



January 8, 2021

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

RE: **Notice of Exempt Modification for T-Mobile:
876355 - T-Mobile Site ID: CT11264C
474-480 Main St. Monroe, CT 06468
Latitude: 41° 19' 31.99"/ Longitude: -73° 15' 57.05"**

Dear Ms. Bachman:

T-Mobile currently maintains 12 total antennas at the 192-foot mount on the existing 194-foot Monopole Tower, located at 474-480 Main Street, Monroe, CT. The tower is owned by Crown Castle. The property is owned by Sprint/Global Signal Acquisition II LLC (a Crown Castle subsidiary). T-Mobile now intends to replace three (3) antennas and ancillary equipment. 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.

Planned Modifications:

Tower:

Remove and Replace:

(3) EMS RR65-18-XXDP Antennas (**REMOVE**) – (3) AIR6449_B41 5G 2500 MHz (**REPLACE**)

Install new:

(3) Radio 4415 B66A
(3) Radio 4449 B71+B85
(3) Radio 4424 B25
(2) 6x12 HCS feedlines

Remove:

(18) 1 5/8" Coax
(6) 1 5/8" unconnected coax cables
(6) TMAs

Existing to Remain:

(3) RFS-APXVAARR24_43-U-NA20 Antenna 600/700 MHz
(3) APX16DWV-16DWV-S-EA20 Antenna 1900/2100 MHz

Ground:

Install new:

- (1) 6160 cabinet
- (1) B160 battery cabinet
- (1) BB 6630
- (1) BB 6648
- (1) PSU 4813 voltage booster
- (1) iXRe router in 6160 cabinet

This facility was approved by the Town of Monroe on October 17, 2000 in No. 10461. The approval did not include any conditions.

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.S.C.A. § 16-50j-73, a copy of this letter is being sent to First Selectman, Kenneth Kellogg, Town of Monroe, Zoning Enforcement Officer Joe Chapman, Town of Monroe. Crown Castle owns both the property and the tower.

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).

Sincerely,

Richard Zajac
Site Acquisition Specialist
4545 East River Road, Suite 320
West Henrietta, NY 14586
585-445-5896
richard.zajac@crowncastle.com

cc:

Melanie A. Bachman

Page 3

First Selectman Kenneth Kellogg (*via email to kkellogg@monroect.org*)
Town of Monroe
7 Fan Hill Road
Monroe, CT 06468
203-452-2800

Zoning Enforcement Officer Joe Chapman (*via email to jchapman@monroect.org*)
Town of Monroe
7 Fan Hill Road
Monroe, CT 06468
203-452-2800

Sprint/Crown Castle, Property Owner

Crown Castle, Tower Owner

Zajac, Richard

From: Zajac, Richard
Sent: Friday, January 8, 2021 9:39 AM
To: jchapman@monroect.org
Subject: Connecticut Siting Council exempt modification application notification
Attachments: CSC Exempt Modification Application - 474-480 Main St.pdf

Good morning Mr. Chapman ,
Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 474 Main Street in Monroe.

Should you have any questions/comments/concerns regarding this application, please do not hesitate to contact me.

Thank you,
RICH ZAJAC
Site Acquisition Specialist
T: (585) 445-5896 M: (607) 346-7212
F: (724) 416-4461
CROWN CASTLE
4545 East River Road, Suite 320
West Henrietta, NY 14586

Zajac, Richard

From: Zajac, Richard
Sent: Friday, January 8, 2021 9:37 AM
To: kkellogg@monroect.org
Subject: Connecticut Siting Council exempt modification application notification
Attachments: CSC Exempt Modification Application - 474-480 Main St.pdf

Good morning Mr. Kellogg,

Please see the attached application to the Connecticut Siting Council regarding antenna work on the existing cell tower located at 474 Main Street in Monroe.

Should you have any questions/comments/concerns regarding this application, please do not hesitate to contact me.

Thank you,

RICH ZAJAC

Site Acquisition Specialist

T: (585) 445-5896 M: (607) 346-7212

F: (724) 416-4461

CROWN CASTLE

4545 East River Road, Suite 320

West Henrietta, NY 14586

Exhibit A

Original Facility Approval

Town of Monroe



OFFICE OF THE TOWN
ENGINEERING DEPARTMENT

Town Hall
7 Fan Hill Road
Monroe, Connecticut 06468
Phone: (203) 452-5437
(203) 452-5438

July 10, 2000

Paul T. Tusch
Cacase, Tusch, Santagam
777 Summer Street
P.O. Box 15859
Stamford, CT. 06901-0859

Re: Sprint PCS
474-480 Main Street
Special Exception Permit

Dear Mr. Tusch:

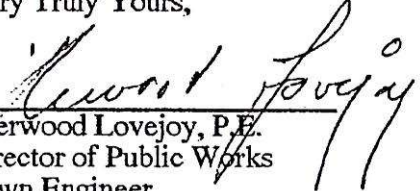
Please be advised that this department has reviewed the plans (4 pages) submitted for the above project and, although the design concept is generally acceptable, the following item should be addressed:

- 1) if the access roadway is to have a gravel surface (ie; not asphalt paved), construct the road using a minimum 6" depth of 3/4" medium coarse process gravel, shaped and crowned to control water runoff and compacted to 95%. Construct sufficient riprap leak offs to control erosion in road shoulder areas.

It is required that installation of the security fencing commence immediately following erection of the tower and continue non stop (without interruption) until completely installed.

If you have any questions, please contact my office at (203) 452-5438.

Very Truly Yours,


Sherwood Lovejoy, P.E.
Director of Public Works
Town Engineer

SL/fjm

0000 6 1 000

Town Hall
7 Fan Hill Road
Monroe, Connecticut 06468-1800



Phone (203) 452-5489
Pager (203) 396-7778

TOWN OF MONROE
OFFICE OF THE FIRE MARSHAL

June 27, 2000

Attorney Paul T. Tusch
Cacase, Tusch, Santagata
777 Summer Street
P. O. Box 15859
Stamford, CT 06901-0859

RE: Sprint PCS Tower , 474-480 Main Street

Dear Attorney Tusch,

I have reviewed the proposed Sprint PCS Tower located at TLC, 474-480 Main Street,
and my only requirements would be:

- Knox box system
- Access road be at least 20' wide

If you have any questions, please call me.

Sincerely,

A handwritten signature in cursive script that reads 'Anthony Carpenter'.

Anthony Carpenter
Fire Marshal

cd

TOWN OF MONROE, CONNECTICUT
PROVISIONAL CERTIFICATE
OF
ZONING COMPLIANCE



This is to certify that the proposed Commissioner Tower - equipment compound
(structure, addition-use)
located at No. 480 (Lot No. Main) Main (Street/Road/Drive)
Application dated 10/17 2000, made by Andrew Sebaste
has been examined and based on the information contained in said application the proposal conforms to the Zoning Regulations of
the Town of Monroe, dated 7-31-00
(Effective date of last amendment)

This provisional certificate expires one year from the date herein, or upon issuance of a permanent certificate of zoning compliance, whichever is first. Failure to obtain said permanent certificate prior to use shall constitute a violation of the Zoning Regulations of the Town of Monroe.

NO 10461

Dated at Monroe, Connecticut this 27th day of October 2000
By: [Signature] (Zoning Enforcement Officer) [Signature] (Planning Administrator)



TOWN HALL
7 Fan Hill Road
Monroe, Connecticut 06468
Phone (203) 452-5467
Fax (203) 261-6197

November 16, 2000

CERTIFIED MAIL RETURN RECEIPT REQUESTED 7009 3400 0007 9991 7695

Sprint PCS
1 International Blvd
Suite 800
Mahwah, NJ 07495

CONDITIONAL APPROVAL
Inland Wetlands Permit No. 00-23

Applicant: Sprint PCS

Property Owner " "

Property Location: 474-480 Main Street Assessor's Map No. 45 Parcel No. 21A & 22B

Plans & Preparer: URS Corporation AES 500 Enterprise Drive, Rocky Hill CT

PERMIT APPROVED (date): October 25, 2000. All appropriate conditions must be satisfied prior to site disturbance. **THIS APPROVAL IS NOT AN AUTHORIZATION TO START CONSTRUCTION.**

PERMIT EXPIRES: October 25, 2005

Permit duration is five (5) years. Additional extensions must be requested prior to expiration. A renewal fee will be required. **THIS PERMIT CANNOT BE REINSTATED IF IT EXPIRES.**

THIS PERMIT IS NOT TRANSFERABLE UNLESS THE NEW OWNER PROVIDES THE COMMISSION WITH A SIGNED ACKNOWLEDGMENT THAT HE UNDERSTANDS AND ACCEPTS THE CONDITIONS OF APPROVAL.

Commission's findings and resolution: The following resolution was adopted by the Inland Wetlands Commission.

Condapp-00-23

Be it resolved that Inland Wetland Permit Application No. 00-23 is hereby approved based upon the findings and subject to the modifications and conditions hereinafter set forth.

The Commission reviewed the application and the site plan and determined there will be no significant impact and the application does not warrant a public hearing. There was also no public interest demonstrated.

The Commission finds that the proposed activities are located entirely within the regulated setback and there will be no direct wetland disturbance.

MODIFICATIONS AND CONDITIONS:

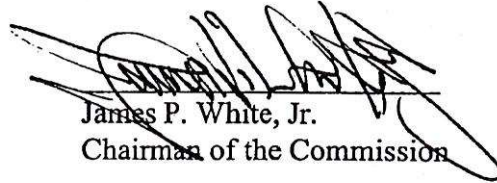
- 1) The excavated trench shall be refilled, seeded and stabilized immediately after completion of the utility installation.
- 2) Access to the construction area will be by existing roads.

STANDARD CONDITIONS:

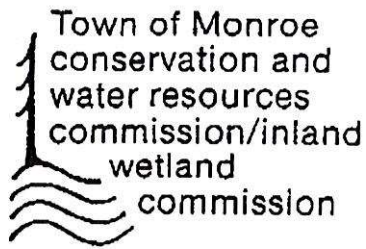
- 1) Regulated activities herein shall be implemented by the permittee in accordance with the timing, location, duration and intent proposed and approved by the Commission.
- 2) Notice of assignment or transfer of the permit must be given to the Commission immediately. Failure to do so may invalidate your permit.
- 3) Install sediment and erosion controls prior to soil disturbance and maintain them during construction and remove them prior to requesting final inspection.
- 4) Any changes in the approved plans must be approved by the Commission. This includes changes required by any other agency.
- 5) The posting of a cash or passbook savings account may be required at any time during construction by the Inland Wetlands Commission for erosion controls or any required wetland mitigation measures, in an amount to be determined by the Commission or its agent.
- 6) For the purpose of making site inspections of sediment and erosion controls, the permittee shall provide forty-eight (48) hours notice prior to site disturbance.
- 7) Anti tracking aprons shall be installed on all road and driveway exits with six (6) inches in depth of crushed stone spread to the traveled width, forty (40) feet long and underlain with construction fabric.
- 8) In the event an appeal is taken from this decision the applicant shall provide the Commission with three (3) sets of all plans, reports and documents in support of the application within thirty (30) days.
- 9) Heating oil tanks will not be buried anywhere on the property.

This application is approved with the above conditions and/or modifications. This decision and these conditions are consistent with the purposes of the wetland regulations which are designed to protect the citizens of Monroe by providing a balance between the need for growth, development and enjoyment of the Town's natural resources with the need to protect its' environment and ecological stability.

cc: Dean Gustafson, Applicants Agent



James P. White, Jr.
Chairman of the Commission



TOWN HALL
7 Fan Hill Road
Monroe, Connecticut 06458
Phone (203) 452-5467
Fax (203) 251-6197

July 11, 2000

URS Greiner Woodward Clyde
500 Enterprise Drive
Rocky Hill, CT 06067

RE: Sprint PCS Upper Stepney

Dear Mr. Clyde:

Based on my review of the site plan for Sprint PCS Upper Stepney dated June 23, 2000. An Inland Wetland permit will not be required for this project.

Please contact me if you have any questions.

Yours truly,

Richard B. Jacobson
Wetland Consultant

gw
cc: Planning and Zoning

Rjclyde

Exhibit B

Property Card

474 MAIN ST

Location 474 MAIN ST

Map/Lot 045/ 022/ 0Z/ /

Acct# 0450220Z

Owner SPRINT PCS

Assessment \$239,700

Appraisal \$342,400

PID 16240

Building Count 1

Survey 1676 B

Affordable

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2014	\$125,000	\$217,400	\$342,400

Assessment			
Valuation Year	Improvements	Land	Total
2014	\$87,500	\$152,200	\$239,700

Owner of Record

Owner SPRINT PCS

Sale Price \$0

Co-Owner GLOBAL SIGNAL ACQ II LLC

Certificate 1

Address PMB 331 4017 WASHINGTON RD
MCMURRAY, PA 15317

Book & Page 943/ 187

Sale Date 04/27/2001

Instrument

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
SPRINT PCS	\$0	1	943/ 187		04/27/2001

Building Information

Building 1 : Section 1

Year Built:

Living Area: 0

Building Attributes	
Field	Description
Style	Vacant Land

Model	
Stories:	
Occupancy	
Exterior Wall 1	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Rooms:	
Fireplaces	
Basement Gar.	
Basement	
In Law Apt	

Building Photo



(<http://images.vgsi.com/photos/MonroeCTPhotos//\00\00\64\02>.)

Building Layout

(<http://images.vgsi.com/photos/MonroeCTPhotos//Sketches/162>.)

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 431
Description TEL REL TW
Zone B1
Neighborhood
Alt Land Approved Category No

Land Line Valuation

Size (Acres) 0.06
Appraised Value \$217,400

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
TT4	TOWER MONOPOLE			1 UNITS	\$125,000	1

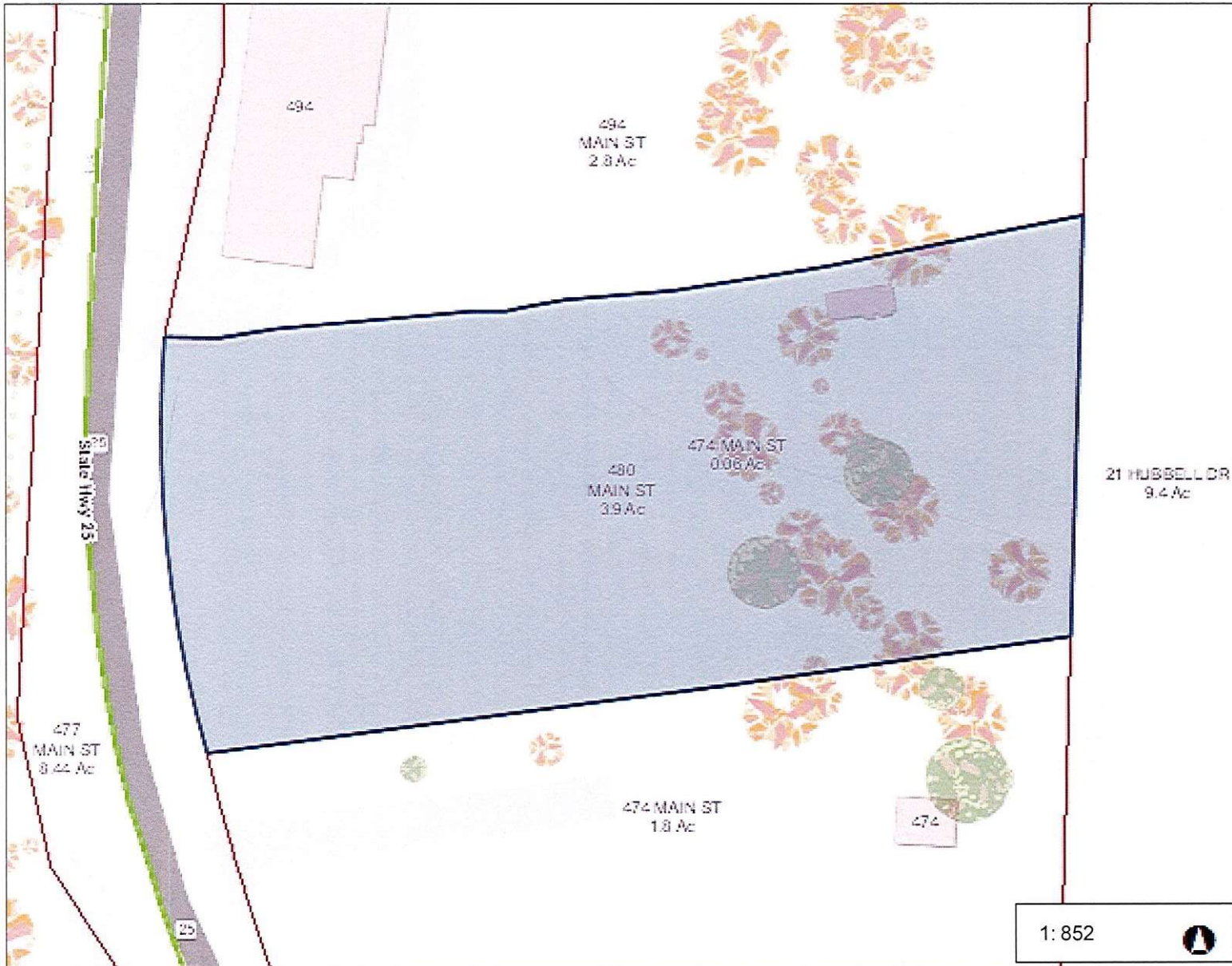
Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total

2018	\$125,000	\$217,400	\$342,400
2017	\$125,000	\$217,400	\$342,400

Assessment			
Valuation Year	Improvements	Land	Total
2018	\$87,500	\$152,200	\$239,700
2017	\$87,500	\$152,200	\$239,700

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Legend

- Parcels
- Streetname
- Roadways
 - Local
 - Collector
 - Minor Collector
 - Minor Arterial
 - Major Collector
 - PA Other
 - PA Other Expwy
 - PA Interstate

1: 852

141.9 0 70.97 141.9 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Created by Greater Bridgeport Regional Council

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION



Exhibit C

Construction Drawings

T-Mobile

T-MOBILE SITE NUMBER: CT11264C
T-MOBILE SITE NAME: MONROE / RT 59 / RT 25
SITE TYPE: MONOPOLE
TOWER HEIGHT: 194'-0"

BUSINESS UNIT #: 876355
SITE ADDRESS: 474-480 MAIN ST
 MONROE CT, 06468
COUNTY: FAIRFIELD
JURISDICTION: CONNECTICUT
SITING COUNCIL

T-MOBILE ANCHOR SITE CONFIGURATION: 67D5A998C ODE+6160

T-Mobile
 4 SYLVAN WAY
 PARSIPPANY, NJ 07054

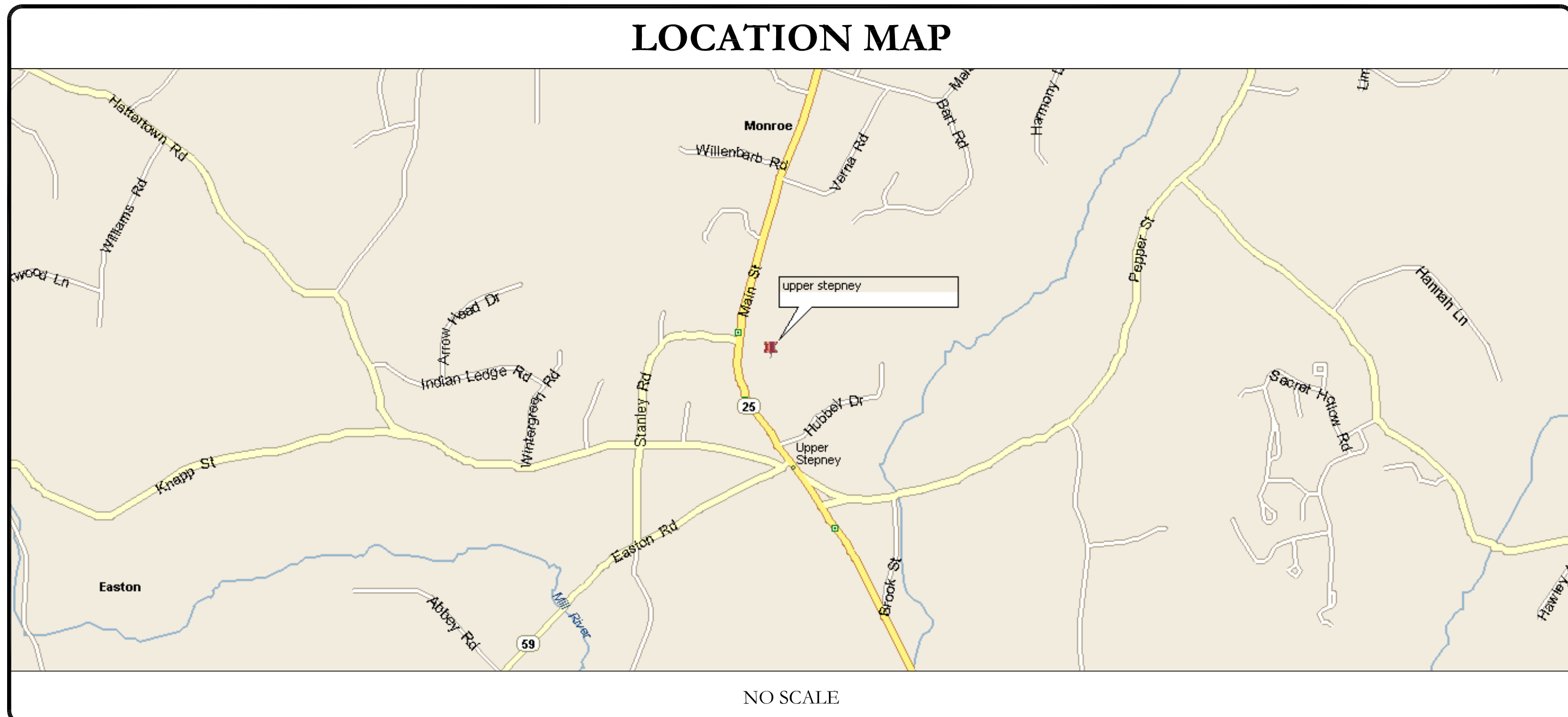
CROWN CASTLE
 3530 TORINGDON WAY, SUITE 300
 CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CT11264C
BU #: 876355
UPPER STEPNEY - TLC
 474-480 MAIN ST
 MONROE CT, 06468
 EXISTING
 194'-0" MONOPOLE

SITE INFORMATION	
CROWN CASTLE USA INC. SITE NAME:	UPPER STEPNEY - TLC
SITE ADDRESS:	474-480 MAIN ST MONROE CT, 06468
COUNTY:	FAIRFIELD
MAP/PARCEL #:	8019
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.325553°
LONGITUDE:	-73.26598°
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	460'
CURRENT ZONING:	B1
JURISDICTION:	CONNECTICUT SITING COUNCIL
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	SEVEN FORTY TWO NURSERY LLC MONROE, CT 06468
TOWER OWNER:	CROWN CASTLE USA INC 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 4 SYLVAN WAY PARSIPPANY, NJ 07054
ELECTRIC PROVIDER:	NOT PROVIDED
TELCO PROVIDER:	NOT PROVIDED

DRAWING INDEX	
SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	OVERALL SITE PLAN
C-1.2	SITE PLAN & ENLARGED SITE PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	PLUMBING DIAGRAM
C-5	EQUIPMENT SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS



ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 24X36. 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.

PROJECT TEAM	
A&E FIRM:	CROWN CASTLE USA INC. 2000 CORPORATE DRIVE CANONSBURG, PA 15317 CROWN.AE.APPROVAL@CROWNCastle.COM
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3530 TORINGDON WAY, SUITE 300 CHARLOTTE, NC 28277

PROJECT DESCRIPTION

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

TOWER SCOPE OF WORK:

- REMOVE (3) ANTENNAS
- REMOVE (6) TMAs
- REMOVE (18) 1 5/8" COAX CABLES
- REMOVE (6) 1 5/8" UNCONNECTED COAX CABLES
- INSTALL (3) ANTENNAS
- INSTALL (9) RADIOS
- INSTALL (2) 6X12 HCS

GROUND SCOPE OF WORK:

- INSTALL (1) 6160 CABINET
- INSTALL (1) BB 6630
- INSTALL (1) BB 6648
- INSTALL (1) B160 BATTERY CABINET
- INSTALL (1) PSU 4813 VOLTAGE BOOSTER
- INSTALL (1) iXRc ROUTER IN 6160 CABINET
- UPGRADE EXISTING RBS CABINET BREAKER

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

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	IBC 2015
MECHANICAL	IMC 2015
ELECTRICAL	NEC 2017

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS: CROWN CASTLE
 DATED: 10/12/20

MOUNT ANALYSIS: INFINGY ENGINEERING, PLLC
 DATED: 10/7/20

RFDS REVISION: 5
 DATED: 9/23/20

ORDER ID: 529718
 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	_____	_____

THE PARTIES ABOVE HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL CONSTRUCTION DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND ANY CHANGES AND MODIFICATIONS THEY MAY IMPOSE.

ISSUED FOR:				
REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/6/20	JTS	CONSTRUCTION	MTJ
1	12/9/20	GEH	CONSTRUCTION	MTJ

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: T-1
REVISION: 1

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

- 1. NOTICE TO PROCEED- NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800-788-7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.

GREENFIELD GROUNDING NOTES:

- 1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

GENERAL NOTES:

- 1. 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.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

- 1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.

ELECTRICAL INSTALLATION NOTES:

- 1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.

Table with 3 columns: SYSTEM, CONDUCTOR, COLOR. Rows include 120/240V, 10, 120/208V, 30, 277/480V, 30, and DC VOLTAGE.

APWA UNIFORM COLOR CODE:

- WHITE PROPOSED EXCAVATION
PINK TEMPORARY SURVEY MARKINGS
RED ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES

ABBREVIATIONS:

- ANT ANTENNA
(E) EXISTING
FIF FACILITY INTERFACE FRAME
GEN GENERATOR

T-Mobile logo and address: 4 SYLVAN WAY PARSIPPANY, NJ 07054

CROWN CASTLE logo and address: 3530 TORINGDON WAY, SUITE 300 CHARLOTTE, NC 28277

B+T GRP logo and address: 1717 S BOULDER SUITE 300 TULSA, OK 74119

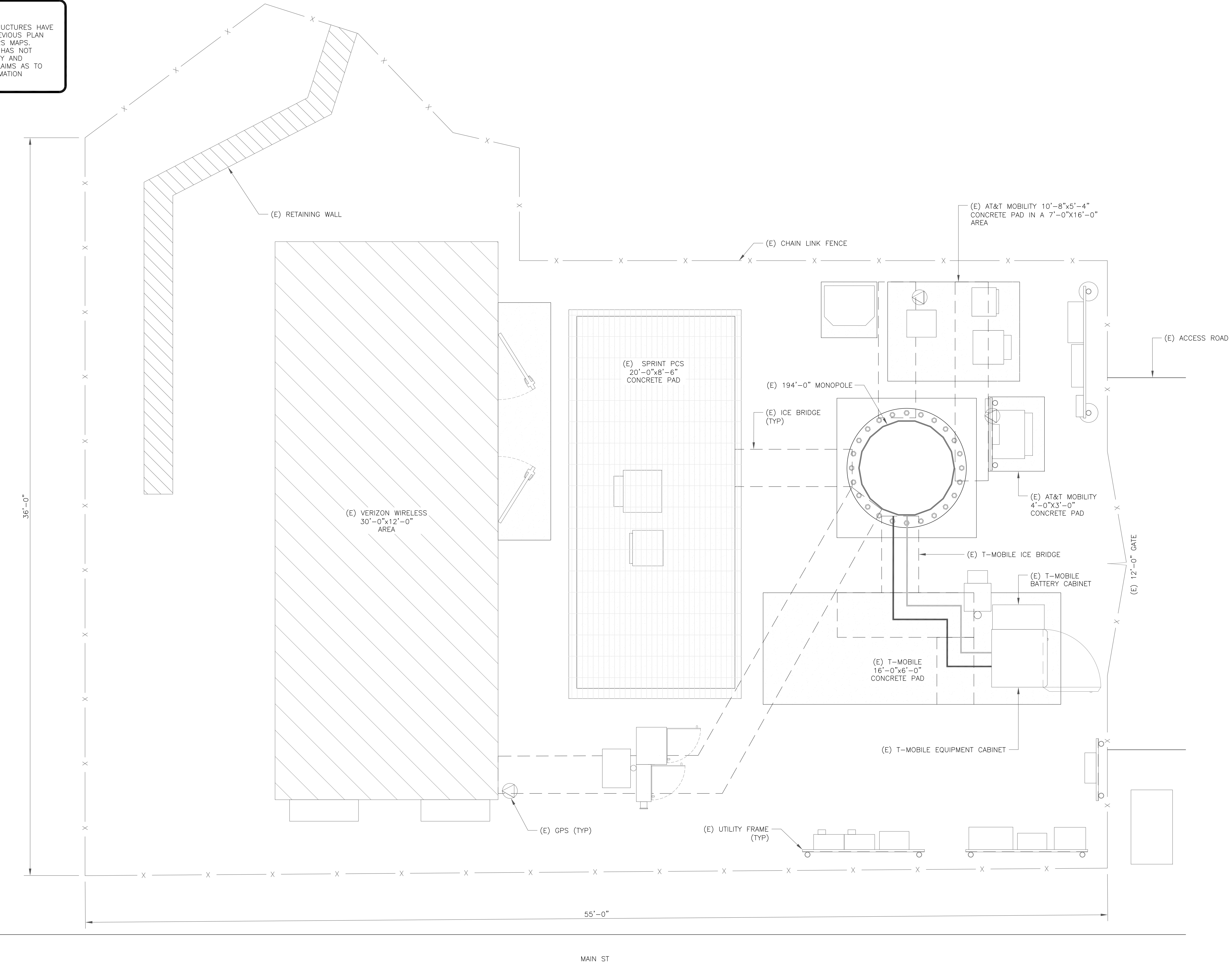
T-MOBILE SITE NUMBER: CT11264C
BU #: 876355
UPPER STEPNEY - TLC
474-480 MAIN ST MONROE CT, 06468
EXISTING 194'-0" MONOPOLE

Table with 5 columns: REV, DATE, DRWN, DESCRIPTION, DES./QA. Contains revision history for construction drawings.

