



May 12, 2021

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

RE: **Notice of Exempt Modification for T-Mobile
Crown Site ID# 803934; T-Mobile Site ID# CT11531C
400 Main Street, Somers, CT 06071
Latitude: 41° 59' 1.48" / Longitude: -72° 27' 56.87"**

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 165-foot mount on the existing 190' foot Monopole Tower located at 400 Main Street in Somers. The property is owned by the Town of Somers and the Tower is owned by Crown Castle. T-Mobile now intends to replace six (6) antennas. This modification/proposal includes hardware that is both 4G(LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times. T-Mobile is also proposing mount modifications as shown on the enclosed Mount Analysis.

Planned Modifications:

Tower:

Remove and Replace:

(3) EMS Wireless – RR90-17-02DP Antennas (**REMOVE**) - (3) RFS – APX16DWV-16DWV-S-E-A20 Antennas (**REPLACE**)

(3) Commscope – LNX-6515DS-A1M Antennas (**REMOVE**) – (3) RFS – APXVAALL24_43-U-NA20 Antennas (**REPLACE**)

Install New:

- (3) Ericsson 4449 B71+B85 radios
- (3) Ericsson 4415 B66A_CCIV3 radios
- (3) Ericsson 4415 B25_CCIV2 radios
- (3) hybrid cables
- (1) Site Pro 1 – HRK14 support kit
- (1) Site Pro 1 – PRK-SFS-L reinforcement kit

Remove:

- (12) Coax cables
- (3) TMAs

Ground:

Install New:

- (1) SSC 6160 cabinet
- (1) B160 battery cabinet

Remove:

- (1) RBS 6102 cabinet

The facility was approved by the Town of Somers in 2001, however approval documents were not able to be located at the time of this application. Nonetheless, the Council has approved several exempt modifications for AT&T as well as other carriers since the tower came under the Siting Council's jurisdiction.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-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. § 16-50j-73, a copy of this letter is being sent to C.G. 'Bud' Knorr Jr., First Selectman for the Town of Somers, as well as Jennifer Roy, Zoning Enforcement Officer for the Town of Somers.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification 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 Communication 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, T-Mobile respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Melanie A. Bachman

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Sincerely,

A handwritten signature in black ink, appearing to read "Richard Zajac". The signature is fluid and cursive, with the first name "Richard" and last name "Zajac" clearly distinguishable.

Richard Zajac
Site Acquisition Specialist
4545 East River Road, Suite 320
West Henrietta, NY
(585) 445-5896
Richard.zajac@crowncastle.com

cc:

C.G. 'Bud' Knorr, Jr., First Selectman (*via email to selectman@somersct.gov*)
Town of Somers
600 Main Street
Somers, CT 06071
860-763-8200

Ms. Jennifer Roy, Zoning Enforcement Officer (*via email to jroy@somersct.gov*)
Town of Somers
600 Main Street
Somers, CT 06071
860-763-8220

Exhibit A

Original Facility Approval

The Council's records indicated that the existing tower was originally approved by the Town of Somers in 2001. However, the approval documents were not able to be located at the time of this application. Nonetheless, the Council has approved several exempt modifications for AT&T as well as other carriers since the tower came under the Siting Council's jurisdiction.

Exhibit B

Property Card

400 MAIN ST

Location 400 MAIN ST

Mblu 05/07/11

Acct# 00202300

Owner SOMERS TOWN OF

Assessment \$2,655,300

Appraisal \$3,793,200

PID 2932

Building Count 1

Dev Lot

Dev Map

Exempt Code X

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2020	\$2,919,400	\$873,800	\$3,793,200

Assessment			
Valuation Year	Improvements	Land	Total
2020	\$2,043,600	\$611,700	\$2,655,300

Owner of Record

Owner SOMERS TOWN OF
Co-Owner FIRE COMPLEX
Address 400 MAIN STREET
SOMERS, CT 06071

Sale Price \$240,000
Certificate
Book & Page 0165/0819
Sale Date 08/18/1995

Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
SOMERS TOWN OF	\$240,000		0165/0819	08/18/1995

Building Information

Building 1 : Section 1

Year Built: 2001
Living Area: 16,282
Replacement Cost: \$3,594,187

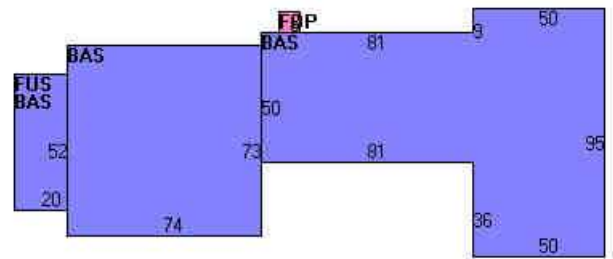
Building Percent Good: 77
Replacement Cost
Less Depreciation: \$2,767,500

Building Photo



(http://images.vgsi.com/photos/SomersCTPhotos///0009/P1020043_9570..)

Building Layout



Building Attributes	
Field	Description
Style:	Fire Station
Model	Ind/Comm
Grade:	Good/Vg
Stories:	1.00
Occupancy:	1.00
Exterior Wall 1:	Brick Veneer
Exterior Wall 2:	Vinyl/Aluminum
Roof Struct:	Hip
Roof Cover:	Copper
Interior Wall 1:	Drywall
Interior Wall 2:	Minim/Masonry
Interior Floor 1:	Concr-Finished
Interior Floor 2:	Linoleum
Heating Fuel:	Oil
Heating Type:	Forced Air
AC Type:	None
Struct Class	Post Office
Bldg Use:	Fire Dept
Fin. Bsmt.	0
Ttl Bedrms:	
Ttl Baths:	
Ttl Half Baths:	
Ttl Xtra Fix:	
1st Floor Use:	
Heat/AC:	Heat/Ac Pkgs
Frame Type:	Wood Frame
Baths/Plumbing:	Average
Ceiling/Wall:	Sus-Ceil & WI
Rooms/Prtns:	Average
Wall Height:	12.00
% Comn Wall:	

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	15,242	15,242
FUS	Finished Upper Story	1,040	1,040
FOP	Open Porch	64	0
		16,346	16,282

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
SPR1	Sprinklers-Wet	15242.00 SF	\$31,700	1

A/C	Air Conditioning	8800.00 SF	\$16,900	1
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Land

Land Use

Use Code	928
Description	Fire Dept
Zone	A-1
Neighborhood	E
Alt Land Appr Category	No

Land Line Valuation

Size (Acres)	11.00
Frontage	
Depth	
Assessed Value	\$611,700
Appraised Value	\$873,800

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	Paving Asph			32000.00 SF	\$57,600	1
LT	Light	1	Single	13.00 UNITS	\$21,800	1
TWR	Tower			190.00 LF	\$0	1
CB1	PreCast Cell Shed	CB		120.00 SF	\$18,000	1
FN4	Fence 8'			330.00 LF	\$5,900	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2019	\$2,692,100	\$592,500	\$3,284,600
2016	\$2,692,100	\$592,500	\$3,284,600
2014	\$2,881,200	\$505,000	\$3,386,200

Assessment			
Valuation Year	Improvements	Land	Total
2019	\$1,884,400	\$414,800	\$2,299,200
2016	\$1,884,400	\$414,800	\$2,299,200
2014	\$2,016,800	\$353,500	\$2,370,300



Imagery ©2021 MassGIS, Commonwealth of Massachusetts EOE, Maxar Technologies, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2021

100 ft 



400 Main St

Somers, CT 06071
Building



Directions



Save



Nearby



Send to your
phone



Share

Photos

Exhibit C

Construction Drawings

T-Mobile

T-Mobile

3801 S. CAPITAL OF TX HWY, STE. 300
AUSTIN, TX 78704

CROWN CASTLE

1600 UTICA AVENUE SOUTH
ST. LOUIS PARK, MN 55416

TeleCAD Wireless

1961 NORTHPOINT BLVD, SUITE 130
HIKSON, TN 37343
PH: 423-843-9500 / FAX: 423-843-9509

T-MOBILE SITE NUMBER: CT11531C
T-MOBILE SITE NAME: CT531/CROWN - SOMERS
SITE TYPE: MONOPOLE
TOWER HEIGHT: 190.0'

BUSINESS UNIT #: 803934
SITE ADDRESS: 400 MAIN STREET
SOMERS, CT 06071
COUNTY: TOLLAND
JURISDICTION: TOWN OF SOMERS

T-MOBILE L600 SITE CONFIGURATION: 67D93D4_1QP+2HP (U21 Market)

SITE INFORMATION

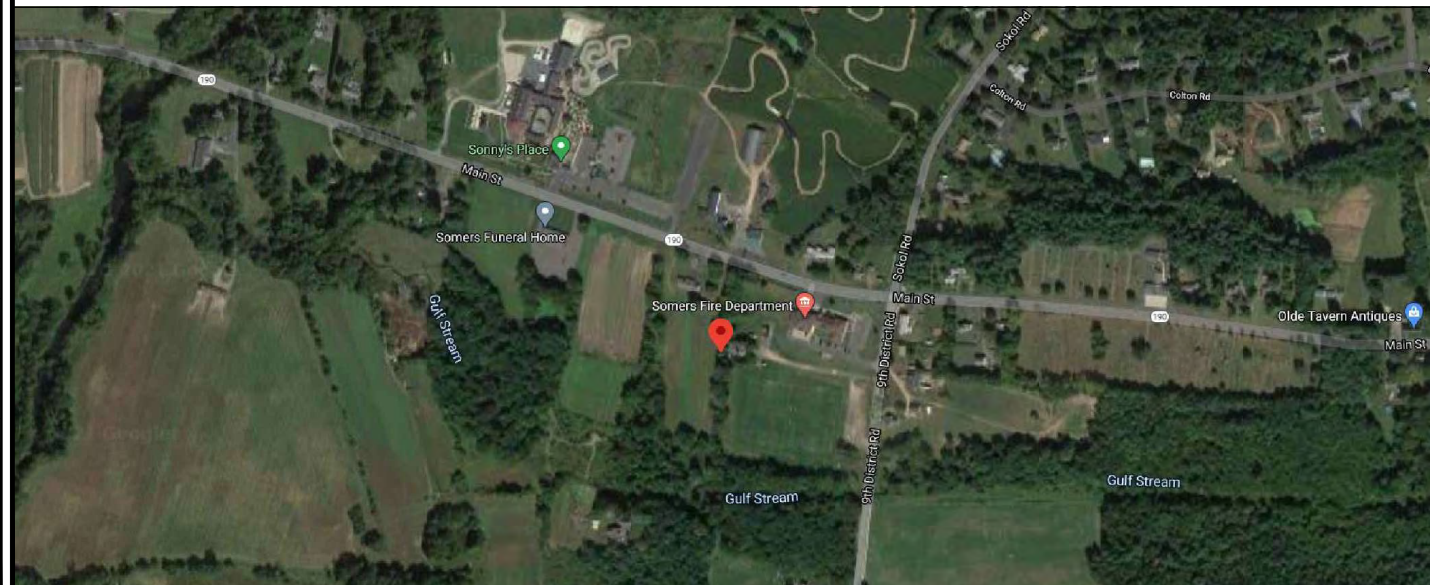
CROWN CASTLE USA INC. CT SOMERS FD CAC
SITE NAME:
SITE ADDRESS: 400 MAIN STREET
SOMERS, CT 06071
COUNTY: TOLLAND
MAP/PARCEL #: TBD
AREA OF CONSTRUCTION: EXISTING
LATITUDE: 41° 59' 1.48"
LONGITUDE: -72° 27' 56.87"
LAT/LONG TYPE: NAD83
GROUND ELEVATION: 200.0'
CURRENT ZONING: TBD
JURISDICTION: TOWN OF SOMERS
OCCUPANCY CLASSIFICATION: U
TYPE OF CONSTRUCTION: IIB
A.D.A. COMPLIANCE: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
TOWER OWNER: CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317
CARRIER/APPLICANT: T-MOBILE
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002
ELECTRIC PROVIDER: CONNECTICUT LIGHT & POWER CO.
PHONE: 888-544-4826
TELCO PROVIDER: LIGHTOWER
PHONE: TBD

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	OVERALL SITE PLAN
C-1.2	ENLARGED SITE PLANS
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	PLUMBING DIAGRAM
C-5.1	EQUIPMENT SPECS
C-5.2	EQUIPMENT SPECS
E-1	AC PANEL SCHEDULE & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 22X34. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

LOCATION MAP



NO SCALE

T-MOBILE SITE NUMBER:
CT11531C

BU #: 803934
CT SOMERS FD CAC

400 MAIN STREET
SOMERS, CT 06071

EXISTING 190.0' MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/30/2021	CAD	PRELIMINARY	FDW
0	05/03/2021	CAD	FINAL	FDW

PROJECT DESCRIPTION

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

TOWER SCOPE OF WORK:

- REMOVE (6) ANTENNAS
- REMOVE (3) TMAs
- REMOVE (3) BIAS TEES
- REMOVE (12) COAX CABLES
- INSTALL (6) ANTENNAS
- INSTALL (9) RRUs
- INSTALL (3) 1-5/8" HYBRID CABLES

GROUND SCOPE OF WORK:

- REMOVE (1) EXISTING RBS 6102 CABINET
- INSTALL (1) ERICSSON 6160 CABINET
- INSTALL (1) ERICSSON B160 CABINET

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

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 STATE BUILDING CODE/2015 IBC W/CT AMENDMENTS
MECHANICAL	2018 CT STATE BUILDING CODE/2015 IMC W/CT AMENDMENTS
ELECTRICAL	2018 CT STATE BUILDING CODE/2017 NEC W/CT AMENDMENTS

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	B+T GROUP
DATED:	02/26/2021
MOUNT ANALYSIS:	B+T GROUP
DATED:	01/22/2021
AC ELECTRICAL POWER DESIGN:	BY OTHERS
DATED:	N/A
RFDS REVISION:	4
DATED:	12/11/2020
ORDER ID:	537325
REVISION:	0



CALL CONNECTICUT ONE CALL

(800) 922-4455 CBYD.COM

CALL 2 WORKING DAYS

BEFORE YOU DIG!



APPROVALS

APPROVAL	SIGNATURE	DATE
PROPERTY OWNER OR REP.	_____	_____
LAND USE PLANNER	_____	_____
T-MOBILE	_____	_____
OPERATIONS	_____	_____
RF	_____	_____
NETWORK	_____	_____
BACKHAUL	_____	_____
CONSTRUCTION MANAGER	_____	_____



Digitally signed by
Christopher
Roberts
Date: 2021.05.04
07:09:08 -04'00'

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 TITLE:

TITLE SHEET

SHEET NUMBER:

T-1

REVISION:

0

PROJECT TEAM

A&E FIRM: TELECAD WIRELESS SITE DESIGN
1961 NORTHPOINT BLVD, SUITE 130
HIKSON, TN 37343
PHONE: 423-843-9500
CROWN CASTLE USA INC. DISTRICT CONTACTS:
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065
ELIZABETH SWEENEY - PROJECT MANAGER
PHONE: N/A
TBD - CONSTRUCTION MANAGER
PHONE: TBD
NITSA CRENSHAW - A&E SPECIALIST
EMAIL: NITSA.CRENSHAW@CROWNCastle.COM
PHONE: (813) 342-3871

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

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

- NOTICE TO PROCEED- NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800-788-7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
- "LOOK UP" - CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT: THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
- PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
- ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED-STD-10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA-322 (LATEST EDITION).
- ALL SITE WORK TO COMPLY WITH 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.
- ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
- APPROVED ANTI-OXIDANT 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: T-MOBILE
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 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°F 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 THW, 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 THW, 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 THW, 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/IEEC 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 SIZES AND FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEC 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 DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
- CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (I.E. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO 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 "T-MOBILE".
- 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	GROUND	GREEN
	A PHASE	BLACK
	B PHASE	RED
277/480V, 3Ø	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
DC VOLTAGE	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
	POS (+)	RED**
	NEG (-)	BLACK**

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

APWA UNIFORM COLOR CODE:

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

ABBREVIATIONS:

- ANT ANTENNA
- (E) EXISTING
- FIF FACILITY INTERFACE FRAME
- GEN GENERATOR
- GPS GLOBAL POSITIONING SYSTEM
- GSM GLOBAL SYSTEM FOR MOBILE
- LTE LONG TERM EVOLUTION
- MGB MASTER GROUND BAR
- MW MICROWAVE
- (N) NEW
- NEC NATIONAL ELECTRIC CODE
- (P) PROPOSED
- PP POWER PLANT
- QTY QUANTITY
- RECT RECTIFIER
- RBS RADIO BASE STATION
- RETS REMOTE ELECTRIC TILT
- RFDSD 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



3801 S. CAPITAL OF TX HWY, STE. 300
AUSTIN, TX 78704



1600 UTICA AVENUE SOUTH
ST. LOUIS PARK, MN 55416



1961 NORTHPOINT BLVD, SUITE 130
HIXSON, TN 37343
PH: 423-843-9500 / FAX: 423-843-9509

T-MOBILE SITE NUMBER:
CT11531C

BU #: 803934
CT SOMERS FD CAC

400 MAIN STREET
SOMERS, CT 06071

EXISTING 190.0' MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	03/30/2021	CAD	PRELIMINARY	FDW
A	05/03/2021	CAD	FINAL	FDW



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SHEET TITLE:
GENERAL NOTES

SHEET NUMBER:
T-2

REVISION:
0

SITE PLAN DISCLAIMER:
 PROPERTY LINES AND STRUCTURES HAVE BEEN DIGITIZED FROM PREVIOUS PLAN SETS. CROWN CASTLE USA INC. HAS NOT COMPLETED A SITE SURVEY AND THEREFORE MAKES NO CLAIMS AS TO THE ACCURACY OF INFORMATION DEPICTED ON THIS SHEET.

EQUIPMENT LEGEND:
 [White Box] EXISTING
 [Blue Box] NEW

T-Mobile
 3801 S. CAPITAL OF TX HWY, STE. 300
 AUSTIN, TX 78704

CROWN CASTLE
 1600 UTICA AVENUE SOUTH
 ST. LOUIS PARK, MN 55416

TeleCAD Wireless
 1961 NORTHPOINT BLVD, SUITE 130
 HIXSON, TN 37343
 PH: 423-843-9500 / FAX: 423-843-9509

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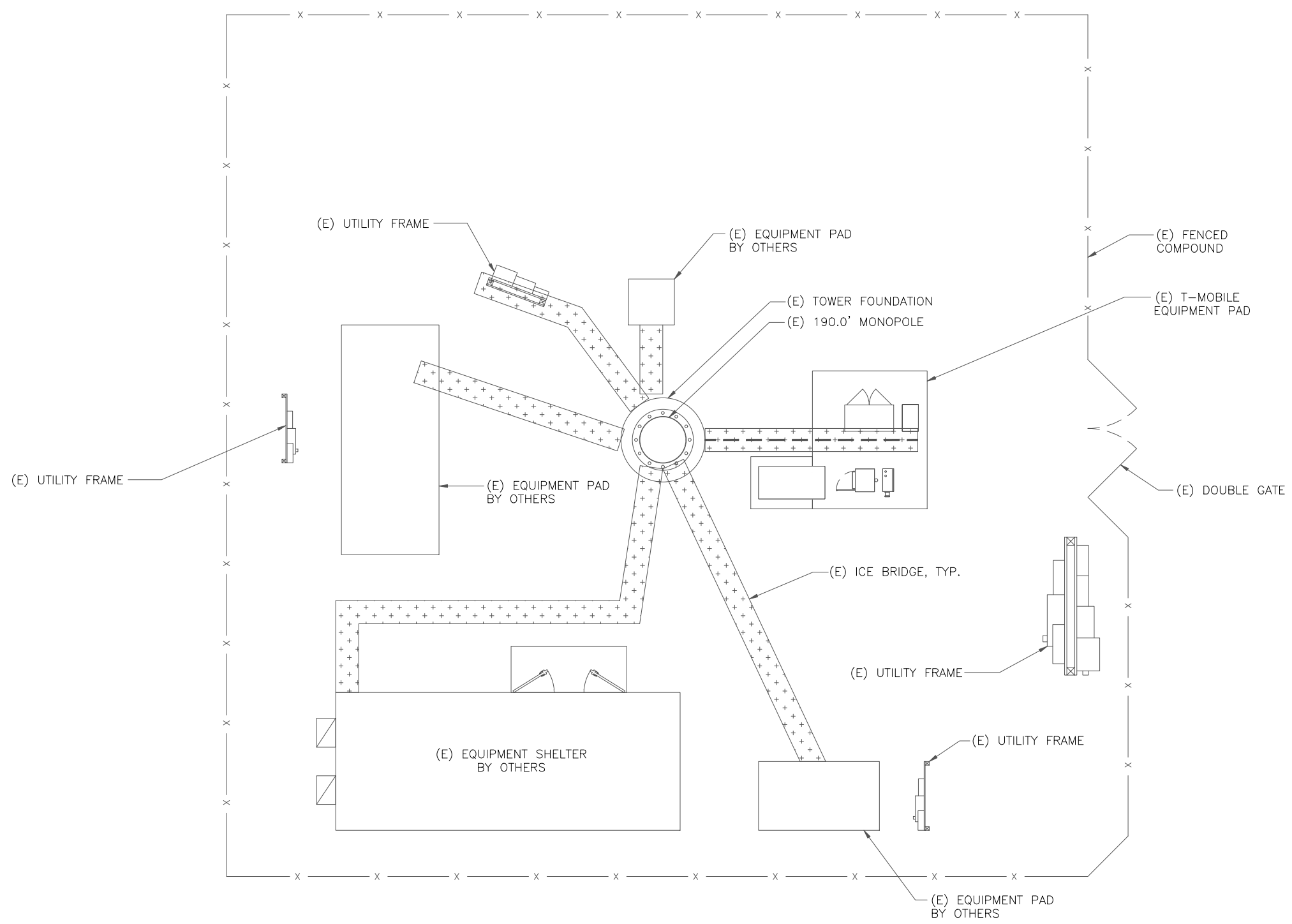


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SHEET TITLE:
 OVERALL SITE PLAN

SHEET NUMBER:
C-1.1

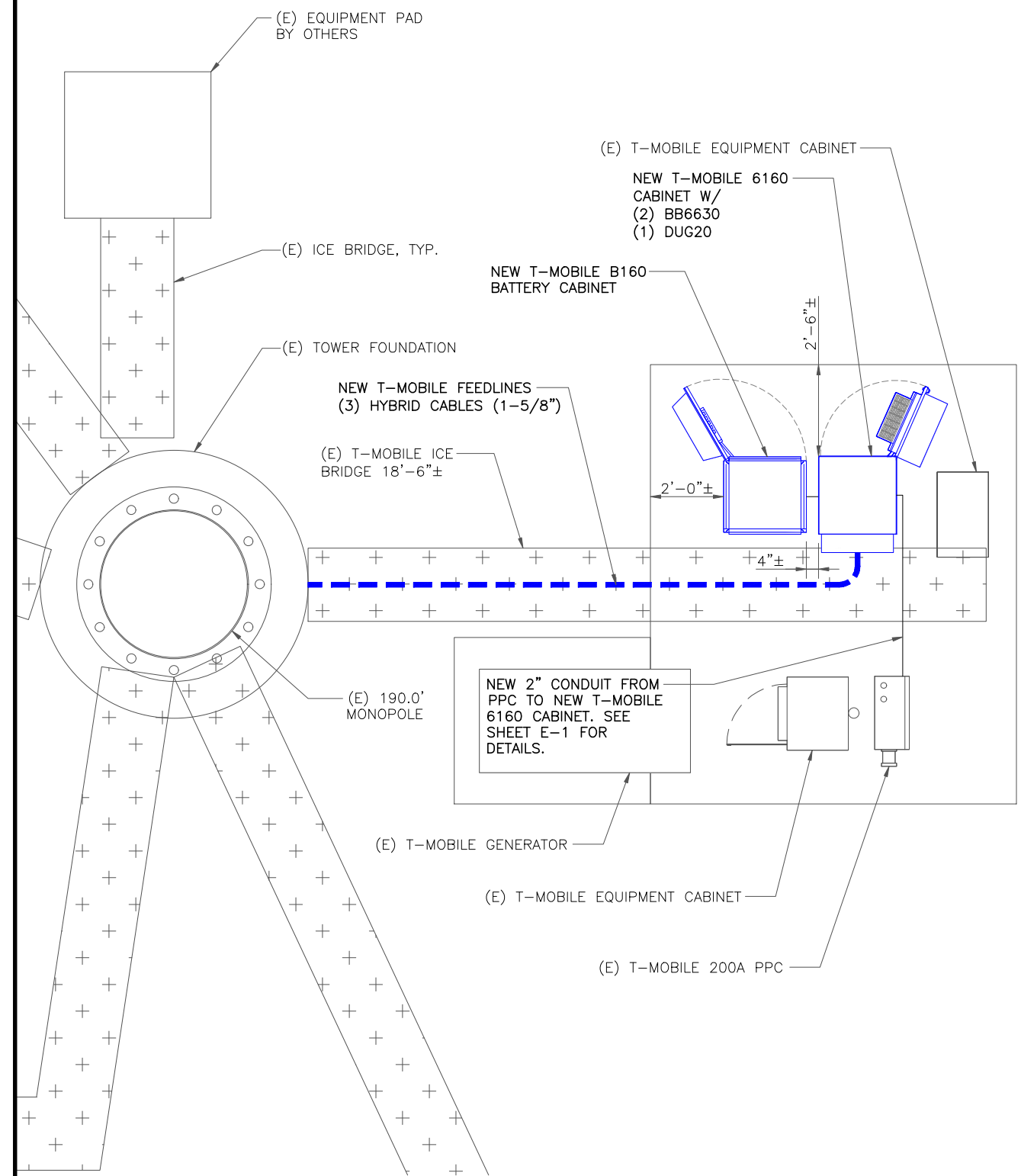
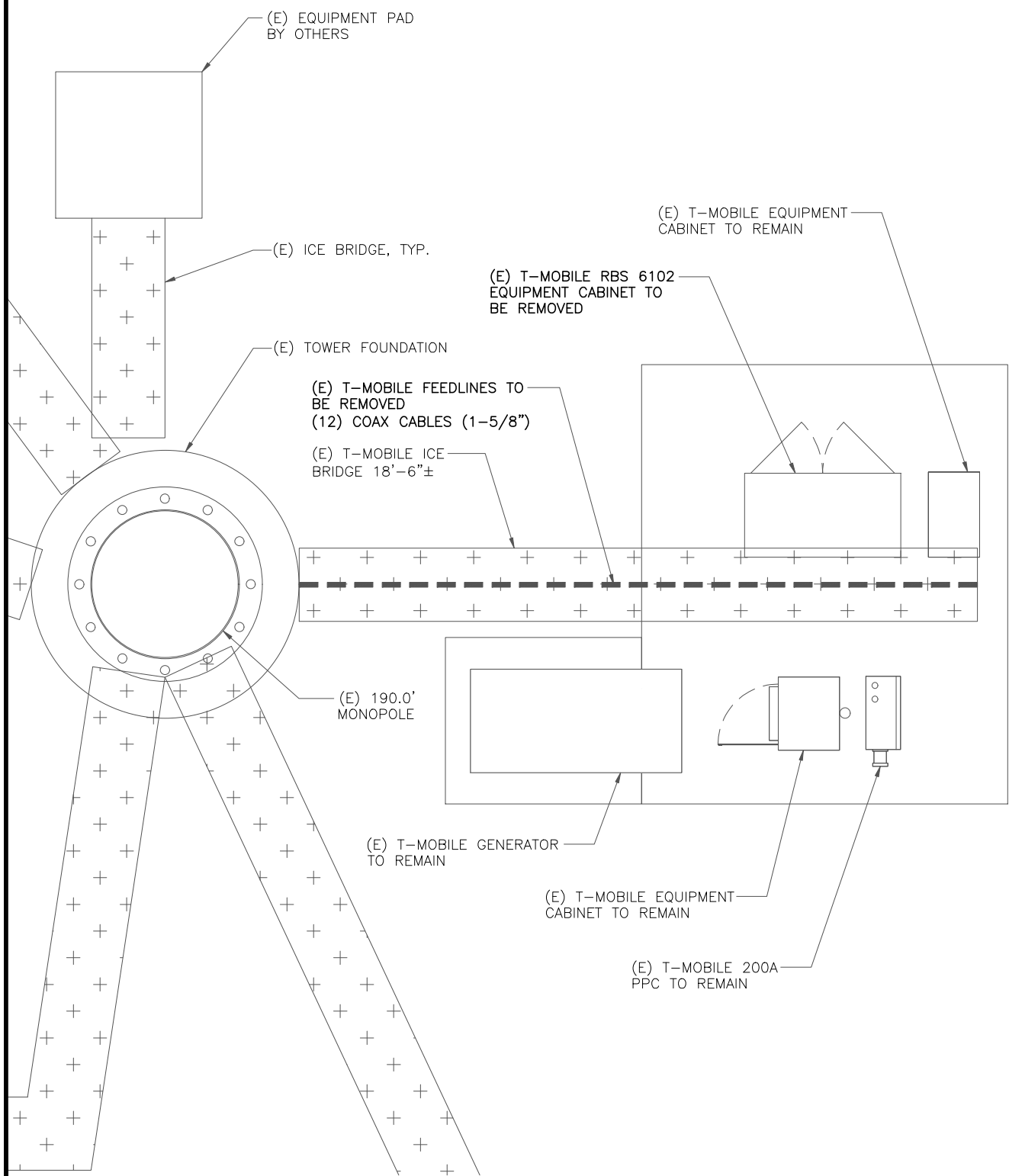
REVISION:
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EXISTING EQUIPMENT PLAN IS BASED ON AS-BUILT DRAWINGS BY B+T GROUP DATED 07/25/2019. CONTRACTOR TO VERIFY LOCATION OF EXISTING T-MOBILE EQUIPMENT ON PAD.

EQUIPMENT LEGEND:
 [] EXISTING
 [] NEW

NOTES:
 THE POWER DESIGN FOR ANY AC ELECTRICAL POWER CHANGES IS TO BE PERFORMED BY OTHERS AND IS SHOWN HERE FOR REFERENCE PURPOSES ONLY. T-MOBILE IS SOLELY RESPONSIBLE FOR THE ELECTRICAL POWER DESIGN.



