DRI APPLICATION FORM

Please consult the MVC website or contact the Martha's Vineyard Commission's Development of Regional Impact (DRI) Coordinator for documents that explain the DRI process and how to fill out this application form.

1. PROJECT NAME

T Mobile Network Upgrades

2. PROJECT LOCATION

0 Airport (Rear)

3. PROJECT SUMMARY

Remove 6 antennas, add 3 antennas, and upgrade equipment at existing wireless installation located on site

Total site area (acres):	
Total area of existing buildings:	*Total area of proposed buildings:*
Estimated cost of construction: 75,000	

4. APPLICANT

Applicant	*Name:* Crown Castle	*E-mail* jeff.barbadora@crowncastle.com
	Address: 1800 W. Park Drive Westborough, MA 01581	
	Telephone: 781-970-0053	*Fax:*
Co-Applicant	*Name:*	*E-mail*
	Address:	
	Telephone:	*Fax:*
Contact Person *(if different from applicant)*	*Name:* Timothy Greene	*E-mail* tgreene@terrasearchllc.com
	Address: 157 Riverside Drive Norwell, MA 02061	
	Telephone: 617-877-2950	*Fax:*
Preparer *(if different from applicant)*	*Name:* Timothy Greene	*E-mail* tgreene@terrasearchllc.com
	Address: 157 Riverside Drive Norwell, MA 02061	
	Telephone: 617-877-2950	*Fax:*

5. OWNERS OF RECORD

Map Parcel	Owner's Name	Lot & Plan	Certificate of Title
28-1-25	Sprint Spectrum		

6. REQUIRED PERMITS OR REGULATORY PERMISSIONS

	Agency	Permit or Regulatory Permission	File Number	Date of Filing	Acknowledgement of application attached
Referring Agency	West Tisbury	ZBA			
Other Agencies		Building Inspector		7/22/22	yes

7. APPLICATION FEE

- [ ] Application Fee is enclosed

8. ATTACHMENTS

- [ ] List of Abutters
- [ ] Deed(s) for all involved parcels
- [ ] Written Authorization(s) from owners of all involved parcels, if other than the Applicant
- [ ] Locus Map
- [ ] Plan(s) of Existing Conditions
- [ ] Plan(s) of Proposed Development
- [ ] Description of Proposed Development and Summary of Impacts
- [ ] Traffic and Access Impact Report or LUPC waiver dated:
- [ ] Other technical report or document (specify)
- [ ] Other technical report or document (specify)
- [ ] Other technical report or document (specify)

9. APPLICANT'S CERTIFICATION OF ACCURACY

I hereby certify that all the information in this application form and attachments is true and accurate to the best of my knowledge. I agree to notify the Martha's Vineyard Commission of any substantial changes in the information provided in this application, in writing, as soon as it is practicable. I understand that the failure to provide the required information and fee may result in a procedural denial of my project.

Signature of Applicant or Legal Representative:	*Date:* 7/27/22
Signature of Co-Applicant or Legal Representative:	*Date:*
Signature of Owner (if different from Applicant):	*Date:* 7-26-22

10. MVC CERTIFICATION OF APPLICATION COMPLETENESS

I hereby certify that this application is complete according to the requirements of the Martha's Vineyard Commission and that a Public Hearing may be scheduled.

Signature of DRI Coordinator:	*Date:*
Signature of Executive Director:	*Date:*

300 foot Abutters List Report

West Tisbury, MA
July 27, 2022

Subject Property:

Parcel Number: 28-1-25
CAMA Number: 28-1-25
Property Address: 0 AIRPORT (REAR)

Mailing Address: SPRINT SPECTRUM BS23XC705 ATTN: PROPERTY TAX DEPT
PO BOX 8430
KANSAS CITY, MO 64114-8430

Abutters:

Parcel Number: 28-1
CAMA Number: 28-1
Property Address: 71 AIRPORT RD

Mailing Address: DUKES COUNTY - AIRPORT
PO BOX 190
EDGARTOWN, MA 02575

Parcel Number: 28-100-10
CAMA Number: 28-100-10
Property Address: 54 AIRPORT ROAD EXT

Mailing Address: DUKES COUNTY -- FIRE RESCUE BL DG
N/A
WEST TISBURY, MA 02575

Parcel Number: 28-100-15
CAMA Number: 28-100-15
Property Address: 21 FLIGHT PATH

Mailing Address: DUKES COUNTY
N/A
WEST TISBURY, MA 02575

Parcel Number: 28-1-11
CAMA Number: 28-1-11
Property Address: 20 HANGAR RD NORTH

Mailing Address: M V AERO CLUB C/O JIM GLAVIN
BOX 1700
VINEYARD HAVEN, MA 02568

Parcel Number: 28-1-13
CAMA Number: 28-1-13
Property Address: 21 HANGAR RD SOUTH

Mailing Address: VINEYARD AIRCRAFT HANGERS INC.
C/O JEROME PIKOR
PO BOX 700
EDGARTOWN, MA 02539

Parcel Number: 28-1-17
CAMA Number: 28-1-17
Property Address: 0 HANGAR RD SOUTH

Mailing Address: JAMES ROGERS HANGAR ASSOCIATIO N LLC
C/O DON OGILVIE 301 SOUTH GATE RD
VINEYARD HAVEN, MA 02568

Parcel Number: 28-1-4
CAMA Number: 28-1-4
Property Address: 1 FLIGHT PATH

Mailing Address: AIRPORT LAUNDROMAT INC C/O NICHOLAS CATT, PRESIDENT
P.O. BOX 2218
VINEYARD HAVEN, MA 02568

Parcel Number: 28-1-5
CAMA Number: 28-1-5
Property Address: 17 HANGAR RD NORTH

Mailing Address: DUKES COUNTY AIRPORT
P.O. BOX 190
EDGARTOWN, MA 02539

Parcel Number: 28-1-6
CAMA Number: 28-1-6
Property Address: 21 HANGAR RD NORTH

Mailing Address: DUKES COUNTY AIRPORT
P.O BOX 190
EDGARTOWN, MA 02539

Parcel Number: 28-1-7
CAMA Number: 28-1-7
Property Address: 27 HANGAR RD NORTH

Mailing Address: DUKES COUNTY - AIRPORT HANGAR
PO BOX 190
EDGARTOWN, MA 02539

AIRPORT LAUNDROMAT INC
C/O NICHOLAS CATT, PRESID
P.O. BOX 2218
VINEYARD HAVEN, MA 02568

DUKES COUNTY
N/A
WEST TISBURY, MA 02575

DUKES COUNTY - AIRPORT
PO BOX 190
EDGARTOWN, MA 02575

DUKES COUNTY - AIRPORT HA
PO BOX 190
EDGARTOWN, MA 02539

DUKES COUNTY -- FIRE RESC
DG
N/A
WEST TISBURY, MA 02575

DUKES COUNTY AIRPORT
P.O BOX 190
EDGARTOWN, MA 02539

DUKES COUNTY AIRPORT
P.O. BOX 190
EDGARTOWN, MA 02539

JAMES ROGERS HANGAR ASSOC
N LLC
C/O DON OGILVIE
301 SOUTH GATE RD
VINEYARD HAVEN, MA 02568

M V AERO CLUB
C/O JIM GLAVIN
BOX 1700
VINEYARD HAVEN, MA 02568

VINEYARD AIRCRAFT HANGERS
C/O JEROME PIKOR
PO BOX 700
EDGARTOWN, MA 02539

Martha's Vineyard Commission – Referral Form for Developments of Regional Impact

RETURN THIS FORM WITH DRI REFERRAL

Name of Applicant: Sprint Spectrum- Timothy Greene

Name of Project: Cell Tower Upgrade

Brief Project Description: Replace 6 antennas, Add 3 antennas, Upgrade equipment at existing wireless facility.

Address: 0 Airport Rd. (Rear) Map 28 Lot 1.25

Phone: 617-877-2950 **Fax:** ----- **Email:** tgreene@terrasearchllc.com

This project will require the following permits from the following local Agencies: (***Please Specify***)

Building Inspector: X

Board of Selectmen:

Board of Health:

Conservation Commission:

Planning Board:

Zoning Board of Appeals:

Other Boards:

Please include any narratives, plans, or other materials associated with this proposal before sending

For Town Use Only

Referring Board or Agent: Inspector of Buildings

I have reviewed the development application and have determined that it meets one or more of the items contained in the Standards & Criteria, I am therefore sending, via certified mail, the development application to the Martha's Vineyard Commission as a Development of Regional Impact.

Signature:

Print Name: Joseph K. Tierney, Jr.

Board: Building Department

Town: West Tisbury

Martha's Vineyard Commission – Referral Form for Developments of Regional Impact

RETURN THIS FORM WITH DRI REFERRAL

STATEMENT FROM MUNICIPAL LAND USE REGULATORY AGENCY: This Board has determined that the proposed project, for which application for a development permit has been made, is one of regional impact using the following criteria from Version 14 of the DRI Standards and Criteria:

(Please circle each of the applicable thresholds triggered by the proposed project)

Italicized triggers are those that have maps to aid determination.

1.3 C) Discretionary Referral – "In-Town"
1.3 C) Discretionary Referral – "Between-Town"
1.3 C) Discretionary Referral – "Island-Wide"
1.3.D) Previous DRI's – Modification
2.1 Division of Commercial Land
2.2 a) Division of Land – 5 or more parcels
2.2 b) Division of Rural Land – 3 or more parcels
2.3 a) Division of Land – 10-16 acres, 2+ parcels
2.3 b) Division of Land – 16-22 acres, 3+ parcels
2.3 c) Division of Land – 22-30 acres, 4+ parcels
2.3 d) Division of Land – 30+ acres, 5+ parcels
2.4 a) Division of Farmland
2.4 b) Division of Farmland – Prime Ag. Soil
2.5 Division of Significant Habitat
2.6 a) ANR with 3 or more parcels in past 5 yrs
2.6 b) ANR in Island Road or Coastal DCPC
3.1 a) Dev. of Commercial – 2,500-3,500 ft^2
3.1 b) Dev. of Comm – 3,500+ ft^2
3.1 c) Dev. of Comm – Addition of 1,000 ft^2
3.1 d) Dev. of Comm – Combination 2,500 ft^2
3.1 e) Dev. of Comm – 6,000 ft^2 Outdoor Use
3.1 f) Dev. of Comm – Change of Use/Intensity
3.1 g) Dev. of Comm – Reduced Dwelling Units
3.1 h) Dev. of Comm – Parking 10+ Vehicles
3.1 i) Dev. of Comm – Expansion of Parking 10+
3.1 j) Dev. of Comm – High Traffic Generator
3.4 a) Vehicular repair/refueling/junkyard
3.4 b) Storage of fuel/hazardous materials
3.4 c) Drive-thru window service
3.4 d) Restaurant in B-I not on sewer 50-99 seat
3.4 e) Restaurant in B-I 80-99 seats
3.4 f) Restaurant in B-I 100+ seats
3.4 g) Restaurant outside commercial district
3.4 h) Formula Retail
3.4 i) Visible storage container/vehicle/trailer
4.1 a) 5 or more Dwelling Units
4.1 b) 5 or more Rooms for Rent
4.1 c) 5 or more Dwelling Units or Rooms
5.1 a) Dev. in/within 25' of Harbor
5.1 b) Dev. in/within 25' of 10+ Acre Body of Water
5.1 c) Dev. in/within 25' of the Ocean
5.2 Change in Use/Intensity of Commercial Pier
5.3 a) New Commercial Facilities on Pier
5.3 b) Expansion of Comm. Facilities on Pier
5.3 c) Change in Intensity of Use of Pier
6.1 a) Private Place Assembly – 3,500+ ft^2
6.1 b) Private Place Assembly – 50+ seats
6.2 a) Public Place Assembly – 3,500+ ft^2
6.2 b) Public Place Assembly – 50+ seats
7.1 a) Transportation Facility to or from M.V.
7.1 b) Transportation Facility 2+ Town Network
7.1 c) Expansion/Alt. of any principal road
8.1 a) Demolition/Ext. Alt. of MACRIS Structure
8.1 b) Demolition/Ext. Alt Structure > 100 years
8.2 a) Subdivision of Archeological Significance
8.2 b) Disturbance of Archeological Significance
8.3 Significant Habitat – Site Alterations1+ acre
8.4 a) Coastal DCPC – New access to coast
8.4 b) Coastal DCPC – New hard surface
8.4 c) Coastal DCPC – New parking for 5 vehicles
8.4 d) Coastal DCPC – Development on Noman's
8.5 Development per Town DCPC Regulation
8.6 a) Development Current/Former Farmland
8.6 b) Development of Prime Agricultural Soils
9.1 a) Telecommunications Tower over 35 feet
9.1 b) Tower Reconstruction/Replacement
9.2 a) Wind Energy Facilities over 150 ft
9.2 b) Wind Energy Facilities in Ocean Zone
9.2 c) Wind Energy Facilities in Land Zone
9.2 d) Wind Energy Facilities near Town Bound
9.2 e) Wind Energy Facilities – other
9.3 Solar Facilities greater than 25,000 ft^2

T-Mobile

CALL MASSACHUSETTS ONE CALL (888) 344-7233 CALL 3 WORKING DAYS BEFORE YOU DIG! 811

T-MOBILE SITE NUMBER: 4HY1505A
T-MOBILE SITE NAME: 4HY1505A_REPLACEMENT
SITE TYPE: MONOPOLE
TOWER HEIGHT: 61'-0"
BUSINESS UNIT #: 875071
SITE ADDRESS: 71 AIRPORT RD, W. TISBURY, MA 02575
COUNTY: DUKES
JURISDICTION: TOWN OF WEST TISBURY

T-MOBILE SPRINT-RETAIN SITE CONFIGURATION: 67E5998E_1xAIR+1OP+1QP

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	WEST TISBURY AIRPORT
SITE ADDRESS:	71 AIRPORT RD W. TISBURY, MA 02575
COUNTY:	DUKES
MAP/PARCEL #:	28-1-27
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41° 23' 15.68" (41.387694)
LONGITUDE:	-70° 36' 45.00"(-70.61250000)
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	67' FT
CURRENT ZONING:	I-1
JURISDICTION:	TOWN OF WEST TISBURY
OVERLAY DISTRICT:	N/A
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	AT&T SERVICES, INC 754 PEACHTREE ST, ATLANTA, GA 30308
TOWER OWNER:	CROWN CASTLE USA, INC. 1200 MACARTHUR BLVD, SUITE 200 MAHWAH, NJ 07430
CARRIER/APPLICANT:	T-MOBILE 4 SYLVAN WAY PARSIPPANY, NJ 07054
ELECTRIC PROVIDER:	NSTAR (800) 572-9337
TELCO PROVIDER:	COMCAST (888) 936-4968

PROJECT TEAM

A&E FIRM:	TOWER ENGINEERING PROFESSIONALS 326 TRYON ROAD RALEIGH, NC 27603
	JOSEPH T. CRESS - PROJECT MANAGER (919) 661-6351
	GRAHAM M. ANDRES - CIVIL ENGINEER (919) 661-6351
	GRAHAM M. ANDRES - ELECTRICAL ENGINEER (919) 661-6351
CROWN CASTLE USA INC. DISTRICT CONTACTS:	CROWN CASTLE USA, INC. 1200 MACARTHUR BLVD, SUITE 200 MAHWAH, NJ 07430
	BILLY STUBBS - A&E SPECIALIST BILLY.STUBBS@CROWNCASTLE.COM

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

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	COMPOUND PLAN
C-1.2	EXISTING & FINAL EQUIPMENT PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	EQUIPMENT SPECS
C-5	CABINET & 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 22x34. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

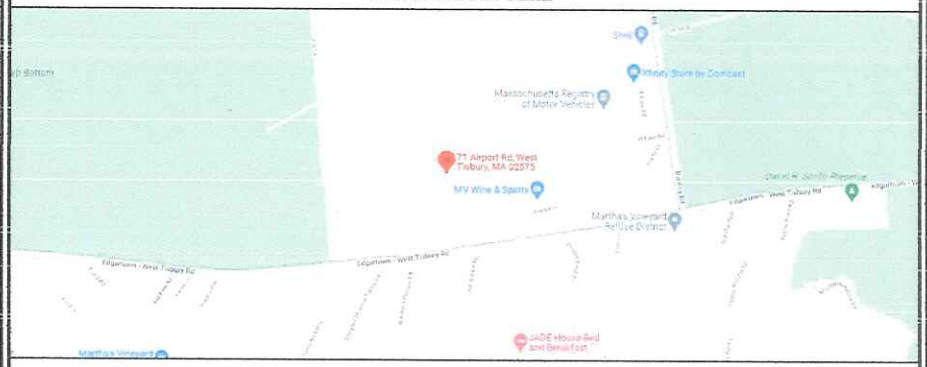
PROJECT DESCRIPTION

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

TOWER SCOPE OF WORK:
- REMOVE (4) EXISTING SPRINT CABLES
- REMOVE (6) EXISTING SPRINT ANTENNAS
- REMOVE (12) EXISTING SPRINT RRHs
- INSTALL (9) ANTENNAS
- INSTALL (6) RRUs
- INSTALL (2) 6x24 HCS 4AWG 30m CABLES

GROUND SCOPE OF WORK:
- REMOVE SPRINT LEGACY CABINET(S) AS NEEDED
- INSTALL (2) CABINETS
- INSTALL (2) BB 6648, (1) RBS 6601 W/ (1) DUG20, (1) IXRE ROUTER, (1) 7705 SAR M, (2) PSU 4813
- REUSE EXISTING SPRINT PLATFORM, ICE BRIDGE & UTILITY EQUIPMENT
- INSTALL (1) CAMLOK GENERATOR INTERFACE
- INSTALL (1) WESTELL CABINET
- REUSE (1) GPS ANTENNA
- INSTALL (1) SLACKBOX

LOCATION MAP



NO SCALE

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	MASSACHUSETTS STATE BUILDING CODE 780 CMR-9th EDITION (2015 IBC) PER SA
ELECTRICAL	NEC 2014 EDITION

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	BLACK & VEATCH
DATED:	04/19/2022
MOUNT ANALYSIS:	INFINIGY
DATED:	04/26/2022
ORDER ID:	583919
REVISION:	1
RFDS VERSION:	1
DATED:	03/18/2022

ANALYSIS CRITERIA:

APPLICABLE CODES:	TIA-222-H / ASCE 7-16
WIND SPEED:	V = 140 MPH (ULTIMATE 3 SECOND GUST)
EXPOSURE CATEGORY:	C
RISK CATEGORY:	II
TOPOGRAPHIC CATEGORY:	1
SEISMIC Ss:	0.141
SEISMIC S1:	0.052
SERVICE WIND SPEED:	60 MPH

APPROVALS

APPROVAL	SIGNATURE	DATE
RF		
CONST.		
FAA		
OPS		
RE		
SR DEV MGR		
REG DIR		

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.