ISSUED FOR:
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: T-2 REVISION: 1

SITE PLAN DISCLAIMER:
 PROPERTY LINES AND STRUCTURES HAVE BEEN DIGITIZED FROM PREVIOUS PLAN SETS OR FROM ASSESSORS MAPS. 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



T-Mobile
 4 SYLVAN WAY
 PARSIPPANY, NJ 07054

CROWN CASTLE
 3530 TORINGDON WAY, SUITE 300
 CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CT11264C

BU #: 876355
UPPER STEPNEY - TLC

474-480 MAIN ST
 MONROE CT, 06468

EXISTING
 194'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/6/20	JTS	CONSTRUCTION	MTJ
1	12/9/20	GEH	CONSTRUCTION	MTJ

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: C-1.1
REVISION: 1

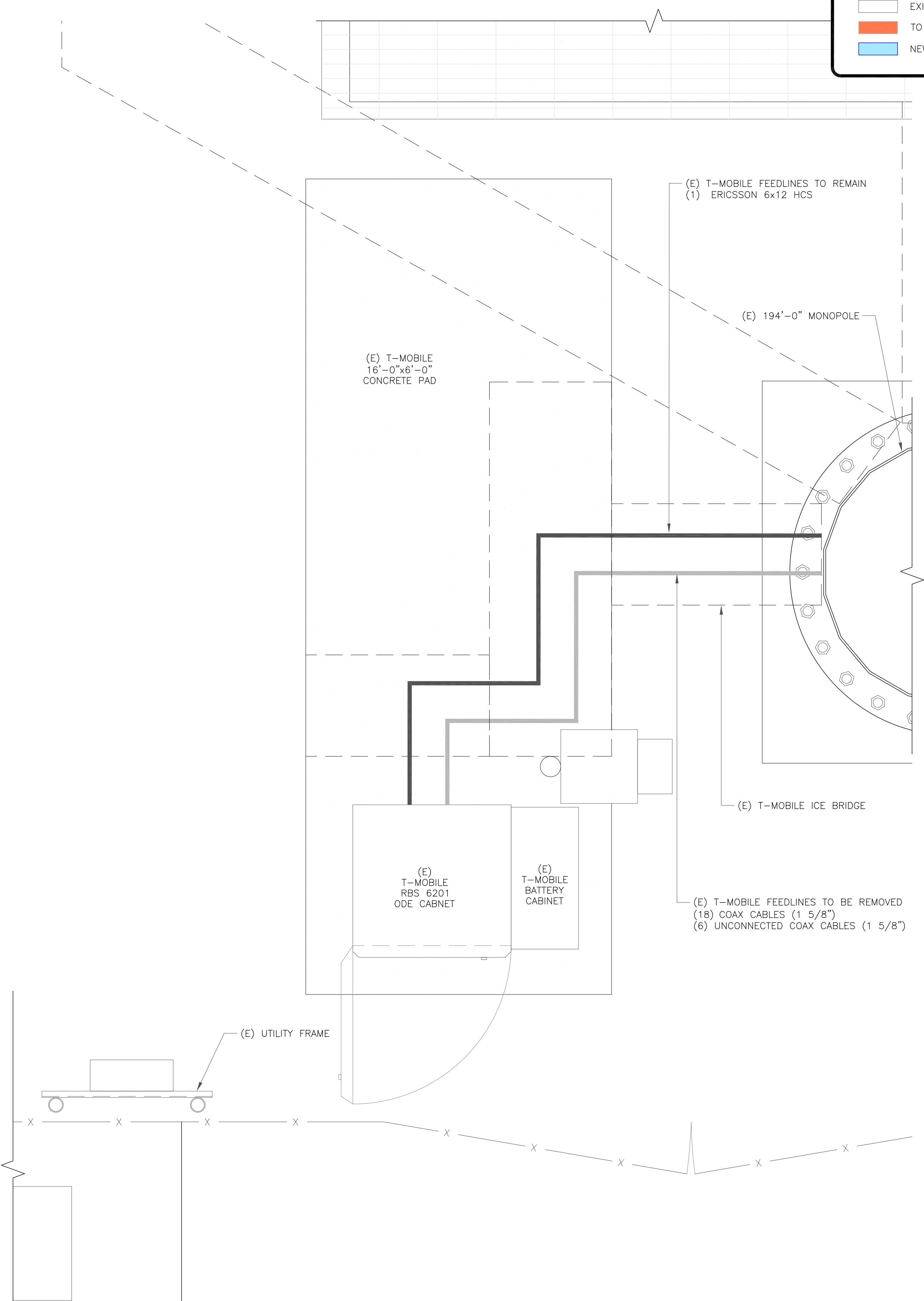
1:37165.003.01_UPPER_STEPNEY_CC_TWO_NE_CD_Upgrade.dwg - Sheet: C-1.1 - User: rcarson - Dec 09, 2020 - 2:25pm

1 OVERALL SITE PLAN
 SCALE: 3/8"=1'-0" (FULL SIZE)
 3/16"=1'-0" (11x17)

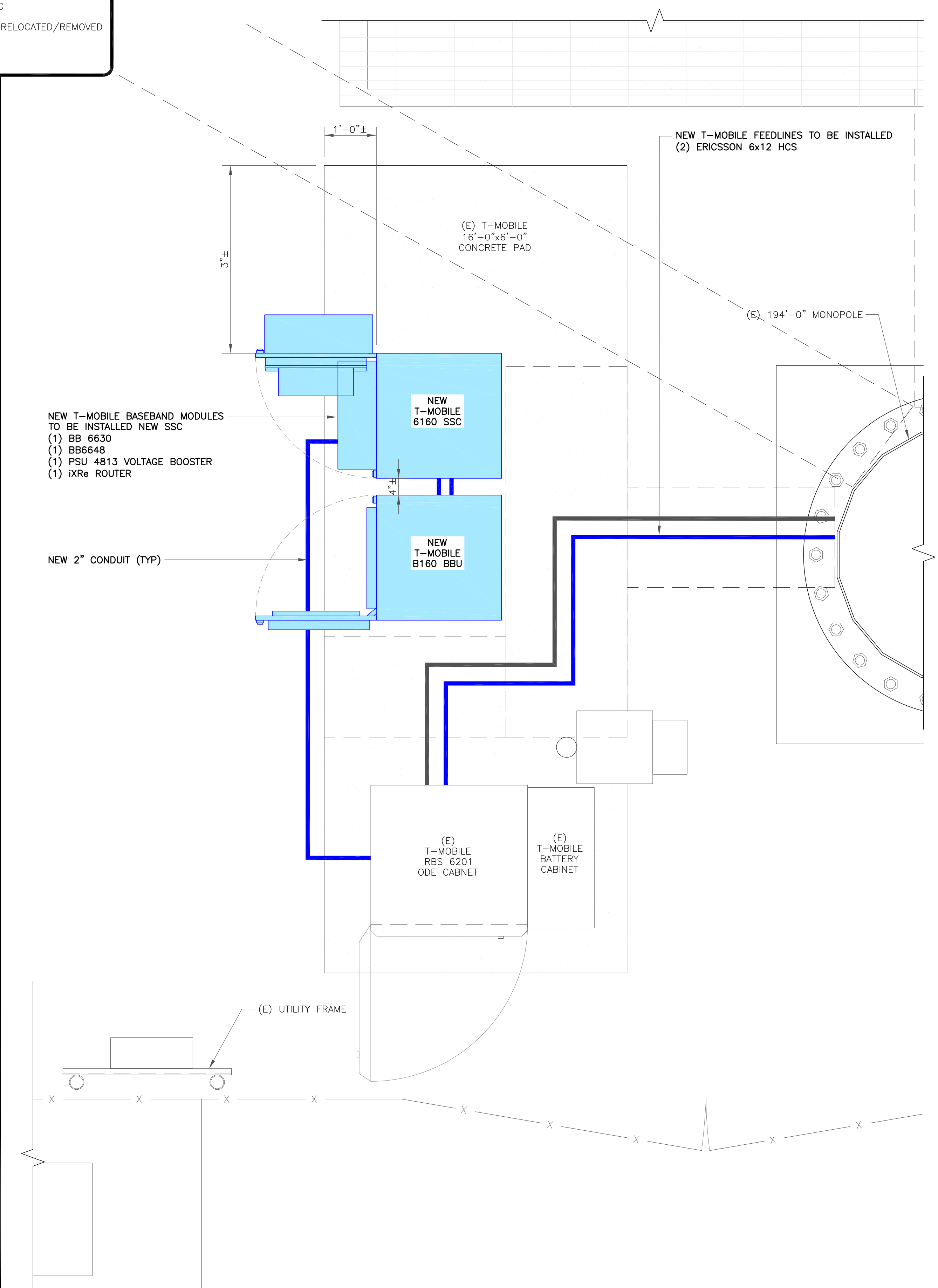
1:37165.003.01_UPPER_STEPNEY_CC_TMO_NE_CD_Upgrade.dwg - User: rcarson - Dec 09, 2020 - 2:25pm

EQUIPMENT LEGEND:

- EXISTING
- TO BE RELOCATED/REMOVED
- NEW



1 EXISTING EQUIPMENT PLAN
SCALE: 3/4"=1'-0" (FULL SIZE)
3/8"=1'-0" (11x17)



2 FINAL EQUIPMENT PLAN
SCALE: 3/4"=1'-0" (FULL SIZE)
3/8"=1'-0" (11x17)

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T-MOBILE SITE NUMBER:
CT11264C

BU #: 876355
UPPER STEPNEY - TLC

474-480 MAIN ST
MONROE CT, 06468

EXISTING
194'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/6/20	JTS	CONSTRUCTION	MTJ
1	12/9/20	GEH	CONSTRUCTION	MTJ

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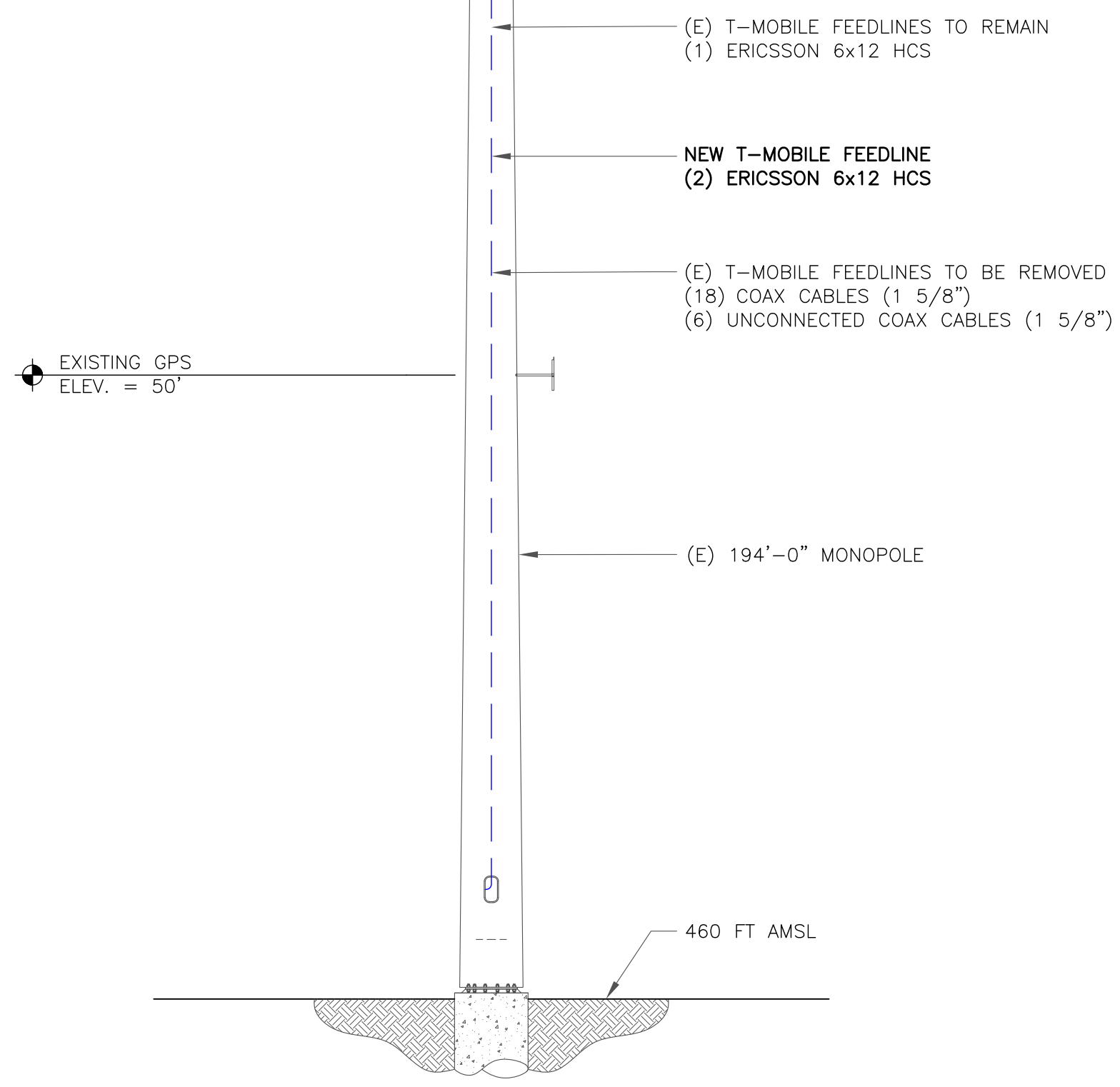
SHEET NUMBER: **C-1.2** REVISION: **1**

- EXISTING T-MOBILE ANTENNAS
RAD CENTER = 194'-0"
- EXISTING T-MOBILE ANTENNAS
RAD CENTER = 192'-0"
- NEW T-MOBILE ANTENNAS
RAD CENTER = 192'-0"
- TOP OF TOWER
ELEV. = 194'-0"
- NEW T-MOBILE EQUIPMENT
(3) ANTENNAS
(9) RADIOS
INSTALLED ON EXISTING MOUNT
- (E) T-MOBILE EQUIPMENT
(9) ANTENNAS
(3) TMAs
INSTALLED ON EXISTING MOUNT

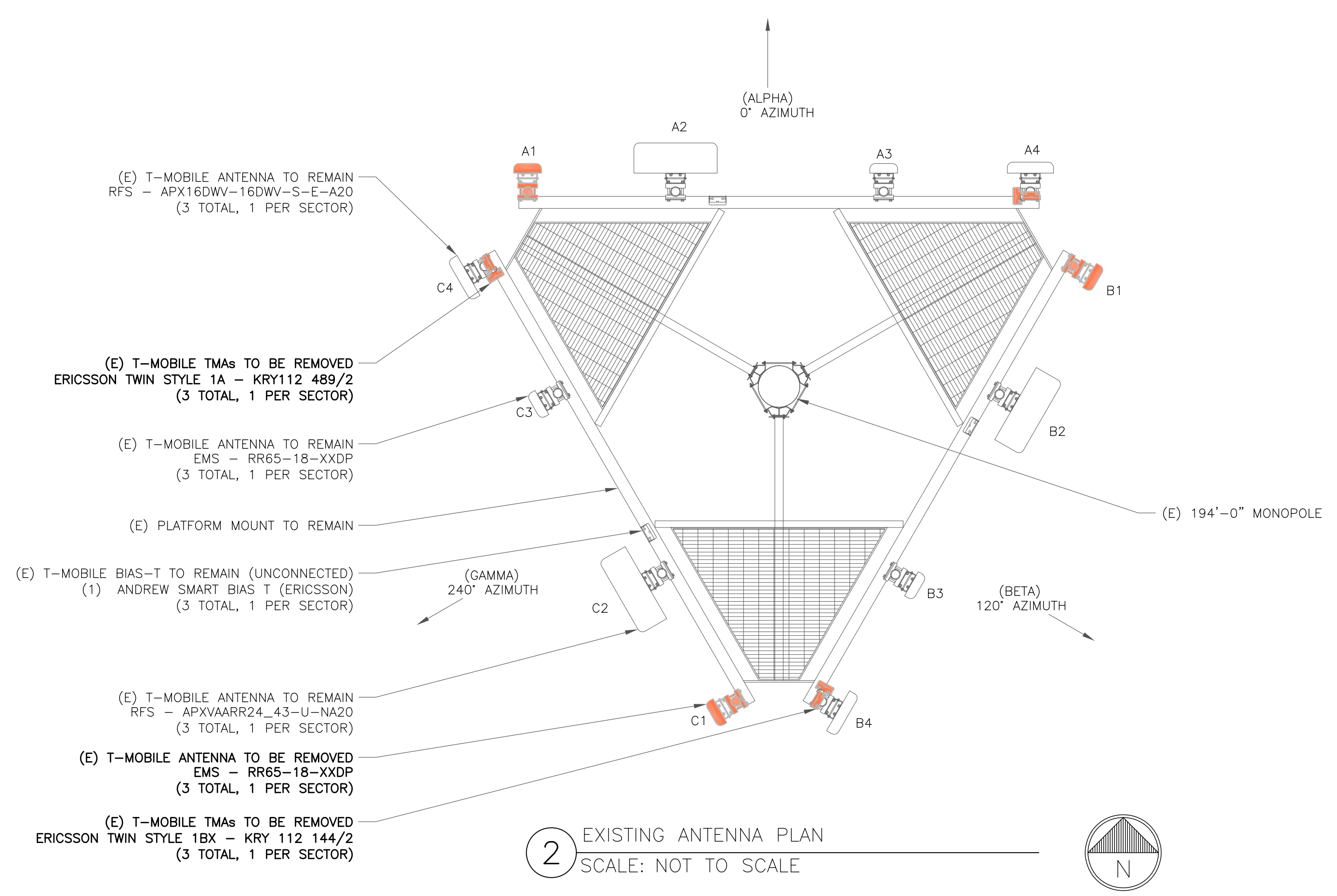
- EXISTING ANTENNAS
ELEV. = 160'
- EXISTING ANTENNAS
ELEV. = 150'
- EXISTING ANTENNAS
ELEV. = 140'

T-MOBILE EQUIPMENT
ANTENNA CL: 192'-0"
MOUNT CL: 192'-0"

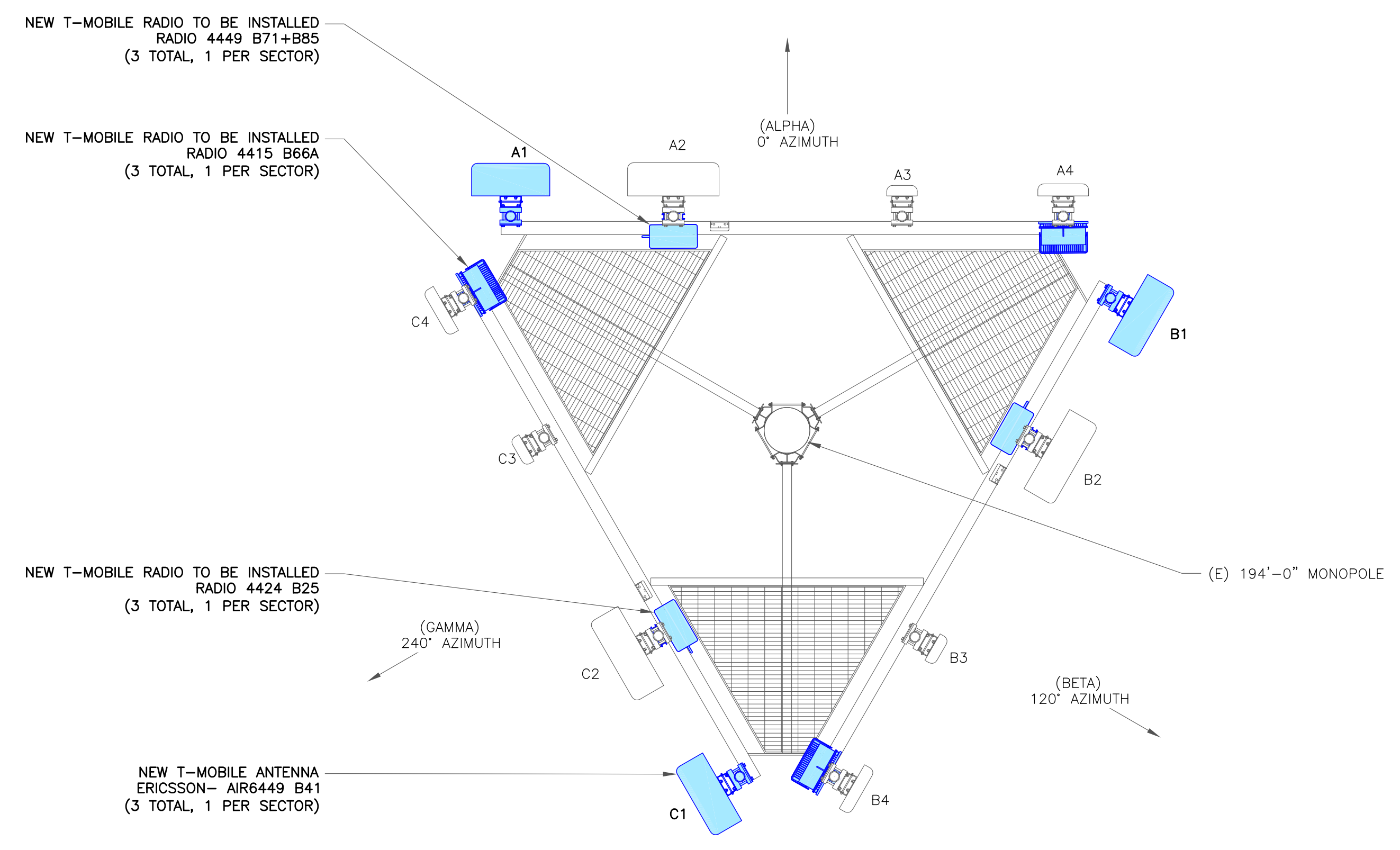
ANY AND ALL TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ EXISTING SAFETY CLIMB



1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA PLAN
SCALE: NOT TO SCALE



3 FINAL ANTENNA PLAN
SCALE: NOT TO SCALE

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T-MOBILE SITE NUMBER:
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BU #: **876355**
UPPER STEPNEY - TLC

474-480 MAIN ST
MONROE CT, 06468

EXISTING
194'-0" MONOPOLE

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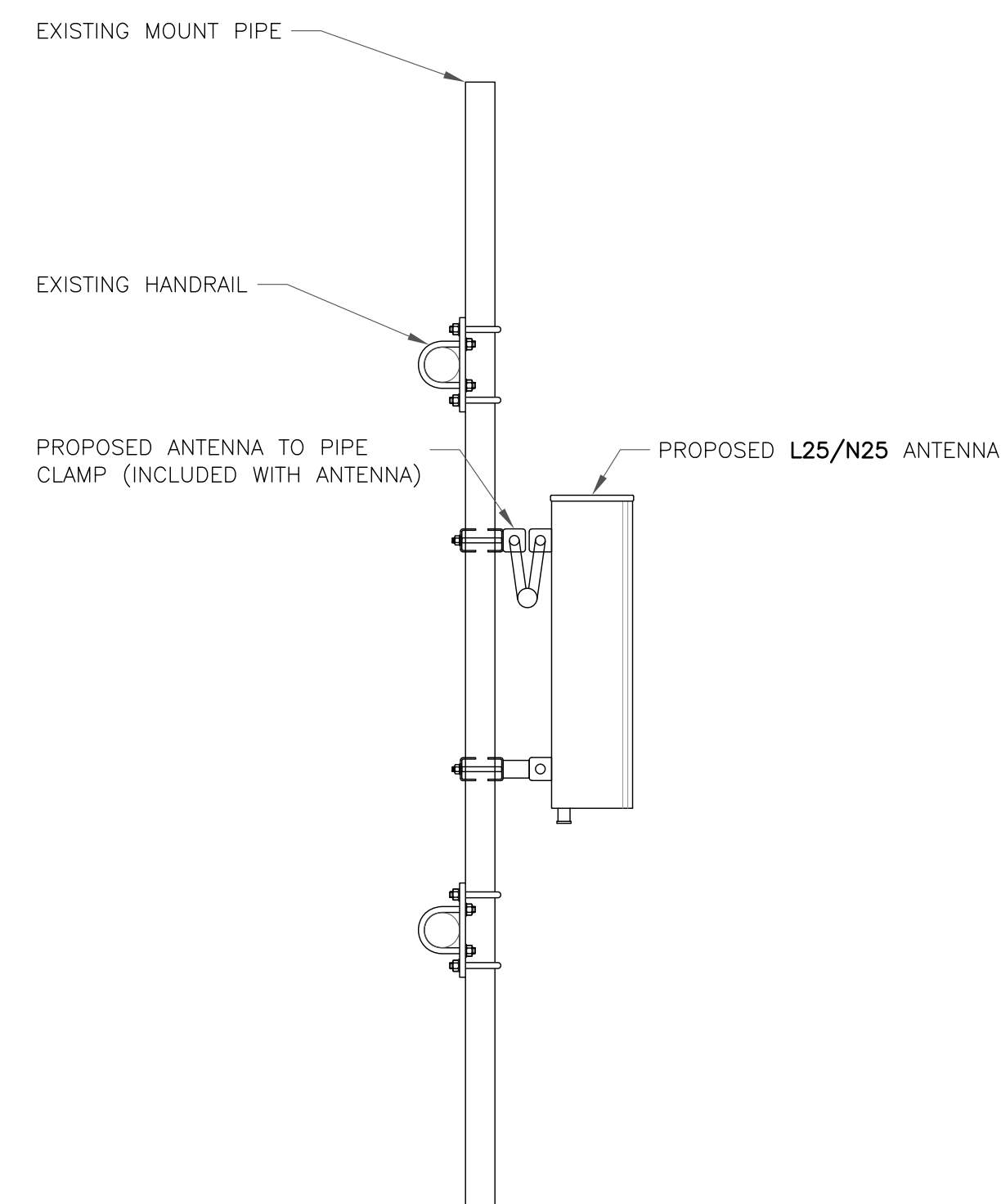
BU #: **876355**
UPPER STEPNEY - TLC

474-480 MAIN ST
MONROE CT, 06468

EXISTING
194'-0" MONOPOLE

RF SYSTEM SCHEDULE												
SECTOR	ANTENNA	TECH	MANUFACTURER	ANTENNA MODEL	AZIMUTH	M-TILT	E-TILT	RAD CENTER	TMA/RRU	CABLE TYPE	CABLE DIAMETER	CABLE LENGTH
ALPHA	A-1	L2500 / N2500	ERICSSON	ERICSSON- AIR6449 B41	0°	0°	-	192'-0"	-	-	-	-
	A-2	L700 / L600 / N600 / L1900 / G1900	RFS	APXVAARR24_43-U-NA20	0°	0°	-	192'-0"	(1) ANDREW SMART BIAS T (1) RADIO 4449 B71+B85 (1) RADIO 4424 B25	(1) FIBER	6x12 HYBRID	244'
	A-3	-	EMS	RR65-18-XXDP	0°	0°	-	194'-0"	-	-	-	-
	A-4	L2100	RFS	APX16DWV-16DWV-S-EA20	0°	0°	-	194'-0"	(1) RADIO 4415 B66A	-	-	-
BETA	B-1	L2500 / N2500	ERICSSON	ERICSSON- AIR6449 B41	120°	0°	-	192'-0"	-	-	-	-
	B-2	L700 / L600 / N600 / L1900 / G1900	RFS	APXVAARR24_43-U-NA20	120°	0°	-	192'-0"	(1) ANDREW SMART BIAS T (1) RADIO 4449 B71+B85 (1) RADIO 4424 B25	(1) FIBER	6x12 HYBRID	244'
	B-3	-	EMS	RR65-18-XXDP	120°	0°	-	194'-0"	-	-	-	-
	B-4	L2100	RFS	APX16DWV-16DWV-S-EA20	120°	0°	-	194'-0"	(1) RADIO 4415 B66A	-	-	-
GAMMA	C-1	L2500 / N2500	ERICSSON	ERICSSON- AIR6449 B41	240°	0°	-	192'-0"	-	-	-	-
	C-2	L700 / L600 / N600 / L1900 / G1900	RFS	APXVAARR24_43-U-NA20	240°	0°	-	192'-0"	(1) ANDREW SMART BIAS T (1) RADIO 4449 B71+B85 (1) RADIO 4424 B25	(1) FIBER	6x12 HYBRID	244'
	C-3	-	EMS	RR65-18-XXDP	240°	0°	-	194'-0"	-	-	-	-
	C-4	L2100	RFS	APX16DWV-16DWV-S-EA20	240°	0°	-	194'-0"	(1) RADIO 4415 B66A	-	-	-

1 ANTENNA & FEEDLINE SCHEDULE
SCALE: NOT TO SCALE



2 ANTENNA MOUNTING DETAIL
SCALE: NOT TO SCALE

ISSUED FOR:

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C-3

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T-MOBILE SITE NUMBER:
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BU #: **876355**
UPPER STEPNEY - TLC

474-480 MAIN ST
MONROE CT, 06468

EXISTING
194'-0" MONOPOLE

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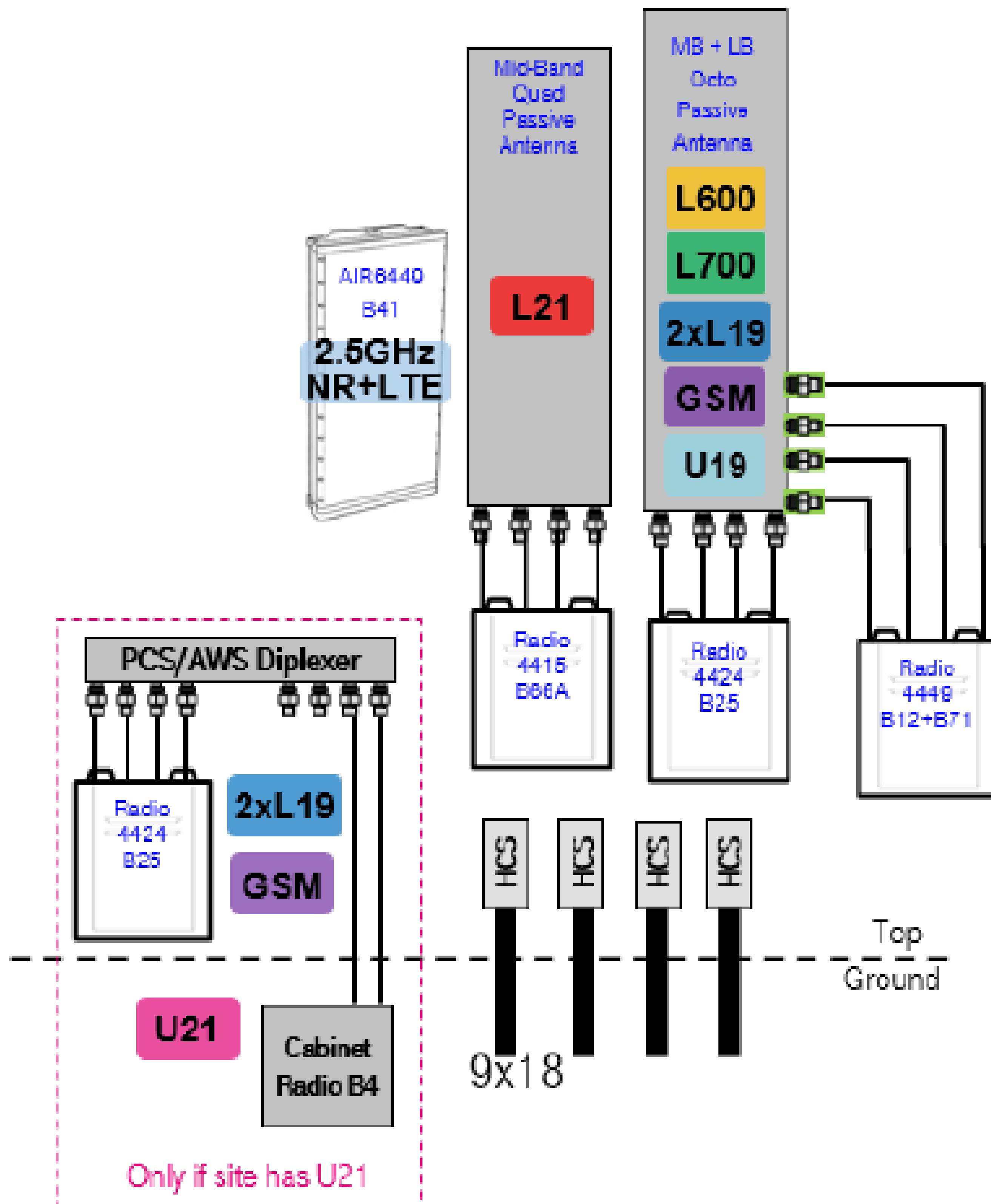
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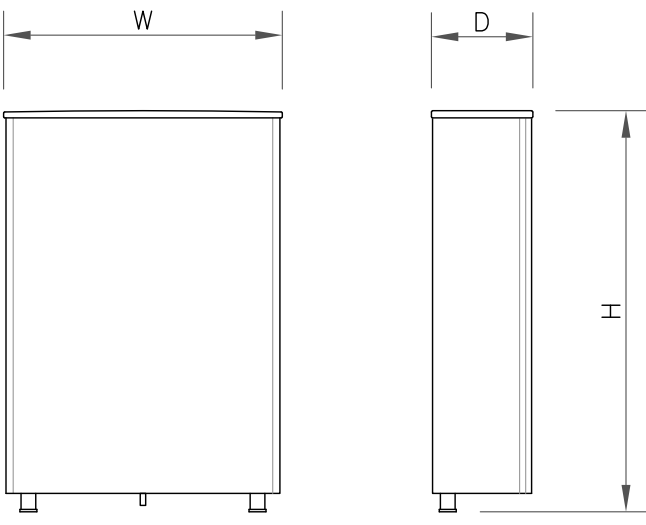
C-4

REVISION:

1

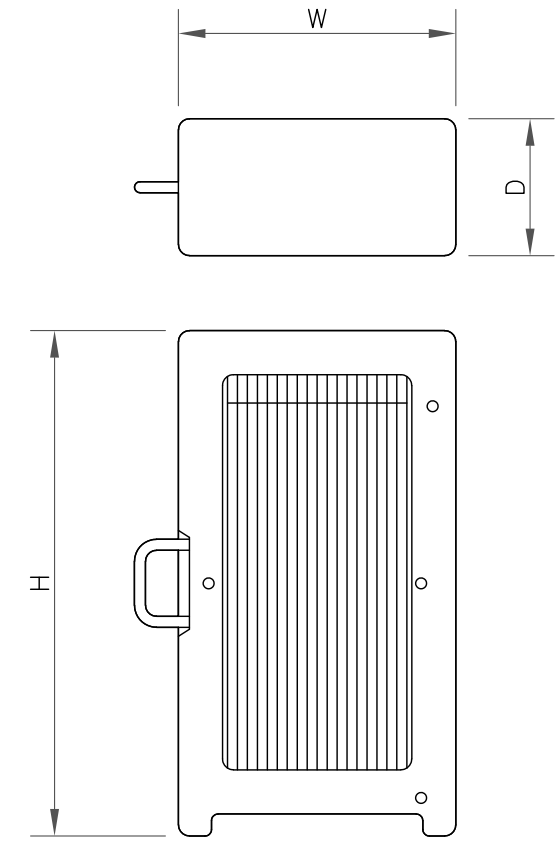


1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE



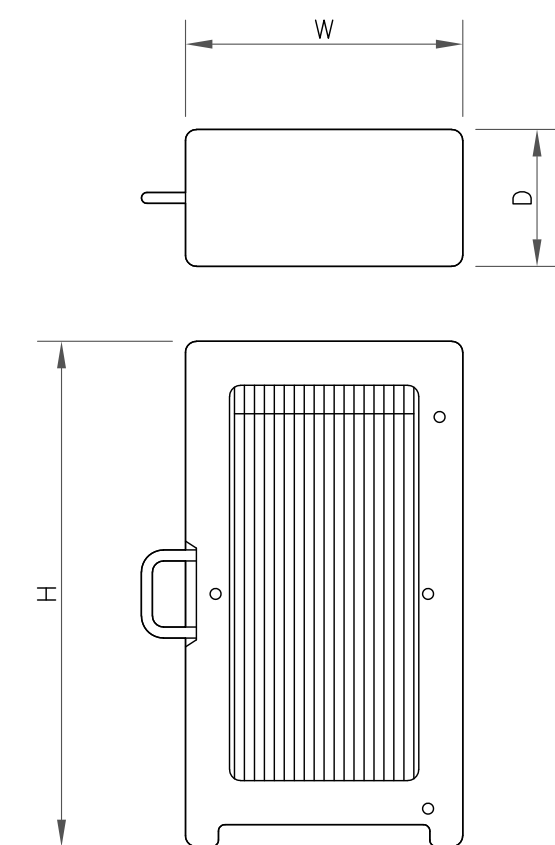
ANTENNA SPECS	
MANUFACTURER	ERICSSON
MODEL #	AIR6449 B41
WIDTH	20.51"
DEPTH	8.54"
HEIGHT	33.11"
WEIGHT	114.63 LBS

1 ANTENNA SPECS
SCALE: NOT TO SCALE



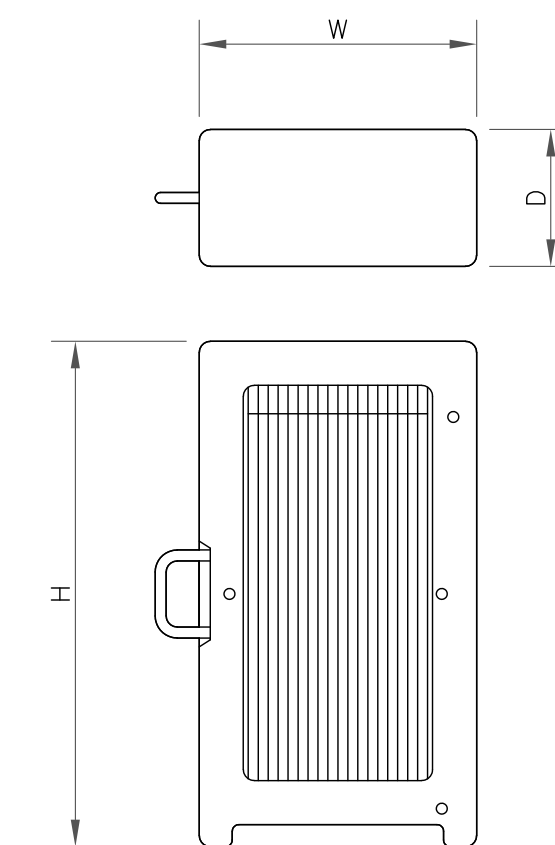
RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	4415 B66A
WIDTH	13.20"
DEPTH	5.40"
HEIGHT	14.90"
WEIGHT	46.30 LBS

2 RRU SPECS
SCALE: NOT TO SCALE



RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	4449 B71+B85
WIDTH	13.19"
DEPTH	9.25"
HEIGHT	14.95"
WEIGHT	75.00 LBS

3 RRU SPECS
SCALE: NOT TO SCALE



RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	4424 B25
WIDTH	14.40"
DEPTH	11.30"
HEIGHT	17.10"
WEIGHT	86.00 LBS

4 RRU SPECS
SCALE: NOT TO SCALE

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BU #: **876355**
UPPER STEPNEY - TLC

474-480 MAIN ST
MONROE CT, 06468

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C-5

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BU #: **876355**
UPPER STEPNEY - TLC

474-480 MAIN ST
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EXISTING
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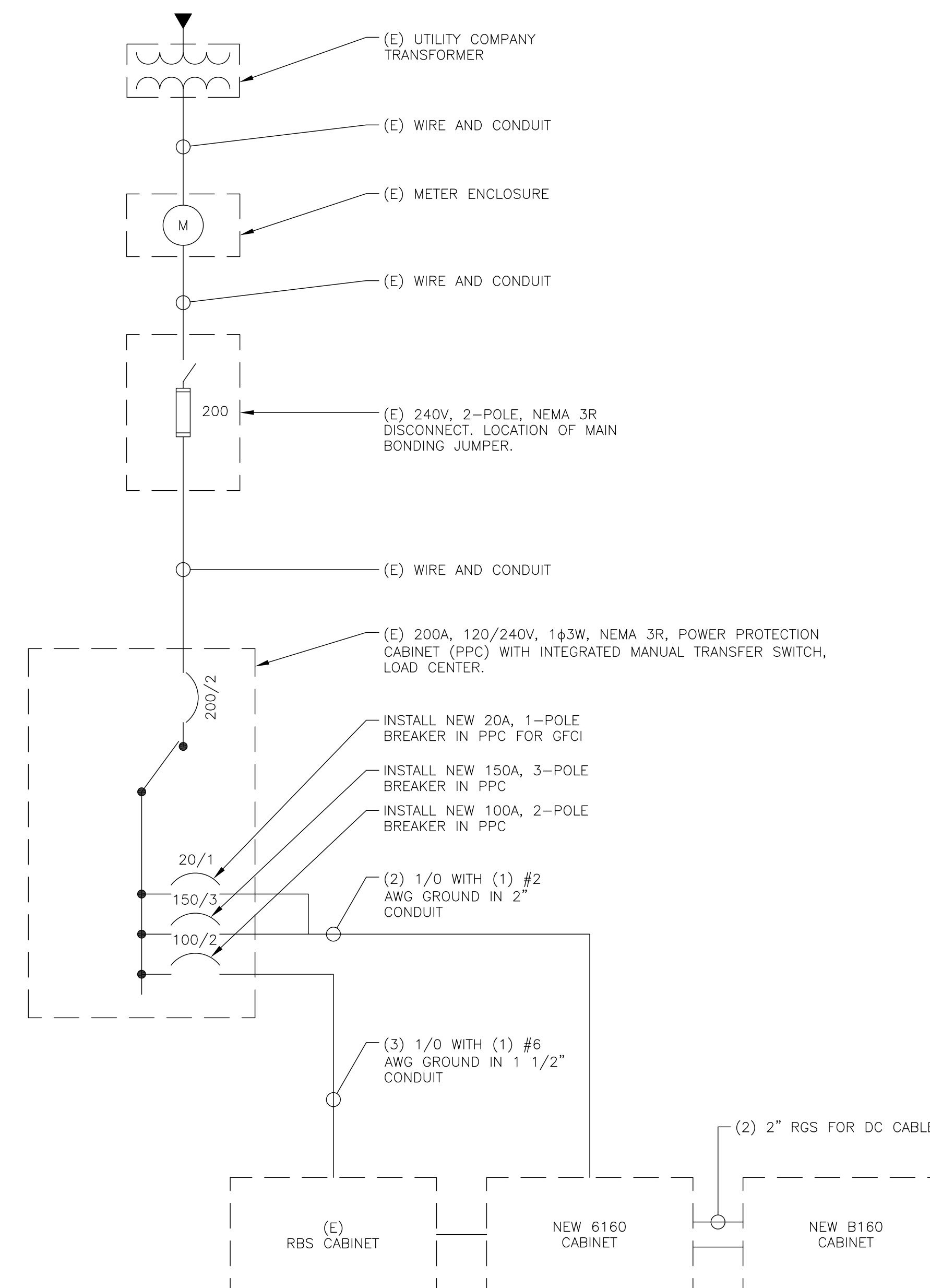
REVISION:

1

FINAL PANEL SCHEDULE							
LOAD	POLES	AMPS	BUS		AMPS	POLES	LOAD
			L1	L2			
RBS 6201	2	XXA	1	2	50A	2	EQUIPMENT
EQUIPMENT	1	20A	5	6	50A	2	EQUIPMENT
FIBER CABINET	1	20A	7	8	20A	1	SPOT LIGHT
6160 SSC	3	150A	9	10			
			11	12			
6160 GFCI	1	20A	13	14			
			15	16			
			17	18			
			19	20			
			21	22			
			23	24			
			25	26			
			27	28			
			29	30			

RATED VOLTAGE: 120/240 1 PHASE, 3 WIRE
 BRANCH POLES: 12 24 30 42
 APPROVED MF'RS
 RATED AMPS: 100 200 400
 CABINET: SURFACE FLUSH
 NEMA 1
 MAIN LUGS ONLY MAIN 200 AMPS BREAKER FUSED SWITCH HINGED DOOR KEYPED DOOR LATCH
 FUSED CIRCUIT BREAKER BRANCH DEVICES TO BE GFCI BREAKERS FULL NEUTRAL BUS
 ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 10,000 AMPS SYMMETRICAL

REPLACE EXISTING BREAKER IN POSITION 1 AND 3 WITH A NEW 2P 100A BREAKER
 INSTALL NEW BREAKER IN POSITION 9, 11 AND 13 USING A NEW 3P 150A BREAKER
 INSTALL NEW BREAKER IN POSITION 15 USING A NEW 1P 20A BREAKER
 REPLACE EXISTING WIRES FOR EXISTING 6201 CABINET WITH (3) 1/0 AWG THWN (COPPER) AND (1) #6G AWG IN 1 1/2" CONDUIT.
 INSTALL NEW WIRES FOR NEW 6160 CABINET USING (2) 1/0 WITH (1) #2 AWG GROUND IN 2" CONDUIT.
 IF 150A BREAKER WILL NOT PROPERLY FIT IN EXISTING PANEL, REPLACE (E) PANEL WITH SQUARE D PANEL QO12040M200RB (OR APPROVED EQUAL).
 UPGRADE FEEDER WIRES TO MEET AMPACITY IF NEW PANEL IS REQUIRED.
 FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING PHOTOS



NOTES:

- ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THWN, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 UNLESS NOTED OTHERWISE.
- CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
- ALL GROUNDING AND BONDING PER THE NEC.

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE

2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

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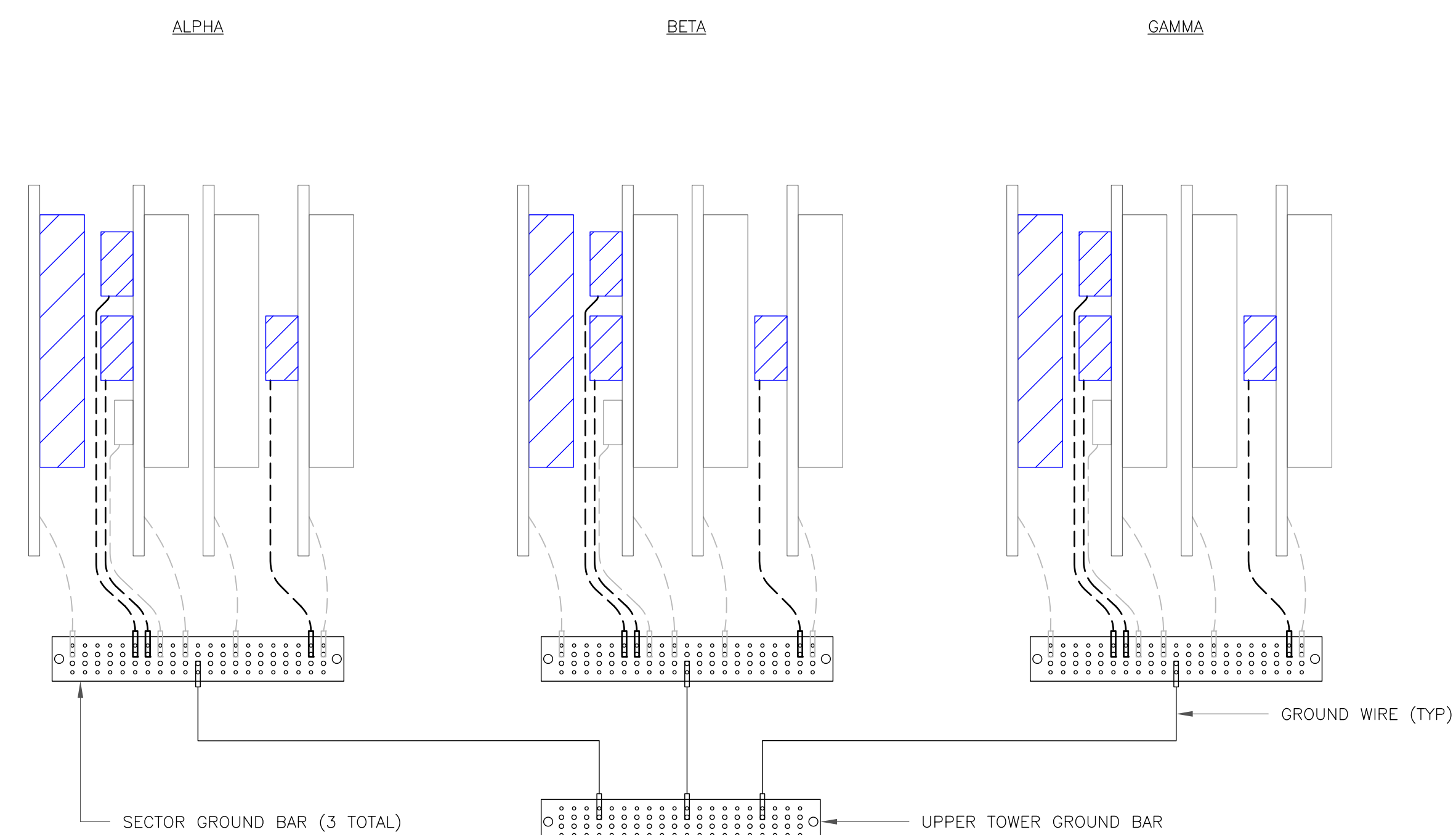
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UPPER STEPNEY - TLC

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

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE



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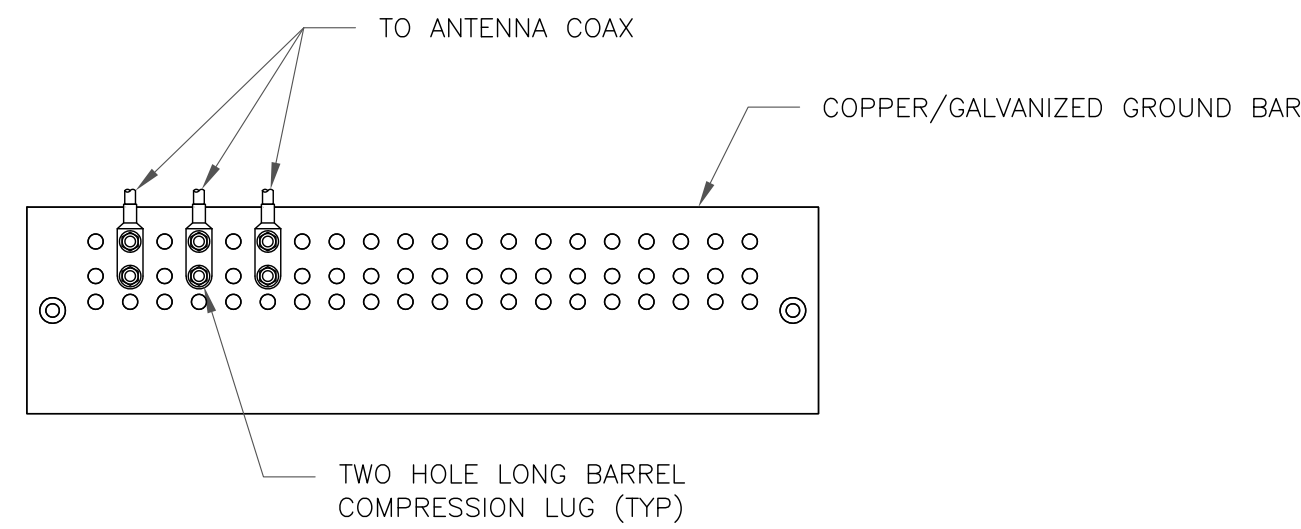
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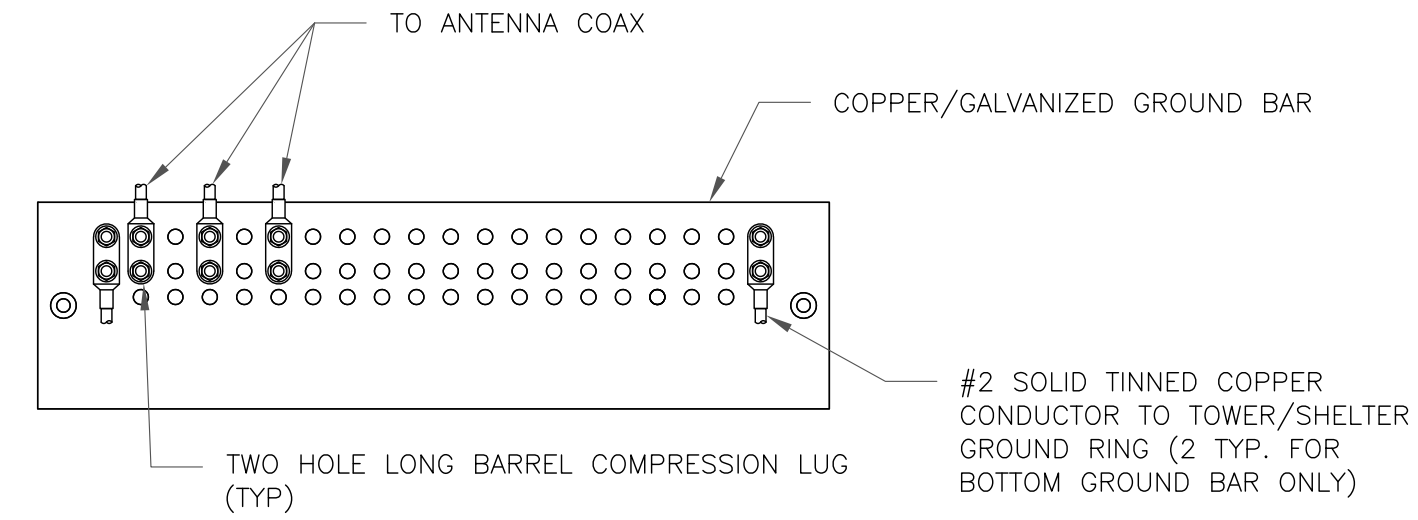
1



NOTES:

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

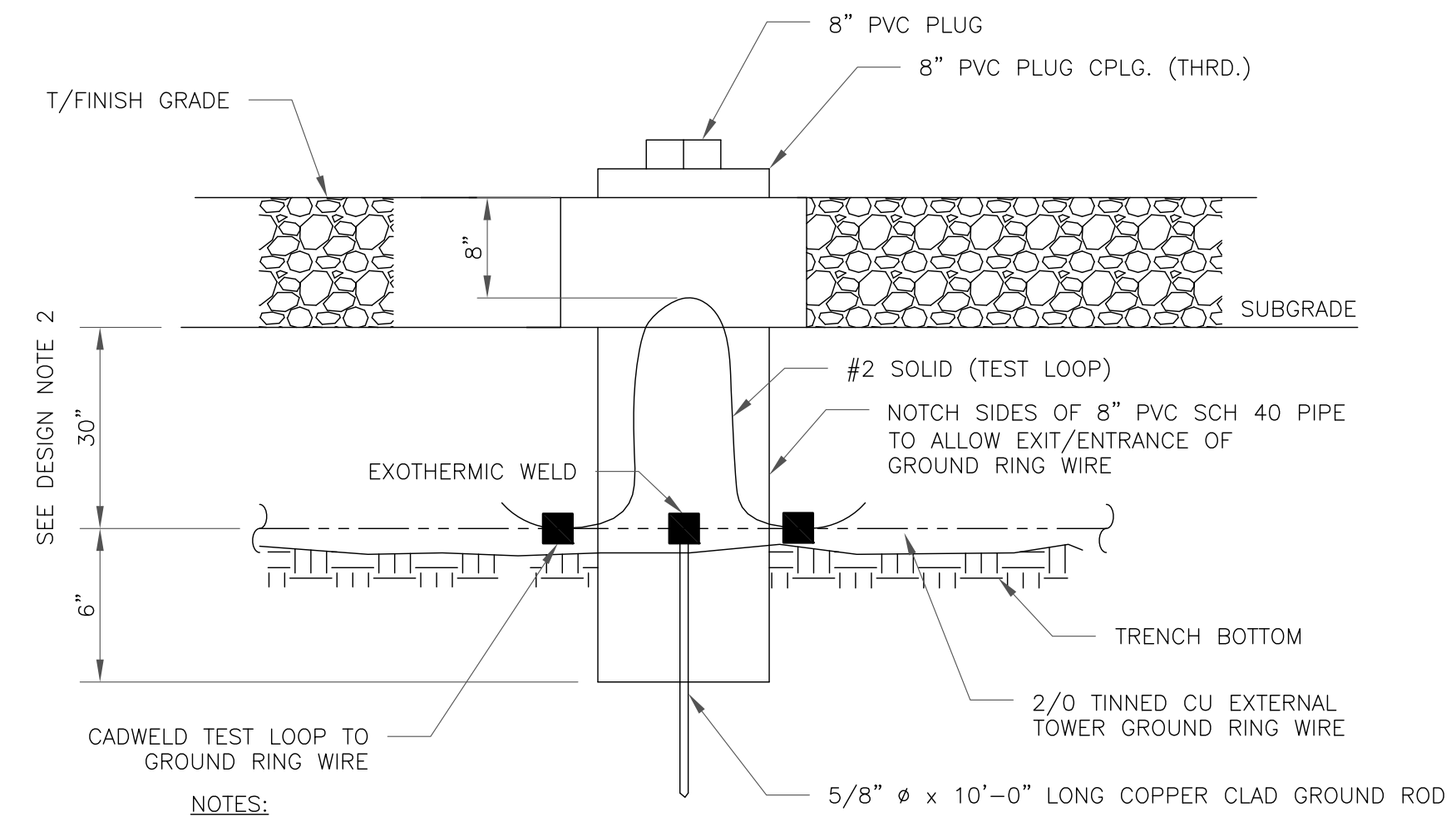
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

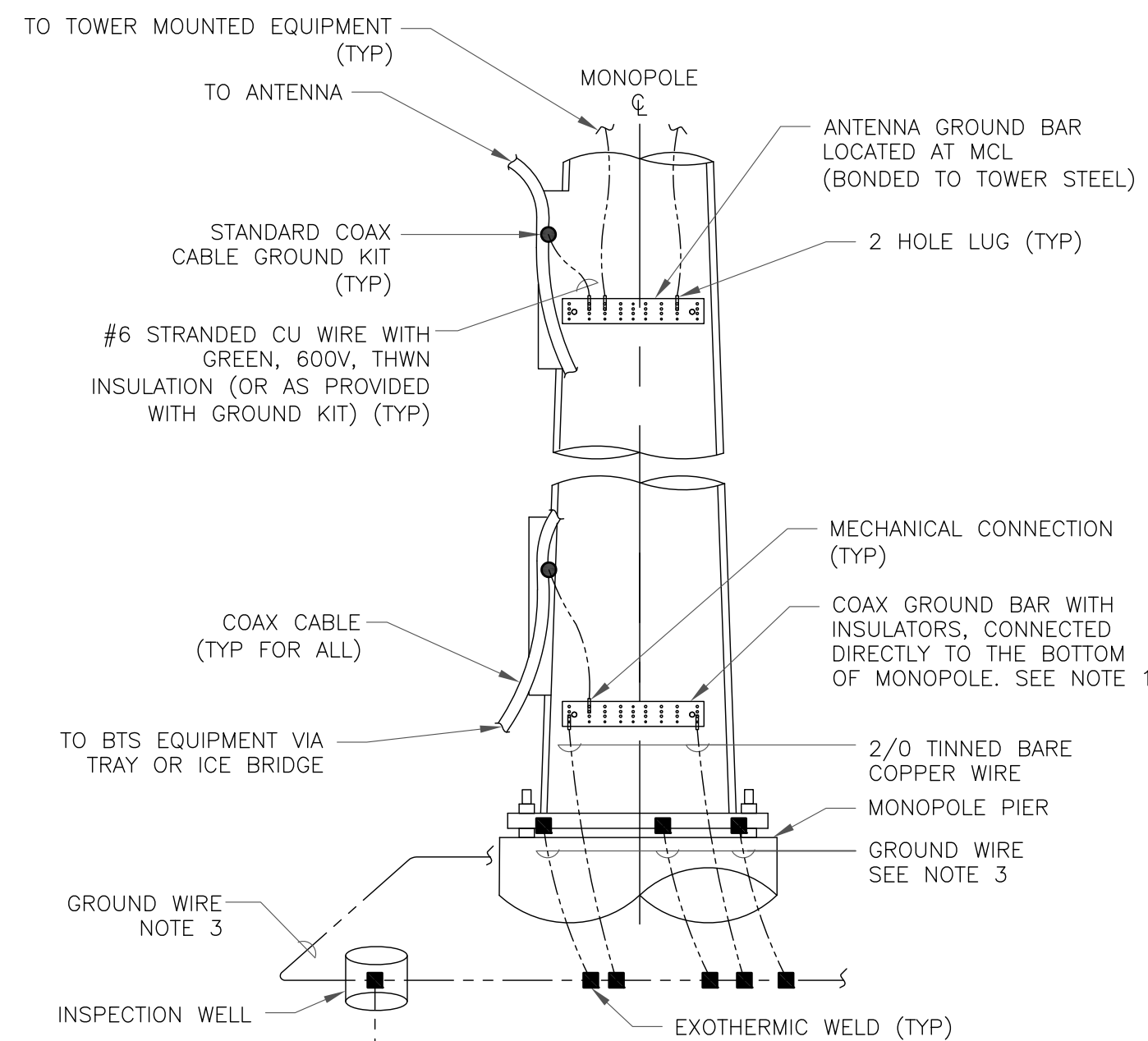
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

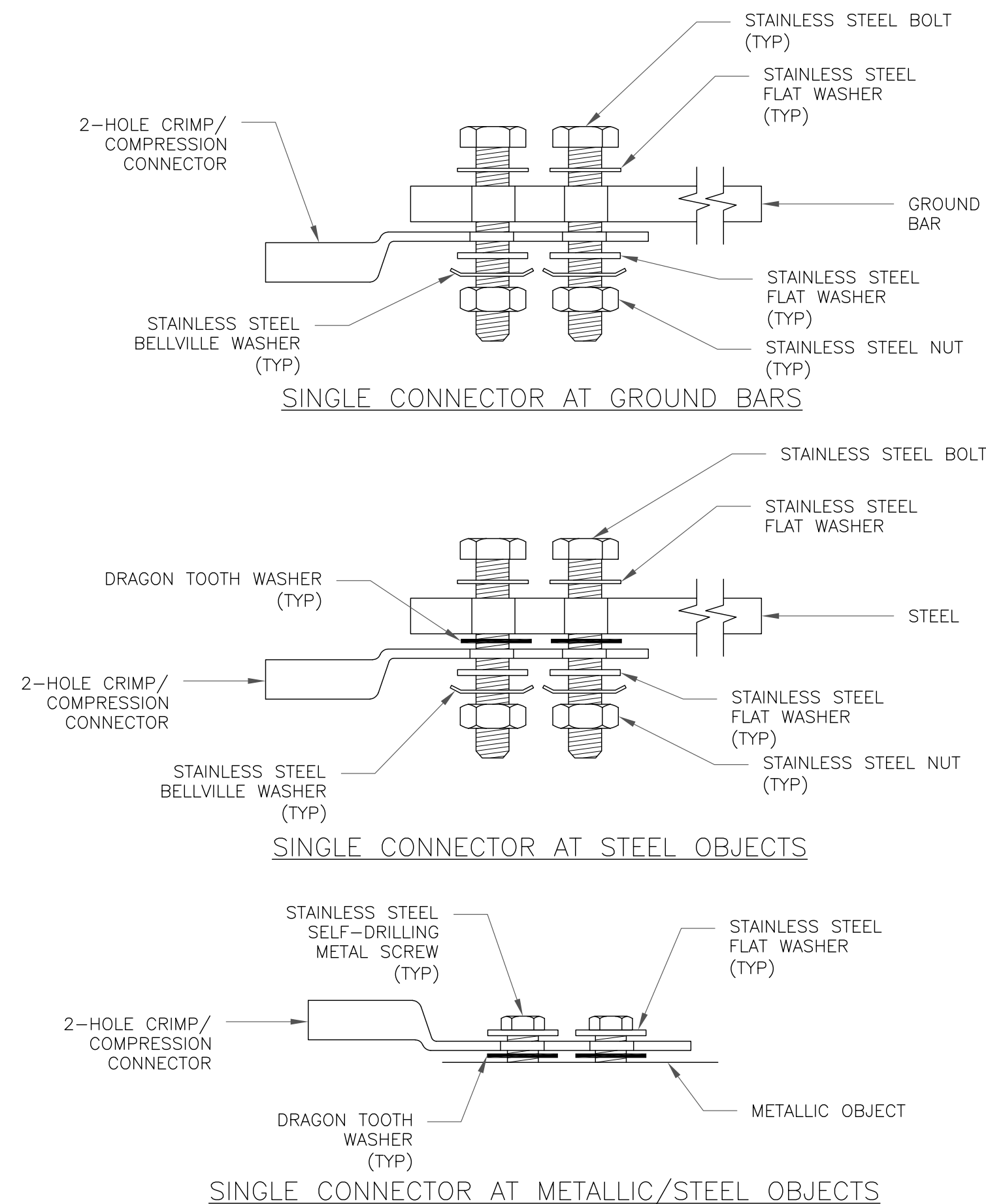
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



