 Wind 30 deg - No Ice	70.426	19.853	-34.661	-3553.362	-2063.313	28.362
0.9 Dead+1.0 Wind 30 deg - No Ice	52.820	19.853	-34.661	-3551.815	-2054.975	28.362
1.2 Dead+1.0 Wind 60 deg - No Ice	70.426	35.954	-20.836	-2131.948	-3701.922	20.401
0.9 Dead+1.0 Wind 60 deg - No Ice	52.820	35.954	-20.836	-2130.400	-3693.584	20.401
1.2 Dead+1.0 Wind 90 deg - No Ice	70.426	42.253	0.070	2.722	-4337.413	-0.792
0.9 Dead+1.0 Wind 90 deg - No Ice	52.820	42.253	0.070	4.270	-4329.075	-0.792
1.2 Dead+1.0 Wind 120 deg - No Ice	70.426	36.160	21.035	2146.494	-3730.737	-13.185
0.9 Dead+1.0 Wind 120 deg - No Ice	52.820	36.160	21.035	2148.042	-3722.400	-13.185
1.2 Dead+1.0 Wind 150 deg -	70.426	18.709	32.539	3399.321	-1991.818	-12.738

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265</p>	<p style="text-align: center;">Job</p> <p style="text-align: center;">102920.011.01 - BRG 124 943066, CT (BU# 806353)</p>	<p style="text-align: center;">Page</p> <p style="text-align: center;">27 of 35</p>
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	<p style="text-align: center;">Client</p> <p style="text-align: center;">Crown Castle</p>	<p style="text-align: center;">Designed by</p> <p style="text-align: center;">Jayaraj B</p>

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						
0.9 Dead+1.0 Wind 150 deg - No Ice	52.820	18.709	32.539	3400.869	-1983.480	-12.738
1.2 Dead+1.0 Wind 180 deg - No Ice	70.426	0.070	37.713	3912.767	-42.264	-21.253
0.9 Dead+1.0 Wind 180 deg - No Ice	52.820	0.070	37.713	3914.315	-33.927	-21.253
1.2 Dead+1.0 Wind 210 deg - No Ice	70.426	-19.853	34.661	3540.980	1996.610	-28.362
0.9 Dead+1.0 Wind 210 deg - No Ice	52.820	-19.853	34.661	3542.528	2004.948	-28.362
1.2 Dead+1.0 Wind 240 deg - No Ice	70.426	-37.449	21.699	2186.328	3750.855	-20.401
0.9 Dead+1.0 Wind 240 deg - No Ice	52.820	-37.449	21.699	2187.876	3759.193	-20.401
1.2 Dead+1.0 Wind 270 deg - No Ice	70.426	-42.253	-0.070	-15.104	4270.710	0.792
0.9 Dead+1.0 Wind 270 deg - No Ice	52.820	-42.253	-0.070	-13.557	4279.048	0.792
1.2 Dead+1.0 Wind 300 deg - No Ice	70.426	-34.664	-20.171	-2092.114	3548.399	13.185
0.9 Dead+1.0 Wind 300 deg - No Ice	52.820	-34.664	-20.171	-2090.566	3556.736	13.185
1.2 Dead+1.0 Wind 330 deg - No Ice	70.426	-18.709	-32.539	-3411.703	1925.115	12.738
0.9 Dead+1.0 Wind 330 deg - No Ice	52.820	-18.709	-32.539	-3410.156	1933.453	12.738
1.2 Dead+1.0 Ice+1.0 Temp	126.361	0.000	0.000	-10.784	-78.936	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	126.361	-0.016	-10.721	-1119.307	-77.062	5.509
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	126.361	5.541	-9.680	-1000.954	-645.350	7.818
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	126.361	10.095	-5.857	-605.297	-1103.295	5.472
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	126.361	11.682	0.016	-8.911	-1269.284	-0.111
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	126.361	9.722	5.661	572.239	-1079.650	-3.100
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	126.361	5.199	9.055	936.731	-622.886	-3.491
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	126.361	0.016	10.429	1075.789	-80.809	-5.509
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	126.361	-5.541	9.680	979.386	487.479	-7.818
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	126.361	-10.347	6.003	594.703	964.434	-5.472
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	126.361	-11.682	-0.016	-12.657	1111.413	0.111
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	126.361	-9.470	-5.515	-582.833	902.770	3.100
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	126.361	-5.199	-9.055	-958.300	465.015	3.491
Dead+Wind 0 deg - Service	58.689	-0.020	-11.244	-1152.993	-25.283	5.985
Dead+Wind 30 deg - Service	58.689	5.659	-9.879	-1009.807	-602.757	7.979
Dead+Wind 60 deg - Service	58.689	10.243	-5.936	-607.102	-1066.628	5.732
Dead+Wind 90 deg - Service	58.689	12.036	0.020	-2.649	-1246.476	-0.239
Dead+Wind 120 deg - Service	58.689	10.301	5.992	604.366	-1074.743	-3.727
Dead+Wind 150 deg - Service	58.689	5.337	9.282	959.594	-582.623	-3.595
Dead+Wind 180 deg - Service	58.689	0.020	10.757	1105.071	-30.303	-5.985
Dead+Wind 210 deg - Service	58.689	-5.659	9.879	999.488	547.172	-7.979
Dead+Wind 240 deg - Service	58.689	-10.665	6.179	615.584	1043.608	-5.732

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Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead+Wind 270 deg - Service	58.689	-12.036	-0.020	-7.670	1190.890	0.239
Dead+Wind 300 deg - Service	58.689	-9.880	-5.749	-595.884	986.592	3.727
Dead+Wind 330 deg - Service	58.689	-5.337	-9.282	-969.913	527.037	3.595

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-58.689	0.000	-0.000	58.689	0.000	0.000%
2	-0.070	-70.426	-39.440	0.070	70.426	39.440	0.000%
3	-0.070	-52.820	-39.440	0.070	52.820	39.440	0.000%
4	19.853	-70.426	-34.661	-19.853	70.426	34.661	0.000%
5	19.853	-52.820	-34.661	-19.853	52.820	34.661	0.000%
6	35.954	-70.426	-20.836	-35.954	70.426	20.836	0.000%
7	35.954	-52.820	-20.836	-35.954	52.820	20.836	0.000%
8	42.253	-70.426	0.070	-42.253	70.426	-0.070	0.000%
9	42.253	-52.820	0.070	-42.253	52.820	-0.070	0.000%
10	36.160	-70.426	21.035	-36.160	70.426	-21.035	0.000%
11	36.160	-52.820	21.035	-36.160	52.820	-21.035	0.000%
12	18.709	-70.426	32.539	-18.709	70.426	-32.539	0.000%
13	18.709	-52.820	32.539	-18.709	52.820	-32.539	0.000%
14	0.070	-70.426	37.713	-0.070	70.426	-37.713	0.000%
15	0.070	-52.820	37.713	-0.070	52.820	-37.713	0.000%
16	-19.853	-70.426	34.661	19.853	70.426	-34.661	0.000%
17	-19.853	-52.820	34.661	19.853	52.820	-34.661	0.000%
18	-37.449	-70.426	21.699	37.449	70.426	-21.699	0.000%
19	-37.449	-52.820	21.699	37.449	52.820	-21.699	0.000%
20	-42.253	-70.426	-0.070	42.253	70.426	0.070	0.000%
21	-42.253	-52.820	-0.070	42.253	52.820	0.070	0.000%
22	-34.664	-70.426	-20.171	34.664	70.426	20.171	0.000%
23	-34.664	-52.820	-20.171	34.664	52.820	20.171	0.000%
24	-18.709	-70.426	-32.539	18.709	70.426	32.539	0.000%
25	-18.709	-52.820	-32.539	18.709	52.820	32.539	0.000%
26	0.000	-126.361	0.000	-0.000	126.361	0.000	0.000%
27	-0.016	-126.361	-10.721	0.016	126.361	10.721	0.000%
28	5.541	-126.361	-9.680	-5.541	126.361	9.680	0.000%
29	10.095	-126.361	-5.857	-10.095	126.361	5.857	0.000%
30	11.682	-126.361	0.016	-11.682	126.361	-0.016	0.000%
31	9.722	-126.361	5.661	-9.722	126.361	-5.661	0.000%
32	5.199	-126.361	9.055	-5.199	126.361	-9.055	0.000%
33	0.016	-126.361	10.429	-0.016	126.361	-10.429	0.000%
34	-5.541	-126.361	9.680	5.541	126.361	-9.680	0.000%
35	-10.347	-126.361	6.003	10.347	126.361	-6.003	0.000%
36	-11.682	-126.361	-0.016	11.682	126.361	0.016	0.000%
37	-9.470	-126.361	-5.515	9.470	126.361	5.515	0.000%
38	-5.199	-126.361	-9.055	5.199	126.361	9.055	0.000%
39	-0.020	-58.689	-11.244	0.020	58.689	11.244	0.000%
40	5.659	-58.689	-9.879	-5.659	58.689	9.879	0.000%
41	10.243	-58.689	-5.936	-10.243	58.689	5.936	0.000%
42	12.036	-58.689	0.020	-12.036	58.689	-0.020	0.000%
43	10.301	-58.689	5.992	-10.301	58.689	-5.992	0.000%
44	5.337	-58.689	9.282	-5.337	58.689	-9.282	0.000%
45	0.020	-58.689	10.757	-0.020	58.689	-10.757	0.000%
46	-5.659	-58.689	9.879	5.659	58.689	-9.879	0.000%
47	-10.665	-58.689	6.179	10.665	58.689	-6.179	0.000%
48	-12.036	-58.689	-0.020	12.036	58.689	0.020	0.000%
49	-9.880	-58.689	-5.749	9.880	58.689	5.749	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
50	-5.337	-58.689	-9.282	5.337	58.689	9.282	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 168	5.174	42	0.275	0.031
T2	168 - 160	4.482	42	0.273	0.031
T3	160 - 140	4.026	42	0.262	0.031
T4	140 - 120	2.978	42	0.220	0.027
T5	120 - 100	2.115	42	0.176	0.023
T6	100 - 80	1.437	42	0.134	0.018
T7	80 - 60	0.908	42	0.104	0.013
T8	60 - 40	0.503	42	0.076	0.008
T9	40 - 20	0.224	42	0.047	0.005
T10	20 - 0	0.063	47	0.019	0.003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
178.000	PD10017	42	5.059	0.276	0.031	895206
170.000	MX08FRO665-21 w/ Mount Pipe	42	4.597	0.274	0.031	365622
164.000	(2) RFV01U-D1A	42	4.253	0.268	0.031	67981
154.000	7770.00 w/ Mount Pipe	42	3.695	0.250	0.030	32124
145.000	800 EXTERNAL NOTCH FILTER	42	3.224	0.231	0.028	26648
143.000	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	42	3.125	0.226	0.028	25690
124.000	1142-2C	42	2.272	0.185	0.024	24652
104.000	220-3BN	42	1.559	0.142	0.019	30921
93.000	APXVAARR24_43-U-NA20	42	1.237	0.122	0.016	35235
62.000	GPS_A	42	0.538	0.079	0.009	37642
60.000	(2) 3'x8" Knife Plate	42	0.503	0.076	0.008	37583
42.000	GPS_A	42	0.246	0.050	0.006	41251
31.000	GPS_A	42	0.137	0.034	0.004	40967
20.000	(2) 3'x8" Knife Plate	47	0.063	0.019	0.003	41797

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 168	18.036	8	0.957	0.111
T2	168 - 160	15.639	8	0.948	0.111
T3	160 - 140	14.056	8	0.912	0.110
T4	140 - 120	10.405	8	0.767	0.097

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T5	120 - 100	7.398	19	0.614	0.081
T6	100 - 80	5.033	19	0.469	0.063
T7	80 - 60	3.184	19	0.361	0.045
T8	60 - 40	1.769	19	0.264	0.030
T9	40 - 20	0.791	19	0.165	0.019
T10	20 - 0	0.223	19	0.065	0.009

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
178.000	PD10017	8	17.636	0.958	0.111	343802
170.000	MX08FRO665-21 w/ Mount Pipe	8	16.038	0.952	0.111	133124
164.000	(2) RFV01U-D1A	8	14.843	0.933	0.111	21286
154.000	7770.00 w/ Mount Pipe	8	12.905	0.873	0.107	9613
145.000	800 EXTERNAL NOTCH FILTER	8	11.264	0.806	0.101	7713
143.000	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	8	10.916	0.790	0.099	7397
124.000	1142-2C	19	7.946	0.644	0.084	7052
104.000	220-3BN	19	5.460	0.495	0.067	8836
93.000	APXVAARR24_43-U-NA20	19	4.333	0.427	0.057	10060
62.000	GPS_A	19	1.891	0.274	0.031	10757
60.000	(2) 3'x8" Knife Plate	19	1.769	0.264	0.030	10742
42.000	GPS_A	19	0.870	0.175	0.020	11839
31.000	GPS_A	19	0.485	0.118	0.015	11760
20.000	(2) 3'x8" Knife Plate	19	0.223	0.065	0.009	11994

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	Diagonal	A325N	0.625	1	0.695	7.875	0.088	✓	1.05	Member Block Shear
		Top Girt	A325N	0.625	1	0.185	7.875	0.023	✓	1.05	Member Block Shear
T2	168	Leg	A325N	0.625	4	1.697	20.340	0.083	✓	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	2.870	7.875	0.365	✓	1.05	Member Block Shear
T3	160	Leg	A325N	0.625	4	10.171	20.340	0.500	✓	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	4.317	7.875	0.548	✓	1.05	Member Block Shear
T4	140	Leg	A325N	0.750	4	18.430	30.101	0.612	✓	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	5.269	7.875	0.669	✓	1.05	Member Block Shear
T5	120	Leg	A325N	0.750	4	25.620	30.101	0.851	✓	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	4.963	9.914	0.501	✓	1.05	Member Block Shear