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

TEP JOB #: 217324566379

T-MOBILE SITE NUMBER:
4HY1505A
BU #: 875071
WEST TISBURY AIRPORT
71 AIRPORT RD,
W. TISBURY, MA 02575
EXISTING 61'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/01/21	AGU	CONSTRUCTION	JTC
1	10/25/21	INS	CONSTRUCTION	SPK
2	11/19/21	INS	CONSTRUCTION	SPK
3	3/16/22	INS	CONSTRUCTION	SPK
4	5/03/22	INS	CONSTRUCTION	SPK

SEAL:

COMMONWEALTH OF MASSACHUSETTS
GRAHAM M. ANDRES
CIVIL
No. 52545
REGISTERED PROFESSIONAL ENGINEER

05/03/22

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

SHEET NUMBER:	REVISION:
T-1	4

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

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

GENERAL NOTES:

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

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

GREENFIELD GROUNDING NOTES:

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

APWA UNIFORM COLOR CODE:

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

ABBREVIATIONS:

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

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

TOWER ENGINEERING PROFESSIONALS
326 TRYON RD
RALEIGH, NC 27603
(919) 661-6351
TEP JOB #: 217324.556579

T-MOBILE SITE NUMBER:
4HY1505A

BU #: **875071**
WEST TISBURY AIRPORT

71 AIRPORT RD,
W. TISBURY, MA 02575

EXISTING 61'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/01/21	AGU	CONSTRUCTION	JTC
1	10/25/21	INS	CONSTRUCTION	SPK

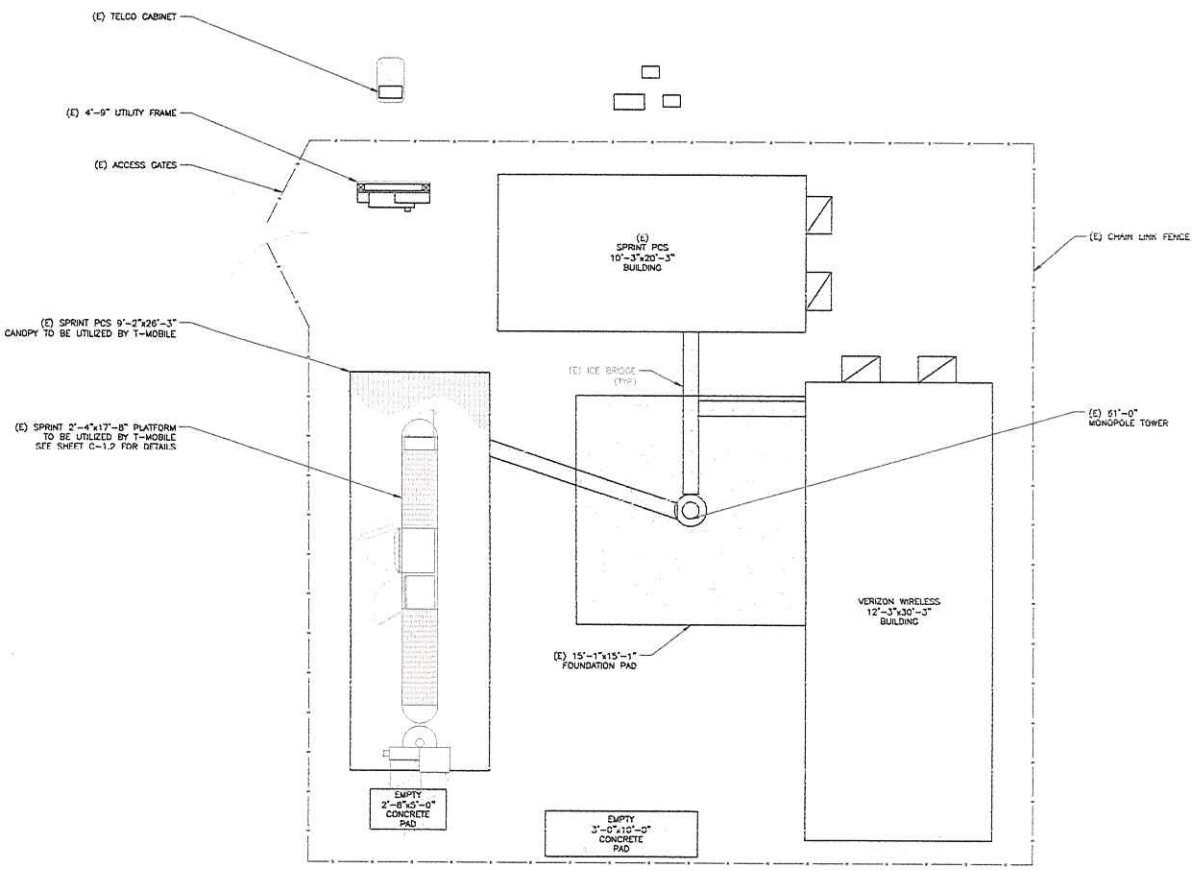
SEAL:

10/25/21

SHEET NUMBER:	REVISION:
T-2	1

NOTE:
SITE PLAN SHOWN BELOW WAS REPRODUCED FROM INFORMATION PROVIDED BY CROWN CASTLE AND SITE WALK CONDUCTED BY TEP. CONTRACTOR TO VERIFY ALL EXISTING INFORMATION IS AS INDICATED ON SITE PLAN. CONTRACTOR IS TO ESTABLISH THE EXISTENCE AND LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES. IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES.

FLOODPLAIN NOTE:
THE TOWER IS LOCATED IN ZONE "X" AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN ACCORDING TO FEMA COMMUNITY PANEL #25007C0113J, DATED 07/20/2016.



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

N

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

TEP JOB #: 21724.336079

T-MOBILE SITE NUMBER:
4HY1505A

BU #: **875071**
WEST TISBURY AIRPORT

71 AIRPORT RD,
W. TISBURY, MA 02575

EXISTING 61'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/01/21	AGU	CONSTRUCTION	JTC
1	10/25/21	DS	CONSTRUCTION	GMK

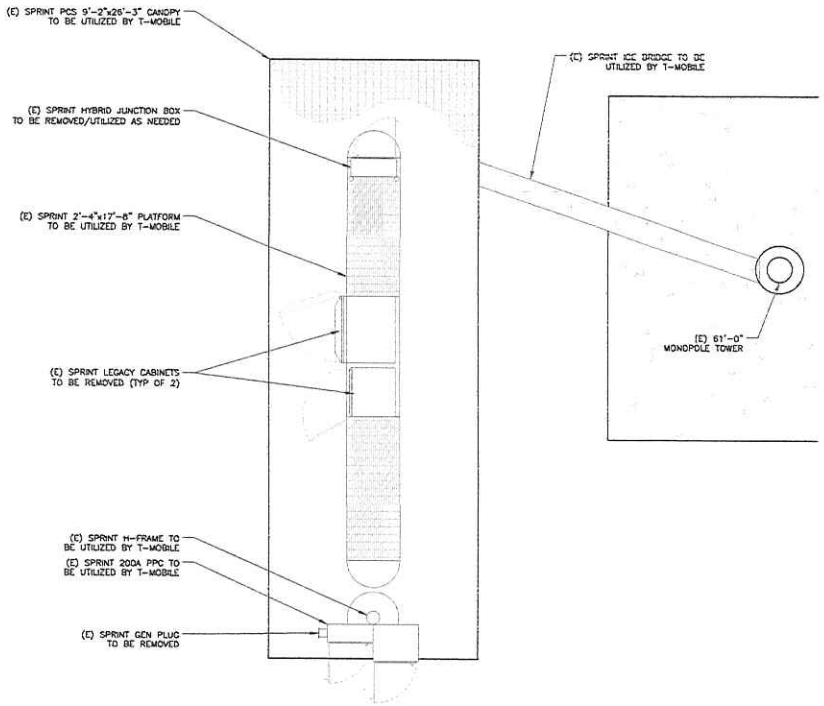
SEAL:

GRAHAM M. ANDRIES
CIVIL
No. 52545
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

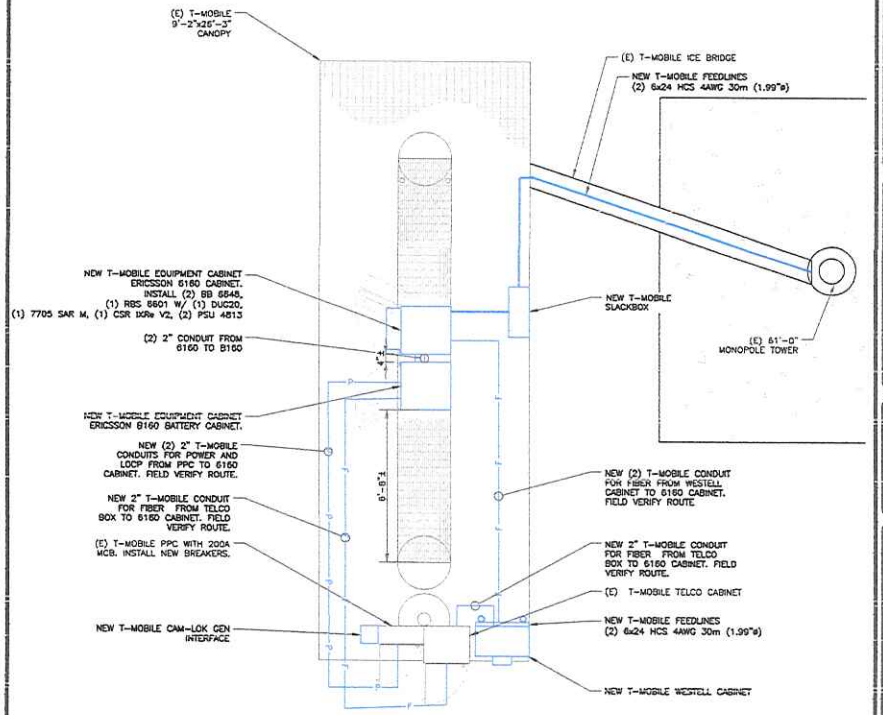
10/25/21

SHEET NUMBER:	REVISION:
C-1.1	1

FLOODPLAIN NOTE:
THE TOWER IS LOCATED IN ZONE "X" AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN ACCORDING TO FEMA COMMUNITY PANEL #25007C0113J, DATED 07/20/2016.



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



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

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

TEP JOB #: 21324.366579

T-MOBILE SITE NUMBER:
4HY1505A

BU #: **875071**
WEST TISBURY AIRPORT

71 AIRPORT RD,
W. TISBURY, MA 02575

EXISTING 61'-0"
MONOPOLE

ISSUED FOR:

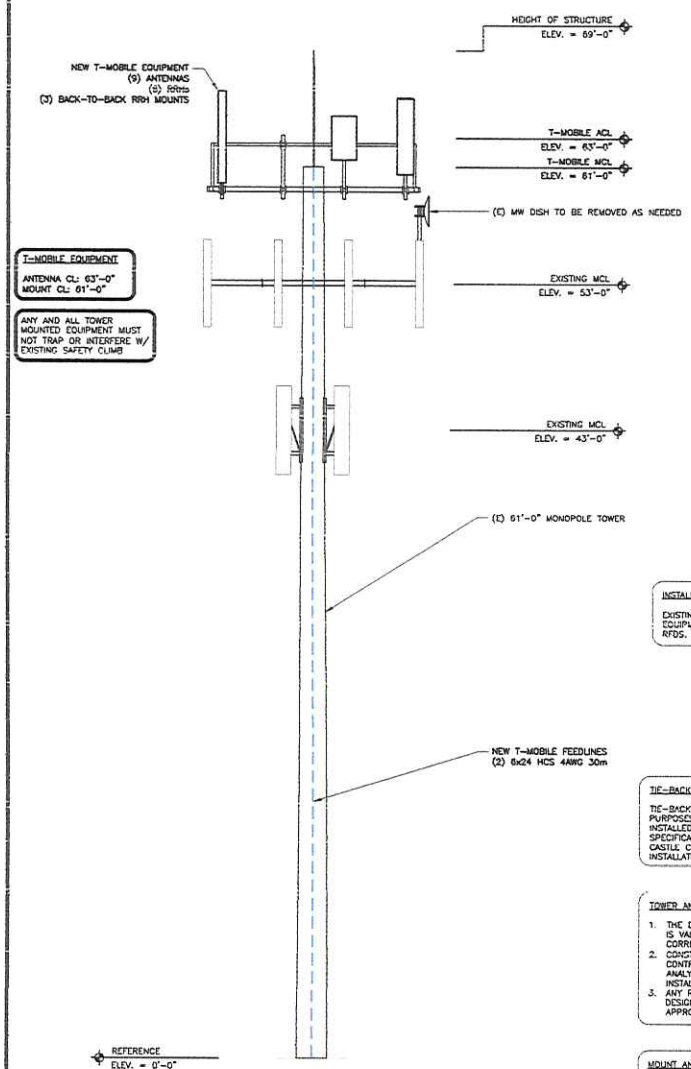
REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/01/21	AGU	CONSTRUCTION	JTC
1	10/25/21	INS	CONSTRUCTION	SPK
2	11/19/21	INS	CONSTRUCTION	SPK
3	1/18/22	INS	CONSTRUCTION	SPK
4	5/03/22	INS	CONSTRUCTION	SPK

SEAL:

COMMONWEALTH OF MASSACHUSETTS
GRAHAM M. ANDRES
CIVIL
No. 52545
REGISTERED PROFESSIONAL ENGINEER

05/03/22

SHEET NUMBER:	REVISION:
C-1.2	4



1 FINAL ELEVATION
SCALE: NOT TO SCALE

INSTALLER NOTE:

EXISTING AND PROPOSED ANTENNA/ EQUIPMENT POSITIONING SHOWN PER RFDS. FIELD CONDITIONS MAY VARY.

TIE-BACK ARM NOTE:

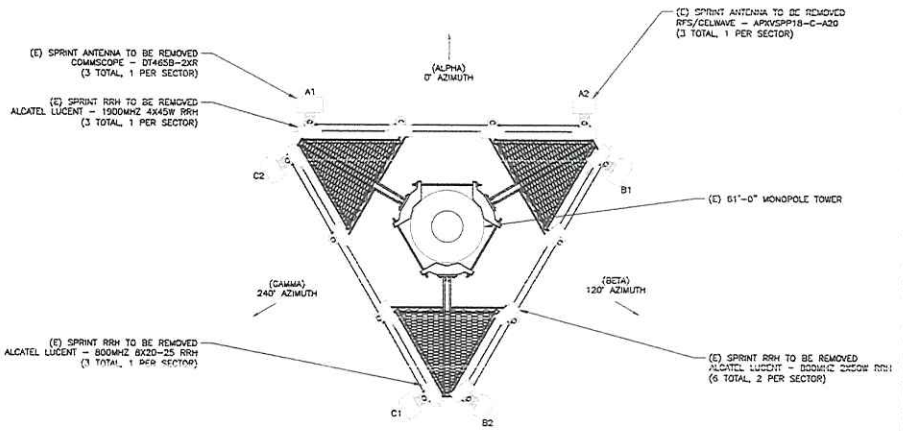
TIE-BACK ARMS SHOWN ARE FOR REFERENCE PURPOSES ONLY. TIE-BACK ARMS TO BE INSTALLED PER MOUNT MANUFACTURERS SPECIFICATIONS, ALSO ADHERING TO CROWN CASTLE CCI-STD-10294 STANDARD FOR INSTALLATION OF MOUNTS AND APPURTENANCES.

TOWER ANALYSIS NOTES:

1. THE DESIGN DEPICTED IN THESE DRAWINGS IS VALID WHEN ACCOMPANIED BY A CORRESPONDING PASSING TOWER ANALYSIS.
2. CONSTRUCTION MANAGER / GENERAL CONTRACTOR SHALL REVIEW THE TOWER ANALYSIS FOR ANY CONDITIONS PRIOR TO INSTALLATION.
3. ANY REQUIRED TOWER MODIFICATION DESIGN OR TOWER REPLACEMENT SHALL BE APPROVED BY EOR.

MOUNT ANALYSIS NOTES:

1. THE DESIGN DEPICTED IN THESE DRAWINGS IS VALID WHEN ACCOMPANIED BY A CORRESPONDING PASSING MOUNT ANALYSIS.
2. CONSTRUCTION MANAGER / GENERAL CONTRACTOR SHALL REVIEW THE MOUNT ANALYSIS FOR ANY CONDITIONS PRIOR TO INSTALLATION.
3. ANY REQUIRED MOUNT MODIFICATION DESIGN OR MOUNT REPLACEMENT SHALL BE APPROVED BY EOR.

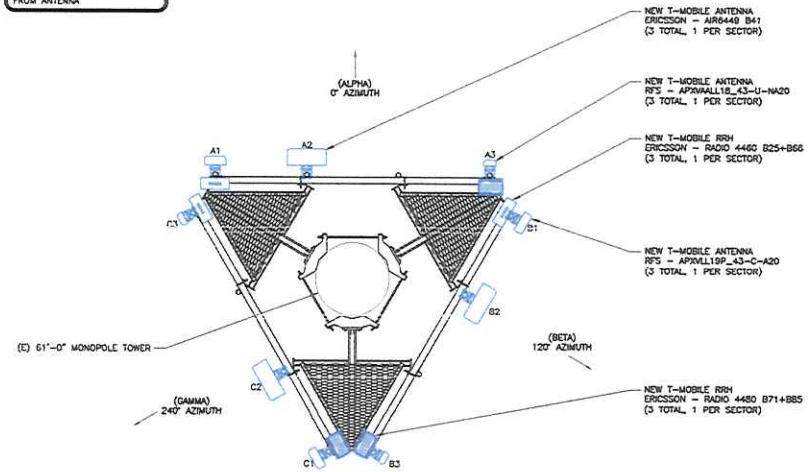


2 EXISTING ANTENNA LAYOUT AT 61'-0"
SCALE: NOT TO SCALE

N

RRH NOTE:

CONTRACTOR TO ENSURE RRHs ARE INSTALLED MIN 8" AWAY FROM ANTENNA



3 FINAL ANTENNA LAYOUT AT 61'-0"
SCALE: NOT TO SCALE

N

T-Mobile

4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE

1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

TOWER ENGINEERING PROFESSIONALS

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

TEP JOB #: 217024366579

T-MOBILE SITE NUMBER:
4HY1505A

BU #: **875071**
WEST TISBURY AIRPORT

71 AIRPORT RD,
W. TISBURY, MA 02575

EXISTING 61'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
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2	11/19/21	INS	CONSTRUCTION	SPK
3	1/18/22	INS	CONSTRUCTION	SPK
5	5/03/22	INS	CONSTRUCTION	SPK

SEAL

COMMONWEALTH OF MASSACHUSETTS
JOSEPH M. ANDRES
CIVIL
No. 22545
REGISTERED PROFESSIONAL ENGINEER

05/03/22

SHEET NUMBER: C-2

REVISION: 4

FINAL ANTENNA SCHEDULE

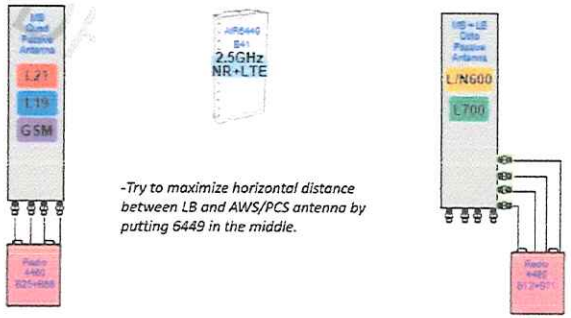
SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	L2100, L1900, G1900	63'-0"	0°	RFS	APXVLL19P_43-C-A20 (QUAD)	0°	0°	ERICSSON - RADIO 4460 B25+B66	(1) 6x24 HCS 4AWG 30m
ALPHA	A2	L2500, N2500	63'-0"	0°	ERICSSON	AIR6449 B41 (ACTIVE ANTENNA - MASSIVE MIMO)	0°	0°	-	HYBRID (SHARED)
ALPHA	-	-	-	-	-	-	-	-	-	-
ALPHA	A3	L700, L600, N600,	63'-0"	0°	RFS	APXVAALL18_43-U-NA20 (OCTO)	0°	0°	ERICSSON - RADIO 4480 B71+B85	HYBRID (SHARED)
BETA	B1	L2100, L1900, G1900	63'-0"	120°	RFS	APXVLL19P_43-C-A20 (QUAD)	0°	0°	ERICSSON - RADIO 4460 B25+B66	(1) 6x24 HCS 4AWG 30m
BETA	B2	L2500, N2500	63'-0"	120°	ERICSSON	AIR6449 B41 (ACTIVE ANTENNA - MASSIVE MIMO)	0°	0°	-	HYBRID (SHARED)
BETA	-	-	-	-	-	-	-	-	-	-
BETA	B3	L700, L600, N600,	63'-0"	120°	RFS	APXVAALL18_43-U-NA20 (OCTO)	0°	0°	ERICSSON - RADIO 4480 B71+B85	HYBRID (SHARED)
GAMMA	C1	L2100, L1900, G1900	63'-0"	240°	RFS	APXVLL19P_43-C-A20 (QUAD)	0°	0°	ERICSSON - RADIO 4460 B25+B66	HYBRID (SHARED)
GAMMA	C2	L2500, N2500	63'-0"	240°	ERICSSON	AIR6449 B41 (ACTIVE ANTENNA - MASSIVE MIMO)	0°	0°	-	HYBRID (SHARED)
GAMMA	-	-	-	-	-	-	-	-	-	-
GAMMA	C3	L700, L600, N600,	63'-0"	240°	RFS	APXVAALL18_43-U-NA20 (OCTO)	0°	0°	ERICSSON - RADIO 4480 B71+B85	HYBRID (SHARED)

PROPOSED ANTENNA/EQUIPMENT SHOWN IN BOLD

FINAL CABLE SCHEDULE

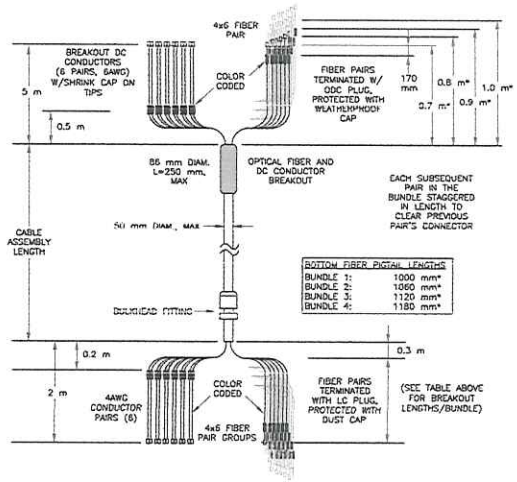
STATUS	CABLE TYPE	SIZE	QUANTITY
NEW	HCS	6x24 4AWG 30m	2
CABLE QUANTITY			2

1 PROPOSED ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE



-Try to maximize horizontal distance between LB and AWS/PCS antenna by putting 6449 in the middle.