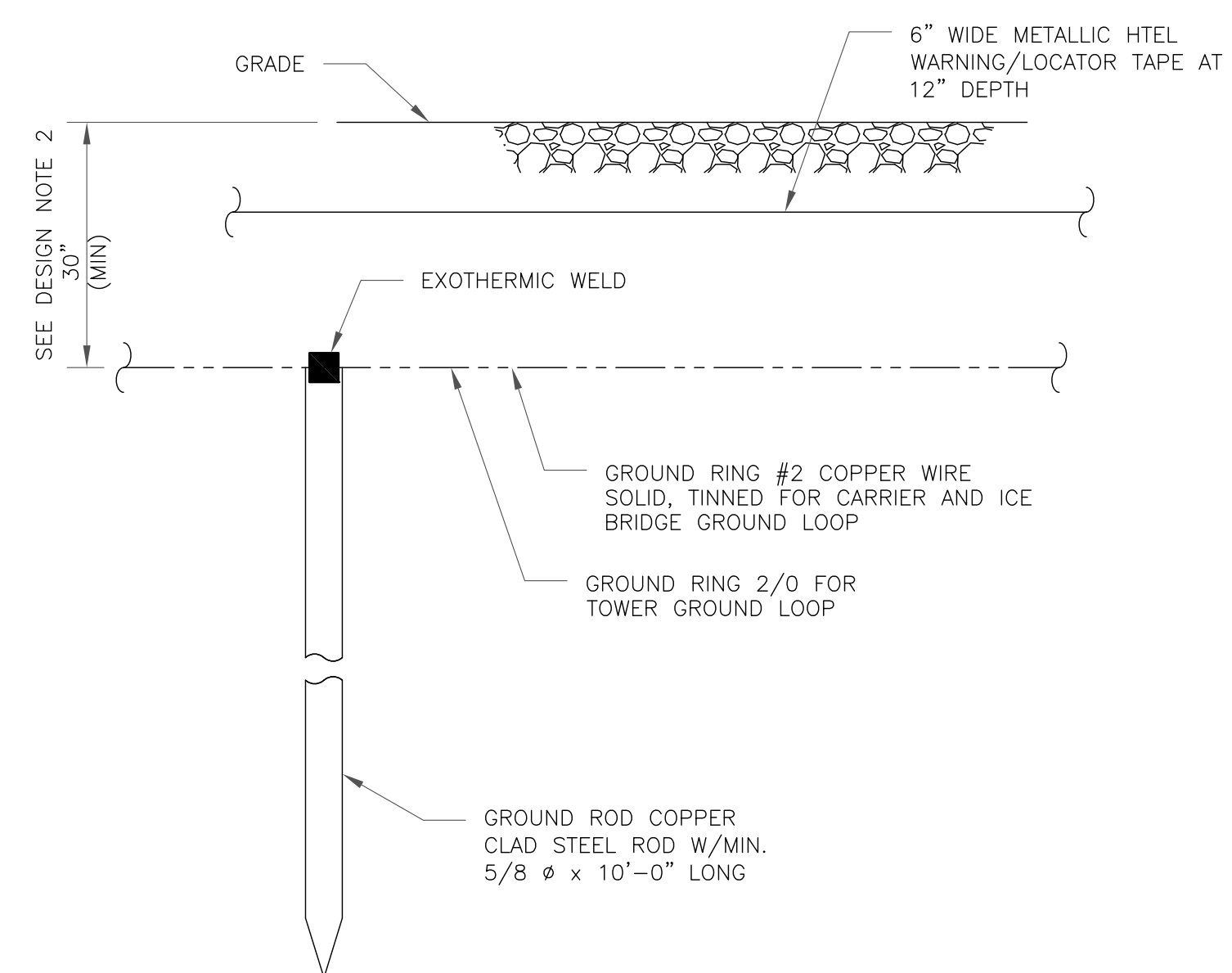
NOTES:

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

4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

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

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

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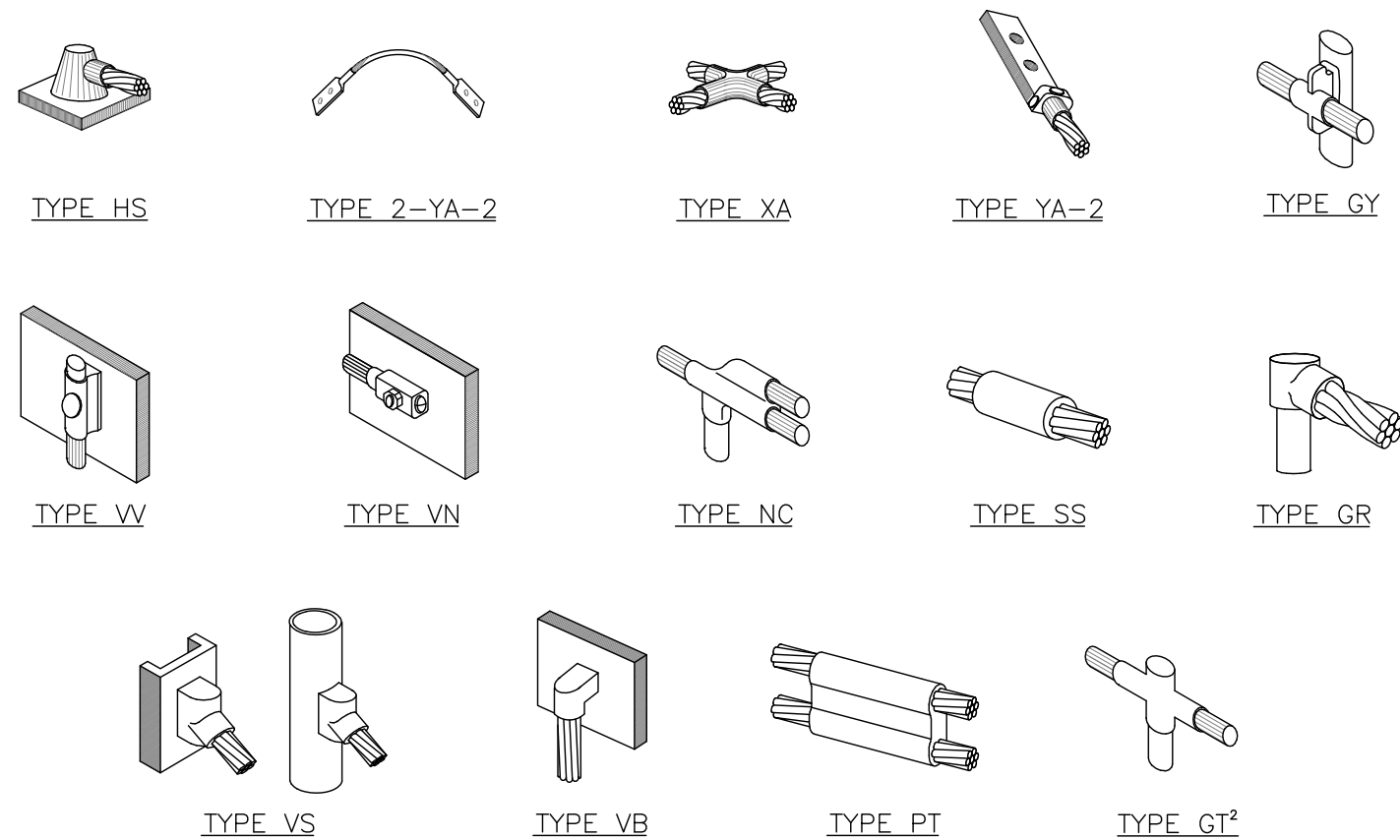
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SHEET NUMBER:

G-2

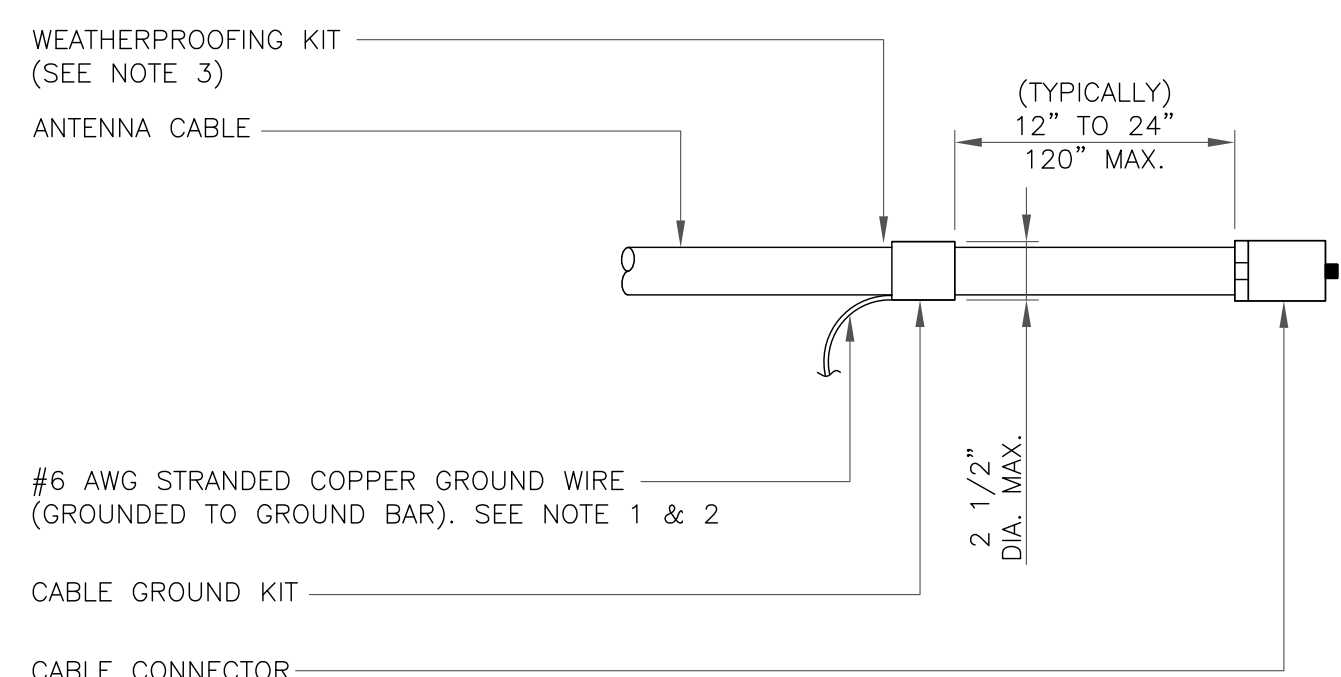
REVISION:

1



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.

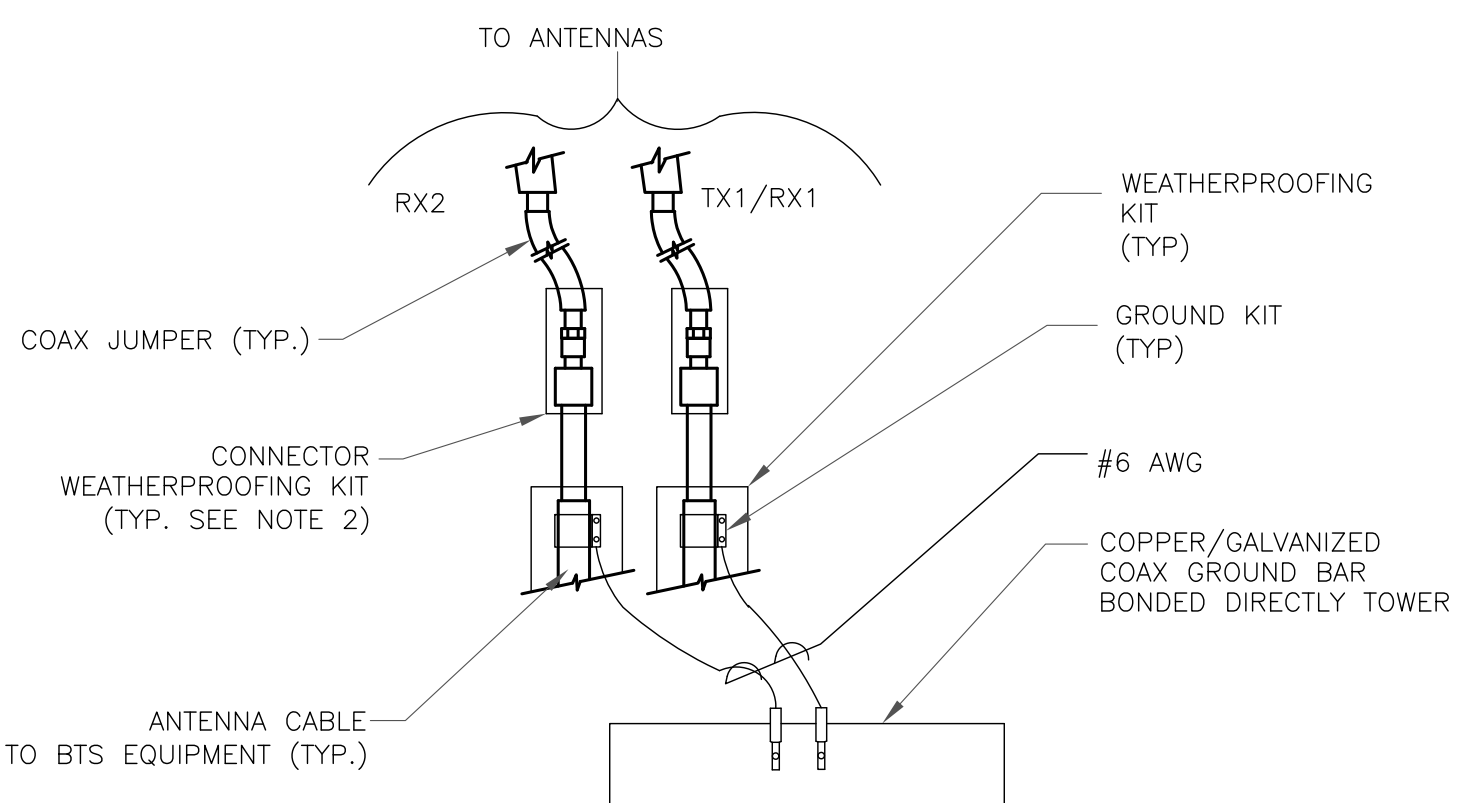
1 CADWELD GROUNDING CONNECTIONS
 SCALE: NOT TO SCALE



WEATHERPROOFING KIT (SEE NOTE 3)
 ANTENNA CABLE
 (TYPICALLY) 12" TO 24" 120" MAX.
 #6 AWG STRANDED COPPER GROUND WIRE (GROUNDED TO GROUND BAR). SEE NOTE 1 & 2
 2 1/2" DIA. MAX.
 CABLE GROUND KIT
 CABLE CONNECTOR

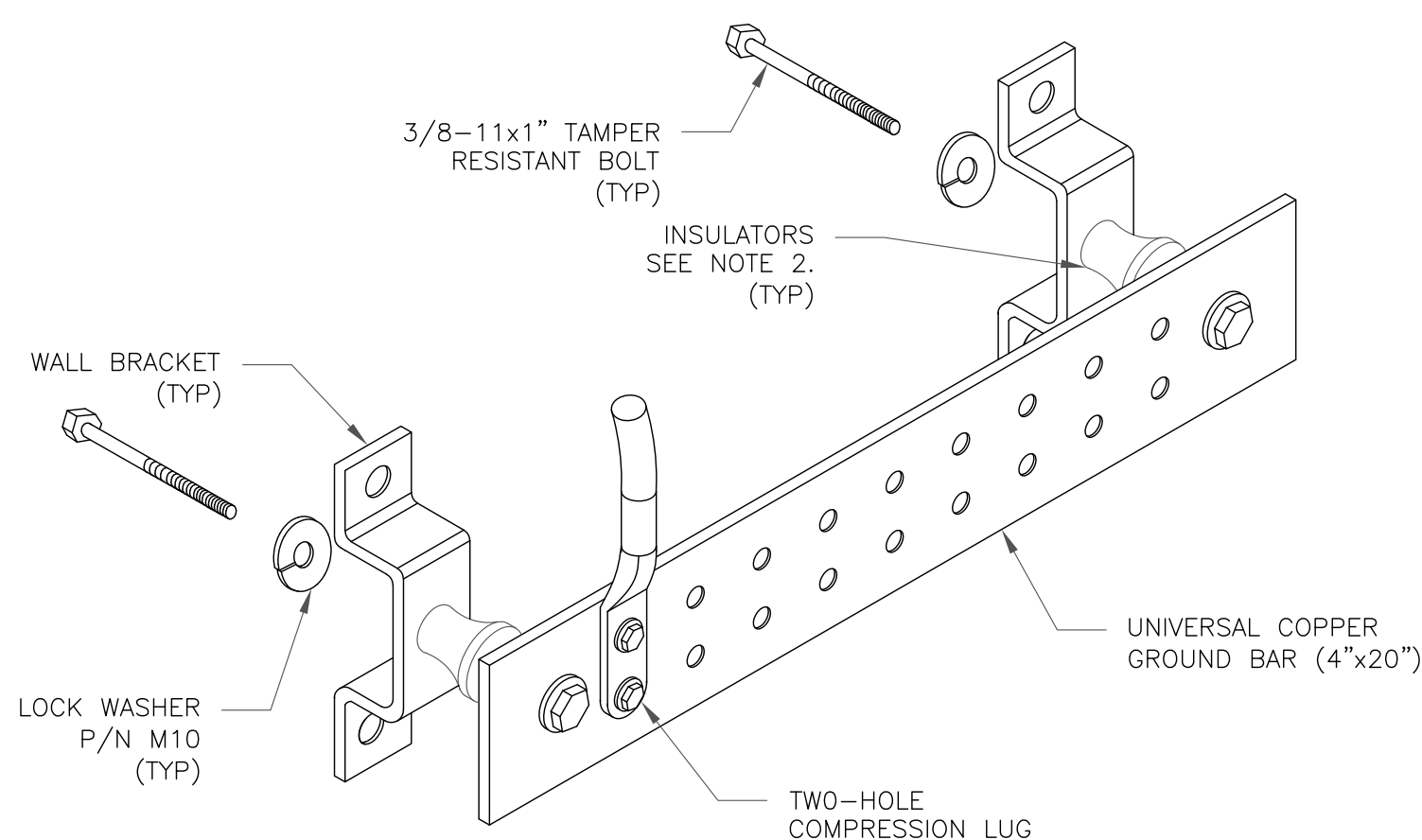
NOTES:
 1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
 2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
 3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

3 CABLE GROUND KIT CONNECTION
 SCALE: NOT TO SCALE



TO ANTENNAS
 RX2 TX1/RX1
 WEATHERPROOFING KIT (TYP)
 GROUND KIT (TYP)
 #6 AWG
 COPPER/GALVANIZED COAX GROUND BAR BONDED DIRECTLY TOWER
 COAX JUMPER (TYP.)
 CONNECTOR WEATHERPROOFING KIT (TYP. SEE NOTE 2)
 ANTENNA CABLE TO BTS EQUIPMENT (TYP.)

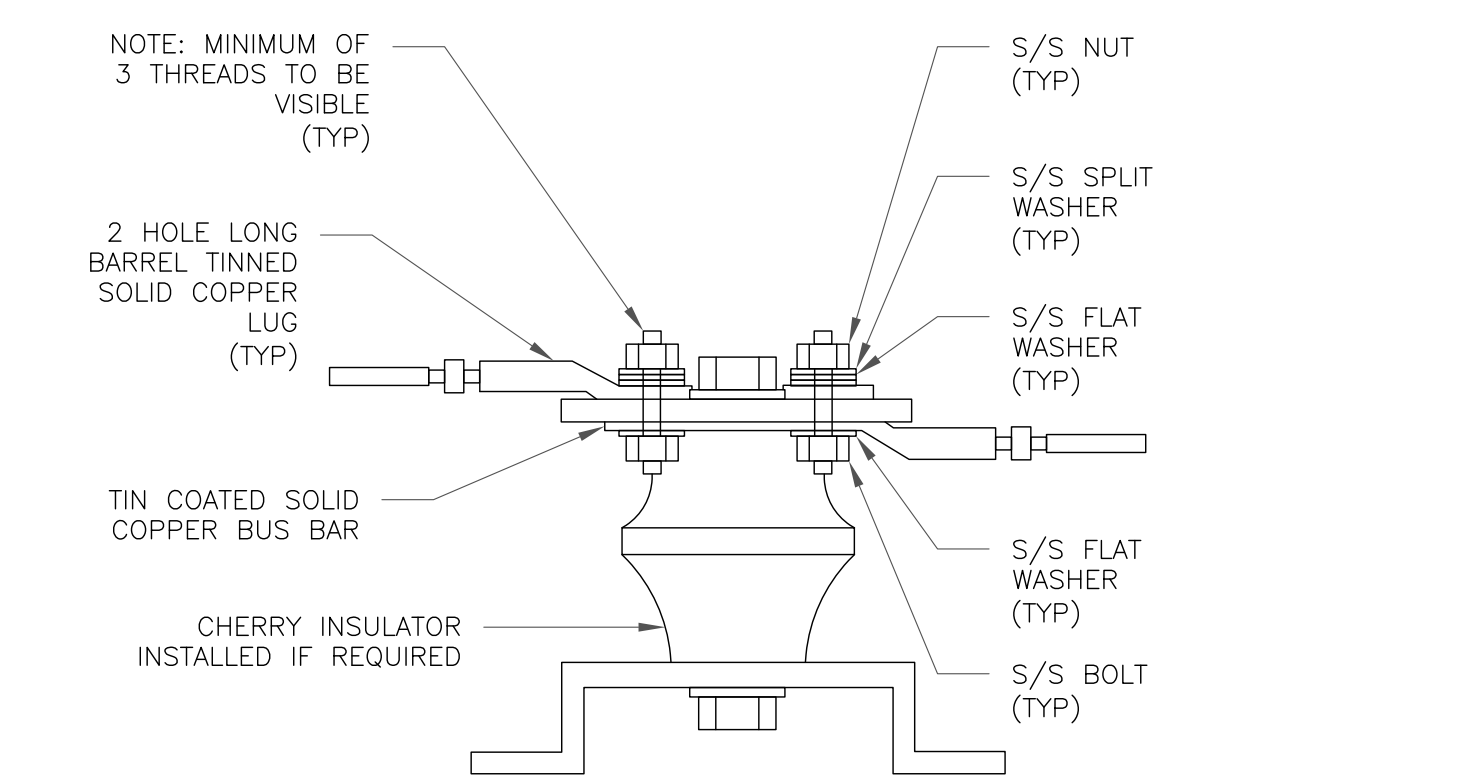
4 GROUND CABLE CONNECTION
 SCALE: NOT TO SCALE



3/8-11x1" TAMPER RESISTANT BOLT (TYP)
 INSULATORS SEE NOTE 2. (TYP)
 WALL BRACKET (TYP)
 LOCK WASHER P/N M10 (TYP)
 UNIVERSAL COPPER GROUND BAR (4"x20")
 TWO-HOLE COMPRESSION LUG

NOTES:
 1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STG-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.

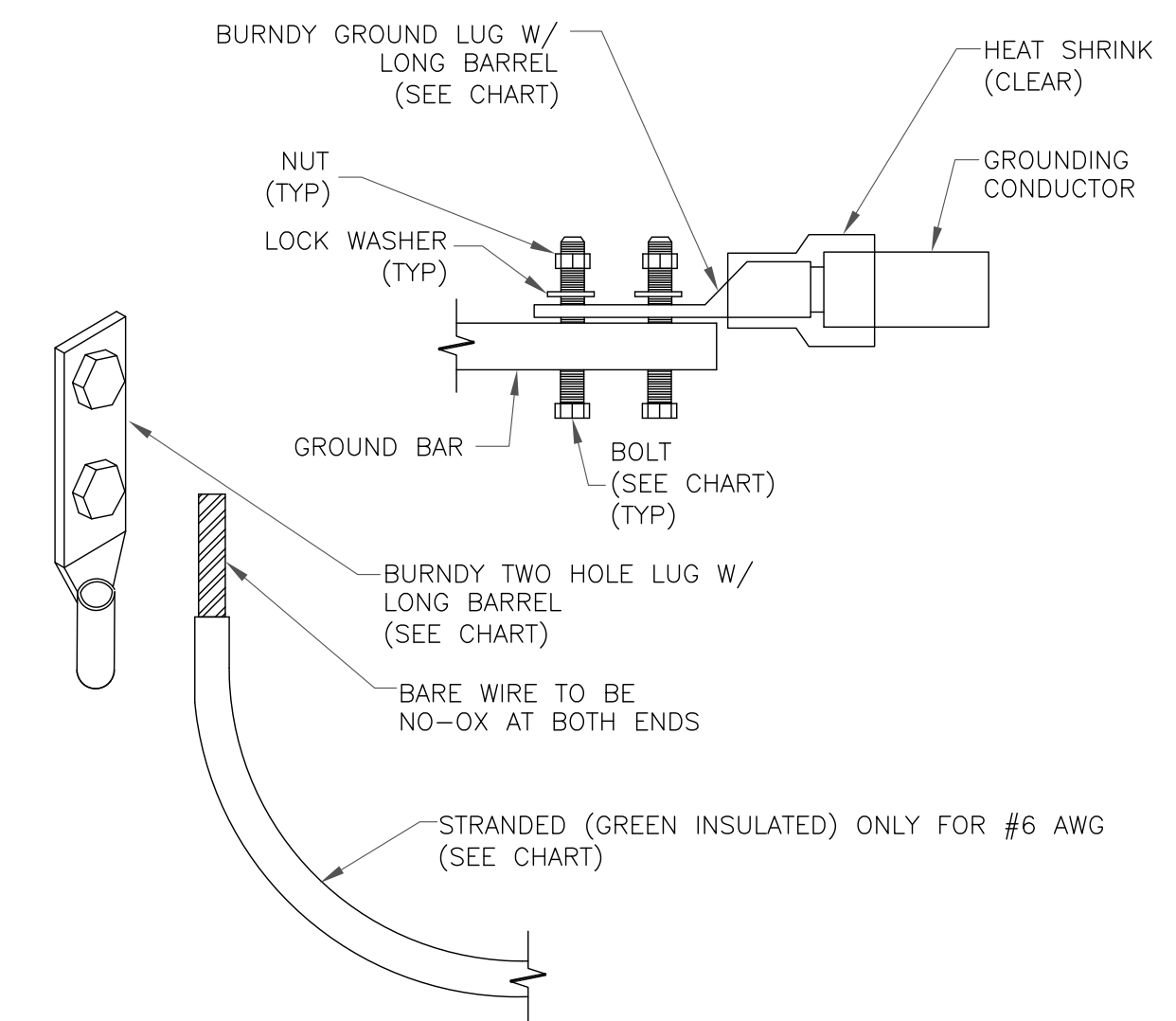
6 GROUND BAR DETAIL
 SCALE: NOT TO SCALE



NOTE: MINIMUM OF 3 THREADS TO BE VISIBLE (TYP)
 S/S NUT (TYP)
 S/S SPLIT WASHER (TYP)
 S/S FLAT WASHER (TYP)
 S/S FLAT WASHER (TYP)
 S/S BOLT (TYP)
 2 HOLE LONG BARREL TINNED SOLID COPPER LUG (TYP)
 TIN COATED SOLID COPPER BUS BAR
 CHERRY INSULATOR INSTALLED IF REQUIRED

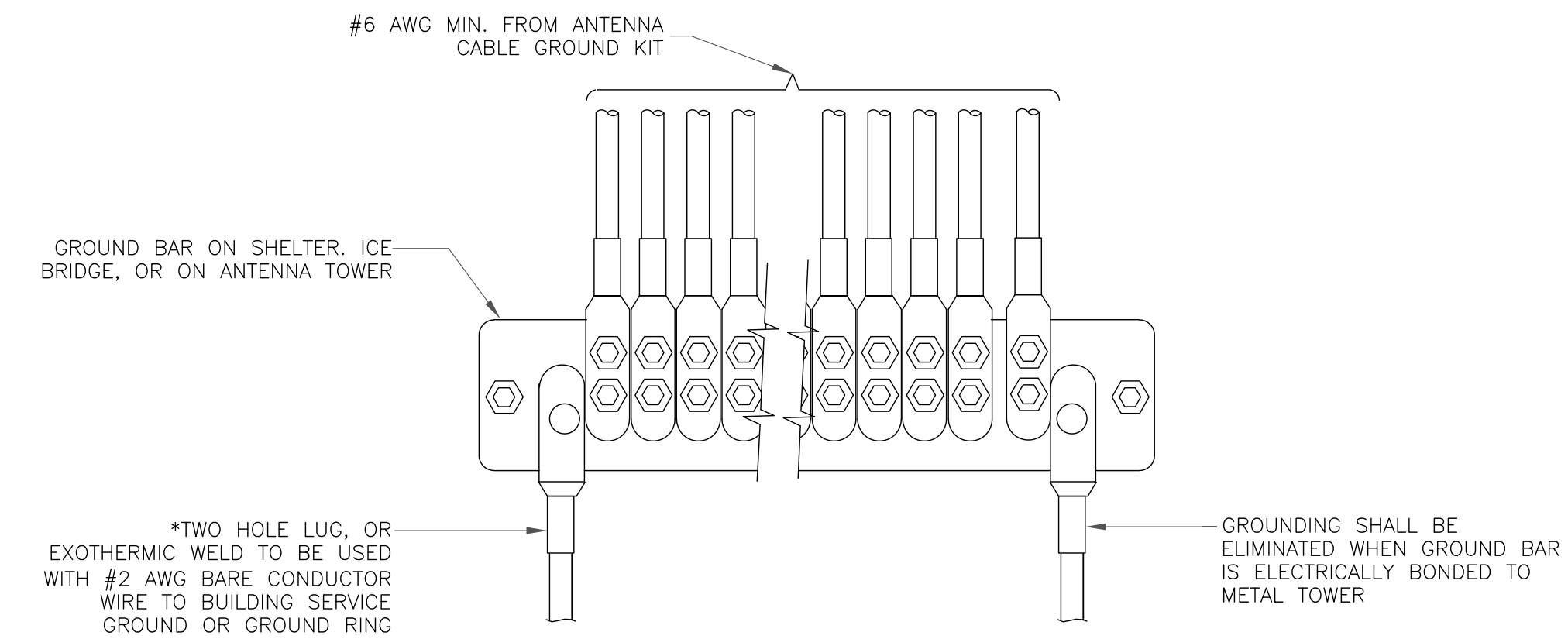
7 LUG DETAIL
 SCALE: NOT TO SCALE

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

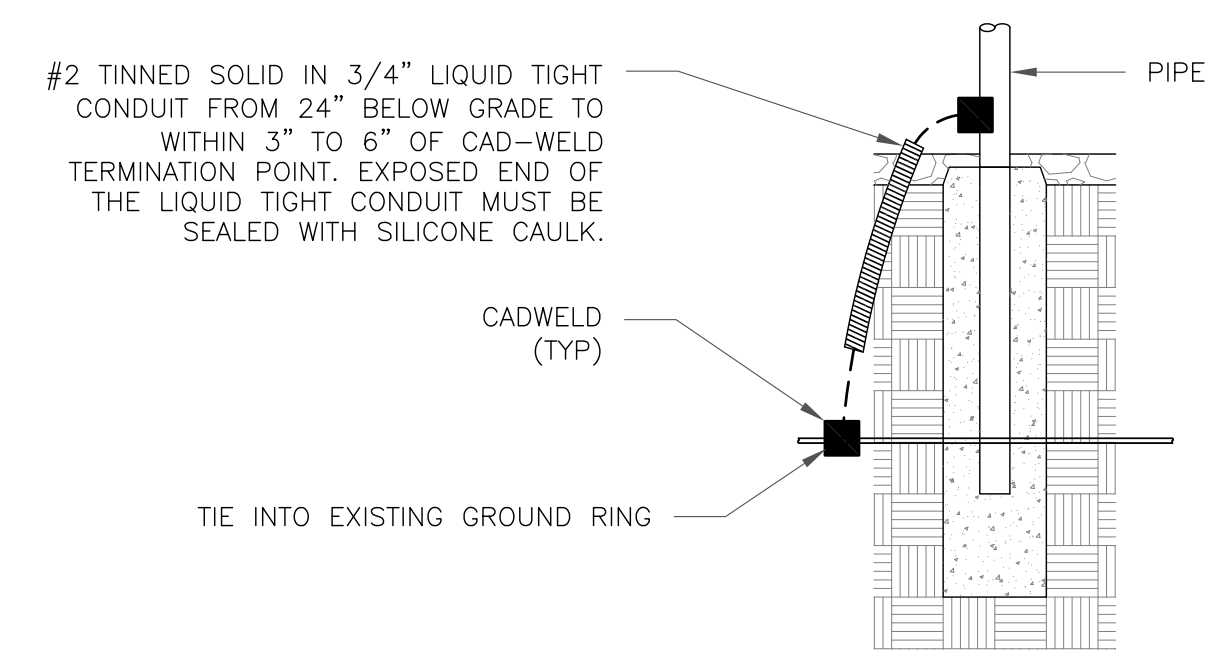


NOTES:
 1. ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER, GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

2 MECHANICAL LUG CONNECTION
 SCALE: NOT TO SCALE



5 GROUNDWIRE INSTALLATION
 SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
 SCALE: NOT TO SCALE

T-Mobile
 4 SYLVAN WAY
 PARSIPPANY, NJ 07054

CROWN CASTLE
 3530 TORINGDON WAY, SUITE 300
 CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CT11264C
 BU #: **876355**
UPPER STEPNEY - TLC
 474-480 MAIN ST
 MONROE CT, 06468
 EXISTING
 194'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/6/20	JTS	CONSTRUCTION	MTJ
1	12/9/20	GEH	CONSTRUCTION	MTJ

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: **G-3** REVISION: **1**

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Exhibit D

Structural Analysis Report

Date: **October 12, 2020**

Amanda Brown
Crown Castle
6325 Ardey Kell Rd, Suite 600
Charlotte, NC 28277



Crown Castle
2000 Corporate Dr.
Canonsburg, PA
(724) 416-2000

Subject: **Structural Analysis Report**

Carrier Designation: **T-Mobile Co-Locate**
Carrier Site Number: CT11264C
Carrier Site Name: Monroe / Rt 59 / Rt 25

Crown Castle Designation: **Crown Castle BU Number:** 876355
Crown Castle Site Name: UPPER STEPNEY - TLC
Crown Castle JDE Job Number: 620162
Crown Castle Work Order Number: 1890918
Crown Castle Order Number: 529718 Rev. 0

Engineering Firm Designation: **Crown Castle Project Number:** 1890918

Site Data: **474-480 Main St., MONROE, Fairfield County, CT**
Latitude 41° 19' 31.99", Longitude -73° 15' 57.05"
191.5 Foot - Monopole Tower

Dear Amanda Brown,

Crown Castle is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above mentioned tower.