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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
T6	100	Leg	A490N	0.875	4	32.203	51.945	0.620 ✓	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	5.797	9.914	0.585 ✓	1.05	Member Block Shear
T7	80	Leg	A325N	0.875	4	38.203	41.556	0.919 ✓	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	6.755	10.934	0.618 ✓	1.05	Member Block Shear
T8	60	Leg	A325N	1.000	4	44.403	54.517	0.814 ✓	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	7.188	13.806	0.521 ✓	1.05	Bolt Shear
T9	40	Leg	A325N	1.000	4	50.087	54.517	0.919 ✓	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	8.326	13.806	0.603 ✓	1.05	Bolt Shear
		Secondary Horizontal	A325N	0.500	1	4.141	8.836	0.469 ✓	1.05	Bolt Shear
T10	20	Diagonal	A325N	0.625	1	8.539	13.806	0.619 ✓	1.05	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
T1	180 - 168	P2x0.154	12.000	4.000	61.0 K=1.00	1.075	-3.050	27.981	0.109 ¹ ✓
T2	168 - 160	P2x0.154 (GR)	8.000	4.000	61.0 K=1.00	1.075	-12.062	38.430	0.314 ¹ ✓
T3	160 - 140	P3x0.216 (GR)	20.033	5.008	51.7 K=1.00	2.228	-53.248	87.013	0.612 ¹ ✓
T4	140 - 120	P3.5x.318 (GR)	20.033	6.678	61.3 K=1.00	3.678	-90.676	122.133	0.742 ¹ ✓
T5	120 - 100	P4x.337 (GR)	20.033	6.678	54.3 K=1.00	4.407	-122.864	157.190	0.782 ¹ ✓
T6	100 - 80	P5x0.375 (GR)	20.033	6.678	43.6 K=1.00	6.112	-154.896	242.300	0.639 ¹ ✓
T7	80 - 60	P6x0.432	20.033	10.017	54.8 K=1.00	8.405	-182.112	227.081	0.802 ¹ ✓
T8	60 - 40	P6x0.432	20.033	10.017	54.8 K=1.00	8.405	-211.110	227.081	0.930 ¹ ✓
T9	40 - 20	P6x0.432	20.033	5.151	28.2 K=1.00	8.405	-238.772	254.222	0.939 ¹ ✓
T10	20 - 0	P8x.5	20.033	10.017	41.8 K=1.00	12.763	-267.094	367.690	0.726 ¹ ✓

¹ P_u / φP_n controls

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	Client Crown Castle	Designed by Jayaraj B

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 - 168	L2x1 1/2x3/16	5.657	2.543	101.1 K=1.07	0.621	-0.803	15.177	0.053 ¹ ✓
T2	168 - 160	L2x1 1/2x3/16	5.657	2.543	101.1 K=1.07	0.621	-3.027	15.177	0.199 ¹ ✓
T3	160 - 140	L2x1 1/2x3/16	7.621	3.637	135.6 K=1.00	0.621	-4.416	9.673	0.457 ¹ ✓
T4	140 - 120	L2x2x3/16	10.162	4.935	150.3 K=1.00	0.715	-4.917	9.058	0.543 ¹ ✓
T5	120 - 100	L2 1/2x2x3/16	11.744	5.701	160.2 K=1.00	0.809	-5.020	9.021	0.556 ¹ ✓
T6	100 - 80	L2 1/2x2 1/2x3/16	13.438	6.498	157.5 K=1.00	0.902	-5.761	10.403	0.554 ¹ ✓
T7	80 - 60	L3x3x3/16	16.803	8.223	165.6 K=1.00	1.090	-6.800	11.381	0.597 ¹ ✓
T8	60 - 40	L3 1/2x3x1/4	18.448	9.047	172.1 K=1.00	1.560	-7.188	15.083	0.477 ¹ ✓
T9	40 - 20	L3 1/2x3x1/4	20.158	10.049	191.1 K=1.00	1.560	-8.326	12.226	0.681 ¹ ✓
T10	20 - 0	L3 1/2x3 1/2x1/4	21.916	10.690	184.8 K=1.00	1.690	-8.539	14.159	0.603 ¹ ✓

¹ P_u / φP_n controls

Secondary Horizontal 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 $\frac{P_u}{\phi P_n}$
T9	40 - 20	L3 1/2x3 1/2x1/4	17.486	8.467	146.4 K=1.00	1.690	-4.141	22.568	0.183 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 - 168	L2x1 1/2x3/16	4.000	3.510	130.8 K=1.00	0.621	-0.143	10.385	0.014 ¹ ✓

tnxTower B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job 102920.011.01 - BRG 124 943066, CT (BU# 806353)	Page 33 of 35
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	Client Crown Castle	Designed by Jayaraj B

¹ $P_u / \phi P_n$ 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 - 168	P2x0.154	12.000	4.000	61.0	1.075	1.670	33.848	0.049 ¹
T2	168 - 160	P2x0.154 (GR)	8.000	4.000	61.0	1.075	6.787	33.848	0.201 ¹
T3	160 - 140	P3x0.216 (GR)	20.033	5.008	51.7	2.228	40.682	70.197	0.580 ¹
T4	140 - 120	P3.5x.318 (GR)	20.033	6.678	61.3	3.678	73.720	115.870	0.636 ¹
T5	120 - 100	P4x.337 (GR)	20.033	6.678	54.3	4.407	102.479	138.834	0.738 ¹
T6	100 - 80	P5x0.375 (GR)	20.033	6.678	43.6	6.112	128.813	192.527	0.669 ¹
T7	80 - 60	P6x0.432	20.033	10.017	54.8	8.405	152.811	264.756	0.577 ¹
T8	60 - 40	P6x0.432	20.033	10.017	54.8	8.405	177.613	264.756	0.671 ¹
T9	40 - 20	P6x0.432	20.033	4.865	26.6	8.405	200.524	264.756	0.757 ¹
T10	20 - 0	P8x.5	20.033	10.017	41.8	12.763	223.041	402.026	0.555 ¹

¹ $P_u / \phi P_n$ 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 - 168	L2x1 1/2x3/16	5.657	2.543	73.4	0.360	0.695	15.675	0.044 ¹
T2	168 - 160	L2x1 1/2x3/16	5.657	2.543	73.4	0.360	2.870	15.675	0.183 ¹
T3	160 - 140	L2x1 1/2x3/16	7.621	3.637	103.3	0.360	4.317	15.675	0.275 ¹
T4	140 - 120	L2x2x3/16	9.197	4.474	89.9	0.431	5.269	18.739	0.281 ¹
T5	120 - 100	L2 1/2x2x3/16	11.744	5.701	117.0	0.501	4.963	21.806	0.228 ¹
T6	100 - 80	L2 1/2x2 1/2x3/16	13.438	6.498	102.5	0.571	5.797	24.840	0.233 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T7	80 - 60	L3x3x3/16	16.803	8.223	107.0	0.712	6.755	30.973	0.218 ¹
T8	60 - 40	L3 1/2x3x1/4	18.448	9.047	120.8	1.029	7.123	44.778	0.159 ¹
T9	40 - 20	L3 1/2x3x1/4	20.158	10.049	132.1	1.029	7.427	44.778	0.166 ¹
T10	20 - 0	L3 1/2x3 1/2x1/4	21.916	10.690	119.3	1.127	7.910	49.019	0.161 ¹

¹ P_u / φP_n controls

Secondary Horizontal 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 $\frac{P_u}{\phi P_n}$
T9	40 - 20	L3 1/2x3 1/2x1/4	16.485	7.966	175.4	1.150	4.141	50.039	0.083 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 - 168	L2x1 1/2x3/16	4.000	3.510	103.8	0.360	0.185	15.675	0.012 ¹

¹ P_u / φP_n controls

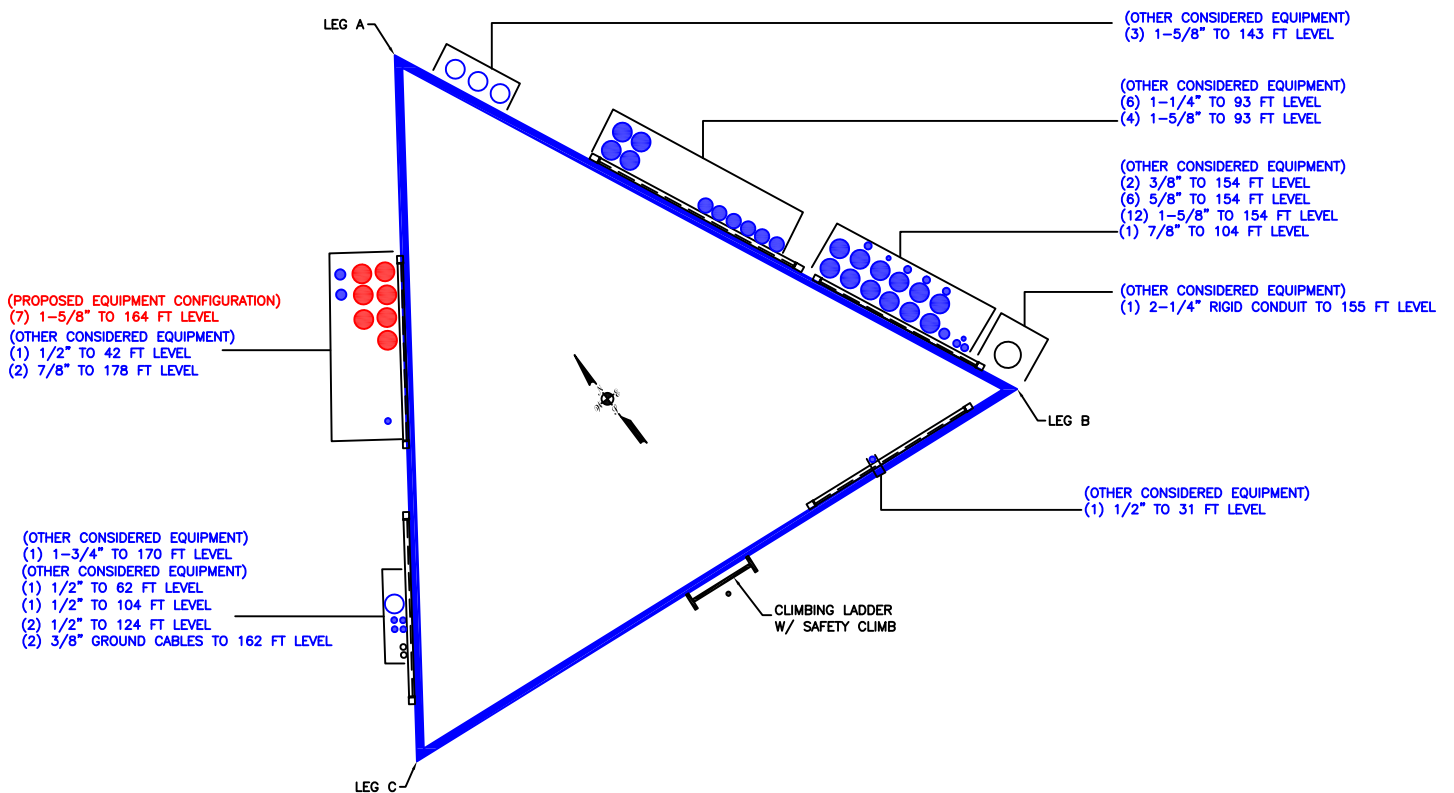
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	φP _{allow} K	% Capacity	Pass Fail
T1	180 - 168	Leg	P2x0.154	2	-3.050	29.380	10.4	Pass
T2	168 - 160	Leg	P2x0.154 (GR)	26	-12.062	40.351	29.9	Pass
T3	160 - 140	Leg	P3x0.216 (GR)	41	-53.248	91.364	58.3	Pass
T4	140 - 120	Leg	P3.5x.318 (GR)	68	-90.676	128.240	70.7	Pass
T5	120 - 100	Leg	P4x.337 (GR)	89	-122.864	165.049	74.4	Pass
T6	100 - 80	Leg	P5x0.375 (GR)	109	128.813	202.153	63.7	Pass
T7	80 - 60	Leg	P6x0.432	131	-182.112	238.435	76.4	Pass
T8	60 - 40	Leg	P6x0.432	145	-211.110	238.435	88.5	Pass
T9	40 - 20	Leg	P6x0.432	160	-238.772	266.933	89.5	Pass
T10	20 - 0	Leg	P8x.5	181	-267.094	386.074	69.2	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
T1	180 - 168	Diagonal	L2x1 1/2x3/16	10	-0.803	15.935	5.0	Pass	
T2	168 - 160	Diagonal	L2x1 1/2x3/16	30	-3.027	15.935	19.0	Pass	
T3	160 - 140	Diagonal	L2x1 1/2x3/16	46	-4.416	10.157	43.5	Pass	
T4	140 - 120	Diagonal	L2x2x3/16	70	-4.917	9.511	51.7	Pass	
T5	120 - 100	Diagonal	L2 1/2x2x3/16	91	-5.020	9.472	53.0	Pass	
T6	100 - 80	Diagonal	L2 1/2x2 1/2x3/16	112	-5.761	10.923	52.7	Pass	
T7	80 - 60	Diagonal	L3x3x3/16	133	-6.800	11.950	56.9	Pass	
T8	60 - 40	Diagonal	L3 1/2x3x1/4	148	-7.188	15.837	45.4	Pass	
T9	40 - 20	Diagonal	L3 1/2x3x1/4	163	-8.326	12.837	64.9	Pass	
T10	20 - 0	Diagonal	L3 1/2x3 1/2x1/4	184	-8.539	14.867	57.4	Pass	
T9	40 - 20	Secondary Horizontal	L3 1/2x3 1/2x1/4	171	-4.141	23.697	17.5	Pass	
T1	180 - 168	Top Girt	L2x1 1/2x3/16	6	-0.143	10.904	1.3	Pass	
							Summary		
							Leg (T9)	89.5	Pass
							Diagonal (T9)	64.9	Pass
							Secondary Horizontal (T9)	17.5	Pass
							Top Girt (T1)	1.3	Pass
							Bolt Checks	87.6	Pass
							RATING =	89.5	Pass