2 PLUMBING DIAGRAM
SCALE: NOT TO SCALE



3 HCS DETAIL
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

TOWER ENGINEERING PROFESSIONALS
326 TRYON RD
RALEIGH, NC 27603
(919) 661-6351
TEP JOB #: 217324.000079

T-MOBILE SITE NUMBER:
4HY1505A

BU #: **875071**
WEST TISBURY AIRPORT

71 AIRPORT RD,
W. TISBURY, MA 02575

EXISTING 61'-0"
MONOPOLE

ISSUED FOR:

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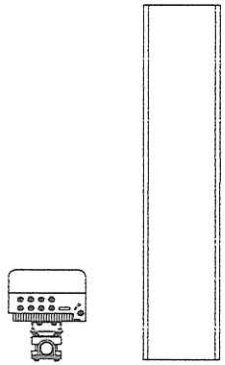
4	5/03/22	INS	CONSTRUCTION	SPK

SEAL:

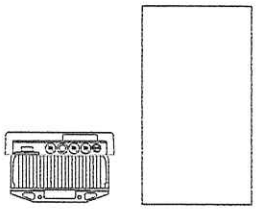
05/03/22

SHEET NUMBER:	REVISION:
C-3	4



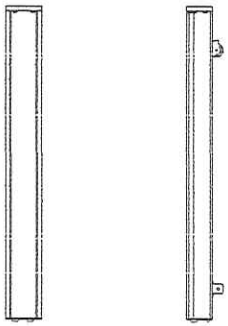
RFS/CELWAVE – APXVLL19P_43-C-A20
WEIGHT (WITHOUT MOUNTING HARDWARE): 48.39 LBS
SIZE (HxWxD): 75.8x11.30x4.60 IN.

1 RFS/CELWAVE – APXVLL19P_43-C-A20
SCALE: NOT TO SCALE



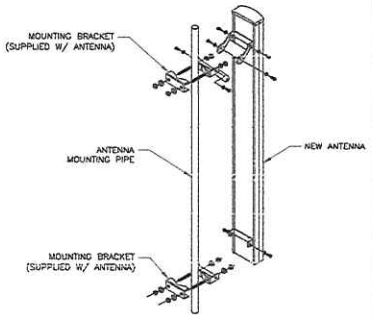
ERICSSON – AIR6449 B41
WEIGHT: 104.0 LBS
SIZE (HxWxD): 33.10x20.60x8.60 IN.

2 ERICSSON – AIR6449 B41
SCALE: NOT TO SCALE

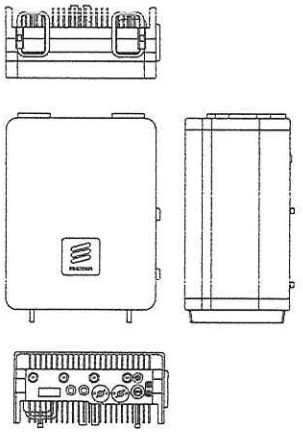


RFS/CELWAVE – APXVAALL18_43-U-NA20
WEIGHT (WITHOUT MOUNTING HARDWARE): 26.34 LBS
SIZE (HxWxD): 78x6.65x3.15 IN.

3 RFS/CELWAVE – APXVAALL18_43-U-NA20
SCALE: NOT TO SCALE

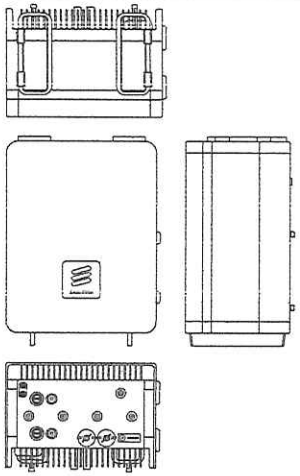


4 ANTENNA MOUNTING DETAIL
SCALE: NOT TO SCALE



ERICSSON – RADIO 4460 B25+B66
WEIGHT: 109.0 LBS
SIZE (HxWxD): 17.00x15.10x11.90 IN.

5 ERICSSON – RADIO 4460 B25+B66
SCALE: NOT TO SCALE

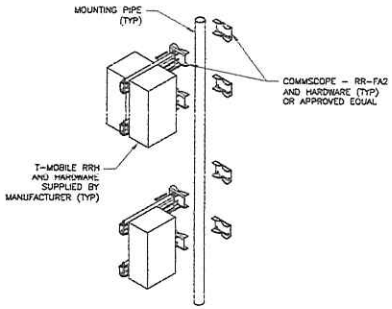


ERICSSON – RADIO 4480 B71+B85
WEIGHT: 81.0 LBS
SIZE (HxWxD): 22.00x15.70x7.50 IN.

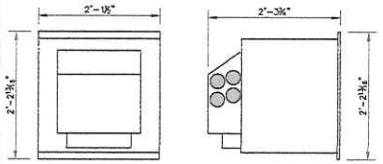
6 ERICSSON – RADIO 4480 B71+B85
SCALE: NOT TO SCALE

INSTALLER NOTES:

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



7 RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE



8 FIBER BOX DETAILS
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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

TEP JOB #: 217324.556579

T-MOBILE SITE NUMBER:
4HY1505A

BU #: **875071**
WEST TISBURY AIRPORT

71 AIRPORT RD,
W. TISBURY, MA 02575

EXISTING 61'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/01/21	AGO	CONSTRUCTION	JTC
1	10/25/21	INS	CONSTRUCTION	SPK
2	11/19/21	INS	CONSTRUCTION	SPK
3	1/18/22	INS	CONSTRUCTION	SPK
3	5/05/22	INS	CONSTRUCTION	SPK

SEAL:

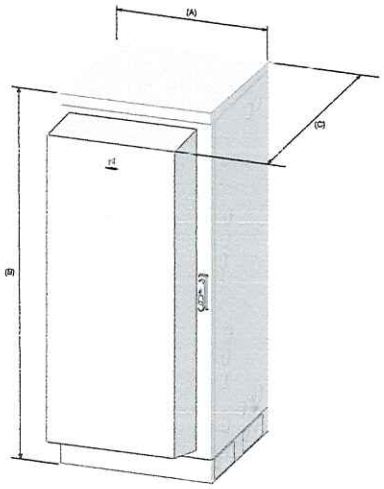
GRAHAM M. ANDRES
CIVIL
No. 25245
REGISTERED PROFESSIONAL ENGINEER

05/05/22

SHEET NUMBER:	REVISION:
C-4	4

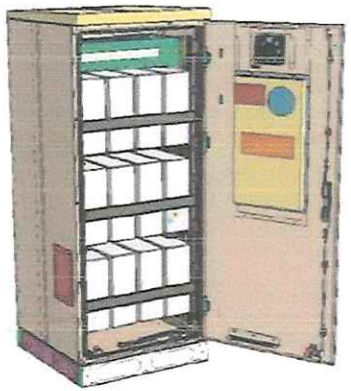
INSTALLER NOTES:

1. INFORMATION SHOWN PROVIDED BY T-MOBILE. CONTRACTOR TO REFERENCE CABINET MANUFACTURER'S SPECIFICATIONS FOR FURTHER DETAILS.
2. CONTRACTOR TO FOLLOW THE LATEST VERSION OF T-MOBILE REGIONAL CONSTRUCTION STANDARDS. CONTACT T-MOBILE FOR DETAILS.

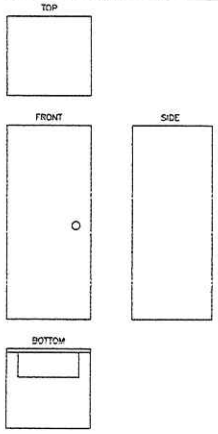


Dimensions	
Width (A)	650 mm / 25.5906 in
Height (B)	1400 mm / 57.08661 in (without base frame) 1600 mm / 62.99213 in (with base frame)
Depth (C)	250 mm / 33.4646 in
Weight	
Empty enclosure	176 kg / 388.014 lb

1 ERICSSON 6160 CABINET DETAILS
SCALE: NOT TO SCALE

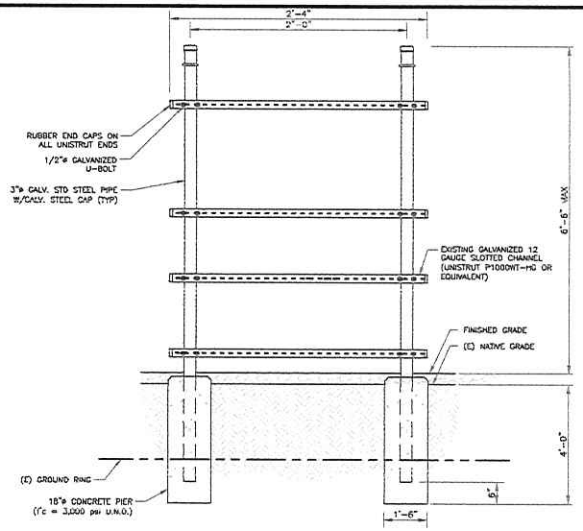


2 ERICSSON B160 CABINET DETAILS
SCALE: NOT TO SCALE



INTERSECT – CAM-LOK GENERATOR CONNECTOR
WEIGHT: 13 LBS
SIZE (HxWxD): 23x10x3.5 IN.

3 INTERSECT – CAM-LOK GENERATOR CONNECTOR
SCALE: NOT TO SCALE



4 UTILITY FRAME ELEVATION
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

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WEST TISBURY AIRPORT

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SEAL:

10/25/21

SHEET NUMBER:	REVISION:
C-5	1

NOTE:
LOAD CALCULATIONS TAKEN FROM INFORMATION PROVIDED BY CROWN CASTLE AND POWER ANALYSIS TOOL, USING RFDS DATED 03/23/2021. CONTRACTOR TO VERIFY LOADS WITH MANUFACTURER'S SPECIFICATIONS PRIOR TO CONSTRUCTION.

PROPOSED 200A M.C.B. 240/120 VAC, 1ø, 3W PPC PANEL SCHEDULE

LOAD SERVED	VOLT AMPERES (WATTS) L1	VOLT AMPERES (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPERES (WATTS) L1	VOLT AMPERES (WATTS) L2	LOAD SERVED
MMBTS	2220		60	1	A	7	60	100		SURGE
		2220		2	B	8			100	
SPARE	-		-	3	A	9	-	-		SPARE
SPARE		-	-	4	B	10	-		-	SPARE
SPACE	-		-	5	A	11	20	180		TELCO OFI
TELCO FAN		180	20	6	B	12	20		500	LIGHT
VOLT AMPS	2220	2400						280	600	VOLT AMPS

L1 VOLT AMPERES	2500	3000 L2 VOLT AMPERES
	3000	MAX VOLT AMPERES
	25	MAX AMPS
	31.3	MAX AMPS x 125%

PROPOSED 200A M.C.B. 240/120 VAC, 1ø, 3W PPC PANEL SCHEDULE

LOAD SERVED	VOLT AMPERES (WATTS) L1	VOLT AMPERES (WATTS) L2	TRIP	CKT #	PHASE	CKT #	TRIP	VOLT AMPERES (WATTS) L1	VOLT AMPERES (WATTS) L2	LOAD SERVED
6160 ENCLOSURE	7920		125	1	A	7	60	100		SURGE
		7920		2	B	8			100	
GFCI INTERNAL IN 6160	180		20	3	A	9	-	-		SPARE
SPARE		-	-	4	B	10	-		-	SPARE
SPACE	-		-	5	A	11	20	180		TELCO OFI
TELCO FAN		180	20	6	B	12	20		500	LIGHT
VOLT AMPS	8100	8100						280	600	VOLT AMPS

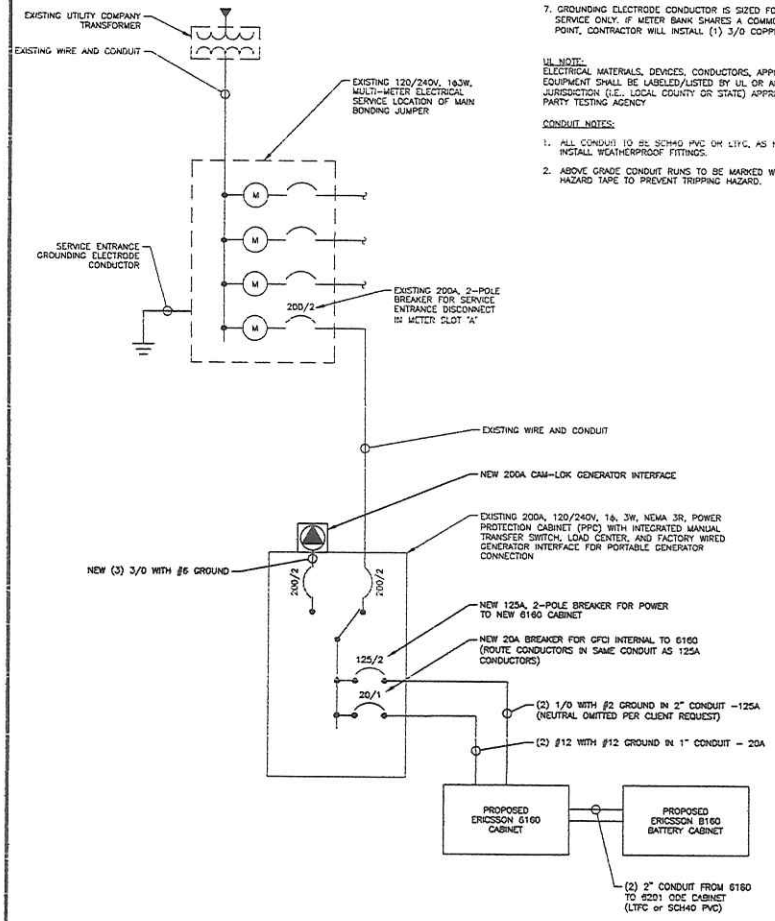
L1 VOLT AMPERES	8380	8700 L2 VOLT AMPERES
	8700	MAX VOLT AMPERES
	72.5	MAX AMPS
	90.8	MAX AMPS x 125%

PROPOSED BREAKER & LOADING IN BOLD

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE

GENERAL NOTES:

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



2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

ONE-LINE DIAGRAM NOTES:

1. ELECTRICAL SERVICE SHALL BE 200A, 120/240V, 1ø, 3W.
2. FOR COMPLETE INTERNAL WIRING AND ARRANGEMENT, REFER TO VENDOR PRINTS PROVIDED BY EQUIPMENT MANUFACTURER.

UTILITY NOTES:

1. CONTRACTOR SHALL VERIFY AVAILABLE FAULT CURRENT WITH POWER COMPANY AND ENSURE ALL ELECTRICAL EQUIPMENT IS SUITABLE FOR AVAILABLE FAULT CURRENT.
2. CONTRACTOR SHALL COORDINATE UTILITY SERVICES WITH LOCAL UTILITY COMPANIES. VERIFY ALL REQUIREMENTS WITH UTILITY COMPANY STANDARDS.
3. ONE-LINE DIAGRAM IS FOR SCHEMATIC PURPOSES ONLY AND IS NOT INDICATIVE OF THE ACTUAL EQUIPMENT LAYOUT.
4. ALL EQUIPMENT WILL HAVE A MINIMUM AIC OF 10 KA. CONTRACTOR TO DETERMINE AVAILABLE FAULT CURRENT BEFORE ENERGIZING EQUIPMENT. THE AMOUNT OF AVAILABLE FAULT CURRENT SHALL BE MARKED ON THE SERVICE EQUIPMENT PER NEC 110.24.
5. CONTRACTOR SHALL NOTIFY UTILITY COMPANY OF CHANGES IN ELECTRICAL LOAD.
6. CONTRACTOR TO VERIFY EXISTING CONDUIT(S) SIZE(S) PRIOR TO CONSTRUCTION AND MAY REUSE EXISTING CONDUIT(S) IF THEY MEET THE MINIMUM REQUIREMENTS PER NEC CODE.
7. GROUNDING ELECTRODE CONDUCTOR IS SIZED FOR SINGLE 200A SERVICE ONLY. IF METER BANK SHARES A COMMON NEUTRAL/GROUND POINT, CONTRACTOR WILL INSTALL (1) 3/0 COPPER GEC INSTEAD.

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

CONDUIT NOTES:

1. ALL CONDUIT TO BE SCH40 PVC OR LTFC, AS NOTED. INSTALL WEATHERPROOF FITTINGS.
2. ABOVE GRADE CONDUIT RUNS TO BE MARKED WITH HAZARD TAPE TO PREVENT TRIPPING HAZARD.

T-Mobile
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CROWN CASTLE
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MAHWAH, NJ 07430

TOWER ENGINEERING PROFESSIONALS
326 TRYON RD
RALEIGH, NC 27603
(919) 661-6351
TEP JOB #: 21732436679

T-MOBILE SITE NUMBER:
4HY1505A

BU #: **875071**
WEST TISBURY AIRPORT

71 AIRPORT RD,
W. TISBURY, MA 02575

EXISTING 61'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/01/21	AGU	CONSTRUCTION	JTC
1	10/25/21	INS	CONSTRUCTION	SPK
2	11/19/21	INS	CONSTRUCTION	SPK
3	1/28/22	INS	CONSTRUCTION	SPK
4	5/05/22	INS	CONSTRUCTION	SPK

SEAL:

GRAHAM M. ANDRES CIVIL No. 52345 REGISTERED PROFESSIONAL ENGINEER

05/05/22

SHEET NUMBER:	REVISION:
E-1	4

T-MOBILE GROUNDING NOTES:

ALL GROUNDS MUST ROUTE DOWNHILL FOR ENTIRE DURATION OF ROUTE

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

ICE BRIDGE/ EQUIPMENT POST:

#2 SOLID COPPER TINNED, EXOTHERMICALLY WELDED TO GROUND RING (BOTH ENDS), FINAL WELD COLD GALVANIZED, IN ¾" NON-METALLIC SEAL TIGHT CONDUIT, SEALED WITH SILICONE, ANCHORED TO PAD/PLATFORM TO AVOID TRIP HAZARD USING HAMMER SET ANCHORS.

PEDESTALS, PLINTHS, SSC CABINET, FCOA CABINETS:

1. #2 SOLID COPPER TINNED, 2 HOLE LUG WITH FLAT AND LOCK WASHER AT EQUIPMENT; EXOTHERMICALLY WELDED TO GROUND RING, FINAL WELD COLD GALVANIZED, IN ¾" NON-METALLIC SEAL TIGHT CONDUIT, SEALED WITH SILICONE, ANCHORED TO PAD TO AVOID TRIP HAZARD USING HAMMER SET ANCHORS. EACH PART REQUIRES A SEPARATE DOWNLEAD. NO DAISY CHAINS.

2. ALL COMPONENTS INSIDE FCOA CABINETS REQUIRE A DEDICATED GROUND.

COVP's:

#6 THHN STRANDED (GREEN JACKET), CONNECTED AT EQUIPMENT SIDE USING OVP TERMINAL BLOCK CONNECTION; MECHANICALLY CONNECTED TO GROUND REFERENCE AT MASTER BUSS BAR USING 2 HOLE LUG WITH FLAT AND LOCK WASHER, IN ¾" NON-METALLIC SEAL TIGHT CONDUIT, SEALED WITH SILICONE, AND ANCHORED TO PAD/PLATFORM TO AVOID TRIP HAZARD.

ANTENNA/ COVP/ RRU MAST PIPES:

1. ALL VERTICAL MAST PIPES: #2 SOLID COPPER TINNED, EXOTHERMICALLY WELDED TO TOP OF PIPE (PIPE, DOWN MOLD), FINAL WELD COLD GALVANIZED, BONDED TO TOP BUSS BAR WITH 2 HOLE COPPER COMPRESSION LUG, FLAT AND LOCK WASHER.

2. EXISTING/REUSED PIPES: #2 SOLID COPPER TINNED, BONDED WITH COLD WATER CLAMP TO TOP OF PIPE, BONDED TO TOP BUSS WITH 2 HOLE COPPER COMPRESSION LUG, FLAT AND LOCK WASHER

AIR TERMINALS:

TO BE INSTALLED, ONLY IF REQUIRED

TMA's, DIPLEXERS AND TRIPLEXERS:

1. #6 THHN, WITH PROPER COPPER COMPRESSION LUG, FLATS AND LOCK WASHERS

2. ALL GROUND LUGS ON TMA MUST BE GROUNDED WITH SEPARATE DOWNLEAD TO BUSS BAR (NO DAISY CHAINS)

ELEVATED STEEL PLATFORMS WITH LUNAR FEET:

#2 SOLID COPPER TINNED, EXOTHERMICALLY WELDED (FLAT PLATE MOLD) TO OUTSIDE PERIMETER BEAMS IN FOUR (4) PLACES, FINAL WELD COLD GALVANIZED, BONDED DIRECTLY TO SUBGRADE GROUND RING

STEEL CANOPY (STEEL PLATFORM OR CONCRETE PAD):

1. #2 SOLID COPPER TINNED, EXOTHERMICALLY WELDED (PIPE, DOWN MOLD) TO BOTTOM OF ALL VERTICAL SUPPORT POSTS, TYPICALLY FOUR (4) PIPES, FINAL WELD COLD GALVANIZED, BONDED DIRECTLY TO SUBGRADE GROUND RING.