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

LC7: Proposed Equipment Configuration

Sufficient Capacity

This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2018 Connecticut Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Alexander Greguric, E.I.T.

Respectfully submitted by:

A handwritten signature in blue ink that reads 'Maribel Dentinger'.

Maribel Dentinger, P.E.
Senior Project Engineer

Maribel
Dentinger

Digitally signed by
Maribel Dentinger
Date: 2020.10.12
09:56:36 -04'00'

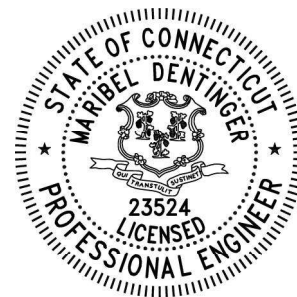


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1) INTRODUCTION

This tower is a 191.5 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC..

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	120 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
192.0	194.0	3	commscope	ATSBT-TOP-MF-4G	3	1-5/8
		3	ems wireless	RR65-18-00DP w/ Mount Pipe		
		3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	ericsson	RADIO 4415 B66A_CCIV3		
		3	ericsson	RADIO 4424 B25_TMO		
	3	rfs celwave	APX16DWV-16DWV-S-E-A20			
	192.0	3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APXVAARR24_43-U-NA20		
1		tower mounts	Platform Mount [LP 301-1]			

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)
160.0	160.0	3	commscope	Side-By-Side Mounting Kit [# BSAMNT-SBS-2-2]	13	1-5/8
		3	alcatel lucent	RRH2X60-700		
		3	alcatel lucent	RRH4X45-AWS4 B66		
		4	antel	LPA-80063/6CF w/ Mount Pipe		
		2	antel	LPA-80080/4CF w/ Mount Pipe		
		3	commscope	JAHH-65B-R3B-V3		
		3	commscope	JAHH-65B-R3B-V3 w/ Mount Pipe		
		1	crown mounts	LP 303-1		
154.0	154.0	1	rfs celwave	DB-B1-6C-8AB-0Z	-	-
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER		
		3	alcatel lucent	800MHZ 2X50W RRH		
		3	alcatel lucent	PCS 1900MHZ 4X45W-65MHZ		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		1	crown mounts	SO 102-3		
150.0	154.0	3	alcatel lucent	TD-RRH8X20-25	4	1-1/4
	152.0	3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
	150.0	1	rfs celwave	APXVTM14-C-120 w/ Mount Pipe		
		9	rfs celwave	ACU-A20-N		
		1	tower mounts	Platform Mount [LP 601-1]		
137.0	140.0	3	ericsson	RRUS-11	2 1 6	5/8 3/8 1-1/4
		3	powerwave technologies	7770.00 w/ Mount Pipe		
		3	powerwave technologies	P65-16-XLH-RR w/ Mount Pipe		
		1	raycap	DC6-48-60-18-8F		
	139.0	6	powerwave technologies	LGP21401		
	137.0	1	crown mounts	LP 303-1		
50.0	52.0	1	kathrein	OG-860/1920/GPS-A	1	1/2
	50.0	1	crown mounts	SO 701-1		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clarence Welti Associates, Inc.	1531885	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Engineered Endeavors, Inc.	1631625	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Engineered Endeavors, Inc.	1631582	CCISITES

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. Crown Castle 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	191.5 - 172.46	Pole	TP20.46x15.5x0.1875	1	-4.21	711.71	26.3	Pass
L2	172.46 - 127.753	Pole	TP31.6x19.2818x0.3125	2	-17.28	1835.55	42.0	Pass
L3	127.753 - 83.0833	Pole	TP42.49x29.8151x0.4375	3	-28.08	3458.67	40.4	Pass
L4	83.0833 - 40.4563	Pole	TP52.59x40.1114x0.5	4	-43.23	4900.09	38.8	Pass
L5	40.4563 - 0	Pole	TP62x49.7669x0.5	5	-64.34	5995.11	42.1	Pass
							Summary	
						Pole (L5)	42.1	Pass
						Rating =	42.1	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	37.6	Pass
1	Base Plate	0	49.7	Pass
1	Base Foundation (Structure)	0	50.6	Pass
1	Base Foundation (Soil Interaction)	0	43.9	Pass

Structure Rating (max from all components) =	50.6%
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Notes:

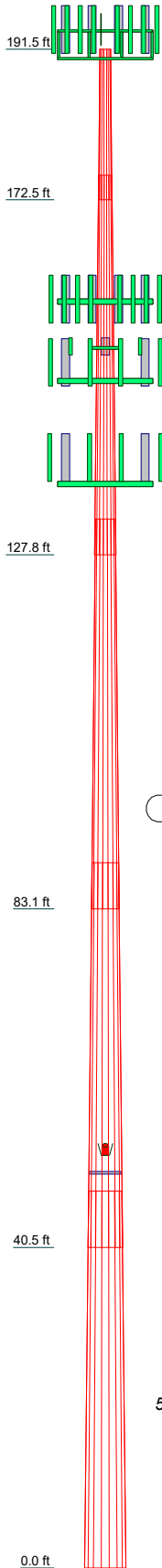
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

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	5
Length (ft)	19.04	47.79	49.17	48.46	47.54
Number of Sides	18	18	18	18	18
Thickness (in)	0.1875	0.3125	0.4375	0.5000	0.5000
Socket Length (ft)	3.08	4.50	5.83	7.08	49.7669
Top Dia (in)	15.5000	19.2818	29.8151	40.1114	62.0000
Bot Dia (in)	20.4600	31.6000	42.4900	52.5900	14.2
Grade			A572-65		
Weight (K)	0.7	4.1	8.3	12.0	39.3



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 42.1%

ALL REACTIONS
ARE FACTORED

AXIAL
99 K

SHEAR
8 K

MOMENT
1047 kip-ft

TORQUE 0 kip-ft
50 mph WIND - 1.5000 in ICE

AXIAL
64 K

SHEAR
28 K

MOMENT
3667 kip-ft

TORQUE 1 kip-ft
REACTIONS - 120 mph WIND

Tower Input Data

The tower is a monopole.
 This tower is designed using the TIA-222-H standard.
 The following design criteria apply:

- 3) Tower base elevation above sea level: 446.00 ft.
- 4) Basic wind speed of 120 mph.
- 5) Risk Category II.
- 6) Exposure Category B.
- 7) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- 8) Topographic Category: 1.
- 9) Crest Height: 0.00 ft.
- 10) Nominal ice thickness of 1.5000 in.
- 11) Ice thickness is considered to increase with height.
- 12) Ice density of 56 pcf.
- 13) A wind speed of 50 mph is used in combination with ice.
- 14) Temperature drop of 50 °F.
- 15) Deflections calculated using a wind speed of 60 mph.
- 16) A non-linear (P-delta) analysis was used.
- 17) Pressures are calculated at each section.
- 18) Stress ratio used in pole design is 1.05.
- 19) Tower analysis based on target reliabilities in accordance with Annex S.
- 20) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- 21) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification Use Code Stress Ratios Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination ✓ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
--	---	---

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	191.50-172.46	19.04	3.08	18	15.5000	20.4600	0.1875	0.7500	A572-65 (65 ksi)
L2	172.46-127.75	47.79	4.50	18	19.2818	31.6000	0.3125	1.2500	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	127.75-83.08	49.17	5.83	18	29.8151	42.4900	0.4375	1.7500	(65 ksi) A572-65
L4	83.08-40.46	48.46	7.08	18	40.1114	52.5900	0.5000	2.0000	(65 ksi) A572-65
L5	40.46-0.00	47.54		18	49.7669	62.0000	0.5000	2.0000	(65 ksi) A572-65

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	15.7102	9.1129	269.9504	5.4359	7.8740	34.2838	540.2560	4.5573	2.3980	12.789
	20.7467	12.0647	626.4228	7.1967	10.3937	60.2696	1253.6699	6.0335	3.2710	17.445
L2	20.3380	18.8152	855.3570	6.7341	9.7951	87.3246	1711.8395	9.4094	2.8436	9.1
	32.0393	31.0333	3838.0178	11.1071	16.0528	239.0871	7681.0857	15.5196	5.0116	16.037
L3	31.3854	40.7945	4448.0643	10.4290	15.1461	293.6778	8901.9815	20.4011	4.4775	10.234
	43.0780	58.3952	13046.616	14.9286	21.5849	604.4320	26110.399	29.2031	6.7082	15.333
L4	42.1782	62.8633	12461.618	14.0620	20.3766	611.5657	24939.634	31.4376	6.1796	12.359
	53.3242	82.6668	28338.538	18.4919	26.7157	1060.7440	56714.365	41.3413	8.3758	16.752
L5	52.3076	78.1865	23976.150	17.4897	25.2816	948.3647	47983.848	39.1007	7.8790	15.758
	62.8793	97.6005	46637.979	21.8325	31.4960	1480.7588	93337.325	48.8095	10.0320	20.064

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
L1 191.50- 172.46				1	1	1			
L2 172.46- 127.75				1	1	1			
L3 127.75- 83.08				1	1	1			
L4 83.08- 40.46				1	1	1			
L5 40.46-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Componen t Type	Placement ft	Total Number	Number Per Row	Start/En d Position	Width or Diamete r in	Perimete r in	Weight plf
*** Safety Line 3/8	C	No	Surface Ar (CaAa)	191.50 - 11.00	1	1	0.000 0.000	0.3750		0.22
Step Bolts	C	No	Surface Ar (CaAa)	191.50 - 11.00	1	1	-0.250 0.000	0.3750		2.00
*** LDF7-50A(1-5/8)	C	No	Surface Ar (CaAa)	191.50 - 2.00	3	3	0.000 0.100	1.9800		0.82
*** HB158-1-08U8- S8J18(1-5/8)	B	No	Surface Ar (CaAa)	160.00 - 10.00	1	1	0.450 0.460	1.9800		1.30

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

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight plf
AVA7-50(1-5/8)	B	No	No	Inside Pole	160.00 - 10.00	12	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.70 0.70 0.70 0.70
*									

HB114-1-0813U4-M5J(1-1/4)	B	No	No	Inside Pole	150.00 - 7.50	4	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.20 1.20 1.20 1.20
*									

LDF6-50A(1-1/4)	B	No	No	Inside Pole	137.00 - 10.00	6	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.60 0.60 0.60 0.60
FB-L98B-002-75000(3/8)	B	No	No	Inside Pole	137.00 - 10.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.06 0.06 0.06 0.06
WR-VG82ST-BRDA(5/8)	C	No	No	Inside Pole	137.00 - 7.50	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.31 0.31 0.31 0.31
2" Rigid Conduit	C	No	No	Inside Pole	137.00 - 7.50	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	2.80 2.80 2.80 2.80
*									

LDF4-50A(1/2)	B	No	No	Inside Pole	50.00 - 7.50	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.15 0.15 0.15 0.15
*									

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	191.50-172.46	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	12.738	0.000	0.09
L2	172.46-127.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	6.385	0.000	0.45
		C	0.000	0.000	29.909	0.000	0.24
L3	127.75-83.08	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	8.845	0.000	0.81
		C	0.000	0.000	29.884	0.000	0.36
L4	83.08-40.46	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	8.440	0.000	0.78
		C	0.000	0.000	28.517	0.000	0.35

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L5	40.46-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	6.030	0.000	0.57
		C	0.000	0.000	25.052	0.000	0.27

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	191.50-172.46	A	1.512	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	34.278	0.000	0.45
L2	172.46-127.75	A	1.482	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	16.136	0.000	0.66
		C		0.000	0.000	80.486	0.000	1.08
L3	127.75-83.08	A	1.431	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	22.086	0.000	1.09
		C		0.000	0.000	79.552	0.000	1.18
L4	83.08-40.46	A	1.357	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	20.639	0.000	1.03
		C		0.000	0.000	74.494	0.000	1.08
L5	40.46-0.00	A	1.210	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	14.295	0.000	0.74
		C		0.000	0.000	59.795	0.000	0.84

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	191.50-172.46	-0.2984	3.6966	-0.0794	3.7912
L2	172.46-127.75	0.4882	4.1821	0.7633	4.6419
L3	127.75-83.08	0.7864	4.5971	1.1667	5.4457
L4	83.08-40.46	0.8284	4.8438	1.2647	5.9497
L5	40.46-0.00	0.5538	4.6138	0.9192	5.5387

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	2	Safety Line 3/8	172.46 - 191.50	1.0000	1.0000
L1	3	Step Bolts	172.46 - 191.50	1.0000	1.0000
L1	5	LDF7-50A(1-5/8)	172.46 - 191.50	1.0000	1.0000
L2	2	Safety Line 3/8	127.75 - 172.46	1.0000	1.0000
L2	3	Step Bolts	127.75 - 172.46	1.0000	1.0000
L2	5	LDF7-50A(1-5/8)	127.75 - 172.46	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L2	7	HB158-1-08U8-S8J18(1-5/8)	127.75 - 160.00	1.0000	1.0000
L3	2	Safety Line 3/8	83.08 - 127.75	1.0000	1.0000
L3	3	Step Bolts	83.08 - 127.75	1.0000	1.0000
L3	5	LDF7-50A(1-5/8)	83.08 - 127.75	1.0000	1.0000
L3	7	HB158-1-08U8-S8J18(1-5/8)	83.08 - 127.75	1.0000	1.0000
L4	2	Safety Line 3/8	40.46 - 83.08	1.0000	1.0000
L4	3	Step Bolts	40.46 - 83.08	1.0000	1.0000
L4	5	LDF7-50A(1-5/8)	40.46 - 83.08	1.0000	1.0000
L4	7	HB158-1-08U8-S8J18(1-5/8)	40.46 - 83.08	1.0000	1.0000
L5	2	Safety Line 3/8	11.00 - 40.46	1.0000	1.0000
L5	3	Step Bolts	11.00 - 40.46	1.0000	1.0000
L5	5	LDF7-50A(1-5/8)	2.00 - 40.46	1.0000	1.0000
L5	7	HB158-1-08U8-S8J18(1-5/8)	10.00 - 40.46	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K

5' Lightning Rod	C	From Leg	0.00	0.0000	191.50	No Ice	0.31	0.31	0.01
			0.00			1/2"	0.83	0.83	0.01
			2.50			Ice	1.32	1.32	0.02
						1" Ice	1.96	1.96	0.04
									2" Ice

RR65-18-00DP w/ Mount Pipe	A	From Leg	4.00	0.0000	192.00	No Ice	4.47	2.92	0.03
			0.00			1/2"	5.08	3.50	0.07
			2.00			Ice	5.70	4.10	0.11
						1" Ice	7.01	5.35	0.22
									2" Ice
RR65-18-00DP w/ Mount Pipe	B	From Leg	4.00	0.0000	192.00	No Ice	4.47	2.92	0.03
			0.00			1/2"	5.08	3.50	0.07
			2.00			Ice	5.70	4.10	0.11
						1" Ice	7.01	5.35	0.22
									2" Ice
RR65-18-00DP w/ Mount Pipe	C	From Leg	4.00	0.0000	192.00	No Ice	4.47	2.92	0.03
			0.00			1/2"	5.08	3.50	0.07
			2.00			Ice	5.70	4.10	0.11
						1" Ice	7.01	5.35	0.22
									2" Ice
APX16DWV-16DWV-S-E-A20	A	From Leg	4.00	0.0000	192.00	No Ice	6.26	1.50	0.04
			0.00			1/2"	6.85	2.00	0.07
			2.00			Ice	7.46	2.52	0.11
						1" Ice	8.72	3.62	0.20
									2" Ice

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			ft	ft	°	ft	ft ²	ft ²	K
APX16DWV-16DWV-S-E-A20	B	From Leg	4.00	0.0000	192.00	No Ice	6.26	1.50	0.04
			0.00			1/2"	6.85	2.00	0.07
			2.00			Ice	7.46	2.52	0.11
						1" Ice	8.72	3.62	0.20
						2" Ice			
APX16DWV-16DWV-S-E-A20	C	From Leg	4.00	0.0000	192.00	No Ice	6.26	1.50	0.04
			0.00			1/2"	6.85	2.00	0.07
			2.00			Ice	7.46	2.52	0.11
						1" Ice	8.72	3.62	0.20
						2" Ice			
APXVAARR24_43-U-NA20	A	From Leg	4.00	0.0000	192.00	No Ice	14.67	5.32	0.15
			0.00			1/2"	15.43	5.99	0.27
			0.00			Ice	16.21	6.68	0.39
						1" Ice	17.81	8.08	0.66
						2" Ice			
APXVAARR24_43-U-NA20	B	From Leg	4.00	0.0000	192.00	No Ice	14.67	5.32	0.15
			0.00			1/2"	15.43	5.99	0.27
			0.00			Ice	16.21	6.68	0.39
						1" Ice	17.81	8.08	0.66
						2" Ice			
APXVAARR24_43-U-NA20	C	From Leg	4.00	0.0000	192.00	No Ice	14.67	5.32	0.15
			0.00			1/2"	15.43	5.99	0.27
			0.00			Ice	16.21	6.68	0.39
						1" Ice	17.81	8.08	0.66
						2" Ice			
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00	0.0000	192.00	No Ice	5.87	3.27	0.13
			0.00			1/2"	6.23	3.73	0.18
			2.00			Ice	6.61	4.20	0.23
						1" Ice	7.38	5.20	0.36
						2" Ice			
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00	0.0000	192.00	No Ice	5.87	3.27	0.13
			0.00			1/2"	6.23	3.73	0.18
			2.00			Ice	6.61	4.20	0.23
						1" Ice	7.38	5.20	0.36
						2" Ice			
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00	0.0000	192.00	No Ice	5.87	3.27	0.13
			0.00			1/2"	6.23	3.73	0.18
			2.00			Ice	6.61	4.20	0.23
						1" Ice	7.38	5.20	0.36
						2" Ice			
RADIO 4424 B25_TMO	A	From Leg	4.00	0.0000	192.00	No Ice	2.05	1.61	0.09
			0.00			1/2"	2.23	1.77	0.11
			2.00			Ice	2.42	1.94	0.13
						1" Ice	2.81	2.30	0.19
						2" Ice			
RADIO 4424 B25_TMO	B	From Leg	4.00	0.0000	192.00	No Ice	2.05	1.61	0.09
			0.00			1/2"	2.23	1.77	0.11
			2.00			Ice	2.42	1.94	0.13
						1" Ice	2.81	2.30	0.19
						2" Ice			
RADIO 4424 B25_TMO	C	From Leg	4.00	0.0000	192.00	No Ice	2.05	1.61	0.09
			0.00			1/2"	2.23	1.77	0.11
			2.00			Ice	2.42	1.94	0.13
						1" Ice	2.81	2.30	0.19
						2" Ice			
RADIO 4449 B12/B71	A	From Leg	4.00	0.0000	192.00	No Ice	1.65	1.16	0.07
			0.00			1/2"	1.81	1.30	0.09
			0.00			Ice	1.98	1.45	0.11
						1" Ice	2.34	1.76	0.16
						2" Ice			
RADIO 4449 B12/B71	B	From Leg	4.00	0.0000	192.00	No Ice	1.65	1.16	0.07
			0.00			1/2"	1.81	1.30	0.09
			0.00			Ice	1.98	1.45	0.11
						1" Ice	2.34	1.76	0.16
						2" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
RADIO 4449 B12/B71	C	From Leg	4.00	0.0000	192.00	No Ice	1.65	1.16	0.07
			0.00			1/2"	1.81	1.30	0.09
			0.00			Ice	1.98	1.45	0.11
						1" Ice	2.34	1.76	0.16
						2" Ice			
RADIO 4415 B66A_CCIV3	A	From Leg	4.00	0.0000	192.00	No Ice	1.64	0.68	0.05
			0.00			1/2"	1.80	0.79	0.06
			2.00			Ice	1.97	0.91	0.07
						1" Ice	2.32	1.18	0.11
						2" Ice			
RADIO 4415 B66A_CCIV3	B	From Leg	4.00	0.0000	192.00	No Ice	1.64	0.68	0.05
			0.00			1/2"	1.80	0.79	0.06
			2.00			Ice	1.97	0.91	0.07
						1" Ice	2.32	1.18	0.11
						2" Ice			
RADIO 4415 B66A_CCIV3	C	From Leg	4.00	0.0000	192.00	No Ice	1.64	0.68	0.05
			0.00			1/2"	1.80	0.79	0.06
			2.00			Ice	1.97	0.91	0.07
						1" Ice	2.32	1.18	0.11
						2" Ice			
ATSBT-TOP-MF-4G	A	From Leg	4.00	0.0000	192.00	No Ice	0.17	0.09	0.00
			0.00			1/2"	0.23	0.14	0.00
			2.00			Ice	0.29	0.19	0.01
						1" Ice	0.44	0.32	0.01
						2" Ice			
ATSBT-TOP-MF-4G	B	From Leg	4.00	0.0000	192.00	No Ice	0.17	0.09	0.00
			0.00			1/2"	0.23	0.14	0.00
			2.00			Ice	0.29	0.19	0.01
						1" Ice	0.44	0.32	0.01
						2" Ice			
ATSBT-TOP-MF-4G	C	From Leg	4.00	0.0000	192.00	No Ice	0.17	0.09	0.00
			0.00			1/2"	0.23	0.14	0.00
			2.00			Ice	0.29	0.19	0.01
						1" Ice	0.44	0.32	0.01
						2" Ice			
Platform Mount [LP 301-1]	C	None		0.0000	192.00	No Ice	23.81	23.81	1.59
						1/2"	30.24	30.24	2.10
						Ice	36.33	36.33	2.73
						1" Ice	48.05	48.05	4.34
						2" Ice			
*** (2) LPA-80063/6CF w/ Mount Pipe	A	From Leg	4.00	0.0000	160.00	No Ice	9.83	10.22	0.05
			0.00			1/2"	10.40	11.38	0.14
			0.00			Ice	10.93	12.27	0.25
						1" Ice	12.03	14.09	0.48
						2" Ice			
(2) LPA-80063/6CF w/ Mount Pipe	B	From Leg	4.00	0.0000	160.00	No Ice	9.83	10.22	0.05
			0.00			1/2"	10.40	11.38	0.14
			0.00			Ice	10.93	12.27	0.25
						1" Ice	12.03	14.09	0.48
						2" Ice			
(2) LPA-80080/4CF w/ Mount Pipe	C	From Leg	4.00	0.0000	160.00	No Ice	2.86	6.57	0.03
			0.00			1/2"	3.22	7.19	0.08
			0.00			Ice	3.59	7.84	0.13
						1" Ice	4.34	9.17	0.25
						2" Ice			
JAHH-65B-R3B-V3 w/ Mount Pipe	A	From Leg	4.00	0.0000	160.00	No Ice	5.50	4.38	0.10
			0.00			1/2"	5.97	4.84	0.17
			0.00			Ice	6.45	5.30	0.25
						1" Ice	7.44	6.26	0.46
						2" Ice			
JAHH-65B-R3B-V3 w/ Mount Pipe	B	From Leg	4.00	0.0000	160.00	No Ice	5.50	4.38	0.10
			0.00			1/2"	5.97	4.84	0.17
			0.00			Ice	6.45	5.30	0.25
						1" Ice	7.44	6.26	0.46
						2" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Lateral					
							ft ²	ft ²	K
JAHH-65B-R3B-V3 w/ Mount Pipe	C	From Leg	4.00	0.0000	160.00	2" Ice			
						No Ice	5.50	4.38	0.10
						1/2"	5.97	4.84	0.17
						Ice	6.45	5.30	0.25
JAHH-65B-R3B-V3	A	From Leg	4.00	0.0000	160.00	1" Ice	7.44	6.26	0.46
						2" Ice			
						No Ice	5.29	3.05	0.06
						1/2"	5.75	3.48	0.12
JAHH-65B-R3B-V3	B	From Leg	4.00	0.0000	160.00	Ice	6.22	3.93	0.19
						1" Ice	7.20	4.84	0.33
						2" Ice			
						No Ice	5.29	3.05	0.06
JAHH-65B-R3B-V3	C	From Leg	4.00	0.0000	160.00	1/2"	5.75	3.48	0.12
						Ice	6.22	3.93	0.19
						1" Ice	7.20	4.84	0.33
						2" Ice			
(3) RRH4X45-AWS4 B66	A	From Leg	4.00	0.0000	160.00	No Ice	5.29	3.05	0.06
						1/2"	5.75	3.48	0.12
						Ice	6.22	3.93	0.19
						1" Ice	7.20	4.84	0.33
RRH2X60-700	A	From Leg	4.00	0.0000	160.00	2" Ice			
						No Ice	2.66	1.59	0.06
						1/2"	2.88	1.77	0.08
						Ice	3.10	1.96	0.11
(2) RRH2X60-700	B	From Leg	4.00	0.0000	160.00	1" Ice	3.58	2.36	0.17
						2" Ice			
						No Ice	3.50	1.82	0.06
						1/2"	3.76	2.05	0.08
DB-B1-6C-8AB-0Z	C	From Leg	4.00	0.0000	160.00	Ice	4.03	2.29	0.11
						1" Ice	4.58	2.79	0.17
						2" Ice			
						No Ice	3.50	1.82	0.06
(2) 6' x 2" STD Pipe	A	From Leg	4.00	0.0000	160.00	1/2"	3.76	2.05	0.08
						Ice	4.03	2.29	0.11
						1" Ice	4.58	2.79	0.17
						2" Ice			
(2) 6' x 2" STD Pipe	B	From Leg	4.00	0.0000	160.00	No Ice	4.80	2.00	0.04
						1/2"	5.07	2.19	0.08
						Ice	5.35	2.39	0.12
						1" Ice	5.93	2.81	0.21
(2) 6' x 2" STD Pipe	C	From Leg	4.00	0.0000	160.00	2" Ice			
						No Ice	1.43	1.43	0.02
						1/2"	1.92	1.92	0.03
						Ice	2.29	2.29	0.05
Side-By-Side Mounting Kit [# BSAMNT-SBS-2-2]	A	From Leg	4.00	0.0000	160.00	1" Ice	3.06	3.06	0.09
						2" Ice			
						No Ice	1.43	1.43	0.02
						1/2"	1.92	1.92	0.03
Side-By-Side Mounting Kit [# BSAMNT-SBS-2-2]	B	From Leg	4.00	0.0000	160.00	Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			
						No Ice	1.43	1.43	0.02
Side-By-Side Mounting Kit [# BSAMNT-SBS-2-2]	C	From Leg	4.00	0.0000	160.00	1/2"	1.92	1.92	0.03
						Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			
Side-By-Side Mounting Kit [# BSAMNT-SBS-2-2]	A	From Leg	4.00	0.0000	160.00	No Ice	0.00	0.00	0.07
						1/2"	0.00	0.00	0.10
						Ice	0.00	0.00	0.13
						1" Ice	0.00	0.00	0.19
Side-By-Side Mounting Kit [# BSAMNT-SBS-2-2]	B	From Leg	4.00	0.0000	160.00	2" Ice			
						No Ice	0.00	0.00	0.07
						1/2"	0.00	0.00	0.10
						Ice	0.00	0.00	0.13
Side-By-Side Mounting Kit [# BSAMNT-SBS-2-2]	C	From Leg	4.00	0.0000	160.00	1" Ice	0.00	0.00	0.19
						2" Ice			

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral	Vert					
			ft	ft	ft	°	ft	ft ²	ft ²	K
Side-By-Side Mounting Kit [# BSAMNT-SBS-2-2]	C	From Leg	4.00	0.0000	160.00		2" Ice			
							No Ice	0.00	0.00	0.07
							1/2"	0.00	0.00	0.10
							Ice	0.00	0.00	0.13
							1" Ice	0.00	0.00	0.19
LP 303-1	C	None		0.0000	160.00		2" Ice			
							No Ice	14.66	14.66	1.25
							1/2"	18.87	18.87	1.48
							Ice	23.08	23.08	1.71
							1" Ice	31.50	31.50	2.18
***	A	From Leg	4.00	0.0000	154.00		2" Ice			
							No Ice	2.32	2.24	0.06
							1/2"	2.53	2.44	0.08
							Ice	2.74	2.65	0.11
							1" Ice	3.19	3.09	0.17
PCS 1900MHZ 4X45W-65MHZ	B	From Leg	4.00	0.0000	154.00		2" Ice			
							No Ice	2.32	2.24	0.06
							1/2"	2.53	2.44	0.08
							Ice	2.74	2.65	0.11
							1" Ice	3.19	3.09	0.17
PCS 1900MHZ 4X45W-65MHZ	C	From Leg	4.00	0.0000	154.00		2" Ice			
							No Ice	2.32	2.24	0.06
							1/2"	2.53	2.44	0.08
							Ice	2.74	2.65	0.11
							1" Ice	3.19	3.09	0.17
800 EXTERNAL NOTCH FILTER	A	From Leg	4.00	0.0000	154.00		2" Ice			
							No Ice	0.66	0.32	0.01
							1/2"	0.76	0.40	0.02
							Ice	0.87	0.48	0.02
							1" Ice	1.11	0.67	0.04
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00	0.0000	154.00		2" Ice			
							No Ice	0.66	0.32	0.01
							1/2"	0.76	0.40	0.02
							Ice	0.87	0.48	0.02
							1" Ice	1.11	0.67	0.04
800 EXTERNAL NOTCH FILTER	C	From Leg	4.00	0.0000	154.00		2" Ice			
							No Ice	0.66	0.32	0.01
							1/2"	0.76	0.40	0.02
							Ice	0.87	0.48	0.02
							1" Ice	1.11	0.67	0.04
800MHZ 2X50W RRH	A	From Leg	4.00	0.0000	154.00		2" Ice			
							No Ice	2.13	1.77	0.05
							1/2"	2.32	1.95	0.07
							Ice	2.51	2.13	0.10
							1" Ice	2.92	2.51	0.16
800MHZ 2X50W RRH	B	From Leg	4.00	0.0000	154.00		2" Ice			
							No Ice	2.13	1.77	0.05
							1/2"	2.32	1.95	0.07
							Ice	2.51	2.13	0.10
							1" Ice	2.92	2.51	0.16
800MHZ 2X50W RRH	C	From Leg	4.00	0.0000	154.00		2" Ice			
							No Ice	2.13	1.77	0.05
							1/2"	2.32	1.95	0.07
							Ice	2.51	2.13	0.10
							1" Ice	2.92	2.51	0.16
SO 102-3	C	None		0.0000	154.00		2" Ice			
							No Ice	3.00	3.00	0.08
							1/2"	3.48	3.48	0.11
							Ice	3.96	3.96	0.14
							1" Ice	4.92	4.92	0.20
***	A	From Leg	4.00	0.0000	150.00		2" Ice			
							No Ice	4.60	4.01	0.10
							1/2"	5.05	4.45	0.16
APXVSP18-C-A20 w/ Mount Pipe			0.00							

