CROWN CASTLE

1 Cityplace Dr, Suite 490
Creve Coeur, MO 63141

Phone: (314) 513-0147
www.crowncastle.com

November 29, 2021

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

RE: **Notice of Exempt Modification for T-Mobile**
Crown Site ID# 806478; T-Mobile Site ID# CT11935A
539 Plains Rd Haddam, CT 06438
Latitude: 41.443056/ Longitude: -72.506222

Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 150-foot mount on the existing 131-foot Self Support Tower located at 539 Plains Rd Haddam, CT. The property is owned by 539 Plains Rd LLC C/O Crown Castle and the Tower by Crown Castle. T-Mobile now intends to replace six (6) existing antennas and add three (3) antennas. This modification/proposal includes hardware that is both 4G(LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

Planned Modifications:
Tower:

Remove and Replace:
(3) Nokia AAHH Antennas **(REMOVE) –** (3) RFS APXVAALL24_43-U-NA20 Antennas **(REPLACE)**

(3) RFS APXVSPP18-C-A20 Antennas **(REMOVE) –** (3) Ericsson AIR6449 B41 Antennas **(REPLACE)**

(3) Sprint RRU Radios **(REMOVE) -** (3) Ericsson 4480 B71+B85 RRU Radios **(REPLACE)**

Install New:
(3) Ericsson 4460 B25+B41 Radios

Ground:

Install New:
(3) Hybrid Cables (6x24)
(1) 6160 Cabinet
(3) BB6648 in 6160 cabinet

(1) IXRE Router in 6160 cabinet
(1) B160 Battery Cabinet

Remove:
(4) Coax cables

The facility was approved by The Connecticut Siting Council by way of a Certificate of Environmental Compatibility Docket No. 58 on October 6, 1986.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72(b)(2). In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to Robert McGarry, Town of Haddam First Selectman, Gary Vivian, Town of Haddam Chief Building Official.

1. The proposed modifications will not result in an increase in the height of the existing tower.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

Colin Robinson

Colin Robinson
Project Manager
NETWORK BUILDING + CONSULTING
100 Apollo Drive Suite 303
Chelmsford, MA 01824
crobinson@nbcllc.com
(360) 561-3311

CROWN CASTLE

1 Cityplace Dr, Suite 490
Creve Coeur, MO 63141

Phone: (314) 513-0147
www.crowncastle.com

cc:

Robert McGarry, First Selectman *(Via Fedex)*
Town of Haddam
30 Field Park Drive
Haddam, CT 06438
860-345-8531

Gary Vivian, Chief Building Official *(Via Fedex)*
Town of Haddam
30 Field Park Drive
Haddam, CT 06438
860-345-8531

539 Plains Road LLC, Property owner
C/O Crown Castle
4017 Washington Rd.
McMurray, PA 15317

TRACK ANOTHER SHIPMENT

775335057981

ADD NICKNAME

Delivered
Tuesday, 11/30/2021 at 12:41 pm

DELIVERED
Signature not required

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM
Ersilia Davis
1777 Sentry Parkway
VEVA 17, Suite 210
Blue Bell, PA US 19422
551-804-0667

TO
Robert McGarry, First Selectman
Town of Haddam
30 Field Park Drive
HADDAM, CT US 06438
860-345-8531

MANAGE DELIVERY

Travel History

TIME ZONE
Local Scan Time

Tuesday, November 30, 2021		
12:41 PM	HADDAM, CT	Delivered Package delivered to recipient address - release authorized
9:51 AM	NORTH HAVEN, CT	On FedEx vehicle for delivery
8:49 AM	NORTH HAVEN, CT	At local FedEx facility
4:55 AM	NEWARK, NJ	Departed FedEx hub
Monday, November 29, 2021		
10:57 PM	NEWARK, NJ	Arrived at FedEx hub

TRACK ANOTHER SHIPMENT

775335102716

ADD NICKNAME

Delivered
Tuesday, 11/30/2021 at 12:41 pm

DELIVERED

Signature not required

GET STATUS UPDATES

OBTAIN PROOF OF DELIVERY

FROM

Ersilia Davis

1777 Sentry Parkway
VEVA 17, Suite 210
Blue Bell, PA US 19422
551-804-0667

TO

Gary Vivian, Chief Bldg. Official
Town of Haddam

30 Field Park Drive
HADDAM, CT US 06438
860-345-8531

MANAGE DELIVERY

Travel History

TIME ZONE
Local Scan Time

Tuesday, November 30, 2021		
12:41 PM	HADDAM, CT	Delivered Package delivered to recipient address - release authorized
9:52 AM	NORTH HAVEN, CT	On FedEx vehicle for delivery
8:45 AM	NORTH HAVEN, CT	At local FedEx facility
4:55 AM	NEWARK, NJ	Departed FedEx hub
Monday, November 29, 2021		
10:57 PM	NEWARK, NJ	Arrived at FedEx hub