1 ENLARGED EXISTING SITE PLAN
 SCALE: 1/2"=1'-0" (FULL SIZE)
 1/4"=1'-0" (11x17)

2 ENLARGED PROPOSED SITE PLAN
 SCALE: 1/2"=1'-0" (FULL SIZE)
 1/4"=1'-0" (11x17)

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T-MOBILE SITE NUMBER:
CT11531C
 BU #: 803934
CT SOMERS FD CAC
 400 MAIN STREET
 SOMERS, CT 06071
 EXISTING 190.0' MONOPOLE

ISSUED FOR:

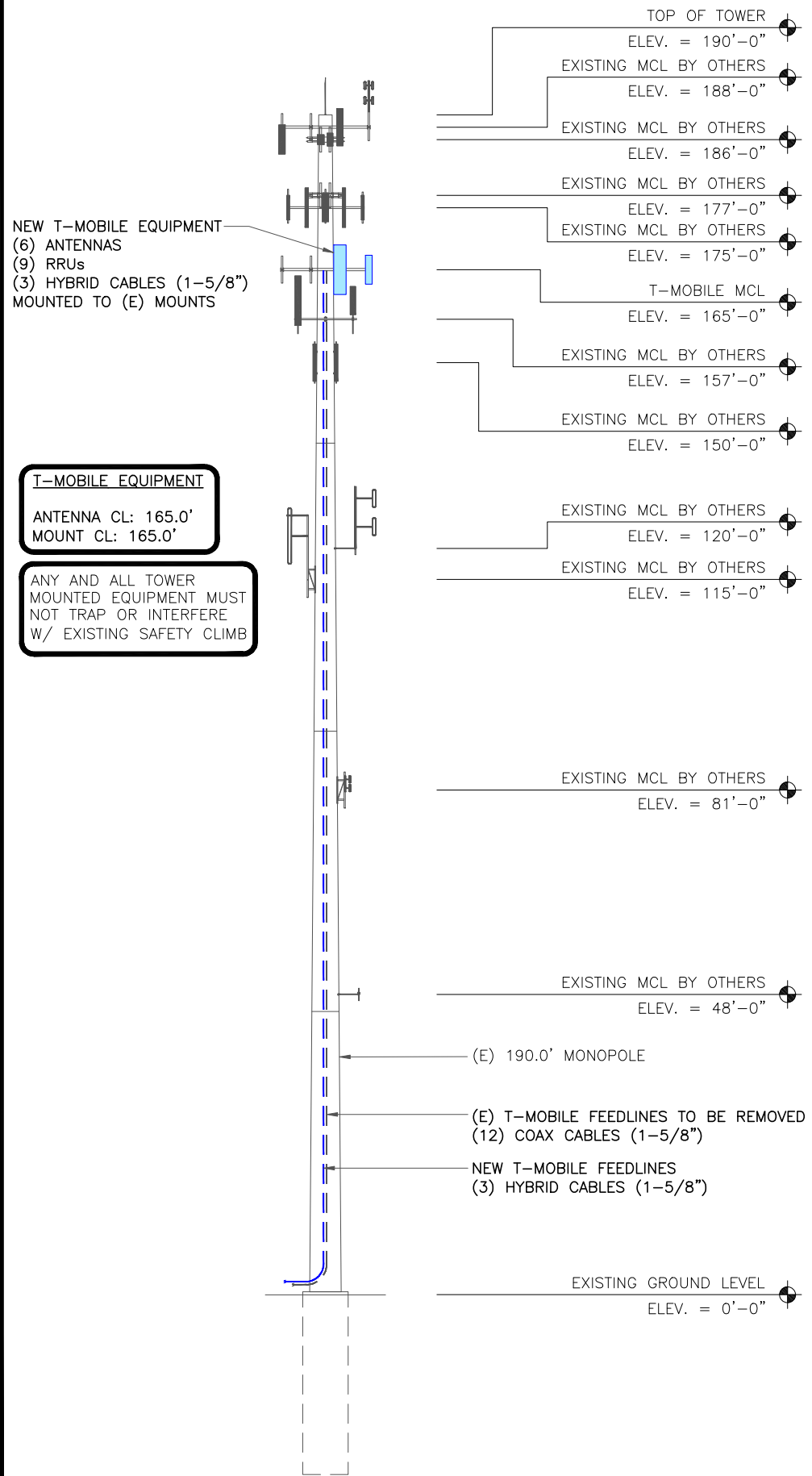
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A	03/30/2021	CAD	PRELIMINARY	FDW
0	05/03/2021	CAD	FINAL	FDW

STATE OF CONNECTICUT
 PROFESSIONAL ENGINEER
 No. 34619

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SHEET TITLE:
ENLARGED SITE PLANS

SHEET NUMBER: **C-1.2**
 REVISION: **0**



T-MOBILE EQUIPMENT

ANTENNA CL: 165.0'
MOUNT CL: 165.0'

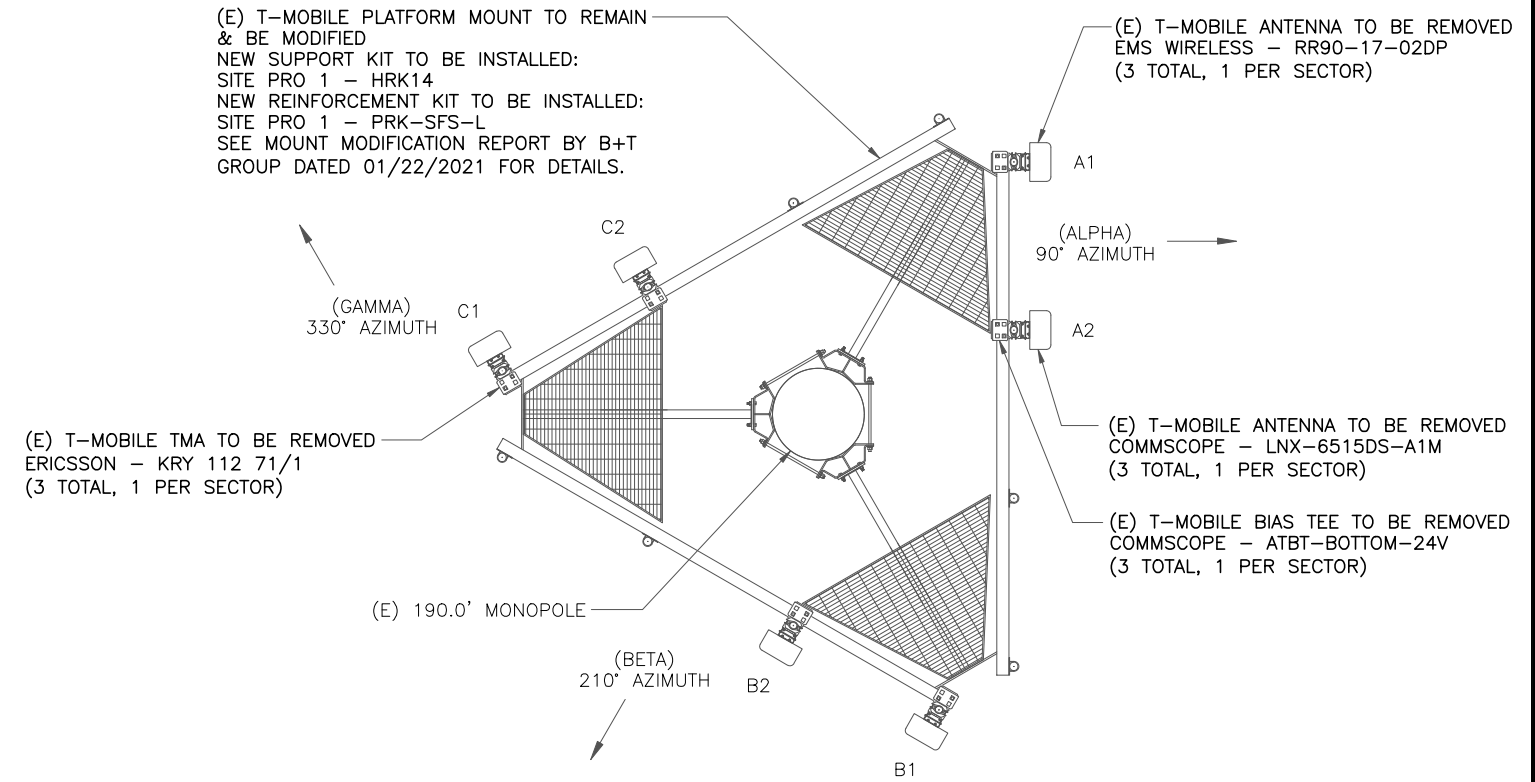
ANY AND ALL TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ EXISTING SAFETY CLIMB

1 FINAL ELEVATION
SCALE: NOT TO SCALE

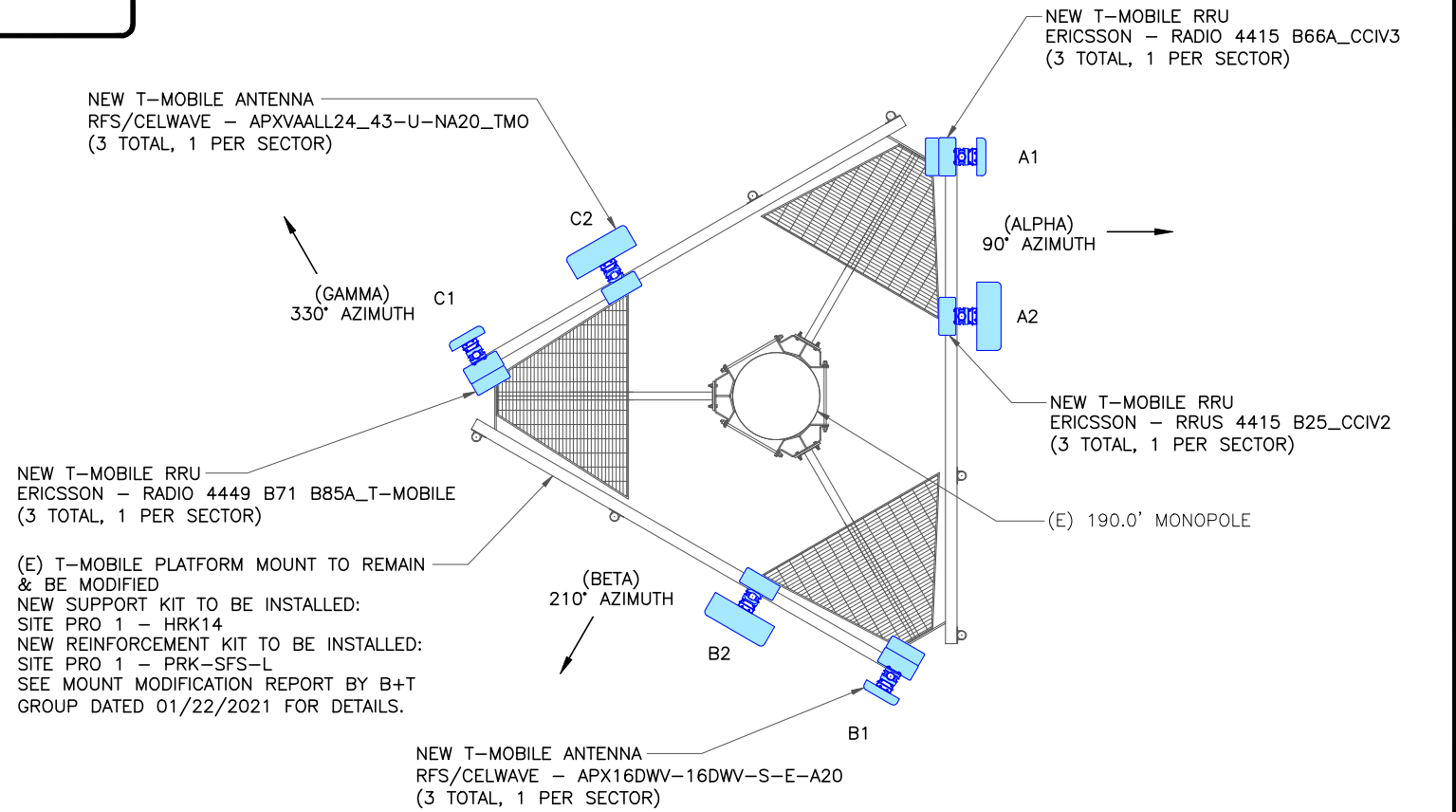
EQUIPMENT LEGEND:

EXISTING

NEW



2 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE



3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

T-Mobile

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T-MOBILE SITE NUMBER:
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BU #: 803934
CT SOMERS FD CAC

400 MAIN STREET
SOMERS, CT 06071

EXISTING 190.0' MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/30/2021	CAD	PRELIMINARY	FDW
0	05/03/2021	CAD	FINAL	FDW

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SHEET TITLE:
FINAL ELEVATION &
ANTENNA PLANS

SHEET NUMBER:
C-2

REVISION:
0

T-MOBILE SITE NUMBER:
CT11531C

BU #: 803934
CT SOMERS FD CAC

400 MAIN STREET
SOMERS, CT 06071

EXISTING 190.0' MONOPOLE

ISSUED FOR:

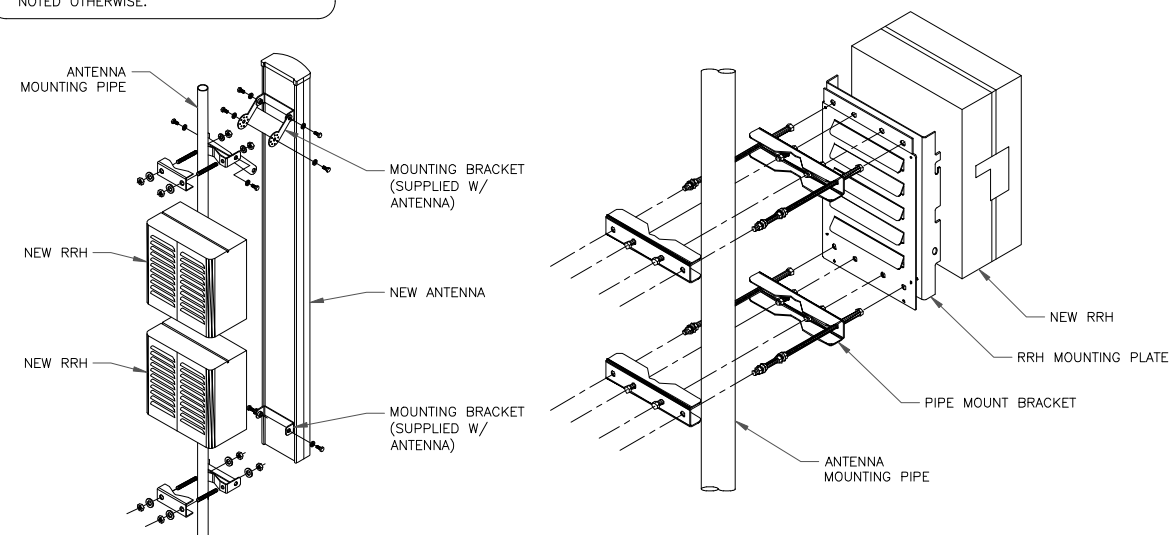
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A	03/30/2021	CAD	PRELIMINARY	FDW
0	05/03/2021	CAD	FINAL	FDW

ANTENNA SCHEDULE										
SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	LTE 1900/G1900	165.0'	90°	RFS/CELWAVE	APX16DWV-16DWV-S-E-A20	0°	0°	(1) ERICSSON - RADIO 4415 B66A_CCV3, (1) ERICSSON - RADIO 4449 B71 B85A_T-MOBILE	--
ALPHA	A2	LTE 600/700/2100 / N600	165.0'	90°	RFS/CELWAVE	APXVAALL24_43-U-NA20_TMO	0°	0°	(1) ERICSSON - RRUS 4415 B25_CCV2	(1) 1-5/8" HYBRID
BETA	B1	LTE 1900/G1900	165.0'	210°	ERICSSON	AIR 32 B2A B66AA_T-MOBILE	0°	0°	(1) ERICSSON - RADIO 4415 B66A_CCV3, (1) ERICSSON - RADIO 4449 B71 B85A_T-MOBILE	--
BETA	B2	LTE 600/700/2100 / N600	165.0'	210°	RFS/CELWAVE	APXVAALL24_43-U-NA20_TMO	0°	0°	(1) ERICSSON - RRUS 4415 B25_CCV2	(1) 1-5/8" HYBRID
GAMMA	C1	LTE 1900/G1900	165.0'	330°	ERICSSON	AIR 32 B2A B66AA_T-MOBILE	0°	0°	(1) ERICSSON - RADIO 4415 B66A_CCV3, (1) ERICSSON - RADIO 4449 B71 B85A_T-MOBILE	--
GAMMA	C2	LTE 600/700/2100 / N600	165.0'	330°	RFS/CELWAVE	APXVAALL24_43-U-NA20_TMO	0°	0°	(1) ERICSSON - RRUS 4415 B25_CCV2	(1) 1-5/8" HYBRID

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE

INSTALLER NOTES:

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



2 ANTENNA WITH RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE



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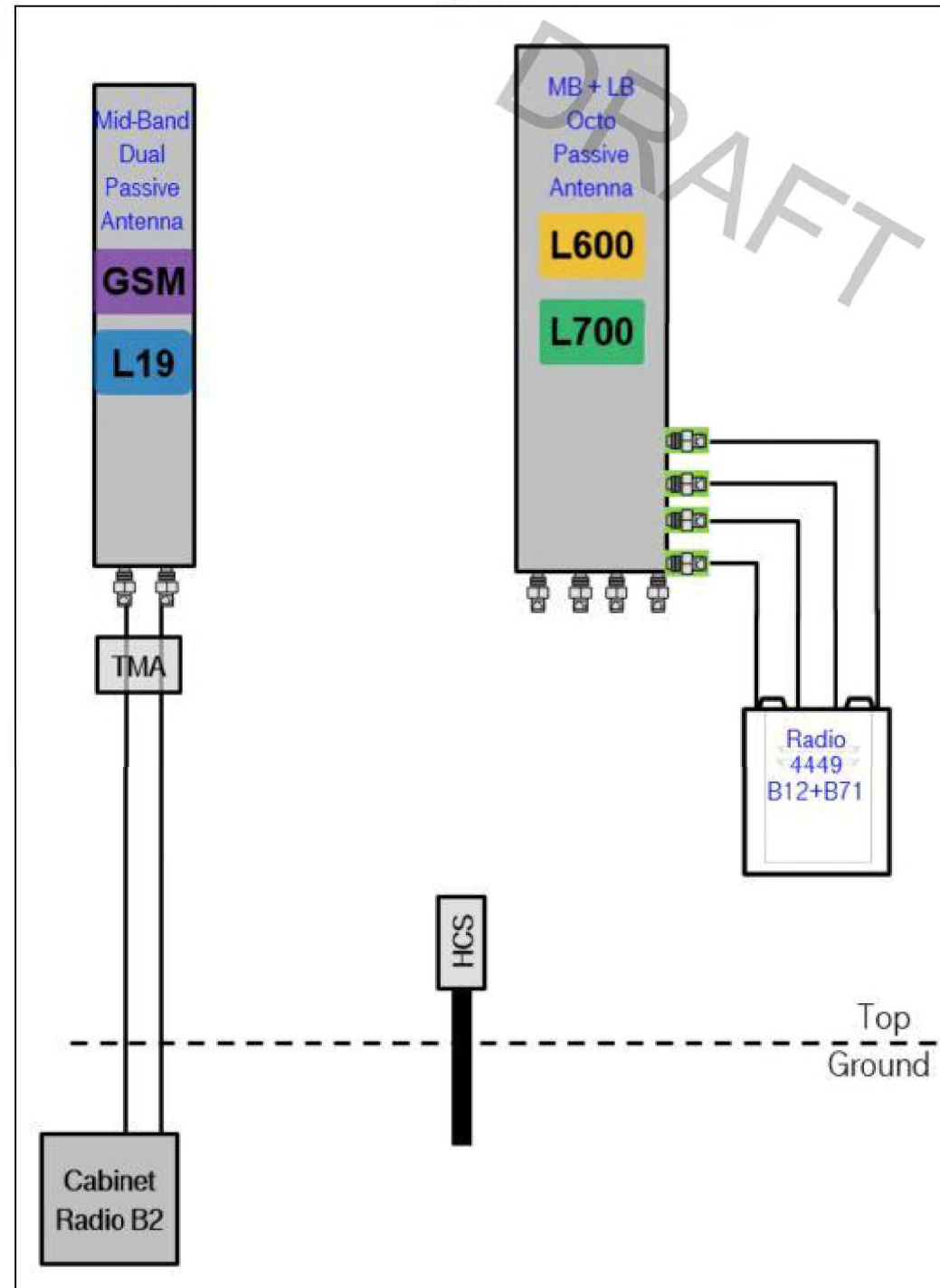
SHEET TITLE:
ANTENNA & CABLE SCHEDULE

SHEET NUMBER:
C-3

REVISION:
0

Section 3 - Proposed Template Images

Capture.JPG



Notes:

1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE



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AUSTIN, TX 78704



1600 UTICA AVENUE SOUTH
ST. LOUIS PARK, MN 55416



1961 NORTHPOINT BLVD, SUITE 130
HISSON, TN 37343
PH: 423-843-9500 / FAX: 423-843-9509

T-MOBILE SITE NUMBER:
CT11531C

BU #: 803934
CT SOMERS FD CAC

400 MAIN STREET
SOMERS, CT 06071

EXISTING 190.0' MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES/QA
A	03/30/2021	CAD	PRELIMINARY	FDW
0	05/03/2021	CAD	FINAL	FDW



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SHEET TITLE:

PLUMBING DIAGRAM

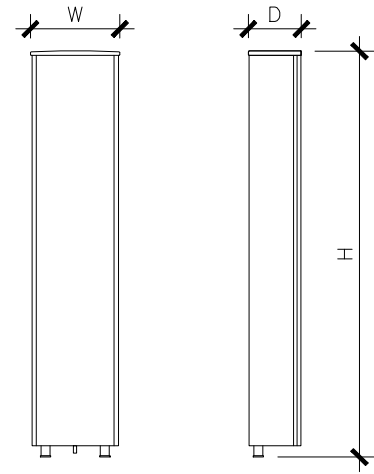
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C-4

REVISION:

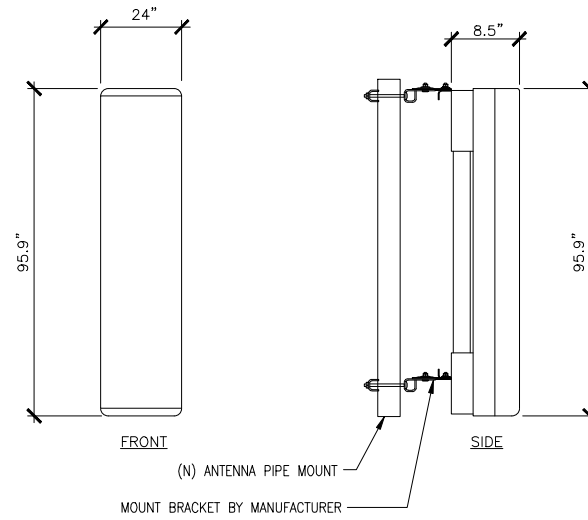
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MANUFACTURER: RFS/CELWAVE
 MODEL: APX16DWV-16DWV-S-E-A20
 WEIGHT: 40.7 LBS
 DIMENSIONS: 55.9"H. X 13.3"W. X 3.15"D.
 FREQUENCY: REFER TO RF DATA SHEET



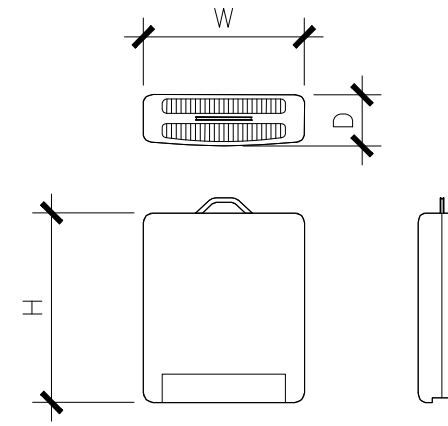
1 RFS/CELWAVE - APX16DWV-16DWV-S-E-A20
 SCALE: NOT TO SCALE

MANUFACTURER: RFS/CELWAVE
 MODEL: APXVAALL24_43-U-NA20_TMO
 WEIGHT: 149.9 LBS
 DIMENSIONS: 95.9"H. X 24"W. X 8.5"D.
 FREQUENCY: REFER TO RF DATA SHEET



2 RFS/CELWAVE - APXVAALL24_43-U-NA20_TMO
 SCALE: NOT TO SCALE

MANUFACTURER: ERICSSON
 MODEL: 4415 B66A_CCIV3
 WEIGHT: 49.6 LBS
 DIMENSIONS: 16.5"H. X 13.5"W. X 6.3"D.
 FREQUENCY: REFER TO RF DATA SHEET



3 RFS/CELWAVE - APXVAALL24_43-U-NA20_TMO
 SCALE: NOT TO SCALE



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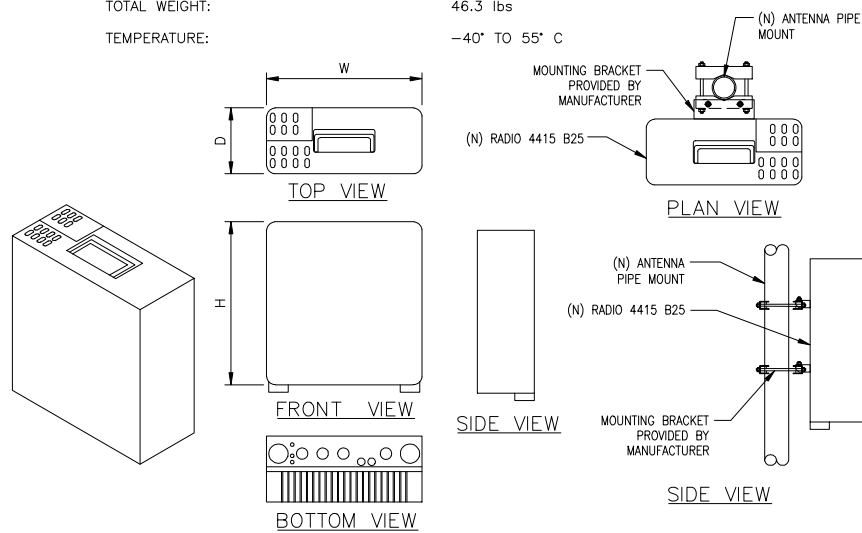
EXISTING 190.0' MONOPOLE

ISSUED FOR:

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A	03/30/2021	CAD	PRELIMINARY	FDW
0	05/03/2021	CAD	FINAL	FDW

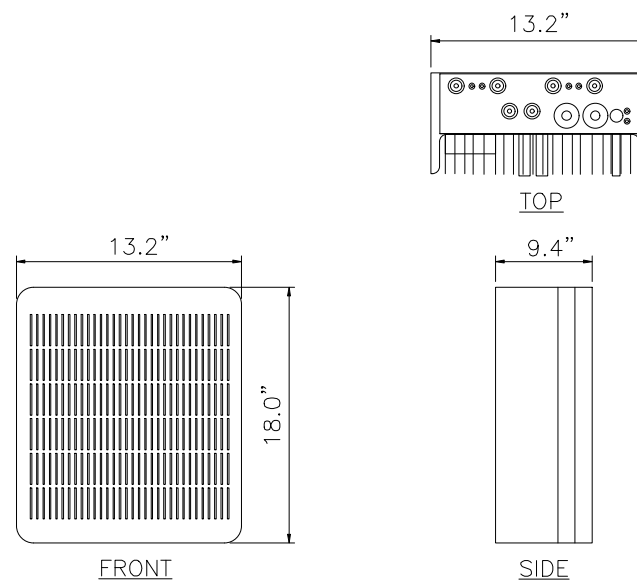
ERICSSON RADIO-4415 B25

DIMENSIONS, WxDxH: 13.2"x5.4"x14.9"
 POWER CONSUMPTION: 660 WATTS
 TOTAL WEIGHT: 46.3 lbs
 TEMPERATURE: -40° TO 55° C

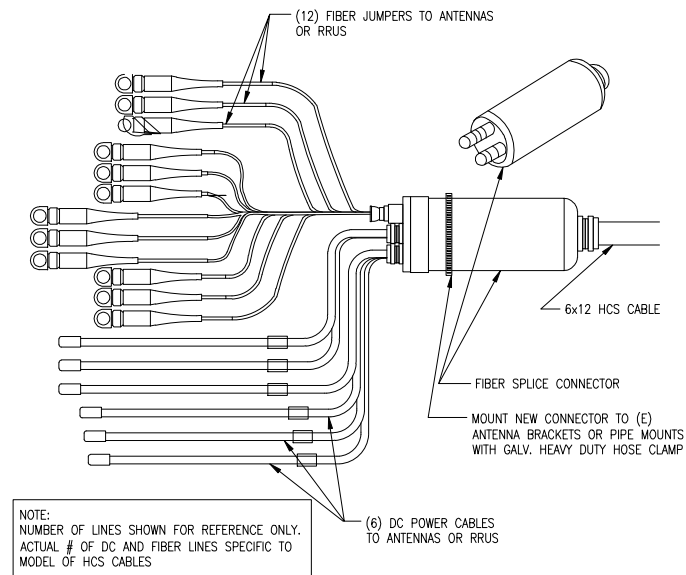


4 ERICSSON - RRUS-4415 B25
 SCALE: NOT TO SCALE

MANUFACTURER: ERICSSON
 MODEL: RRUS-4449 B71 B85A_T-MOBILE
 WEIGHT: 73.21 LBS
 DIMENSIONS: 18.0"H. X 13.2"W. X 9.4"D.
 FREQUENCY: REFER TO RF DATA SHEET



5 ERICSSON - RRUS-4449 B71 B85A_T-MOBILE
 SCALE: NOT TO SCALE



NOTE:
 NUMBER OF LINES SHOWN FOR REFERENCE ONLY.
 ACTUAL # OF DC AND FIBER LINES SPECIFIC TO
 MODEL OF HCS CABLES

6 (N) 6X12 HCS CABLE DETAIL
 SCALE: NOT TO SCALE

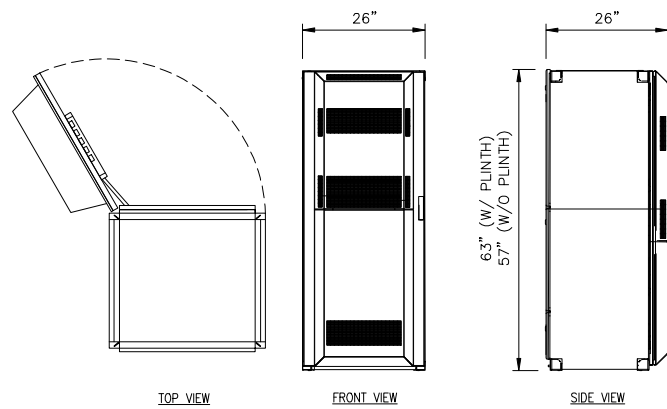


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SHEET TITLE:
EQUIPMENT SPECS

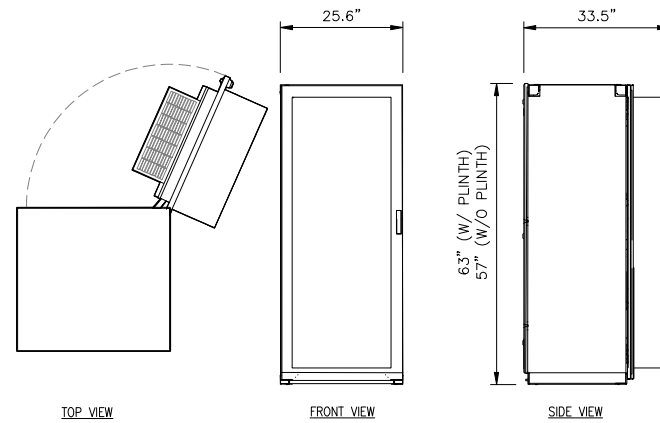
SHEET NUMBER:
C-5.1

REVISION:
0



ERICSSON MODEL NO.:	B160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x26"x26" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	485 LBS
MAXIMUM WEIGHT:	2100± LBS

1 B160 CABINET DETAIL
SCALE: NOT TO SCALE



ERICSSON MODEL NO.:	6160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x25.6"x25.6" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	410 LBS
MAXIMUM WEIGHT:	770± LBS

2 6160 CABINET DETAIL
SCALE: NOT TO SCALE

3 NOT USED
SCALE: NOT TO SCALE

4 NOT USED
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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EQUIPMENT SPECS

SHEET NUMBER:

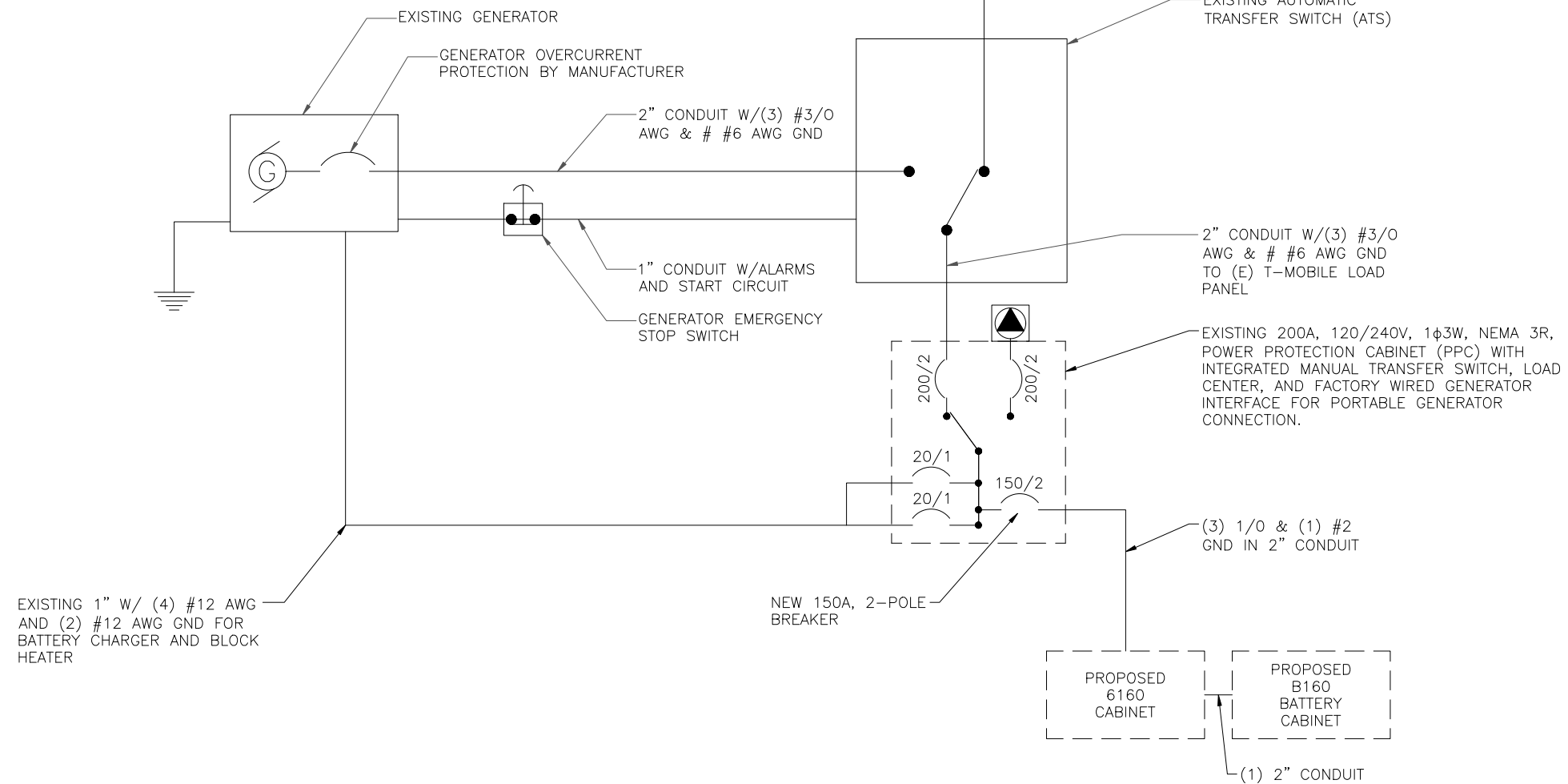
C-5.2

REVISION:

0

T-MOBILE PANEL SCHEDULE											
MAIN: 200 AMP MAIN BREAKER			VOLTAGE/PHASE: 120/240V, 1-PHASE, 3-WIRE				SHORT CIRCUIT CURRENT RATING: --				
MOUNTING: INSIDE PPC ENCLOSURE			ENCLOSURE: NEMA 3R				SURGE PROTECTION DEVICE: YES				
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	LOAD (VA)		CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
					A-PHASE	B-PHASE					
6160	2000	C	150	1	2000	2	30	NC	0	0	TVSS
	2000	C		3	2000	4					
6301	9000	C	150	5	10000	6	60	NC	1000	1000	RBS 6201
	9000	C		7	10000	8					
6160 GFCI	180	NC	20	9	180	10	--	--	--	--	BLANK
BLANK	--	--	--	11	0	12	--	--	--	--	BLANK
BLANK	--	--	--	13	0	14	--	--	--	--	BLANK
BLANK	--	--	--	15	0	16	--	--	--	--	BLANK
BLANK	--	--	--	17	0	18	--	--	--	--	BLANK
BLANK	--	--	--	19	0	20	--	--	--	--	BLANK
BLANK	--	--	--	21	0	22	--	--	--	--	BLANK
BLANK	--	--	--	23	0	24	--	--	--	--	BLANK
PHASE LOAD (VA) =					12360	12180	C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD				
PHASE CURRENT (A) =					126	124	AMPERES PER PHASE CANNOT EXCEED MAIN BREAKER RATING				
PANEL TOTAL (VA) =					24540						

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE



2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE



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BU #: 803934
CT SOMERS FD CAC

400 MAIN STREET
SOMERS, CT 06071

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SHEET TITLE:
AC PANEL SCHEDULE &
ONE LINE DIAGRAM

SHEET NUMBER:
E-1

REVISION:
0

T-MOBILE SITE NUMBER:
CT11531C

BU #: **803934**
CT SOMERS FD CAC

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SOMERS, CT 06071

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SHEET TITLE:
**ANTENNA GROUNDING
DIAGRAM**

SHEET NUMBER:

G-1

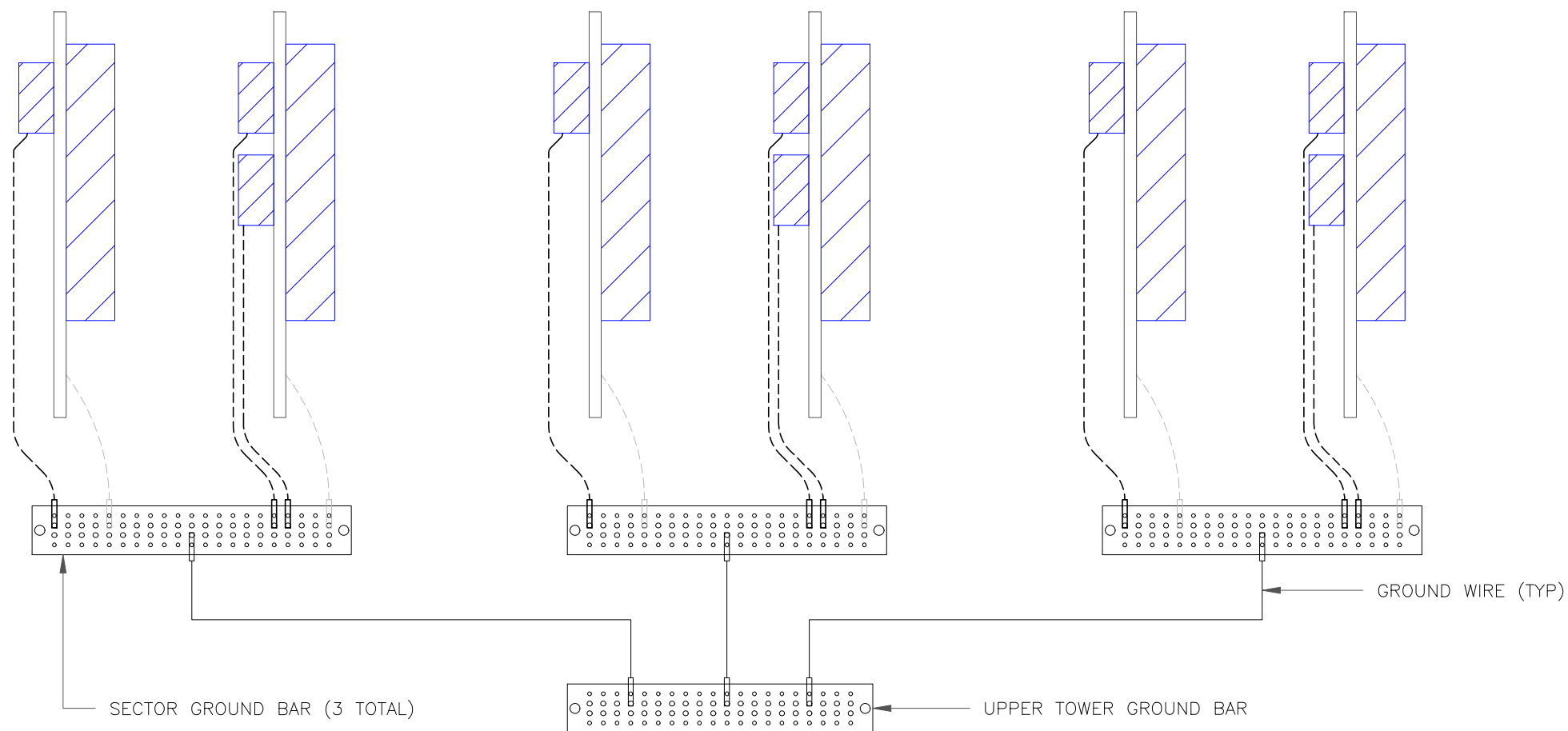
REVISION:

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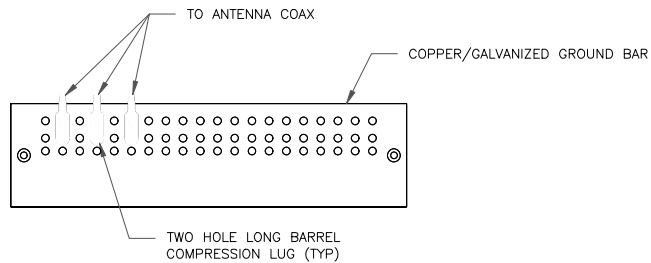
ALPHA

BETA

GAMMA

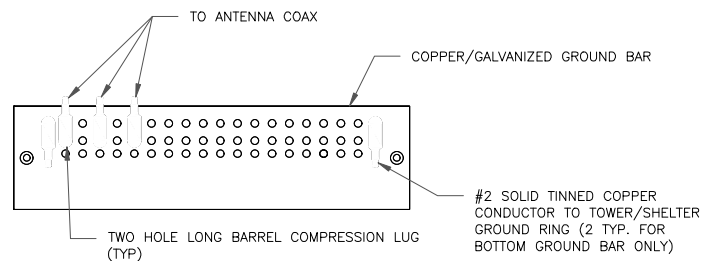


NOTE:
ALL NEW GROUNDS TO BE #6 STRANDED
COPPER WITH GREEN INSULATION UNLESS
NOTED OTHERWISE.



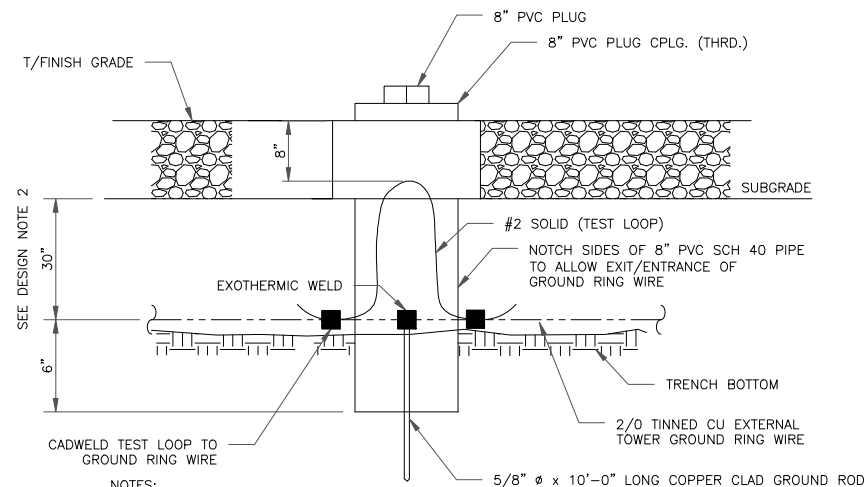
- NOTES:
- DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
 - EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
 - GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO ANTENNA MOUNT STEEL.

1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



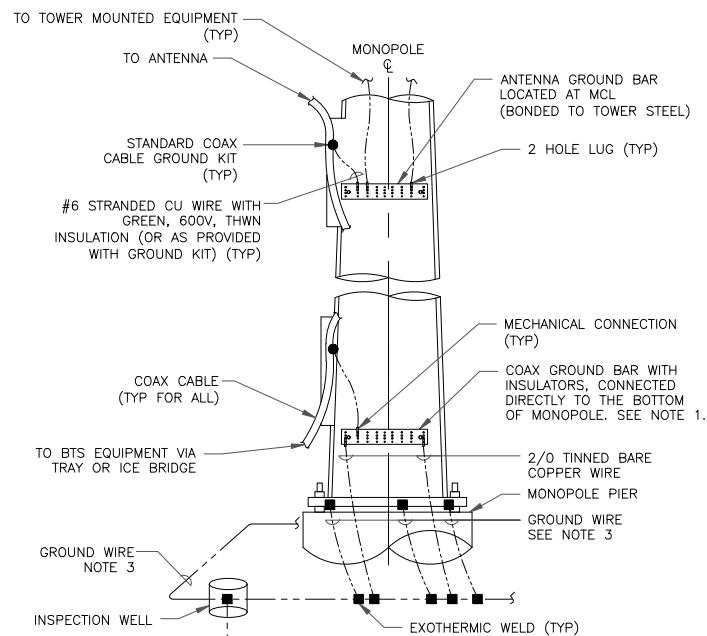
- NOTES:
- EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
 - GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
 - GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

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



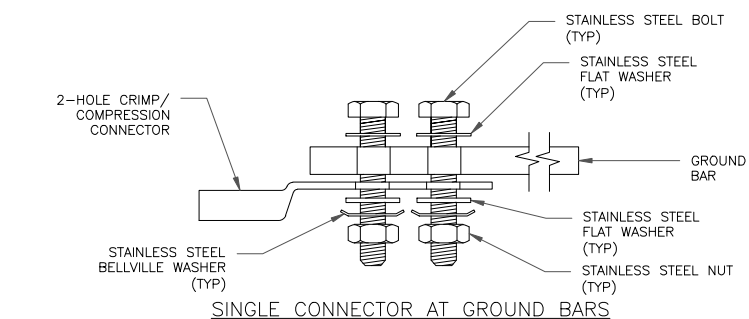
- NOTES:
- GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
 - GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE

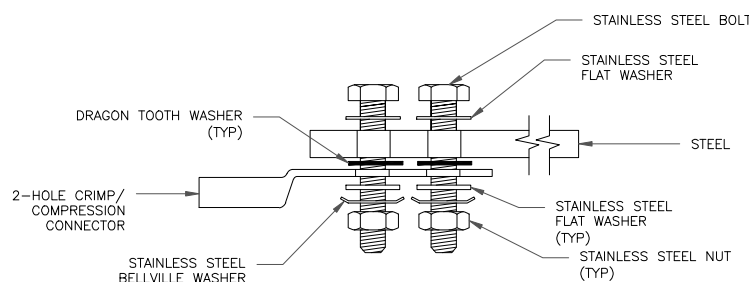


- NOTES:
- NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
 - ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE 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.

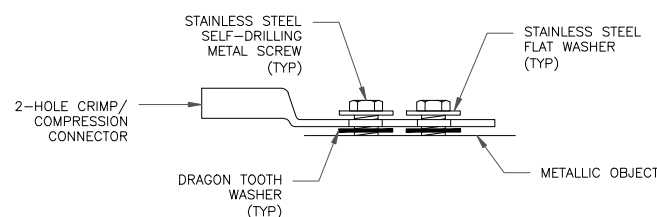
4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

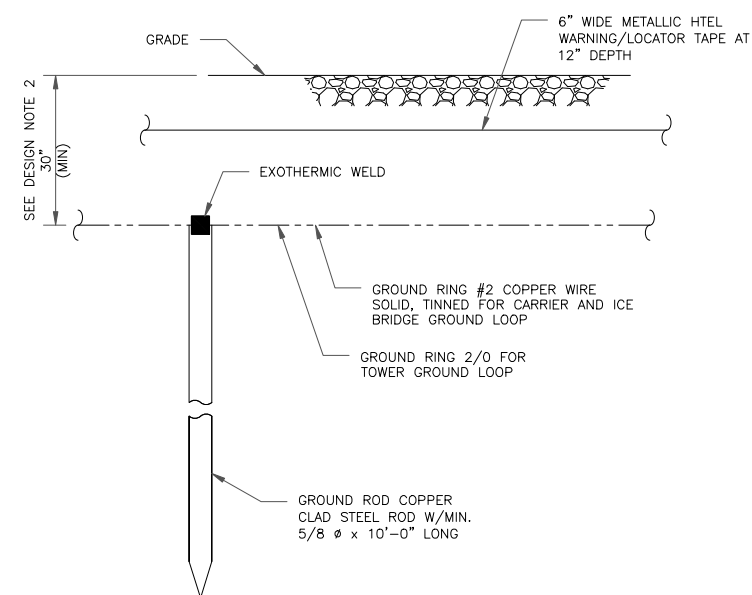


SINGLE CONNECTOR AT STEEL OBJECTS



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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SHEET TITLE:

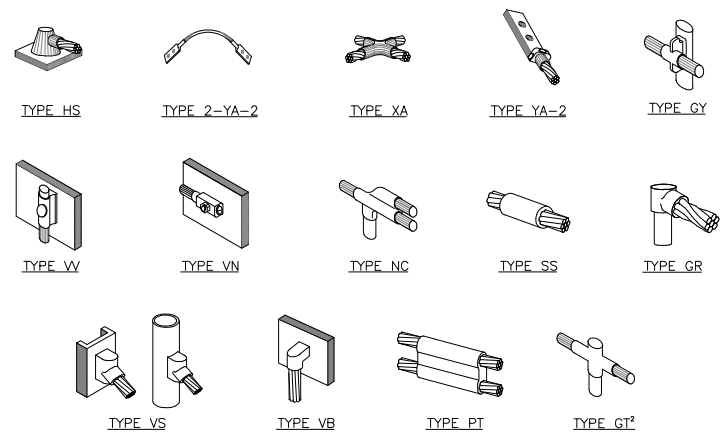
GROUNDING DETAILS

SHEET NUMBER:

G-2

REVISION:

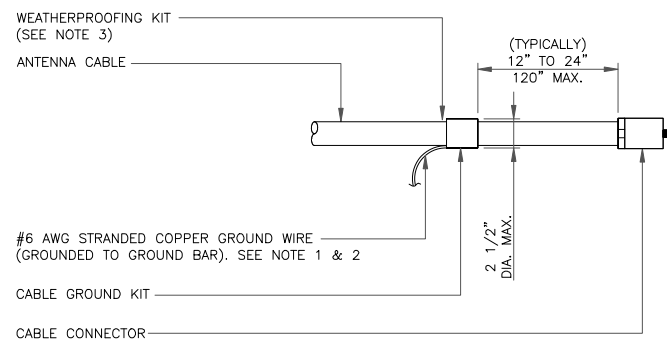
0



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.

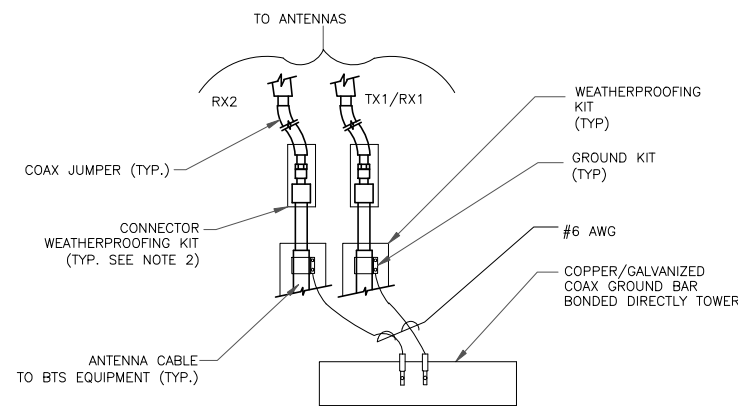
1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE



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.

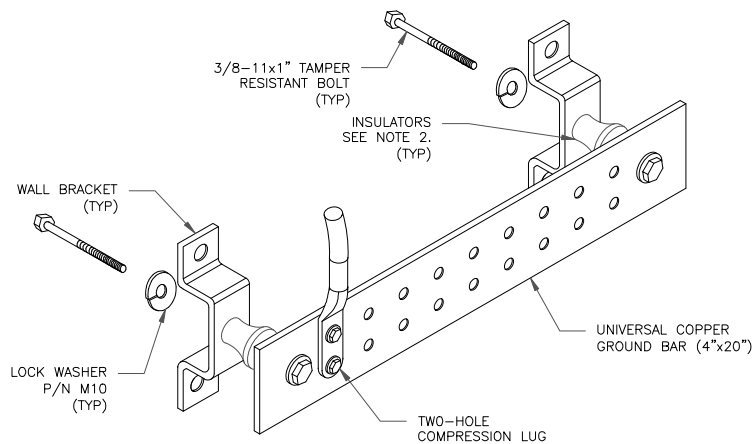
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



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.

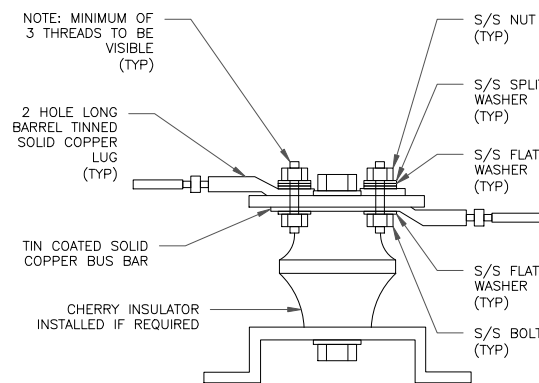
4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



NOTES:

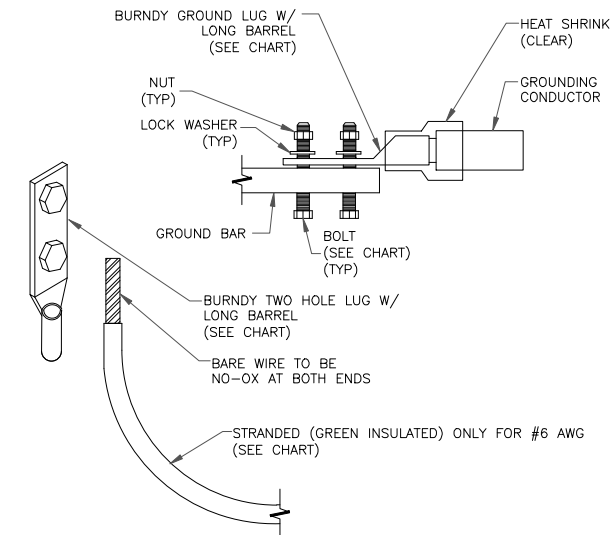
1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY GAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION. CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR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

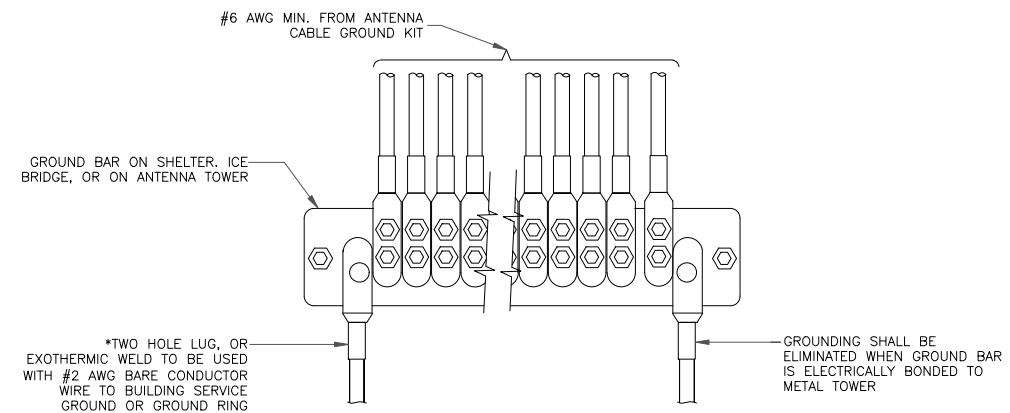
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



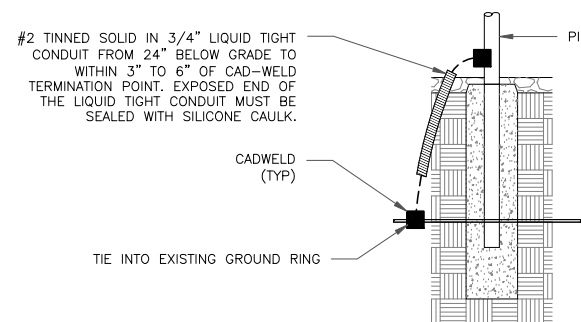
NOTES:

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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1961 NORTHPOINT BLVD, SUITE 130
HIXSON, TN 37343
PH: 423-843-9500 / FAX: 423-843-9509

T-MOBILE SITE NUMBER:
CT11531C

BU #: 803934
CT SOMERS FD CAC

400 MAIN STREET
SOMERS, CT 06071

EXISTING 190.0' MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	03/30/2021	CAD	PRELIMINARY	FDW
0	05/03/2021	CAD	FINAL	FDW



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 TITLE:

GROUNDING DETAILS

SHEET NUMBER:

G-3

REVISION:

0

Exhibit D

Structural Analysis Report



Date: **February 26, 2021**

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

Subject: **Structural Analysis Report**

Carrier Designation: **T-Mobile Co-Locate**
Site Number: CT11531C
Site Name: CT531/Crown-Somers

Crown Castle Designation: **BU Number:** 803934
Site Name: CT Somers FD CAC
JDE Job Number: 627574
Work Order Number: 1908544
Order Number: 537325 Rev. 0

Engineering Firm Designation: **B+T Group Project Number:** 87311.008.01

Site Data: **400 Main Street, Somers, Tolland County, CT**
Latitude 41° 59' 1.48", Longitude -72° 27' 56.87"
187 Foot - Monopole

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 - 78.1%**

This analysis utilizes an ultimate 3-second gust wind speed of 125 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: John Landon

Respectfully submitted by: B+T Engineering, Inc.
COA: PEC.0001564; Expires: 2/10/2021



Chad E. Tuttle, P.E.

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1) INTRODUCTION

This tower is a 187 ft. Monopole designed by Summit Manufacturing, in April of 2001.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	2 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)
165.0	165.0	3	Ericsson	RADIO 4415 B66A_CCIV3	3	1-5/8
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	Ericsson	RRUS 4415 B25_CCIV2		
		3	Rfs Celwave	APX16DWV-16DWV-S-E-A20		
		3	Rfs Celwave	APXVAALL24_43-U-NA20_TMO		
		1	Site Pro 1	PRK-SFS-L Kit		
		1	Site Pro 1	HRK14 Rail Kit		
		1	--	Platform Mount [LP 1201-1_HR-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
188.0	193.0	1	Andrew	DB404L-B	4 1	1-1/4 7/8
	190.0	3	Alcatel Lucent	TD-RRH8X20-25		
		2	Rfs Celwave	APXVSP18-C-A20		
	188.0	1	Rfs Celwave	APXVSP18-C-A20		
	188.0	1	--	Platform Mount [LP 1201-1]		
186.0	186.0	3	Rfs Celwave	APXVTM14-C-120	--	--
		3	Alcatel Lucent	800MHZ 2X50W RRH W/FILTER		
		1	Alcatel Lucent	PCS 1900MHz 4x45W-65MHz		
177.0	177.0	1	--	Side Arm Mount [SO 102-3]	--	--
		3	Alcatel Lucent	TME-RRH2X40 700		
175.0	179.0	3	Alcatel Lucent	9442 RRH2X40-AWS	19	1-5/8
		1	Raycap	RRFDC-3315-PF-48		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	175.0	3	Andrew	LNx-6513DS-A1M		
		2	Antel	LPA-80063/4CF		
		4	Antel	LPA-80080-4CF-EDIN-0		
		6	Kathrein	742 213		
		1	--	Platform Mount [LP 1201-1]		
165.0	165.0	1	--	Platform Mount [LP 1201-1_HR-1]	3	1-5/8
157.0	157.0	3	Cci Antennas	DMP65R-BU8D	6 4 2 6	1-5/8 3/4 3/8 5/16
		3	Cci Antennas	HPA65R-BU8A		
		3	Cci Antennas	OPA65R-BU8D		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 4478 B14_CCIV2		
		3	Ericsson	RRUS 8843 B2/B66A_CCIV2		
		3	Kathrein	800 10121		
		6	Powerwave Tech.	LGP21401		
		1	Raycap	DC6-48-60-18-8F		
		1	Raycap	DC6-48-60-18-8F		
		1	--	C10857804		
150.0	150.0	3	Rfs Celwave	APXV18-206517S-C	6	1-5/8
120.0	125.0	1	Sinclair	SD212-SF2P2SNM	1	7/8
	120.0	1	--	Side Arm Mount [SO 702-1]		
115.0	115.0	1	Sinclair	SD110-SFXPASNM	1	1/2
81.0	82.0	1	Telewave	ANT450D3	1	7/8
	81.0	1	--	Side Arm Mount [SO 309-1]		
48.0	48.0	1	Lucent	KS24019-L112A	1	1/2
		1	--	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Tower Manufacturer Drawing	419873	CCI Sites
Mount Analysis Report	9516467	CCI Sites
Mount Analysis Report	9363401	CCI Sites
Foundation Drawing	1058248	CCI Sites
Geotech Report	1095648	CCI Sites
Crown CAD Package	Date: 12/21/2020	CCI Sites

3.1) Analysis Method

tnxTower (version 8.0.7.5), 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) 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 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	187 - 136	Pole	TP36.201x26x0.25	1	-20.551	1708.402	58.2	Pass
L2	136 - 89.5	Pole	TP45.003x34.801x0.375	2	-32.458	3178.707	66.4	Pass
L3	89.5 - 44.25	Pole	TP53.304x43.103x0.438	3	-49.079	4394.155	71.6	Pass
L4	44.25 - 0	Pole	TP61.28x51.079x0.5	4	-73.485	5924.929	71.5	Pass
							Summary	
						Pole (L3)	71.6	Pass
						Rating =	71.6	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	64.4	Pass
1	Base Plate	Base	48.4	Pass
1	Base Foundation (Structure)	Base	78.1	Pass
1	Base Foundation (Soil Interaction)	Base	59.0	Pass

Structure Rating (max from all components) =	78.1%
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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.