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			2.00			Ice 5.50	4.89	0.23
						1" Ice 6.44	5.82	0.42
						2" Ice		
APXVSP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	150.00	No Ice 4.60	4.01	0.10
						1/2" 5.05	4.45	0.16
						Ice 5.50	4.89	0.23
						1" Ice 6.44	5.82	0.42
						2" Ice		
APXVSP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	150.00	No Ice 4.60	4.01	0.10
						1/2" 5.05	4.45	0.16
						Ice 5.50	4.89	0.23
						1" Ice 6.44	5.82	0.42
						2" Ice		
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	150.00	No Ice 4.09	2.86	0.08
						1/2" 4.48	3.23	0.13
						Ice 4.88	3.61	0.19
						1" Ice 5.71	4.40	0.33
						2" Ice		
TD-RRH8X20-25	A	From Leg	4.00 0.00 4.00	0.0000	150.00	No Ice 4.05	1.53	0.07
						1/2" 4.30	1.71	0.10
						Ice 4.56	1.90	0.13
						1" Ice 5.10	2.30	0.20
						2" Ice		
TD-RRH8X20-25	B	From Leg	4.00 0.00 4.00	0.0000	150.00	No Ice 4.05	1.53	0.07
						1/2" 4.30	1.71	0.10
						Ice 4.56	1.90	0.13
						1" Ice 5.10	2.30	0.20
						2" Ice		
TD-RRH8X20-25	C	From Leg	4.00 0.00 4.00	0.0000	150.00	No Ice 4.05	1.53	0.07
						1/2" 4.30	1.71	0.10
						Ice 4.56	1.90	0.13
						1" Ice 5.10	2.30	0.20
						2" Ice		
(3) ACU-A20-N	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 0.07	0.12	0.00
						1/2" 0.10	0.16	0.00
						Ice 0.15	0.21	0.00
						1" Ice 0.26	0.34	0.01
						2" Ice		
(3) ACU-A20-N	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 0.07	0.12	0.00
						1/2" 0.10	0.16	0.00
						Ice 0.15	0.21	0.00
						1" Ice 0.26	0.34	0.01
						2" Ice		
(3) ACU-A20-N	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 0.07	0.12	0.00
						1/2" 0.10	0.16	0.00
						Ice 0.15	0.21	0.00
						1" Ice 0.26	0.34	0.01
						2" Ice		
Climbing Ladder 6'	C	From Leg	2.00 0.00 -3.00	0.0000	150.00	No Ice 6.00	6.00	0.16
						1/2" 8.00	8.00	0.24
						Ice 10.00	10.00	0.32
						1" Ice 14.00	14.00	0.48
						2" Ice		
6' x 2" STD Pipe	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1.43	1.43	0.02
						1/2" 1.92	1.92	0.03
						Ice 2.29	2.29	0.05
						1" Ice 3.06	3.06	0.09
						2" Ice		
6' x 2" STD Pipe	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1.43	1.43	0.02
						1/2" 1.92	1.92	0.03
						Ice 2.29	2.29	0.05
						1" Ice 3.06	3.06	0.09
						2" Ice		
6' x 2" STD Pipe	C	From Leg	4.00 0.00	0.0000	150.00	No Ice 1.43	1.43	0.02
						1/2" 1.92	1.92	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	CAAA Front ft ²	CAAA Side ft ²	Weight K
			0.00			Ice 2.29	2.29	0.05
						1" Ice 3.06	3.06	0.09
						2" Ice		
Platform Mount [LP 601-1]	C	None		0.0000	150.00	No Ice 28.50	28.50	1.12
						1/2" 31.69	31.69	1.68
						Ice 34.87	34.87	2.28
						1" Ice 41.23	41.23	3.65
						2" Ice		

7770.00 w/ Mount Pipe	A	From Leg	4.00	0.0000	137.00	No Ice 5.75	4.25	0.06
			0.00			1/2" 6.18	5.01	0.10
			3.00			Ice 6.61	5.71	0.16
						1" Ice 7.49	7.16	0.29
						2" Ice		
7770.00 w/ Mount Pipe	B	From Leg	4.00	0.0000	137.00	No Ice 5.75	4.25	0.06
			0.00			1/2" 6.18	5.01	0.10
			3.00			Ice 6.61	5.71	0.16
						1" Ice 7.49	7.16	0.29
						2" Ice		
7770.00 w/ Mount Pipe	C	From Leg	4.00	0.0000	137.00	No Ice 5.75	4.25	0.06
			0.00			1/2" 6.18	5.01	0.10
			3.00			Ice 6.61	5.71	0.16
						1" Ice 7.49	7.16	0.29
						2" Ice		
P65-16-XLH-RR w/ Mount Pipe	A	From Leg	4.00	0.0000	137.00	No Ice 5.66	4.01	0.08
			0.00			1/2" 6.21	4.53	0.14
			3.00			Ice 6.76	5.06	0.21
						1" Ice 7.90	6.15	0.38
						2" Ice		
P65-16-XLH-RR w/ Mount Pipe	B	From Leg	4.00	0.0000	137.00	No Ice 5.66	4.01	0.08
			0.00			1/2" 6.21	4.53	0.14
			3.00			Ice 6.76	5.06	0.21
						1" Ice 7.90	6.15	0.38
						2" Ice		
P65-16-XLH-RR w/ Mount Pipe	C	From Leg	4.00	0.0000	137.00	No Ice 5.66	4.01	0.08
			0.00			1/2" 6.21	4.53	0.14
			3.00			Ice 6.76	5.06	0.21
						1" Ice 7.90	6.15	0.38
						2" Ice		
(2) LGP21401	A	From Leg	4.00	0.0000	137.00	No Ice 1.10	0.21	0.01
			0.00			1/2" 1.24	0.27	0.02
			2.00			Ice 1.38	0.35	0.03
						1" Ice 1.69	0.52	0.05
						2" Ice		
(2) LGP21401	B	From Leg	4.00	0.0000	137.00	No Ice 1.10	0.21	0.01
			0.00			1/2" 1.24	0.27	0.02
			2.00			Ice 1.38	0.35	0.03
						1" Ice 1.69	0.52	0.05
						2" Ice		
(2) LGP21401	C	From Leg	4.00	0.0000	137.00	No Ice 1.10	0.21	0.01
			0.00			1/2" 1.24	0.27	0.02
			2.00			Ice 1.38	0.35	0.03
						1" Ice 1.69	0.52	0.05
						2" Ice		
RRUS-11	A	From Leg	4.00	0.0000	137.00	No Ice 2.78	1.19	0.05
			0.00			1/2" 2.99	1.33	0.07
			3.00			Ice 3.21	1.49	0.09
						1" Ice 3.66	1.83	0.15
						2" Ice		
RRUS-11	B	From Leg	4.00	0.0000	137.00	No Ice 2.78	1.19	0.05
			0.00			1/2" 2.99	1.33	0.07
			3.00			Ice 3.21	1.49	0.09
						1" Ice 3.66	1.83	0.15
						2" Ice		
RRUS-11	C	From Leg	4.00	0.0000	137.00	No Ice 2.78	1.19	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			0.00			1/2"	2.99	1.33	0.07
			3.00			Ice	3.21	1.49	0.09
						1" Ice	3.66	1.83	0.15
						2" Ice			
DC6-48-60-18-8F	C	From Leg	4.00	0.0000	137.00	No Ice	1.21	1.21	0.02
			0.00			1/2"	1.89	1.89	0.04
			3.00			Ice	2.11	2.11	0.07
						1" Ice	2.57	2.57	0.13
						2" Ice			
3' x 2" STD Pipe	A	From Leg	1.00	0.0000	139.00	No Ice	0.58	0.58	0.01
			0.00			1/2"	0.77	0.77	0.02
			0.00			Ice	0.97	0.97	0.02
						1" Ice	1.42	1.42	0.05
						2" Ice			
3' x 2" STD Pipe	B	From Leg	1.00	0.0000	139.00	No Ice	0.58	0.58	0.01
			0.00			1/2"	0.77	0.77	0.02
			0.00			Ice	0.97	0.97	0.02
						1" Ice	1.42	1.42	0.05
						2" Ice			
3' x 2" STD Pipe	C	From Leg	1.00	0.0000	139.00	No Ice	0.58	0.58	0.01
			0.00			1/2"	0.77	0.77	0.02
			0.00			Ice	0.97	0.97	0.02
						1" Ice	1.42	1.42	0.05
						2" Ice			
SO 102-3	A	None		0.0000	139.00	No Ice	3.00	3.00	0.08
						1/2"	3.48	3.48	0.11
						Ice	3.96	3.96	0.14
						1" Ice	4.92	4.92	0.20
						2" Ice			
LP 303-1	C	None		0.0000	137.00	No Ice	14.66	14.66	1.25
						1/2"	18.87	18.87	1.48
						Ice	23.08	23.08	1.71
						1" Ice	31.50	31.50	2.18
						2" Ice			

OG-860/1920/GPS-A	A	From Leg	3.00	0.0000	50.00	No Ice	0.31	0.37	0.00
			0.00			1/2"	0.40	0.46	0.01
			2.00			Ice	0.49	0.55	0.01
						1" Ice	0.70	0.77	0.03
						2" Ice			
SO 701-1	A	From Leg	1.50	0.0000	50.00	No Ice	0.85	1.67	0.07
			0.00			1/2"	1.14	2.34	0.08
			0.00			Ice	1.43	3.01	0.09
						1" Ice	2.01	4.35	0.12
						2" Ice			

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

Comb. No.	Description
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	191.5 - 172.46	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10.55	0.02	-0.32
			Max. Mx	20	-4.21	90.52	-0.04
			Max. My	14	-4.22	-0.02	-89.73
			Max. Vy	20	-5.74	90.52	-0.04
			Max. Vx	2	-5.63	0.03	89.58
			Max. Torque	22			0.01
L2	172.46 - 127.753	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.78	0.50	-0.32
			Max. Mx	20	-17.28	588.36	2.82
			Max. My	2	-17.29	3.04	585.12
			Max. Vy	20	-18.04	588.36	2.82
			Max. Vx	14	18.01	-2.29	-584.79
			Max. Torque	13			1.64
L3	127.753 - 83.0833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.44	0.04	-1.65

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L4	83.0833 - 40.4563	Pole	Max. Mx	20	-28.08	1442.59	6.40
			Max. My	14	-28.08	-6.27	-1438.40
			Max. Vy	20	-21.43	1442.59	6.40
			Max. Vx	14	21.40	-6.27	-1438.40
			Max. Torque	9			0.44
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.02	-0.49	-2.71
			Max. Mx	20	-43.23	2401.16	9.99
			Max. My	14	-43.23	-10.07	-2396.13
			Max. Vy	20	-24.89	2401.16	9.99
L5	40.4563 - 0	Pole	Max. Vx	14	24.84	-10.07	-2396.13
			Max. Torque	9			0.67
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-99.26	-1.04	-4.55
			Max. Mx	20	-64.34	3666.72	13.64
			Max. My	14	-64.34	-14.31	-3660.00
			Max. Vy	20	-28.29	3666.72	13.64
			Max. Vx	14	28.25	-14.31	-3660.00
			Max. Torque	9			0.67

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	33	99.26	-0.01	-7.88
	Max. H _x	20	64.36	28.27	0.08
	Max. H _z	2	64.36	0.08	28.22
	Max. M _x	2	3658.53	0.08	28.22
	Max. M _z	8	3666.58	-28.27	-0.08
	Max. Torsion	9	0.67	-28.27	-0.08
	Min. Vert	7	48.27	-24.29	14.04
	Min. H _x	8	64.36	-28.27	-0.08
	Min. H _z	14	64.36	-0.08	-28.22
	Min. M _x	14	-3660.00	-0.08	-28.22
	Min. M _z	20	-3666.72	28.27	0.08
	Min. Torsion	21	-0.66	28.27	0.08

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturing Moment, M _x kip-ft	Overturing Moment, M _z kip-ft	Torque kip-ft
Dead Only	53.63	0.00	0.00	0.60	0.04	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	64.36	-0.08	-28.22	-3658.53	14.45	-0.04
0.9 Dead+1.0 Wind 0 deg - No Ice	48.27	-0.08	-28.22	-3615.82	14.25	-0.02
1.2 Dead+1.0 Wind 30 deg - No Ice	64.36	13.97	-24.40	-3161.15	-1805.30	-0.36
0.9 Dead+1.0 Wind 30 deg - No Ice	48.27	13.97	-24.40	-3124.26	-1784.17	-0.35
1.2 Dead+1.0 Wind 60 deg - No Ice	64.36	24.29	-14.04	-1816.49	-3141.32	-0.58
0.9 Dead+1.0 Wind 60 deg - No Ice	48.27	24.29	-14.04	-1795.37	-3104.52	-0.59
1.2 Dead+1.0 Wind 90 deg - No Ice	64.36	28.27	0.08	15.12	-3666.58	-0.65
0.9 Dead+1.0 Wind 90 deg - No Ice	48.27	28.27	0.08	14.76	-3623.59	-0.67

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 120 deg - No Ice	64.36	24.37	14.18	1842.85	-3155.65	-0.54
0.9 Dead+1.0 Wind 120 deg - No Ice	48.27	24.37	14.18	1821.05	-3118.68	-0.57
1.2 Dead+1.0 Wind 150 deg - No Ice	64.36	14.12	24.48	3176.96	-1830.18	-0.28
0.9 Dead+1.0 Wind 150 deg - No Ice	48.27	14.12	24.48	3139.51	-1808.73	-0.31
1.2 Dead+1.0 Wind 180 deg - No Ice	64.36	0.08	28.22	3660.00	-14.31	0.05
0.9 Dead+1.0 Wind 180 deg - No Ice	48.27	0.08	28.22	3616.92	-14.15	0.03
1.2 Dead+1.0 Wind 210 deg - No Ice	64.36	-13.97	24.40	3162.63	1805.43	0.37
0.9 Dead+1.0 Wind 210 deg - No Ice	48.27	-13.97	24.40	3125.36	1784.26	0.36
1.2 Dead+1.0 Wind 240 deg - No Ice	64.36	-24.29	14.04	1817.97	3141.45	0.58
0.9 Dead+1.0 Wind 240 deg - No Ice	48.27	-24.29	14.04	1796.47	3104.61	0.59
1.2 Dead+1.0 Wind 270 deg - No Ice	64.36	-28.27	-0.08	-13.64	3666.72	0.64
0.9 Dead+1.0 Wind 270 deg - No Ice	48.27	-28.27	-0.08	-13.65	3623.68	0.66
1.2 Dead+1.0 Wind 300 deg - No Ice	64.36	-24.37	-14.18	-1841.37	3155.79	0.53
0.9 Dead+1.0 Wind 300 deg - No Ice	48.27	-24.37	-14.18	-1819.94	3118.77	0.56
1.2 Dead+1.0 Wind 330 deg - No Ice	64.36	-14.12	-24.48	-3175.49	1830.32	0.28
0.9 Dead+1.0 Wind 330 deg - No Ice	48.27	-14.12	-24.48	-3138.41	1808.83	0.31
1.2 Dead+1.0 Ice+1.0 Temp	99.26	0.00	0.00	4.55	-1.04	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	99.26	-0.01	-7.88	-1035.86	1.06	-0.16
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	99.26	3.92	-6.82	-895.34	-517.74	-0.18
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	99.26	6.81	-3.93	-513.60	-898.11	-0.15
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	99.26	7.87	0.01	7.08	-1038.12	-0.08
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	99.26	6.82	3.95	527.19	-900.26	0.01
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	99.26	3.94	6.83	907.35	-521.48	0.10
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	99.26	0.01	7.88	1045.71	-3.25	0.16
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	99.26	-3.92	6.82	905.20	515.55	0.18
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	99.26	-6.81	3.93	523.45	895.92	0.15
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	99.26	-7.87	-0.01	2.77	1035.93	0.08
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	99.26	-6.82	-3.95	-517.33	898.07	-0.01
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	99.26	-3.94	-6.83	-897.50	519.28	-0.10
Dead+Wind 0 deg - Service	53.63	-0.02	-6.64	-855.02	3.41	-0.01
Dead+Wind 30 deg - Service	53.63	3.29	-5.74	-738.71	-422.08	-0.08
Dead+Wind 60 deg - Service	53.63	5.72	-3.30	-424.30	-734.47	-0.14
Dead+Wind 90 deg - Service	53.63	6.66	0.02	3.97	-857.31	-0.16
Dead+Wind 120 deg - Service	53.63	5.74	3.34	431.34	-737.83	-0.13
Dead+Wind 150 deg - Service	53.63	3.33	5.76	743.29	-427.91	-0.07
Dead+Wind 180 deg - Service	53.63	0.02	6.64	856.24	-3.31	0.01
Dead+Wind 210 deg - Service	53.63	-3.29	5.74	739.93	422.19	0.08

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 240 deg - Service	53.63	-5.72	3.30	425.51	734.57	0.14
Dead+Wind 270 deg - Service	53.63	-6.66	-0.02	-2.75	857.41	0.16
Dead+Wind 300 deg - Service	53.63	-5.74	-3.34	-430.12	737.93	0.13
Dead+Wind 330 deg - Service	53.63	-3.33	-5.76	-742.07	428.01	0.07

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-53.63	0.00	0.00	53.63	0.00	0.000%
2	-0.08	-64.36	-28.22	0.08	64.36	28.22	0.000%
3	-0.08	-48.27	-28.22	0.08	48.27	28.22	0.000%
4	13.97	-64.36	-24.40	-13.97	64.36	24.40	0.000%
5	13.97	-48.27	-24.40	-13.97	48.27	24.40	0.000%
6	24.29	-64.36	-14.04	-24.29	64.36	14.04	0.000%
7	24.29	-48.27	-14.04	-24.29	48.27	14.04	0.000%
8	28.27	-64.36	0.08	-28.27	64.36	-0.08	0.000%
9	28.27	-48.27	0.08	-28.27	48.27	-0.08	0.000%
10	24.37	-64.36	14.18	-24.37	64.36	-14.18	0.000%
11	24.37	-48.27	14.18	-24.37	48.27	-14.18	0.000%
12	14.12	-64.36	24.48	-14.12	64.36	-24.48	0.000%
13	14.12	-48.27	24.48	-14.12	48.27	-24.48	0.000%
14	0.08	-64.36	28.22	-0.08	64.36	-28.22	0.000%
15	0.08	-48.27	28.22	-0.08	48.27	-28.22	0.000%
16	-13.97	-64.36	24.40	13.97	64.36	-24.40	0.000%
17	-13.97	-48.27	24.40	13.97	48.27	-24.40	0.000%
18	-24.29	-64.36	14.04	24.29	64.36	-14.04	0.000%
19	-24.29	-48.27	14.04	24.29	48.27	-14.04	0.000%
20	-28.27	-64.36	-0.08	28.27	64.36	0.08	0.000%
21	-28.27	-48.27	-0.08	28.27	48.27	0.08	0.000%
22	-24.37	-64.36	-14.18	24.37	64.36	14.18	0.000%
23	-24.37	-48.27	-14.18	24.37	48.27	14.18	0.000%
24	-14.12	-64.36	-24.48	14.12	64.36	24.48	0.000%
25	-14.12	-48.27	-24.48	14.12	48.27	24.48	0.000%
26	0.00	-99.26	0.00	0.00	99.26	0.00	0.000%
27	-0.01	-99.26	-7.88	0.01	99.26	7.88	0.000%
28	3.92	-99.26	-6.82	-3.92	99.26	6.82	0.000%
29	6.81	-99.26	-3.93	-6.81	99.26	3.93	0.000%
30	7.87	-99.26	0.01	-7.87	99.26	-0.01	0.000%
31	6.82	-99.26	3.95	-6.82	99.26	-3.95	0.000%
32	3.94	-99.26	6.83	-3.94	99.26	-6.83	0.000%
33	0.01	-99.26	7.88	-0.01	99.26	-7.88	0.000%
34	-3.92	-99.26	6.82	3.92	99.26	-6.82	0.000%
35	-6.81	-99.26	3.93	6.81	99.26	-3.93	0.000%
36	-7.87	-99.26	-0.01	7.87	99.26	0.01	0.000%
37	-6.82	-99.26	-3.95	6.82	99.26	3.95	0.000%
38	-3.94	-99.26	-6.83	3.94	99.26	6.83	0.000%
39	-0.02	-53.63	-6.64	0.02	53.63	6.64	0.000%
40	3.29	-53.63	-5.74	-3.29	53.63	5.74	0.000%
41	5.72	-53.63	-3.30	-5.72	53.63	3.30	0.000%
42	6.66	-53.63	0.02	-6.66	53.63	-0.02	0.000%
43	5.74	-53.63	3.34	-5.74	53.63	-3.34	0.000%
44	3.33	-53.63	5.76	-3.33	53.63	-5.76	0.000%
45	0.02	-53.63	6.64	-0.02	53.63	-6.64	0.000%
46	-3.29	-53.63	5.74	3.29	53.63	-5.74	0.000%
47	-5.72	-53.63	3.30	5.72	53.63	-3.30	0.000%
48	-6.66	-53.63	-0.02	6.66	53.63	0.02	0.000%
49	-5.74	-53.63	-3.34	5.74	53.63	3.34	0.000%
50	-3.33	-53.63	-5.76	3.33	53.63	5.76	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	4	0.00000001	0.00051353
3	Yes	4	0.00000001	0.00019854
4	Yes	5	0.00000001	0.00099753
5	Yes	5	0.00000001	0.00047070
6	Yes	6	0.00000001	0.00005724
7	Yes	5	0.00000001	0.00047541
8	Yes	4	0.00000001	0.00053409
9	Yes	4	0.00000001	0.00022994
10	Yes	6	0.00000001	0.00005718
11	Yes	5	0.00000001	0.00047398
12	Yes	6	0.00000001	0.00005852
13	Yes	5	0.00000001	0.00048582
14	Yes	4	0.00000001	0.00058579
15	Yes	4	0.00000001	0.00028125
16	Yes	6	0.00000001	0.00005709
17	Yes	5	0.00000001	0.00047365
18	Yes	5	0.00000001	0.00099107
19	Yes	5	0.00000001	0.00046744
20	Yes	4	0.00000001	0.00073839
21	Yes	4	0.00000001	0.00041685
22	Yes	6	0.00000001	0.00005859
23	Yes	5	0.00000001	0.00048653
24	Yes	6	0.00000001	0.00005746
25	Yes	5	0.00000001	0.00047623
26	Yes	4	0.00000001	0.00000001
27	Yes	5	0.00000001	0.00044744
28	Yes	5	0.00000001	0.00054205
29	Yes	5	0.00000001	0.00054269
30	Yes	5	0.00000001	0.00044750
31	Yes	5	0.00000001	0.00054949
32	Yes	5	0.00000001	0.00055006
33	Yes	5	0.00000001	0.00045084
34	Yes	5	0.00000001	0.00054695
35	Yes	5	0.00000001	0.00054455
36	Yes	5	0.00000001	0.00044690
37	Yes	5	0.00000001	0.00054453
38	Yes	5	0.00000001	0.00054568
39	Yes	4	0.00000001	0.00004306
40	Yes	4	0.00000001	0.00025581
41	Yes	4	0.00000001	0.00026407
42	Yes	4	0.00000001	0.00004658
43	Yes	4	0.00000001	0.00025426
44	Yes	4	0.00000001	0.00027227
45	Yes	4	0.00000001	0.00004383
46	Yes	4	0.00000001	0.00026019
47	Yes	4	0.00000001	0.00025098
48	Yes	4	0.00000001	0.00004874
49	Yes	4	0.00000001	0.00027449
50	Yes	4	0.00000001	0.00025745

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	191.5 - 172.46	25.629	48	1.3900	0.0013
L2	175.543 - 127.753	21.139	48	1.2736	0.0014
L3	132.253 -	11.172	48	0.8837	0.0004

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L4	83.0833 88.9163 - 40.4563	4.740	48	0.5231	0.0002
L5	47.5363 - 0	1.324	44	0.2567	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
192.00	RR65-18-00DP w/ Mount Pipe	48	25.629	1.3900	0.0013	20544
191.50	5' Lightning Rod	48	25.629	1.3900	0.0013	20544
160.00	(2) LPA-80063/6CF w/ Mount Pipe	48	17.145	1.1419	0.0011	6271
154.00	PCS 1900MHZ 4X45W-65MHZ	48	15.726	1.0871	0.0009	6209
150.00	APXVSPP18-C-A20 w/ Mount Pipe	48	14.819	1.0499	0.0008	6169
139.00	3' x 2" STD Pipe	48	12.485	0.9465	0.0005	6051
137.00	7770.00 w/ Mount Pipe	48	12.086	0.9278	0.0005	6030
50.00	OG-860/1920/GPS-A	44	1.456	0.2710	0.0001	7989

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	191.5 - 172.46	109.718	20	5.9580	0.0060
L2	175.543 - 127.753	90.501	20	5.4596	0.0059
L3	132.253 - 83.0833	47.834	20	3.7861	0.0015
L4	88.9163 - 40.4563	20.293	20	2.2407	0.0006
L5	47.5363 - 0	5.664	20	1.0989	0.0003

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
192.00	RR65-18-00DP w/ Mount Pipe	20	109.718	5.9580	0.0060	4893
191.50	5' Lightning Rod	20	109.718	5.9580	0.0060	4893
160.00	(2) LPA-80063/6CF w/ Mount Pipe	20	73.406	4.8945	0.0046	1484
154.00	PCS 1900MHZ 4X45W-65MHZ	20	67.332	4.6593	0.0038	1467
150.00	APXVSPP18-C-A20 w/ Mount Pipe	20	63.448	4.4994	0.0033	1456
139.00	3' x 2" STD Pipe	20	53.456	4.0556	0.0021	1425
137.00	7770.00 w/ Mount Pipe	20	51.748	3.9752	0.0020	1419
50.00	OG-860/1920/GPS-A	20	6.229	1.1600	0.0003	1867

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	191.5 - 172.46 (1)	TP20.46x15.5x0.1875	19.04	0.00	0.0	11.586 7	-4.21	677.82	0.006
L2	172.46 - 127.753 (2)	TP31.6x19.2818x0.3125	47.79	0.00	0.0	29.882 8	-17.28	1748.14	0.010
L3	127.753 - 83.0833 (3)	TP42.49x29.8151x0.4375	49.17	0.00	0.0	56.307 2	-28.08	3293.97	0.009
L4	83.0833 - 40.4563 (4)	TP52.59x40.1114x0.5	48.46	0.00	0.0	79.773 5	-43.23	4666.75	0.009
L5	40.4563 - 0 (5)	TP62x49.7669x0.5	47.54	0.00	0.0	97.600 5	-64.34	5709.63	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	191.5 - 172.46 (1)	TP20.46x15.5x0.1875	90.52	336.46	0.269	0.00	336.46	0.000
L2	172.46 - 127.753 (2)	TP31.6x19.2818x0.3125	588.37	1367.38	0.430	0.00	1367.38	0.000
L3	127.753 - 83.0833 (3)	TP42.49x29.8151x0.4375	1442.61	3478.03	0.415	0.00	3478.03	0.000
L4	83.0833 - 40.4563 (4)	TP52.59x40.1114x0.5	2401.18	6029.67	0.398	0.00	6029.67	0.000
L5	40.4563 - 0 (5)	TP62x49.7669x0.5	3666.74	8525.50	0.430	0.00	8525.50	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	191.5 - 172.46 (1)	TP20.46x15.5x0.1875	5.74	203.35	0.028	0.01	346.71	0.000
L2	172.46 - 127.753 (2)	TP31.6x19.2818x0.3125	18.04	524.44	0.034	0.41	1383.70	0.000
L3	127.753 - 83.0833 (3)	TP42.49x29.8151x0.4375	21.43	988.19	0.022	0.41	3509.13	0.000
L4	83.0833 - 40.4563 (4)	TP52.59x40.1114x0.5	24.89	1400.03	0.018	0.64	6163.08	0.000
L5	40.4563 - 0 (5)	TP62x49.7669x0.5	28.29	1712.89	0.017	0.64	9225.42	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	191.5 - 172.46 (1)	0.006	0.269	0.000	0.028	0.000	0.276	1.050	4.8.2
L2	172.46 -	0.010	0.430	0.000	0.034	0.000	0.441	1.050	4.8.2

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u	M_{ux}	M_{uy}	V_u	T_u			
		ϕP_n	ϕM_{nx}	ϕM_{ny}	ϕV_n	ϕT_n			
L3	127.753 (2) 127.753 - 83.0833 (3)	0.009	0.415	0.000	0.022	0.000	0.424	1.050	4.8.2
L4	83.0833 - 40.4563 (4)	0.009	0.398	0.000	0.018	0.000	0.408	1.050	4.8.2
L5	40.4563 - 0 (5)	0.011	0.430	0.000	0.017	0.000	0.442	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	191.5 - 172.46	Pole	TP20.46x15.5x0.1875	1	-4.21	711.71	26.3	Pass	
L2	172.46 - 127.753	Pole	TP31.6x19.2818x0.3125	2	-17.28	1835.55	42.0	Pass	
L3	127.753 - 83.0833	Pole	TP42.49x29.8151x0.4375	3	-28.08	3458.67	40.4	Pass	
L4	83.0833 - 40.4563	Pole	TP52.59x40.1114x0.5	4	-43.23	4900.09	38.8	Pass	
L5	40.4563 - 0	Pole	TP62x49.7669x0.5	5	-64.34	5995.11	42.1	Pass	
							Summary		
							Pole (L5)	42.1	Pass
							RATING =	42.1	Pass

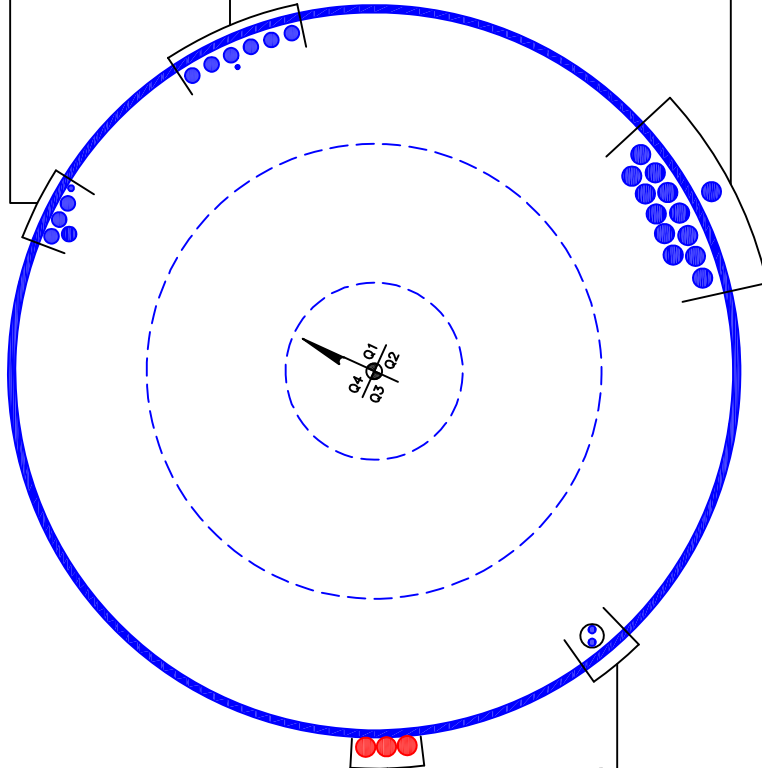
APPENDIX B
BASE LEVEL DRAWING



(OTHER CONSIDERED EQUIPMENT)
(4) 1-1/4" TO 150 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 50 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO 137 FT LEVEL
(6) 1-1/4" TO 137 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(13) 1-5/8" TO 160 FT LEVEL



(PROPOSED EQUIPMENT CONFIGURATION)
(3) 1-5/8" TO 192 FT LEVEL

(OTHER CONSIDERED EQUIPMENT-IN CONDUIT)
(2) 5/8" TO 137 FT LEVEL

APPENDIX C
ADDITIONAL CALCULATIONS

Monopole Base Plate Connection

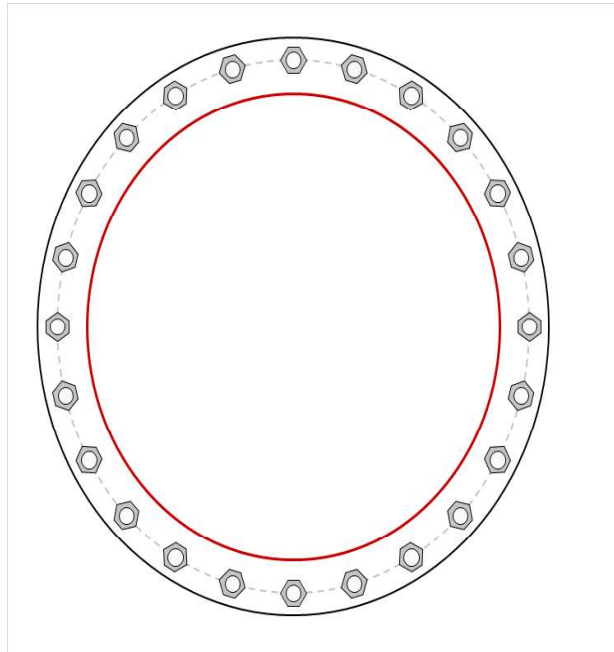


Site Info	
BU #	876355
Site Name	Upper stepway - TLC
Order #	529718 rev 0

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

Applied Loads	
Moment (kip-ft)	3666.74
Axial Force (kips)	64.34
Shear Force (kips)	28.29