Exhibit A

Original Facility Approval

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

1 CENTRAL PARK PLAZA • NEW BRITAIN, CONN. 06051

PHONE: 827-2604

GLORIA DIBBLE POND
CHAIRPERSON

COMMISSIONERS
JOHN DOWNEY
STANLEY PAC

OWEN L. CLARK
MORTIMER A. GELSTON
JAMES G. HORSFALL
PAMELA B. KATZ
WILLIAM H. SMITH
COLIN C. TAIT

John C. Kelly
EXECUTIVE DIRECTOR
STANLEY J. MODZELESKY
EXECUTIVE ASSISTANT

October 7, 1986

Attorney Howard L. Slater
Byrne, Slater, Sandler, Shulman,
and Rouse, P.C.
330 Main Street
P.O. Box 3216
Hartford, Connecticut 06103

RE: Docket No. 58 - Hartford Cellular Company Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of facilities to provide cellular service in Hartford, Tolland, and Middlesex Counties. Development and Management Plans for Portland, Haddam, Somers, and Windsor tower sites.

Dear Attorney Slater:

At a meeting of the Siting Council held on October 6, 1986, the Council considered and approved the Development and Management Plans (D&M Plans) for the above-referenced tower sites. Please note that the Portland monopole must be painted to comply with Order No. 7 of the Decision and Order in Docket No. 58.

Enclosed for your reference is a copy of the Staff Report for these D&M Plans recommending the Council's approval.

This approval applies only to the D&M plans for the Haddam, Portland, Somers, and Windsor sites. Modifications to these D&M plans require advance Council notification and approval.

Contact Robert K. Erling of the Council Staff if you have any questions on this matter.

Very truly yours,

Gloria Dibble Pond
Chairperson

enclosure
GDP/RKE/cp

Exhibit B

Property Card

539 PLAINS RD

Location 539 PLAINS RD

Mblu 63/ 022/ C/ /

Acct# PT496400

Owner 539 PLAINS RD LLC

Assessment $275,460

Appraisal $393,510

PID 3240

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2016	$206,010	$187,500	$393,510

Assessment			
Valuation Year	Improvements	Land	Total
2016	$144,210	$131,250	$275,460

Owner of Record

Owner 539 PLAINS RD LLC
Co-Owner C/O CROWN ATLANTIC CO
Address PMB353 4017 WASHINGTON RD
MCMURRAY, PA 15317

Sale Price $325,000
Certificate
Book & Page 347/ 725
Sale Date 10/25/2011
Instrument 00

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
539 PLAINS RD LLC	$325,000		347/ 725	00	10/25/2011
MICHAEL JACQUELINE A	$0		330/ 411	29	06/26/2009
PIONEER ENTERPRISES LLC	$0		308/ 256		12/21/2006
MICHAEL JACQUELINE	$0		284/ 001		10/26/2004
MICHAEL JACK & JACQUELINE	$0		90/ 198		12/02/1958

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0
Building Percent Good:
Replacement Cost Less Depreciation: $0

Building Photo

Building Attributes	
Field	**Description**
Style	Outbuildings
Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Extra Kitchens	
Fireplace(s)	
Extra Opening(s)	
Gas Fireplace(s)	
Blocked FPL(s)	
Woodstove(s)	
Bsmt Garage(s)	
SF Fin Bsmt	
FBM Quality	
Whirlpool	
Sauna	
Foundation	

(http://images.vgsi.com/photos2/HaddamCTPhotos//\00\00\57/59.JPG)

Building Layout

Building

(http://images.vgsi.com/photos2/HaddamCTPhotos//Sketches/32

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

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	350
Description	Cell Tower
Zone	R-2A
Neighborhood	CELL
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.25
Frontage	
Depth	
Assessed Value	$131,250
Appraised Value	$187,500

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN1	FENCE-4' CHAIN			1200 L.F.	$10,800	1
SHDC	Cell Shed			315 S.F.	$85,050	1
SHDC	Cell Shed			312 S.F.	$84,240	1
SHDC	Cell Shed			96 S.F.	$25,920	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$206,010	$187,500	$393,510
2016	$206,010	$187,500	$393,510
2015	$206,010	$187,500	$393,510

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$144,210	$131,250	$275,460
2016	$144,210	$131,250	$275,460
2015	$144,210	$131,250	$275,460