2. #2 SOLID COPPER TINNED, EXOTHERMICALLY WELDED (PIPE, UP MOLD) TO TOP OF ALL VERTICAL SUPPORT POSTS, TYPICALLY FOUR (4) PIPES, FINAL WELD COLD GALVANIZED, BONDED UP TO CANOPY GRIP-STRUT USING 2 HOLE COPPER COMPRESSION LUG, FLAT AND LOCK WASHER.

RRU:

#6 THHN, WITH PROPER COPPER COMPRESSION LUG, ANTI-OXIDANT TO SECTOR BUSS BAR

FSBE ALARM BOX:

#6 THHN WITH ONE HOLE LUG BONDED TO PREVIOUSLY GROUNDED FCOA, PLINTH OR BUSS BAR.

SURGE SUPPRESSORS:

#6 THHN TO PREVIOUSLY GROUNDED BUSS BAR USING PROPER LUGS

FYGA/FYGB BRACKET:

1. #6 THHN TO PREVIOUSLY GROUNDED BUSS BAR USING PROPER LUGS

2. THROUGH BOLTS WITH FLAT, LOCK ON BRACKET

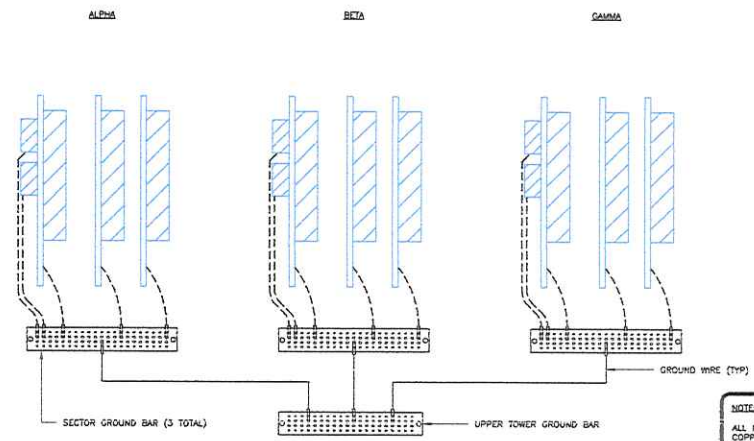
BUSS BARS:

1. PLATFORM / PAD BUSS BAR SHOULD BE MINIMUM 12" TINNED COPPER WITH INSULATORS, AND SHOULD HAVE TWO (2) EXOTHERMICALLY WELDED DOWN LEADS DIRECTLY TO GROUND RING USING #2 SOLID COPPER TINNED WIRE.

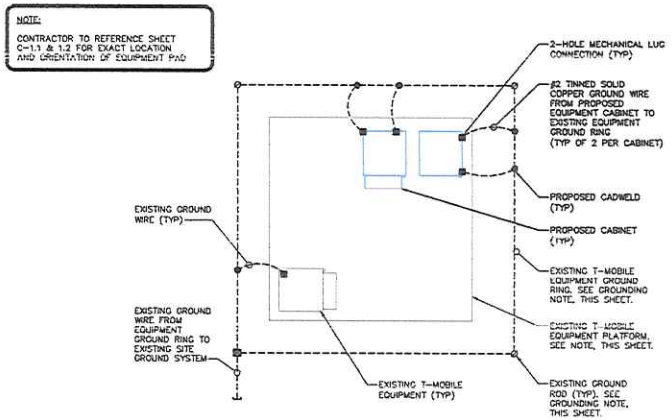
2. SECTOR BUSS BAR SHOULD BE PROPERLY SIZED TO ACCOMMODATE NECESSARY GROUNDING FOR EQUIPMENT ON EACH MOUNT, AND MAY BE SOLID COPPER (TINNED NOT REQUIRED). DO NOT USE INSULATORS ON SECTOR BUSS BARS ATTACH DIRECTLY TO TOWER MOUNT STEEL.

GENERAL:

- NO GROUND KITS ON HYBRID TRUNKS (TOP OR BOTTOM)
- NO GROUND KITS ON MICROWAVE IF CABLES (TOP OR BOTTOM)
- MICROWAVE SURGE SUPPRESSORS ARE NOT TO BE INSTALLED UPSTAIRS ON TOWER, DOWNSTAIRS ONLY (BULKHEAD PREFERRED)
- MICROWAVE ODU MUST BE GROUNDED TO TOWER TOP SECTOR OR COLLECTOR BUSS BAR
- ALL TMA'S AND DIPLEXERS MUST BE GROUNDED TO BUSS BAR. NO DAISY CHAIN ON TWIN/DUAL TMA
- ALL LUGS SHOULD BE PROPERLY SIZED FOR CONDUCTOR, BURNDY TINNED COPPER COMPRESSION STYLE
  1. INDOOR (OR INSIDE CABINET) SHOULD HAVE WINDOW
  2. OUTDOOR SHOULD NOT HAVE WINDOW
- CONTRACTOR TO VERIFY EXISTENCE AND LOCATION OF EXISTING SITE GROUND SYSTEM.
- CONTRACTOR SHALL VERIFY THAT GROUNDING ELECTRODES SHALL BE CONNECTED IN A RING USING #2 AWG BARE TINNED COPPER WIRE. THE TOP OF THE GROUND RODS AND THE RING CONDUCTOR SHALL BE 30" BELOW FINISHED GRADE, OR TO FROST DEPTH, WHICHEVER IS GREATER. GROUNDING ELECTRODES SHALL BE DRIVEN ON 10'-0" CENTERS (PROVIDE AND INSTALL AS REQUIRED. REQUIRED PER PLAN BELOW).
- GROUNDING CONDUCTORS SHALL BE OF EQUAL LENGTH, MATERIAL, AND BONDING TECHNIQUE.
- CONTRACTOR SHALL ENSURE GROUND RING IS WITHIN 12 TO 36 INCHES OF THE EQUIPMENT PLATFORM. PROVIDE AND INSTALL GROUNDING CONNECTIONS SHOWN BELOW AS NEEDED PER EXISTING SITE GROUNDING SYSTEM. CONTRACTOR SHALL VERIFY ALL EXISTING SITE GROUNDING CONDITIONS BEFORE STARTING WORK OR PURCHASING EQUIPMENT.
- ALL DOWN CONDUCTORS MUST GO DOWN.



1 TYPICAL ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE



2 TYPICAL CABINET GROUNDING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

TOWER ENGINEERING PROFESSIONALS
326 TRYON RD
RALEIGH, NC 27603
(919) 661-6351
TEP JOB #: 217524.306579

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BU #: **875071**
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0	10/01/21	AGU	CONSTRUCTION	JTC
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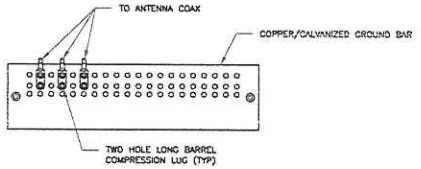
SEAL:

GRAHAM M. ANDRES, CIVIL, NO. 52545, REGISTERED PROFESSIONAL ENGINEER, COMMONWEALTH OF MASSACHUSETTS

10/25/21

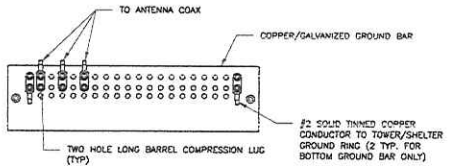
SHEET NUMBER:	REVISION:
G-1	1



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.

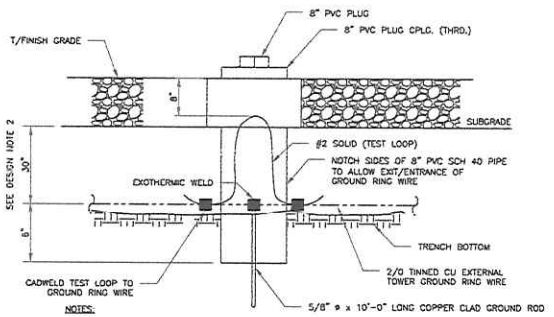
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



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.

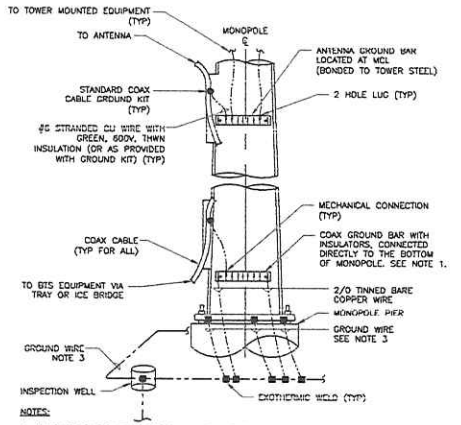
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



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)

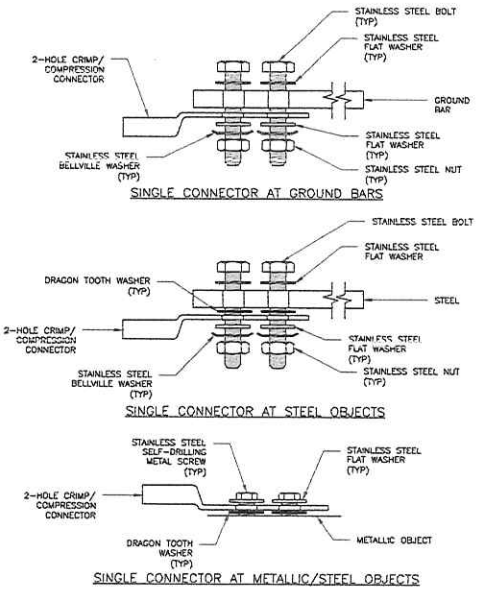
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



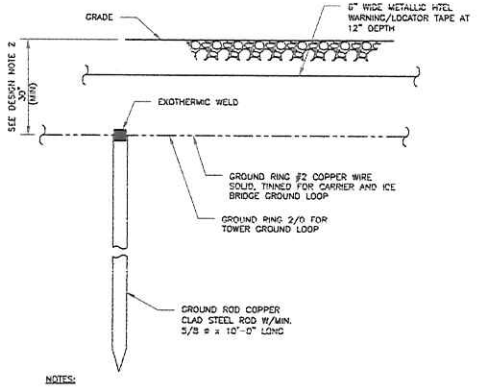
NOTES:

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

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

TOWER ENGINEERING PROFESSIONALS
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RALEIGH, NC 27603
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ISSUED FOR:

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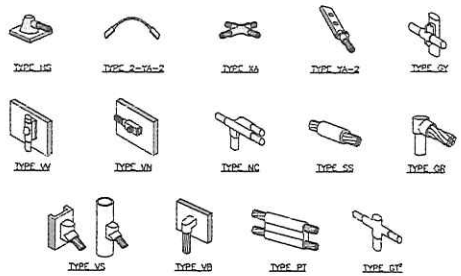
1	10/25/21	INS	CONSTRUCTION	SPH

SEAL:

GRAHAM M. ANDRES
CIVIL
No. 52345
REGISTERED PROFESSIONAL ENGINEER

10/25/21

SHEET NUMBER:	REVISION:
G-2	1

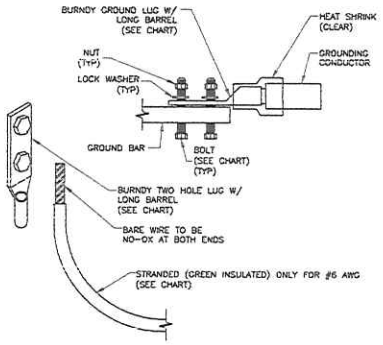


NOTE:

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

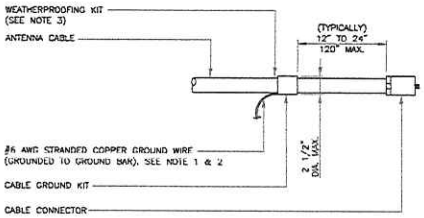
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

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

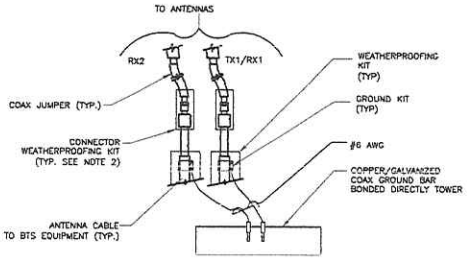
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

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

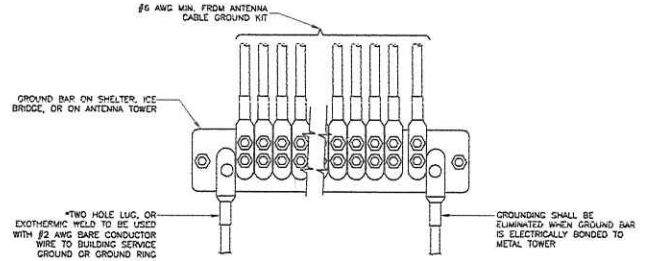
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



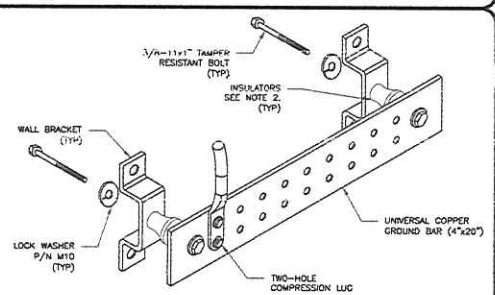
NOTES:

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

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



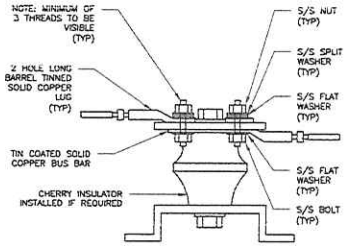
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



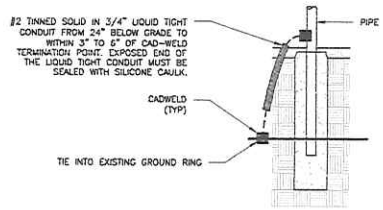
NOTES:

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

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

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

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1	10/25/21	INS	CONSTRUCTION	GPK

SEAL:

10/25/21

SHEET NUMBER:	REVISION:
G-3	1

Date: **April 19, 2022**

Black & Veatch Corp.
11401 Lamar Avenue
Overland Park, KS 66211
(913) 458-6909

Subject:	**Structural Analysis Report**	
Carrier Designation:	**Site Number:**	4HY1505A
	Site Name:	BS23XC705
Crown Castle Designation:	**BU Number:**	875071
	Site Name:	WEST TISBURY AIRPORT
	JDE Job Number:	684155
	Work Order Number:	2102685
	Order Number:	583919 Rev. 3
Engineering Firm Designation:	**Black & Veatch Corp. Project Number:**	406642
Site Data:	**71 Airport Rd, W. Tisbury, Dukes County, MA**	
	Latitude *41° 23' 15.684"*, Longitude *-70° 36' 45"*	
	61 Foot - Monopole Tower	

Black & Veatch Corp. 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:

LC5: Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 140 mph as required by the 2015 IBC as amended by the Massachusetts State Building Code, Ninth Edition. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Jumpon Uea-areevorakul

Respectfully submitted by:

Justin Vibbert, P.E.
Professional Engineer

COMMONWEALTH OF MASSACHUSETTS
JUSTIN D. VIBBERT
No.56889
REGISTERED PROFESSIONAL ENGINEER

4/19/2022

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 61 ft Monopole tower designed by Paul J. Ford and Company.

The tower has been modified per reinforcement drawings prepared by Paul J. Ford and Company in March of 2011. Reinforcement consists of addition of reinforcement plates at elevation 0' to 23.25' and base plate and transition stiffeners. Refer to the passing Modification Observation Report by Paul J. Ford and Company in July of 2011. This modification has been considered effective in this analysis.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	140 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic Ss:	0.141
Seismic S1:	0.052
Service Wind Speed:	60 mph
Seismic Loading:	Does not control per engineering judgment.

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)
61.0	63.0	3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe	2	1-5/8
		3	ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	ericsson	Radio 4480_TMOV2		
		3	rfs celwave	APXVAALL18_43-U-NA20_TMO w/ Mount Pipe		
		3	rfs celwave	APXVLL19P_43-C-A20_TMO w/ Mount Pipe		
	61.0	1	kenwood	T1510KT12H 12.5' Platform w/ P2STD Handrail		

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)
53.0	58.0	1	radiowaves	SP2-2.4	13	7/8
	53.0	1	cci tower mounts (v2.1)	Platform Mount [14' LP 403-1]		
		4	decibel	DB846H90E-SX w/ Mount Pipe		
		8	decibel	DB846H90E-SX w/Mount Pipe		
43.0	43.0	1	cci tower mounts (v2.1)	Side Arm Mount [SO 104-3]	12	1-1/4
		3	css	X7CAP-665 w/ Mount Pipe		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1515344	CCISITES
4-POST-MODIFICATION INSPECTION	2929344	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1635303	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1430655	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2847129	CCISITES

3.1) Analysis Method

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

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

3.2) Assumptions

1) Tower and structures were maintained in accordance with the TIA-222 Standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Black & Veatch Corp. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary) (Monopole Tower)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
61 - 56	Pole	TP17.25x16.5x0.1875	Pole	17.4%	Pass
56 - 51	Pole	TP18.001x17.25x0.1875	Pole	33.7%	Pass
51 - 46	Pole	TP18.751x18.001x0.1875	Pole	52.0%	Pass
46 - 41	Pole	TP19.502x18.751x0.1875	Pole	69.4%	Pass
41 - 37.5	Pole	TP20.44x19.502x0.1875	Pole	81.3%	Pass
37.5 - 32.5	Pole	TP20.403x19.652x0.25	Pole	68.7%	Pass
32.5 - 27.5	Pole	TP21.153x20.403x0.25	Pole	78.0%	Pass
27.5 - 22.5	Pole	TP21.903x21.153x0.25	Pole	86.9%	Pass
22.5 - 21	Pole	TP22.128x21.903x0.25	Pole	89.4%	Pass
21 - 20.75	Pole + Reinf.	TP22.166x22.128x0.2688	Pole	90.1%	Pass
20.75 - 20.5	Pole + Reinf.	TP22.203x22.166x0.475	Reinf. 2 Compression	67.2%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
20.5 - 15.5	Pole + Reinf.	TP22.954x22.203x0.4688	Reinf. 2 Compression	73.7%	Pass
15.5 - 10.5	Pole + Reinf.	TP23.704x22.954x0.4625	Reinf. 2 Compression	79.7%	Pass
10.5 - 5.5	Pole + Reinf.	TP24.455x23.704x0.45	Reinf. 2 Compression	85.3%	Pass
5.5 - 0.5	Pole + Reinf.	TP25.205x24.455x0.4438	Reinf. 2 Compression	90.6%	Pass
0.5 - 0	Pole + Reinf.	TP25.28x25.205x0.4438	Reinf. 2 Compression	91.1%	Pass
				Summary	
			Pole	90.2%	Pass
			Reinforcement	91.1%	Pass
			Overall	91.1%	Pass

Table 5 - Tower Component Stresses vs. Capacity (Monopole Tower) - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	65.7	Pass
	Base Plate		38.5	Pass
	Base Plate Stiffeners		53.3	Pass
1	Base Foundation (Structure)	0	54.2	Pass
	Base Foundation (Soil Interaction)		90.6	Pass

Structure Rating (max from all components) =	91.1%

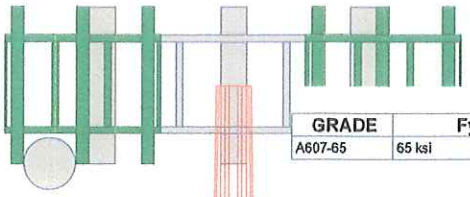
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity. Rating per TIA-222-H Section 15.5.