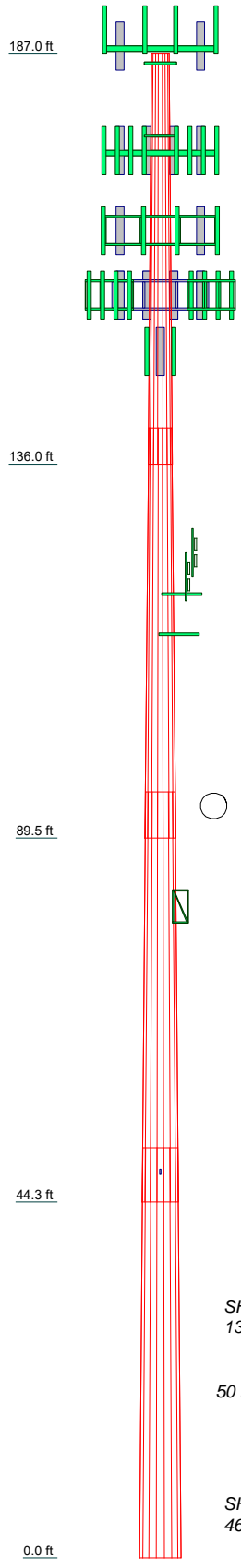
4.1) Recommendations

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	1	2	3	4	
Length (ft)	51.000	51.000	51.000	51.000	
Number of Sides	18	18	18	18	
Thickness (in)	0.250	0.375	0.438	0.500	
Socket Length (ft)	4.500	5.750	6.750	6.750	
Top Dia (in)	26.000	34.801	43.103	51.079	
Bot Dia (in)	36.201	45.003	53.304	61.280	
Grade		A607-65			
Weight (K)	4.2	8.2	11.5	15.3	39.3



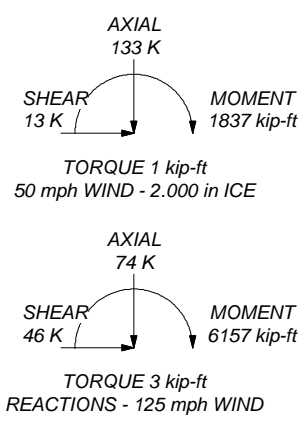
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			


TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 2.00 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. TIA-222-H Annex S
9. TOWER RATING: 71.6%

ALL REACTIONS
ARE FACTORED



TORQUE 3 kip-ft
REACTIONS - 125 mph WIND

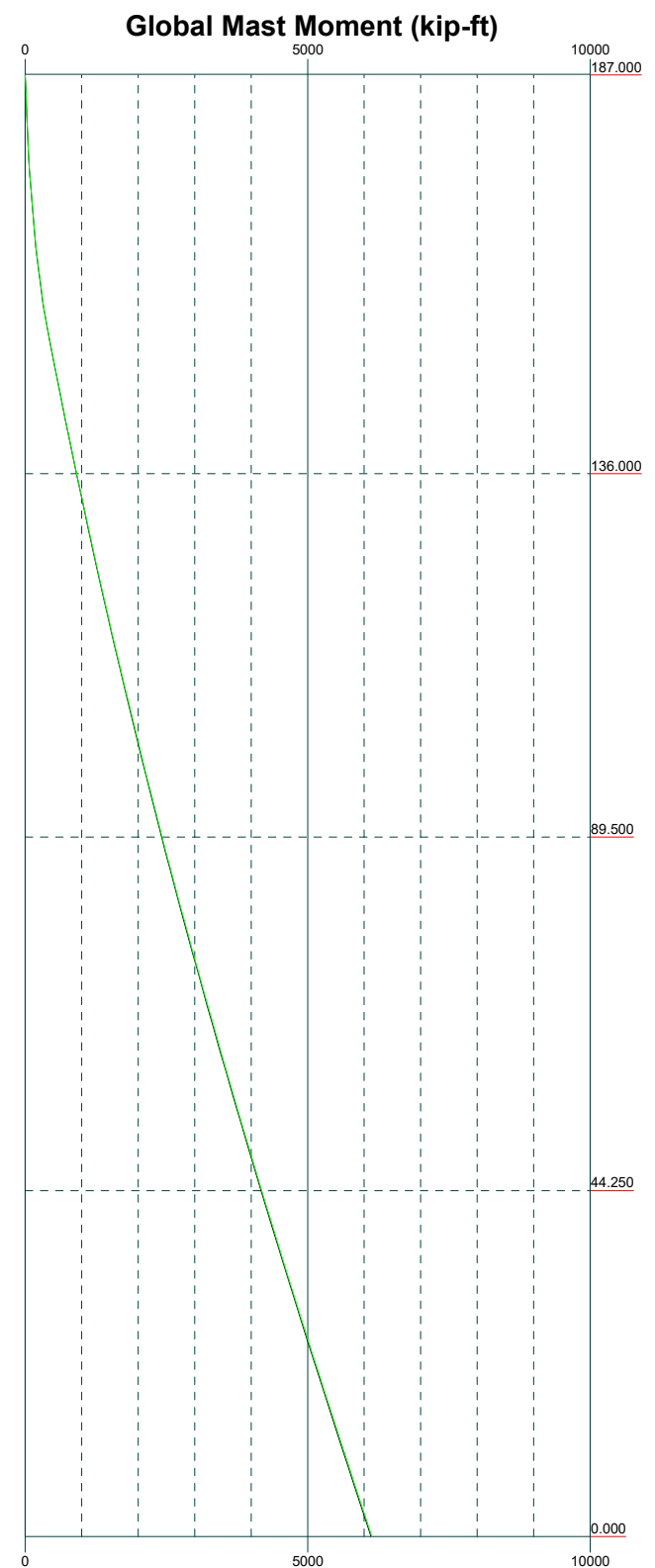
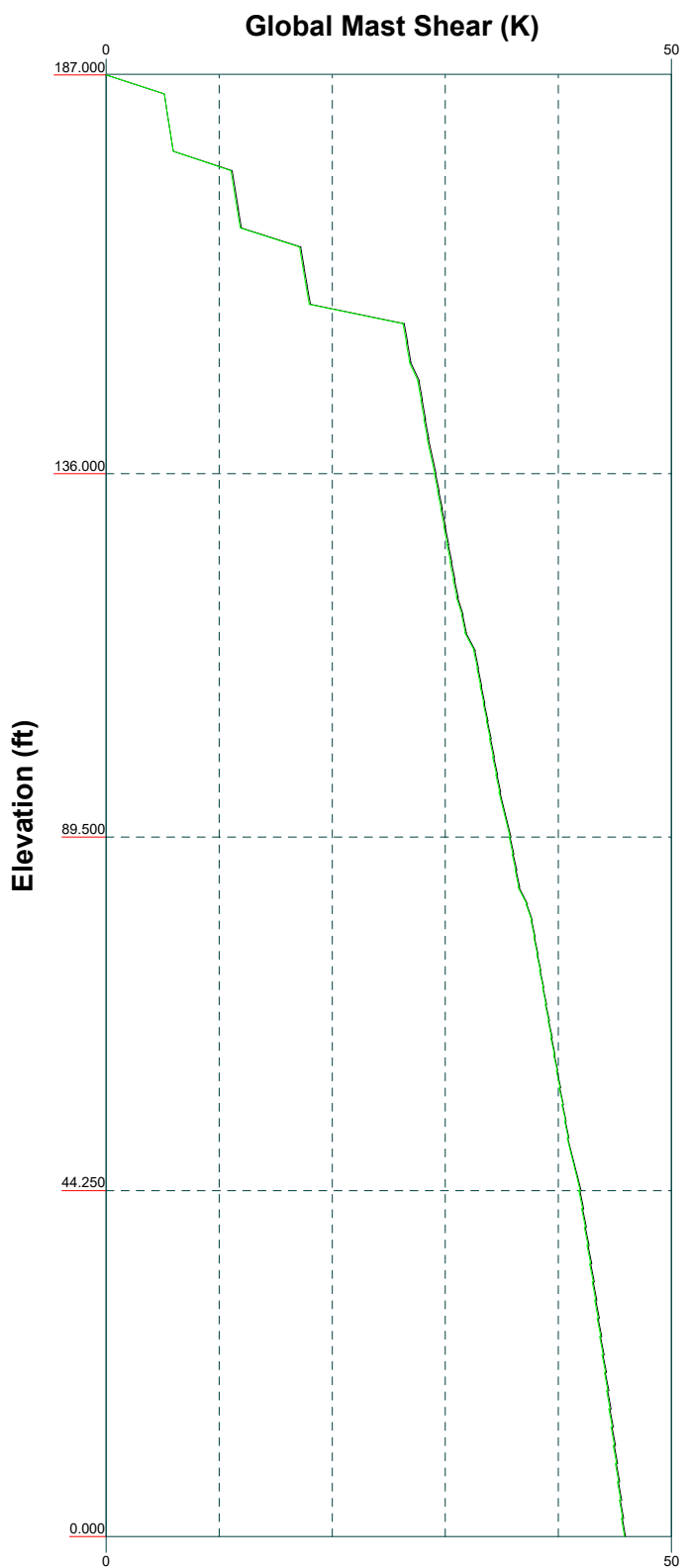
B+T Group
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Job: 87311.008.01 - CT SOMERS FD CAC, CT (BU# 80393)		
Project:		
Client: Crown Castle	Drawn by: JD Prabhu	App'd:
Code: TIA-222-H	Date: 02/27/21	Scale: NTS
Path:	Dwg No. E-1	

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Vx Vz

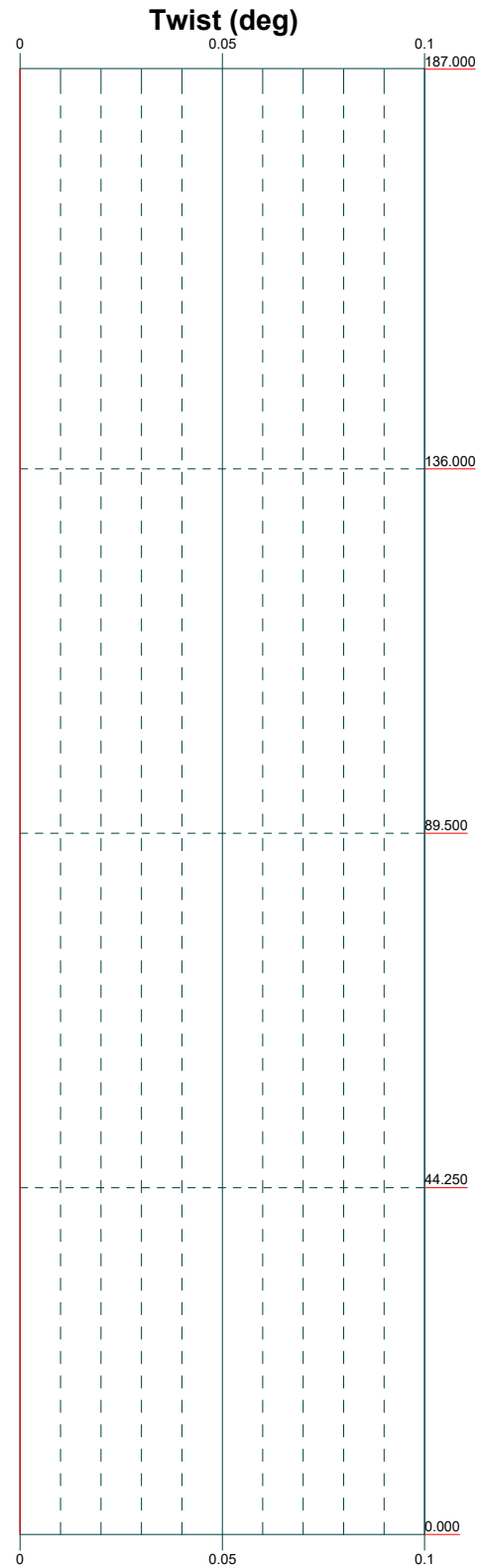
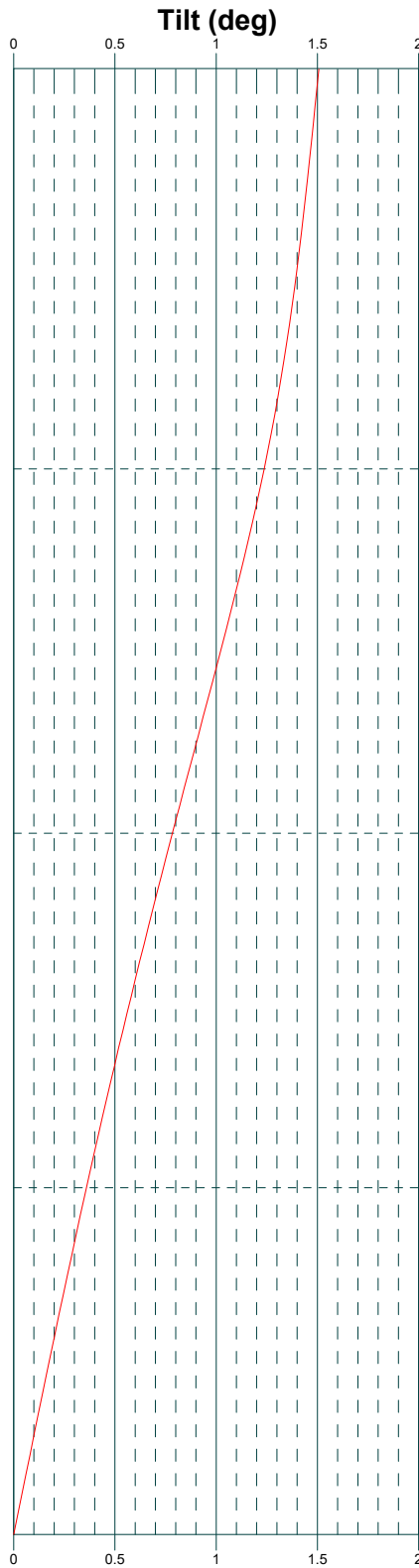
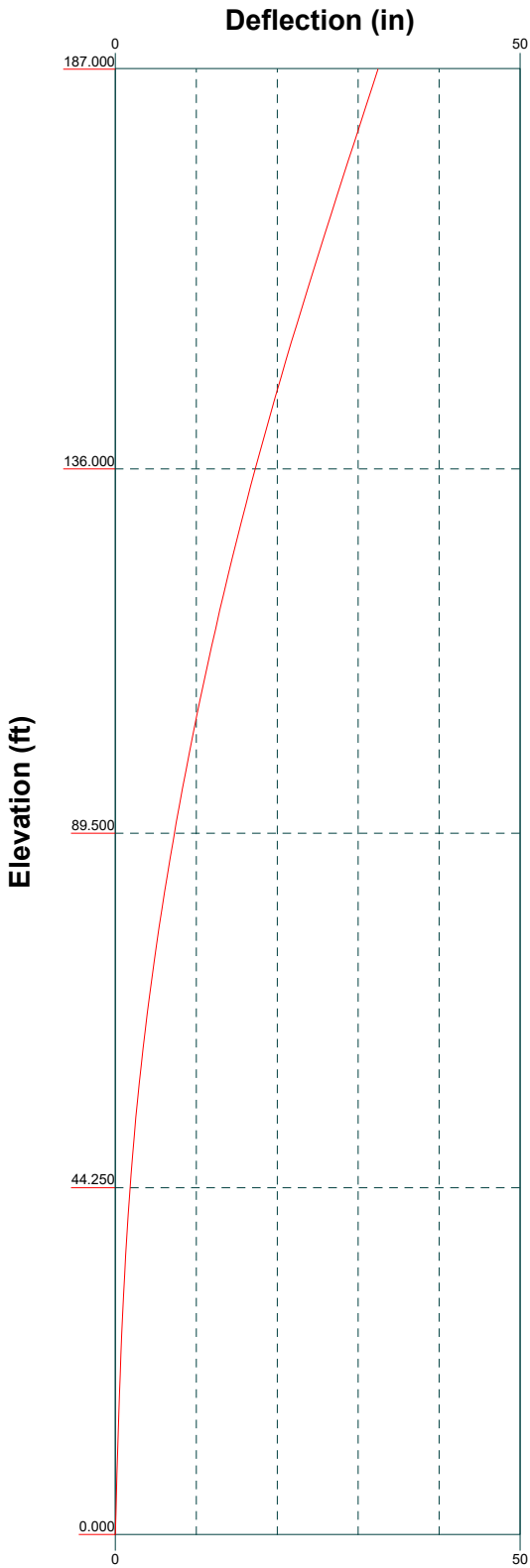
Mx Mz



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Project:		
Client: Crown Castle	Drawn by: JD Prabhu	App'd:
Code: TIA-222-H	Date: 02/27/21	Scale: NTS
Path:	Dwg No: E-4	

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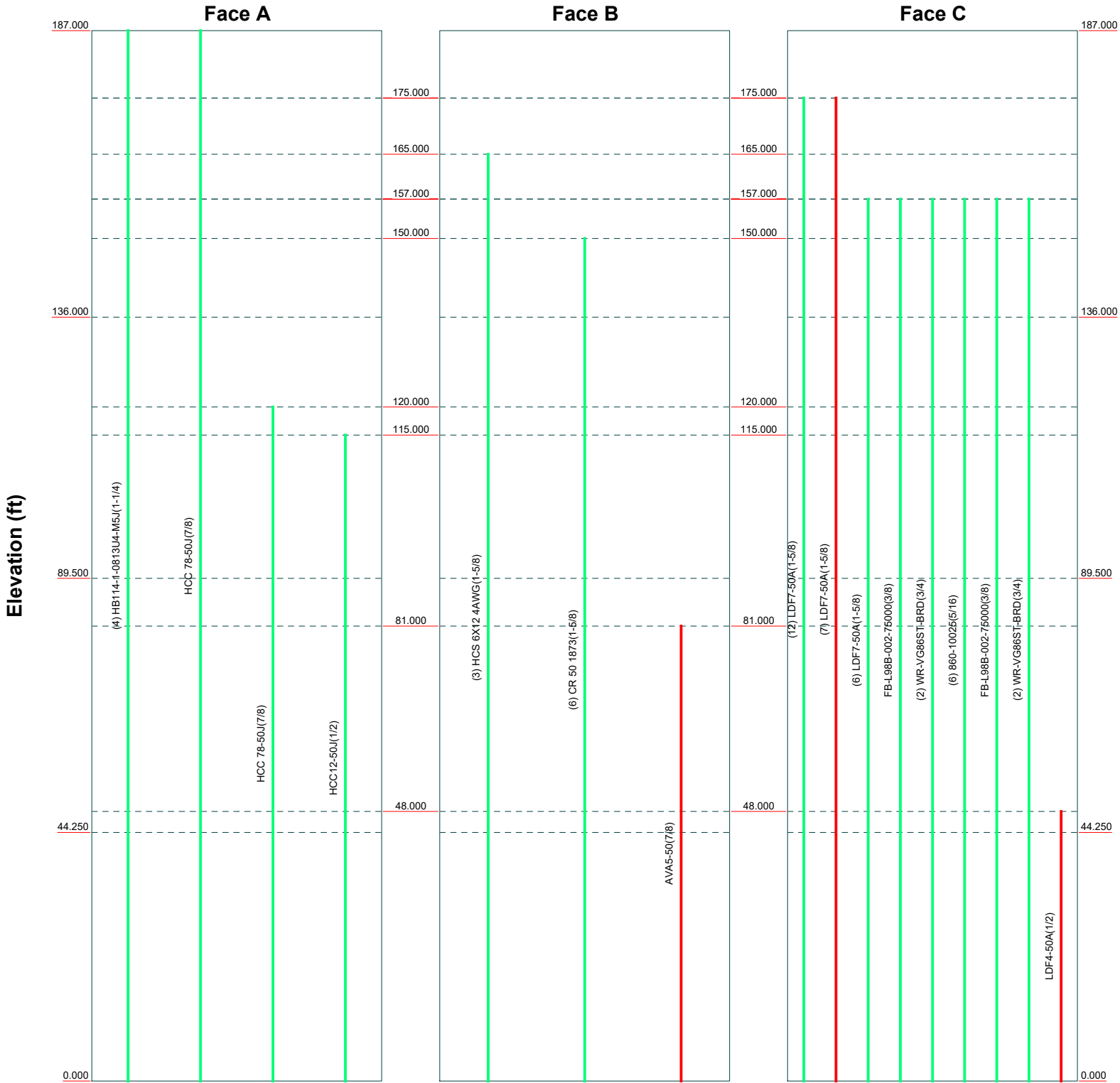
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Project:		
Client: Crown Castle	Drawn by: JD Prabhu	App'd:
Code: TIA-222-H	Date: 02/27/21	Scale: NTS
Path:	Dwg No: E-5	


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Feed Line Distribution Chart

0' - 187'

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




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Project:		
Client: Crown Castle	Drawn by: JD Prabhu	App'd:
Code: TIA-222-H	Date: 02/27/21	Scale: NTS
Path:	Dwg No. E-7	

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	Project	Date 00:39:49 02/27/21
	Client Crown Castle	Designed by JD Prabhu

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

- Tower is located in Tolland County, Connecticut.
- Tower base elevation above sea level: 198.000 ft.
- Basic wind speed of 125 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.000 ft.
- Nominal ice thickness of 2.000 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.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.05.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- 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 |
|--|---|---|

tnxTower B+T Group 1717 S. Boulder, Suite 300 Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job 87311.008.01 - CT SOMERS FD CAC, CT (BU# 803934)	Page 2 of 21
	Project	Date 00:39:49 02/27/21
	Client Crown Castle	Designed by JD Prabhu

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	187.000-136.000	51.000	4.500	18	26.000	36.201	0.250	1.000	A607-65 (65 ksi)
L2	136.000-89.500	51.000	5.750	18	34.801	45.003	0.375	1.500	A607-65 (65 ksi)
L3	89.500-44.250	51.000	6.750	18	43.103	53.304	0.438	1.750	A607-65 (65 ksi)
L4	44.250-0.000	51.000		18	51.079	61.280	0.500	2.000	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I ² /Q in ²	w in	w/t
L1	26.363	20.433	1711.654	9.141	13.208	129.592	3425.561	10.218	4.136	16.544
	36.721	28.527	4658.191	12.763	18.390	253.299	9322.512	14.266	5.931	23.726
L2	36.194	40.975	6135.246	12.221	17.679	347.039	12278.566	20.492	5.465	14.573
	45.639	53.118	13365.891	15.843	22.862	584.646	26749.369	26.564	7.261	19.361
L3	44.868	59.246	13625.291	15.146	21.896	622.267	27268.510	29.629	6.816	15.58
	54.059	73.412	25921.737	18.768	27.078	957.284	51877.583	36.713	8.612	19.683
L4	53.161	80.269	25943.042	17.955	25.948	999.807	51920.220	40.142	8.110	16.22
	62.148	96.458	45019.064	21.577	31.130	1446.152	90097.366	48.238	9.905	19.811

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
187.000-136.000				1	1	1			
136.000-89.500				1	1	1			
89.500-44.250				1	1	1			
44.250-0.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
LDF7-50A(1-5/8)	C	No	Surface Ar (CaAa)	175.000 - 0.000	7	7	0.300 - 0.450	1.980		0.001
* AVA5-50(7/8)	B	No	Surface Ar (CaAa)	81.000 - 0.000	1	1	-0.220 - 0.200	1.102		0.000

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	Project	Date 00:39:49 02/27/21
	Client Crown Castle	Designed by JD Prabhu

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
*										
LDF4-50A(1/2)	C	No	Surface Ar (CaAa)	48.000 - 0.000	1	1	0.250 0.260	0.630		0.000
*										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		CAAA ft ² /ft	Weight klf
HB114-1-0813U4-M 5J(1-1/4)	A	No	No	Inside Pole	187.000 - 0.000	4	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001
*									
HCC 78-50J(7/8)	A	No	No	Inside Pole	187.000 - 0.000	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001
*									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	175.000 - 0.000	12	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001
*									
HCS 6X12 4AWG(1-5/8)	B	No	No	Inside Pole	165.000 - 0.000	3	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.002 0.002 0.002 0.002
*									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	157.000 - 0.000	6	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001
FB-L98B-002-75000 (3/8)	C	No	No	Inside Pole	157.000 - 0.000	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	157.000 - 0.000	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001
860-10025(5/16)	C	No	No	Inside Pole	157.000 - 0.000	6	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000
FB-L98B-002-75000 (3/8)	C	No	No	Inside Pole	157.000 - 0.000	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.000 0.000 0.000 0.000
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	157.000 - 0.000	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.001 0.001 0.001 0.001
*									
CR 50 1873(1-5/8)	B	No	No	Inside Pole	150.000 - 0.000	6	No Ice	0.000	0.001

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	Project	Date 00:39:49 02/27/21
	Client Crown Castle	Designed by JD Prabhu

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight klf
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
*									
HCC 78-50J(7/8)	A	No	No	Inside Pole	120.000 - 0.000	1	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
*									
HCC12-50J(1/2)	A	No	No	Inside Pole	115.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
*									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	187.000-136.000	A	0.000	0.000	0.000	0.000	0.272
		B	0.000	0.000	0.000	0.000	0.279
		C	0.000	0.000	54.054	0.000	0.763
L2	136.000-89.500	A	0.000	0.000	0.000	0.000	0.270
		B	0.000	0.000	0.000	0.000	0.566
		C	0.000	0.000	64.449	0.000	1.067
L3	89.500-44.250	A	0.000	0.000	0.000	0.000	0.276
		B	0.000	0.000	4.050	0.000	0.562
		C	0.000	0.000	62.953	0.000	1.039
L4	44.250-0.000	A	0.000	0.000	0.000	0.000	0.270
		B	0.000	0.000	4.876	0.000	0.552
		C	0.000	0.000	64.118	0.000	1.022

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	187.000-136.000	A	1.991	0.000	0.000	0.000	0.000	0.272
		B		0.000	0.000	0.000	0.000	0.279
		C		0.000	0.000	86.981	0.000	1.933
L2	136.000-89.500	A	1.921	0.000	0.000	0.000	0.000	0.270
		B		0.000	0.000	0.000	0.000	0.566
		C		0.000	0.000	103.708	0.000	2.463
L3	89.500-44.250	A	1.824	0.000	0.000	0.000	0.000	0.276
		B		0.000	0.000	18.170	0.000	0.823
		C		0.000	0.000	101.806	0.000	2.368
L4	44.250-0.000	A	1.636	0.000	0.000	0.000	0.000	0.270
		B		0.000	0.000	21.015	0.000	0.841
		C		0.000	0.000	115.764	0.000	2.472

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Feed Line Center of Pressure

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L1	187.000-136.000	-4.313	4.313	-3.547	3.547
L2	136.000-89.500	-5.353	5.353	-4.480	4.480
L3	89.500-44.250	-5.267	5.152	-3.959	3.705
L4	44.250-0.000	-5.513	5.480	-4.443	4.531

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	6	LDF7-50A(1-5/8)	136.00 - 175.00	1.0000	1.0000
L2	6	LDF7-50A(1-5/8)	89.50 - 136.00	1.0000	1.0000
L3	6	LDF7-50A(1-5/8)	44.25 - 89.50	1.0000	1.0000
L3	25	AVA5-50(7/8)	44.25 - 81.00	1.0000	1.0000
L3	27	LDF4-50A(1/2)	44.25 - 48.00	1.0000	1.0000
L4	6	LDF7-50A(1-5/8)	0.00 - 44.25	1.0000	1.0000
L4	25	AVA5-50(7/8)	0.00 - 44.25	1.0000	1.0000
L4	27	LDF4-50A(1/2)	0.00 - 44.25	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
Town of Somers									
DB404L-B	A	From Leg	4.000 0.000 5.000	0.000	188.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.140 2.052 2.964 4.788	1.140 2.052 2.964 4.788	0.014 0.018 0.022 0.031
Sprint									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	188.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.600 5.050 5.500 6.440	4.010 4.450 4.890 5.820	0.095 0.160 0.235 0.419
APXVSPP18-C-A20 w/	B	From Leg	4.000	0.000	188.000	No Ice	4.600	4.010	0.095

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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	
Mount Pipe			0.000			1/2" Ice	5.050	4.450	0.160
			2.000			1" Ice	5.500	4.890	0.235
						2" Ice	6.440	5.820	0.419
APXVSP18-C-A20 w/ Mount Pipe	C	From Leg	4.000	0.000	188.000	No Ice	4.600	4.010	0.095
			0.000			1/2" Ice	5.050	4.450	0.160
			2.000			1" Ice	5.500	4.890	0.235
						2" Ice	6.440	5.820	0.419
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.000	0.000	188.000	No Ice	4.090	2.860	0.077
			0.000			1/2" Ice	4.480	3.230	0.127
			-2.000			1" Ice	4.880	3.610	0.185
						2" Ice	5.710	4.400	0.331
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000	0.000	188.000	No Ice	4.090	2.860	0.077
			0.000			1/2" Ice	4.480	3.230	0.127
			-2.000			1" Ice	4.880	3.610	0.185
						2" Ice	5.710	4.400	0.331
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000	0.000	188.000	No Ice	4.090	2.860	0.077
			0.000			1/2" Ice	4.480	3.230	0.127
			-2.000			1" Ice	4.880	3.610	0.185
						2" Ice	5.710	4.400	0.331
TD-RRH8X20-25	A	From Leg	4.000	0.000	188.000	No Ice	4.045	1.535	0.070
			0.000			1/2" Ice	4.298	1.714	0.097
			2.000			1" Ice	4.557	1.901	0.128
						2" Ice	5.098	2.295	0.201
TD-RRH8X20-25	B	From Leg	4.000	0.000	188.000	No Ice	4.045	1.535	0.070
			0.000			1/2" Ice	4.298	1.714	0.097
			2.000			1" Ice	4.557	1.901	0.128
						2" Ice	5.098	2.295	0.201
TD-RRH8X20-25	C	From Leg	4.000	0.000	188.000	No Ice	4.045	1.535	0.070
			0.000			1/2" Ice	4.298	1.714	0.097
			2.000			1" Ice	4.557	1.901	0.128
						2" Ice	5.098	2.295	0.201
(3) 6' x 2" Mount Pipe	A	From Leg	4.000	0.000	188.000	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" Ice	3.060	3.060	0.090
(3) 6' x 2" Mount Pipe	B	From Leg	4.000	0.000	188.000	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" Ice	3.060	3.060	0.090
(3) 6' x 2" Mount Pipe	C	From Leg	4.000	0.000	188.000	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" Ice	3.060	3.060	0.090
Platform Mount [LP 1201-1]	C	None		0.000	188.000	No Ice	18.380	18.380	2.100
						1/2" Ice	22.110	22.110	2.652
						1" Ice	25.870	25.870	3.263
						2" Ice	33.470	33.470	4.662
*									
PCS 1900MHz 4x45W-65MHz	A	From Leg	2.000	0.000	186.000	No Ice	2.322	2.238	0.060
			0.000			1/2" Ice	2.527	2.441	0.083
			0.000			1" Ice	2.739	2.651	0.110
						2" Ice	3.185	3.093	0.173
PCS 1900MHz 4x45W-65MHz	B	From Leg	2.000	0.000	186.000	No Ice	2.322	2.238	0.060
			0.000			1/2" Ice	2.527	2.441	0.083
			0.000			1" Ice	2.739	2.651	0.110
						2" Ice	3.185	3.093	0.173
PCS 1900MHz	C	From Leg	2.000	0.000	186.000	No Ice	2.322	2.238	0.060

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz Lateral	Vert						°
4x45W-65MHz			0.000			1/2" Ice	2.527	2.441	0.083	
			0.000			1" Ice	2.739	2.651	0.110	
						2" Ice	3.185	3.093	0.173	
800MHZ 2X50W RRH W/FILTER	A	From Leg	2.000		0.000	186.000	No Ice	2.058	1.932	0.064
			0.000				1/2" Ice	2.240	2.109	0.086
			0.000				1" Ice	2.429	2.293	0.111
							2" Ice	2.829	2.684	0.172
800MHZ 2X50W RRH W/FILTER	B	From Leg	2.000		0.000	186.000	No Ice	2.058	1.932	0.064
			0.000				1/2" Ice	2.240	2.109	0.086
			0.000				1" Ice	2.429	2.293	0.111
							2" Ice	2.829	2.684	0.172
800MHZ 2X50W RRH W/FILTER	C	From Leg	2.000		0.000	186.000	No Ice	2.058	1.932	0.064
			0.000				1/2" Ice	2.240	2.109	0.086
			0.000				1" Ice	2.429	2.293	0.111
							2" Ice	2.829	2.684	0.172
Side Arm Mount [SO 102-3]	C	None			0.000	186.000	No Ice	3.600	3.600	0.075
							1/2" Ice	4.180	4.180	0.105
							1" Ice	4.750	4.750	0.135
							2" Ice	5.900	5.900	0.195
*										
TME-RRH2X40 700	A	From Leg	2.000		0.000	177.000	No Ice	1.962	1.034	0.050
			0.000				1/2" Ice	2.137	1.168	0.067
			0.000				1" Ice	2.318	1.311	0.086
							2" Ice	2.704	1.617	0.134
TME-RRH2X40 700	B	From Leg	2.000		0.000	177.000	No Ice	1.962	1.034	0.050
			0.000				1/2" Ice	2.137	1.168	0.067
			0.000				1" Ice	2.318	1.311	0.086
							2" Ice	2.704	1.617	0.134
TME-RRH2X40 700	C	From Leg	2.000		0.000	177.000	No Ice	1.962	1.034	0.050
			0.000				1/2" Ice	2.137	1.168	0.067
			0.000				1" Ice	2.318	1.311	0.086
							2" Ice	2.704	1.617	0.134
Side Arm Mount [SO 102-3]	C	None			0.000	177.000	No Ice	3.600	3.600	0.075
							1/2" Ice	4.180	4.180	0.105
							1" Ice	4.750	4.750	0.135
							2" Ice	5.900	5.900	0.195
*										
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	A	From Leg	4.000		0.000	175.000	No Ice	2.856	6.569	0.030
			0.000				1/2" Ice	3.220	7.195	0.076
			0.000				1" Ice	3.592	7.837	0.128
							2" Ice	4.337	9.170	0.253
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	B	From Leg	4.000		0.000	175.000	No Ice	2.856	6.569	0.030
			0.000				1/2" Ice	3.220	7.195	0.076
			0.000				1" Ice	3.592	7.837	0.128
							2" Ice	4.337	9.170	0.253
(2) LPA-80063/4CF w/ Mount Pipe	C	From Leg	4.000		0.000	175.000	No Ice	6.385	6.603	0.038
			0.000				1/2" Ice	6.784	7.232	0.104
			0.000				1" Ice	7.192	7.876	0.176
							2" Ice	8.035	9.214	0.344
(2) 742 213 w/ Mount Pipe	A	From Leg	4.000		0.000	175.000	No Ice	3.540	2.980	0.049
			0.000				1/2" Ice	4.130	3.570	0.087
			0.000				1" Ice	4.740	4.170	0.136
							2" Ice	6.010	5.420	0.267
(2) 742 213 w/ Mount Pipe	B	From Leg	4.000		0.000	175.000	No Ice	3.540	2.980	0.049
			0.000				1/2" Ice	4.130	3.570	0.087
			0.000				1" Ice	4.740	4.170	0.136
							2" Ice	6.010	5.420	0.267