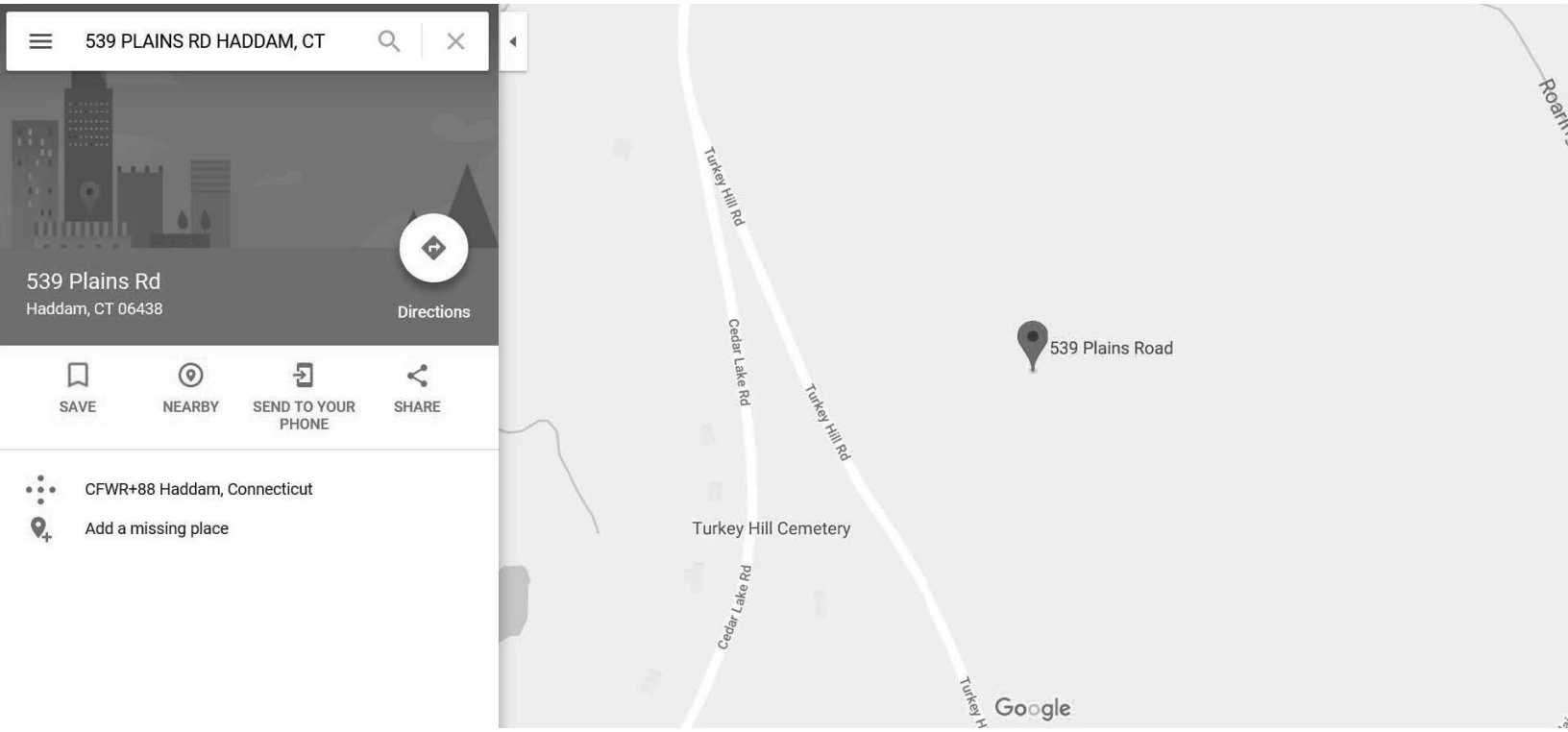

539 PLAINS RD HADDAM, CT
539 Plains Rd
Haddam, CT 06438
Directions
SAVE
NEARBY
SEND TO YOUR PHONE
SHARE
CFWR+88 Haddam, Connecticut
Add a missing place
Turkey Hill Rd
Cedar Lake Rd
539 Plains Road
Turkey Hill Rd
Turkey Hill Cemetery
Cedar Lake Rd
Google

Exhibit C

Construction Drawings

T-Mobile

T-MOBILE SITE NUMBER: CT11935A
T-MOBILE SITE NAME: CT11935A
SITE TYPE: SELF SUPPORT TOWER
TOWER HEIGHT: 190'-0"

BUSINESS UNIT #: 806478
SITE ADDRESS: 539 PLAINS RD HADDAM, CT 06438
COUNTY: MIDDLESEX
JURISDICTION: MIDDLESEX COUNTY

T-MOBILE SPRINT RETAIN SITE CONFIGURATION: 67E5998E_1XAIR+1OP+1QP

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	HRT 080 953381
SITE ADDRESS:	539 PLAINS RD HADDAM, CT 06438
COUNTY:	MIDDLESEX
MAP/PARCEL #:	63 022 2
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.443056° (41° 26' 35.00")
LONGITUDE:	-72.506222° (-72° 30' 22.40")
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	539 FT
CURRENT ZONING:	R-2A
JURISDICTION:	MIDDLESEX COUNTY
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	539 PLAINS RD LLC 444 ROUTE 312 BREWSTER, NY 10509
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	TBD
TELCO PROVIDER:	TBD

PROJECT TEAM

A&E FIRM:	INFINIGY 1033 WATERVLIET SHAKER RD. ALBANY, NY 12205
CROWN CASTLE USA INC. DISTRICT CONTACTS:	4511 N HIMES AVE, SUITE 210 TAMPA, FL 33614
	TRICIA PELON - PROJECT MANAGER (518) 373-3507
	JASON D'AMICO - CONSTRUCTION MANAGER (860) 209-0104

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1	SITE PLAN & ENLARGED SITE PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	PLUMBING DIAGRAM
C-5	EQUIPMENT SPECS
C-6	EQUIPMENT SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR ----. 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