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

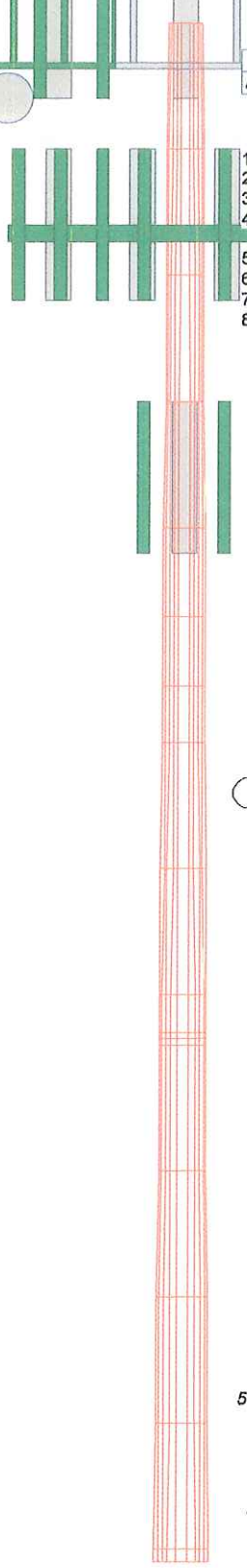


MATERIAL STRENGTH

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

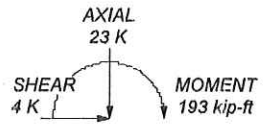
TOWER DESIGN NOTES

1. Tower is located in Dukes County, Massachusetts.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 140 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 91.1%

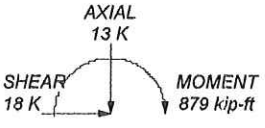


Section	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Length (ft)	0.50	5.00	5.00	5.00	5.00	2.50	1.50	2.50	5.00	5.00	5.00	6.25	5.00	5.00	5.00	5.00
Number of Sides	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Thickness (in)	0.4437	0.4437	0.4500	0.4625	0.4688	0.4688	0.2500	0.2500	0.2500	0.2500	0.2500	0.1875	0.1875	0.1875	0.1875	0.1875
Socket Length (ft)												2.75				
Top Dia (in)	25.2050	24.4546	23.7042	22.9539	22.2035	22.0785	22.0160	21.9535	21.1530	20.4026	19.6522	19.5019	18.7514	18.0010	17.2505	16.5000
Bot Dia (in)	25.2800	25.2050	24.4546	23.7042	22.9539	22.2035	22.0785	22.0160	21.9033	21.1530	20.4026	20.4400	19.5019	18.7514	18.0010	17.2505
Grade					A607-65											
Weight (K)	4.60	0.1	0.7	0.6	0.6	0.6	0.0	0.0	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2

ALL REACTIONS ARE FACTORED



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



TORQUE 2 kip-ft
REACTIONS - 140 mph WIND

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Overland Park, KS 66211
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FAX:

Job: *WEST TISBURY AIRPORT (BU# 875071)*			
Project: *406642 (875071.2102685)*			
Client: Crown Castle	Drawn by: Jumpon Uea-areevorakul	App'd:	
Code: TIA-222-H	Date: 04/19/22	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

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

- Tower is located in Dukes County, Massachusetts.
- Tower base elevation above sea level: 53.00 ft.
- Basic wind speed of 140 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

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	61.00-56.00	5.00	0.00	12	16.5000	17.2505	0.1875	0.7500	A607-65 (65 ksi)
L2	56.00-51.00	5.00	0.00	12	17.2505	18.0010	0.1875	0.7500	A607-65 (65 ksi)
L3	51.00-46.00	5.00	0.00	12	18.0010	18.7514	0.1875	0.7500	A607-65 (65 ksi)
L4	46.00-41.00	5.00	0.00	12	18.7514	19.5019	0.1875	0.7500	A607-65 (65 ksi)
L5	41.00-34.75	6.25	2.75	12	19.5019	20.4400	0.1875	0.7500	A607-65 (65 ksi)
L6	34.75-32.50	5.00	0.00	12	19.6522	20.4026	0.2500	1.0000	A607-65 (65 ksi)
L7	32.50-27.50	5.00	0.00	12	20.4026	21.1530	0.2500	1.0000	A607-65 (65 ksi)
L8	27.50-22.50	5.00	0.00	12	21.1530	21.9033	0.2500	1.0000	A607-65 (65 ksi)
L9	22.50-21.00	1.50	0.00	12	21.9033	22.1285	0.2500	1.0000	A607-65 (65 ksi)
L10	21.00-20.75	0.25	0.00	12	22.1285	22.1660	0.2687	1.0750	A607-65 (65 ksi)
L11	20.75-20.50	0.25	0.00	12	22.1660	22.2035	0.4750	1.9000	A607-65 (65 ksi)
L12	20.50-15.50	5.00	0.00	12	22.2035	22.9539	0.4688	1.8750	A607-65 (65 ksi)
L13	15.50-10.50	5.00	0.00	12	22.9539	23.7042	0.4625	1.8500	A607-65 (65 ksi)
L14	10.50-5.50	5.00	0.00	12	23.7042	24.4546	0.4500	1.8000	A607-65 (65 ksi)
L15	5.50-0.50	5.00	0.00	12	24.4546	25.2050	0.4437	1.7750	A607-65 (65 ksi)
L16	0.50-0.00	0.50		12	25.2050	25.2800	0.4437	1.7750	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	17.0159	9.8487	334.5066	5.8399	8.5470	39.1373	677.8010	4.8472	3.9195	20.904
	17.7929	10.3018	382.8313	6.1085	8.9357	42.8427	775.7200	5.0702	4.1206	21.977
L2	17.7929	10.3018	382.8313	6.1085	8.9357	42.8427	775.7200	5.0702	4.1206	21.977
	18.5698	10.7549	435.5995	6.3772	9.3245	46.7156	882.6427	5.2932	4.3218	23.049
L3	18.5698	10.7549	435.5995	6.3772	9.3245	46.7156	882.6427	5.2932	4.3218	23.049
	19.3468	11.2080	493.0066	6.6459	9.7132	50.7561	998.9651	5.5162	4.5229	24.122
L4	19.3468	11.2080	493.0066	6.6459	9.7132	50.7561	998.9651	5.5162	4.5229	24.122
	20.1237	11.6611	555.2481	6.9146	10.1020	54.9642	1125.0832	5.7392	4.7240	25.195
L5	20.1237	11.6611	555.2481	6.9146	10.1020	54.9642	1125.0832	5.7392	4.7240	25.195
	21.0949	12.2274	640.1460	7.2504	10.5879	60.4600	1297.1093	6.0180	4.9754	26.536
L6	20.6846	15.6188	750.4769	6.9460	10.1799	73.7217	1520.6696	7.6871	4.5968	18.387
	21.0341	16.2228	840.9603	7.2146	10.5686	79.5720	1704.0136	7.9844	4.7979	19.192
L7	21.0341	16.2228	840.9603	7.2146	10.5686	79.5720	1704.0136	7.9844	4.7979	19.192
	21.8110	16.8269	938.4391	7.4833	10.9572	85.6456	1901.5321	8.2817	4.9990	19.996
L8	21.8110	16.8269	938.4391	7.4833	10.9572	85.6456	1901.5321	8.2817	4.9990	19.996
	22.5878	17.4309	1043.1738	7.7519	11.3459	91.9425	2113.7530	8.5790	5.2001	20.8
L9	22.5878	17.4309	1043.1738	7.7519	11.3459	91.9425	2113.7530	8.5790	5.2001	20.8
	22.8209	17.6122	1076.0481	7.8325	11.4625	93.8752	2180.3652	8.6682	5.2604	21.042
L10	22.8143	18.9168	1153.7802	7.8258	11.4625	100.6566	2337.8715	9.3103	5.2102	19.387
	22.8531	18.9493	1159.7312	7.8392	11.4820	101.0045	2349.9298	9.3263	5.2202	19.424
L11	22.7803	33.1763	1992.3813	7.7654	11.4820	173.5226	4037.1047	16.3284	4.6675	9.826
	22.8192	33.2337	2002.7377	7.7788	11.5014	174.1298	4058.0896	16.3566	4.6775	9.847
L12	22.8214	32.8059	1978.0919	7.7810	11.5014	171.9869	4008.1504	16.1461	4.6943	10.014
	23.5982	33.9385	2190.1208	8.0497	11.8901	184.1970	4437.7784	16.7035	4.8954	10.443
L13	23.6004	33.4953	2162.7216	8.0519	11.8901	181.8927	4382.2603	16.4853	4.9121	10.621
	24.3773	34.6127	2386.4851	8.3205	12.2788	194.3583	4835.6658	17.0353	5.1132	11.056
L14	24.3817	33.6954	2325.7340	8.3250	12.2788	189.4107	4712.5676	16.5838	5.1467	11.437
	25.1585	34.7827	2558.2176	8.5936	12.6675	201.9516	5183.6424	17.1190	5.3478	11.884

Section	Tip Dia. in	Area in²	I in⁴	r in	C in	I/C in³	J in⁴	It/Q in²	w in	w/t
L15	25.1607	34.3085	2524.6578	8.5959	12.6675	199.3023	5115.6411	16.8856	5.3646	12.089
	25.9376	35.3807	2768.8278	8.8645	13.0562	212.0704	5610.3958	17.4133	5.5657	12.542
L16	25.9376	35.3807	2768.8278	8.8645	13.0562	212.0704	5610.3958	17.4133	5.5657	12.542
	26.0152	35.4879	2794.0763	8.8914	13.0950	213.3691	5661.5560	17.4661	5.5858	12.588

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 61.00-56.00				1	1	1			
L2 56.00-51.00				1	1	1			
L3 51.00-46.00				1	1	1			
L4 46.00-41.00				1	1	1			
L5 41.00-34.75				1	1	1			
L6 34.75-32.50				1	1	1			
L7 32.50-27.50				1	1	1			
L8 27.50-22.50				1	1	1			
L9 22.50-21.00				1	1	1			
L10 21.00-20.75				1	1	1.60484			
L11 20.75-20.50				1	1	1.11183			
L12 20.50-15.50				1	1	1.10654			
L13 15.50-10.50				1	1	1.10243			
L14 10.50-5.50				1	1	1.11441			
L15 5.50-0.50				1	1	1.11265			
L16 0.50-0.00				1	1	1.11099			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	A	No	Surface Ar (CaAa)	61.00 - 10.00	1	1	0.482 0.500	0.3750		0.22
HB158-21U6S24-xxM_TMO(1-5/8) ***	C	No	Surface Ar (CaAa)	61.00 - 0.00	2	2	0.318 0.500	1.9960		2.50
6-1/4"x1" flat plate	A	No	Surface Af (CaAa)	23.00 - 4.25	1	1	0.000 0.000	6.2500	14.5000	0.00
6-1/2"x1" flat plate	B	No	Surface Af (CaAa)	23.25 - 0.00	1	1	0.000 0.000	6.5000	15.0000	0.00
6-1/2"x1" flat plate	C	No	Surface Af (CaAa)	23.25 - 2.25	1	1	0.000 0.000	6.5000	15.0000	0.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight plf
***									
***									
LDF5-50A(7/8)	C	No	No	Inside Pole	53.00 - 0.00	13	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
***									
LDF6-50A(1-1/4)	C	No	No	Inside Pole	43.00 - 0.00	12	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60
							2" Ice	0.00	0.60

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L1	61.00-56.00	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.996	0.000	0.03
L2	56.00-51.00	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.996	0.000	0.03
L3	51.00-46.00	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.996	0.000	0.05
L4	46.00-41.00	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.996	0.000	0.06
L5	41.00-34.75	A	0.000	0.000	0.234	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.495	0.000	0.10
L6	34.75-32.50	A	0.000	0.000	0.084	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.898	0.000	0.04
L7	32.50-27.50	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.996	0.000	0.08
L8	27.50-22.50	A	0.000	0.000	0.708	0.000	0.00
		B	0.000	0.000	0.813	0.000	0.00
		C	0.000	0.000	2.809	0.000	0.08
L9	22.50-21.00	A	0.000	0.000	1.619	0.000	0.00
		B	0.000	0.000	1.625	0.000	0.00
		C	0.000	0.000	2.224	0.000	0.02
L10	21.00-20.75	A	0.000	0.000	0.270	0.000	0.00
		B	0.000	0.000	0.271	0.000	0.00
		C	0.000	0.000	0.371	0.000	0.00
L11	20.75-20.50	A	0.000	0.000	0.270	0.000	0.00
		B	0.000	0.000	0.271	0.000	0.00
		C	0.000	0.000	0.371	0.000	0.00
L12	20.50-15.50	A	0.000	0.000	5.396	0.000	0.00
		B	0.000	0.000	5.417	0.000	0.00
		C	0.000	0.000	7.413	0.000	0.08
L13	15.50-10.50	A	0.000	0.000	5.396	0.000	0.00
		B	0.000	0.000	5.417	0.000	0.00
		C	0.000	0.000	7.413	0.000	0.08
L14	10.50-5.50	A	0.000	0.000	5.227	0.000	0.00
		B	0.000	0.000	5.417	0.000	0.00
		C	0.000	0.000	7.413	0.000	0.08
L15	5.50-0.50	A	0.000	0.000	1.302	0.000	0.00
		B	0.000	0.000	5.417	0.000	0.00
		C	0.000	0.000	5.517	0.000	0.08

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L16	0.50-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.542	0.000	0.00
		C	0.000	0.000	0.200	0.000	0.01

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	61.00-56.00	A	1.350	0.000	0.000	1.538	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	4.183	0.000	0.06
L2	56.00-51.00	A	1.338	0.000	0.000	1.526	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	4.168	0.000	0.07
L3	51.00-46.00	A	1.325	0.000	0.000	1.513	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	4.151	0.000	0.09
L4	46.00-41.00	A	1.311	0.000	0.000	1.498	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	4.133	0.000	0.10
L5	41.00-34.75	A	1.293	0.000	0.000	1.850	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	5.138	0.000	0.15
L6	34.75-32.50	A	1.277	0.000	0.000	0.666	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.850	0.000	0.05
L7	32.50-27.50	A	1.263	0.000	0.000	1.450	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	4.074	0.000	0.12
L8	27.50-22.50	A	1.240	0.000	0.000	2.072	0.000	0.02
		B		0.000	0.000	0.999	0.000	0.01
		C		0.000	0.000	5.044	0.000	0.13
L9	22.50-21.00	A	1.223	0.000	0.000	2.353	0.000	0.02
		B		0.000	0.000	1.992	0.000	0.01
		C		0.000	0.000	3.199	0.000	0.05
L10	21.00-20.75	A	1.218	0.000	0.000	0.392	0.000	0.00
		B		0.000	0.000	0.332	0.000	0.00
		C		0.000	0.000	0.533	0.000	0.01
L11	20.75-20.50	A	1.216	0.000	0.000	0.391	0.000	0.00
		B		0.000	0.000	0.332	0.000	0.00
		C		0.000	0.000	0.532	0.000	0.01
L12	20.50-15.50	A	1.200	0.000	0.000	7.796	0.000	0.06
		B		0.000	0.000	6.617	0.000	0.05
		C		0.000	0.000	10.611	0.000	0.16
L13	15.50-10.50	A	1.161	0.000	0.000	7.719	0.000	0.05
		B		0.000	0.000	6.578	0.000	0.04
		C		0.000	0.000	10.525	0.000	0.16
L14	10.50-5.50	A	1.106	0.000	0.000	6.444	0.000	0.04
		B		0.000	0.000	6.523	0.000	0.04
		C		0.000	0.000	10.401	0.000	0.15
L15	5.50-0.50	A	1.003	0.000	0.000	1.553	0.000	0.01
		B		0.000	0.000	6.419	0.000	0.04
		C		0.000	0.000	7.921	0.000	0.13
L16	0.50-0.00	A	0.782	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.620	0.000	0.00
		C		0.000	0.000	0.347	0.000	0.01

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	61.00-56.00	-1.5719	1.1815	-1.6074	0.6730
L2	56.00-51.00	-1.5808	1.1875	-1.6361	0.6855
L3	51.00-46.00	-1.5892	1.1932	-1.6632	0.6979
L4	46.00-41.00	-1.5971	1.1985	-1.6888	0.7102
L5	41.00-34.75	-1.6054	1.2042	-1.7156	0.7241
L6	34.75-32.50	-1.6092	1.2068	-1.7267	0.7281
L7	32.50-27.50	-1.6141	1.2102	-1.7388	0.7403
L8	27.50-22.50	-1.1358	1.1427	-1.4086	0.7548
L9	22.50-21.00	-0.5378	0.4951	-0.8504	0.4176
L10	21.00-20.75	-0.5396	0.4968	-0.8531	0.4197
L11	20.75-20.50	-0.5407	0.4979	-0.8546	0.4206
L12	20.50-15.50	-0.5460	0.5027	-0.8623	0.4269
L13	15.50-10.50	-0.5558	0.5117	-0.8756	0.4398
L14	10.50-5.50	-0.5673	0.5907	-0.9049	0.8267
L15	5.50-0.50	1.1611	0.8717	0.5169	1.0934
L16	0.50-0.00	2.3176	-1.0020	1.3519	-0.3774