APPENDIX B
BASE LEVEL DRAWING



BUSINESS UNIT: 806353

APPENDIX C
ADDITIONAL CALCULATIONS

Self Support Anchor Rod Capacity

Site Info	
BU #	806353
Site Name	BRG 124 943066, CT
Order #	606853 Rev# 0

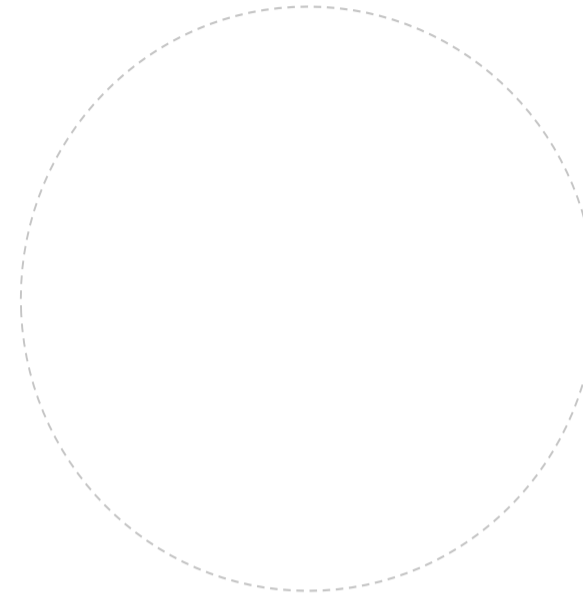
Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	Yes
l_{ar} (in)	0

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	258.00	229.00
Shear Force (kips)	26.00	24.00

*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	Analysis Results
-----------------------	------------------

Anchor Rod Data
(6) 1-1/2" ϕ bolts (A36 N; Fy=36 ksi, Fu=58 ksi)
l_{ar} (in): 0

Anchor Rod Summary		(units of kips, kip-in)
$Pu_t = 38.17$	$\phi Pn_t = 61.34$	Stress Rating
$Vu = 4$	$\phi Vn = 38.44$	59.3%
$Mu = n/a$	$\phi Mn = n/a$	Pass

Drilled Pier Foundation

BU # :	806353
Site Name:	BRG 124 943066, CT
Order Number:	606853,Rev# 0
TIA-222 Revision:	H
Tower Type:	Self Support



Applied Loads		
	Comp.	Uplift
Moment (kip-ft)		
Axial Force (kips)	274	229
Shear Force (kips)	28	24

Material Properties		
Concrete Strength, f _c :	3	ksi
Rebar Strength, F _y :	60	ksi
Tie Yield Strength, F _{yt} :	40	ksi

Pier Design Data		
Depth	13.2	ft
Ext. Above Grade	0.3	ft
Pier Section 1		
<i>From 0.3' above grade to 13.2' below grade</i>		
Pier Diameter	2.5	ft
Rebar Quantity	14	
Rebar Size	8	
Clear Cover to Ties	4	in
Tie Size	4	
Tie Spacing	16	in

Rebar 2, F_y Override (ksi)

Rebar 3, F_y Override (ksi)

[Rebar & Pier Options](#)

[Embedded Pole Inputs](#)

[Belled Pier Inputs](#)

Analysis Results

Soil Lateral Check	Compression	Uplift
D _{v=0} (ft from TOC)	7.52	7.52
Soil Safety Factor	7.47	8.71
Max Moment (kip-ft)	191.60	164.23
Rating*	17.0%	14.5%

Soil Vertical Check	Compression	Uplift
Skin Friction (kips)	191.24	191.24
End Bearing (kips)	206.28	-
Weight of Concrete (kips)	11.93	8.95
Total Capacity (kips)	397.52	267.34
Axial (kips)	375.46	229.00
Rating*	90.0%	81.6%

Reinforced Concrete Flexure	Compression	Uplift
Critical Depth (ft from TOC)	7.53	7.14
Critical Moment (kip-ft)	191.60	162.92
Critical Moment Capacity	505.91	353.37
Rating*	36.1%	43.9%

Reinforced Concrete Shear	Compression	Uplift
Critical Depth (ft from TOC)	10.51	10.51
Critical Shear (kip)	64.07	54.92
Critical Shear Capacity	127.00	52.52
Rating*	48.1%	99.6%

Tie Spacing Requirements Not Met

Structural Foundation Rating*	99.6%
Soil Interaction Rating*	90.0%

*Rating per TIA-222-H Section 15.5

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

[Go to Soil Calculations](#)

Soil Profile			
Groundwater Depth	N/A	# of Layers	3

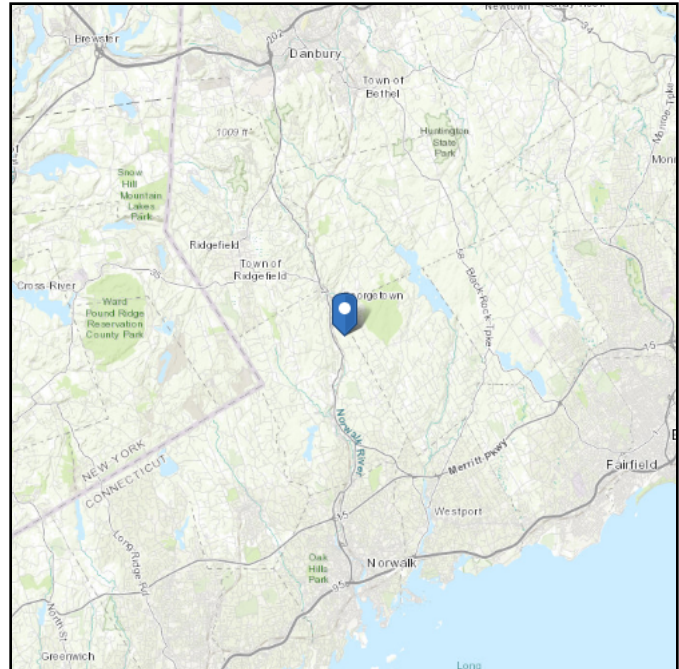
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ _{soil} (pcf)	γ _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	5	5	110	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	5	6	1	110	150	0	30	0.000	0.000	0.77	0.77			Cohesionless
3	6	13.2	7.2	140	150	8	0	3.600	3.600	4.40	4.40	56.03		Cohesive

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 427.44 ft (NAVD 88)
Latitude: 41.238528
Longitude: -73.424139



Wind

Results:

Wind Speed	116 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Fri Feb 25 2022

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

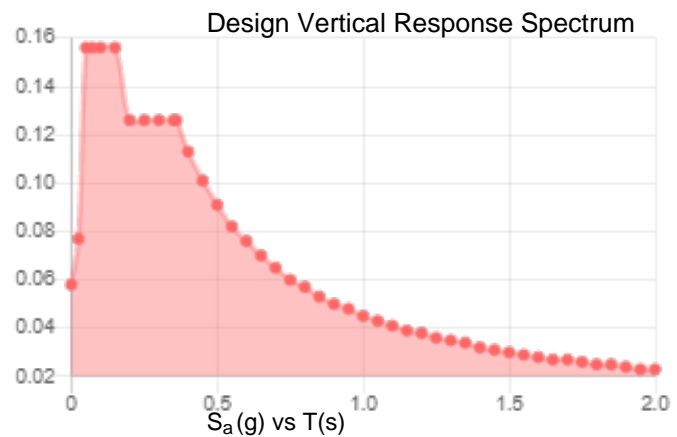
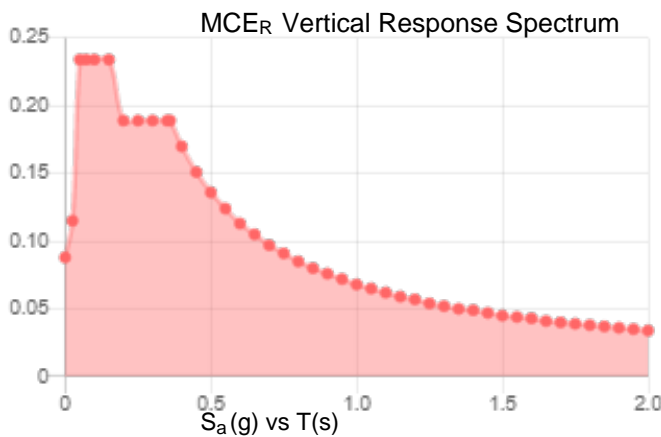
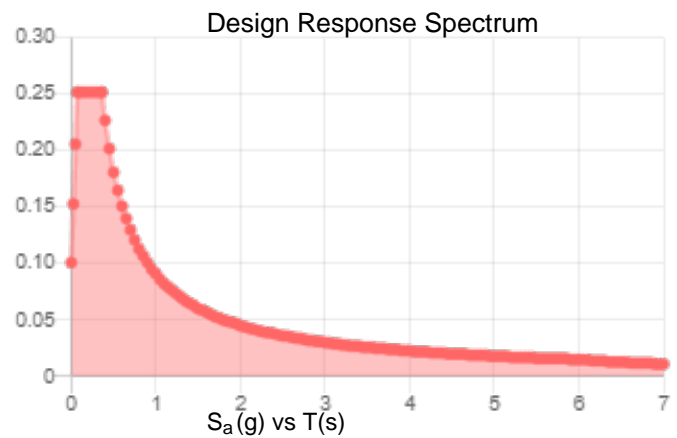
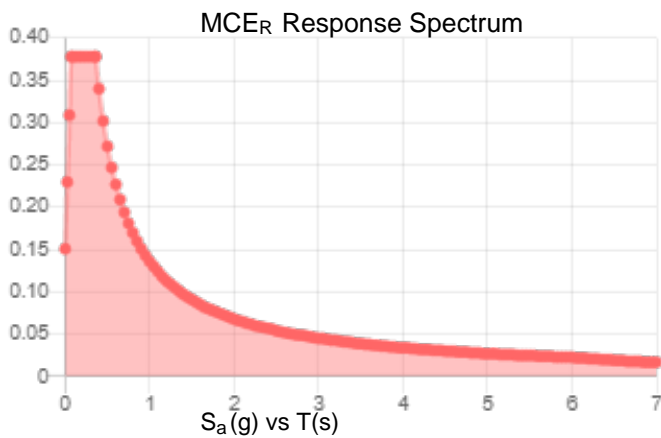
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Stiff Soil

Results:

S_s :	0.236	S_{D1} :	0.091
S_1 :	0.057	T_L :	6
F_a :	1.6	PGA :	0.139
F_v :	2.4	PGA _M :	0.211
S_{MS} :	0.378	F_{PGA} :	1.523
S_{M1} :	0.136	I_e :	1
S_{DS} :	0.252	C_v :	0.773

Seismic Design Category B



Data Accessed: Fri Feb 25 2022

Date Source:

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

Ice

Results:

Ice Thickness: 1.00 in.

Concurrent Temperature: 15 F

Gust Speed 50 mph

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

Date Accessed: Fri Feb 25 2022

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 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.

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

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Exhibit E

Mount Analysis



Maser Consulting Connecticut
2000 Midlantic Drive, Suite 100
Mt. Laurel, NJ 08054
(856) 797-0412
peter.albano@colliersengineering.com

Antenna Mount Analysis Report and PMI Requirements

Mount Analysis

SMART Tool Project #: 10039584
Maser Consulting Connecticut Project #: 21777141A

May 12, 2021

Site Information

Site ID: 467241-VZW / WILTON CT
Site Name: WILTON CT
Carrier Name: Verizon Wireless
Address: 128 Mather Rd.
Wilton, Connecticut 06897
Fairfield County
Latitude: 41.238426°
Longitude: -73.424011°

Structure Information

Tower Type: 180-Ft Self Support
Mount Type: 17.42-Ft Sector Frame

FUZE ID # 16272216

Analysis Results

Sector Frame: **100.7%* ACCEPTABLE**

*Capacities up to 105% are within engineering tolerance and considered acceptable.

Report Prepared By: Ella Khosravi



Executive Summary:

The objective of this report is to determine the capacity of the antenna support mount at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

This analysis is inclusive of the mount structure only and does not address the structural capacity of the supporting structure. This mounting frame was not analyzed as an anchor attachment point for fall protection. All climbing activities are required to have a fall protection plan completed by a competent person.

Sources of Information:

Document Type	Remarks
Radio Frequency Data Sheet (RFDS)	Verizon RFDS Site ID: 325157, dated February 10, 2021
Mount Mapping Report	Hudson Design Group LLC., Site ID: 467241, dated March 23, 2021

Analysis Criteria:

Codes and Standards:	ANSI/TIA-222-H
Wind Parameters:	Basic Wind Speed (Ultimate 3-sec. Gust), V_{ULT} : 116 mph Ice Wind Speed (3-sec. Gust): 50 mph Design Ice Thickness: 1.00 in Risk Category: II Exposure Category: B Topographic Category: 1 Topographic Feature Considered: N/A Topographic Method: N/A Ground Elevation Factor, K_e : 0.985
Seismic Parameters:	S_s : 0.236 S_1 : 0.057
Maintenance Parameters:	Wind Speed (3-sec. Gust): 30 mph Maintenance Live Load, L_v : 250 lbs. Maintenance Live Load, L_m : 500 lbs.
Analysis Software:	RISA-3D (V17)

Final Loading Configuration:

The following equipment has been considered for the analysis of the mount:

Mount Elevation (ft)	Equipment Elevation (ft)	Quantity	Manufacturer	Model	Status
160.00	162.00	3	Samsung	MT6407-77A	Added
		6	Commscope	JAHH-65B-R3B	Retained
		6	RFS	APL868013	
		3	Samsung	CBRS RRH-RT4401-48A	
		3	Samsung	B2/B66A RRH-BR049	
		3	Samsung	B5/B13 RRH-BR04C	
		3	Commscope	CBC78T-DS-43	
		2	Raycap	RRFDC-3315-PF-48	

Standard Conditions:

1. All engineering services are performed on the basis that the information provided to Maser Consulting and used in this analysis is current and correct. The existing equipment loading has been applied at locations determined from the supplied documentation. Any deviation from the loading locations specified in this report shall be communicated to Maser Consulting to verify deviation will not adversely impact the analysis.
2. Mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer’s specifications.

Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping and reported in the Mount Mapping Report are assumed to be corrected and documented as part of the PMI process and are not considered in the mount analysis.

The mount analysis and the mount mapping are not a condition assessment of the mount. Proper maintenance and condition assessments are still required post analysis.

3. For mount analyses completed from other data sources (including new replacement mounts) and not specifically mapped by Maser Consulting Connecticut, the mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer’s specifications.
4. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
5. The mount was checked up to, and including, the bolts that fasten it to the mount collar/attachment and threaded rod connections in collar members if applicable. Local deformation and interaction between the mount collar/attachment and the supporting tower structure are outside the scope of this analysis.
6. All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Maser Consulting Connecticut is not responsible for the conclusion, opinions, and recommendations made by others based on the information supplied.