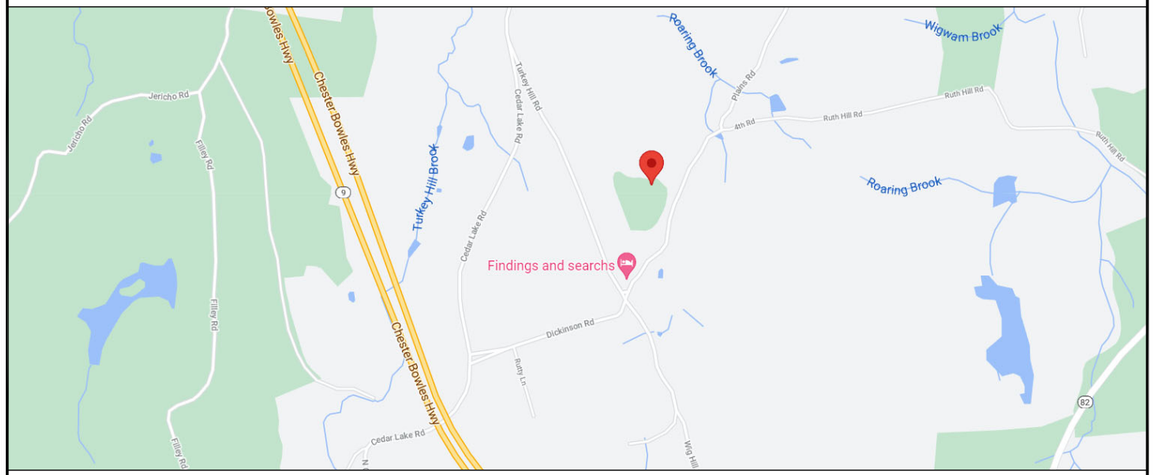
THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- REMOVE (6) ANTENNAS
- REMOVE (6) RRHs
- REMOVE (4) HYBRID CABLES
- INSTALL (9) ANTENNAS
- INSTALL (9) RRHs
- INSTALL (3) 6X24 HYBRID CABLES
- INSTALL (1) GPS
- INSTALL (1) GPS LINE

GROUND SCOPE OF WORK:
- REMOVE (1) MMBS EQUIPMENT CABINET
- REMOVE (1) BBU EQUIPMENT CABINET
- INSTALL (1) 6160 & (1) B160 BATTERY CABINETS
- INSTALL (2) BB 6648
- INSTALL (1) DUG20
- INSTALL (1) PSU 4813
- INSTALL (1) CSR IXRe V2 (GEN2)
- UPGRADE SERVICE TO 200AMP.

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

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	2018 CT STATE BUILDING CODE
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	B+T GROUP
DATED:	09/24/2021
MOUNT ANALYSIS:	B+T GROUP
DATED:	09/16/2021
RFDS REVISION:	1
DATED:	08/13/2021
ORDER ID:	582282
REVISION:	0

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

APPROVALS

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

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

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1500 CORPORATE DRIVE
CANONSBURG, PA 15317

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com

T-MOBILE SITE NUMBER:
CT11935A

BU #: **806478**
HRT 080 953381

539 PLAINS RD
HADDAM, CT 06438

EXISTING 190'-0" SELF SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/15/2021	TJ	FINAL	SS
1	11/02/2021	TJ	SA REFERENCE	SS
2	11/29/2021	TJ	HYBRID QTY UPDATE	SS

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER

11/29/2021

SHEET NUMBER: T-1
REVISION: 2

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED– NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800–788–7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
2. "LOOK UP" – CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT:
THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED–STD–10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH QAS–STD–10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE," CED–STD–10294 "STANDARD FOR INSTALLATION OF MOUNTS AND APPURTENANCES," AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
   CARRIER: 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 PER 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
PINK	TEMPORARY SURVEY MARKINGS
RED	ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES
YELLOW	GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
ORANGE	COMMUNICATION, ALARM OR SIGNAL LINES, CABLES, OR CONDUIT AND TRAFFIC LOOPS
BLUE	POTABLE WATER
PURPLE	RECLAIMED WATER, IRRIGATION, AND SLURRY LINES
GREEN	SEWERS AND DRAIN LINES

ABBREVIATIONS:

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

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE
1500 CORPORATE DRIVE
CANONSBURG, PA 15317

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T-MOBILE SITE NUMBER:
CT11935A

BU #: **806478**
HRT 080 953381

539 PLAINS RD
HADDAM, CT 06438

EXISTING 190'-0" SELF SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/15/2021	TJ	FINAL	SS
1	11/02/2021	TJ	SA REFERENCE	SS
2	11/29/2021	TJ	HYBRID QTY UPDATE	SS

STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

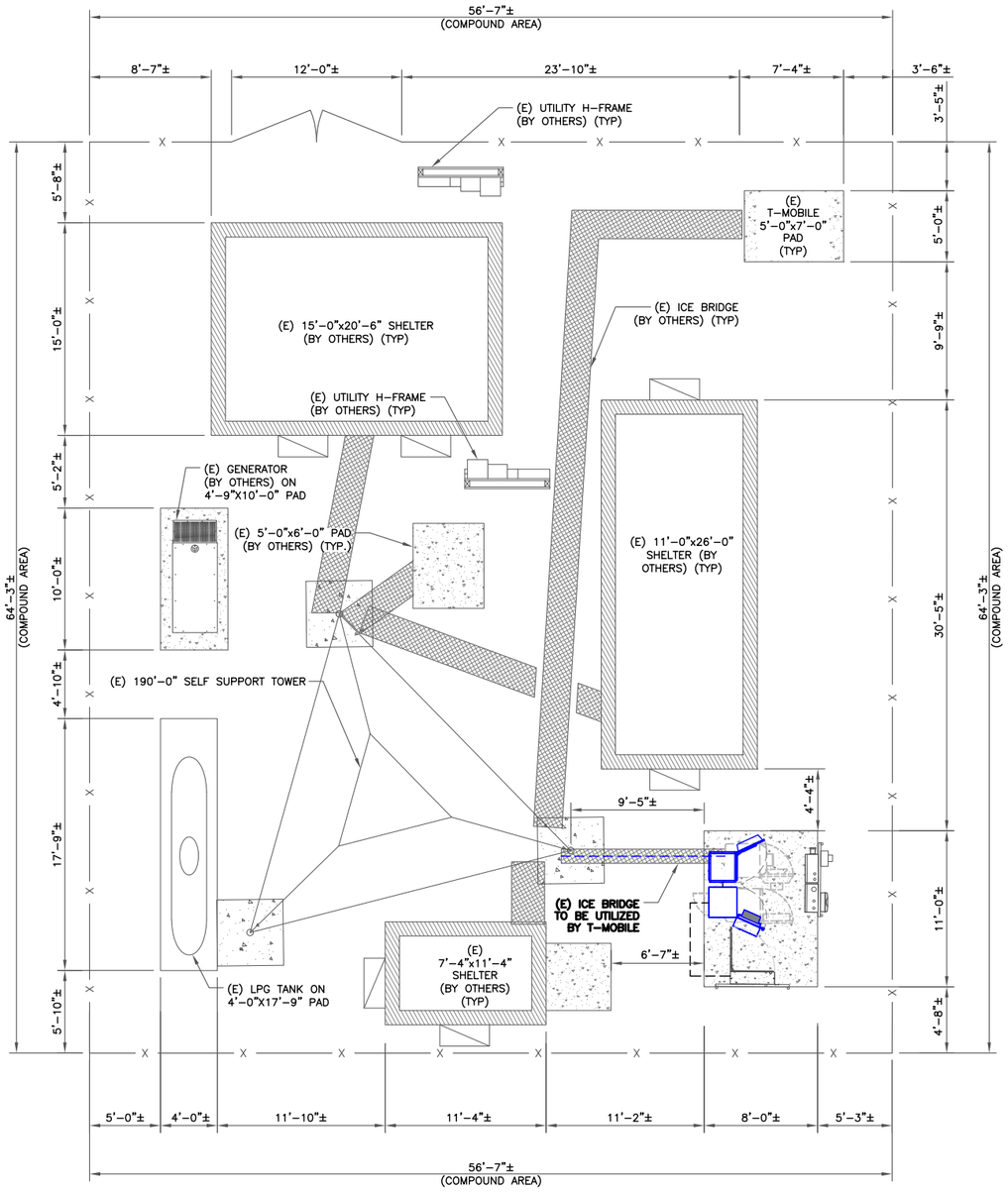
11/29/2021

SHEET NUMBER: T-2

REVISION: 2

NOTE:

1. PLANS BASED ON SITE PLAN PROVIDED BY TOWER OWNER AND SITE VISIT PERFORMED BY INFINIGY. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING T-MOBILE EQUIPMENT.