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	1	Safety Line 3/8	56.00 - 61.00	1.0000	1.0000
L1	6	HB158-21U6S24-xxM_TMO(1-5/8)	56.00 - 61.00	1.0000	1.0000
L2	1	Safety Line 3/8	51.00 - 56.00	1.0000	1.0000
L2	6	HB158-21U6S24-xxM_TMO(1-5/8)	51.00 - 56.00	1.0000	1.0000
L3	1	Safety Line 3/8	46.00 - 51.00	1.0000	1.0000
L3	6	HB158-21U6S24-xxM_TMO(1-5/8)	46.00 - 51.00	1.0000	1.0000
L4	1	Safety Line 3/8	41.00 - 46.00	1.0000	1.0000
L4	6	HB158-21U6S24-xxM_TMO(1-5/8)	41.00 - 46.00	1.0000	1.0000
L5	1	Safety Line 3/8	34.75 - 41.00	1.0000	1.0000
L5	6	HB158-21U6S24-xxM_TMO(1-5/8)	34.75 - 41.00	1.0000	1.0000
L6	1	Safety Line 3/8	32.50 - 34.75	1.0000	1.0000
L6	6	HB158-21U6S24-xxM_TMO(1-5/8)	32.50 - 34.75	1.0000	1.0000
L7	1	Safety Line 3/8	27.50 - 32.50	1.0000	1.0000
L7	6	HB158-21U6S24-xxM_TMO(1-5/8)	27.50 - 32.50	1.0000	1.0000
L8	1	Safety Line 3/8	22.50 - 27.50	1.0000	1.0000
L8	6	HB158-21U6S24-xxM_TMO(1-5/8)	22.50 - 27.50	1.0000	1.0000
L8	12	6-1/4"x1" flat plate	22.50 - 23.00	1.0000	1.0000
L8	13	6-1/2"x1" flat plate	22.50 - 23.25	1.0000	1.0000
L8	14	6-1/2"x1" flat plate	22.50 - 23.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L9	1	Safety Line 3/8	21.00 - 22.50	1.0000	1.0000
L9	6	HB158-21U6S24-xxM_TMO(1-5/8)	21.00 - 22.50	1.0000	1.0000
L9	12	6-1/4"x1" flat plate	21.00 - 22.50	1.0000	1.0000
L9	13	6-1/2"x1" flat plate	21.00 - 22.50	1.0000	1.0000
L9	14	6-1/2"x1" flat plate	21.00 - 22.50	1.0000	1.0000
L10	1	Safety Line 3/8	20.75 - 21.00	1.0000	1.0000
L10	6	HB158-21U6S24-xxM_TMO(1-5/8)	20.75 - 21.00	1.0000	1.0000
L10	12	6-1/4"x1" flat plate	20.75 - 21.00	1.0000	1.0000
L10	13	6-1/2"x1" flat plate	20.75 - 21.00	1.0000	1.0000
L10	14	6-1/2"x1" flat plate	20.75 - 21.00	1.0000	1.0000
L11	1	Safety Line 3/8	20.50 - 20.75	1.0000	1.0000
L11	6	HB158-21U6S24-xxM_TMO(1-5/8)	20.50 - 20.75	1.0000	1.0000
L11	12	6-1/4"x1" flat plate	20.50 - 20.75	1.0000	1.0000
L11	13	6-1/2"x1" flat plate	20.50 - 20.75	1.0000	1.0000
L11	14	6-1/2"x1" flat plate	20.50 - 20.75	1.0000	1.0000
L12	1	Safety Line 3/8	15.50 - 20.50	1.0000	1.0000
L12	6	HB158-21U6S24-xxM_TMO(1-5/8)	15.50 - 20.50	1.0000	1.0000
L12	12	6-1/4"x1" flat plate	15.50 - 20.50	1.0000	1.0000
L12	13	6-1/2"x1" flat plate	15.50 - 20.50	1.0000	1.0000
L12	14	6-1/2"x1" flat plate	15.50 - 20.50	1.0000	1.0000
L13	1	Safety Line 3/8	10.50 - 15.50	1.0000	1.0000
L13	6	HB158-21U6S24-xxM_TMO(1-5/8)	10.50 - 15.50	1.0000	1.0000
L13	12	6-1/4"x1" flat plate	10.50 - 15.50	1.0000	1.0000
L13	13	6-1/2"x1" flat plate	10.50 - 15.50	1.0000	1.0000
L13	14	6-1/2"x1" flat plate	10.50 - 15.50	1.0000	1.0000
L14	1	Safety Line 3/8	10.00 - 10.50	1.0000	1.0000
L14	6	HB158-21U6S24-xxM_TMO(1-5/8)	5.50 - 10.50	1.0000	1.0000
L14	12	6-1/4"x1" flat plate	5.50 - 10.50	1.0000	1.0000
L14	13	6-1/2"x1" flat plate	5.50 - 10.50	1.0000	1.0000
L14	14	6-1/2"x1" flat plate	5.50 - 10.50	1.0000	1.0000
L15	6	HB158-21U6S24-xxM_TMO(1-5/8)	0.50 - 5.50	1.0000	1.0000
L15	12	6-1/4"x1" flat plate	4.25 - 5.50	1.0000	1.0000
L15	13	6-1/2"x1" flat plate	0.50 - 5.50	1.0000	1.0000
L15	14	6-1/2"x1" flat plate	2.25 - 5.50	1.0000	1.0000
L16	6	HB158-21U6S24-xxM_TMO(1-5/8)	0.00 - 0.50	1.0000	1.0000
L16	13	6-1/2"x1" flat plate	0.00 - 0.50	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L8	12	6-1/4"x1" flat plate	22.50 - 23.00	Manual	1.0000
L8	13	6-1/2"x1" flat plate	22.50 - 23.25	Manual	1.0000
L8	14	6-1/2"x1" flat plate	22.50 - 23.25	Manual	1.0000
L9	12	6-1/4"x1" flat plate	21.00 - 22.50	Manual	1.0000
L9	13	6-1/2"x1" flat plate	21.00 - 22.50	Manual	1.0000
L9	14	6-1/2"x1" flat plate	21.00 - 22.50	Manual	1.0000
L10	12	6-1/4"x1" flat plate	20.75 - 21.00	Manual	1.0000
L10	13	6-1/2"x1" flat plate	20.75 - 21.00	Manual	1.0000
L10	14	6-1/2"x1" flat plate	20.75 - 21.00	Manual	1.0000
L11	12	6-1/4"x1" flat plate	20.50 - 20.75	Manual	1.0000
L11	13	6-1/2"x1" flat plate	20.50 - 20.75	Manual	1.0000
L11	14	6-1/2"x1" flat plate	20.50 - 20.75	Manual	1.0000
L12	12	6-1/4"x1" flat plate	15.50 - 20.50	Manual	1.0000
L12	13	6-1/2"x1" flat plate	15.50 - 20.50	Manual	1.0000
L12	14	6-1/2"x1" flat plate	15.50 - 20.50	Manual	1.0000
L13	12	6-1/4"x1" flat plate	10.50 - 15.50	Manual	1.0000
L13	13	6-1/2"x1" flat plate	10.50 - 15.50	Manual	1.0000
L13	14	6-1/2"x1" flat plate	10.50 - 15.50	Manual	1.0000
L14	12	6-1/4"x1" flat plate	5.50 - 10.50	Manual	1.0000
L14	13	6-1/2"x1" flat plate	5.50 - 10.50	Manual	1.0000
L14	14	6-1/2"x1" flat plate	5.50 - 10.50	Manual	1.0000
L15	12	6-1/4"x1" flat plate	4.25 - 5.50	Manual	1.0000
L15	13	6-1/2"x1" flat plate	0.50 - 5.50	Manual	1.0000
L15	14	6-1/2"x1" flat plate	2.25 - 5.50	Manual	1.0000
L16	13	6-1/2"x1" flat plate	0.00 - 0.50	Manual	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Kenwood T1510KT12H	C	None			0.0000	61.00	No Ice	43.90	43.90	1.12
12.5' Platform w/ P2STD							1/2"	75.60	75.60	1.22

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Handrail						Ice	107.30	107.30	1.33
						1" Ice	170.70	170.70	1.54
						2" Ice			
(2) 8'x2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	61.00	No Ice	1.90	1.90	0.03
						1/2" Ice	2.73	2.73	0.04
						1" Ice	3.40	3.40	0.06
						2" Ice	4.40	4.40	0.12
(2) 8'x2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	61.00	No Ice	1.90	1.90	0.03
						1/2" Ice	2.73	2.73	0.04
						1" Ice	3.40	3.40	0.06
						2" Ice	4.40	4.40	0.12
(2) 8'x2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	61.00	No Ice	1.90	1.90	0.03
						1/2" Ice	2.73	2.73	0.04
						1" Ice	3.40	3.40	0.06
						2" Ice	4.40	4.40	0.12
(2) 4'6"x2" Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	61.00	No Ice	1.02	1.02	0.02
						1/2" Ice	1.30	1.30	0.02
						1" Ice	1.58	1.58	0.04
						2" Ice	2.17	2.17	0.07
(2) 4'6"x2" Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	61.00	No Ice	1.02	1.02	0.02
						1/2" Ice	1.30	1.30	0.02
						1" Ice	1.58	1.58	0.04
						2" Ice	2.17	2.17	0.07
(2) 4'6"x2" Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	61.00	No Ice	1.02	1.02	0.02
						1/2" Ice	1.30	1.30	0.02
						1" Ice	1.58	1.58	0.04
						2" Ice	2.17	2.17	0.07
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	61.00	No Ice	5.19	2.71	0.13
						1/2" Ice	5.59	3.04	0.17
						1" Ice	6.02	3.38	0.23
						2" Ice	6.90	4.12	0.35
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	61.00	No Ice	5.19	2.71	0.13
						1/2" Ice	5.59	3.04	0.17
						1" Ice	6.02	3.38	0.23
						2" Ice	6.90	4.12	0.35
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	61.00	No Ice	5.19	2.71	0.13
						1/2" Ice	5.59	3.04	0.17
						1" Ice	6.02	3.38	0.23
						2" Ice	6.90	4.12	0.35
APXVAALL18_43-U-NA20_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	61.00	No Ice	10.84	5.09	0.14
						1/2" Ice	11.44	5.61	0.24
						1" Ice	12.05	6.14	0.35
						2" Ice	13.31	7.24	0.61
APXVAALL18_43-U-NA20_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	61.00	No Ice	10.84	5.09	0.14
						1/2" Ice	11.44	5.61	0.24
						1" Ice	12.05	6.14	0.35
						2" Ice	13.31	7.24	0.61
APXVAALL18_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	61.00	No Ice	10.84	5.09	0.14
						1/2" Ice	11.44	5.61	0.24
						1" Ice	12.05	6.14	0.35
						2" Ice	13.31	7.24	0.61
APXVLL19P_43-C-A20_TMO w/ Mount Pipe	A	From Leg	4.00 0.00	0.0000	61.00	No Ice	5.08	3.20	0.08
						1/2" Ice	5.59	3.68	0.13

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			2.00				Ice	6.10	4.17	0.20
							1" Ice	7.17	5.19	0.37
							2" Ice			
APXVLL19P_43-C-A20_TMO w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	61.00	No Ice	5.08	3.20	0.08
							1/2"	5.59	3.68	0.13
			2.00				Ice	6.10	4.17	0.20
							1" Ice	7.17	5.19	0.37
							2" Ice			
APXVLL19P_43-C-A20_TMO w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	61.00	No Ice	5.08	3.20	0.08
							1/2"	5.59	3.68	0.13
			2.00				Ice	6.10	4.17	0.20
							1" Ice	7.17	5.19	0.37
							2" Ice			
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00	0.00	0.0000	61.00	No Ice	2.14	1.69	0.11
							1/2"	2.32	1.85	0.13
			2.00				Ice	2.51	2.02	0.16
							1" Ice	2.91	2.39	0.22
							2" Ice			
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00	0.00	0.0000	61.00	No Ice	2.14	1.69	0.11
							1/2"	2.32	1.85	0.13
			2.00				Ice	2.51	2.02	0.16
							1" Ice	2.91	2.39	0.22
							2" Ice			
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.00	0.00	0.0000	61.00	No Ice	2.14	1.69	0.11
							1/2"	2.32	1.85	0.13
			2.00				Ice	2.51	2.02	0.16
							1" Ice	2.91	2.39	0.22
							2" Ice			
Radio 4480_TMOV2	A	From Leg	4.00	0.00	0.0000	61.00	No Ice	2.88	1.40	0.08
							1/2"	3.09	1.56	0.10
			2.00				Ice	3.31	1.73	0.13
							1" Ice	3.78	2.09	0.19
							2" Ice			
Radio 4480_TMOV2	B	From Leg	4.00	0.00	0.0000	61.00	No Ice	2.88	1.40	0.08
							1/2"	3.09	1.56	0.10
			2.00				Ice	3.31	1.73	0.13
							1" Ice	3.78	2.09	0.19
							2" Ice			
Radio 4480_TMOV2	C	From Leg	4.00	0.00	0.0000	61.00	No Ice	2.88	1.40	0.08
							1/2"	3.09	1.56	0.10
			2.00				Ice	3.31	1.73	0.13
							1" Ice	3.78	2.09	0.19
							2" Ice			
***										
Platform Mount [14' LP 403-1]	C	None			0.0000	53.00	No Ice	17.59	17.59	1.40
							1/2"	22.68	22.68	1.68
							Ice	27.77	27.77	1.95
							1" Ice	37.94	37.94	2.51
							2" Ice			
6'x2" Mount Pipe	A	From Leg	4.00	-7.00	0.0000	53.00	No Ice	1.43	1.43	0.02
							1/2"	1.92	1.92	0.03
			2.00				Ice	2.29	2.29	0.05
							1" Ice	3.06	3.06	0.09
							2" Ice			
(4) DB846H90E-SX w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	53.00	No Ice	3.50	5.30	0.05
							1/2"	4.05	5.88	0.10
			0.00				Ice	4.62	6.48	0.16
							1" Ice	5.81	7.71	0.32
							2" Ice			
(4) DB846H90E-SX w/Mount Pipe	B	From Leg	4.00	0.00	0.0000	53.00	No Ice	5.23	7.53	0.04
							1/2"	5.78	8.72	0.10
			0.00				Ice	6.30	9.62	0.16
							1" Ice	7.37	11.45	0.32
							2" Ice			
(4) DB846H90E-SX	C	From Leg	4.00		0.0000	53.00	No Ice	5.23	7.53	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
w/Mount Pipe			0.00 0.00			1/2" Ice 1" Ice 2" Ice	5.78 6.30 7.37	8.72 9.62 11.45	0.10 0.16 0.32
***									
Side Arm Mount [SO 104-3]	C	None		0.0000	43.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.62 3.30 3.98 5.35	2.62 3.30 3.98 5.35	0.29 0.41 0.53 0.77
X7CAP-665 w/ Mount Pipe	A	From Leg	1.00 0.00 0.00	0.0000	43.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.64 9.21 9.73 10.81	6.95 8.13 9.02 10.84	0.06 0.13 0.21 0.39
X7CAP-665 w/ Mount Pipe	B	From Leg	1.00 0.00 0.00	0.0000	43.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.64 9.21 9.73 10.81	6.95 8.13 9.02 10.84	0.06 0.13 0.21 0.39
X7CAP-665 w/ Mount Pipe	C	From Leg	1.00 0.00 0.00	0.0000	43.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.64 9.21 9.73 10.81	6.95 8.13 9.02 10.84	0.06 0.13 0.21 0.39

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
SP2-2.4	A	Paraboloid w/Radome	From Leg	4.00 -7.00 5.00	-30.0000		53.00	2.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.41 3.67 4.21	0.02 0.04 0.06 0.09

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice

Comb. No.	Description
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	61 - 56	Pole	Max Tension	26	0.00	-0.00	-0.00
			Max. Compression	26	-7.23	0.54	0.31
			Max. Mx	20	-3.22	44.75	0.03
			Max. My	2	-3.21	0.13	44.75
			Max. Vy	8	7.69	-44.50	-0.00
			Max. Vx	14	7.73	0.09	-44.67
			Max. Torque	14			-1.02
L2	56 - 51	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-12.87	1.03	0.65
			Max. Mx	20	-5.45	92.66	0.47
			Max. My	2	-5.43	0.30	93.22
			Max. Vy	8	12.29	-92.31	0.37
			Max. Vx	14	12.42	0.22	-92.67
			Max. Torque	12			-1.72
L3	51 - 46	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-13.37	1.06	0.61
			Max. Mx	20	-5.77	154.85	0.41
			Max. My	2	-5.75	0.35	156.02
			Max. Vy	8	12.68	-154.73	0.23
			Max. Vx	14	12.82	0.23	-155.78
			Max. Torque	12			-1.72
L4	46 - 41	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15.39	1.08	0.56
			Max. Mx	8	-6.63	-221.40	0.09
			Max. My	14	-6.61	0.22	-223.13

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	14.23	-221.40	0.09
			Max. Vx	14	14.36	0.22	-223.13
			Max. Torque	12			-1.72
L5	41 - 34.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-15.79	1.10	0.52
			Max. Mx	8	-6.95	-271.63	-0.01
			Max. My	14	-6.94	0.22	-273.83
			Max. Vy	8	14.49	-271.63	-0.01
			Max. Vx	14	14.62	0.22	-273.83
			Max. Torque	12			-1.72
L6	34.75 - 32.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-16.67	1.12	0.47
			Max. Mx	8	-7.60	-345.05	-0.14
			Max. My	14	-7.58	0.21	-347.94
			Max. Vy	8	14.88	-345.05	-0.14
			Max. Vx	14	15.02	0.21	-347.94
			Max. Torque	12			-1.72
L7	32.5 - 27.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17.33	1.14	0.41
			Max. Mx	8	-8.17	-420.30	-0.28
			Max. My	14	-8.16	0.20	-423.88
			Max. Vy	8	15.24	-420.30	-0.28
			Max. Vx	14	15.37	0.20	-423.88
			Max. Torque	12			-1.72
L8	27.5 - 22.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.02	1.15	0.35
			Max. Mx	8	-8.78	-497.27	-0.41
			Max. My	14	-8.77	0.18	-501.52
			Max. Vy	8	15.57	-497.27	-0.41
			Max. Vx	14	15.70	0.18	-501.52
			Max. Torque	12			-1.72
L9	22.5 - 21	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.27	1.15	0.34
			Max. Mx	8	-8.96	-520.71	-0.45
			Max. My	14	-8.95	0.18	-525.17
			Max. Vy	8	15.71	-520.71	-0.45
			Max. Vx	14	15.84	0.18	-525.17
			Max. Torque	12			-1.71
L10	21 - 20.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.32	1.15	0.33
			Max. Mx	8	-9.03	-524.64	-0.46
			Max. My	14	-9.02	0.18	-529.13
			Max. Vy	8	15.72	-524.64	-0.46
			Max. Vx	14	15.85	0.18	-529.13
			Max. Torque	12			-1.71
L11	20.75 - 20.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.38	1.15	0.33
			Max. Mx	8	-9.08	-528.57	-0.46
			Max. My	14	-9.07	0.17	-533.10
			Max. Vy	8	15.74	-528.57	-0.46
			Max. Vx	14	15.88	0.17	-533.10
			Max. Torque	12			-1.71
L12	20.5 - 15.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.60	1.16	0.27
			Max. Mx	8	-10.02	-608.44	-0.60
			Max. My	14	-10.01	0.16	-613.72
			Max. Vy	8	16.22	-608.44	-0.60
			Max. Vx	14	16.37	0.16	-613.72
			Max. Torque	12			-1.71
L13	15.5 - 10.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.81	1.17	0.21
			Max. Mx	8	-10.99	-690.65	-0.73
			Max. My	14	-10.98	0.14	-696.75
			Max. Vy	8	16.68	-690.65	-0.73
			Max. Vx	14	16.84	0.14	-696.75
			Max. Torque	12			-1.71
L14	10.5 - 5.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.02	1.17	0.14
			Max. Mx	8	-11.99	-775.13	-0.86

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	14	-11.98	0.11	-782.12
			Max. Vy	8	17.13	-775.13	-0.86
			Max. Vx	14	17.31	0.11	-782.12
			Max. Torque	12			-1.71
L15	5.5 - 0.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.17	1.14	0.08
			Max. Mx	8	-13.01	-861.59	-0.99
			Max. My	14	-13.01	0.09	-869.79
			Max. Vy	20	-17.55	860.00	-0.16
			Max. Vx	14	17.76	0.09	-869.79
			Max. Torque	12			-1.71
L16	0.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.28	1.14	0.07
			Max. Mx	8	-13.12	-870.33	-1.00
			Max. My	14	-13.12	0.09	-878.67
			Max. Vy	20	-17.59	868.78	-0.16
			Max. Vx	14	17.79	0.09	-878.67
			Max. Torque	12			-1.71

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	23.28	0.00	0.00
	Max. H_x	21	9.84	17.58	-0.01
	Max. H_z	3	9.84	0.00	17.59
	Max. M_x	2	875.24	0.00	17.59
	Max. M_z	8	870.33	-17.49	-0.02
	Max. Torsion	24	1.60	8.78	15.29
	Min. Vert	11	9.84	-15.20	-8.82
	Min. H_x	9	9.84	-17.49	-0.02
	Min. H_z	14	13.12	-0.00	-17.78
	Min. M_x	14	-878.67	-0.00	-17.78
	Min. M_z	20	-868.78	17.58	-0.01
	Min. Torsion	12	-1.71	-8.80	-15.31

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	10.94	0.00	0.00	-0.13	0.29	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	13.12	-0.00	-17.59	-875.24	0.60	-1.18
0.9 Dead+1.0 Wind 0 deg - No Ice	9.84	-0.00	-17.59	-869.63	0.50	-1.17
1.2 Dead+1.0 Wind 30 deg - No Ice	13.12	8.73	-15.19	-755.89	-433.95	-0.27
0.9 Dead+1.0 Wind 30 deg - No Ice	9.84	8.73	-15.19	-751.04	-431.28	-0.26
1.2 Dead+1.0 Wind 60 deg - No Ice	13.12	15.17	-8.77	-435.82	-752.86	0.56
0.9 Dead+1.0 Wind 60 deg - No Ice	9.84	15.17	-8.77	-433.01	-748.16	0.58
1.2 Dead+1.0 Wind 90 deg - No Ice	13.12	17.49	0.02	1.00	-870.33	1.11
0.9 Dead+1.0 Wind 90 deg - No Ice	9.84	17.49	0.02	1.04	-864.89	1.12
1.2 Dead+1.0 Wind 120 deg - No Ice	13.12	15.20	8.82	439.37	-756.28	1.52

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
0.9 Dead+1.0 Wind 120 deg - No Ice	9.84	15.20	8.82	436.62	-751.55	1.53
1.2 Dead+1.0 Wind 150 deg - No Ice	13.12	8.80	15.31	761.83	-437.20	1.71
0.9 Dead+1.0 Wind 150 deg - No Ice	9.84	8.80	15.31	757.03	-434.50	1.71
1.2 Dead+1.0 Wind 180 deg - No Ice	13.12	0.00	17.78	878.67	0.09	1.46
0.9 Dead+1.0 Wind 180 deg - No Ice	9.84	0.00	17.78	873.13	-0.00	1.46
1.2 Dead+1.0 Wind 210 deg - No Ice	13.12	-8.80	15.35	758.97	434.90	0.59
0.9 Dead+1.0 Wind 210 deg - No Ice	9.84	-8.80	15.35	754.19	432.05	0.57
1.2 Dead+1.0 Wind 240 deg - No Ice	13.12	-15.23	8.86	437.82	752.06	-0.39
0.9 Dead+1.0 Wind 240 deg - No Ice	9.84	-15.23	8.86	435.08	747.19	-0.40
1.2 Dead+1.0 Wind 270 deg - No Ice	13.12	-17.58	0.01	0.16	868.78	-1.09
0.9 Dead+1.0 Wind 270 deg - No Ice	9.84	-17.58	0.01	0.20	863.17	-1.10
1.2 Dead+1.0 Wind 300 deg - No Ice	13.12	-15.30	-8.88	-438.74	755.36	-1.49
0.9 Dead+1.0 Wind 300 deg - No Ice	9.84	-15.30	-8.88	-435.91	750.47	-1.50
1.2 Dead+1.0 Wind 330 deg - No Ice	13.12	-8.78	-15.29	-760.67	437.04	-1.60
0.9 Dead+1.0 Wind 330 deg - No Ice	9.84	-8.78	-15.29	-755.79	434.17	-1.60
1.2 Dead+1.0 Ice+1.0 Temp	23.28	-0.00	-0.00	-0.07	1.14	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	23.28	-0.00	-3.59	-192.59	1.20	-0.23
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	23.28	1.77	-3.10	-166.46	-93.90	-0.07
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	23.28	3.08	-1.79	-96.03	-163.63	0.10
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	23.28	3.55	0.00	0.11	-189.30	0.21
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	23.28	3.08	1.80	96.45	-164.10	0.29
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	23.28	1.78	3.11	167.03	-94.25	0.33
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	23.28	0.00	3.60	192.99	1.12	0.28
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	23.28	-1.77	3.11	166.81	96.23	0.12
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	23.28	-3.07	1.79	96.23	165.67	-0.07
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	23.28	-3.54	0.00	-0.02	191.20	-0.21
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	23.28	-3.08	-1.80	-96.41	166.10	-0.29
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	23.28	-1.78	-3.11	-166.94	96.44	-0.31
Dead+Wind 0 deg - Service	10.94	-0.00	-3.04	-151.08	0.34	-0.21
Dead+Wind 30 deg - Service	10.94	1.51	-2.63	-130.49	-74.61	-0.05
Dead+Wind 60 deg - Service	10.94	2.62	-1.52	-75.28	-129.62	0.10
Dead+Wind 90 deg - Service	10.94	3.03	0.00	0.07	-149.88	0.20
Dead+Wind 120 deg - Service	10.94	2.63	1.53	75.68	-130.21	0.27
Dead+Wind 150 deg - Service	10.94	1.52	2.65	131.30	-75.17	0.30
Dead+Wind 180 deg - Service	10.94	0.00	3.08	151.46	0.25	0.25
Dead+Wind 210 deg - Service	10.94	-1.52	2.66	130.81	75.25	0.10
Dead+Wind 240 deg - Service	10.94	-2.63	1.53	75.41	129.96	-0.07