7. Structural Steel Grades have been assumed as follows, if applicable, unless otherwise noted in this analysis:
- Channel, Solid Round, Angle, Plate ASTM A36 (Gr. 36)
 - HSS (Rectangular) ASTM 500 (Gr. B-46)
 - Pipe ASTM A53 (Gr. B-35)
 - Threaded Rod F1554 (Gr. 36)
 - Bolts ASTM A325

Discrepancies between in-field conditions and the assumptions listed above may render this analysis invalid unless explicitly approved by Maser Consulting Connecticut.

Analysis Results:

Component	Utilization %	Pass/Fail
<i>Face Horizontal</i>	<i>76.9 %</i>	<i>Pass</i>
<i>Antenna Pipe</i>	<i>57.7 %</i>	<i>Pass</i>
<i>Connection Beam</i>	<i>29.3 %</i>	<i>Pass</i>
<i>Connection Pipe</i>	<i>32.7 %</i>	<i>Pass</i>
<i>Standoff Diagonal</i>	<i>10.8 %</i>	<i>Pass</i>
<i>Standoff Connection</i>	<i>100.7 %</i>	<i>Acceptable*</i>
<i>Standoff Horizontal</i>	<i>15.0 %</i>	<i>Pass</i>
<i>Tie Back</i>	<i>25.5 %</i>	<i>Pass</i>
<i>Connection Check</i>	<i>89.8 %</i>	<i>Pass</i>

Structure Rating – (Controlling Utilization of all Components)	100.7%
---	---------------

*Capacities up to 105% are within engineering tolerance and considered acceptable.

Recommendation:


The existing mount is **SUFFICIENT** for the final loading. The following modification will be required prior to any installation:

ANSI/ASSP rigging plan review services compliant with the requirements of ANSI/TIA 322 are available for a Construction Class IV site or other, if required. Separate review fees will apply.

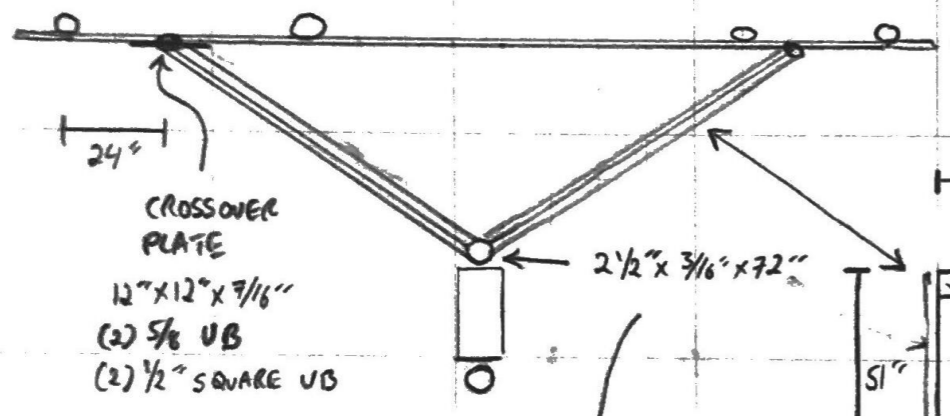
Attachments:

1. Mount Photos
2. Mount Mapping Report (for reference only)
3. Analysis Calculations
4. **Contractor Required Post Installation Inspection (PMI) Report Deliverables**
5. Antenna Placement Diagrams
6. TIA Adoption and Wind Speed Usage Letter

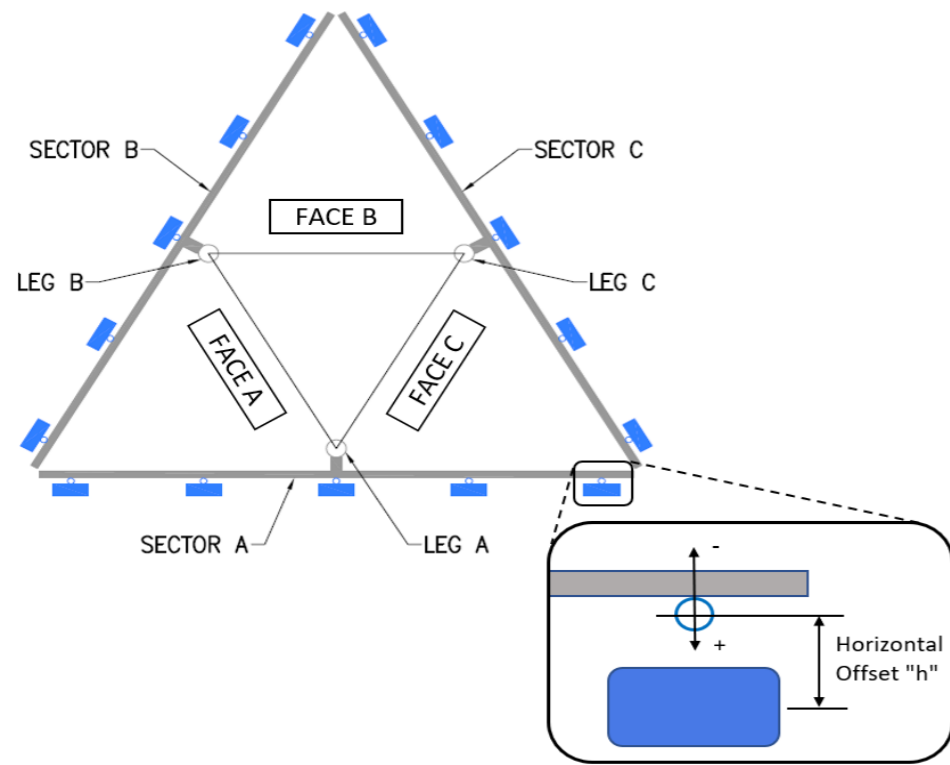


	Antenna Mount Mapping Form (PATENT PENDING)			FCC #
	Tower Owner:	CROWN CASTLE	Mapping Date:	3/23/2021
	Site Name:	WILTON CT	Tower Type:	Self Support
	Site Number or ID:	467241	Tower Height (Ft.):	180
Mapping Contractor:	HUDSON DESIGN GROUP, LLC.	Mount Elevation (Ft.):	162	

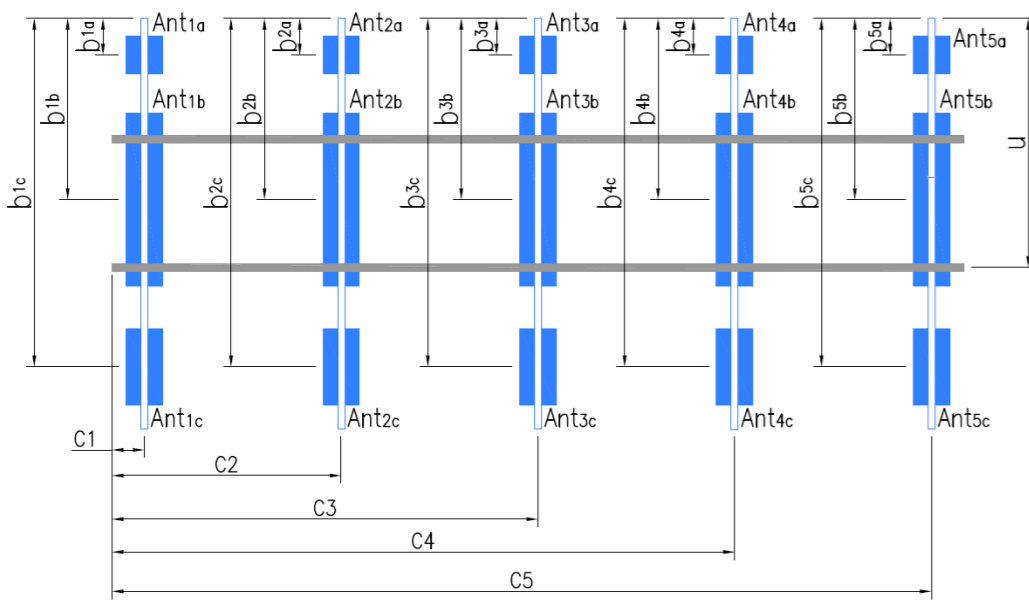
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Mount Pipe Configuration and Geometries [Unit = Inches]							
Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "u"	Horizontal Offset "C1, C2, C3, etc."	Sector / Position	Mount Pipe Size & Length	Vertical Offset Dimension "u"	Horizontal Offset "C1, C2, C3, etc."
A1	2" STD. PIPE X 72" LONG	61.00	12.00	C1	2" STD. PIPE X 72" LONG	61.00	12.00
A2	3-1/2" Ø X 3/8" THK. X 96" LONG	73.00	67.00	C2	3-1/2" Ø X 3/8" THK. X 96" LONG	73.00	67.00
A3	2" STD. PIPE X 72" LONG	60.00	173.00	C3	2" STD. PIPE X 72" LONG	60.00	173.00
A4	2" STD. PIPE X 72" LONG	61.00	197.00	C4	2" STD. PIPE X 72" LONG	61.00	197.00
A5				C5			
A6				C6			
B1	2" STD. PIPE X 72" LONG	61.00	12.00	D1			
B2	3-1/2" Ø X 3/8" THK. X 96" LONG	73.00	67.00	D2			
B3	2" STD. PIPE X 72" LONG	60.00	173.00	D3			
B4	2" STD. PIPE X 72" LONG	61.00	197.00	D4			
B5				D5			
B6				D6			
Distance between bottom rail and mount CL elevation (dim d). Unit is inches. See 'Mount Elev Ref' tab for details. :							51.00
Distance from top of bottom support rail to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.) :							40
Distance from top of bottom support rail to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.) :							20
Please enter additional information or comments below.							
MAST 6 INFO WILL BE LOCATED IN STANDOFF COLUMNS							
Tower Face Width at Mount Elev. (ft.): 3.791 Tower Leg Size or Pole Shaft Diameter at Mount Elev. (in.): 2.5							

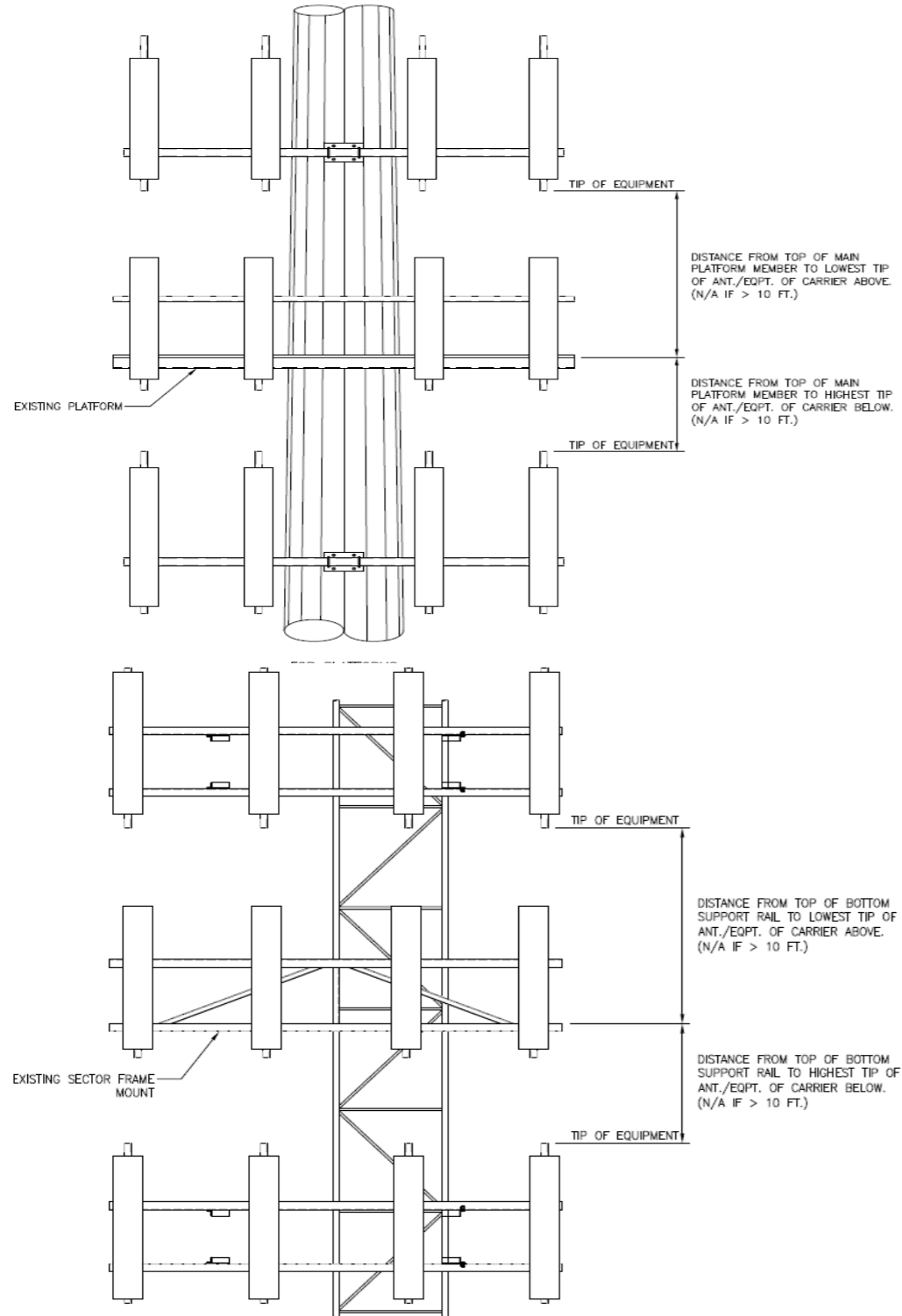


Enter antenna model. If not labeled, enter "Unknown".							Mounting Locations [Units are inches and degrees]			Photos of antennas
Ants. Items	Antenna Models if Known	Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	Antenna Center-line (Ft.)	Vertical Distances "b _{1a} , b _{2a} , b _{3a} , b _{1b} ..." (Inches)	Horiz. Offset "h" (Use "-" if Ant. is behind)	Antenna Azimuth (Degrees)	Photo Numbers
Sector A										
Ant _{1a}										
Ant _{1b}	UNKNOWN ANTENNA	6.00	8.00	48.00		160.667	26.00	9.50	330.00	53
Ant _{1c}										
Ant _{2a}	RFV0U1-D2A	16.00	10.00	16.00		160.667	38.00	-9.50		53,92
Ant _{2b}	(2) JAHH-65B-R3B	14.00	8.50	73.00		160.833	36.00	14.00	0.00	53,100
Ant _{2c}	CBC78T-DS-43-DC	7.00	10.00	7.00		157.083	81.00	-9.00		98,99
Ant _{3a}										
Ant _{3b}	RT4401-48A	8.50	8.00	15.00		160.583	26.00	9.50	0.00	95,96
Ant _{3c}										
Ant _{4a}										
Ant _{4b}	UNKNOWN ANTENNA	6.00	8.00	48.00		160.667	26.00	9.50	330.00	57
Ant _{4c}										
Ant _{5a}										
Ant _{5b}										
Ant _{5c}										
Ant on Standoff	RFV0U1-D1A	16.00	12.00	16.00			31.00	-9.00		53,80
Ant on Standoff										
Ant on Tower	(2) RRFDC-3315-PF-48	15.00	10.00	28.00						107-110
Ant on Tower										