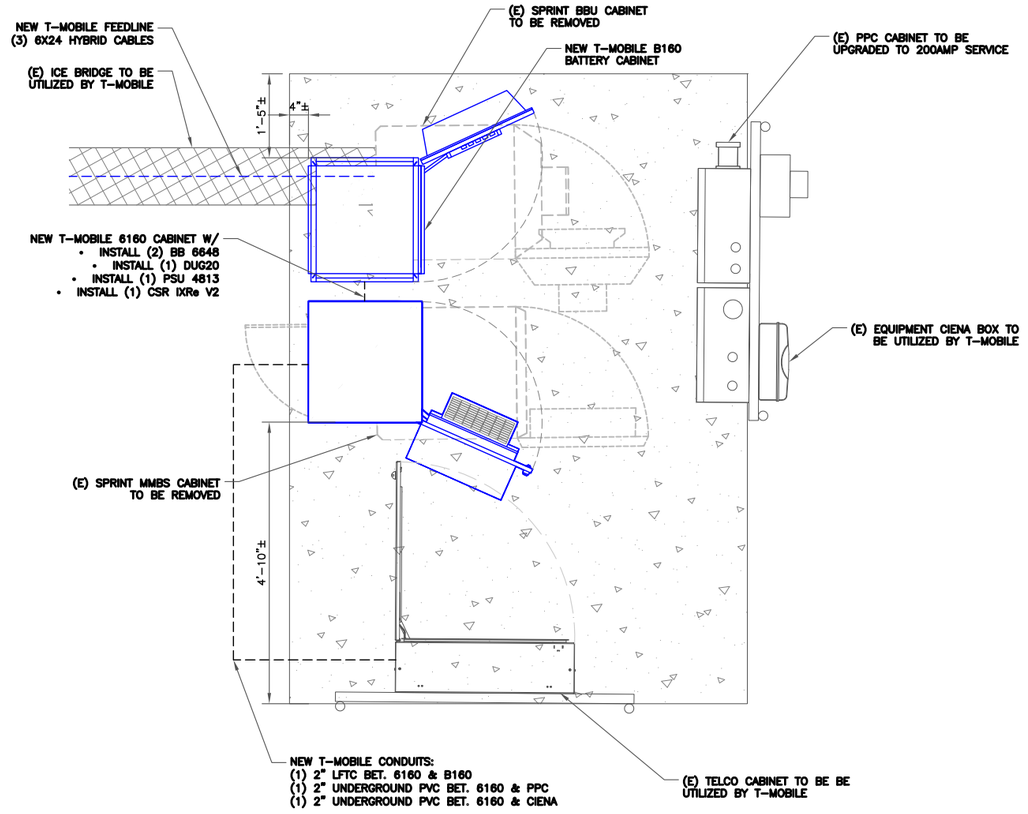


1 SITE PLAN
SCALE: 4' 3' 2' 1' 0 4' 1/4"=1'-0" (FULL SIZE) 1/8"=1'-0" (11x17)

N

NOTES:

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



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

N

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T-MOBILE SITE NUMBER:
CT11935A

BU #: **806478**
HRT 080 953381

539 PLAINS RD
HADDAM, CT 06438

EXISTING 190'-0" SELF SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/15/2021	TJ	FINAL	SS
1	11/02/2021	TJ	SA REFERENCE	SS
2	11/29/2021	TJ	HYBRID QTY UPDATE	SS

STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED
PROFESSIONAL ENGINEER

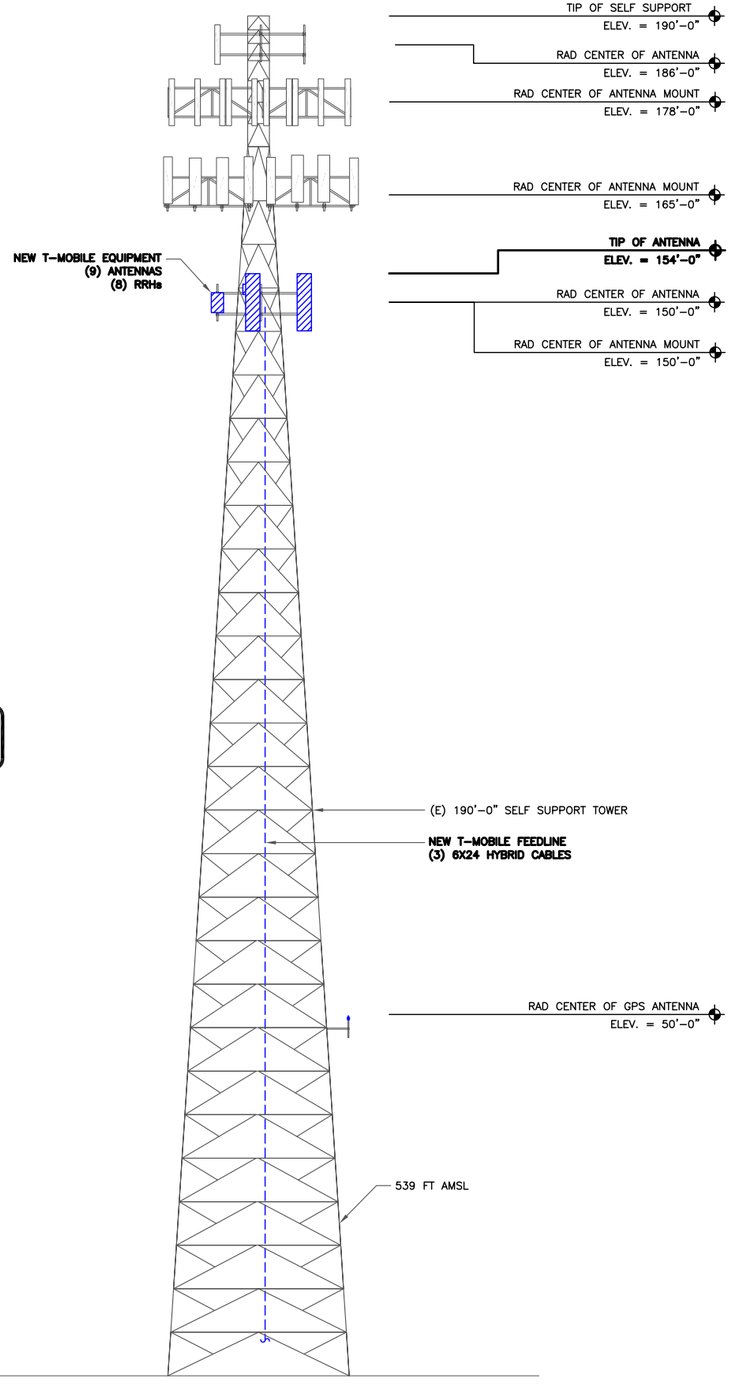
11/29/2021

SHEET NUMBER: C-1

REVISION: 2

NOTES:

1. ELEVATION BASED ON DRAWING PROVIDED BY TOWER OWNER. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING EQUIPMENT.
2. INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR STRUCTURAL INTEGRITY REGARDING PROPOSED LOADINGS. FINAL INSTALLATION SHALL COMPLY WITH RESULTS OF PASSING STRUCTURAL ANALYSES PERFORMED BY OTHERS.