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead+Wind 270 deg - Service	10.94	-3.04	0.00	-0.08	150.09	-0.19
Dead+Wind 300 deg - Service	10.94	-2.65	-1.54	-75.78	130.53	-0.26
Dead+Wind 330 deg - Service	10.94	-1.52	-2.65	-131.32	75.62	-0.28

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-10.94	0.00	0.00	10.94	0.00	0.000%
2	-0.00	-13.12	-17.59	0.00	13.12	17.59	0.000%
3	-0.00	-9.84	-17.59	0.00	9.84	17.59	0.000%
4	8.73	-13.12	-15.19	-8.73	13.12	15.19	0.000%
5	8.73	-9.84	-15.19	-8.73	9.84	15.19	0.000%
6	15.17	-13.12	-8.77	-15.17	13.12	8.77	0.000%
7	15.17	-9.84	-8.77	-15.17	9.84	8.77	0.000%
8	17.49	-13.12	0.02	-17.49	13.12	-0.02	0.000%
9	17.49	-9.84	0.02	-17.49	9.84	-0.02	0.000%
10	15.20	-13.12	8.82	-15.20	13.12	-8.82	0.000%
11	15.20	-9.84	8.82	-15.20	9.84	-8.82	0.000%
12	8.80	-13.12	15.31	-8.80	13.12	-15.31	0.000%
13	8.80	-9.84	15.31	-8.80	9.84	-15.31	0.000%
14	0.00	-13.12	17.78	-0.00	13.12	-17.78	0.000%
15	0.00	-9.84	17.78	-0.00	9.84	-17.78	0.000%
16	-8.80	-13.12	15.35	8.80	13.12	-15.35	0.000%
17	-8.80	-9.84	15.35	8.80	9.84	-15.35	0.000%
18	-15.23	-13.12	8.86	15.23	13.12	-8.86	0.000%
19	-15.23	-9.84	8.86	15.23	9.84	-8.86	0.000%
20	-17.58	-13.12	0.01	17.58	13.12	-0.01	0.000%
21	-17.58	-9.84	0.01	17.58	9.84	-0.01	0.000%
22	-15.30	-13.12	-8.88	15.30	13.12	8.88	0.000%
23	-15.30	-9.84	-8.88	15.30	9.84	8.88	0.000%
24	-8.78	-13.12	-15.29	8.78	13.12	15.29	0.000%
25	-8.78	-9.84	-15.29	8.78	9.84	15.29	0.000%
26	0.00	-23.28	0.00	0.00	23.28	0.00	0.000%
27	-0.00	-23.28	-3.59	0.00	23.28	3.59	0.000%
28	1.77	-23.28	-3.10	-1.77	23.28	3.10	0.000%
29	3.08	-23.28	-1.79	-3.08	23.28	1.79	0.000%
30	3.55	-23.28	0.00	-3.55	23.28	-0.00	0.000%
31	3.08	-23.28	1.80	-3.08	23.28	-1.80	0.000%
32	1.78	-23.28	3.11	-1.78	23.28	-3.11	0.000%
33	0.00	-23.28	3.60	-0.00	23.28	-3.60	0.000%
34	-1.77	-23.28	3.11	1.77	23.28	-3.11	0.000%
35	-3.07	-23.28	1.79	3.07	23.28	-1.79	0.000%
36	-3.54	-23.28	0.00	3.54	23.28	-0.00	0.000%
37	-3.08	-23.28	-1.80	3.08	23.28	1.80	0.000%
38	-1.78	-23.28	-3.11	1.78	23.28	3.11	0.000%
39	-0.00	-10.94	-3.04	0.00	10.94	3.04	0.000%
40	1.51	-10.94	-2.63	-1.51	10.94	2.63	0.000%
41	2.62	-10.94	-1.52	-2.62	10.94	1.52	0.000%
42	3.03	-10.94	0.00	-3.03	10.94	-0.00	0.000%
43	2.63	-10.94	1.53	-2.63	10.94	-1.53	0.000%
44	1.52	-10.94	2.65	-1.52	10.94	-2.65	0.000%
45	0.00	-10.94	3.08	-0.00	10.94	-3.08	0.000%
46	-1.52	-10.94	2.66	1.52	10.94	-2.66	0.000%
47	-2.63	-10.94	1.53	2.63	10.94	-1.53	0.000%
48	-3.04	-10.94	0.00	3.04	10.94	-0.00	0.000%
49	-2.65	-10.94	-1.54	2.65	10.94	1.54	0.000%
50	-1.52	-10.94	-2.65	1.52	10.94	2.65	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00005180
3	Yes	4	0.00000001	0.00097904
4	Yes	5	0.00000001	0.00031643
5	Yes	5	0.00000001	0.00012095
6	Yes	5	0.00000001	0.00031064
7	Yes	5	0.00000001	0.00011825
8	Yes	5	0.00000001	0.00004729
9	Yes	4	0.00000001	0.00091172
10	Yes	5	0.00000001	0.00036701
11	Yes	5	0.00000001	0.00014280
12	Yes	5	0.00000001	0.00029275
13	Yes	5	0.00000001	0.00011009
14	Yes	5	0.00000001	0.00006324
15	Yes	5	0.00000001	0.00002564
16	Yes	5	0.00000001	0.00033994
17	Yes	5	0.00000001	0.00013081
18	Yes	5	0.00000001	0.00033278
19	Yes	5	0.00000001	0.00012814
20	Yes	5	0.00000001	0.00004580
21	Yes	4	0.00000001	0.00088278
22	Yes	5	0.00000001	0.00029660
23	Yes	5	0.00000001	0.00011176
24	Yes	5	0.00000001	0.00037187
25	Yes	5	0.00000001	0.00014450
26	Yes	4	0.00000001	0.00008791
27	Yes	5	0.00000001	0.00037189
28	Yes	5	0.00000001	0.00038932
29	Yes	5	0.00000001	0.00038597
30	Yes	5	0.00000001	0.00036193
31	Yes	5	0.00000001	0.00038764
32	Yes	5	0.00000001	0.00038791
33	Yes	5	0.00000001	0.00036965
34	Yes	5	0.00000001	0.00039407
35	Yes	5	0.00000001	0.00039282
36	Yes	5	0.00000001	0.00037004
37	Yes	5	0.00000001	0.00039511
38	Yes	5	0.00000001	0.00039907
39	Yes	4	0.00000001	0.00010336
40	Yes	4	0.00000001	0.00013844
41	Yes	4	0.00000001	0.00013602
42	Yes	4	0.00000001	0.00009528
43	Yes	4	0.00000001	0.00021264
44	Yes	4	0.00000001	0.00015379
45	Yes	4	0.00000001	0.00012150
46	Yes	4	0.00000001	0.00016763
47	Yes	4	0.00000001	0.00015742
48	Yes	4	0.00000001	0.00009445
49	Yes	4	0.00000001	0.00014933
50	Yes	4	0.00000001	0.00022284

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	61 - 56	6.430	50	0.9250	0.0067
L2	56 - 51	5.469	50	0.9073	0.0065
L3	51 - 46	4.537	50	0.8670	0.0057
L4	46 - 41	3.662	50	0.8001	0.0045
L5	41 - 34.75	2.869	50	0.7108	0.0035
L6	37.5 - 32.5	2.375	50	0.6364	0.0028
L7	32.5 - 27.5	1.741	50	0.5629	0.0023

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L8	27.5 - 22.5	1.206	50	0.4560	0.0017
L9	22.5 - 21	0.788	50	0.3411	0.0011
L10	21 - 20.75	0.687	50	0.3059	0.0010
L11	20.75 - 20.5	0.671	50	0.3003	0.0010
L12	20.5 - 15.5	0.655	50	0.2970	0.0009
L13	15.5 - 10.5	0.379	50	0.2294	0.0007
L14	10.5 - 5.5	0.176	50	0.1586	0.0004
L15	5.5 - 0.5	0.049	50	0.0843	0.0002
L16	0.5 - 0	0.000	50	0.0077	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
61.00	Kenwood T1510KT12H 12.5' Platform w/ P2STD Handrail	50	6.430	0.9250	0.0067	9901
58.00	SP2-2.4	50	5.851	0.9161	0.0066	9901
53.00	Platform Mount [14' LP 403-1]	50	4.904	0.8865	0.0061	6501
43.00	Side Arm Mount [SO 104-3]	50	3.175	0.7502	0.0039	3075

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	61 - 56	37.098	14	5.3340	0.0383
L2	56 - 51	31.570	14	5.2323	0.0371
L3	51 - 46	26.213	14	5.0025	0.0326
L4	46 - 41	21.173	12	4.6210	0.0259
L5	41 - 34.75	16.600	12	4.1088	0.0199
L6	37.5 - 32.5	13.745	12	3.6812	0.0161
L7	32.5 - 27.5	10.079	12	3.2577	0.0132
L8	27.5 - 22.5	6.988	12	2.6406	0.0097
L9	22.5 - 21	4.568	12	1.9759	0.0065
L10	21 - 20.75	3.979	12	1.7722	0.0056
L11	20.75 - 20.5	3.887	12	1.7398	0.0055
L12	20.5 - 15.5	3.797	12	1.7210	0.0054
L13	15.5 - 10.5	2.198	12	1.3294	0.0039
L14	10.5 - 5.5	1.020	14	0.9194	0.0026
L15	5.5 - 0.5	0.282	14	0.4885	0.0013
L16	0.5 - 0	0.002	14	0.0445	0.0001

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
61.00	Kenwood T1510KT12H 12.5' Platform w/ P2STD Handrail	14	37.098	5.3340	0.0383	1764
58.00	SP2-2.4	14	33.769	5.2827	0.0379	1764
53.00	Platform Mount [14' LP 403-1]	14	28.326	5.1136	0.0349	1163
43.00	Side Arm Mount [SO 104-3]	12	18.362	4.3347	0.0222	542

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	61 - 56 (1)	TP17.2505x16.5x0.1875	5.00	0.00	0.0	10.3018	-3.20	602.65	0.005
L2	56 - 51 (2)	TP18.001x17.2505x0.1875	5.00	0.00	0.0	10.7549	-5.42	629.16	0.009
L3	51 - 46 (3)	TP18.7514x18.001x0.1875	5.00	0.00	0.0	11.2080	-5.75	655.67	0.009
L4	46 - 41 (4)	TP19.5019x18.7514x0.1875	5.00	0.00	0.0	11.6611	-6.62	682.17	0.010
L5	41 - 34.75 (5)	TP20.44x19.5019x0.1875	6.25	0.00	0.0	11.9782	-6.94	700.73	0.010
L6	34.75 - 32.5 (6)	TP20.4026x19.6522x0.25	5.00	0.00	0.0	16.2228	-7.58	949.04	0.008
L7	32.5 - 27.5 (7)	TP21.153x20.4026x0.25	5.00	0.00	0.0	16.8269	-8.16	984.37	0.008
L8	27.5 - 22.5 (8)	TP21.9033x21.153x0.25	5.00	0.00	0.0	17.4309	-8.77	1019.71	0.009
L9	22.5 - 21 (9)	TP22.1285x21.9033x0.25	1.50	0.00	0.0	17.6122	-8.95	1030.31	0.009
L10	21 - 20.75 (10)	TP22.166x22.1285x0.2688	0.25	0.00	0.0	18.9493	-9.02	1108.53	0.008
L11	20.75 - 20.5 (11)	TP22.2035x22.166x0.475	0.25	0.00	0.0	33.2337	-9.07	1944.17	0.005
L12	20.5 - 15.5 (12)	TP22.9539x22.2035x0.4688	5.00	0.00	0.0	33.9385	-10.01	1985.40	0.005
L13	15.5 - 10.5 (13)	TP23.7042x22.9539x0.4625	5.00	0.00	0.0	34.6127	-10.98	2024.85	0.005
L14	10.5 - 5.5 (14)	TP24.4546x23.7042x0.45	5.00	0.00	0.0	34.7827	-11.98	2034.79	0.006
L15	5.5 - 0.5 (15)	TP25.205x24.4546x0.4438	5.00	0.00	0.0	35.3807	-13.01	2069.77	0.006
L16	0.5 - 0 (16)	TP25.28x25.205x0.4438	0.50	0.00	0.0	35.4879	-13.12	2076.04	0.006

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	61 - 56 (1)	TP17.2505x16.5x0.1875	44.91	254.76	0.176	0.00	254.76	0.000
L2	56 - 51 (2)	TP18.001x17.2505x0.1875	93.58	273.69	0.342	0.00	273.69	0.000
L3	51 - 46 (3)	TP18.7514x18.001x0.1875	156.53	292.91	0.534	0.00	292.91	0.000
L4	46 - 41 (4)	TP19.5019x18.7514x0.1875	223.76	312.37	0.716	0.00	312.37	0.000
L5	41 - 34.75 (5)	TP20.44x19.5019x0.1875	274.37	326.11	0.841	0.00	326.11	0.000
L6	34.75 - 32.5 (6)	TP20.4026x19.6522x0.25	348.35	488.77	0.713	0.00	488.77	0.000
L7	32.5 - 27.5 (7)	TP21.153x20.4026x0.25	424.17	523.15	0.811	0.00	523.15	0.000
L8	27.5 - 22.5 (8)	TP21.9033x21.153x0.25	501.89	555.57	0.903	0.00	555.57	0.000
L9	22.5 - 21 (9)	TP22.1285x21.9033x0.25	525.55	565.39	0.930	0.00	565.39	0.000
L10	21 - 20.75 (10)	TP22.166x22.1285x0.2688	529.51	620.42	0.853	0.00	620.42	0.000
L11	20.75 - 20.5 (11)	TP22.2035x22.166x0.475	533.48	1069.59	0.499	0.00	1069.59	0.000
L12	20.5 - 15.5 (12)	TP22.9539x22.2035x0.4688	614.11	1131.43	0.543	0.00	1131.43	0.000

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 $\frac{M_{uy}}{\phi M_{ny}}$
L13	15.5 - 10.5 (13)	TP23.7042x22.9539x0.4625	697.06	1193.85	0.584	0.00	1193.85	0.000
L14	10.5 - 5.5 (14)	TP24.4546x23.7042x0.45	782.28	1240.49	0.631	0.00	1240.49	0.000
L15	5.5 - 0.5 (15)	TP25.205x24.4546x0.4438	869.78	1302.64	0.668	0.00	1302.64	0.000
L16	0.5 - 0 (16)	TP25.28x25.205x0.4438	878.67	1310.62	0.670	0.00	1310.62	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	61 - 56 (1)	TP17.2505x16.5x0.1875	7.72	180.80	0.043	0.46	271.36	0.002
L2	56 - 51 (2)	TP18.001x17.2505x0.1875	12.40	188.75	0.066	1.61	295.75	0.005
L3	51 - 46 (3)	TP18.7514x18.001x0.1875	12.80	196.70	0.065	1.61	321.20	0.005
L4	46 - 41 (4)	TP19.5019x18.7514x0.1875	14.34	204.65	0.070	1.61	347.69	0.005
L5	41 - 34.75 (5)	TP20.44x19.5019x0.1875	14.60	210.22	0.069	1.61	366.87	0.004
L6	34.75 - 32.5 (6)	TP20.4026x19.6522x0.25	15.00	284.71	0.053	1.61	504.70	0.003
L7	32.5 - 27.5 (7)	TP21.153x20.4026x0.25	15.38	295.31	0.052	1.72	542.99	0.003
L8	27.5 - 22.5 (8)	TP21.9033x21.153x0.25	15.71	305.91	0.051	1.71	582.67	0.003
L9	22.5 - 21 (9)	TP22.1285x21.9033x0.25	15.85	309.09	0.051	1.71	594.85	0.003
L10	21 - 20.75 (10)	TP22.166x22.1285x0.2688	15.86	332.56	0.048	1.71	640.56	0.003
L11	20.75 - 20.5 (11)	TP22.2035x22.166x0.475	15.88	583.25	0.027	1.71	1114.77	0.002
L12	20.5 - 15.5 (12)	TP22.9539x22.2035x0.4688	16.36	595.62	0.027	1.71	1178.05	0.001
L13	15.5 - 10.5 (13)	TP23.7042x22.9539x0.4625	16.82	607.45	0.028	1.71	1241.88	0.001
L14	10.5 - 5.5 (14)	TP24.4546x23.7042x0.45	17.28	610.44	0.028	1.71	1288.94	0.001
L15	5.5 - 0.5 (15)	TP25.205x24.4546x0.4438	17.76	617.17	0.029	1.46	1352.43	0.001
L16	0.5 - 0 (16)	TP25.28x25.205x0.4438	17.79	620.93	0.029	1.46	1360.64	0.001

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	61 - 56 (1)	0.005	0.176	0.000	0.043	0.002	0.184	1.050	4.8.2
L2	56 - 51 (2)	0.009	0.342	0.000	0.066	0.005	0.356	1.050	4.8.2
L3	51 - 46 (3)	0.009	0.534	0.000	0.065	0.005	0.548	1.050	4.8.2
L4	46 - 41 (4)	0.010	0.716	0.000	0.070	0.005	0.732	1.050	4.8.2
L5	41 - 34.75 (5)	0.010	0.841	0.000	0.069	0.004	0.857	1.050	4.8.2
L6	34.75 - 32.5 (6)	0.008	0.713	0.000	0.053	0.003	0.724	1.050	4.8.2
L7	32.5 - 27.5 (7)	0.008	0.811	0.000	0.052	0.003	0.822	1.050	4.8.2
L8	27.5 - 22.5 (8)	0.009	0.903	0.000	0.051	0.003	0.915	1.050	4.8.2
L9	22.5 - 21 (9)	0.009	0.930	0.000	0.051	0.003	0.941	1.050	4.8.2
L10	21 - 20.75 (10)	0.008	0.853	0.000	0.048	0.003	0.864	1.050	4.8.2
L11	20.75 - 20.5 (11)	0.005	0.499	0.000	0.027	0.002	0.504	1.050	4.8.2
L12	20.5 - 15.5 (12)	0.005	0.543	0.000	0.027	0.001	0.549	1.050	4.8.2

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L13	15.5 - 10.5 (13)	0.005	0.584	0.000	0.028	0.001	0.590	1.050	4.8.2
L14	10.5 - 5.5 (14)	0.006	0.631	0.000	0.028	0.001	0.637	1.050	4.8.2
L15	5.5 - 0.5 (15)	0.006	0.668	0.000	0.029	0.001	0.675	1.050	4.8.2
L16	0.5 - 0 (16)	0.006	0.670	0.000	0.029	0.001	0.678	1.050	4.8.2