*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results
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Anchor Rod Data
(24) 2-1/4" ϕ bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 71" BC
Base Plate Data
77" OD x 2.25" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)
Stiffener Data
N/A
Pole Data
62" x 0.5" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Anchor Rod Summary	<i>(units of kips, kip-in)</i>	
Pu_c = 105.93	$\phi Pn_c = 268.39$	Stress Rating
Vu = 1.18	$\phi Vn = 120.77$	37.6%
Mu = n/a	$\phi Mn = n/a$	Pass
Base Plate Summary		
Max Stress (ksi):	28.19	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	49.7%	Pass

Pier and Pad Foundation



BU # : 876355
Site Name: Upper Stepway - T
App. Number: 529718 rev 0

TIA-222 Revision: H
Tower Type: Monopole

Top & Bot. Pad Rein. Different?:
Block Foundation?:

Superstructure Analysis Reactions		
Compression, P_{comp} :	64	kips
Base Shear, V_{u_comp} :	28	kips
Moment, M_u :	3667	ft-kips
Tower Height, H :	191.5	ft
BP Dist. Above Fdn, bp_{dist} :	4.25	in

Foundation Analysis Checks				
	Capacity	Demand	Rating*	Check
<i>Lateral (Sliding) (kips)</i>	363.56	28.00	7.3%	Pass
<i>Bearing Pressure (ksf)</i>	18.00	2.11	11.1%	Pass
<i>Overturning (kip*ft)</i>	8766.18	3844.92	43.9%	Pass
<i>Pier Flexure (Comp.) (kip*ft)</i>	7065.36	3751.00	50.6%	Pass
<i>Pier Compression (kip)</i>	35802.00	94.38	0.3%	Pass
<i>Pad Flexure (kip*ft)</i>	5636.96	1384.30	23.4%	Pass
<i>Pad Shear - 1-way (kips)</i>	1075.81	180.38	16.0%	Pass
<i>Pad Shear - 2-way (Comp) (ksi)</i>	0.190	0.034	17.0%	Pass
<i>Flexural 2-way (Comp) (kip*ft)</i>	4646.67	2250.60	46.1%	Pass

Pier Properties		
Pier Shape:	Square	
Pier Diameter, dpier :	7.5	ft
Ext. Above Grade, E :	1	ft
Pier Rebar Size, Sc :	8	
Pier Rebar Quantity, mc :	51	
Pier Tie/Spiral Size, St :	4	
Pier Tie/Spiral Quantity, mt :	4	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier} :	3	in

*Rating per TIA-222-H Section 15.5

Soil Rating*:	43.9%
Structural Rating*:	50.6%

Pad Properties		
Depth, D :	5	ft
Pad Width, W :	30	ft
Pad Thickness, T :	3	ft
Pad Rebar Size (Top), Sp_{top} :	8	
Pad Top Rebar Quantity (Top), mp_{top} :	26	
Pad Rebar Size (Bottom), Sp :	8	
Pad Rebar Quantity (Bottom), mp :	52	
Pad Clear Cover, cc_{pad} :	3	in

Material Properties		
Rebar Grade, Fy :	60	ksi
Concrete Compressive Strength, F'c :	4	ksi
Dry Concrete Density, δc :	150	pcf

Soil Properties		
Total Soil Unit Weight, γ :	110	pcf
Ultimate Gross Bearing, Qult :	24.000	ksf
Cohesion, Cu :		ksf
Friction Angle, φ :	30	degrees
SPT Blow Count, N_{blows} :		
Base Friction, μ :	0.7	
Neglected Depth, N :	3.50	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, gw :	N/A	ft

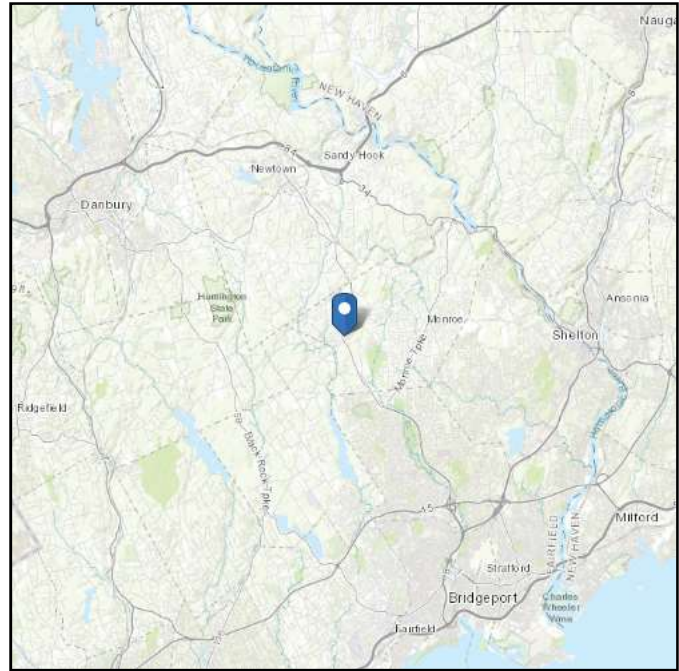
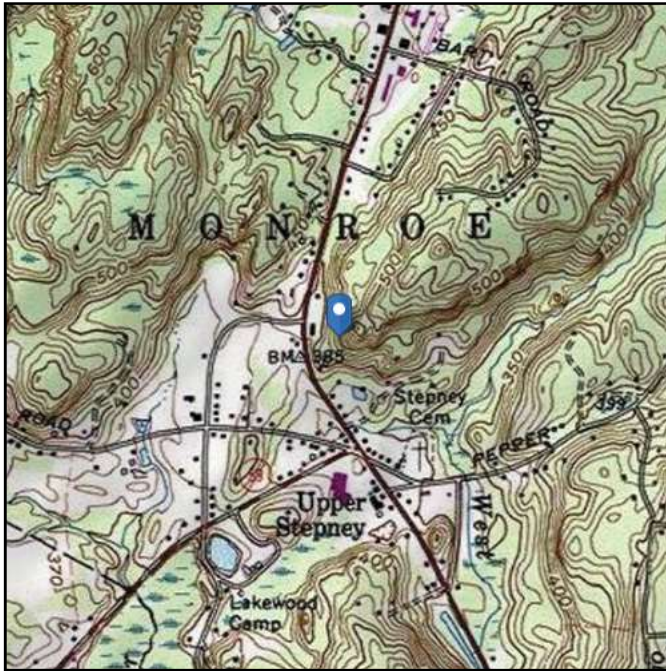
<--Toggle between Gross and Net

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 445.89 ft (NAVD 88)
Latitude: 41.325553
Longitude: -73.265847



Wind

Results:

Wind Speed:	120 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	91 Vmph
100-year MRI	98 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Thu Oct 08 2020

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

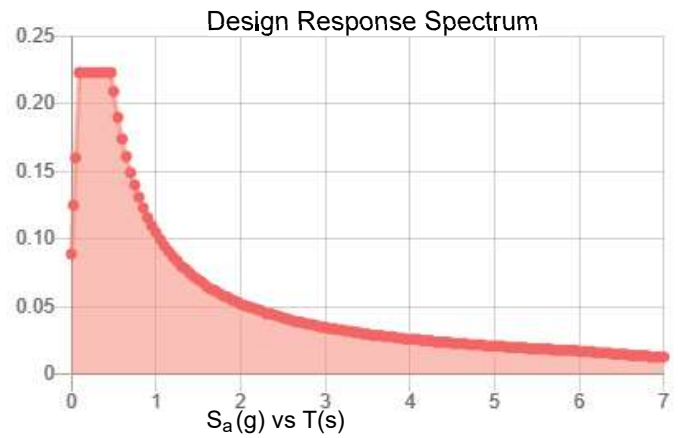
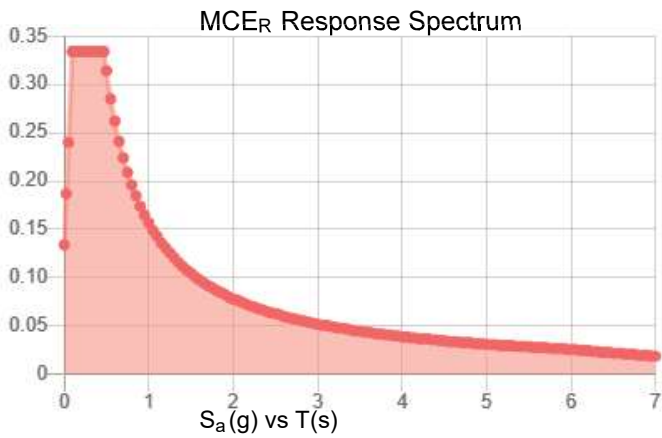
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Site Soil Class: D - Stiff Soil

Results:

S_s :	0.209	S_{DS} :	0.223
S_1 :	0.065	S_{D1} :	0.105
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.113
S_{MS} :	0.334	PGA _M :	0.178
S_{M1} :	0.157	F _{PGA} :	1.574
		I_e :	1

Seismic Design Category B



Data Accessed:

Thu Oct 08 2020

Date Source:

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

Ice

Results:

Ice Thickness: 0.75 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

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

Date Accessed: Thu Oct 08 2020

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

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

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

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

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

Exhibit E

Mount Analysis

Date: **October 7, 2020**

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
Infinigy Engineering, PLLC
1033 Watervliet Shaker Road
Albany, NY 12205
518-690-0790
structural@infinigy.com

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

Subject: **Mount Analysis Report**

Carrier Designation: **T-Mobile Anchor**
Carrier Site Number: CT11264C
Carrier Site Name: Monroe / Rt 59 / Rt 25

Crown Castle Designation: **Crown Castle BU Number:** 876355
Crown Castle Site Name: UPPER STEPNEY - TLC
Crown Castle JDE Job Number: 620162
Crown Castle Order Number: 529718 Rev. 0

Engineering Firm Designation: **Infinigy Engineering, PLLC Report Designation:** 1039-Z0001-B

Site Data: **474-480 Main Street, Monroe, Fairfield County, CT, 06468**
Latitude 41°19'31.99", Longitude -73°15'57.05"

Structure Information: **Tower Height & Type:** **191.5 ft Monopole**
Mount Elevation: **192.0 ft**
Mount Type: **12.5 ft Platform**

Dear Darcy Tarr,

Infinigy Engineering, PLLC is pleased to submit this "**Mount Analysis 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 stress level. Based on our analysis we have determined the mount stress level to be:

Platform

Sufficient

This analysis has been performed in accordance with the 2018 Connecticut State Building Code and Appendix N based upon an ultimate 3-second gust wind speed of 120 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Jacques S. Grimaldi, M.S., P.E.

Respectfully Submitted by:
John S. Stevens, P.E.
518-690-0790
structural@infinigy.com
CT PE License No. PEN.0024705



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Additional Calculations

1) INTRODUCTION

This is an existing 3 sector 12.5 ft Platform, mapped by Pier Structural Engineering Corp.

2) ANALYSIS CRITERIA

Building Code: 2015 IBC / 2018 Connecticut State Building Code and Appendix N
TIA-222 Revision: TIA-222-H
Risk Category: II
Ultimate Wind Speed: 120 mph
Exposure Category: B
Topographic Factor at Base: 1.0
Topographic Factor at Mount: 1.0
Ice Thickness: 1.5 in
Wind Speed with Ice: 50 mph
Seismic S_s: 0.205
Seismic S₁: 0.065
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)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
192.0	194.0	3	EMS Wireless	RR65-18-00DP	12.5 ft Platform
		3	Ericsson	AIR6449 B41 T-MOBILE	
		3	RFS/Celwave	APX16DWV-16DWV-S-E-A20	
		3	Commscope	ATSBT-TOP-MF-4G	
		3	Ericsson	RADIO 4415 B66A_CCIV3	
		3	Ericsson	RADIO 4424 B25 TMO	
	192.0	3	RFS/Celwave	APXVAARR24_43-U-NA20	
		3	Ericsson	RADIO 4449 B12/B71	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	529718 Rev. 0	CCI Sites
Loading Document	T-Mobile	RFDS Version: 5	TSA
Mount Mapping Documents	Pier Structural Engineering Corp.	8347820	CCI Sites

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.

Infinigy Mount Analysis Tool V2.1.4, a tool internally developed by Infinigy, 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 B).

3.2) Assumptions

- 1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
- 2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
- 3) 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.
- 4) 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.
- 5) Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
- 6) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

This analysis may be affected if any assumptions are not valid or have been made in error. Infinigy Engineering, PLLC 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, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1	Mount Pipe(s)	MP6	192.0	50.3	Pass
	Handrail(s)	M48		26.2	Pass
	Frame Rail(s)	M9		20.9	Pass
	Standoff(s)	M6		45.7	Pass
	Mount Connection(s)	-		31.5	Pass

Structure Rating (max from all components) =	50.3%
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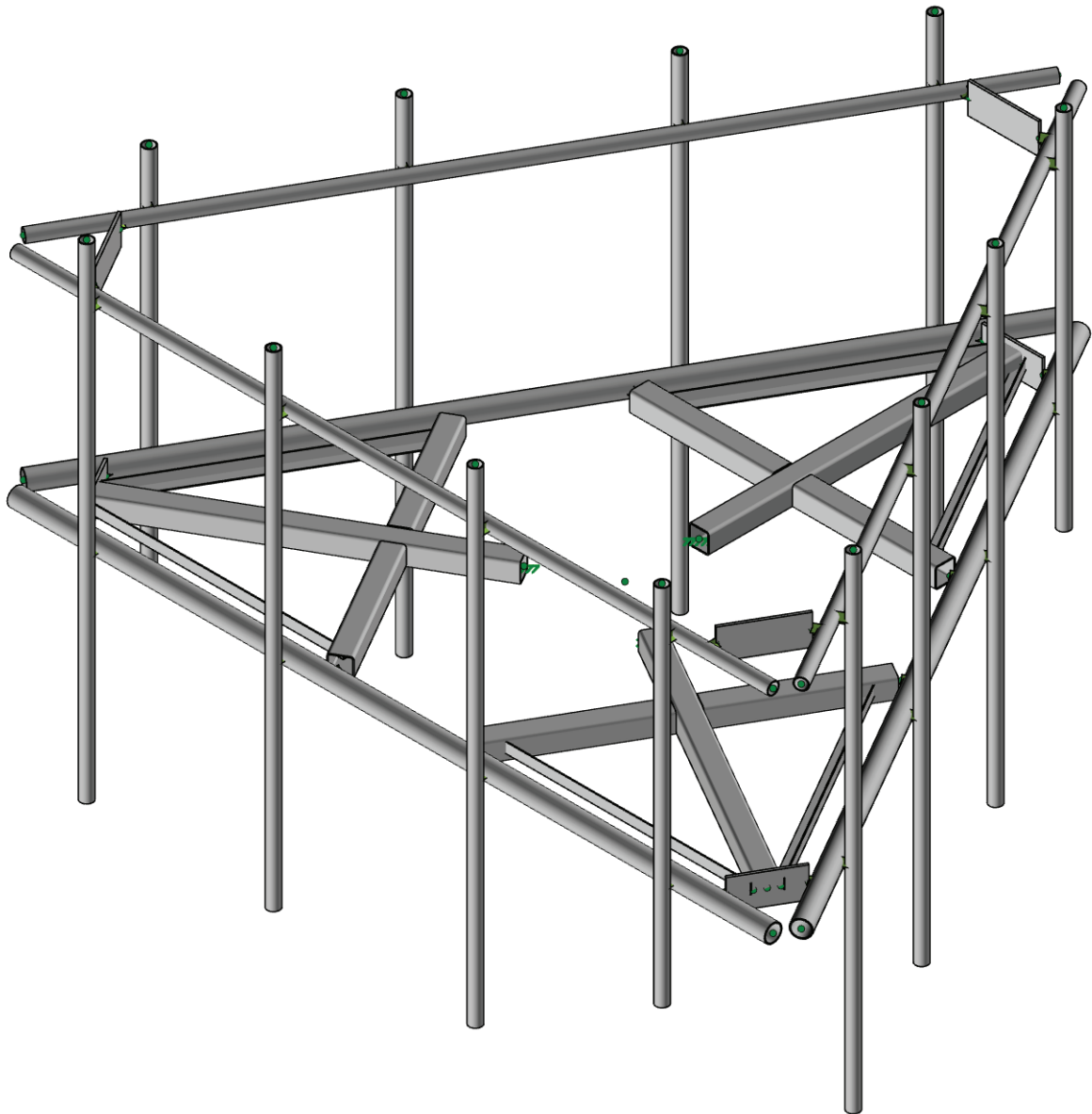
Notes:

- 1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.

4.1) Recommendations

The mount has sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

APPENDIX A
WIRE FRAME AND RENDERED MODELS



Infinigy Engineering, PLLC

876355

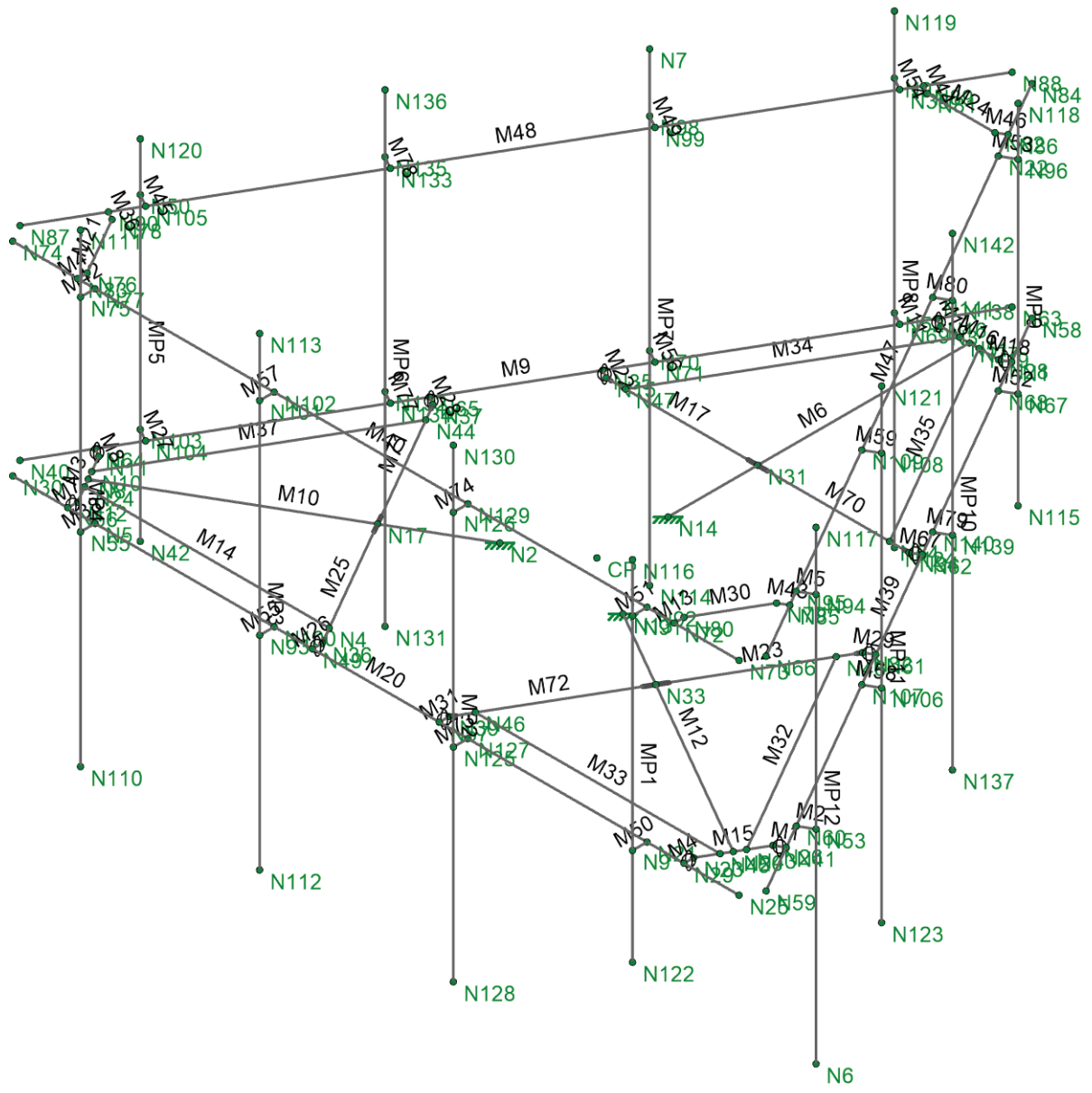
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Oct 07, 2020

1039-Z0001-B

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Infinigy Engineering, PLLC
 JG
 1039-Z0001-B

876355

Wireframe
 Oct 07, 2020
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APPENDIX B
SOFTWARE INPUT CALCULATIONS

Program Inputs

PROJECT INFORMATION		
Client:	Crown Castle	
Carrier:	T-Mobile	
Engineer:	Jacques Grimaldi	

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	B	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil	
Ground Elevation:	445.89	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Platform	
Num Sectors:	3	
Centerline AGL:	192.0	ft
Tower Height AGL:	191.5	ft

TOPOGRAPHIC DATA		
Topo Feature:	N/A	
Slope Distance:	N/A	ft
Crest Distance:	N/A	ft
Crest Height:	N/A	ft

FACTORS		
Directionality Fact. (K_d):	0.95	
Ground Ele. Factor (K_e):	0.98	*Rev H Only
Rooftop Speed-Up (K_s):	1.00	*Rev H Only
Topographic Factor (K_{zt}):	1.00	
Gust Effect Factor (G_h):	1.0	

CODE STANDARDS		
Building Code:	2015 IBC	
TIA Standard:	TIA-222-H	
ASCE Standard:	ASCE 7-10	

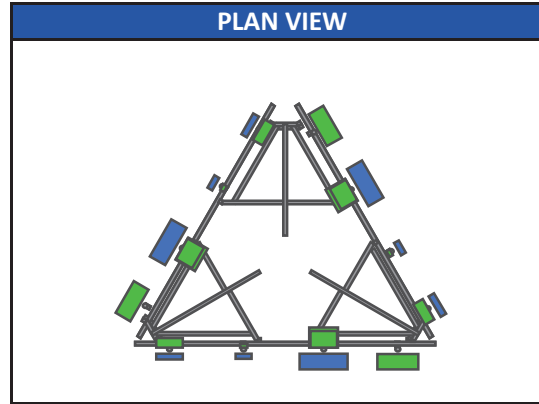
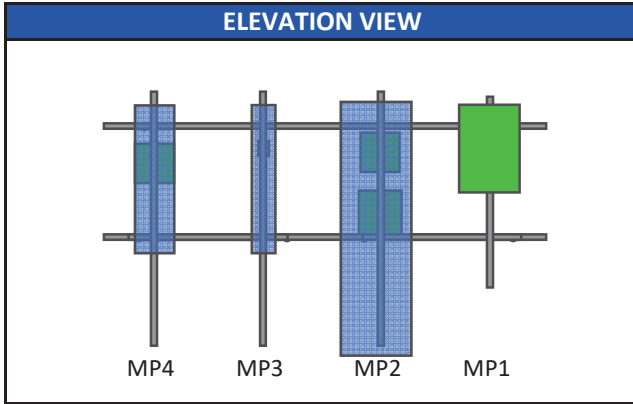
WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	120	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	1.5	in
Flat Pressure:	82.06	psf
Round Pressure:	49.24	psf
Ice Wind Pressure:	8.55	psf

SEISMIC DATA		
Short-Period Accel. (S_s):	0.205	g
1-Second Accel. (S_1):	0.065	g
Short-Period Design (S_{DS}):	0.22	
1-Second Design (S_{D1}):	0.10	
Short-Period Coeff. (F_a):	1.60	
1-Second Coeff. (F_v):	2.40	
Amplification Factor (a_p):	1.00	
Response Mod. (R_p):	2.50	
Overstrength (Ω_o):	1.00	



Infinigy Load Calculator V2.1.4

Program Inputs



Infinigy Load Calculator V2.1.4

APPURTENANCE INFORMATION												
Appurtenance Name	Elevation	Qty.	K _a	q _z (psf)	EPA _N (ft ²)	EPA _T (ft ²)	Wind F _z (lbs)	Wind F _x (lbs)	Weight (lbs)	Seismic F (lbs)	Member (α sector)	
EMS WIRELESS RR65-18-00DP	194.0	3	0.90	41.15	4.47	2.92	165.68	108.23	13.50	1.48	MP3	
ERICSSON AIR6449 B41_T-MOBILE	194.0	3	0.90	41.15	5.66	2.48	209.60	91.72	114.63	12.53	MP1	
RFS/CELWAVE APX16DWV-16DWV-S-E-A20	194.0	3	0.90	41.15	6.29	2.76	232.97	102.22	40.70	4.45	MP4	
RFS/CELWAVE APXVAARR24_43-U-NA20	192.0	3	0.90	41.03	14.69	6.87	542.61	253.83	128.00	13.99	MP2	
COMMSCOPE ATSBT-TOP-MF-4G	194.0	3	0.90	41.15	0.17	0.09	6.43	3.52	1.80	0.20	MP3	
ERICSSON RADIO 4415 B66A_CCIV3	194.0	3	0.90	41.15	1.64	0.68	60.71	25.07	46.30	5.06	MP4	
ERICSSON RADIO 4424 B25_TMO	194.0	3	0.90	41.15	2.05	1.61	76.00	59.64	86.00	9.40	MP2	
ERICSSON RADIO 4449 B12/B71	192.0	3	0.90	41.03	1.64	1.15	60.68	42.56	75.00	8.20	MP2	

APPENDIX C
SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M10	N2	N8		Stand Off	None	None	A500 Gr.B Rect	Typical
2	M3	N11	N12		Corner Plate	None	None	A36 Gr.36	Typical
3	M8	N11	N64		RIGID	None	None	RIGID	Typical
4	M7	N12	N56		RIGID	None	None	RIGID	Typical
5	M12	N13	N20		Stand Off	None	None	A500 Gr.B Rect	Typical
6	M6	N14	N27		Stand Off	None	None	A500 Gr.B Rect	Typical
7	M15	N23	N26		Corner Plate	None	None	A36 Gr.36	Typical
8	M4	N23	N29		RIGID	None	None	RIGID	Typical
9	M1	N26	N41		RIGID	None	None	RIGID	Typical
10	M16	N28	N3		Corner Plate	None	None	A36 Gr.36	Typical
11	M18	N28	N1		RIGID	None	None	RIGID	Typical
12	M19	N3	N16		RIGID	None	None	RIGID	Typical
13	M20	N30	N25		Face Horizontal	None	None	A53 Gr.B	Typical
14	M17	N31	N15	90	Srtand Off Support	None	None	A500 Gr.B Rect	Typical
15	M22	N15	N35		RIGID	None	None	RIGID	Typical
16	M67	N34	N62		RIGID	None	None	RIGID	Typical
17	M25	N17	N36	90	Srtand Off Support	None	None	A500 Gr.B Rect	Typical
18	M26	N36	N49		RIGID	None	None	RIGID	Typical
19	M28	N37	N65		RIGID	None	None	RIGID	Typical
20	M23	N33	N32	90	Srtand Off Support	None	None	A500 Gr.B Rect	Typical
21	M29	N32	N61		RIGID	None	None	RIGID	Typical
22	M31	N39	N57		RIGID	None	None	RIGID	Typical
23	M32	N43	N48	270	Grating Support Angle	None	None	A36 Gr.36	Typical
24	M33	N45	N46		Grating Support Angle	None	None	A36 Gr.36	Typical
25	M34	N51	N47	270	Grating Support Angle	None	None	A36 Gr.36	Typical
26	M35	N19	N54		Grating Support Angle	None	None	A36 Gr.36	Typical
27	M14	N24	N4	270	Grating Support Angle	None	None	A36 Gr.36	Typical
28	M37	N10	N44		Grating Support Angle	None	None	A36 Gr.36	Typical
29	M38	N5	N55		RIGID	None	None	RIGID	Typical
30	M39	N59	N58		Face Horizontal	None	None	A53 Gr.B	Typical
31	M9	N63	N40		Face Horizontal	None	None	A53 Gr.B	Typical
32	M40	N74	N73		Support Rail	None	None	A53 Gr.B	Typical
33	M21	N76	N78	180	Corner Plate	None	None	A36 Gr.36	Typical
34	M41	N76	N83		RIGID	None	None	RIGID	Typical
35	M42	N77	N75		RIGID	None	None	RIGID	Typical
36	M36	N78	N90		RIGID	None	None	RIGID	Typical
37	M30	N79	N80	180	Corner Plate	None	None	A36 Gr.36	Typical
38	M43	N79	N85		RIGID	None	None	RIGID	Typical
39	M13	N80	N72		RIGID	None	None	RIGID	Typical
40	M24	N81	N82	180	Corner Plate	None	None	A36 Gr.36	Typical
41	M44	N81	N89		RIGID	None	None	RIGID	Typical
42	M46	N82	N86		RIGID	None	None	RIGID	Typical
43	M47	N66	N84		Support Rail	None	None	A53 Gr.B	Typical
44	M48	N88	N87		Support Rail	None	None	A53 Gr.B	Typical
45	MP4	N111	N110		Mount Pipe	None	None	A53 Gr.B	Typical
46	M50	N21	N9		RIGID	None	None	RIGID	Typical
47	M51	N92	N91		RIGID	None	None	RIGID	Typical
48	MP1	N116	N122		Mount Pipe	None	None	A53 Gr.B	Typical
49	M2	N60	N53		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
50	M5	N95	N94		RIGID	None	None	RIGID	Typical
51	MP12	N117	N6		Mount Pipe	None	None	A53 Gr.B	Typical
52	M52	N68	N67		RIGID	None	None	RIGID	Typical
53	M53	N22	N96		RIGID	None	None	RIGID	Typical
54	MP9	N118	N115		Mount Pipe	None	None	A53 Gr.B	Typical
55	M11	N69	N52		RIGID	None	None	RIGID	Typical
56	M54	N38	N97		RIGID	None	None	RIGID	Typical
57	MP8	N119	N124	30	Mount Pipe	None	None	A53 Gr.B	Typical
58	M56	N71	N70		RIGID	None	None	RIGID	Typical
59	M49	N99	N98		RIGID	None	None	RIGID	Typical
60	MP7	N7	N114	30	Mount Pipe 2	None	None	A53 Gr.B	Typical
61	M55	N100	N93		RIGID	None	None	RIGID	Typical
62	M57	N102	N101		RIGID	None	None	RIGID	Typical
63	MP3	N113	N112		Mount Pipe 2	None	None	A53 Gr.B	Typical
64	M27	N104	N103		RIGID	None	None	RIGID	Typical
65	M45	N105	N50		RIGID	None	None	RIGID	Typical
66	MP5	N120	N42	30	Mount Pipe	None	None	A53 Gr.B	Typical
67	M58	N107	N106		RIGID	None	None	RIGID	Typical
68	M59	N109	N108		RIGID	None	None	RIGID	Typical
69	MP11	N121	N123		Mount Pipe 2	None	None	A53 Gr.B	Typical
70	M70	N31	N34	180	Srtand Off Support	None	None	A500 Gr.B Rect	Typical
71	M71	N17	N37	180	Srtand Off Support	None	None	A500 Gr.B Rect	Typical
72	M72	N33	N39	180	Srtand Off Support	None	None	A500 Gr.B Rect	Typical
73	M73	N127	N125		RIGID	None	None	RIGID	Typical
74	M74	N129	N126		RIGID	None	None	RIGID	Typical
75	MP2	N130	N128		Mount Pipe	None	None	A53 Gr.B	Typical
76	MP6	N136	N131	30	Mount Pipe	None	None	A53 Gr.B	Typical
77	M77	N134	N132		RIGID	None	None	RIGID	Typical
78	M78	N133	N135		RIGID	None	None	RIGID	Typical
79	M79	N140	N139		RIGID	None	None	RIGID	Typical
80	M80	N141	N138		RIGID	None	None	RIGID	Typical
81	MP10	N142	N137		Mount Pipe	None	None	A53 Gr.B	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[LB]
1	General				
2	RIGID		42	108	0
3	Total General		42	108	0
4					
5	Hot Rolled Steel				
6	A36 Gr.36	6x0.5	6	78	66.354
7	A36 Gr.36	L2x2x3	6	303.1	62.059
8	A500 Gr.B Rect	HSS4X4X4	9	356.3	366.208
9	A53 Gr.B	PIPE_2.0	12	1242	359.231
10	A53 Gr.B	PIPE_2.0X	3	288	114.333
11	A53 Gr.B	PIPE_3.0	3	450	264.141
12	Total HR Steel		39	2717.4	1232.326