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	Crown Castle	JD Prabhu

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
(2) 742 213 w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	175.000	No Ice 3.540	2.980	0.049
			0.000				1/2" Ice 4.130	3.570	0.087
			0.000				1" Ice 4.740	4.170	0.136
							2" Ice 6.010	5.420	0.267
LNx-6513DS-A1M w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	175.000	No Ice 2.840	2.290	0.062
			0.000				1/2" Ice 3.120	2.570	0.111
			0.000				1" Ice 3.410	2.850	0.168
							2" Ice 4.020	3.440	0.311
LNx-6513DS-A1M w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	175.000	No Ice 2.840	2.290	0.062
			0.000				1/2" Ice 3.120	2.570	0.111
			0.000				1" Ice 3.410	2.850	0.168
							2" Ice 4.020	3.440	0.311
LNx-6513DS-A1M w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	175.000	No Ice 2.840	2.290	0.062
			0.000				1/2" Ice 3.120	2.570	0.111
			0.000				1" Ice 3.410	2.850	0.168
							2" Ice 4.020	3.440	0.311
RRFDC-3315-PF-48	A	From Leg	4.000	0.000	0.000	175.000	No Ice 3.364	2.192	0.021
			0.000				1/2" Ice 3.597	2.395	0.050
			4.000				1" Ice 3.838	2.606	0.082
							2" Ice 4.343	3.049	0.158
9442 RRH2X40-AWS	A	From Leg	4.000	0.000	0.000	175.000	No Ice 2.155	1.420	0.044
			0.000				1/2" Ice 2.353	1.590	0.061
			4.000				1" Ice 2.559	1.768	0.082
							2" Ice 2.992	2.143	0.132
9442 RRH2X40-AWS	B	From Leg	4.000	0.000	0.000	175.000	No Ice 2.155	1.420	0.044
			0.000				1/2" Ice 2.353	1.590	0.061
			4.000				1" Ice 2.559	1.768	0.082
							2" Ice 2.992	2.143	0.132
9442 RRH2X40-AWS	C	From Leg	4.000	0.000	0.000	175.000	No Ice 2.155	1.420	0.044
			0.000				1/2" Ice 2.353	1.590	0.061
			4.000				1" Ice 2.559	1.768	0.082
							2" Ice 2.992	2.143	0.132
Platform Mount [LP 1201-1]	C	None		0.000		175.000	No Ice 18.380	18.380	2.100
							1/2" Ice 22.110	22.110	2.652
							1" Ice 25.870	25.870	3.263
							2" Ice 33.470	33.470	4.662
*									
APX16DWV-16DWV-S-E-A 20 w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	165.000	No Ice 6.290	2.760	0.061
			0.000				1/2" Ice 6.860	3.270	0.105
			0.000				1" Ice 7.450	3.790	0.157
							2" Ice 8.680	4.900	0.290
APX16DWV-16DWV-S-E-A 20 w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	165.000	No Ice 6.290	2.760	0.061
			0.000				1/2" Ice 6.860	3.270	0.105
			0.000				1" Ice 7.450	3.790	0.157
							2" Ice 8.680	4.900	0.290
APX16DWV-16DWV-S-E-A 20 w/ Mount Pipe	C	From Leg	4.000	0.000	0.000	165.000	No Ice 6.290	2.760	0.061
			0.000				1/2" Ice 6.860	3.270	0.105
			0.000				1" Ice 7.450	3.790	0.157
							2" Ice 8.680	4.900	0.290
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.000	0.000	0.000	165.000	No Ice 14.690	6.870	0.183
			0.000				1/2" Ice 15.460	7.550	0.311
			0.000				1" Ice 16.230	8.250	0.453
							2" Ice 17.820	9.670	0.782
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.000	0.000	0.000	165.000	No Ice 14.690	6.870	0.183
			0.000				1/2" Ice 15.460	7.550	0.311
			0.000				1" Ice 16.230	8.250	0.453
							2" Ice 17.820	9.670	0.782

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			0.000			1/2" Ice	1.918	0.024	0.034
			0.000			1" Ice	2.343	0.049	0.048
						2" Ice	3.215	0.123	0.091
(2) L 2.5x2.5x3/16x6'	C	From Leg	3.000	0.000	165.000	No Ice	1.500	0.005	0.025
			0.000			1/2" Ice	1.918	0.024	0.034
			0.000			1" Ice	2.343	0.049	0.048
						2" Ice	3.215	0.123	0.091
Platform Mount [LP 1201-1_HR-1]	C	None		0.000	165.000	No Ice	26.390	26.390	2.356
						1/2" Ice	31.400	31.400	3.061
						1" Ice	36.200	36.200	3.864
						2" Ice	45.400	45.400	5.764
*									
800 10121 w/ Mount Pipe	A	From Leg	4.000	0.000	157.000	No Ice	3.600	2.950	0.072
			0.000			1/2" Ice	4.000	3.340	0.115
			0.000			1" Ice	4.420	3.740	0.166
						2" Ice	5.290	4.590	0.297
800 10121 w/ Mount Pipe	B	From Leg	4.000	0.000	157.000	No Ice	3.600	2.950	0.072
			0.000			1/2" Ice	4.000	3.340	0.115
			0.000			1" Ice	4.420	3.740	0.166
						2" Ice	5.290	4.590	0.297
800 10121 w/ Mount Pipe	C	From Leg	4.000	0.000	157.000	No Ice	3.600	2.950	0.072
			0.000			1/2" Ice	4.000	3.340	0.115
			0.000			1" Ice	4.420	3.740	0.166
						2" Ice	5.290	4.590	0.297
(2) LGP21401	A	From Leg	4.000	0.000	157.000	No Ice	1.104	0.207	0.014
			0.000			1/2" Ice	1.239	0.274	0.021
			0.000			1" Ice	1.381	0.348	0.030
						2" Ice	1.688	0.521	0.055
(2) LGP21401	B	From Leg	4.000	0.000	157.000	No Ice	1.104	0.207	0.014
			0.000			1/2" Ice	1.239	0.274	0.021
			0.000			1" Ice	1.381	0.348	0.030
						2" Ice	1.688	0.521	0.055
(2) LGP21401	C	From Leg	4.000	0.000	157.000	No Ice	1.104	0.207	0.014
			0.000			1/2" Ice	1.239	0.274	0.021
			0.000			1" Ice	1.381	0.348	0.030
						2" Ice	1.688	0.521	0.055
DC6-48-60-18-8F	A	From Leg	4.000	0.000	157.000	No Ice	1.212	1.212	0.033
			0.000			1/2" Ice	1.892	1.892	0.055
			0.000			1" Ice	2.105	2.105	0.080
						2" Ice	2.570	2.570	0.138
HPA65R-BU8A w/ Mount Pipe	A	From Leg	4.000	0.000	157.000	No Ice	8.100	6.940	0.087
			0.000			1/2" Ice	8.860	7.690	0.170
			0.000			1" Ice	9.640	8.450	0.266
						2" Ice	11.240	10.030	0.500
HPA65R-BU8A w/ Mount Pipe	B	From Leg	4.000	0.000	157.000	No Ice	8.100	6.940	0.087
			0.000			1/2" Ice	8.860	7.690	0.170
			0.000			1" Ice	9.640	8.450	0.266
						2" Ice	11.240	10.030	0.500
HPA65R-BU8A w/ Mount Pipe	C	From Leg	4.000	0.000	157.000	No Ice	8.100	6.940	0.087
			0.000			1/2" Ice	8.860	7.690	0.170
			0.000			1" Ice	9.640	8.450	0.266
						2" Ice	11.240	10.030	0.500
OPA65R-BU8D w/ Mount Pipe	A	From Leg	4.000	0.000	157.000	No Ice	17.460	8.580	0.109
			0.000			1/2" Ice	18.460	9.490	0.224
			0.000			1" Ice	19.480	10.420	0.353
						2" Ice	21.580	12.330	0.656
OPA65R-BU8D w/ Mount	B	From Leg	4.000	0.000	157.000	No Ice	17.460	8.580	0.109

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			Horz Lateral ft	Vert ft					
Pipe			0.000				1/2" Ice 18.460	9.490	0.224
			0.000				1" Ice 19.480	10.420	0.353
							2" Ice 21.580	12.330	0.656
OPA65R-BU8D w/ Mount Pipe	C	From Leg	4.000	0.000	157.000		No Ice 17.460	8.580	0.109
			0.000				1/2" Ice 18.460	9.490	0.224
			0.000				1" Ice 19.480	10.420	0.353
							2" Ice 21.580	12.330	0.656
DMP65R-BU8D w/ Mount Pipe	A	From Leg	4.000	0.000	157.000		No Ice 15.890	7.890	0.139
			0.000				1/2" Ice 16.810	8.740	0.252
			0.000				1" Ice 17.760	9.600	0.380
							2" Ice 19.700	11.370	0.679
DMP65R-BU8D w/ Mount Pipe	B	From Leg	4.000	0.000	157.000		No Ice 15.890	7.890	0.139
			0.000				1/2" Ice 16.810	8.740	0.252
			0.000				1" Ice 17.760	9.600	0.380
							2" Ice 19.700	11.370	0.679
DMP65R-BU8D w/ Mount Pipe	C	From Leg	4.000	0.000	157.000		No Ice 15.890	7.890	0.139
			0.000				1/2" Ice 16.810	8.740	0.252
			0.000				1" Ice 17.760	9.600	0.380
							2" Ice 19.700	11.370	0.679
DC6-48-60-18-8F	A	From Leg	4.000	0.000	157.000		No Ice 1.212	1.212	0.033
			0.000				1/2" Ice 1.892	1.892	0.055
			0.000				1" Ice 2.105	2.105	0.080
							2" Ice 2.570	2.570	0.138
RRUS 8843 B2/B66A_CCIV2	A	From Leg	4.000	0.000	157.000		No Ice 1.980	1.695	0.075
			0.000				1/2" Ice 2.157	1.861	0.096
			0.000				1" Ice 2.341	2.035	0.119
							2" Ice 2.733	2.405	0.176
RRUS 8843 B2/B66A_CCIV2	B	From Leg	4.000	0.000	157.000		No Ice 1.980	1.695	0.075
			0.000				1/2" Ice 2.157	1.861	0.096
			0.000				1" Ice 2.341	2.035	0.119
							2" Ice 2.733	2.405	0.176
RRUS 8843 B2/B66A_CCIV2	C	From Leg	4.000	0.000	157.000		No Ice 1.980	1.695	0.075
			0.000				1/2" Ice 2.157	1.861	0.096
			0.000				1" Ice 2.341	2.035	0.119
							2" Ice 2.733	2.405	0.176
RRUS 4478 B14_CCIV2	A	From Leg	4.000	0.000	157.000		No Ice 2.021	1.246	0.059
			0.000				1/2" Ice 2.200	1.396	0.077
			0.000				1" Ice 2.386	1.554	0.097
							2" Ice 2.780	1.891	0.147
RRUS 4478 B14_CCIV2	B	From Leg	4.000	0.000	157.000		No Ice 2.021	1.246	0.059
			0.000				1/2" Ice 2.200	1.396	0.077
			0.000				1" Ice 2.386	1.554	0.097
							2" Ice 2.780	1.891	0.147
RRUS 4478 B14_CCIV2	C	From Leg	4.000	0.000	157.000		No Ice 2.021	1.246	0.059
			0.000				1/2" Ice 2.200	1.396	0.077
			0.000				1" Ice 2.386	1.554	0.097
							2" Ice 2.780	1.891	0.147
RRUS 4449 B5/B12	A	From Leg	4.000	0.000	157.000		No Ice 1.968	1.408	0.071
			0.000				1/2" Ice 2.144	1.564	0.090
			0.000				1" Ice 2.328	1.727	0.111
							2" Ice 2.718	2.075	0.163
RRUS 4449 B5/B12	B	From Leg	4.000	0.000	157.000		No Ice 1.968	1.408	0.071
			0.000				1/2" Ice 2.144	1.564	0.090
			0.000				1" Ice 2.328	1.727	0.111
							2" Ice 2.718	2.075	0.163
RRUS 4449 B5/B12	C	From Leg	4.000	0.000	157.000		No Ice 1.968	1.408	0.071
			0.000				1/2" Ice 2.144	1.564	0.090

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			0.000						
7'X2" Horizontal Pipe	A	From Leg	3.000	0.000	157.000	1" Ice	2.328	1.727	0.111
			0.000			2" Ice	2.718	2.075	0.163
			0.000			No Ice	1.330	0.010	0.019
			0.000			1/2" Ice	2.050	0.040	0.290
7'X2" Horizontal Pipe	B	From Leg	3.000	0.000	157.000	1" Ice	2.640	0.090	0.044
			0.000			2" Ice	3.520	0.210	0.089
			0.000			No Ice	1.330	0.010	0.019
			0.000			1/2" Ice	2.050	0.040	0.290
7'X2" Horizontal Pipe	C	From Leg	3.000	0.000	157.000	1" Ice	2.640	0.090	0.044
			0.000			2" Ice	3.520	0.210	0.089
			0.000			No Ice	1.330	0.010	0.019
			0.000			1/2" Ice	2.050	0.040	0.290
Sector Mount [SM 502-3]	C	None		0.000	157.000	1" Ice	2.640	0.090	0.044
						2" Ice	3.520	0.210	0.089
						No Ice	29.820	29.820	1.673
						1/2" Ice	42.210	42.210	2.266
Pipe Mount [PM 601-3]	C	None		0.000	157.000	1" Ice	54.430	54.430	3.052
						2" Ice	78.490	78.490	5.180
						No Ice	3.170	3.170	0.195
						1/2" Ice	3.790	3.790	0.232
* APXV18-206517S-C w/ Mount Pipe	A	From Leg	0.500	0.000	150.000	1" Ice	4.420	4.420	0.279
			0.000			2" Ice	5.760	5.760	0.401
			0.000			No Ice	3.790	3.160	0.053
			0.000			1/2" Ice	4.380	3.750	0.094
APXV18-206517S-C w/ Mount Pipe	B	From Leg	0.500	0.000	150.000	1" Ice	4.990	4.350	0.145
			0.000			2" Ice	6.250	5.590	0.281
			0.000			No Ice	3.790	3.160	0.053
			0.000			1/2" Ice	4.380	3.750	0.094
APXV18-206517S-C w/ Mount Pipe	C	From Leg	0.500	0.000	150.000	1" Ice	4.990	4.350	0.145
			0.000			2" Ice	6.250	5.590	0.281
			0.000			No Ice	3.790	3.160	0.053
			0.000			1/2" Ice	4.380	3.750	0.094
* SD212-SF2P2SNM	B	From Leg	3.000	0.000	120.000	1" Ice	4.990	4.350	0.145
			0.000			2" Ice	6.250	5.590	0.281
			5.000			No Ice	2.160	2.160	0.021
						1/2" Ice	3.960	3.960	0.050
Side Arm Mount [SO 702-1]	B	From Leg	1.500	0.000	120.000	1" Ice	5.760	5.760	0.079
			0.000			2" Ice	9.360	9.360	0.137
			0.000			No Ice	0.620	1.490	0.027
			0.000			1/2" Ice	0.740	2.070	0.042
* SD110-SFXPASNM	B	From Leg	2.000	0.000	115.000	1" Ice	0.890	2.540	0.063
			0.000			2" Ice	1.250	3.550	0.122
			7.000			No Ice	6.333	6.333	0.025
						1/2" Ice	7.917	7.917	0.069
15' x 2" Pipe Mount	B	From Leg	1.000	0.000	115.000	1" Ice	9.501	9.501	0.112
			0.000			2" Ice	12.669	12.669	0.199
			0.000			No Ice	3.563	3.563	0.055
						1/2" Ice	5.091	5.091	0.081
* ANT450D3	B	From Leg	2.000	0.000	81.000	1" Ice	6.635	6.635	0.118
			0.000			2" Ice	9.775	9.775	0.219
			1.000			No Ice	1.431	1.431	0.088
					1/2" Ice	2.185	2.185	0.100	
					1" Ice	2.939	2.939	0.112	

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
4' x 2" Pipe Mount	A	From Leg	1.000	0.000	81.000	2" Ice	4.446	4.446	0.136
			0.000			No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
						1" Ice	1.281	1.281	0.044
4' x 2" Pipe Mount	B	From Leg	1.000	0.000	81.000	2" Ice	1.814	1.814	0.072
			0.000			No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
						1" Ice	1.281	1.281	0.044
4' x 2" Pipe Mount	C	From Leg	1.000	0.000	81.000	2" Ice	1.814	1.814	0.072
			0.000			No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
						1" Ice	1.281	1.281	0.044
Side Arm Mount [SO 309-1]	B	From Leg	1.000	0.000	81.000	2" Ice	1.814	1.814	0.072
			0.000			No Ice	1.220	2.630	0.040
			0.000			1/2" Ice	1.800	3.930	0.061
						1" Ice	2.400	5.470	0.090
Side Arm Mount [SO 102-3]	C	None		0.000	83.000	2" Ice	3.700	9.560	0.170
						No Ice	3.600	3.600	0.075
						1/2" Ice	4.180	4.180	0.105
						1" Ice	4.750	4.750	0.135
Side Arm Mount [SO 102-3]	C	None		0.000	79.000	2" Ice	5.900	5.900	0.195
						No Ice	3.600	3.600	0.075
						1/2" Ice	4.180	4.180	0.105
						1" Ice	4.750	4.750	0.135
* KS24019-L112A	A	From Leg	3.000	0.000	48.000	2" Ice	5.900	5.900	0.195
			0.000			No Ice	0.141	0.141	0.005
			0.000			1/2" Ice	0.198	0.198	0.007
						1" Ice	0.262	0.262	0.009
Side Arm Mount [SO 701-1]	A	From Leg	1.500	0.000	48.000	2" Ice	0.415	0.415	0.018
			0.000			No Ice	0.850	1.670	0.065
			0.000			1/2" Ice	1.140	2.340	0.079
						1" Ice	1.430	3.010	0.093
					2" Ice	2.010	4.350	0.121	

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice

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Comb. No.	Description
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			
L1	187 - 136	Pole	Max Tension	42	0.000	0.000	-0.000			
			Max. Compression	26	-59.596	0.773	-0.123			
			Max. Mx	20	-20.572	782.661	-4.975			
			Max. My	2	-20.593	-5.057	779.158			
			Max. Vy	8	28.543	-782.508	5.170			
			Max. Vx	14	28.432	5.089	-778.709			
			Max. Torque	20			-1.400			
			Max Tension	1	0.000	0.000	0.000			
			L2	136 - 89.5	Pole	Max. Compression	26	-77.732	-1.428	-4.682
						Max. Mx	8	-32.475	-2220.602	11.673
Max. My	14	-32.487				11.933	-2212.697			
Max. Vy	8	34.903				-2220.602	11.673			
Max. Vx	14	34.816				11.933	-2212.697			
Max. Torque	15						2.104			

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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
L3	89.5 - 44.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-101.062	-2.889	-8.613
			Max. M _x	8	-49.089	-3907.559	19.007
			Max. M _y	14	-49.095	19.651	-3897.209
			Max. V _y	8	40.937	-3907.559	19.007
			Max. V _x	14	40.884	19.651	-3897.209
			Max. Torque	2			-2.669
L4	44.25 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-132.923	-3.600	-12.467
			Max. M _x	8	-73.485	-6135.930	28.137
			Max. M _y	14	-73.486	29.290	-6121.813
			Max. V _y	8	45.940	-6135.930	28.137
			Max. V _x	14	45.857	29.290	-6121.813
			Max. Torque	2			-2.662

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	33	132.923	0.049	-12.695
	Max. H _x	21	55.141	45.882	-0.185
	Max. H _z	2	73.522	-0.185	45.799
	Max. M _x	2	6117.706	-0.185	45.799
	Max. M _z	8	6135.930	-45.882	0.185
	Max. Torsion	14	2.658	0.185	-45.799
	Min. Vert	25	55.141	22.781	39.571
	Min. H _x	9	55.141	-45.882	0.185
	Min. H _z	15	55.141	0.185	-45.799
	Min. M _x	14	-6121.813	0.185	-45.799
	Min. M _z	20	-6134.046	45.882	-0.185
	Min. Torsion	2		-2.659	45.799

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	61.268	0.000	0.000	1.636	-0.739	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	73.522	0.185	-45.799	-6117.706	-31.123	2.659
0.9 Dead+1.0 Wind 0 deg - No Ice	55.141	0.185	-45.799	-6029.947	-30.415	2.654
1.2 Dead+1.0 Wind 30 deg - No Ice	73.522	23.101	-39.755	-5312.800	-3094.556	2.238
0.9 Dead+1.0 Wind 30 deg - No Ice	55.141	23.101	-39.755	-5236.639	-3049.628	2.231
1.2 Dead+1.0 Wind 60 deg - No Ice	73.522	39.827	-23.059	-3083.891	-5329.015	1.218
0.9 Dead+1.0 Wind 60 deg - No Ice	55.141	39.827	-23.059	-3039.877	-5251.845	1.211
1.2 Dead+1.0 Wind 90 deg - No Ice	73.522	45.882	-0.185	-28.137	-6135.930	-0.127

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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
0.9 Dead+1.0 Wind 90 deg - No Ice	55.141	45.882	-0.185	-28.206	-6047.102	-0.132
1.2 Dead+1.0 Wind 120 deg - No Ice	73.522	39.643	22.740	3035.830	-5299.016	-1.438
0.9 Dead+1.0 Wind 120 deg - No Ice	55.141	39.643	22.740	2991.546	-5222.303	-1.439
1.2 Dead+1.0 Wind 150 deg - No Ice	73.522	22.781	39.571	5286.928	-3042.350	-2.365
0.9 Dead+1.0 Wind 150 deg - No Ice	55.141	22.781	39.571	5210.152	-2998.229	-2.362
1.2 Dead+1.0 Wind 180 deg - No Ice	73.522	-0.185	45.799	6121.813	29.291	-2.658
0.9 Dead+1.0 Wind 180 deg - No Ice	55.141	-0.185	45.799	6032.962	29.062	-2.653
1.2 Dead+1.0 Wind 210 deg - No Ice	73.522	-23.101	39.755	5316.893	3092.697	-2.240
0.9 Dead+1.0 Wind 210 deg - No Ice	55.141	-23.101	39.755	5239.670	3048.257	-2.233
1.2 Dead+1.0 Wind 240 deg - No Ice	73.522	-39.827	23.059	3088.000	5327.130	-1.221
0.9 Dead+1.0 Wind 240 deg - No Ice	55.141	-39.827	23.059	3042.920	5250.455	-1.214
1.2 Dead+1.0 Wind 270 deg - No Ice	73.522	-45.882	0.185	32.276	6134.046	0.127
0.9 Dead+1.0 Wind 270 deg - No Ice	55.141	-45.882	0.185	31.270	6045.712	0.131
1.2 Dead+1.0 Wind 300 deg - No Ice	73.522	-39.643	-22.740	-3031.676	5297.158	1.441
0.9 Dead+1.0 Wind 300 deg - No Ice	55.141	-39.643	-22.740	-2988.471	5220.932	1.442
1.2 Dead+1.0 Wind 330 deg - No Ice	73.522	-22.781	-39.571	-5282.791	3040.518	2.368
0.9 Dead+1.0 Wind 330 deg - No Ice	55.141	-22.781	-39.571	-5207.089	2996.877	2.365
1.2 Dead+1.0 Ice+1.0 Temp	132.923	0.000	0.000	12.467	-3.600	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	132.923	0.049	-12.695	-1808.565	-11.027	1.183
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	132.923	6.391	-11.019	-1568.208	-921.295	1.047
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	132.923	11.020	-6.390	-904.213	-1585.694	0.631
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	132.923	12.697	-0.049	5.503	-1826.199	0.046
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	132.923	10.971	6.305	917.182	-1578.366	-0.551
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	132.923	6.306	10.970	1586.535	-908.602	-1.001
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	132.923	-0.049	12.695	1834.209	3.625	-1.183
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	132.923	-6.391	11.019	1593.848	913.882	-1.048
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	132.923	-11.020	6.390	929.860	1578.271	-0.632
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	132.923	-12.697	0.049	20.156	1818.778	-0.046
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	132.923	-10.971	-6.305	-891.518	1570.956	0.551
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	132.923	-6.306	-10.970	-1560.879	901.201	1.001
Dead+Wind 0 deg - Service	61.268	0.040	-9.938	-1316.083	-7.281	0.582
Dead+Wind 30 deg - Service	61.268	5.013	-8.627	-1142.782	-666.951	0.489

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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 60 deg - Service	61.268	8.642	-5.004	-662.819	-1148.120	0.265
Dead+Wind 90 deg - Service	61.268	9.956	-0.040	-4.796	-1321.861	-0.030
Dead+Wind 120 deg - Service	61.268	8.602	4.934	654.969	-1141.620	-0.317
Dead+Wind 150 deg - Service	61.268	4.943	8.587	1139.693	-655.691	-0.519
Dead+Wind 180 deg - Service	61.268	-0.040	9.938	1319.492	5.722	-0.582
Dead+Wind 210 deg - Service	61.268	-5.013	8.627	1146.191	665.390	-0.489
Dead+Wind 240 deg - Service	61.268	-8.642	5.004	666.228	1146.558	-0.265
Dead+Wind 270 deg - Service	61.268	-9.956	0.040	8.207	1320.300	0.030
Dead+Wind 300 deg - Service	61.268	-8.602	-4.934	-651.558	1140.059	0.317
Dead+Wind 330 deg - Service	61.268	-4.943	-8.587	-1136.282	654.131	0.519

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	-61.268	0.000	0.000	61.268	0.000	0.000%
2	0.185	-73.522	-45.799	-0.185	73.522	45.799	0.000%
3	0.185	-55.141	-45.799	-0.185	55.141	45.799	0.000%
4	23.101	-73.522	-39.755	-23.101	73.522	39.755	0.000%
5	23.101	-55.141	-39.755	-23.101	55.141	39.755	0.000%
6	39.827	-73.522	-23.059	-39.827	73.522	23.059	0.000%
7	39.827	-55.141	-23.059	-39.827	55.141	23.059	0.000%
8	45.882	-73.522	-0.185	-45.882	73.522	0.185	0.000%
9	45.882	-55.141	-0.185	-45.882	55.141	0.185	0.000%
10	39.643	-73.522	22.740	-39.643	73.522	-22.740	0.000%
11	39.643	-55.141	22.740	-39.643	55.141	-22.740	0.000%
12	22.781	-73.522	39.571	-22.781	73.522	-39.571	0.000%
13	22.781	-55.141	39.571	-22.781	55.141	-39.571	0.000%
14	-0.185	-73.522	45.799	0.185	73.522	-45.799	0.000%
15	-0.185	-55.141	45.799	0.185	55.141	-45.799	0.000%
16	-23.101	-73.522	39.755	23.101	73.522	-39.755	0.000%
17	-23.101	-55.141	39.755	23.101	55.141	-39.755	0.000%
18	-39.827	-73.522	23.059	39.827	73.522	-23.059	0.000%
19	-39.827	-55.141	23.059	39.827	55.141	-23.059	0.000%
20	-45.882	-73.522	0.185	45.882	73.522	-0.185	0.000%
21	-45.882	-55.141	0.185	45.882	55.141	-0.185	0.000%
22	-39.643	-73.522	-22.740	39.643	73.522	22.740	0.000%
23	-39.643	-55.141	-22.740	39.643	55.141	22.740	0.000%
24	-22.781	-73.522	-39.571	22.781	73.522	39.571	0.000%
25	-22.781	-55.141	-39.571	22.781	55.141	39.571	0.000%
26	0.000	-132.923	0.000	-0.000	132.923	-0.000	0.000%
27	0.049	-132.923	-12.695	-0.049	132.923	12.695	0.000%
28	6.391	-132.923	-11.019	-6.391	132.923	11.019	0.000%
29	11.020	-132.923	-6.390	-11.020	132.923	6.390	0.000%
30	12.696	-132.923	-0.049	-12.697	132.923	0.049	0.000%
31	10.971	-132.923	6.305	-10.971	132.923	-6.305	0.000%
32	6.306	-132.923	10.970	-6.306	132.923	-10.970	0.000%
33	-0.049	-132.923	12.695	0.049	132.923	-12.695	0.000%
34	-6.391	-132.923	11.019	6.391	132.923	-11.019	0.000%
35	-11.020	-132.923	6.390	11.020	132.923	-6.390	0.000%
36	-12.696	-132.923	0.049	12.697	132.923	-0.049	0.000%
37	-10.971	-132.923	-6.305	10.971	132.923	6.305	0.000%
38	-6.306	-132.923	-10.970	6.306	132.923	10.970	0.000%
39	0.040	-61.268	-9.938	-0.040	61.268	9.938	0.000%
40	5.013	-61.268	-8.627	-5.013	61.268	8.627	0.000%
41	8.642	-61.268	-5.004	-8.642	61.268	5.004	0.000%
42	9.956	-61.268	-0.040	-9.956	61.268	0.040	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	
43	8.602	-61.268	4.934	-8.602	61.268	-4.934	0.000%
44	4.943	-61.268	8.587	-4.943	61.268	-8.587	0.000%
45	-0.040	-61.268	9.938	0.040	61.268	-9.938	0.000%
46	-5.013	-61.268	8.627	5.013	61.268	-8.627	0.000%
47	-8.642	-61.268	5.004	8.642	61.268	-5.004	0.000%
48	-9.956	-61.268	0.040	9.956	61.268	-0.040	0.000%
49	-8.602	-61.268	-4.934	8.602	61.268	4.934	0.000%
50	-4.943	-61.268	-8.587	4.943	61.268	8.587	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00014822
3	Yes	5	0.00000001	0.00006839
4	Yes	6	0.00000001	0.00024545
5	Yes	6	0.00000001	0.00007710
6	Yes	6	0.00000001	0.00024179
7	Yes	6	0.00000001	0.00007576
8	Yes	5	0.00000001	0.00007573
9	Yes	4	0.00000001	0.00082760
10	Yes	6	0.00000001	0.00023589
11	Yes	6	0.00000001	0.00007418
12	Yes	6	0.00000001	0.00024182
13	Yes	6	0.00000001	0.00007637
14	Yes	5	0.00000001	0.00006002
15	Yes	4	0.00000001	0.00071797
16	Yes	6	0.00000001	0.00024008
17	Yes	6	0.00000001	0.00007515
18	Yes	6	0.00000001	0.00024412
19	Yes	6	0.00000001	0.00007658
20	Yes	5	0.00000001	0.00004674
21	Yes	4	0.00000001	0.00059509
22	Yes	6	0.00000001	0.00024062
23	Yes	6	0.00000001	0.00007596
24	Yes	6	0.00000001	0.00023432
25	Yes	6	0.00000001	0.00007370
26	Yes	4	0.00000001	0.00005751
27	Yes	6	0.00000001	0.00025000
28	Yes	6	0.00000001	0.00038829
29	Yes	6	0.00000001	0.00038289
30	Yes	6	0.00000001	0.00025151
31	Yes	6	0.00000001	0.00038395
32	Yes	6	0.00000001	0.00038937
33	Yes	6	0.00000001	0.00025294
34	Yes	6	0.00000001	0.00038612
35	Yes	6	0.00000001	0.00039158
36	Yes	6	0.00000001	0.00025075
37	Yes	6	0.00000001	0.00037977
38	Yes	6	0.00000001	0.00037453
39	Yes	4	0.00000001	0.00013495
40	Yes	4	0.00000001	0.00078858
41	Yes	4	0.00000001	0.00075100
42	Yes	4	0.00000001	0.00010746
43	Yes	4	0.00000001	0.00071775

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44	Yes	4	0.00000001	0.00077675
45	Yes	4	0.00000001	0.00012546
46	Yes	4	0.00000001	0.00073699
47	Yes	4	0.00000001	0.00077425
48	Yes	4	0.00000001	0.00010484
49	Yes	4	0.00000001	0.00076135
50	Yes	4	0.00000001	0.00070298

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	187 - 136	32.451	41	1.507	0.002
L2	140.5 - 89.5	18.487	41	1.272	0.001
L3	95.25 - 44.25	8.303	41	0.840	0.001
L4	51 - 0	2.348	47	0.421	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
188.000	DB404L-B	41	32.451	1.507	0.002	56459
186.000	PCS 1900MHz 4x45W-65MHz	41	32.135	1.503	0.002	56459
177.000	TME-RRH2X40 700	41	29.302	1.468	0.002	28229
175.000	(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	41	28.676	1.460	0.002	23524
165.000	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	41	25.582	1.416	0.001	12831
157.000	800 10121 w/ Mount Pipe	41	23.173	1.377	0.001	9409
150.000	APXV18-206517S-C w/ Mount Pipe	41	21.131	1.336	0.001	7628
120.000	SD212-SF2P2SNM	41	13.374	1.093	0.001	6101
115.000	SD110-SFXPASNM	41	12.253	1.043	0.001	6108
83.000	Side Arm Mount [SO 102-3]	47	6.240	0.718	0.001	5826
81.000	ANT450D3	47	5.932	0.698	0.001	5778
79.000	Side Arm Mount [SO 102-3]	47	5.632	0.679	0.001	5730
48.000	KS24019-L112A	47	2.101	0.395	0.000	5469

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	187 - 136	150.621	6	7.015	0.009
L2	140.5 - 89.5	85.867	6	5.921	0.005
L3	95.25 - 44.25	38.585	6	3.909	0.003
L4	51 - 0	10.911	18	1.957	0.001

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Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	187 - 136 (1)	TP36.201x26x0.25	28.643	488.116	0.059	1.222	1498.317	0.001
L2	136 - 89.5 (2)	TP45.003x34.801x0.375	35.026	908.202	0.039	0.903	3458.042	0.000
L3	89.5 - 44.25 (3)	TP53.304x43.103x0.438	41.090	1255.470	0.033	1.470	5664.117	0.000
L4	44.25 - 0 (4)	TP61.28x51.079x0.5	46.080	1692.840	0.027	1.221	9010.667	0.000