Antenna Layout (Looking Out From Tower)

Mount Azimuth (Degree) for Each Sector			Tower Leg Azimuth (Degree) for Each Sector			Sector B												
Sector A:	330.00	Deg	Leg A:	23.00	Deg	Ant _{1a}												
Sector B:	80.00	Deg	Leg B:	143.00	Deg	Ant _{1b}	UNKNOWN ANTENNA	6.00	8.00	48.00		160.667	26.00	9.50	80.00	58		
Sector C:	200.00	Deg	Leg C:	263.00	Deg	Ant _{1c}												
Sector D:		Deg	Leg D:		Deg	Ant _{2a}	RFV0U1-D2A	16.00	10.00	16.00		160.667	38.00	-9.50		58,92		
Climbing Facility Information						Ant _{2b}	(2) JAHH-65B-R3B	14.00	8.50	73.00		160.833	36.00	14.00	130.00	58,100		
Location:	203.00	Deg	Outside Face C			Ant _{2c}	CBC78T-DS-43-DC	7.00	10.00	7.00		157.083	81.00	-9.00		98,99		
Climbing Facility	Corrosion Type:		Good condition.			Ant _{3a}												
	Access:		Climbing path was unobstructed.			Ant _{3b}	RT4401-48A	8.50	8.00	15.00		160.583	26.00	9.50	130.00	59,95,96		
	Condition:		Good condition.			Ant _{3c}												



Ant _{4a}																		
Ant _{4b}	UNKNOWN ANTENNA	6.00	8.00	48.00		160.667	26.00	9.50	80.00	59								
Ant _{4c}																		
Ant _{5a}																		
Ant _{5b}																		
Ant _{5c}																		
Ant on Standoff	RFV0U1-D1A	16.00	12.00	16.00			31.00	-9.00		58,80								
Ant on Standoff																		
Ant on Tower																		
Ant on Tower																		

Sector C																		
Ant _{1a}																		
Ant _{1b}	UNKNOWN ANTENNA	6.00	8.00	48.00		160.667	26.00	9.50	215.00	60								
Ant _{1c}																		
Ant _{2a}	RFV0U1-D2A	16.00	10.00	16.00		160.667	38.00	-9.50		60,92								
Ant _{2b}	(2) JAHH-65B-R3B	14.00	8.50	73.00		160.833	36.00	14.00	230.00	60,100								
Ant _{2c}	CBC78T-DS-43-DC	7.00	10.00	7.00		157.083	81.00	-9.00		98,99								
Ant _{3a}																		
Ant _{3b}	RT4401-48A	8.50	8.00	15.00		160.583	26.00	9.50	230.00	95,96								
Ant _{3c}																		
Ant _{4a}																		
Ant _{4b}	UNKNOWN ANTENNA	6.00	8.00	48.00		160.667	26.00	9.50	215.00	63								
Ant _{4c}																		
Ant _{5a}																		
Ant _{5b}																		
Ant _{5c}																		
Ant on Standoff	RFV0U1-D1A	16.00	12.00	16.00			31.00	-9.00		60,80								
Ant on Standoff																		
Ant on Tower																		
Ant on Tower																		

Sector D																		
Ant _{1a}																		
Ant _{1b}																		
Ant _{1c}																		
Ant _{2a}																		
Ant _{2b}																		
Ant _{2c}																		
Ant _{3a}																		
Ant _{3b}																		
Ant _{3c}																		
Ant _{4a}																		
Ant _{4b}																		
Ant _{4c}																		
Ant _{5a}																		
Ant _{5b}																		
Ant _{5c}																		
Ant on Standoff																		
Ant on Standoff																		
Ant on Tower																		
Ant on Tower																		

Observed Safety and Structural Issues During the Mount Mapping		
Issue #	Description of Issue	Photo #

1		
2	(6) 1-5/8"Ø COAX, (6) 1-1/4"Ø COAX, (2) 1-1/4"Ø HYBRID	164-166
3		
4		
5		
6		
7		
8		

Mapping Notes

1. Please report any visible structural or safety issues observed on the antenna mounts (Damaged members, loose connections, tilting mounts, safety climb issues, etc.)
2. If the thickness of the existing pipes or tubing can't be obtained from a general tool (such as Caliper), please use an ultrasonic measurement tool (thickness gauge) to measure the thickness.
3. Please create all required detail sketches of the mounts and insert them into the "Sketches" tab.
4. Please measure and enter the bolt sizes and types under the Members Box in the spreadsheet of the mount type.
5. Take and label the photos of the tower, mounts, connections, antennas and all measurements. Minimum 50 photos are required.
6. Please measure and report the size and length of all existing antenna mounting pipes.
7. Please measure and report the antenna information for all sectors.
8. Don't delete or rearrange any sheet or contents of any sheet from this mapping form.

Standard Conditions

1. Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping are to be reported in this mapping. However, this mount mapping is not a condition assessment of the mount.



Antenna Mount Mapping Form (PATENT PENDING)

FCC #

Tower Owner:	CROWN CASTLE	Mapping Date:	3/23/2021
Site Name:	WILTON CT	Tower Type:	Self Support
Site Number or ID:	467241	Tower Height (Ft.):	180
Mapping Contractor:	HUDSON DESIGN GROUP, LLC.	Mount Elevation (Ft.):	162

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Please Insert Sketches of the Antenna Mount

DATE: 03232021

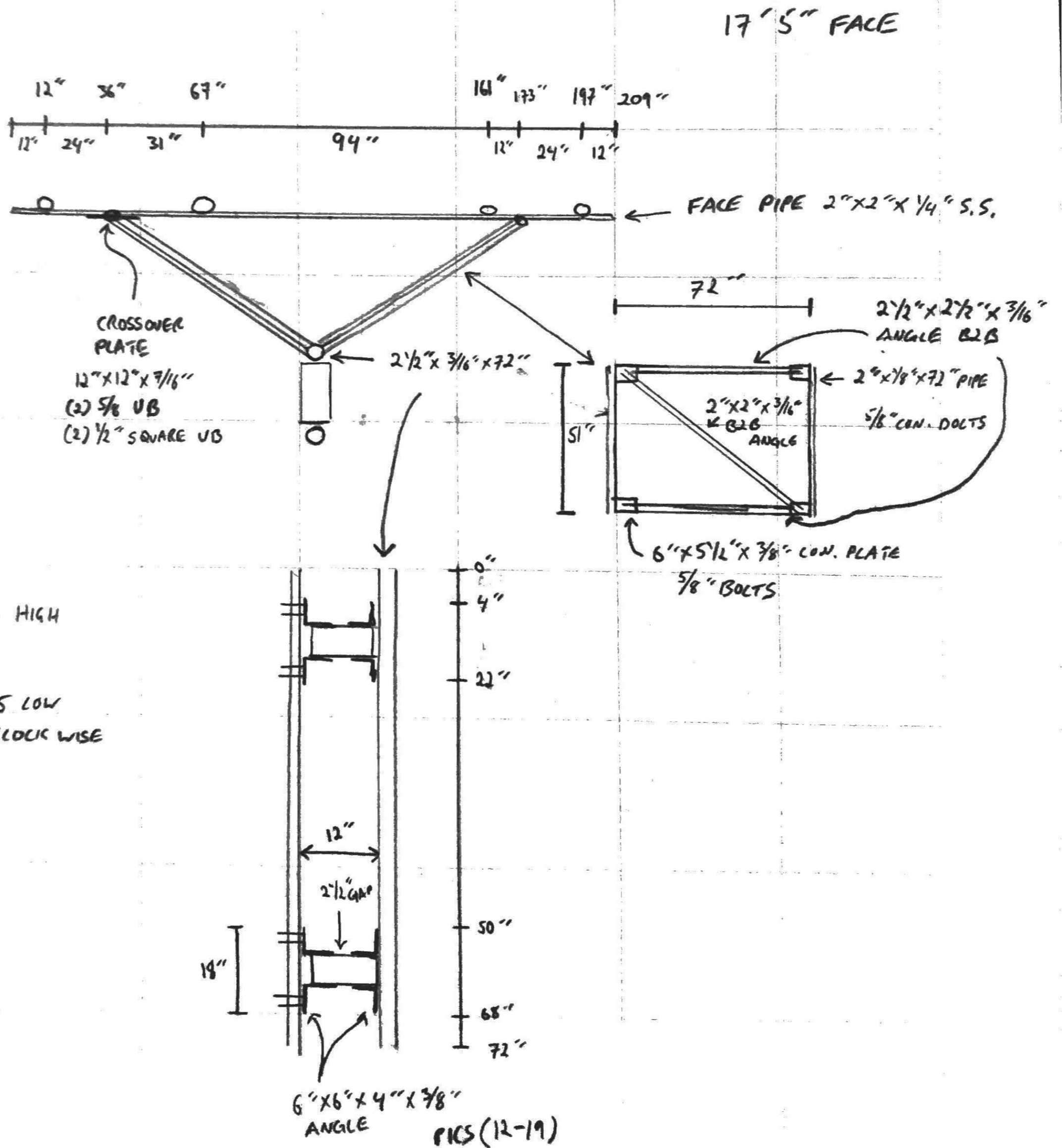
Project Name: _____

Project No.: WILTON CT

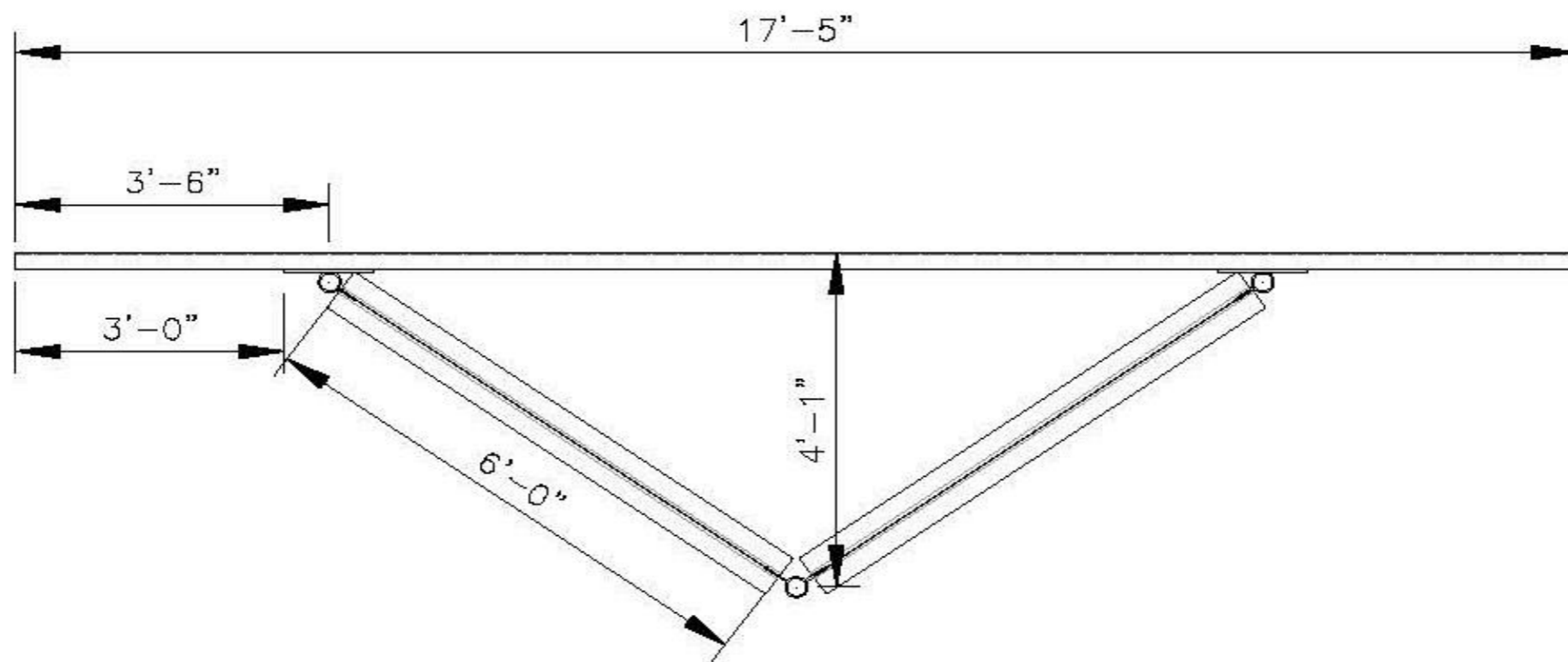
Design By: [Signature] Chk'd By: _____

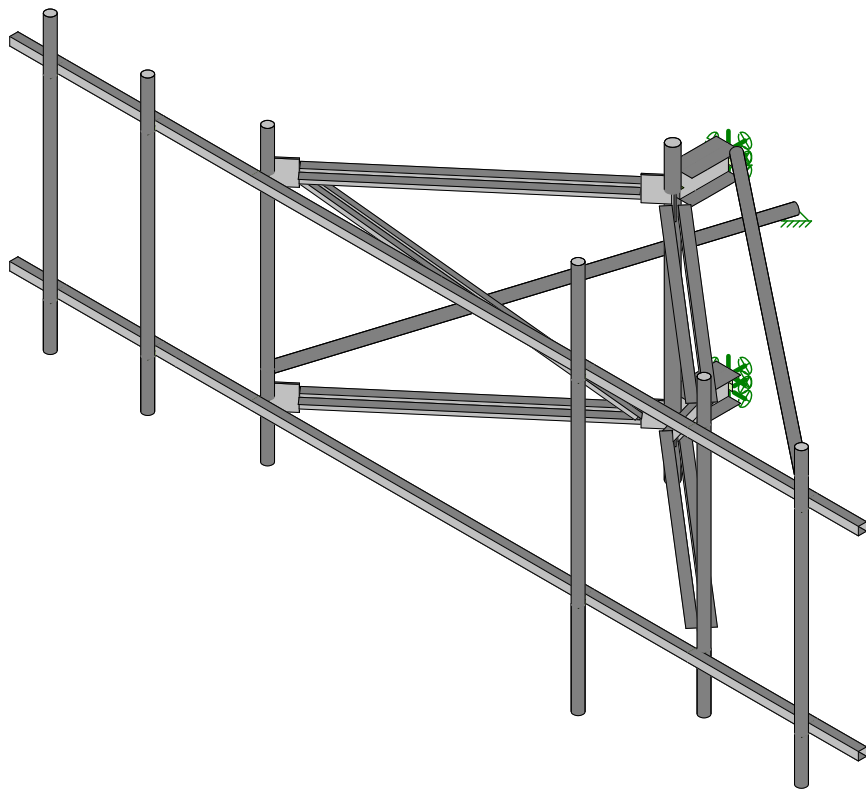
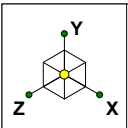
Page 2 of 2