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed	Area(Member)
1	Self Weight	DL		-1			48		12
2	Wind Load AZI 0	WLZ					96		
3	Wind Load AZI 30	None					96		
4	Wind Load AZI 60	None					96		
5	Wind Load AZI 90	WLX					96		
6	Wind Load AZI 120	None					96		
7	Wind Load AZI 150	None					96		
8	Wind Load AZI 180	None					96		
9	Wind Load AZI 210	None					96		
10	Wind Load AZI 240	None					96		
11	Wind Load AZI 270	None					96		
12	Wind Load AZI 300	None					96		
13	Wind Load AZI 330	None					96		
14	Distr. Wind Load Z	WLZ						81	
15	Distr. Wind Load X	WLX						81	
16	Ice Weight	OL1					48	81	12
17	Ice Wind Load AZI 0	OL2					96		
18	Ice Wind Load AZI 30	None					96		
19	Ice Wind Load AZI 60	None					96		
20	Ice Wind Load AZI 90	OL3					96		
21	Ice Wind Load AZI 120	None					96		
22	Ice Wind Load AZI 150	None					96		
23	Ice Wind Load AZI 180	None					96		
24	Ice Wind Load AZI 210	None					96		
25	Ice Wind Load AZI 240	None					96		
26	Ice Wind Load AZI 270	None					96		
27	Ice Wind Load AZI 300	None					96		
28	Ice Wind Load AZI 330	None					96		
29	Distr. Ice Wind Load Z	OL2						81	
30	Distr. Ice Wind Load X	OL3						81	
31	Seismic Load Z	ELZ			-0.109		48		
32	Seismic Load X	ELX	-0.109				48		
33	Service Live Loads	LL				1			
34	Maintenance Load 1	LL				2			
35	Maintenance Load 2	LL				2			
36	Maintenance Load 3	LL				2			
37	Maintenance Load 4	LL				2			
38	Maintenance Load 5	LL				2			
39	Maintenance Load 6	LL				2			
40	Maintenance Load 7	LL				2			
41	Maintenance Load 8	LL				2			
42	Maintenance Load 9	LL				2			
43	Maintenance Load 10	LL				2			
44	Maintenance Load 11	LL				2			
45	Maintenance Load 12	LL				2			
46	BLC 1 Transient Area Loads	None						63	
47	BLC 16 Transient Area Loads	None						63	



Load Combinations

	Description	Solve	P	Delta	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor
1	1.4DL	Yes	Y	1	1.4								
2	1.2DL + 1WL AZI 0	Yes	Y	1	1.2	2	1	14	1	15			
3	1.2DL + 1WL AZI 30	Yes	Y	1	1.2	3	1	14	0.866	15	0.5		
4	1.2DL + 1WL AZI 60	Yes	Y	1	1.2	4	1	14	0.5	15	0.866		
5	1.2DL + 1WL AZI 90	Yes	Y	1	1.2	5	1	14		15	1		
6	1.2DL + 1WL AZI 120	Yes	Y	1	1.2	6	1	14	-0.5	15	0.866		
7	1.2DL + 1WL AZI 150	Yes	Y	1	1.2	7	1	14	-0.866	15	0.5		
8	1.2DL + 1WL AZI 180	Yes	Y	1	1.2	8	1	14	-1	15			
9	1.2DL + 1WL AZI 210	Yes	Y	1	1.2	9	1	14	-0.866	15	-0.5		
10	1.2DL + 1WL AZI 240	Yes	Y	1	1.2	10	1	14	-0.5	15	-0.866		
11	1.2DL + 1WL AZI 270	Yes	Y	1	1.2	11	1	14		15	-1		
12	1.2DL + 1WL AZI 300	Yes	Y	1	1.2	12	1	14	0.5	15	-0.866		
13	1.2DL + 1WL AZI 330	Yes	Y	1	1.2	13	1	14	0.866	15	-0.5		
14	0.9DL + 1WL AZI 0	Yes	Y	1	0.9	2	1	14	1	15			
15	0.9DL + 1WL AZI 30	Yes	Y	1	0.9	3	1	14	0.866	15	0.5		
16	0.9DL + 1WL AZI 60	Yes	Y	1	0.9	4	1	14	0.5	15	0.866		
17	0.9DL + 1WL AZI 90	Yes	Y	1	0.9	5	1	14		15	1		
18	0.9DL + 1WL AZI 120	Yes	Y	1	0.9	6	1	14	-0.5	15	0.866		
19	0.9DL + 1WL AZI 150	Yes	Y	1	0.9	7	1	14	-0.866	15	0.5		
20	0.9DL + 1WL AZI 180	Yes	Y	1	0.9	8	1	14	-1	15			
21	0.9DL + 1WL AZI 210	Yes	Y	1	0.9	9	1	14	-0.866	15	-0.5		
22	0.9DL + 1WL AZI 240	Yes	Y	1	0.9	10	1	14	-0.5	15	-0.866		
23	0.9DL + 1WL AZI 270	Yes	Y	1	0.9	11	1	14		15	-1		
24	0.9DL + 1WL AZI 300	Yes	Y	1	0.9	12	1	14	0.5	15	-0.866		
25	0.9DL + 1WL AZI 330	Yes	Y	1	0.9	13	1	14	0.866	15	-0.5		
26	1.2D + 1.0Di	Yes	Y	1	1.2	16	1						
27	1.2D + 1.0Di + 1.0Wi AZI 0	Yes	Y	1	1.2	16	1	17	1	29	1	30	
28	1.2D + 1.0Di + 1.0Wi AZI 30	Yes	Y	1	1.2	16	1	18	1	29	0.866	30	0.5
29	1.2D + 1.0Di + 1.0Wi AZI 60	Yes	Y	1	1.2	16	1	19	1	29	0.5	30	0.866
30	1.2D + 1.0Di + 1.0Wi AZI 90	Yes	Y	1	1.2	16	1	20	1	29		30	1
31	1.2D + 1.0Di + 1.0Wi AZI 120	Yes	Y	1	1.2	16	1	21	1	29	-0.5	30	0.866
32	1.2D + 1.0Di + 1.0Wi AZI 150	Yes	Y	1	1.2	16	1	22	1	29	-0.866	30	0.5
33	1.2D + 1.0Di + 1.0Wi AZI 180	Yes	Y	1	1.2	16	1	23	1	29	-1	30	
34	1.2D + 1.0Di + 1.0Wi AZI 210	Yes	Y	1	1.2	16	1	24	1	29	-0.866	30	-0.5
35	1.2D + 1.0Di + 1.0Wi AZI 240	Yes	Y	1	1.2	16	1	25	1	29	-0.5	30	-0.866
36	1.2D + 1.0Di + 1.0Wi AZI 270	Yes	Y	1	1.2	16	1	26	1	29		30	-1
37	1.2D + 1.0Di + 1.0Wi AZI 300	Yes	Y	1	1.2	16	1	27	1	29	0.5	30	-0.866
38	1.2D + 1.0Di + 1.0Wi AZI 330	Yes	Y	1	1.2	16	1	28	1	29	0.866	30	-0.5
39	(1.2 + 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	1.244	31	1	32					
40	(1.2 + 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	1.244	31	0.866	32	0.5				
41	(1.2 + 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	1.244	31	0.5	32	0.866				
42	(1.2 + 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	1.244	31		32	1				
43	(1.2 + 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	1.244	31	-0.5	32	0.866				
44	(1.2 + 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	1.244	31	-0.866	32	0.5				
45	(1.2 + 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	1.244	31	-1	32					
46	(1.2 + 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	1.244	31	-0.866	32	-0.5				
47	(1.2 + 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	1.244	31	-0.5	32	-0.866				
48	(1.2 + 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	1.244	31		32	-1				
49	(1.2 + 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	1.244	31	0.5	32	-0.866				

Load Combinations (Continued)

	Description	Solve	PDelta	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor
50	(1.2 + 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	1.244	31	0.866	32	-0.5				
51	(0.9 - 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	0.856	31	1	32					
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	0.856	31	0.866	32	0.5				
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	0.856	31	0.5	32	0.866				
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	0.856	31		32	1				
55	(0.9 - 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	0.856	31	-0.5	32	0.866				
56	(0.9 - 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	0.856	31	-0.866	32	0.5				
57	(0.9 - 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	0.856	31	-1	32					
58	(0.9 - 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	0.856	31	-0.866	32	-0.5				
59	(0.9 - 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	0.856	31	-0.5	32	-0.866				
60	(0.9 - 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	0.856	31		32	-1				
61	(0.9 - 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	0.856	31	0.5	32	-0.866				
62	(0.9 - 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	0.856	31	0.866	32	-0.5				
63	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 0	Yes	Y	1	1	2	0.25	14	0.25	15		33	1.5
64	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 30	Yes	Y	1	1	3	0.25	14	0.217	15	0.125	33	1.5
65	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 60	Yes	Y	1	1	4	0.25	14	0.125	15	0.217	33	1.5
66	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 90	Yes	Y	1	1	5	0.25	14		15	0.25	33	1.5
67	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 120	Yes	Y	1	1	6	0.25	14	-0.125	15	0.217	33	1.5
68	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 150	Yes	Y	1	1	7	0.25	14	-0.217	15	0.125	33	1.5
69	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 180	Yes	Y	1	1	8	0.25	14	-0.25	15		33	1.5
70	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 210	Yes	Y	1	1	9	0.25	14	-0.217	15	-0.125	33	1.5
71	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 240	Yes	Y	1	1	10	0.25	14	-0.125	15	-0.217	33	1.5
72	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 270	Yes	Y	1	1	11	0.25	14		15	-0.25	33	1.5
73	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 300	Yes	Y	1	1	12	0.25	14	0.125	15	-0.217	33	1.5
74	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 330	Yes	Y	1	1	13	0.25	14	0.217	15	-0.125	33	1.5
75	1.2DL + 1.5LL	Yes	Y	1	1.2	33	1.5						
76	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	34	1.5	2	0.063	14	0.063	15	
77	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	34	1.5	3	0.063	14	0.054	15	0.031
78	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	34	1.5	4	0.063	14	0.031	15	0.054
79	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	34	1.5	5	0.063	14		15	0.063
80	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	34	1.5	6	0.063	14	-0.031	15	0.054
81	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	34	1.5	7	0.063	14	-0.054	15	0.031
82	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	34	1.5	8	0.063	14	-0.063	15	
83	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	34	1.5	9	0.063	14	-0.054	15	-0.031
84	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	34	1.5	10	0.063	14	-0.031	15	-0.054
85	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	34	1.5	11	0.063	14		15	-0.063
86	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	34	1.5	12	0.063	14	0.031	15	-0.054
87	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	34	1.5	13	0.063	14	0.054	15	-0.031
88	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	35	1.5	2	0.063	14	0.063	15	
89	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	35	1.5	3	0.063	14	0.054	15	0.031
90	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	35	1.5	4	0.063	14	0.031	15	0.054
91	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	35	1.5	5	0.063	14		15	0.063
92	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	35	1.5	6	0.063	14	-0.031	15	0.054
93	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	35	1.5	7	0.063	14	-0.054	15	0.031
94	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	35	1.5	8	0.063	14	-0.063	15	
95	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	35	1.5	9	0.063	14	-0.054	15	-0.031
96	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	35	1.5	10	0.063	14	-0.031	15	-0.054
97	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	35	1.5	11	0.063	14		15	-0.063
98	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	35	1.5	12	0.063	14	0.031	15	-0.054



Company : Infinigy Engineering, PLLC
 Designer : JG
 Job Number : 1039-Z0001-B
 Model Name : 876355

10/7/2020
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 Checked By : _____

Load Combinations (Continued)

Description		Solve	PD	Delta	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor
99	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	35	1.5	13	0.063	14	0.054	15	-0.031
100	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	36	1.5	2	0.063	14	0.063	15	
101	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	36	1.5	3	0.063	14	0.054	15	0.031
102	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	36	1.5	4	0.063	14	0.031	15	0.054
103	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	36	1.5	5	0.063	14		15	0.063
104	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	36	1.5	6	0.063	14	-0.031	15	0.054
105	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	36	1.5	7	0.063	14	-0.054	15	0.031
106	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	36	1.5	8	0.063	14	-0.063	15	
107	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	36	1.5	9	0.063	14	-0.054	15	-0.031
108	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	36	1.5	10	0.063	14	-0.031	15	-0.054
109	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	36	1.5	11	0.063	14		15	-0.063
110	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	36	1.5	12	0.063	14	0.031	15	-0.054
111	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	36	1.5	13	0.063	14	0.054	15	-0.031
112	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	37	1.5	2	0.063	14	0.063	15	
113	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	37	1.5	3	0.063	14	0.054	15	0.031
114	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	37	1.5	4	0.063	14	0.031	15	0.054
115	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	37	1.5	5	0.063	14		15	0.063
116	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	37	1.5	6	0.063	14	-0.031	15	0.054
117	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	37	1.5	7	0.063	14	-0.054	15	0.031
118	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	37	1.5	8	0.063	14	-0.063	15	
119	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	37	1.5	9	0.063	14	-0.054	15	-0.031
120	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	37	1.5	10	0.063	14	-0.031	15	-0.054
121	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	37	1.5	11	0.063	14		15	-0.063
122	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	37	1.5	12	0.063	14	0.031	15	-0.054
123	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	37	1.5	13	0.063	14	0.054	15	-0.031
124	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	38	1.5	2	0.063	14	0.063	15	
125	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	38	1.5	3	0.063	14	0.054	15	0.031
126	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	38	1.5	4	0.063	14	0.031	15	0.054
127	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	38	1.5	5	0.063	14		15	0.063
128	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	38	1.5	6	0.063	14	-0.031	15	0.054
129	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	38	1.5	7	0.063	14	-0.054	15	0.031
130	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	38	1.5	8	0.063	14	-0.063	15	
131	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	38	1.5	9	0.063	14	-0.054	15	-0.031
132	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	38	1.5	10	0.063	14	-0.031	15	-0.054
133	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	38	1.5	11	0.063	14		15	-0.063
134	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	38	1.5	12	0.063	14	0.031	15	-0.054
135	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	38	1.5	13	0.063	14	0.054	15	-0.031
136	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	39	1.5	2	0.063	14	0.063	15	
137	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	39	1.5	3	0.063	14	0.054	15	0.031
138	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	39	1.5	4	0.063	14	0.031	15	0.054
139	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	39	1.5	5	0.063	14		15	0.063
140	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	39	1.5	6	0.063	14	-0.031	15	0.054
141	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	39	1.5	7	0.063	14	-0.054	15	0.031
142	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	39	1.5	8	0.063	14	-0.063	15	
143	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	39	1.5	9	0.063	14	-0.054	15	-0.031
144	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	39	1.5	10	0.063	14	-0.031	15	-0.054
145	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	39	1.5	11	0.063	14		15	-0.063
146	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	39	1.5	12	0.063	14	0.031	15	-0.054
147	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	39	1.5	13	0.063	14	0.054	15	-0.031



Load Combinations (Continued)

Description		Solve	PD	Delta	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor
148	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	40	1.5	2	0.063	14	0.063	15	
149	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	40	1.5	3	0.063	14	0.054	15	0.031
150	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	40	1.5	4	0.063	14	0.031	15	0.054
151	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	40	1.5	5	0.063	14		15	0.063
152	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	40	1.5	6	0.063	14	-0.031	15	0.054
153	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	40	1.5	7	0.063	14	-0.054	15	0.031
154	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	40	1.5	8	0.063	14	-0.063	15	
155	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	40	1.5	9	0.063	14	-0.054	15	-0.031
156	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	40	1.5	10	0.063	14	-0.031	15	-0.054
157	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	40	1.5	11	0.063	14		15	-0.063
158	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	40	1.5	12	0.063	14	0.031	15	-0.054
159	1.2DL + 1.5LM-MP7 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	40	1.5	13	0.063	14	0.054	15	-0.031
160	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	41	1.5	2	0.063	14	0.063	15	
161	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	41	1.5	3	0.063	14	0.054	15	0.031
162	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	41	1.5	4	0.063	14	0.031	15	0.054
163	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	41	1.5	5	0.063	14		15	0.063
164	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	41	1.5	6	0.063	14	-0.031	15	0.054
165	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	41	1.5	7	0.063	14	-0.054	15	0.031
166	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	41	1.5	8	0.063	14	-0.063	15	
167	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	41	1.5	9	0.063	14	-0.054	15	-0.031
168	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	41	1.5	10	0.063	14	-0.031	15	-0.054
169	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	41	1.5	11	0.063	14		15	-0.063
170	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	41	1.5	12	0.063	14	0.031	15	-0.054
171	1.2DL + 1.5LM-MP8 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	41	1.5	13	0.063	14	0.054	15	-0.031
172	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	42	1.5	2	0.063	14	0.063	15	
173	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	42	1.5	3	0.063	14	0.054	15	0.031
174	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	42	1.5	4	0.063	14	0.031	15	0.054
175	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	42	1.5	5	0.063	14		15	0.063
176	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	42	1.5	6	0.063	14	-0.031	15	0.054
177	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	42	1.5	7	0.063	14	-0.054	15	0.031
178	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	42	1.5	8	0.063	14	-0.063	15	
179	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	42	1.5	9	0.063	14	-0.054	15	-0.031
180	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	42	1.5	10	0.063	14	-0.031	15	-0.054
181	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	42	1.5	11	0.063	14		15	-0.063
182	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	42	1.5	12	0.063	14	0.031	15	-0.054
183	1.2DL + 1.5LM-MP9 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	42	1.5	13	0.063	14	0.054	15	-0.031
184	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	43	1.5	2	0.063	14	0.063	15	
185	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	43	1.5	3	0.063	14	0.054	15	0.031
186	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	43	1.5	4	0.063	14	0.031	15	0.054
187	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	43	1.5	5	0.063	14		15	0.063
188	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	43	1.5	6	0.063	14	-0.031	15	0.054
189	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	43	1.5	7	0.063	14	-0.054	15	0.031
190	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	43	1.5	8	0.063	14	-0.063	15	
191	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	43	1.5	9	0.063	14	-0.054	15	-0.031
192	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	43	1.5	10	0.063	14	-0.031	15	-0.054
193	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	43	1.5	11	0.063	14		15	-0.063
194	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	43	1.5	12	0.063	14	0.031	15	-0.054
195	1.2DL + 1.5LM-MP10 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	43	1.5	13	0.063	14	0.054	15	-0.031
196	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	44	1.5	2	0.063	14	0.063	15	

Load Combinations (Continued)

Description		Solve	PDelta	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor	BLCFactor
197	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	44	1.5	3	0.063	14	0.054	15	0.031
198	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	44	1.5	4	0.063	14	0.031	15	0.054
199	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	44	1.5	5	0.063	14		15	0.063
200	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	44	1.5	6	0.063	14	-0.031	15	0.054
201	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	44	1.5	7	0.063	14	-0.054	15	0.031
202	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	44	1.5	8	0.063	14	-0.063	15	
203	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	44	1.5	9	0.063	14	-0.054	15	-0.031
204	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	44	1.5	10	0.063	14	-0.031	15	-0.054
205	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	44	1.5	11	0.063	14		15	-0.063
206	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	44	1.5	12	0.063	14	0.031	15	-0.054
207	1.2DL + 1.5LM-MP11 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	44	1.5	13	0.063	14	0.054	15	-0.031
208	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	45	1.5	2	0.063	14	0.063	15	
209	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	45	1.5	3	0.063	14	0.054	15	0.031
210	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	45	1.5	4	0.063	14	0.031	15	0.054
211	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	45	1.5	5	0.063	14		15	0.063
212	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	45	1.5	6	0.063	14	-0.031	15	0.054
213	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	45	1.5	7	0.063	14	-0.054	15	0.031
214	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	45	1.5	8	0.063	14	-0.063	15	
215	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	45	1.5	9	0.063	14	-0.054	15	-0.031
216	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	45	1.5	10	0.063	14	-0.031	15	-0.054
217	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	45	1.5	11	0.063	14		15	-0.063
218	1.2DL + 1.5LM-MP12 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	45	1.5	12	0.063	14	0.031	15	-0.054

Envelope Node Reactions

Node Label	X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC		
1	N14	max	1728.722	5	3908.965	27	2269.513	14	7214.445	27	1930.166	11	718.036	11
2		min	-1725.943	23	390.646	20	-2320.395	8	344.353	20	-1926.659	17	-566.22	17
3	N13	max	1872.958	4	3902.341	35	1741.001	2	-31.832	15	1565.556	7	6128.668	35
4		min	-1830.213	22	408.991	16	-1713.154	20	-3826.904	34	-1562.145	25	330.915	16
5	N2	max	1965.88	17	3902.288	31	1557.036	2	-9.426	25	1704.067	3	-332.037	24
6		min	-2011.516	11	409.343	24	-1534.317	20	-3459.149	32	-1700.557	21	-6343.566	31
7	Totals:	max	5428.602	5	11266.723	29	5560.524	14						
8		min	-5428.597	23	3005.138	60	-5560.534	8						

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

Member	Shape	Code Check	Loc[in]	LC	Shear	Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	MP6	PIPE_2.0	0.503	54	4	0.068	54	4	14916.096	32130	1871.625	1871.625	1	H1-1b	
2	MP10	PIPE_2.0	0.498	54	6	0.065	54	12	14916.096	32130	1871.625	1871.625	1.802	H1-1b	
3	MP2	PIPE_2.0	0.492	54	8	0.067	54	8	14916.096	32130	1871.625	1871.625	1.983	H1-1b	
4	M6	HSS4X4X4	0.457	0	37	0.125	0	y	37	135489.768	139518	16180.5	16180.5	1	H1-1b
5	M10	HSS4X4X4	0.455	0	32	0.125	0	y	29	135489.768	139518	16180.5	16180.5	1	H1-1b
6	M12	HSS4X4X4	0.453	0	34	0.125	0	y	33	135489.768	139518	16180.5	16180.5	1	H1-1b
7	MP8	PIPE_2.0	0.328	54	33	0.084	12	29	14916.096	32130	1871.625	1871.625	2.099	H1-1b	
8	MP12	PIPE_2.0	0.324	54	29	0.084	12	37	14916.096	32130	1871.625	1871.625	2.044	H1-1b	
9	MP4	PIPE_2.0	0.321	54	37	0.084	12	33	14916.096	32130	1871.625	1871.625	1.987	H1-1b	
10	MP5	PIPE_2.0	0.295	51.75	37	0.105	51.75	4	20866.733	32130	1871.625	1871.625	2.565	H1-1b	
11	MP9	PIPE_2.0	0.293	51.75	33	0.101	51.75	12	20866.733	32130	1871.625	1871.625	1.834	H1-1b	
12	MP1	PIPE_2.0	0.29	51.75	29	0.104	51.75	8	20866.733	32130	1871.625	1871.625	2.443	H1-1b	



Company : Infinigy Engineering, PLLC
 Designer : JG
 Job Number : 1039-Z0001-B
 Model Name : 876355

10/7/2020
 9:18:45 PM
 Checked By : _____

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

Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn	
13	MP7	PIPE_2.0X	0.279	54	10	0.072	54		4	19844.858	44100	2530.5	2530.5	1.935	H1-1b
14	MP3	PIPE_2.0X	0.275	54	2	0.07	54		8	19844.858	44100	2530.5	2530.5	2.098	H1-1b
15	MP11	PIPE_2.0X	0.267	54	6	0.069	54		12	19844.858	44100	2530.5	2530.5	1.959	H1-1b
16	M48	PIPE_2.0	0.262	53.125	31	0.189	14.062		11	6295.422	32130	1871.625	1871.625	3	H1-1b
17	M47	PIPE_2.0	0.26	53.125	27	0.186	135.937		6	6295.422	32130	1871.625	1871.625	3	H1-1b
18	M40	PIPE_2.0	0.259	53.125	35	0.189	14.063		3	6295.422	32130	1871.625	1871.625	3	H1-1b
19	M72	HSS4X4X4	0.237	0	34	0.05	0	y	33	136537.125	139518	16180.5	16180.5	1	H1-1b
20	M70	HSS4X4X4	0.237	0	38	0.05	0	y	37	136537.125	139518	16180.5	16180.5	1	H1-1b
21	M71	HSS4X4X4	0.237	0	30	0.05	0	y	29	136537.125	139518	16180.5	16180.5	1	H1-1b
22	M17	HSS4X4X4	0.229	0	28	0.05	0	z	29	136537.125	139518	16180.5	16180.5	1	H1-1b
23	M25	HSS4X4X4	0.229	0	32	0.051	0	z	33	136537.125	139518	16180.5	16180.5	1	H1-1b
24	M23	HSS4X4X4	0.228	0	36	0.05	0	z	37	136537.125	139518	16180.5	16180.5	1	H1-1b
25	M33	L2x2x3	0.223	50.52	34	0.019	50.52	y	27	16075.22	23392.8	557.717	1137.685	1.5	H2-1
26	M35	L2x2x3	0.223	50.52	38	0.019	50.52	y	31	16075.22	23392.8	557.717	1137.685	1.5	H2-1
27	M37	L2x2x3	0.223	50.52	30	0.019	50.52	y	35	16075.22	23392.8	557.717	1137.685	1.5	H2-1
28	M14	L2x2x3	0.219	50.52	7	0.019	50.52	z	27	16075.22	23392.8	557.717	1137.685	1.5	H2-1
29	M34	L2x2x3	0.212	50.52	28	0.019	50.52	z	35	16075.22	23392.8	557.717	1137.685	1.5	H2-1
30	M32	L2x2x3	0.211	50.52	36	0.019	50.52	z	31	16075.22	23392.8	557.717	1137.685	1.5	H2-1
31	M9	PIPE_3.0	0.209	62.5	27	0.14	60.937		36	59302.836	65205	5748.75	5748.75	1	H1-1b
32	M39	PIPE_3.0	0.209	62.5	35	0.139	60.937		31	59302.836	65205	5748.75	5748.75	1	H1-1b
33	M20	PIPE_3.0	0.208	62.5	31	0.141	60.938		2	59302.836	65205	5748.75	5748.75	1	H1-1b
34	M3	6x0.5	0.206	6	5	0.095	4	y	4	67551.643	97200	1012.5	12150	1.453	H1-1b
35	M15	6x0.5	0.203	6	9	0.097	4	y	8	67551.643	97200	1012.5	12150	1.454	H1-1b
36	M16	6x0.5	0.2	6	9	0.097	4	y	12	67551.643	97200	1012.5	12150	1.387	H1-1b
37	M21	6x0.5	0.11	0	4	0.085	0	y	9	59233.776	97200	1012.5	12150	2.225	H1-1b
38	M30	6x0.5	0.101	0	8	0.083	0	y	13	59233.776	97200	1012.5	12150	2.229	H1-1b
39	M24	6x0.5	0.094	0	12	0.083	0	y	5	59233.776	97200	1012.5	12150	2.222	H1-1b

APPENDIX D
ADDITIONAL CALCUATIONS

Bolt Calculation Tool, V1.4

PROJECT DATA	
Site Name:	UPPER STEPNEY - TLC
Site Number:	876355
Job Code:	1039-Z0001-B
Connection Description:	Standoff to Collar

APPLIED LOADS		
Bolt Tension:	6399.48	lbs
Bolt Shear:	1105.70	lbs

BOLT PROPERTIES		
Bolt Type:	Bolt	-
Bolt Diameter:	0.625	in
Bolt Grade:	A325	-
# of Bolts:	4	-
Threads Excluded?	No	-

BOLT CHECK		
Tensile Strength	20340.15	
Shear Strength	13805.83	
Tensile Usage	31.5%	
Shear Usage	8.0%	
Interaction Check	0.11	≤1.05
Result	Pass	

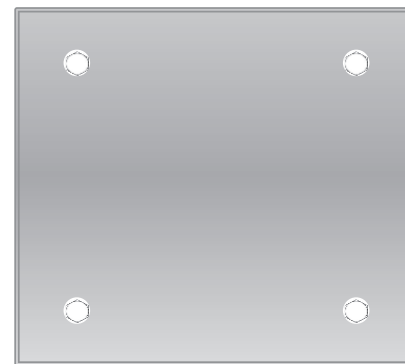


Exhibit F

Power Density/RF Emissions Report

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL
TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CT11264C

Monroe / Rt 59 / Rt 25
474-480 Main Street
Monroe, Connecticut 06468

October 27, 2020

EBI Project Number: 6220005553

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	10.46%

October 27, 2020

T-Mobile

Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, Connecticut 06002

Emissions Analysis for Site: CT11264C - Monroe / Rt 59 / Rt 25

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **474-480 Main Street in Monroe, Connecticut** 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.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency 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), 2100 MHz (AWS) and 11 GHz frequency bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure 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.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 474-480 Main Street in Monroe, Connecticut 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 manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, 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.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.
- 3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 5) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

- 6) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 7) 2 LTE channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 8) 2 NR channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 9) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. 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. This is rarely the case, and if so, is never continuous.
- 10) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 11) The antennas used in this modeling are the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the RFS APXI6DWV-16DWV-S-E-A20 for the 2100 MHz channel(s) in Sector A, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the RFS APXI6DWV-16DWV-S-E-A20 for the 2100 MHz channel(s) in Sector B, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz channel(s), the RFS APXI6DWV-16DWV-S-E-A20 for the 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, 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.

- 12) The antenna mounting height centerline of the proposed antennas is 192 and 194 feet above ground level (AGL).
- 13) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 14) All calculations were done with respect to uncontrolled / general population threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	194 feet	Height (AGL):	194 feet	Height (AGL):	194 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	25,651.93	ERP (W):	25,651.93	ERP (W):	25,651.93
Antenna A1 MPE %:	2.45%	Antenna B1 MPE %:	2.45%	Antenna C1 MPE %:	2.45%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd
Height (AGL):	192 feet	Height (AGL):	192 feet	Height (AGL):	192 feet
Channel Count:	11	Channel Count:	11	Channel Count:	11
Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts	Total TX Power (W):	440 Watts
ERP (W):	12,873.80	ERP (W):	12,873.80	ERP (W):	12,873.80
Antenna A2 MPE %:	1.80%	Antenna B2 MPE %:	1.80%	Antenna C2 MPE %:	1.80%
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	RFS APX16DWW-16DWW-S-E-A20	Make / Model:	RFS APX16DWW-16DWW-S-E-A20	Make / Model:	RFS APX16DWW-16DWW-S-E-A20
Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz	Frequency Bands:	2100 MHz
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	194 feet	Height (AGL):	194 feet	Height (AGL):	194 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts	Total TX Power (W):	120 Watts
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A3 MPE %:	0.45%	Antenna B3 MPE %:	0.45%	Antenna C3 MPE %:	0.45%

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	4.70%
AT&T	1.09%
Sprint	2.49%
Verizon	2.18%
Site Total MPE % :	10.46%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	4.70%
T-Mobile Sector B Total:	4.70%
T-Mobile Sector C Total:	4.70%
Site Total MPE % :	10.46%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# 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 2500 MHz LTE	2	6412.98	194.0	12.25	2500 MHz LTE	1000	1.23%
T-Mobile 2500 MHz NR	2	6412.98	194.0	12.25	2500 MHz NR	1000	1.23%
T-Mobile 600 MHz LTE	2	591.73	192.0	1.15	600 MHz LTE	400	0.29%
T-Mobile 600 MHz NR	1	1577.94	192.0	1.54	600 MHz NR	400	0.38%
T-Mobile 700 MHz LTE	2	648.82	192.0	1.27	700 MHz LTE	467	0.27%
T-Mobile 1900 MHz GSM	4	1101.85	192.0	4.30	1900 MHz GSM	1000	0.43%
T-Mobile 1900 MHz LTE	2	2203.69	192.0	4.30	1900 MHz LTE	1000	0.43%
T-Mobile 2100 MHz LTE	2	2334.27	194.0	4.46	2100 MHz LTE	1000	0.45%
						Total:	4.70%

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

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:	4.70%
Sector B:	4.70%
Sector C:	4.70%
T-Mobile Maximum MPE % (Sector A):	4.70%
Site Total:	10.46%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **10.46%** 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.