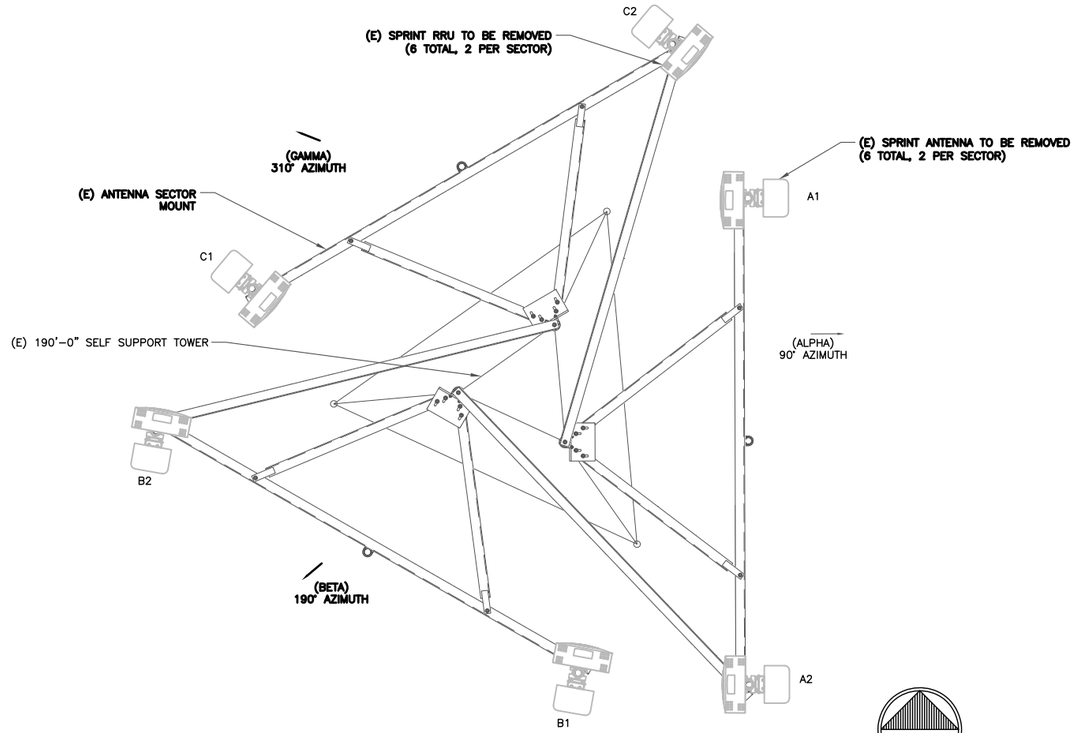


T-MOBILE EQUIPMENT

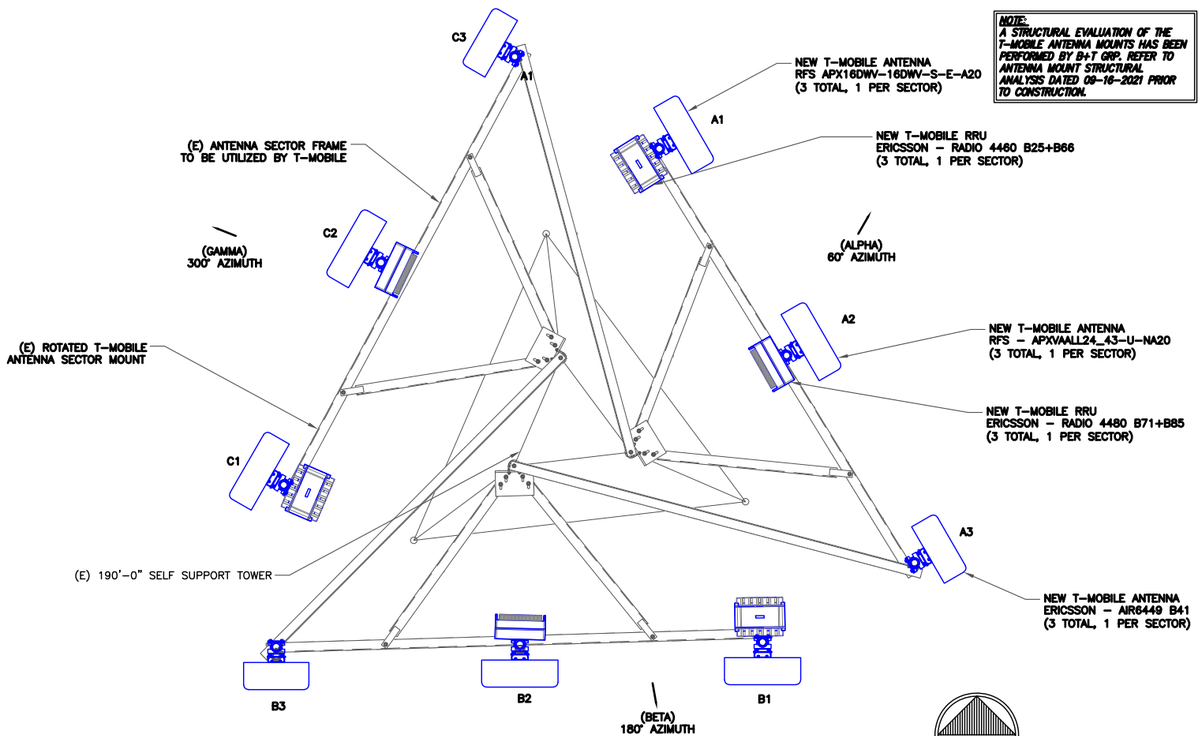
ANTENNA CL: 150'-0"
MOUNT CL: 150'-0"