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

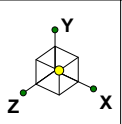


Please Insert Sketches of the Antenna Mount, cont'd

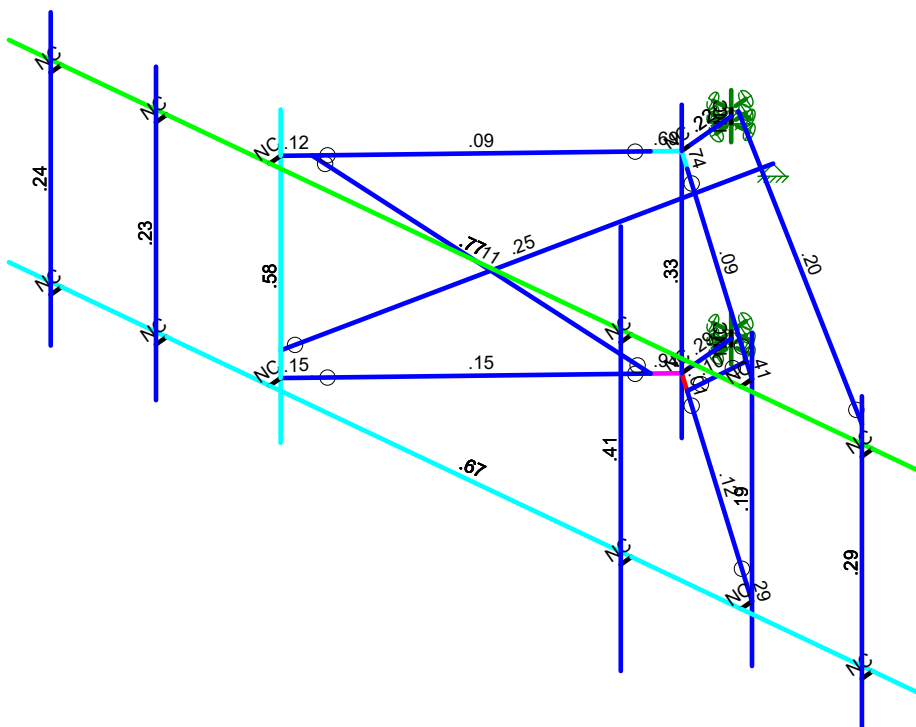




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EK		EK-266791-VZW_MT_LOT_A_H 3...

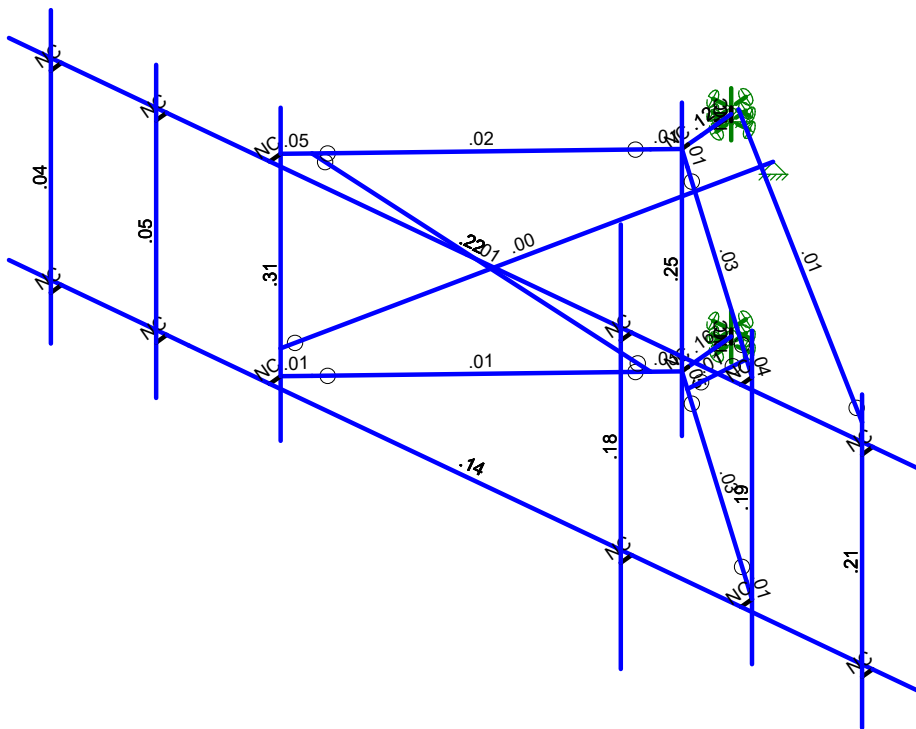
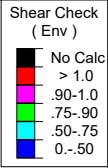
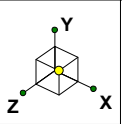


Code Check (Env)	
Black	No Calc
Red	> 1.0
Pink	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0.-.50



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Maser Consulting	467241-VZW_MT_LOT_SectorA_H	May 12, 2021 at 9:27 AM
EK		EK-266791-VZW_MT_LOT_A_H 3...



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Maser Consulting	467241-VZW_MT_LOT_SectorA_H	May 12, 2021 at 9:28 AM
EK		EK-266791-VZW_MT_LOT_A_H 3...

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HF	T ÚHœ	Ý	ËËÍ	Í
HG	T ÚHœ	Z	ËËÍÍ	Í
HH	T ÚHœ	T ç	ËËH	Í
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HÍ	T HG	Z	ËËÍ	Í
HÎ	T HG	T ç	€	Í
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A Ya Vyf'Dc]bhi@UXg'f6 @ '&*. '5 bMbbUK]fi '\$\$'8 Yl'k

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Í	T ÚHœ	Z	ËËÍH	G
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FF	T ÚGœ	Z	ËËÍÍ	G
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FH	T ÚGœ	Ý	ËËÍÍ	ËË
FI	T ÚGœ	Z	ËËÍÍ	ËË
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FÎ	T ÚGœ	Ý	ËËÍÍ	G
FÏ	T ÚGœ	Z	ËËÍÍ	G
FÌ	T ÚGœ	T ç	ËËÍ	G
FJ	T ÚFœ	Ý	ËËÍÍ	ËË
G€	T ÚFœ	Z	ËËÍÍ	ËË
GF	T ÚFœ	T ç	ËËH	ËË
GG	T ÚFœ	Ý	ËËÍÍ	G
GH	T ÚFœ	Z	ËËÍÍ	G
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HJ	THJ	Y	ĚĚ Ĝ	ĚĚ Ĝ	€	Ā FEE
I€	THJ	Z	FĚĪ	FĚĪ	€	Ā FEE
IF	TI€OE	Y	ĚĚ Ĝ	ĚĚ Ĝ	€	Ā FEE
IG	TI€OE	Z	FĚĪ	FĚĪ	€	Ā FEE
IH	TIF	Y	ĚĚ IG	ĚĚ IG	€	Ā FEE
II	TIF	Z	ĪĪ HJ	ĪĪ HJ	€	Ā FEE
IĪ	TIĜOE	Y	ĚĚ Ĝ	ĚĚ Ĝ	€	Ā FEE
IĪ	TIĜOE	Z	FĚĪ	FĚĪ	€	Ā FEE
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IĪ	TIĤOE	Z	FĚĪ	FĚĪ	€	Ā FEE
IJ	TIIOE	Y	ĚĚ IG	ĚĚ IG	€	Ā FEE
I€	TIIOE	Z	ĪĪ HJ	ĪĪ HJ	€	Ā FEE
IF	TIIOE	Y	ĚĚ JĪ	ĚĚ JĪ	€	Ā FEE
IG	TIIOE	Z	ĪĪ J	ĪĪ J	€	Ā FEE
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G	TF	Z	ĚĚ Ī	ĚĚ Ī	€	Ā FEE
H	TG	Y	ĚĚ ĪJ	ĚĚ ĪJ	€	Ā FEE
I	TG	Z	ĚĚ Ī	ĚĚ Ī	€	Ā FEE
Í	TÚIOE	Y	ĚĚ IG	ĚĚ IG	€	Ā FEE
Ī	TÚIOE	Z	HĚ JH	HĚ JH	€	Ā FEE
Ī	TÚĤOE	Y	ĚĚ IG	ĚĚ IG	€	Ā FEE
Ī	TÚĤOE	Z	HĚ JH	HĚ JH	€	Ā FEE
J	TÚĜOE	Y	ĚĚ IG	ĚĚ IG	€	Ā FEE
F€	TÚĜOE	Z	HĚ JH	HĚ JH	€	Ā FEE
FF	TÚFOE	Y	ĚĚ IG	ĚĚ IG	€	Ā FEE
FG	TÚFOE	Z	HĚ JH	HĚ JH	€	Ā FEE
FH	THG	Y	ĚĚ IG	ĚĚ IG	€	Ā FEE
FI	THG	Z	HĚ JH	HĚ JH	€	Ā FEE
FĪ	THĪ	Y	ĚĚ ĪĪ	ĚĚ ĪĪ	€	Ā FEE
FĪ	THĪ	Z	ĪĪ Ī	ĪĪ Ī	€	Ā FEE
FĪ	THĪ	Y	ĚĚ ĪĪ	ĚĚ ĪĪ	€	Ā FEE
FĪ	THĪ	Z	ĪĪ Ī	ĪĪ Ī	€	Ā FEE
FJ	UXÚ	Y	ĚĚ ĪF	ĚĚ ĪF	€	Ā FEE
G€	UXÚ	Z	ĪĚ FG	ĪĚ FG	€	Ā FEE
GF	TI€Ó	Y	ĚĚ ÉĜ	ĚĚ ÉĜ	€	Ā FEE
GG	TI€Ó	Z	ĪĚ FH	ĪĚ FH	€	Ā FEE
GH	THÍÓ	Y	ĚĚ ĪĪ	ĚĚ ĪĪ	€	Ā FEE
G	THÍÓ	Z	ĪĚ ĜĪ	ĪĚ ĜĪ	€	Ā FEE
G	THJÓ	Y	ĚĚ ĪĪ	ĚĚ ĪĪ	€	Ā FEE
G	THJÓ	Z	ĪĚ ĜĪ	ĪĚ ĜĪ	€	Ā FEE
G	TI€Ó	Y	ĚĚ ĪĪ	ĚĚ ĪĪ	€	Ā FEE
G	TI€Ó	Z	ĪĚ ĪF	ĪĚ ĪF	€	Ā FEE

A Ya Vyf'8]g]f]Vi hYX' @ UXg'f6 @ '*%.'Gfi Wñ fy'K]''fB(\$'8 Y] ŁŁ'f c b]bi YXL

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FÌ	T IH	Z	FÈÈÈ	FÈÈÈ	€	À FEE
FJ	UXÚ	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
G€	UXÚ	Z	FÈÈÈ	FÈÈÈ	€	À FEE
GF	T I €Ó	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
GG	T I €Ó	Z	FÈÈÈ	FÈÈÈ	€	À FEE
GH	T HÌ Ó	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
G	T HÌ Ó	Z	FÈÈÈ	FÈÈÈ	€	À FEE
G	T HJÓ	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
G	T HJÓ	Z	FÈÈÈ	FÈÈÈ	€	À FEE
G	T I €Ò	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
G	T I €Ò	Z	FÈÈÈ	FÈÈÈ	€	À FEE
GJ	T I FOE	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
H€	T I FOE	Z	FÈÈÈ	FÈÈÈ	€	À FEE
HF	T I GÓ	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
HG	T I GÓ	Z	FÈÈÈ	FÈÈÈ	€	À FEE
HH	T I HÓ	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
H	T I HÓ	Z	FÈÈÈ	FÈÈÈ	€	À FEE
HÍ	T HÌ OE	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
HĪ	T HÌ OE	Z	FÈÈÈ	FÈÈÈ	€	À FEE
HĪ	T HÌ OE	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
HÌ	T HÌ OE	Z	FÈÈÈ	FÈÈÈ	€	À FEE
HJ	T HJ	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
I€	T HJ	Z	FÈÈÈ	FÈÈÈ	€	À FEE
IF	T I €OE	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
IG	T I €OE	Z	FÈÈÈ	FÈÈÈ	€	À FEE
IH	T I F	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
I	T I F	Z	FÈÈÈ	FÈÈÈ	€	À FEE
IÍ	T I OE	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
IĪ	T I OE	Z	FÈÈÈ	FÈÈÈ	€	À FEE
IĪ	T I OE	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
IÌ	T I OE	Z	FÈÈÈ	FÈÈÈ	€	À FEE
IJ	T I J	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
I€	T I J	Z	FÈÈÈ	FÈÈÈ	€	À FEE
IF	T I J	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
IG	T I J	Z	FÈÈÈ	FÈÈÈ	€	À FEE
IH	T I Ó	Y	ÈÈÈÈ	ÈÈÈÈ	€	À FEE
IÌ	T I Ó	Z	FÈÈÈ	FÈÈÈ	€	À FEE