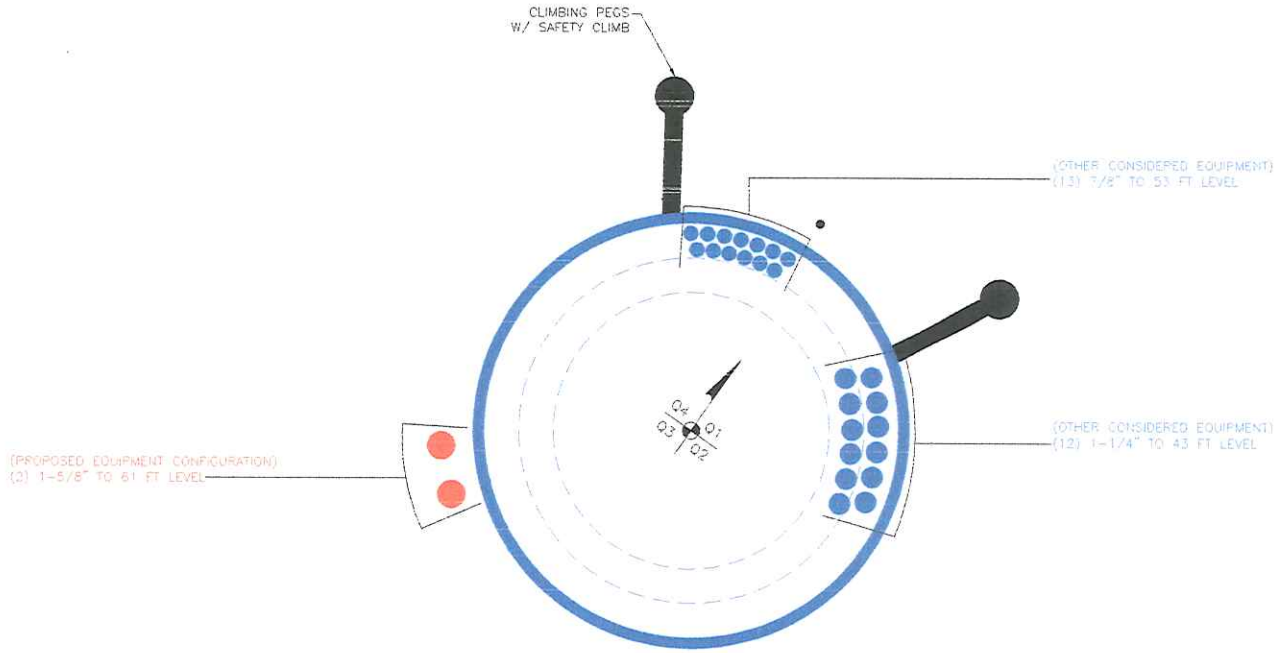
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	61 - 56	Pole	TP17.2505x16.5x0.1875	1	-3.20	632.79	17.5	Pass
L2	56 - 51	Pole	TP18.001x17.2505x0.1875	2	-5.42	660.62	33.9	Pass
L3	51 - 46	Pole	TP18.7514x18.001x0.1875	3	-5.75	688.45	52.2	Pass
L4	46 - 41	Pole	TP19.5019x18.7514x0.1875	4	-6.62	716.28	69.7	Pass
L5	41 - 34.75	Pole	TP20.44x19.5019x0.1875	5	-6.94	735.76	81.6	Pass
L6	34.75 - 32.5	Pole	TP20.4026x19.6522x0.25	6	-7.58	996.49	68.9	Pass
L7	32.5 - 27.5	Pole	TP21.153x20.4026x0.25	7	-8.16	1033.59	78.3	Pass
L8	27.5 - 22.5	Pole	TP21.9033x21.153x0.25	8	-8.77	1070.70	87.1	Pass
L9	22.5 - 21	Pole	TP22.1285x21.9033x0.25	9	-8.95	1081.83	89.6	Pass
L10	21 - 20.75	Pole	TP22.166x22.1285x0.2688	10	-9.02	1163.96	82.3	Pass
L11	20.75 - 20.5	Pole	TP22.2035x22.166x0.475	11	-9.07	2041.38	48.0	Pass
L12	20.5 - 15.5	Pole	TP22.9539x22.2035x0.4688	12	-10.01	2084.67	52.3	Pass
L13	15.5 - 10.5	Pole	TP23.7042x22.9539x0.4625	13	-10.98	2126.09	56.2	Pass
L14	10.5 - 5.5	Pole	TP24.4546x23.7042x0.45	14	-11.98	2136.53	60.7	Pass
L15	5.5 - 0.5	Pole	TP25.205x24.4546x0.4438	15	-13.01	2173.26	64.3	Pass
L16	0.5 - 0	Pole	TP25.28x25.205x0.4438	16	-13.12	2179.84	64.5	Pass
							Summary	
						Pole (L9)	89.6	Pass
						RATING =	**89.6**	**Pass**

***NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.**

APPENDIX B

BASE LEVEL DRAWING


CLIMBING PEGS
W/ SAFETY CLIMB
(OTHER CONSIDERED EQUIPMENT)
(13) 7/8" TO 53 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(12) 1-1/4" TO 43 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(2) 1-5/8" TO 61 FT LEVEL
Q4
Q1
Q3
Q2

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 875071

Work Order: 2102685

CROWN CASTLE

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	61	26.25	2.75	12	16.5	20.44	0.1875	Auto	A607-65
2	37.5	37.5	0	12	19.65	25.28	0.25	Auto	A607-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	21	plate	SR1 6-1/2"x1"	1										E		
2	0	20.75	plate	SR2 6-1/2"x1"	1						E						
3	0	21	plate	SR3 6-1/4"x1"	1			E									
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (In2)	Bolt Hole Size (in)	Reinforcement Material
1	6.5	1	6.5	0.5	Welded	n/a	PC 8.8 - M20 (100)	27.000	18.000	5.250	1.1875	A572-65
2	6.5	1	6.5	0.5	PC 8.8 - M20 (100)	27	PC 8.8 - M20 (100)	30.000	18.000	5.250	1.1875	A572-65
3	6.25	1	6.25	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	18.000	5.000	1.1875	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
SR1 6-1/2"x1"	Top	9	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	-	-	-	-	80	CJP Groove	6.5	1	60	0.5	-	-	-
SR2 6-1/2"x1"	Top	10	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	9	N	3	3	-	-	-	-	-	-	-	-	-
SR3 6-1/4"x1"	Top	8	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	8	N	3	3	-	-	-	-	-	-	-	-	-

TNX Geometry Input

Increment (ft): 5 Export to TNX

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	61 - 56	5		12	16.500	17.250	0.1875	A607-65	1.000
2	56 - 51	5		12	17.250	18.001	0.1875	A607-65	1.000
3	51 - 46	5		12	18.001	18.751	0.1875	A607-65	1.000
4	46 - 41	5		12	18.751	19.502	0.1875	A607-65	1.000
5	41 - 37.5	6.25	2.75	12	19.502	20.440	0.1875	A607-65	1.000
6	37.5 - 32.5	5		12	19.652	20.403	0.25	A607-65	1.000
7	32.5 - 27.5	5		12	20.403	21.153	0.25	A607-65	1.000
8	27.5 - 22.5	5		12	21.153	21.903	0.25	A607-65	1.000
9	22.5 - 21	1.5		12	21.903	22.128	0.25	A607-65	1.000
10	21 - 20.75	0.25		12	22.128	22.166	0.26875	A607-65	1.605
11	20.75 - 20.5	0.25		12	22.166	22.203	0.475	A607-65	1.112
12	20.5 - 15.5	5		12	22.203	22.954	0.46875	A607-65	1.107
13	15.5 - 10.5	5		12	22.954	23.704	0.4625	A607-65	1.102
14	10.5 - 5.5	5		12	23.704	24.455	0.45	A607-65	1.114
15	5.5 - 0.5	5		12	24.455	25.205	0.44375	A607-65	1.113
16	0.5 - 0	0.5		12	25.205	25.280	0.44375	A607-65	1.111

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	61 - 56	3.20	44.91	7.72
2	56 - 51	5.42	93.58	12.40
3	51 - 46	5.75	156.53	12.80
4	46 - 41	6.62	223.76	14.34
5	41 - 37.5	6.94	274.37	14.60
6	37.5 - 32.5	7.58	348.35	15.00
7	32.5 - 27.5	8.16	424.17	15.38
8	27.5 - 22.5	8.77	501.89	15.71
9	22.5 - 21	8.95	525.55	15.85
10	21 - 20.75	9.02	529.52	15.86
11	20.75 - 20.5	9.07	533.48	15.88
12	20.5 - 15.5	10.01	614.11	16.36
13	15.5 - 10.5	10.98	697.06	16.82
14	10.5 - 5.5	11.98	782.28	17.28
15	5.5 - 0.5	13.01	869.79	17.76
16	0.5 - 0	13.12	878.67	17.79

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
61 - 56	Pole	TP17.25x16.5x0.1875	Pole	17.4%	Pass
56 - 51	Pole	TP18.001x17.25x0.1875	Pole	33.7%	Pass
51 - 46	Pole	TP18.751x18.001x0.1875	Pole	52.0%	Pass
46 - 41	Pole	TP19.502x18.751x0.1875	Pole	69.4%	Pass
41 - 37.5	Pole	TP20.44x19.502x0.1875	Pole	81.3%	Pass
37.5 - 32.5	Pole	TP20.403x19.652x0.25	Pole	68.7%	Pass
32.5 - 27.5	Pole	TP21.153x20.403x0.25	Pole	78.0%	Pass
27.5 - 22.5	Pole	TP21.903x21.153x0.25	Pole	86.9%	Pass
22.5 - 21	Pole	TP22.128x21.903x0.25	Pole	89.4%	Pass
21 - 20.75	Pole + Reinf.	TP22.166x22.128x0.2688	Pole	90.1%	Pass
20.75 - 20.5	Pole + Reinf.	TP22.203x22.166x0.475	Reinf. 2 Compression	67.2%	Pass
20.5 - 15.5	Pole + Reinf.	TP22.954x22.203x0.4688	Reinf. 2 Compression	73.7%	Pass
15.5 - 10.5	Pole + Reinf.	TP23.704x22.954x0.4625	Reinf. 2 Compression	79.7%	Pass
10.5 - 5.5	Pole + Reinf.	TP24.455x23.704x0.45	Reinf. 2 Compression	85.3%	Pass
5.5 - 0.5	Pole + Reinf.	TP25.205x24.455x0.4438	Reinf. 2 Compression	90.6%	Pass
0.5 - 0	Pole + Reinf.	TP25.28x25.205x0.4438	Reinf. 2 Compression	91.1%	Pass
				Summary	
			Pole	90.2%	Pass
			Reinforcement	91.1%	Pass
			Overall	91.1%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity* (100% Max. Allowable)			
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3
61 - 56	383	n/a	383	10.29	n/a	10.29	17.4%			
56 - 51	436	n/a	436	10.74	n/a	10.74	33.7%			
51 - 46	494	n/a	494	11.19	n/a	11.19	52.0%			
46 - 41	556	n/a	556	11.64	n/a	11.64	69.4%			
41 - 37.5	603	n/a	603	11.96	n/a	11.96	81.3%			
37.5 - 32.5	842	n/a	842	16.20	n/a	16.20	68.7%			
32.5 - 27.5	940	n/a	940	16.80	n/a	16.80	78.0%			
27.5 - 22.5	1045	n/a	1045	17.41	n/a	17.41	86.9%			
22.5 - 21	1078	n/a	1078	17.59	n/a	17.59	89.4%			
21 - 20.75	1111	79	1190	17.62	12.75	30.37	90.2%	61.8%		63.0%
20.75 - 20.5	1104	926	2030	17.65	19.25	36.90	52.2%	58.3%	67.2%	63.4%
20.5 - 15.5	1221	984	2205	18.25	19.25	37.50	57.7%	64.0%	73.7%	69.4%
15.5 - 10.5	1345	1045	2390	18.85	19.25	38.10	63.0%	69.4%	79.7%	75.1%
10.5 - 5.5	1478	1107	2585	19.46	19.25	38.71	68.1%	74.4%	85.3%	80.4%
5.5 - 0.5	1619	1172	2790	20.06	19.25	39.31	73.0%	79.2%	90.6%	85.4%
0.5 - 0	1633	1178	2812	20.12	19.25	39.37	73.5%	79.7%	91.1%	85.9%

Note: Section capacity checked using 5 degree increments.

**Rating per TIA-222-H Section 15.5.*

Monopole Base Plate Connection

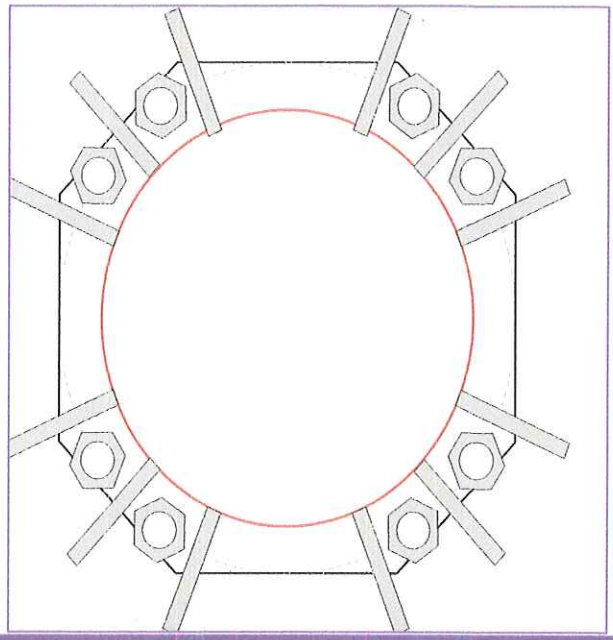
CROWN CASTLE

Site Info	
BU #	875071
Site Name	VEST TISBURY AIRPOR
Order #	583919 Rev. 3

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	Yes
l_{er} (in)	2.8125

Applied Loads	
Moment (kip-ft)	878.67
Axial Force (kips)	13.12
Shear Force (kips)	17.79

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(8) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 31" BC

Anchor Spacing: 6 in

Base Plate Data

31" W x 2" Plate (A572-50; Fy=50 ksi, Fu=65 ksi); Clip: 8 in

Stiffener Data

(12) 12"H x 8"W x 1"T, Notch: 0.75"

plate: Fy= 65 ksi ; weld: Fy= 70 ksi

horiz. weld: 0.5" groove, 45° dbl bevel, 0.5" fillet

vert. weld: 0.375" fillet

Pole Data

25.28" x 0.25" 12-sided pole (A607-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_t = 168.06	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.22	ϕVn = 149.1	**65.7%**
Mu = n/a	ϕMn = n/a	Pass

Base Plate Summary

Max Stress (ksi):	11.82	(Shear)
Allowable Stress (ksi):	29.25	
Stress Rating:	**38.5%**	Pass

Stiffener Summary

Horizontal Weld:	**49.9%**	Pass
Vertical Weld:	**53.3%**	Pass
Plate Flexure+Shear:	**11.7%**	Pass
Plate Tension+Shear:	**47.7%**	Pass
Plate Compression:	**44.8%**	Pass

Pole Summary

Punching Shear:	**22.8%**	Pass

Drilled Pier Foundation

BU # :	875071
Site Name:	WEST TISBURY AIRPORT
Order Number:	583919 Rev. 3
TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	878.67	
Axial Force (kips)	13.12	
Shear Force (kips)	17.78	

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

Pier Design Data		
Depth	15	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 15' below grade		
Pier Diameter	5	ft
Rebar Quantity	16	
Rebar Size	9	
Clear Cover to Ties	4	in
Tie Size	5	
Tie Spacing	18	in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
D_{ve0} (ft from TOC)	5.60	-
Soil Safety Factor	1.40	-
Max Moment (kip-ft)	971.87	-
Rating*	*90.6%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	112.70	-
End Bearing (kips)	159.04	-
Weight of Concrete (kips)	54.78	-
Total Capacity (kips)	271.74	-
Axial (kips)	67.90	-
Rating*	*23.8%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	5.58	-
Critical Moment (kip-ft)	971.87	-
Critical Moment Capacity	1769.90	-
Rating*	*52.3%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	12.17	-
Critical Shear (kip)	182.85	-
Critical Shear Capacity	321.27	-
Rating*	*54.2%*	-

Shear-Friction Methodology is Applied

Structural Foundation Rating*	**54.2%**
Soil Interaction Rating*	**90.6%**

*Rating per TIA-222-H Section 15.5

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	☐
Shear Design Options	
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☑
Override Critical Depth:	☐

Go to Soil Calculations

Soil Profile

Groundwater Depth	n/a	# of Layers	7

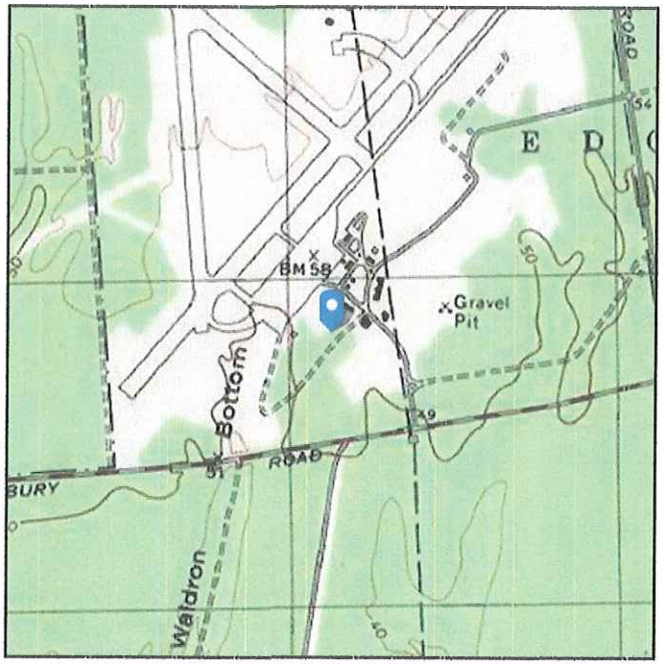
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Net Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	4.17	4.17	120	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	4.17	6	1.83	120	150	0	32	0.730	0.730				17	Cohesionless
3	6	8	2	120	150	0	32	0.960	0.960				21	Cohesionless
4	8	10	2	120	150	0	32	0.552	0.552				7	Cohesionless
5	10	12	2	120	150	0	32	0.833	0.833				9	Cohesionless
6	12	14	2	120	150	0	32	1.370	1.370				13	Cohesionless
7	14	15	1	120	150	0	32	0.80	0.80			9	7	Cohesionless

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 52.94 ft (NAVD 88)
Latitude: 41.38769
Longitude: -70.6125



Wind

Results:

Wind Speed:	140 Vmph
10-year MRI	82 Vmph
25-year MRI	96 Vmph
50-year MRI	106 Vmph
100-year MRI	120 Vmph

Date Accessed: Thu Sep 09 2021

ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

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 shall be protected against wind-borne debris as specified in Section 26.10.3.

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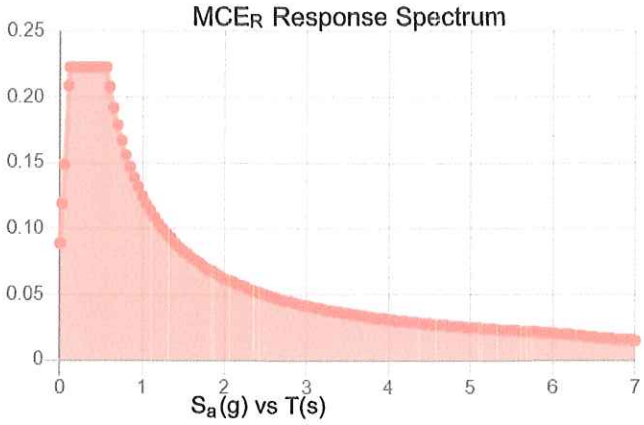
Seismic

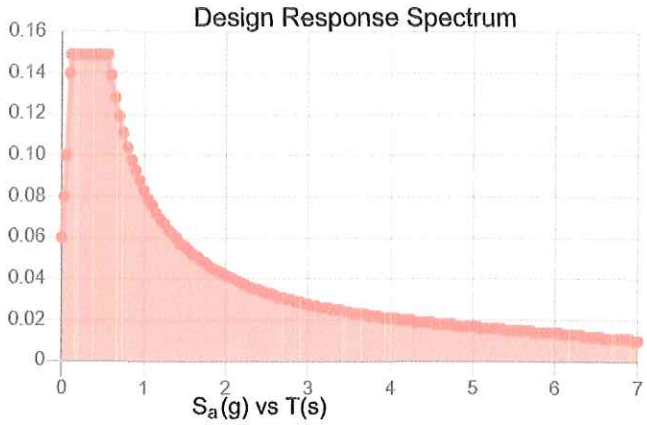
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.14*	S_{DS} :	0.149
S_1 :	0.052	S_{D1} :	0.083
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.069
S_{MS} :	0.223	PGA_M :	0.111
S_{M1} :	0.125	F_{PGA} :	1.6
*The jurisdiction requires Ss = 0.141		I_e :	1

Seismic Design Category B





Data Accessed: Thu Sep 09 2021

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

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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 Sep 09 2021

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

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