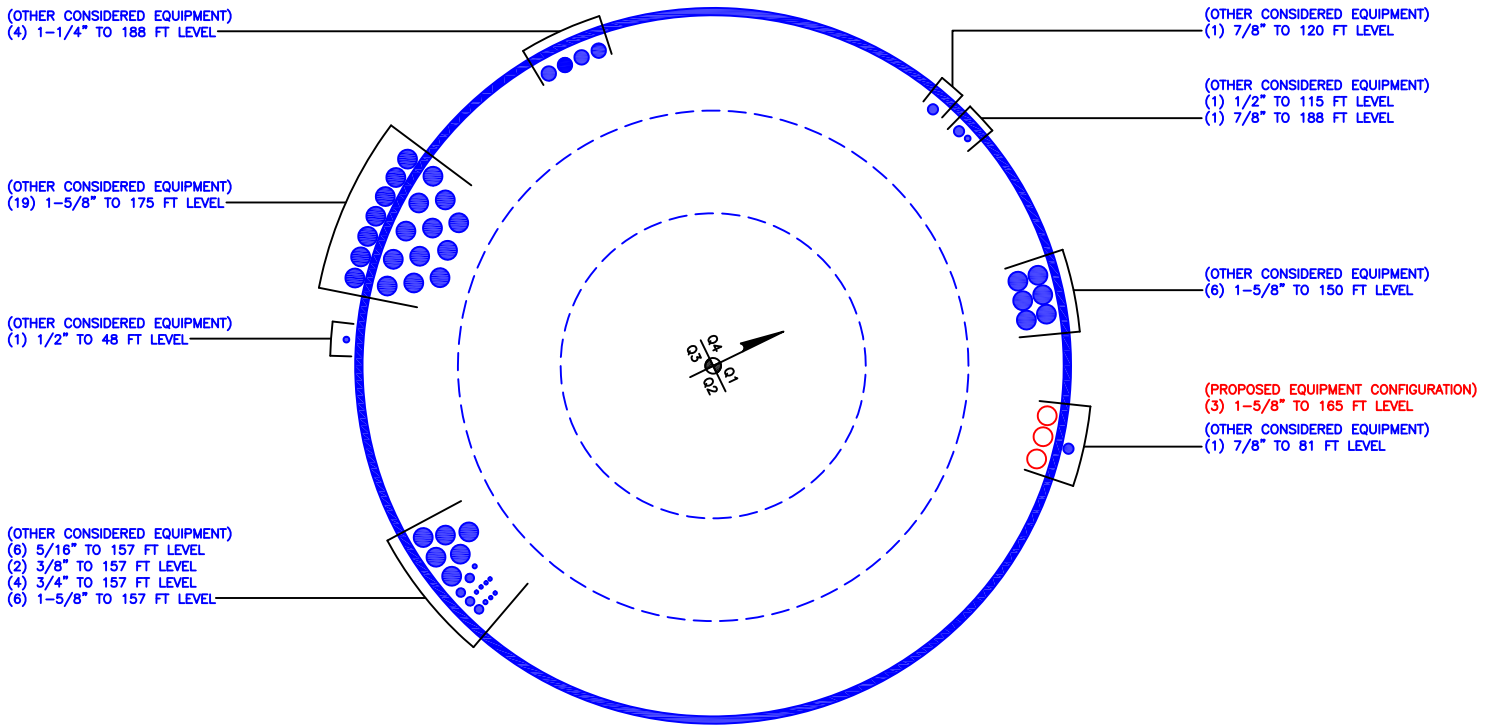
Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	187 - 136 (1)	0.013	0.595	0.000	0.059	0.001	0.611	1.050	4.8.2 ✓
L2	136 - 89.5 (2)	0.011	0.685	0.000	0.039	0.000	0.697	1.050	4.8.2 ✓
L3	89.5 - 44.25 (3)	0.012	0.739	0.000	0.033	0.000	0.752	1.050	4.8.2 ✓
L4	44.25 - 0 (4)	0.013	0.737	0.000	0.027	0.000	0.750	1.050	4.8.2 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	187 - 136	Pole	TP36.201x26x0.25	1	-20.551	1708.402	58.2	Pass
L2	136 - 89.5	Pole	TP45.003x34.801x0.375	2	-32.458	3178.707	66.4	Pass
L3	89.5 - 44.25	Pole	TP53.304x43.103x0.438	3	-49.079	4394.155	71.6	Pass
L4	44.25 - 0	Pole	TP61.28x51.079x0.5	4	-73.485	5924.929	71.5	Pass
Summary								
Pole (L3)							71.6	Pass
RATING =							71.6	Pass

APPENDIX B
BASE LEVEL DRAWING



BUSINESS UNIT: 803934

APPENDIX C
ADDITIONAL CALCULATIONS

Monopole Base Plate Connection

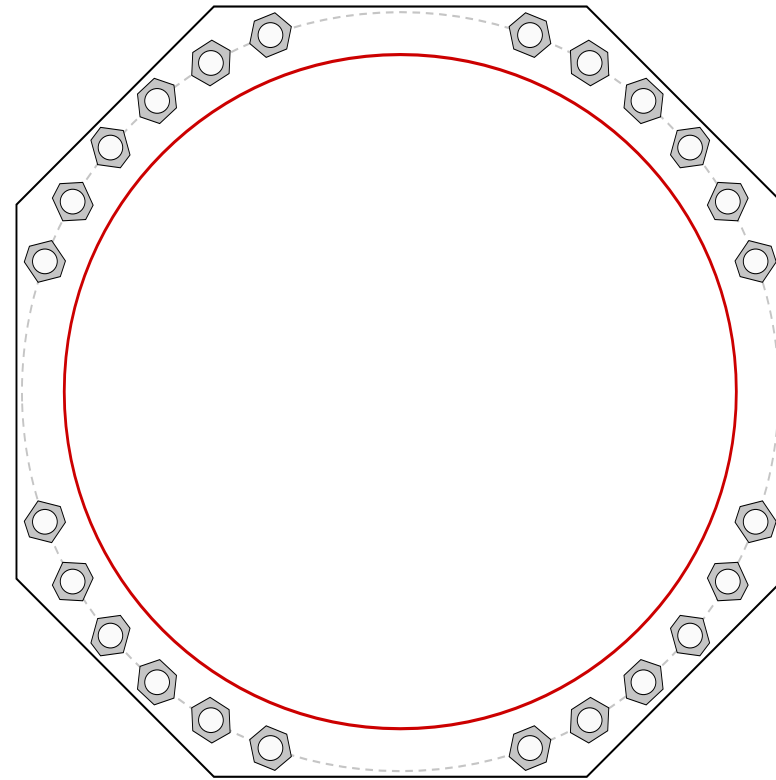


Site Info	
BU #	803934
Site Name	CT SOMERS FD CAC, CT
Order #	537325, Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	2

Applied Loads	
Moment (kip-ft)	6157.44
Axial Force (kips)	73.49
Shear Force (kips)	46.08

*TIA-222-H Section 15.5 Applied



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

Anchor Rod Data
(24) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 69" BC <i>Anchor Spacing: 6 in</i>
Base Plate Data
70" W x 3.25" Plate (A572-55; $F_y=55$ ksi, $F_u=70$ ksi); Clip: 18 in
Stiffener Data
N/A
Pole Data
61.28" x 0.5" 18-sided pole (A607-65; $F_y=65$ ksi, $F_u=80$ ksi)

Anchor Rod Summary			<i>(units of kips, kip-in)</i>
P_{u_c} = 181.46	ϕP_{n_c} = 268.39	Stress Rating	
V_u = 1.92	ϕV_n = 120.77	64.4%	
M_u = n/a	ϕM_n = n/a	Pass	
Base Plate Summary			
Max Stress (ksi):	25.14	(Flexural)	
Allowable Stress (ksi):	49.5		
Stress Rating:	48.4%	Pass	

Drilled Pier Foundation



BU #:	803934
Site Name:	CT SOMERS FD CAC
Order Number:	537325, Rev. 0

TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	6157.44	
Axial Force (kips)	73.52	
Shear Force (kips)	46.02	

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

Pier Design Data		
Depth	29	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
<i>From 0.5' above grade to 29' below grade</i>		
Pier Diameter	8	ft
Rebar Quantity	32	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	
Tie Spacing	18	in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results

Soil Lateral Check	Compression	Uplift
D _{v=0} (ft from TOC)	6.58	-
Soil Safety Factor	2.15	-
Max Moment (kip-ft)	6419.52	-
Rating*	59.0%	-

Soil Vertical Check	Compression	Uplift
Skin Friction (kips)	282.74	-
End Bearing (kips)	904.78	-
Weight of Concrete (kips)	174.64	-
Total Capacity (kips)	1187.52	-
Axial (kips)	248.16	-
Rating*	19.9%	-

Reinforced Concrete Flexure	Compression	Uplift
Critical Depth (ft from TOC)	6.48	-
Critical Moment (kip-ft)	6419.37	-
Critical Moment Capacity	8999.03	-
Rating*	67.9%	-

Reinforced Concrete Shear	Compression	Uplift
Critical Depth (ft from TOC)	20.84	-
Critical Shear (kip)	587.52	-
Critical Shear Capacity	716.86	-
Rating*	78.1%	-

Soil Interaction Rating*	59.0%
Structural Foundation Rating*	78.1%

*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"/>
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	4.5	# of Layers	3
-------------------	-----	-------------	---

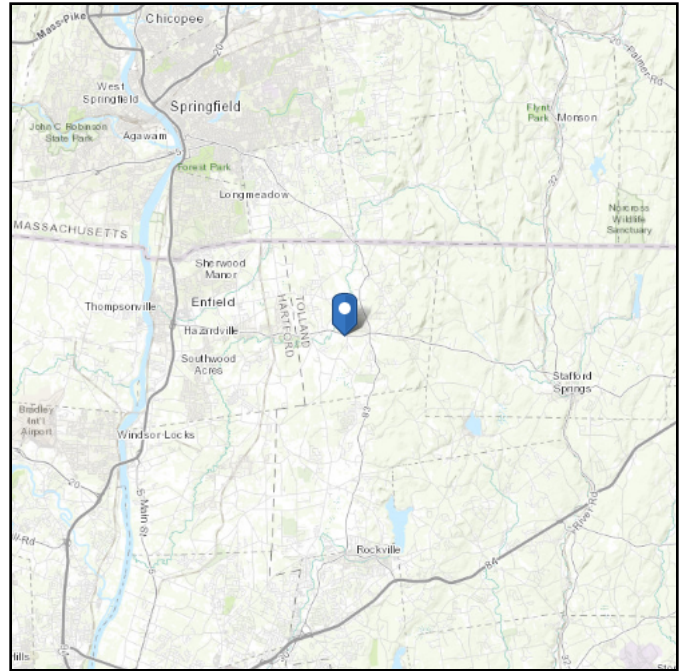
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ _{soil} (pcf)	γ _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	4	4	120	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	4	4.5	0.5	120	150	0	34	0.000	0.000	0.60	0.60			Cohesionless
3	4.5	29	24.5	60	87.6	0	34	0.000	0.000	0.60	0.60	24		Cohesionless

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 197.69 ft (NAVD 88)
Latitude: 41.983744
Longitude: -72.465797

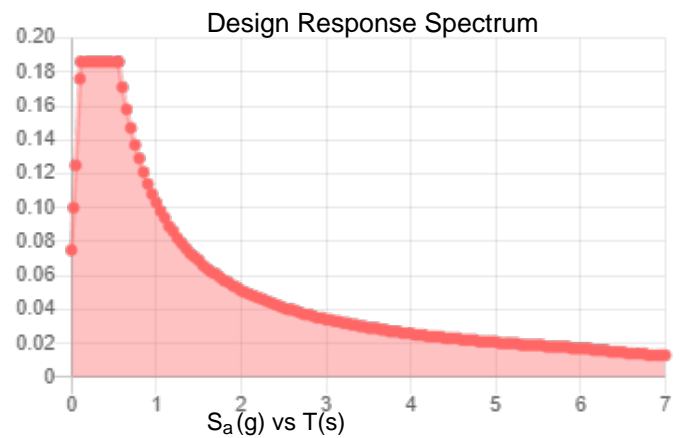
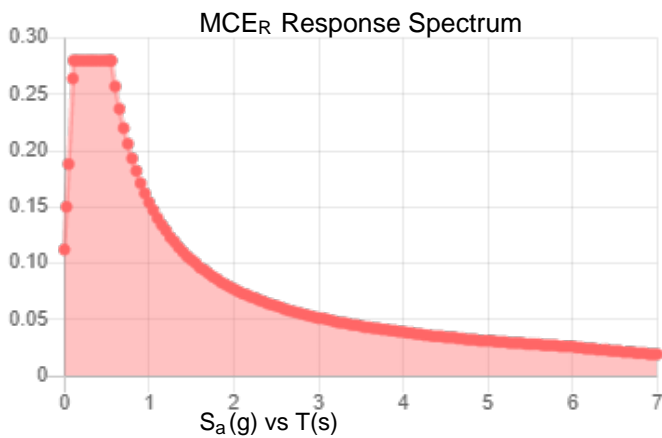


Site Soil Class: D - Stiff Soil

Results:

S_S :	0.175	S_{DS} :	0.186
S_1 :	0.064	S_{D1} :	0.103
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.086
S_{MS} :	0.28	PGA _M :	0.137
S_{M1} :	0.154	F _{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Tue Feb 23 2021

Date Source:

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

Ice

Results:

Ice Thickness: 1.00 in.
Concurrent Temperature: 5 F
Gust Speed: 50 mph

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

Date Accessed: Tue Feb 23 2021

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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Exhibit E

Mount Analysis



Date: January 22, 2021

Darcy Tarr
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6589

B+T Group
1717 S. Boulder, Suite 300
Tulsa, Ok 74119
(918) 587-4630
towersupport@btgrp.com

Subject: Mount Modification Report

Carrier Designation: T-Mobile Equipment Change-Out
Carrier Site Number: CT11531C
Carrier Site Name: CT531/Crown-Somers

Crown Castle Designation: **Crown Castle BU Number:** 803934
Crown Castle Site Name: CT Somers FD CAC
Crown Castle JDE Job Number: 627574
Crown Castle Order Number: 537325, Rev.0

Engineering Firm Designation: **B+T Group Report Designation:** 87311.007.01

Site Data: 400 Main Street, Somers, CT 06071, Tolland County
Latitude 41° 59' 1.48" Longitude -72° 27' 56.87"

Structure Information: **Tower Height & Type:** 190 ft. Monopole
Mount Elevation: 165 ft.
Mount Type: 14 ft. Platform Mount

Dear Ms. Tarr,

B+T Group is pleased to submit this "Mount Modification Report" to determine the structural integrity of T-Mobile's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

The purpose of the analysis is to determine acceptability of the mount's stress level. Based on our analysis we have determined the stress level to be:

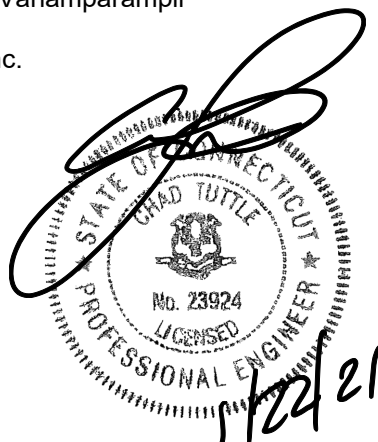
Platform Mount

Sufficient

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount structural analysis prepared by: Joseph Variamparampil

Respectfully submitted by: B&T Engineering, Inc.
COA: PEC.0001564 Expires: 02/10/2021



Chad E. Tuttle, P.E.

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Additional Calculations

9) APPENDIX E

Mount Modification Design Drawings (MDD)

1) INTRODUCTION

This is an existing 14' platform mount.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor at Base:	1
Topographic Factor at Mount:	1
Ice Thickness:	2 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.175
Seismic S_1:	0.064
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft.)	Antenna Centerline (ft.)	Qty.	Manufacturer	Model / Type	Mount / Modification Details
165	165	3	RFS	APX16DWV-16DWVS-E-A20	14' Platform Mount
		3	RFS	APXVAALL24 43-UNA20 TMO	
		3	Ericsson	RADIO 4415 B66A_CCIV3	
		3	Ericsson	RADIO 4449 B71 B85A T-MOBILE	
		3	Ericsson	RRUS 4415 B25_CCIV2	

Table 2 - Documents Provided

Document	Remarks	Reference	Source
CCI Order	Existing Loading Proposed Loading	Date: 12/18/2020	Crown Castle
RFDS		Date: 12/11/2020	
Mount Analysis Report	B+T Group	Date: 01/12/2021	On File

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 18.0.5), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A tool internally developed by B+T Group, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading cases. Selected output from the analysis is included in Appendix B "Software Input Calculations".

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision C).

3.2) Assumptions

1. The mount was properly fabricated and installed in accordance with its original design and manufacturer's specifications.
2. The mount has been maintained in accordance with the manufacturer's specifications and is free of damage.
3. The configuration of antennas, mounts, and other appurtenances are as specified in Table-1.
4. All mount components have been assumed to be in sufficient condition to carry their full design capacity for the analysis.
5. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.
6. The following assumptions have been included in the analysis of the mount]

Component	Section	Length	Note
Antenna Mount Pipes	2" Std. Pipe	7'-0"	In Pos.1 & Pos.4
		8'-0"	In Pos.2

7. Serviceability with respect to antenna twist, tilt, roll or lateral translation is not checked and is left to the carrier or tower owner to ensure conformance.
8. All prior structural modifications, if any are assumed to be correctly installed and fully effective.
9. 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.
10. The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
11. The following material grades were assumed (Unless Noted Otherwise):
 - (a) Connection Bolts : ASTM A325
 - (b) Steel Pipe : ASTM A53 (GR. 35)
 - (c) HSS (Round) : ASTM 500 (GR. B-42)
 - (d) HSS (Rectangular) : ASTM 500 (GR. B-46)
 - (e) Channel : ASTM A36 (GR. 36)
 - (f) Steel Solid Rod : ASTM A36 (GR. 36)
 - (g) Steel Plate : ASTM A36 (GR. 36)
 - (h) Steel Angle : ASTM A36 (GR. 36)
 - (i) UNISTRUT : ASTM A570 (GR. 33)

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 antenna mounting system.

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Platform Mount)

Notes	Component	Centerline (ft.)	Critical Member	% Capacity	Pass / Fail
1,2	Mount Pipes	165	31	77.6	Pass
	Support Tubes	165	17	34.5	Pass
	Main Horizontals	165	1	84.1	Pass
	Support Angles	165	9	33.6	Pass
	New Support Rail Pipe	165	M40	70.6	Pass
	New Support Connection	165	M53	52.6	Pass
	New Reinforcement Angles	165	M60	20.8	Pass
3	Mount-Tower Connection	165	--	73.39	Pass

Structure Rating (max from all components) =	84.1%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
- 2) All sectors are typical.
- 3) See additional documentation in "Appendix D - Additional Calculations" for calculations supporting the % capacity reported.

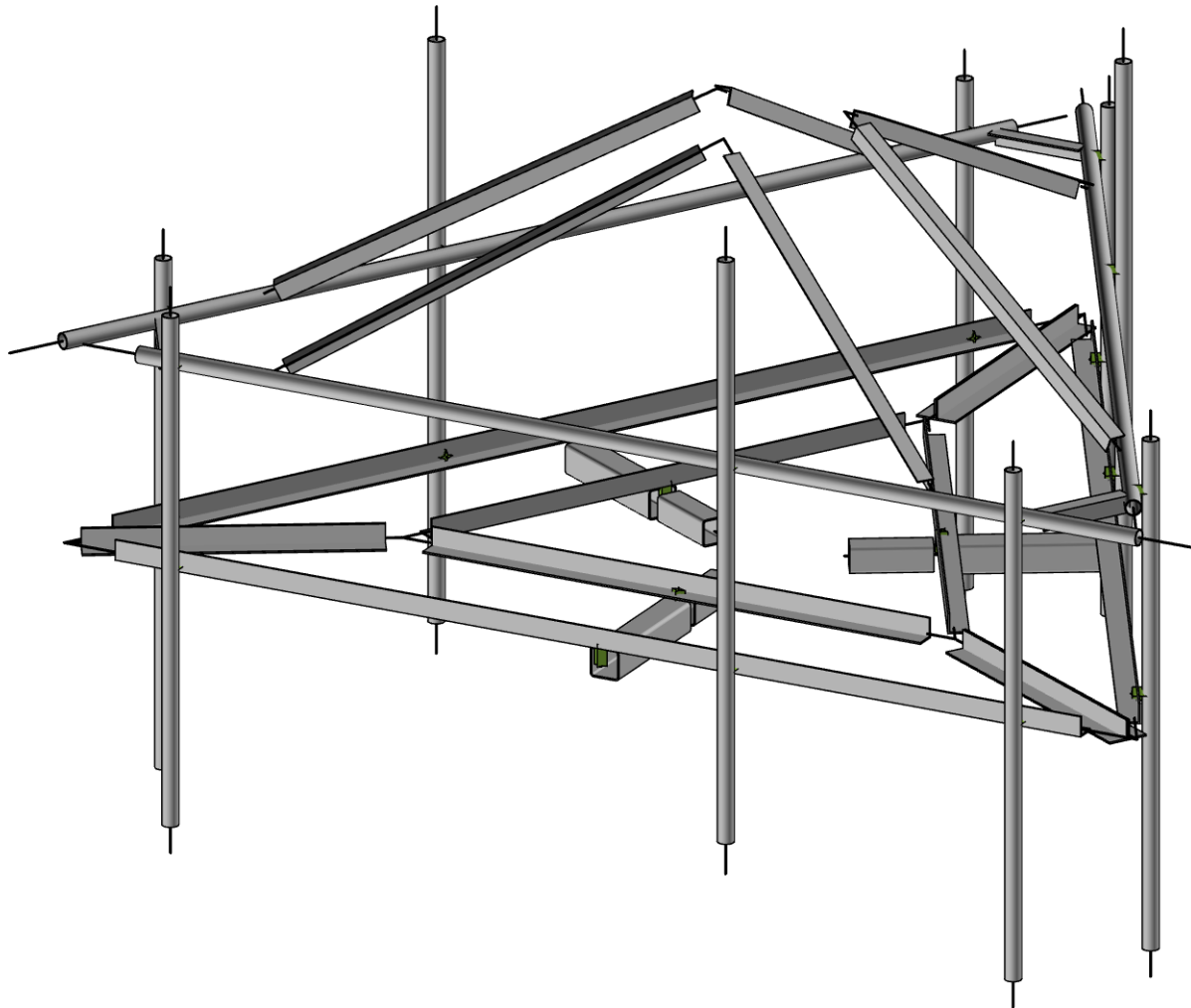
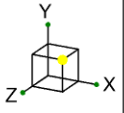
4.1) RECOMMENDATIONS

The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the structural modifications listed below must be completed.

1. Installation of new support rail kit, SitePro1 Part# HRK14
2. Installation of new reinforcement kit, SitePro1 Part# PRK-SFS-L

Engineering detail drawings have been provided in Appendix E – Mount Modification Design Drawings.

APPENDIX A
WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

B+T Group

JV

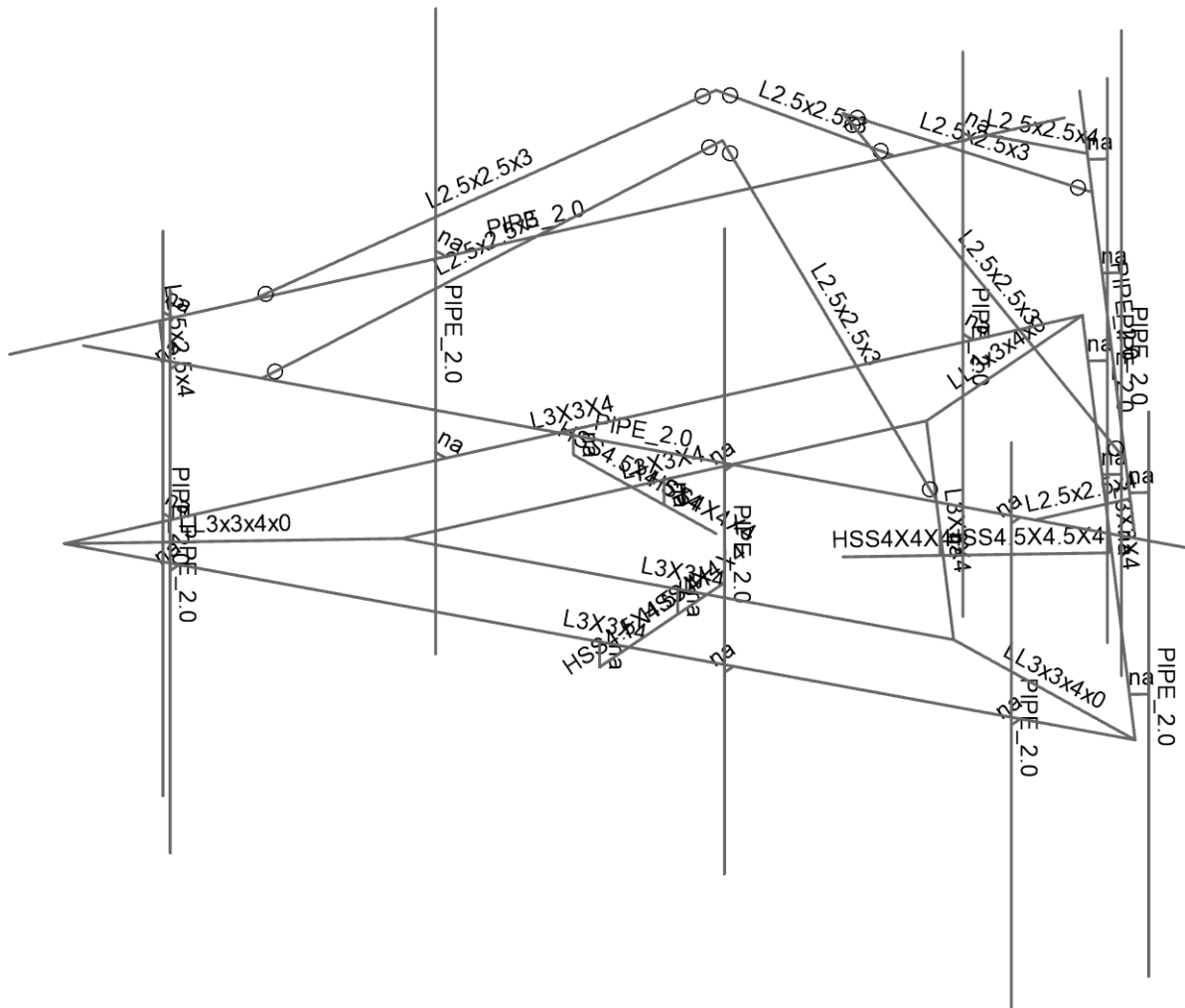
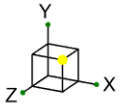
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803934 - CT Somers FD CAC

SK-1

Jan 21, 2021

87311_007_01_CT Somers FD C...



Envelope Only Solution

B+T Group

JV

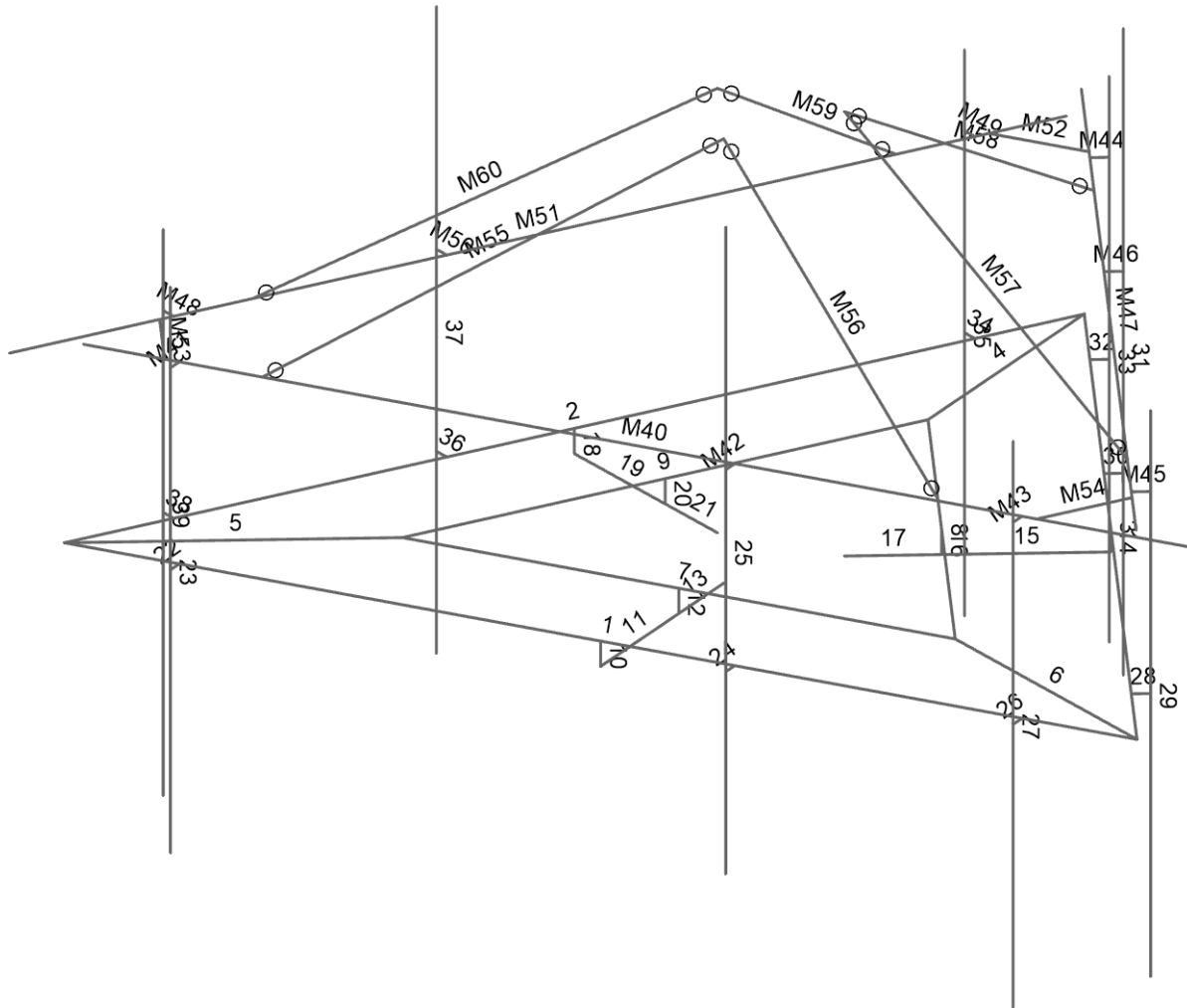
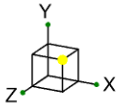
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803934 - CT Somers FD CAC

SK-2

Jan 21, 2021

87311_007_01_CT Somers FD C...