A Ya Vyf'8]g]f]Vi hYX' @ UXg'f6 @ '*&.'Gfi Wñ fy'K]''fB+\$'8 Y] ŁŁ

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G	TF	Z	€	€	€	À FEE
H	TG	Y	€	€	€	À FEE
I	TG	Z	€	€	€	À FEE

A Ya Vyf'8 jgfi]Vi hYX'@ UXg'f6 @' +) : 'Gfi Wi fy'Ka ''fi '\$\$'8 Y] ŁŁf'7 cbh]bi YXL

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IH	TIF	Ý	ĚĚ	ĚĚ
II	TIF	Z	ĚĚGF	ĚĚGF
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IĚ	TIHOE	Ý	ĚÍÍ	ĚÍÍ
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IJ	TIIOE	Ý	ĚĚ	ĚĚ
I€	TIIOE	Z	ĚĚGF	ĚĚGF
IF	TIÍOE	Ý	ĚFH	ĚFH
IG	TIÍOE	Z	ĚĚ	ĚĚ
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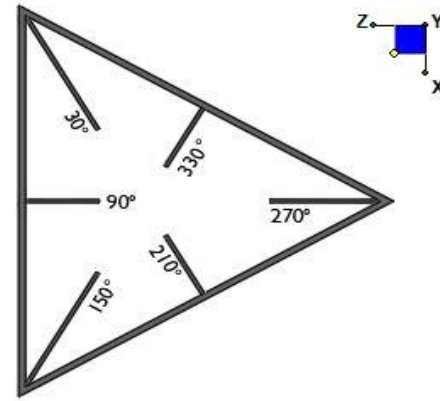
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F	TF	Ý	ĚÍF	ĚÍF
G	TF	Z	ĚĚÍ	ĚĚÍ
H	TG	Ý	ĚÍF	ĚÍF
I	TG	Z	ĚĚÍ	ĚĚÍ
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J	TÚGOE	Ý	ĚĚ	ĚĚ
F€	TÚGOE	Z	ĚÍF	ĚÍF
FF	TÚFOE	Ý	ĚĚ	ĚĚ
FG	TÚFOE	Z	ĚÍF	ĚÍF
FH	THG	Ý	ĚĚ	ĚĚ
FI	THG	Z	ĚÍF	ĚÍF
FÍ	THĚ	Ý	ĚĚÍ	ĚĚÍ
FĚ	THĚ	Z	ĚĚÍ	ĚĚÍ
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G€	UXÚ	Z	ĚÍÍ	ĚÍÍ
GF	TI€Ó	Ý	ĚĚÍ	ĚĚÍ
GG	TI€Ó	Z	ĚĚJH	ĚĚJH
GH	THÍÓ	Ý	ĚĚJ	ĚĚJ
G	THÍÓ	Z	ĚĚÍ	ĚĚÍ
G	THJÓ	Ý	ĚĚJ	ĚĚJ
G	THJÓ	Z	ĚĚÍ	ĚĚÍ
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G	TI€Ó	Z	ĚĚH	ĚĚH



I. Mount-to-Tower Connection Check

RISA Model Data

Nodes (labeled per RISA)	Orientation (per graphic of typical platform)
N68	90
N69	90
N74A	90
N75	90



TYPICAL PLATFORM

Tower Connection Bolt Checks

Any moment resistance?:

Bolt Quantity per Reaction:

d_x (in) (Delta X of typ. bolt config. sketch) :

d_y (in) (Delta Y of typ. bolt config. sketch) :

Bolt Type:

Bolt Diameter (in):

Required Tensile Strength (kips):

Required Shear Strength (kips):

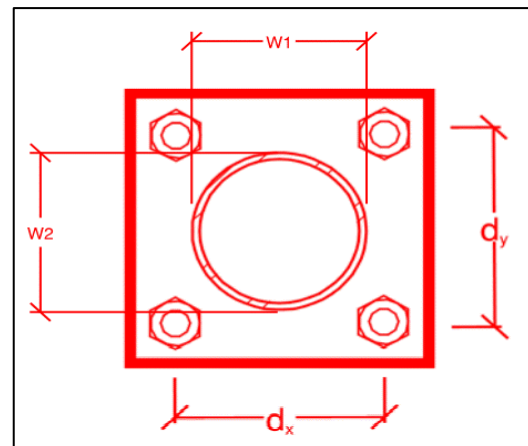
Tensile Strength / bolt (kips):

Shear Strength / bolt (kips):

Tensile Capacity Overall:

Shear Capacity Overall:

yes
4
2.5
4
A307
0.375
8.4
5.7
2.3
2.2
89.8%*
65.4%



*Note: Tension reduction not required if tension or shear capacity < 30%

Mount Desktop – Post Modification Inspection (PMI) Report Requirements

Documents & Photos Required from Contractor – **Passing Mount Analysis**

Purpose – to provide Maser Consulting the proper documentation in order to complete the required Mount Desktop review of the Post Modification Inspection Report.

- Contractor is responsible for making certain the photos provided as noted below provide confirmation that the installation was completed in accordance with this Passing Mount Analysis.
- Contractor shall relay any data that can impact the performance of the mount, this includes safety issues.


















Base Requirements:

- Any special photos outside of the standard requirements will be indicated on the passing MA
- Verification that loading is as communicated in the Passing Mount Analysis. NOTE If loading is different than what is conveyed contact Maser Consulting immediately.
- Each photo should be time and date stamped
- Photos should be high resolution and submitted in a Zip File and should be organized in the file structure as depicted in Schedule A attached.
- Contractor shall ensure that the safety climb wire rope is supported and not adversely impacted by the install of the modification components. This may involve the install of wire rope guides, or other items to protect the wire rope.
- The photos in the file structure should be uploaded to <https://pmi.vzsmart.com> as depicted on the drawings

Photo Requirements:

- Base and “During Installation Photos”
 - Base pictures include
 - Photo of Gate Signs showing the tower owner, site name, and number
 - Photo of carrier shelter showing the carrier site name and number if available
 - Photos of the galvanizing compound and/or paint used (if applicable), clearly showing the label and name
 - “During Installation Photos if provided - must be placed only in this folder
- Photos taken at ground level
 - Overall tower structure before and after installation of the equipment modifications
 - Photos of the appropriate mount before and after installation of the modifications; if the mounts are at different rad elevations, pictures must be provided for all elevations that the modifications were installed
- Photos taken at Mount Elevation
 - Photos showing each individual sector before and also after installation of equipment.

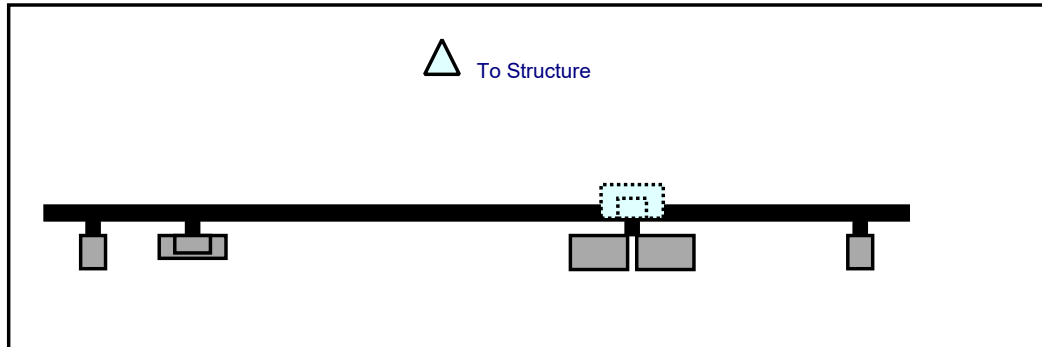
Schedule A – Photo & Document File Structure

-  VzW Site Number / Name
 -  Base & “During Installation” Photos
 -  Pre-Installation Photos
 -  Alpha
 -  Beta
 -  Gamma
 -  Ground Level
 -  Tape Drop
 -  Post-Installation Photos
 -  Alpha
 -  Beta
 -  Gamma
 -  Ground Level
 -  Tape Drop
 -  Photos of climbing facility and safety climb – If Present
-  Certifications – Submission of this document including certifications
-  Specific Required Additional Photos

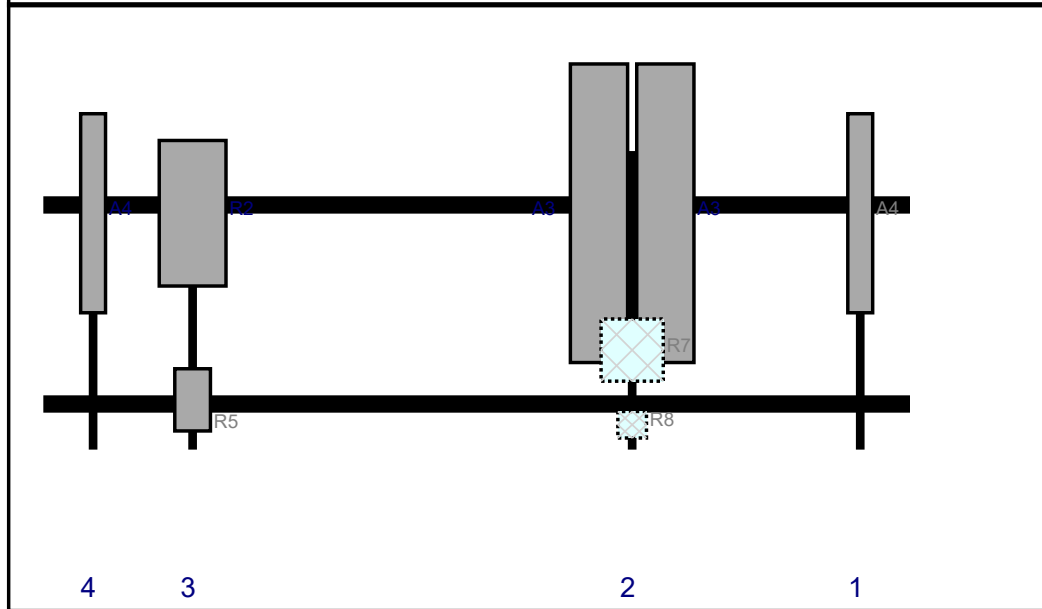
Sector: A
 Structure Type: Self Support
 Mount Elev: 160.00



Plan View



Front View
 Looking at Structure

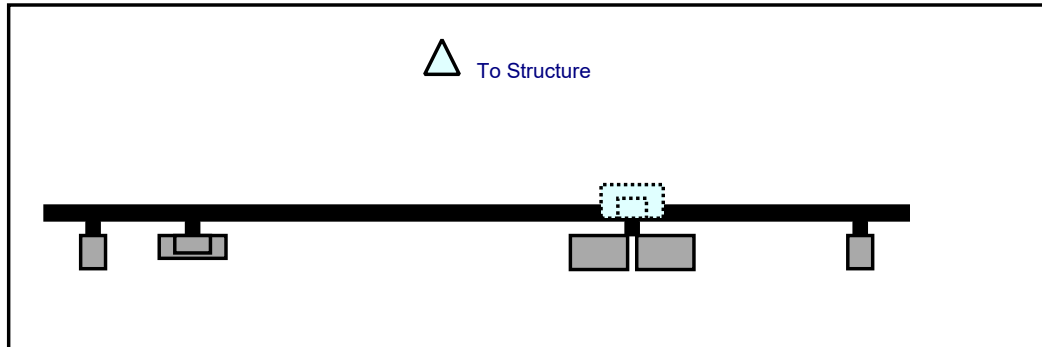


Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A4	APL868013	48	6	197	1	a	Front	15	0	Retained	03/23/2021
A3	JAHH-65B-R3B	72	13.8	142	2	a	Front	15	-8	Retained	03/23/2021
A3	JAHH-65B-R3B	72	13.8	142	2	b	Front	15	8	Retained	03/23/2021
R7	B5/B13 RRH-BR04C	15	15	142	2	a	Behind	48	0	Retained	03/23/2021
R8	CBC78T-DS-43	6.4	6.9	142	2	a	Behind	66	0	Retained	03/23/2021
R2	MT6407-77A	35.1	16.1	36	3	a	Front	15	0	Added	
R5	CBRS RRH - RT4401-48A	15	8.6	36	3	a	Front	60	0	Retained	03/23/2021
A4	APL868013	48	6	12	4	a	Front	15	0	Retained	03/23/2021

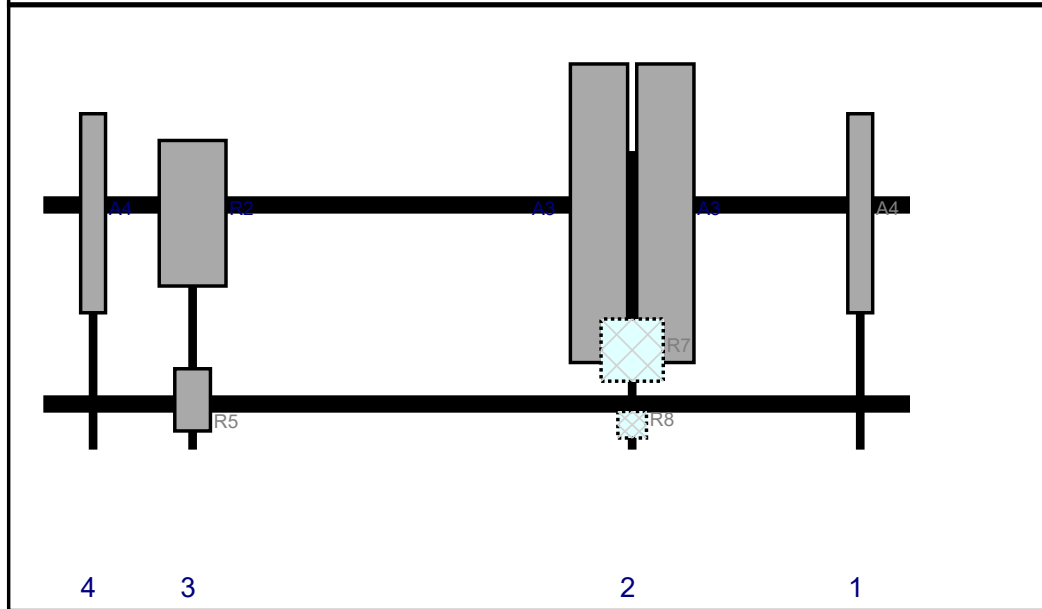
Sector: **B**
 Structure Type: Self Support
 Mount Elev: 160.00



Plan View



Front View
Looking at Structure

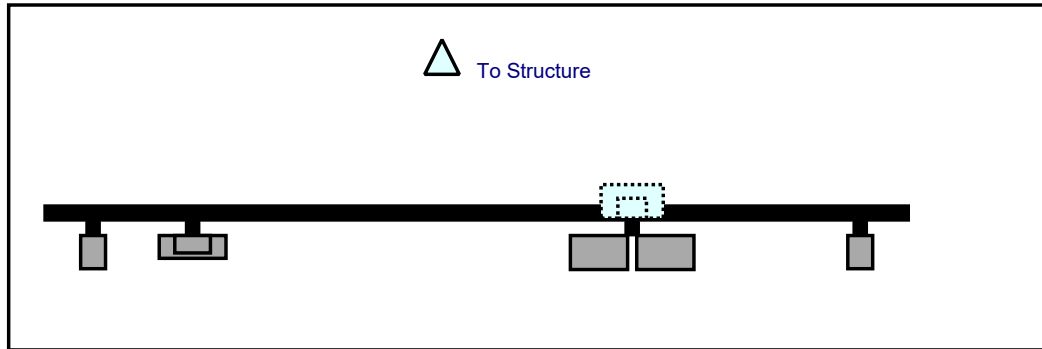


Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A4	APL868013	48	6	197	1	a	Front	15	0	Retained	03/23/2021
A3	JAHH-65B-R3B	72	13.8	142	2	a	Front	15	-8	Retained	03/23/2021
A3	JAHH-65B-R3B	72	13.8	142	2	b	Front	15	8	Retained	03/23/2021
R7	B5/B13 RRH-BR04C	15	15	142	2	a	Behind	48	0	Retained	03/23/2021
R8	CBC78T-DS-43	6.4	6.9	142	2	a	Behind	66	0	Retained	03/23/2021
R2	MT6407-77A	35.1	16.1	36	3	a	Front	15	0	Added	
R5	CBRS RRH - RT4401-48A	15	8.6	36	3	a	Front	60	0	Retained	03/23/2021
A4	APL868013	48	6	12	4	a	Front	15	0	Retained	03/23/2021

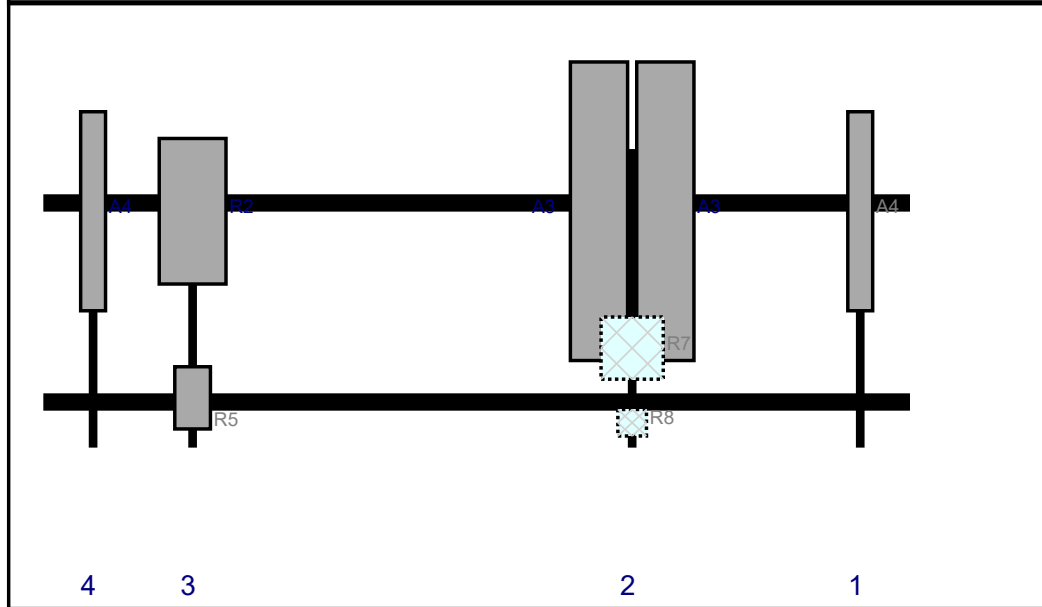
Sector: C
 Structure Type: Self Support
 Mount Elev: 160.00



Plan View



Front View
 Looking at Structure



Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A4	APL868013	48	6	197	1	a	Front	15	0	Retained	03/23/2021
A3	JAHH-65B-R3B	72	13.8	142	2	a	Front	15	-8	Retained	03/23/2021
A3	JAHH-65B-R3B	72	13.8	142	2	b	Front	15	8	Retained	03/23/2021
R7	B5/B13 RRH-BR04C	15	15	142	2	a	Behind	48	0	Retained	03/23/2021
R8	CBC78T-DS-43	6.4	6.9	142	2	a	Behind	66	0	Retained	03/23/2021
R2	MT6407-77A	35.1	16.1	36	3	a	Front	15	0	Added	
R5	CBRS RRH - RT4401-48A	15	8.6	36	3	a	Front	60	0	Retained	03/23/2021
A4	APL868013	48	6	12	4	a	Front	15	0	Retained	03/23/2021



Maser Consulting

Subject

TIA-222-H Usage

Site Information

Site ID: 467241-VZW / WILTON CT
Site Name: WILTON CT
Carrier Name: Verizon wireless
Address: 128 Mather Rd.
Wilton, Connecticut 06897
Fairfield County

Latitude: 41.238426°
Longitude: -73.424011°

Structure Information

Tower Type: 180-Ft Self Support
Mount Type: 17.42-Ft Sector Frame

To Whom It May Concern,

We respectfully submit the above referenced Antenna Mount Structural Analysis report in conformance with ANSI/TIA-222-H, Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures.

The 2015 International Building Code states that, in Section 3108, telecommunication towers shall be designed and constructed in accordance with the provisions of TIA-222. The TIA-222-H is the latest revision of the TIA-222 Standard, effective as of January 01, 2018.

As with all ANSI standards and engineering best practice is to apply the most current revision of the standard. This ensures the engineer is applying all updates. As an example, the TIA-222-H standard includes updates to bring it in line with the latest AISC and ACI standards and it also incorporates the latest wind speed maps by ASCE 7 based on updated studies of the wind data.

The TIA-222-H standard clarifies these specific requirements for the antenna mount analysis such as modeling methods, seismic analysis, 30-degree increment wind directions and maintenance loading. Therefore, it is our opinion that TIA-222-H is the most appropriate standard for antenna mount structural analysis and is acceptable for use at this tower site to ensure the engineer is taking into account the most current engineering standard available.

Sincerely,

A handwritten signature in black ink, appearing to read 'Petros Tsoukalas'.

Petros Tsoukalas, PE
Geographic Discipline Leader

Exhibit F

Power Density/RF Emissions Report

Site Name: **WILTON CT**
 Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissible Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm ²)	(mW/cm ²)	(%)
VZW 700	751	4	628	2511	162	0.0034	0.5007	0.69%
VZW CDMA	877.26	2	360	720	162	0.0010	0.5848	0.17%
VZW Cellular	874	4	715	2858	162	0.0039	0.5827	0.67%
VZW PCS	1980	4	1480	5919	162	0.0081	1.0000	0.81%
VZW AWS	2120	4	1450	5802	162	0.0080	1.0000	0.80%
VZW CBRS	3625	4	13	53	162	0.0001	1.0000	0.01%
VZW CBAND	3730.005	4	6531	26125	162	0.0358	1.0000	3.58%

Total Percentage of Maximum Permissible Exposure 6.72%

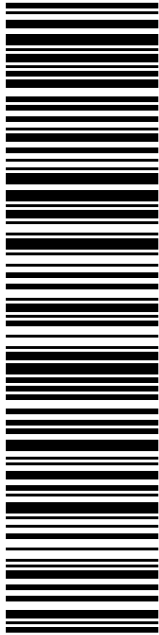
*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Part 1 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992
 **Calculation includes a -10 dB Off Beam Antenna Pattern Adjustment pursuant to Attachments B and C of the Siting Council's November 10, 2015 Memorandum for Exempt Modification filings

MHz = Megahertz
 mW/cm² = milliwatts per square centimeter
 ERP = Effective Radiated Power

Absolute worst case maximum values used.

Exhibit G

Recipient Mailings



USPS TRACKING #

9405 5036 9930 0187 2886 41

Electronic Rate Approved #038555749

SHIP TO:

SARAH SNELL
1800 W PARK DR
WESTBOROUGH MA 01581-3926

Expected Delivery Date: 03/10/22

Re#: CR-806353

0006

C006

P

03/08/2022

usps.com 9405 5036 9930 0187 2886 41 0089 5000 0010 1581

US POSTAGE

Flat Rate Envoy

U.S. POSTAGE PAID

Click-N-Ship®

Mailed from 01566

PRIORITY MAIL 1-DAY™

UNITED STATES POSTAL SERVICE®

Click-N-Ship®



Cut on dotted line.

Instructions

1. Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :

9405 5036 9930 0187 2886 41

<p>Trans. #: 558356102</p> <p>Print Date: 03/08/2022</p> <p>Ship Date: 03/08/2022</p> <p>Expected Delivery Date: 03/10/2022</p>	<p>Priority Mail® Postage: \$8.95</p> <p>Total: \$8.95</p>
---	--

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359


Re#: CR-806353

To: SARAH SNELL
1800 W PARK DR
WESTBOROUGH MA 01581-3926

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com



**UNITED STATES
POSTAL SERVICE®**

Click-N-Ship®

P

usps.com 9405 5036 9930 0187 2886 65 0089 5000 0020 6897
US POSTAGE
 Flat Rate Env
 U.S. POSTAGE PAID
Click-N-Ship®

03/08/2022 Mailed from 01566

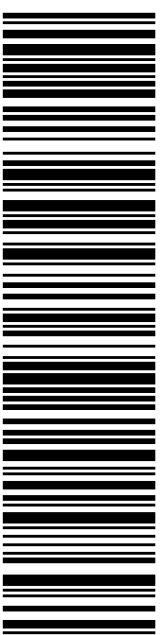
PRIORITY MAIL 2-DAY™

Expected Delivery Date: 03/12/22
 Ref#: CR-806353
0006

C005

SHIP TO: LYNNE VANDERSLICE
 FIRST SELCTWOMAN
 238 DANBURY RD
 WILTON CT 06897-4008

USPS TRACKING #



9405 5036 9930 0187 2886 65

Electronic Rate Approved #038555749



Cut on dotted line.

Instructions

1. Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
4. To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0187 2886 65

Trans. #: 558356102	Priority Mail® Postage: \$8.95
Print Date: 03/08/2022	Total: \$8.95
Ship Date: 03/08/2022	
Expected Delivery Date: 03/12/2022	

From: DEBORAH CHASE
 NORTHEAST SITE SOLUTIONS
 420 MAIN ST
 STE 1
 STURBRIDGE MA 01566-1359

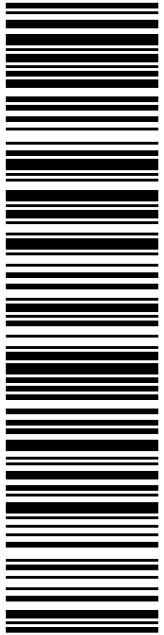
Ref#: CR-806353

To: LYNNE VANDERSLICE
 FIRST SELCTWOMAN
 238 DANBURY RD
 WILTON CT 06897-4008

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



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USPS TRACKING #

9405 5036 9930 0187 2886 72

Electronic Rate Approved #038555749

SHIP TO: MICHAEL WRINN
DIRECTOR OF PLANNING & LAND USE
238 DANBURY RD
WILTON CT 06897-4008

P

03/08/2022

PRIORITY MAIL 2-DAY™

Expected Delivery Date: 03/12/22
Ret#: CR-806353
0006

C005

UNITED STATES POSTAL SERVICE®

Click-N-Ship®

usps.com 9405 5036 9930 0187 2886 72 0089 5000 0020 6897
US POSTAGE
Flat Rate Envoy

U.S. POSTAGE PAID
Click-N-Ship®

Mailed from 01566



Cut on dotted line.

Instructions

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Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0187 2886 72

Trans. #: 558356102	Priority Mail® Postage: \$8.95
Print Date: 03/08/2022	Total: \$8.95
Ship Date: 03/08/2022	
Expected Delivery Date: 03/12/2022	

From: DEBORAH CHASE
NORTHEAST SITE SOLUTIONS
420 MAIN ST
STE 1
STURBRIDGE MA 01566-1359

Reff#: CR-806353

To: MICHAEL WRINN
DIRECTOR OF PLANNING & LAND USE
238 DANBURY RD
WILTON CT 06897-4008

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



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806 353 Crown Vzw



FARMINGTON
210 MAIN ST
FARMINGTON, CT 06032-9998
(800) 275-8777

03/09/2022

01:17 PM

Product	Qty	Unit Price	Price
Prepaid Mail Westborough, MA 01581 Weight: 0 lb 2.00 oz Acceptance Date: Wed 03/09/2022 Tracking #: 9405 5036 9930 0187 2886 41	1		\$0.00
Prepaid Mail Wilton, CT 06897 Weight: 0 lb 6.70 oz Acceptance Date: Wed 03/09/2022 Tracking #: 9405 5036 9930 0187 2886 72	1		\$0.00
Prepaid Mail Wilton, CT 06897 Weight: 0 lb 6.70 oz Acceptance Date: Wed 03/09/2022 Tracking #: 9405 5036 9930 0187 2886 65	1		\$0.00
Grand Total:			\$0.00