Envelope Only Solution

B+T Group

JV

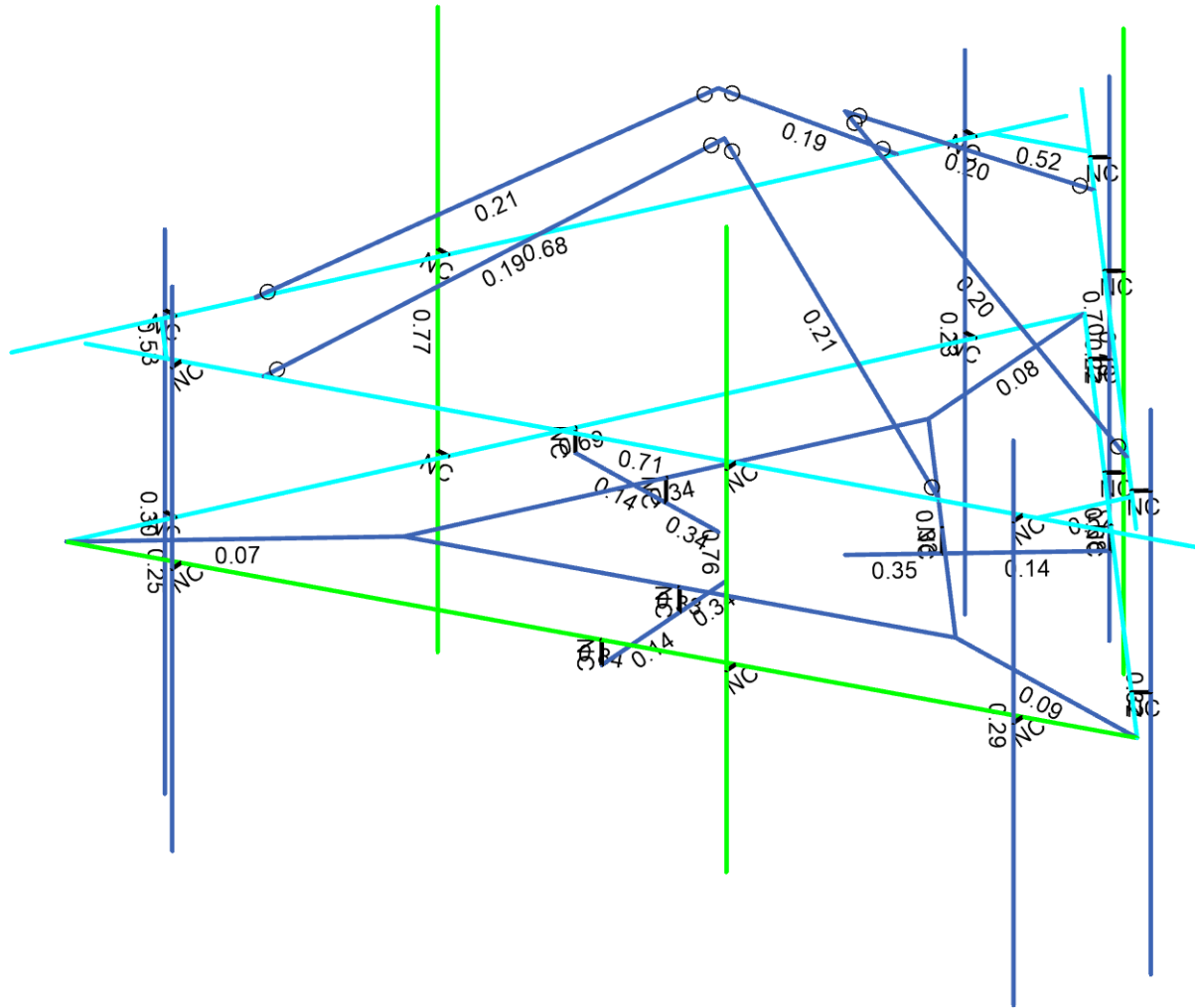
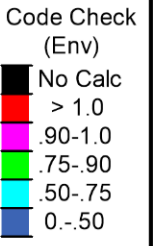
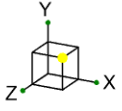
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803934 - CT Somers FD CAC

SK-3

Jan 21, 2021

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Member Code Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	803934 - CT Somers FD CAC	SK-5
JV		Jan 21, 2021
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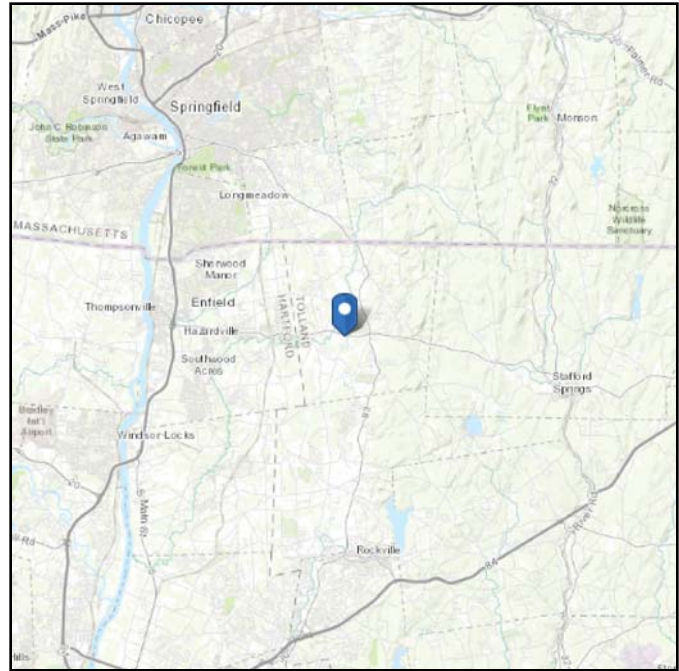
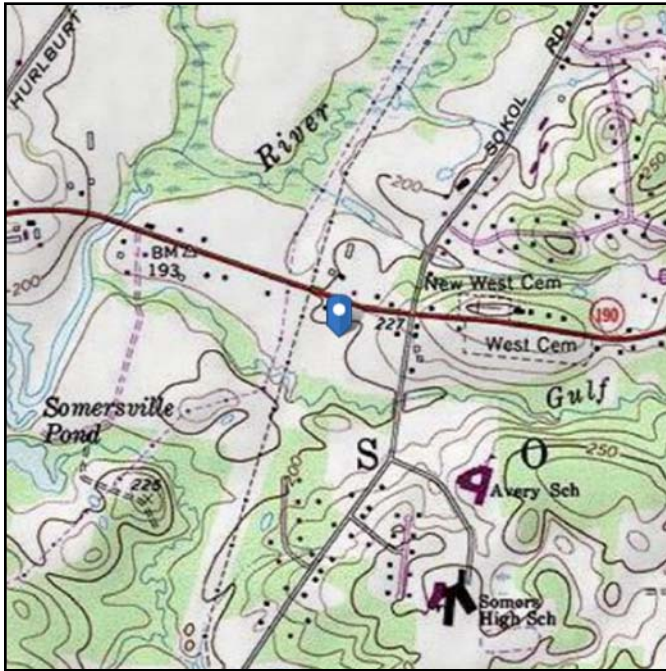
APPENDIX B
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 197.69 ft (NAVD 88)
Latitude: 41.983744
Longitude: -72.465797

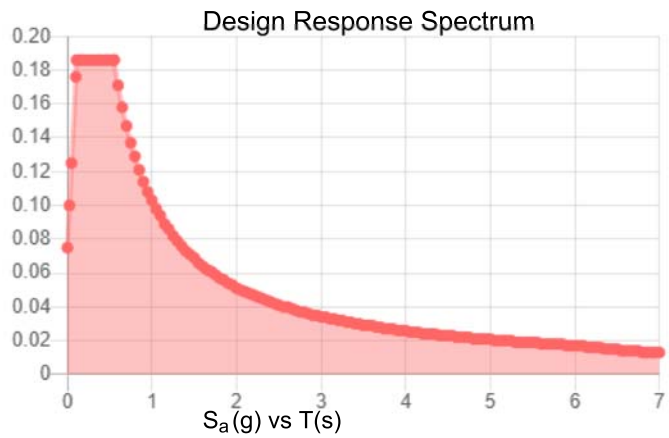
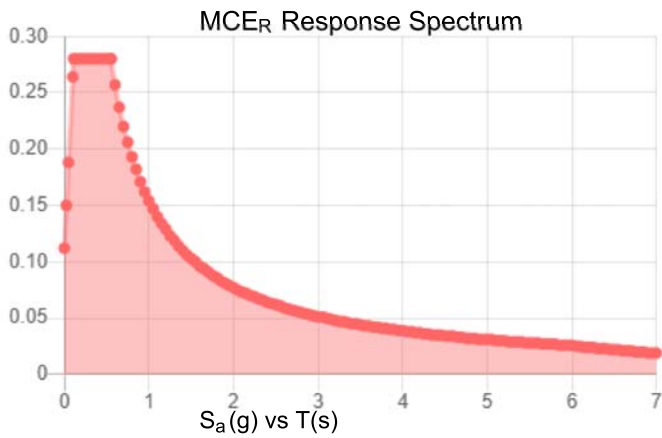


Site Soil Class: D - Stiff Soil

Results:

S_s :	0.175	S_{DS} :	0.186
S_1 :	0.064	S_{D1} :	0.103
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.086
S_{MS} :	0.28	PGA _M :	0.137
S_{M1} :	0.154	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Fri Jan 08 2021

Date Source:

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

Ice

Results:

Ice Thickness: 1.00 in.

Concurrent Temperature: 5 F

Gust Speed: 50 mph

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

Date Accessed: Fri Jan 08 2021

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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PROJECT	87311.007.01 - CT Somers FD		KSC
SUBJECT	Platform Mount Mount Analysis		
DATE	01/21/21	PAGE	OF



B+T GRP
 1717 S. Boulder, Suite 300
 Tulsa, OK 74159
 (918) 587-4630

Tower Type	:	Monopole	
Ground Elevation	Z_s :	198	ft [ASCE7 Hazard Tool]
Tower Height	:	190.00	ft
Mount Elevation	:	165.00	ft
Antenna Elevation	:	165.00	ft
Crest Height	:	0	ft
Risk Category	:	II	[Table 2-1]
Exposure Category	:	C	[Sec. 2.6.5.1.2]
Topography Category	:	1.00	[Sec. 2.6.6.2]
Wind Velocity	V :	125	mph [ASCE7 Hazard Tool]
Ice wind Velocity	V_i :	50	mph [ASCE7 Hazard Tool]
Service Velocity	V_s :	30	mph [ASCE7 Hazard Tool]
Base Ice thickness	t_i :	2.00	in [ASCE7 Hazard Tool]
Seismic Design Cat.	:	B	[ASCE7 Hazard Tool]
	S_S :	0.18	
	S_1 :	0.06	
	S_{DS} :	0.19	
	S_{D1} :	0.10	
Gust Factor	G_h :	1.00	[Sec. 16.6]
Pressure Coefficient	K_z :	1.41	[Sec. 2.6.5.2]
Topography Factor	K_{zt} :	2.99	[Sec. 2.6.6]
Elevation Factor	K_e :	0.99	[Sec. 2.6.8]
Directionality Factor	K_d :	0.95	[Sec. 16.6]
Shielding Factor	K_a :	0.90	[Sec. 16.6]
Design Ice Thickness	t_{iz} :	2.35	in [Sec. 2.6.10]
Importance Factor	I_e :	1	[Table 2-3]
Response Coefficient	C_s :	0.093	[Sec. 2.7.7.1]
Amplification	A_s :	2.473684	[Sec. 16.7]
	q_z :	53.06	psf

PROJECT	87311.007.01 - CT Somers FD		KSC
SUBJECT	Platform Mount Mount Analysis		
DATE	01/21/21	PAGE	OF



Manufacturer	Model	Qty	Aspect Ratio	C _a	EPA _N (ft ²)	EPA _T (ft ²)	EPA _{N-Ice} (ft ²)	EPA _{T-Ice} (ft ²)	F _{A No Ice (N)}	F _{A No Ice (T)}	F _{A Ice (N)}	F _{A Ice (T)}
				flat/round								
RFS/CELWAVE	APX16DWV-16DWVS-E-A20	0.5	4.61	4.36	2.70	0.66	3.97	1.76	0.17	0.04	0.04	0.02
RFS/CELWAVE	APX16DWV-16DWVS-E-A20	0.5	4.61	1.29	2.70	0.66	3.97	1.76	0.17	0.04	0.04	0.02
ERICSSON	RRUS 4415 B25_CCIV2	1	1.23	1.20	1.54	0.68	2.66	1.56	0.09	0.04	0.01	0.01
RFS/CELWAVE	APXVAALL24_43-UNA20_TMO	0.5	4.00	1.27	7.99	2.83	10.02	4.61	0.48	0.17	0.08	0.03
RFS/CELWAVE	APXVAALL24_43-UNA20_TMO	0.5	4.00	1.27	7.99	2.83	10.02	4.61	0.48	0.17	0.08	0.03
ERICSSON	RADIO 4415 B66A_CCIV3	1	1.13	1.20	1.37	0.56	2.44	1.37	0.08	0.03	0.01	0.01
ERICSSON	ADIO 4449 B71 B85A_T-MOBII	1	1.36	1.20	1.64	1.32	2.81	2.41	0.09	0.08	0.02	0.01
RFS/CELWAVE	APX16DWV-16DWVS-E-A20	0.5	4.61	1.29	2.70	0.66	3.97	1.76	0.17	0.04	0.04	0.02
RFS/CELWAVE	APX16DWV-16DWVS-E-A20	0.5	4.61	1.29	2.70	0.66	3.97	1.76	0.17	0.04	0.04	0.02
ERICSSON	RRUS 4415 B25_CCIV2	1	1.23	1.20	1.54	0.68	2.66	1.56	0.09	0.04	0.01	0.01
RFS/CELWAVE	APXVAALL24_43-UNA20_TMO	0.5	4.00	1.27	7.99	2.83	10.02	4.61	0.48	0.17	0.08	0.03
RFS/CELWAVE	APXVAALL24_43-UNA20_TMO	0.5	4.00	1.27	7.99	2.83	10.02	4.61	0.48	0.17	0.08	0.03
ERICSSON	RADIO 4415 B66A_CCIV3	1	1.13	1.20	1.37	0.56	2.44	1.37	0.08	0.03	0.01	0.01
ERICSSON	ADIO 4449 B71 B85A_T-MOBII	1	1.36	1.20	1.64	1.32	2.81	2.41	0.09	0.08	0.02	0.01
RFS/CELWAVE	APX16DWV-16DWVS-E-A20	0.5	4.61	1.29	2.70	0.66	3.97	1.76	0.17	0.04	0.04	0.02
RFS/CELWAVE	APX16DWV-16DWVS-E-A20	0.5	4.61	1.29	2.70	0.66	3.97	1.76	0.17	0.04	0.04	0.02
ERICSSON	RRUS 4415 B25_CCIV2	1	1.23	1.20	1.54	0.68	2.66	1.56	0.09	0.04	0.01	0.01
RFS/CELWAVE	APXVAALL24_43-UNA20_TMO	0.5	4.00	1.27	7.99	2.83	10.02	4.61	0.48	0.17	0.08	0.03
RFS/CELWAVE	APXVAALL24_43-UNA20_TMO	0.5	4.00	1.27	7.99	2.83	10.02	4.61	0.48	0.17	0.08	0.03
ERICSSON	RADIO 4415 B66A_CCIV3	1	1.13	1.20	1.37	0.56	2.44	1.37	0.08	0.03	0.01	0.01
ERICSSON	ADIO 4449 B71 B85A_T-MOBII	1	1.36	1.20	1.64	1.32	2.81	2.41	0.09	0.08	0.02	0.01

APPENDIX C
SOFTWARE ANALYSIS OUTPUT



Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	1	0	0	0	
2	2	-0.	0	-8.082904	
3	3	-7	0	4.041452	
4	4	7	0	4.041452	
5	5	3.608073	0	2.083122	
6	6	-0.	0	-4.166244	
7	7	-3.608073	0	2.083122	
8	8	0.	0	4.041452	
9	9	0.	-0.3125	4.041452	
10	10	0.	0	2.083122	
11	11	0.	-0.3125	2.083122	
12	12	0.	-0.3125	2.041452	
13	13	0.	-0.3125	0.958119	
14	14	3.5	0	-2.020726	
15	15	3.5	-0.3125	-2.020726	
16	16	1.804036	0	-1.041561	
17	17	1.804036	-0.3125	-1.041561	
18	18	1.767949	-0.3125	-1.020726	
19	19	0.829755	-0.3125	-0.479059	
20	20	-3.5	0	-2.020726	
21	21	-3.5	-0.3125	-2.020726	
22	22	-1.804036	0	-1.041561	
23	23	-1.804036	-0.3125	-1.041561	
24	24	-1.767949	-0.3125	-1.020726	
25	25	-0.829755	-0.3125	-0.479059	
26	26	-5.5	0	4.041452	
27	27	-5.5	0	4.265618	
28	28	-5.5	3.5	4.265618	
29	29	-5.5	-3.5	4.265618	
30	30	1.749957	0	4.041452	
31	31	1.749957	0	4.265618	
32	32	1.749957	5.5	4.265618	
33	33	1.749957	-2.5	4.265618	
34	34	5.5	0	4.041452	
35	35	5.5	0	4.265618	
36	36	5.5	3.5	4.265618	
37	37	5.5	-3.5	4.265618	
38	38	6.25	0	2.742414	
39	39	6.444133	0	2.630331	
40	40	6.444133	3.5	2.630331	
41	41	6.444133	-3.5	2.630331	
42	42	2.625022	0	-3.536233	
43	43	2.819155	0	-3.648316	
44	44	2.819155	5.5	-3.648316	
45	45	2.819155	-2.5	-3.648316	
46	46	0.75	0	-6.783866	
47	47	0.944133	0	-6.895949	
48	48	0.944133	3.5	-6.895949	
49	49	0.944133	-3.5	-6.895949	
50	50	-0.75	0	-6.783866	
51	51	-0.944133	0	-6.895949	
52	52	-0.944133	3.5	-6.895949	
53	53	-0.944133	-3.5	-6.895949	
54	54	-4.374978	0	-0.505219	
55	55	-4.569112	0	-0.617302	
56	56	-4.569112	5.5	-0.617302	
57	57	-4.569112	-2.5	-0.617302	
58	58	-6.25	0	2.742414	

Node Coordinates (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
59	59	-6.444133	0	2.630331	
60	60	-6.444133	3.5	2.630331	
61	61	-6.444133	-3.5	2.630331	
62	N62	-6.75	2.5	4.041452	
63	N63	7.75	2.5	4.041452	
64	N64	-5.5	2.5	4.041452	
65	N65	-5.5	2.5	4.265618	
66	N66	1.749957	2.5	4.041452	
67	N67	1.749957	2.5	4.265618	
68	N68	5.5	2.5	4.041452	
69	N69	5.5	2.5	4.265618	
70	N70	0.75	2.5	-6.783866	
71	N71	0.944133	2.5	-6.895949	
72	N72	6.25	2.5	2.742414	
73	N73	6.444133	2.5	2.630331	
74	N74	2.625022	2.5	-3.536233	
75	N75	2.819155	2.5	-3.648316	
76	N76	6.875	2.5	3.824946	
77	N77	-0.375	2.5	-8.732423	
78	N78	-6.25	2.5	2.742414	
79	N79	-6.444133	2.5	2.630331	
80	N80	-0.75	2.5	-6.783866	
81	N81	-0.944133	2.5	-6.895949	
82	N82	-4.374978	2.5	-0.505219	
83	N83	-4.569112	2.5	-0.617302	
84	N84	-0.125	2.5	-7.866397	
85	N85	-7.375	2.5	4.690971	
86	N86	-0.654238	2.5	-6.949731	
87	N87	0.654238	2.5	-6.949731	
88	N88	-5.691525	2.5	4.041452	
89	N89	-6.345762	2.5	2.908279	
90	N90	6.345762	2.5	2.908279	
91	N91	5.691525	2.5	4.041452	
92	N92	0.	5.1875	0.958119	
93	N93	-4.416667	2.5	4.041452	
94	N94	4.416667	2.5	4.041452	
95	N95	0.829755	5.1875	-0.479059	
96	N96	5.708333	2.5	1.80422	
97	N97	1.291667	2.5	-5.845671	
98	N98	-0.829755	5.1875	-0.479059	
99	N99	-1.291667	2.5	-5.845671	
100	N100	-5.708333	2.5	1.80422	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	25	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	19	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	13	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N92	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N95	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
6	N98	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e ⁻⁵ °F ⁻¹]	Density [k/ft ³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1



Hot Rolled Steel Properties (Continued)

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e ⁵ °F ⁻¹]	Density [k/ft ³]	Yield [ksi]	Ry	Fu [ksi]	Rt
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in ²]	Iyy [in ⁴]	Izz [in ⁴]	J [in ⁴]
1	MF-P1	PIPE 2.0	Column	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
2	F1-ST1	HSS4X4X4	Beam	Tube	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
3	F1-ST2	HSS4.5X4.5X4	Beam	Tube	A500 Gr.B Rect	Typical	3.84	11.4	11.4	18.5
4	MF-H1	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	0.031
5	F1-SA1	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	0.031
6	F1-SA2	LL3x3x4x0	Beam	Double Angle (No Gap)	A36 Gr.36	Typical	2.88	4.5	2.46	0.063
7	SR Pipe	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
8	SR Connection Angle	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	0.692	0.692	0.026
9	Reinforcement Angles	L2.5x2.5x3	VBrace	Single Angle	A36 Gr.36	Typical	0.901	0.535	0.535	0.011

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	1	3	4	270	MF-H1	Beam	Single Angle	A36 Gr.36	Typical
2	2	3	2		MF-H1	Beam	Single Angle	A36 Gr.36	Typical
3	3	2	4		MF-H1	Beam	Single Angle	A36 Gr.36	Typical
4	4	2	6	180	F1-SA2	Beam	Double Angle (No Gap)	A36 Gr.36	Typical
5	5	3	7	180	F1-SA2	Beam	Double Angle (No Gap)	A36 Gr.36	Typical
6	6	4	5	180	F1-SA2	Beam	Double Angle (No Gap)	A36 Gr.36	Typical
7	7	7	5		F1-SA1	Beam	Single Angle	A36 Gr.36	Typical
8	8	5	6		F1-SA1	Beam	Single Angle	A36 Gr.36	Typical
9	9	6	7		F1-SA1	Beam	Single Angle	A36 Gr.36	Typical
10	10	8	9		RIGID	None	None	RIGID	Typical
11	11	9	12		F1-ST2	Beam	Tube	A500 Gr.B Rect	Typical
12	12	10	11		RIGID	None	None	RIGID	Typical
13	13	12	13		F1-ST1	Beam	Tube	A500 Gr.B Rect	Typical
14	14	14	15		RIGID	None	None	RIGID	Typical
15	15	15	18		F1-ST2	Beam	Tube	A500 Gr.B Rect	Typical
16	16	16	17		RIGID	None	None	RIGID	Typical
17	17	18	19		F1-ST1	Beam	Tube	A500 Gr.B Rect	Typical
18	18	20	21		RIGID	None	None	RIGID	Typical
19	19	21	24		F1-ST2	Beam	Tube	A500 Gr.B Rect	Typical
20	20	22	23		RIGID	None	None	RIGID	Typical
21	21	24	25		F1-ST1	Beam	Tube	A500 Gr.B Rect	Typical
22	22	26	27		RIGID	None	None	RIGID	Typical
23	23	28	29		MF-P1	Column	Pipe	A53 Gr.B	Typical
24	24	30	31		RIGID	None	None	RIGID	Typical
25	25	32	33		MF-P1	Column	Pipe	A53 Gr.B	Typical
26	26	34	35		RIGID	None	None	RIGID	Typical
27	27	36	37		MF-P1	Column	Pipe	A53 Gr.B	Typical
28	28	38	39		RIGID	None	None	RIGID	Typical
29	29	40	41		MF-P1	Column	Pipe	A53 Gr.B	Typical
30	30	42	43		RIGID	None	None	RIGID	Typical
31	31	44	45		MF-P1	Column	Pipe	A53 Gr.B	Typical
32	32	46	47		RIGID	None	None	RIGID	Typical
33	33	48	49		MF-P1	Column	Pipe	A53 Gr.B	Typical
34	34	50	51		RIGID	None	None	RIGID	Typical
35	35	52	53		MF-P1	Column	Pipe	A53 Gr.B	Typical
36	36	54	55		RIGID	None	None	RIGID	Typical
37	37	56	57		MF-P1	Column	Pipe	A53 Gr.B	Typical
38	38	58	59		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
39	39	60	61		MF-P1	Column	Pipe	A53 Gr.B Typical
40	M40	N62	N63	270	SR Pipe	Beam	Pipe	A53 Gr.B Typical
41	M41	N64	N65		RIGID	None	None	RIGID Typical
42	M42	N66	N67		RIGID	None	None	RIGID Typical
43	M43	N68	N69		RIGID	None	None	RIGID Typical
44	M44	N70	N71		RIGID	None	None	RIGID Typical
45	M45	N72	N73		RIGID	None	None	RIGID Typical
46	M46	N74	N75		RIGID	None	None	RIGID Typical
47	M47	N76	N77	270	SR Pipe	Beam	Pipe	A53 Gr.B Typical
48	M48	N78	N79		RIGID	None	None	RIGID Typical
49	M49	N80	N81		RIGID	None	None	RIGID Typical
50	M50	N82	N83		RIGID	None	None	RIGID Typical
51	M51	N84	N85	270	SR Pipe	Beam	Pipe	A53 Gr.B Typical
52	M52	N86	N87	90	SR Connection Angle	Beam	Single Angle	A36 Gr.36 Typical
53	M53	N88	N89	90	SR Connection Angle	Beam	Single Angle	A36 Gr.36 Typical
54	M54	N90	N91	90	SR Connection Angle	Beam	Single Angle	A36 Gr.36 Typical
55	M55	N92	N93	180	Reinforcement Angles	VBrace	Single Angle	A36 Gr.36 Typical
56	M56	N92	N94	90	Reinforcement Angles	VBrace	Single Angle	A36 Gr.36 Typical
57	M57	N95	N96	180	Reinforcement Angles	VBrace	Single Angle	A36 Gr.36 Typical
58	M58	N95	N97	90	Reinforcement Angles	VBrace	Single Angle	A36 Gr.36 Typical
59	M59	N98	N99	180	Reinforcement Angles	VBrace	Single Angle	A36 Gr.36 Typical
60	M60	N98	N100	90	Reinforcement Angles	VBrace	Single Angle	A36 Gr.36 Typical

Hot Rolled Steel Design Parameters

Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	Lcomp top [ft]	Function
1	1	MF-H1	14	7	7	Lbyy Lateral
2	2	MF-H1	14	7	7	Lbyy Lateral
3	3	MF-H1	14	7	7	Lbyy Lateral
4	4	F1-SA2	3.917			Lbyy Lateral
5	5	F1-SA2	3.917			Lbyy Lateral
6	6	F1-SA2	3.917			Lbyy Lateral
7	7	F1-SA1	7.216			Lbyy Lateral
8	8	F1-SA1	7.216			Lbyy Lateral
9	9	F1-SA1	7.216			Lbyy Lateral
10	11	F1-ST2	2			Lbyy Lateral
11	13	F1-ST1	1.083			Lbyy Lateral
12	15	F1-ST2	2			Lbyy Lateral
13	17	F1-ST1	1.083			Lbyy Lateral
14	19	F1-ST2	2			Lbyy Lateral
15	21	F1-ST1	1.083			Lbyy Lateral
16	23	MF-P1	7			Lbyy Lateral
17	25	MF-P1	8			Lbyy Lateral
18	27	MF-P1	7			Lbyy Lateral
19	29	MF-P1	7			Lbyy Lateral
20	31	MF-P1	8			Lbyy Lateral
21	33	MF-P1	7			Lbyy Lateral
22	35	MF-P1	7			Lbyy Lateral
23	37	MF-P1	8			Lbyy Lateral
24	39	MF-P1	7			Lbyy Lateral
25	M40	SR Pipe	14.5			Lbyy Lateral
26	M47	SR Pipe	14.5			Lbyy Lateral
27	M51	SR Pipe	14.5			Lbyy Lateral
28	M52	SR Connection Angle	1.308			Lbyy Lateral
29	M53	SR Connection Angle	1.308			Lbyy Lateral
30	M54	SR Connection Angle	1.308			Lbyy Lateral
31	M55	Reinforcement Angles	6.02			Lbyy Lateral
32	M56	Reinforcement Angles	6.02			Lbyy Lateral
33	M57	Reinforcement Angles	6.02			Lbyy Lateral



Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	Lcomp top [ft]	Function
34	M58	Reinforcement Angles	6.02			Lbyy	Lateral
35	M59	Reinforcement Angles	6.02			Lbyy	Lateral
36	M60	Reinforcement Angles	6.02			Lbyy	Lateral

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed	Area(Member)
1	Dead	DL	-1		30		3
2	0 Wind - No Ice	WLZ			30	36	
3	90 Wind - No Ice	WLX			30	36	
4	0 Wind - Ice	WLZ			30	36	
5	90 Wind - Ice	WLX			30	36	
6	0 Wind - Service	WLZ			30	36	
7	90 Wind - Service	WLX			30	36	
8	Ice	OL1			30	36	3
9	0 Seismic	ELZ			30	36	
10	90 Seismic	ELX			30	36	
11	Live Load a	LL		3			
12	Live Load b	LL		3			
13	Live Load c	LL		3			
14	Live Load d	LL					
15	Maint LL 1	LL			1		
16	Maint LL 2	LL			1		
17	Maint LL 3	LL			1		
18	Maint LL 4	LL			1		
19	Maint LL 5	LL			1		
20	Maint LL 6	LL			1		
21	Maint LL 7	LL			1		
22	Maint LL 8	LL			1		
23	Maint LL 9	LL			1		
24	Maint LL 10	LL					
25	Maint LL 11	LL					
26	Maint LL 12	LL					
27	Maint LL 13	LL					
28	Maint LL 14	LL					
29	Maint LL 15	LL					
30	Maint LL 16	LL					
31	Maint LL 17	LL					
32	Maint LL 18	LL					
33	Maint LL 19	LL					
34	Maint LL 20	LL					
35	Maint LL 21	LL					
36	Maint LL 22	LL					
37	Maint LL 23	LL					
38	Maint LL 24	LL					
39	BLC 1 Transient Area Loads	None				28	
40	BLC 8 Transient Area Loads	None				28	

Load Combinations

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4 Dead	Yes	Y	1	1.4						
2	1.2 D + 1.0 - 0 W	Yes	Y	1	1.2	2	1				
3	1.2 D + 1.0 - 30 W	Yes	Y	1	1.2	2	0.866	3	0.5		
4	1.2 D + 1.0 - 60 W	Yes	Y	1	1.2	3	0.866	2	0.5		
5	1.2 D + 1.0 - 90 W	Yes	Y	1	1.2	3	1				
6	1.2 D + 1.0 - 120 W	Yes	Y	1	1.2	3	0.866	2	-0.5		
7	1.2 D + 1.0 - 150 W	Yes	Y	1	1.2	2	-0.866	3	0.5		
8	1.2 D + 1.0 - 180 W	Yes	Y	1	1.2	2	-1				



Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
9	1.2 D + 1.0 - 210 W	Yes	Y	1	1.2	2	-0.866	3	-0.5		
10	1.2 D + 1.0 - 240 W	Yes	Y	1	1.2	3	-0.866	2	-0.5		
11	1.2 D + 1.0 - 270 W	Yes	Y	1	1.2	3	-1				
12	1.2 D + 1.0 - 300 W	Yes	Y	1	1.2	3	-0.866	2	0.5		
13	1.2 D + 1.0 - 330 W	Yes	Y	1	1.2	2	0.866	3	-0.5		
14	1.2 D + 1.0 - 0 W/Ice	Yes	Y	1	1.2	4	1			8	1
15	1.2 D + 1.0 - 30 W/Ice	Yes	Y	1	1.2	4	0.866	5	0.5	8	1
16	1.2 D + 1.0 - 60 W/Ice	Yes	Y	1	1.2	5	0.866	4	0.5	8	1
17	1.2 D + 1.0 - 90 W/Ice	Yes	Y	1	1.2	5	1			8	1
18	1.2 D + 1.0 - 120 W/Ice	Yes	Y	1	1.2	5	0.866	4	-0.5	8	1
19	1.2 D + 1.0 - 150 W/Ice	Yes	Y	1	1.2	4	-0.866	5	0.5	8	1
20	1.2 D + 1.0 - 180 W/Ice	Yes	Y	1	1.2	4	-1			8	1
21	1.2 D + 1.0 - 210 W/Ice	Yes	Y	1	1.2	4	-0.866	5	-0.5	8	1
22	1.2 D + 1.0 - 240 W/Ice	Yes	Y	1	1.2	5	-0.866	4	-0.5	8	1
23	1.2 D + 1.0 - 270 W/Ice	Yes	Y	1	1.2	5	-1			8	1
24	1.2 D + 1.0 - 300 W/Ice	Yes	Y	1	1.2	5	-0.866	4	0.5	8	1
25	1.2 D + 1.0 - 330 W/Ice	Yes	Y	1	1.2	4	0.866	5	-0.5	8	1
26	1.2 D + 1.0 E - 0	Yes	Y	1	1.2	9	1				
27	1.2 D + 1.0 E - 30	Yes	Y	1	1.2	9	0.866	10	0.5		
28	1.2 D + 1.0 E - 60	Yes	Y	1	1.2	10	0.866	9	0.5		
29	1.2 D + 1.0 E - 90	Yes	Y	1	1.2	10	1				
30	1.2 D + 1.0 E - 120	Yes	Y	1	1.2	10	0.866	9	-0.5		
31	1.2 D + 1.0 E - 150	Yes	Y	1	1.2	9	-0.866	10	0.5		
32	1.2 D + 1.0 E - 180	Yes	Y	1	1.2	9	-1				
33	1.2 D + 1.0 E - 210	Yes	Y	1	1.2	9	-0.866	10	-0.5		
34	1.2 D + 1.0 E - 240	Yes	Y	1	1.2	10	-0.866	9	-0.5		
35	1.2 D + 1.0 E - 270	Yes	Y	1	1.2	10	-1				
36	1.2 D + 1.0 E - 300	Yes	Y	1	1.2	10	-0.866	9	0.5		
37	1.2 D + 1.0 E - 330	Yes	Y	1	1.2	9	0.866	10	-0.5		
38	1.2 D + 1.5 LL a + Service - 0 W	Yes	Y	1	1.2	6	1			11	1.5
39	1.2 D + 1.5 LL a + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	11	1.5
40	1.2 D + 1.5 LL a + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	11	1.5
41	1.2 D + 1.5 LL a + Service - 90 W	Yes	Y	1	1.2	7	1			11	1.5
42	1.2 D + 1.5 LL a + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	11	1.5
43	1.2 D + 1.5 LL a + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	11	1.5
44	1.2 D + 1.5 LL a + Service - 180 W	Yes	Y	1	1.2	6	-1			11	1.5
45	1.2 D + 1.5 LL a + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	11	1.5
46	1.2 D + 1.5 LL a + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	11	1.5
47	1.2 D + 1.5 LL a + Service - 270 W	Yes	Y	1	1.2	7	-1			11	1.5
48	1.2 D + 1.5 LL a + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	11	1.5
49	1.2 D + 1.5 LL a + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	11	1.5
50	1.2 D + 1.5 LL b + Service - 0 W	Yes	Y	1	1.2	6	1			12	1.5
51	1.2 D + 1.5 LL b + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	12	1.5
52	1.2 D + 1.5 LL b + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	12	1.5
53	1.2 D + 1.5 LL b + Service - 90 W	Yes	Y	1	1.2	7	1			12	1.5
54	1.2 D + 1.5 LL b + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	12	1.5
55	1.2 D + 1.5 LL b + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	12	1.5
56	1.2 D + 1.5 LL b + Service - 180 W	Yes	Y	1	1.2	6	-1			12	1.5
57	1.2 D + 1.5 LL b + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	12	1.5
58	1.2 D + 1.5 LL b + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	12	1.5
59	1.2 D + 1.5 LL b + Service - 270 W	Yes	Y	1	1.2	7	-1			12	1.5
60	1.2 D + 1.5 LL b + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	12	1.5
61	1.2 D + 1.5 LL b + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	12	1.5
62	1.2 D + 1.5 LL c + Service - 0 W	Yes	Y	1	1.2	6	1			13	1.5
63	1.2 D + 1.5 LL c + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	13	1.5
64	1.2 D + 1.5 LL c + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	13	1.5
65	1.2 D + 1.5 LL c + Service - 90 W	Yes	Y	1	1.2	7	1			13	1.5
66	1.2 D + 1.5 LL c + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	13	1.5

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
67	1.2 D + 1.5 LL c + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	13	1.5
68	1.2 D + 1.5 LL c + Service - 180 W	Yes	Y	1	1.2	6	-1			13	1.5
69	1.2 D + 1.5 LL c + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	13	1.5
70	1.2 D + 1.5 LL c + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	13	1.5
71	1.2 D + 1.5 LL c + Service - 270 W	Yes	Y	1	1.2	7	-1			13	1.5
72	1.2 D + 1.5 LL c + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	13	1.5
73	1.2 D + 1.5 LL c + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	13	1.5
74	1.2 D + 1.5 LL d + Service - 0 W	Yes	Y	1	1.2	6	1			14	1.5
75	1.2 D + 1.5 LL d + Service - 30 W	Yes	Y	1	1.2	6	0.866	7	0.5	14	1.5
76	1.2 D + 1.5 LL d + Service - 60 W	Yes	Y	1	1.2	7	0.866	6	0.5	14	1.5
77	1.2 D + 1.5 LL d + Service - 90 W	Yes	Y	1	1.2	7	1			14	1.5
78	1.2 D + 1.5 LL d + Service - 120 W	Yes	Y	1	1.2	7	0.866	6	-0.5	14	1.5
79	1.2 D + 1.5 LL d + Service - 150 W	Yes	Y	1	1.2	6	-0.866	7	0.5	14	1.5
80	1.2 D + 1.5 LL d + Service - 180 W	Yes	Y	1	1.2	6	-1			14	1.5
81	1.2 D + 1.5 LL d + Service - 210 W	Yes	Y	1	1.2	6	-0.866	7	-0.5	14	1.5
82	1.2 D + 1.5 LL d + Service - 240 W	Yes	Y	1	1.2	7	-0.866	6	-0.5	14	1.5
83	1.2 D + 1.5 LL d + Service - 270 W	Yes	Y	1	1.2	7	-1			14	1.5
84	1.2 D + 1.5 LL d + Service - 300 W	Yes	Y	1	1.2	7	-0.866	6	0.5	14	1.5
85	1.2 D + 1.5 LL d + Service - 330 W	Yes	Y	1	1.2	6	0.866	7	-0.5	14	1.5
86	1.2 D + 1.5 LL Maint (1)	Yes	Y	1	1.2					15	1.5
87	1.2 D + 1.5 LL Maint (2)	Yes	Y	1	1.2					16	1.5
88	1.2 D + 1.5 LL Maint (3)	Yes	Y	1	1.2					17	1.5
89	1.2 D + 1.5 LL Maint (4)	Yes	Y	1	1.2					18	1.5
90	1.2 D + 1.5 LL Maint (5)	Yes	Y	1	1.2					19	1.5
91	1.2 D + 1.5 LL Maint (6)	Yes	Y	1	1.2					20	1.5
92	1.2 D + 1.5 LL Maint (7)	Yes	Y	1	1.2					21	1.5
93	1.2 D + 1.5 LL Maint (8)	Yes	Y	1	1.2					22	1.5
94	1.2 D + 1.5 LL Maint (9)	Yes	Y	1	1.2					23	1.5
95	1.2 D + 1.5 LL Maint (10)	Yes	Y	1	1.2					24	1.5
96	1.2 D + 1.5 LL Maint (11)	Yes	Y	1	1.2					25	1.5
97	1.2 D + 1.5 LL Maint (12)	Yes	Y	1	1.2					26	1.5
98	1.2 D + 1.5 LL Maint (13)	Yes	Y	1	1.2					27	1.5
99	1.2 D + 1.5 LL Maint (14)	Yes	Y	1	1.2					28	1.5
100	1.2 D + 1.5 LL Maint (15)	Yes	Y	1	1.2					29	1.5
101	1.2 D + 1.5 LL Maint (16)	Yes	Y	1	1.2					30	1.5
102	1.2 D + 1.5 LL Maint (17)	Yes	Y	1	1.2					31	1.5
103	1.2 D + 1.5 LL Maint (18)	Yes	Y	1	1.2					32	1.5
104	1.2 D + 1.5 LL Maint (19)	Yes	Y	1	1.2					33	1.5
105	1.2 D + 1.5 LL Maint (20)	Yes	Y	1	1.2					34	1.5
106	1.2 D + 1.5 LL Maint (21)	Yes	Y	1	1.2					35	1.5
107	1.2 D + 1.5 LL Maint (22)	Yes	Y	1	1.2					36	1.5
108	1.2 D + 1.5 LL Maint (23)	Yes	Y	1	1.2					37	1.5
109	1.2 D + 1.5 LL Maint (24)	Yes	Y	1	1.2					38	1.5

Envelope Node Reactions

Node Label	X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC		
1	25	max	1.296	6	1.945	22	2.574	2	2.006	24	2.416	13	-0.903	4
2		min	-1.428	12	0.372	4	-2.539	8	0.371	5	-2.331	7	-4.405	22
3	19	max	1.339	4	1.95	19	2.532	2	2.843	18	2.432	9	3.933	19
4		min	-1.3	10	0.336	13	-2.659	8	0.501	12	-2.351	3	0.716	13
5	13	max	2.121	5	1.956	14	1.149	2	-0.764	8	1.773	5	0.568	24
6		min	-2.028	11	0.264	8	-1.054	8	-4.818	15	-1.692	11	-0.063	6
7	N92	max	0.205	3	2.058	20	0.824	2	0	2	0	10	0	40
8		min	-0.398	22	-0.596	2	-2.266	20	0	8	0	40	0	10
9	N95	max	0.379	7	2.012	25	1.426	25	0	46	0	2	0	2
10		min	-1.744	24	-0.353	7	-0.405	7	0	4	0	8	0	8
11	N98	max	2.054	16	1.987	16	0.83	15	0	18	0	7	0	9
12		min	-0.302	10	-0.169	10	-0.183	9	0	12	0	13	0	3



Envelope Node Reactions (Continued)

Node Label	X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
13 Totals: max	5.672	5	11.098	21	8.644	2						
14 min	-5.672	11	3.3	3	-8.644	8						

Envelope AISC 15th (360-16): LRFD Steel Code Checks

Member	Shape	Code Check	Loc [ft]	LC	Shear Check	Loc [ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn	
1	M40	PIPE 2.0	0.706	11.026	20	0.327	11.026	2	4.679	32.13	1.872	1.872	1.838	H1-1a	
2	M51	PIPE 2.0	0.678	11.026	16	0.278	12.385	21	4.679	32.13	1.872	1.872	1.974	H1-1a	
3	M47	PIPE 2.0	0.696	11.026	25	0.27	12.385	18	4.679	32.13	1.872	1.872	1.964	H1-1a	
4	25	PIPE 2.0	0.758	3	2	0.19	5.5	2	14.916	32.13	1.872	1.872	3	H1-1b	
5	37	PIPE 2.0	0.771	3	2	0.156	5.5	9	14.916	32.13	1.872	1.872	2.435	H1-1b	
6	27	PIPE 2.0	0.294	1.021	7	0.146	1.021	20	17.855	32.13	1.872	1.872	2.09	H1-1b	
7	39	PIPE 2.0	0.304	1.021	2	0.146	3.5	15	17.855	32.13	1.872	1.872	2.66	H1-1b	
8	33	PIPE 2.0	0.221	1.021	23	0.144	1.021	24	17.855	32.13	1.872	1.872	1.511	H1-1b	
9	2	L3X3X4	0.687	7	25	0.138	7	y	23	15.778	46.656	1.688	3.279	1.5	H2-1
10	3	L3X3X4	0.684	7	21	0.137	7	y	19	15.778	46.656	1.688	3.279	1.5	H2-1
11	1	L3X3X4	0.841	7	16	0.136	7	z	15	15.778	46.656	1.688	2.161	1	H2-1
12	31	PIPE 2.0	0.776	3	2	0.125	5.5	7	14.916	32.13	1.872	1.872	2.105	H1-1b	
13	29	PIPE 2.0	0.316	1.021	2	0.116	3.5	38	17.855	32.13	1.872	1.872	2.085	H1-1b	
14	35	PIPE 2.0	0.231	3.5	7	0.115	3.5	43	17.855	32.13	1.872	1.872	1.606	H1-1b	
15	23	PIPE 2.0	0.245	1.021	9	0.115	3.5	46	17.855	32.13	1.872	1.872	2.13	H1-1b	
16	15	HSS4.5X4.5X4	0.142	2	20	0.112	1.958	z	9	156.915	158.976	20.907	20.907	1.76	H1-1b
17	19	HSS4.5X4.5X4	0.14	2	25	0.112	1.958	z	13	156.915	158.976	20.907	20.907	1.746	H1-1b
18	21	HSS4X4X4	0.343	1.083	25	0.092	1.083	z	7	138.834	139.518	16.181	16.181	1.209	H1-1b
19	13	HSS4X4X4	0.336	1.083	16	0.091	1.083	y	24	138.834	139.518	16.181	16.181	1.211	H1-1b
20	17	HSS4X4X4	0.345	1.083	20	0.09	1.083	y	16	138.834	139.518	16.181	16.181	1.211	H1-1b
21	11	HSS4.5X4.5X4	0.139	2	16	0.089	1.958	y	16	156.915	158.976	20.907	20.907	1.76	H1-1b
22	M54	L2.5x2.5x4	0.522	0	24	0.079	0	z	2	36.461	38.556	1.114	2.537	1.11	H2-1
23	M53	L2.5x2.5x4	0.526	0	20	0.072	0	z	9	36.461	38.556	1.114	2.537	1.115	H2-1
24	M52	L2.5x2.5x4	0.52	0	15	0.041	0	z	5	36.461	38.556	1.114	2.537	1.075	H2-1
25	8	L3X3X4	0.326	3.608	15	0.024	3.608	y	20	14.847	46.656	1.688	3.256	1.5	H2-1
26	7	L3X3X4	0.327	3.608	24	0.024	3.608	y	15	14.847	46.656	1.688	3.256	1.5	H2-1
27	9	L3X3X4	0.336	3.608	20	0.024	3.608	y	14	14.847	46.656	1.688	3.256	1.5	H2-1
28	M56	L2.5x2.5x3	0.207	3.01	18	0.011	6.02	y	8	9.063	29.192	0.873	1.529	1.136	H2-1
29	M60	L2.5x2.5x3	0.208	3.01	25	0.01	6.02	z	24	9.063	29.192	0.873	1.529	1.136	H2-1
30	4	LL3x3x4x0	0.084	0	7	0.01	0	y	15	76.374	93.312	6.48	4.361	1.789	H1-1b
31	6	LL3x3x4x0	0.093	0	2	0.01	0	y	22	76.374	93.312	6.48	4.361	1.811	H1-1b
32	M58	L2.5x2.5x3	0.204	3.01	21	0.01	6.02	z	20	9.063	29.192	0.873	1.529	1.136	H2-1
33	5	LL3x3x4x0	0.067	0	8	0.01	0	y	19	76.374	93.312	6.48	4.361	1.8	H1-1b
34	M55	L2.5x2.5x3	0.194	3.01	23	0.009	6.02	z	9	9.063	29.192	0.873	1.529	1.136	H2-1
35	M57	L2.5x2.5x3	0.195	3.01	15	0.009	6.02	y	16	9.063	29.192	0.873	1.529	1.136	H2-1
36	M59	L2.5x2.5x3	0.193	3.01	19	0.009	6.02	y	20	9.063	29.192	0.873	1.529	1.136	H2-1

APPENDIX D
ADDITIONAL CALCUATIONS

PROJECT	87311.007.01 - CT Somers FD CAC, CT KSC		
SUBJECT	Platform Mount Mount Analysis		
DATE	01/21/21	PAGE	1 OF 1



[REF: AISC 360-05]

Reactions at Bolted Connection

Tension	:	1.149	k
Vertical Shear	:	1.956	k
Horizontal Shear	:	2.121	k
Torsion	:	0.568	k.ft
Moment from Horizontal Forces	:	1.773	k.ft
Moment from Vertical Forces	:	-0.764	k.ft

Bolt Parameters

Bolt Grade	:	A307	
Bolt Diameter	:	0.625	in
Nominal Bolt Area	:	0.307	in ²
Bolt spacing, Horizontal	:	10	in
Bolt spacing, Vertical	:	3	in
Bolt edge distance, plate height	:	1	in
Bolt edge distance, plate width	:	1	in
Total Number of Bolts	:	3	bolts

Summary of Forces

Shear Resultant Force	:	2.89	k
Force from Horz. Moment	:	2.00	k
Force from Vert. Moment	:	-2.53	k
Shear Load / Bolt	:	0.96	k
Tension Load / Bolt	:	0.38	k
Resultant from Moments / Bolt	:	2.15	k

Bolt Checks

Nominal Tensile Stress, F_{nt}	:	45.00	ksi	[AISC Table J3.2]
Available Tensile Stress, ΦR_{nt}	:	10.36	k/bolt	[Eq. J3-1]
Unity Check, Bolt Tension	:	24.45%		OKAY
Nominal Shear Stress, F_{nv}	:	24.00	ksi	[AISC Table J3.2]
Available Shear Stress, ΦR_{nv}	:	5.53	k/bolt	[Eq. J3-1]
Unity Check, Bolt Shear	:	24.33%		OKAY
Unity Check, Combined	:	48.79%		OKAY
Available Bearing Strength, ΦR_n	:	18.35	k/bolt	
Unity Check, Bolt Bearing	:	5.24%		OKAY

APPENDIX E
MOUNT MODIFICATION DESIGN DRAWINGS

RELOCATE EXISTING MOUNT PIPE
IN POSITION 2 TO 5'-6" ABOVE
MAIN HORIZONTAL ANGLE
(TYP. 3 PLACES)

NEW PLATFORM REINFORCEMENT KIT,
SITEPRO1 #PRK-SFS-L
RE: 2/S1

MODIFICATIONS BASED ON THE FAILING
STRUCTURAL ANALYSIS FROM B+T GROUP
DATED 01/12/21 AND ACCOMPANIED BY
ANALYSIS FROM B+T GROUP DATED 01/22/21

GENERAL NOTES

- 1.1 CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND DIMENSIONS PRIOR TO THE MOBILIZING ON THE SITE FOR INSTALLATION OF THE MOUNT MODIFICATION AND SHALL NOTIFY THE ENGINEER OF RECORD IF THE FIELD CONDITIONS VARY FROM WHAT IS SHOWN ON THE DRAWINGS. IN ADDITION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD PRIOR TO MOBILIZING AT THE SITE IF THE MOUNT REINFORCEMENT SHOWN WILL NEED TO BE REVISED TO SATISFY FIELD CONDITIONS
- 1.2 CONTRACTOR SHALL RELOCATE NON-ANTENNA EQUIPMENT ALONG THE EXISTING PIPE MOUNT THAT IT IS MOUNTED TO, TO ALLOW FOR INSTALLATION OF MOUNT REINFORCEMENT. ENGINEER OF RECORD WILL BE NOTIFIED IF NON-ANTENNA EQUIPMENT NEEDS TO BE RELOCATED TO ANY OTHER EXISTING MEMBERS TO ALLOW FOR INSTALLATION OF MOUNT MODIFICATION.
- 1.3 MODIFICATION SHALL BE COMPLETED PRIOR TO ADDING THE PROPOSED APPURTENANCES.
- 1.4 ALL WORK SHALL COMPLY WITH THE TIA-222-H STANDARD, ANSI/TIA-322 AND ANSI/ASSE A10.48, AS WELL AS ANY OTHER GOVERNING BUILDING CODES.
- 1.5 FIELD WORK WILL BE DONE AROUND EXISTING COAXIAL CABLE AND EQUIPMENT. ALL WORK SHALL BE DONE IN A MANNER SUCH THAT NO DAMAGE OCCURS TO THE EXISTING EQUIPMENT OR THE STRUCTURE. A MINIMUM OF TWO COATS OF ZINGA COLD GALVANIZING COMPOUND (OR APPROVED EQUIVALENT) SHALL BE APPLIED TO ANY FIELD CUTS OR FIELD DRILLED HOLES.
- 1.7 THE USE OF A GAS TORCH OR WELDER WILL NOT BE PERMITTED ON THE TOWER WITHOUT THE CONSENT OF THE OWNER.
- 1.8 ALL FIELD CONNECTIONS SHALL BE MADE WITH A325N BOLTS, U.N.O.
- 1.9 IN LIEU OF TEMPORARY BRACING, CONTRACTOR MAY HAVE A STABILITY ANALYSIS PERFORMED BY AN ENGINEER LICENSED IN THE STATE THE TOWER IS LOCATED. THE ANALYSIS SHALL USE A MINIMUM WIND SPEED OF 45 mph (3-SEC) PER ANSI/TIA-322 and ANSI/ASSE A10.48
- 1.10 ALL CUTTING AND WELDING ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH CCUSA POLICY "CUTTING AND WELDING PLAN" (DOC #ENG-PLN-10015) ON AN ONGOING BASIS THROUGHOUT THE ENTIRE LIFE OF THE PROJECT.
- 1.11 DIMENSIONS WITH "±" MUST BE WITHIN 3" OF THE INDICATED DIMENSION.

FABRICATION

- 2.1 ALL WORK SHALL BE DONE IN ACCORDANCE WITH A.I.S.C. "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
- 2.2 STRUCTURAL STEEL SHALL MEET THE FOLLOWING SPECIFICATIONS:

	YIELD	ASTM SPECS
STEEL PIPE, U.N.O.	35ksi	A53 GR.B
- 2.3 ALL NEW MATERIAL INCLUDING STRUCTURAL STEEL AND FASTENERS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 AND A153.
- 2.4 WELDING SHALL MEET ANSI/AWS D1.1 STRUCTURAL WELDING CODE (LATEST REVISION). ELECTRODES SHALL BE E80 SERIES.
- 2.5 CONTRACTOR SHALL PROVIDE SHOP FABRICATION DRAWINGS TO B+T GROUP 5 DAYS PRIOR TO FABRICATION.



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




**CT SOMERS FD
CAC**
400 MAIN STREET
SOMERS, CT 06071
TOLLAND
EXISTING PLATFORM
AT 165'-00"

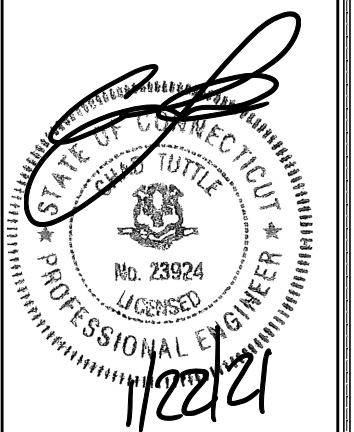
PROJECT NO: 87311.007.01

CHECKED BY: JV

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	01/22/21	PMS	CONSTRUCTION

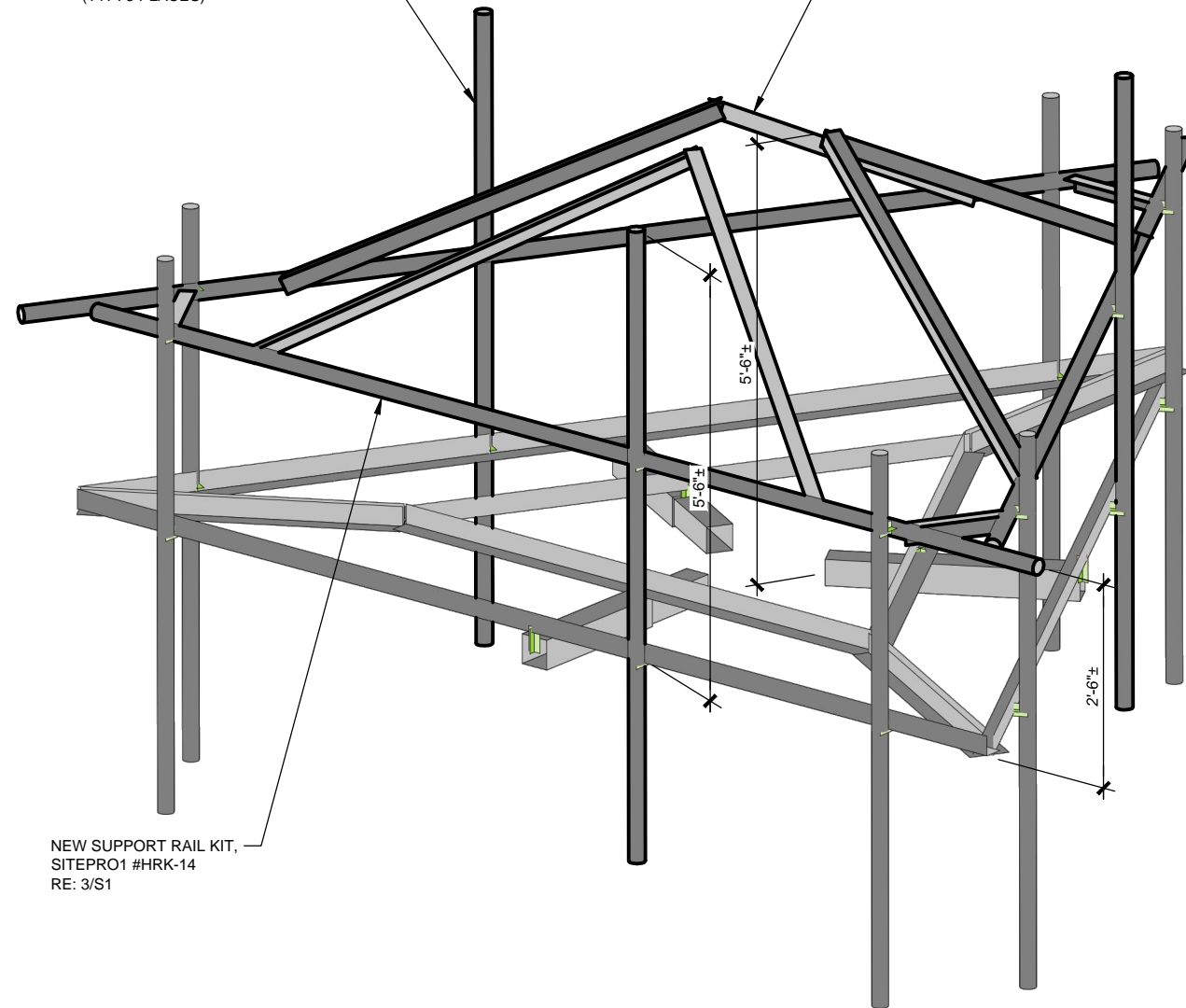
B+T ENGINEERING, INC.
PEC.0001564
Expires 2/10/21



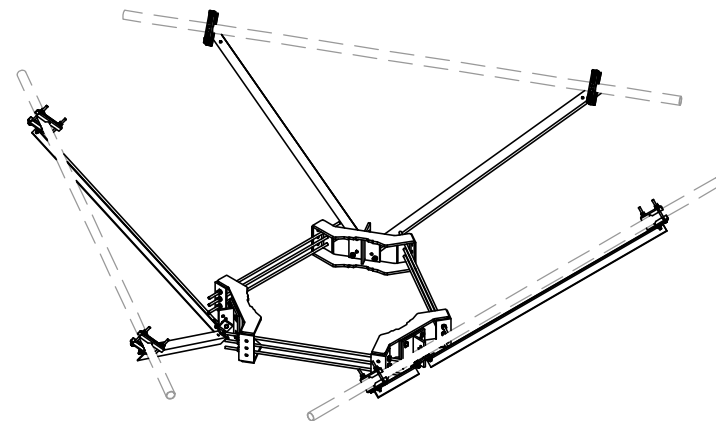
IT IS A VIOLATION OF LAW FOR ANY PERSON,
UNLESS THEY ARE ACTING UNDER THE DIRECTION
OF A LICENSED PROFESSIONAL ENGINEER,
TO ALTER THIS DOCUMENT.

SHEET NUMBER: REVISION:

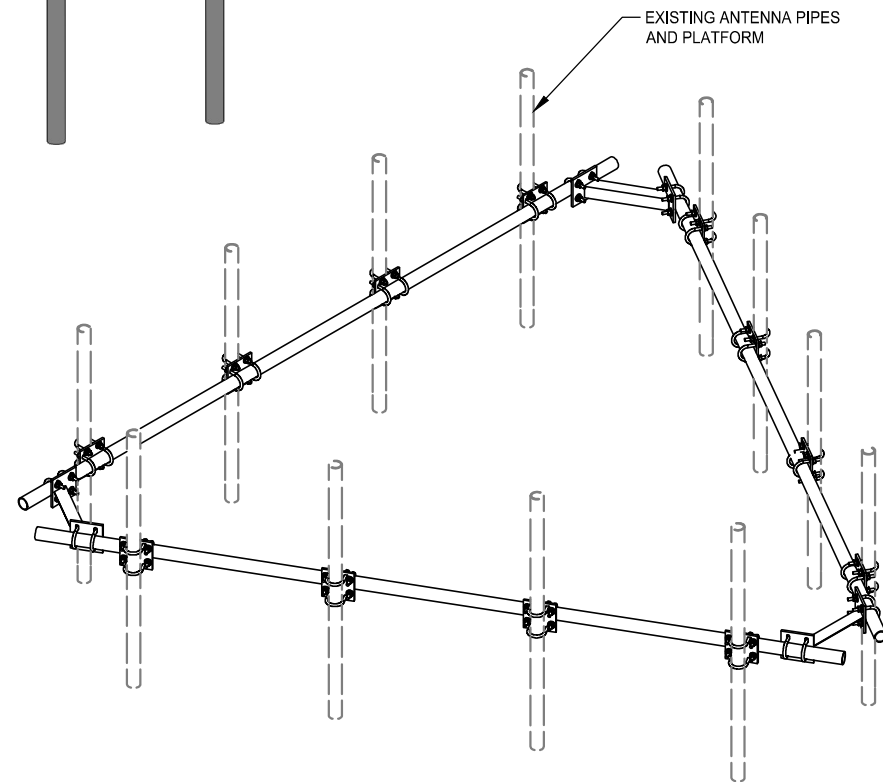
S1 **0**



1 MODIFIED PLATFORM
SCALE: N.T.S.



2 SITE PRO1 PRK-SFS-L REINFORCEMENT KIT
SCALE: N.T.S.



3 SITE PRO1 HRK-14 SUPPORT RAIL KIT
SCALE: N.T.S.

Exhibit F

Power Density/RF Emissions Report

Transcom Engineering, Inc.

Wireless Network Design and Deployment

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CT11531C

CT531/Crown - Somers
400 Main St
Somers, CT 06071

June 1, 2019

Transcom Engineering Project Number: 737001-0112

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	7.59 %

Transcom Engineering, Inc.

Wireless Network Design and Deployment

June 1, 2019

T-MOBILE

Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 6009

Emissions Analysis for Site: **CT11531C – CT531/Crown - Somers**

Transcom Engineering, Inc (“Transcom”) was directed to analyze the proposed upgrades to the T-MOBILE facility located at **400 Main St, Somers, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

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

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 & 700 MHz bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

Transcom Engineering, Inc.

Wireless Network Design and Deployment

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **400 Main St, Somers, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-MOBILE is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE	1900 MHz (PCS)	4	40
GSM	1900 MHz (PCS)	1	15
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20
LTE	2100 MHz (AWS)	2	60

Table 1: Channel Data Table

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The following antennas listed in *Table 2* were used in the modeling for transmission in the 600, 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APX16DWV-16DWV-S-E-ACU	165
A	2	RFS APXVAARR24_43-U-NA20	165
B	1	RFS APX16DWV-16DWV-S-E-ACU	165
B	2	RFS APXVAARR24_43-U-NA20	165
C	1	RFS APX16DWV-16DWV-S-E-ACU	165
C	2	RFS APXVAARR24_43-U-NA20	165

Table 2: Antenna Data

All calculations were done with respect to uncontrolled / general population threshold limits.

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RESULTS

Per the calculations completed for the proposed T-MOBILE configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APX16DWV-16DWV-S-E-ACU	1900 MHz (PCS)	15.9	5	175	6,808.29	0.97
Antenna A2	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz / 2100 MHz (AWS)	12.95 / 13.35 / 16.35	6	240	7,621.25	1.56
Sector A Composite MPE%							2.53
Antenna B1	RFS APX16DWV-16DWV-S-E-ACU	1900 MHz (PCS)	15.9	5	175	6,808.29	0.97
Antenna B2	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz / 2100 MHz (AWS)	12.95 / 13.35 / 16.35	6	240	7,621.25	1.56
Sector B Composite MPE%							2.53
Antenna C1	RFS APX16DWV-16DWV-S-E-ACU	1900 MHz (PCS)	15.9	5	175	6,808.29	0.97
Antenna C2	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz / 2100 MHz (AWS)	12.95 / 13.35 / 16.35	6	240	7,621.25	1.56
Sector C Composite MPE%							2.53

Table 3: T-MOBILE Emissions Levels

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The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum T-MOBILE MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each T-MOBILE Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	MPE%
T-MOBILE – Max Per Sector Value	2.53 %
Sprint	0.15 %
MetroPCS	0.33 %
AT&T	2.33 %
Verizon Wireless	1.68 %
Town	0.57 %
Site Total MPE %:	7.59 %

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	2.53 %
T-MOBILE Sector B Total:	2.53 %
T-MOBILE Sector C Total:	2.53 %
Site Total:	7.59 %

Table 5: Site MPE Summary

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FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated T-MOBILE sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 1900 MHz (PCS) LTE	4	1,556.18	165	8.85	1900 MHz (PCS)	1000	0.89%
T-Mobile 1900 MHz (PCS) GSM	1	583.57	165	0.83	1900 MHz (PCS)	1000	0.08%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	165	2.24	600 MHz	400	0.56%
T-Mobile 700 MHz LTE	2	432.54	165	1.23	700 MHz	467	0.26%
T-Mobile 2100 MHz (AWS) LTE	2	2,589.11	165	7.36	2100 MHz (AWS)	1000	0.74%
						Total:	2.53%

Table 6: T-MOBILE Maximum Sector MPE Power Values

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Wireless Network Design and Deployment

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the T-MOBILE facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

T-MOBILE Sector	Power Density Value (%)
Sector A:	2.53 %
Sector B:	2.53 %
Sector C:	2.53 %
T-MOBILE Maximum Total (per sector):	2.53 %
Site Total:	7.59 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **7.59 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.



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