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

1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE



3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

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T-MOBILE SITE NUMBER:
CT11935A

BU #: **806478**
HRT 080 953381

539 PLAINS RD
HADDAM, CT 06438

EXISTING 190'-0" SELF SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/15/2021	TJ	FINAL	SS
1	11/02/2021	TJ	SA REFERENCE	SS
2	11/29/2021	TJ	HYBRID QTY UPDATE	SS

STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

11/29/2021

SHEET NUMBER: C-2

REVISION: 2

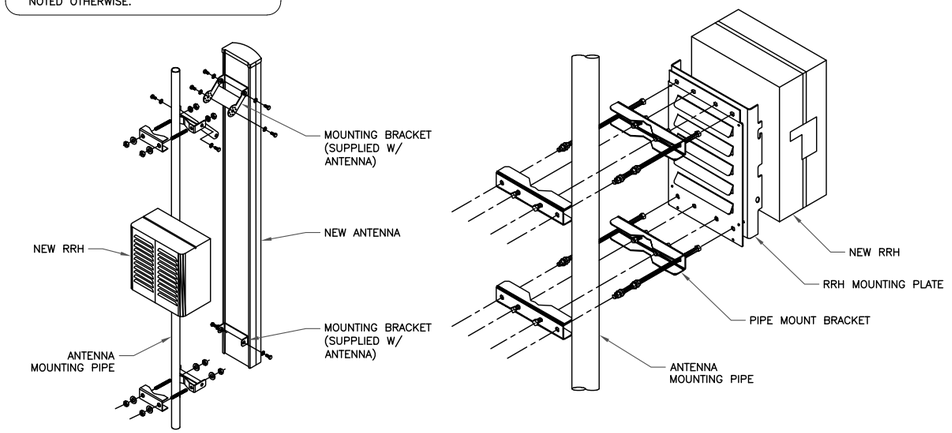
ANTENNA SCHEDULE

SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE
ALPHA	A1	L2100	150'-0"	60°	RFS	APX16DWV-16DWV-S-E-A20	0°	--	(1) ERICSSON - RRUS 4460 B25+B66	(3) 6X24 HCS HYBRID (SHARED)
ALPHA	A2	L700, L600, N600, L1900, G1900	150'-0"	60°	RFS	APXVAALL24_43-U-NA20	0°	--	(1) ERICSSON - RRUS 4480 B71+B85	
ALPHA	A3	L2500, N2500	150'-0"	60°	ERICSSON	AIR6449 B41	0°	--	--	
BETA	B1	L2100	150'-0"	180°	RFS	APX16DWV-16DWV-S-E-A20	0°	--	(1) ERICSSON - RRUS 4460 B25+B66	(3) 6X24 HCS HYBRID (SHARED)
BETA	B2	L700, L600, N600, L1900, G1900	150'-0"	180°	RFS	APXVAALL24_43-U-NA20	0°	--	(1) ERICSSON - RRUS 4480 B71+B85	
BETA	B3	L2500, N2500	150'-0"	180°	ERICSSON	AIR6449 B41	0°	--	--	
GAMMA	C1	L2100	150'-0"	300°	RFS	APX16DWV-16DWV-S-E-A20	0°	--	(1) ERICSSON - RRUS 4460 B25+B66	(3) 6X24 HCS HYBRID (SHARED)
GAMMA	C2	L700, L600, N600, L1900, G1900	150'-0"	300°	RFS	APXVAALL24_43-U-NA20	0°	--	(1) ERICSSON - RRUS 4480 B71+B85	
GAMMA	C3	L2500, N2500	150'-0"	300°	ERICSSON	AIR6449 B41	0°	--	--	

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE

INSTALLER NOTES:

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



NOTE:

1. CONTRACTOR SHALL INSTALL 3RD DUAL RRH MOUNT TO ACCOMMODATE ALL RRH BRACKETS HOLES IF NECESSARY.

2 ANTENNA WITH RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

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BU #: **806478**
HRT 080 953381

539 PLAINS RD
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EXISTING 190'-0" SELF SUPPORT TOWER

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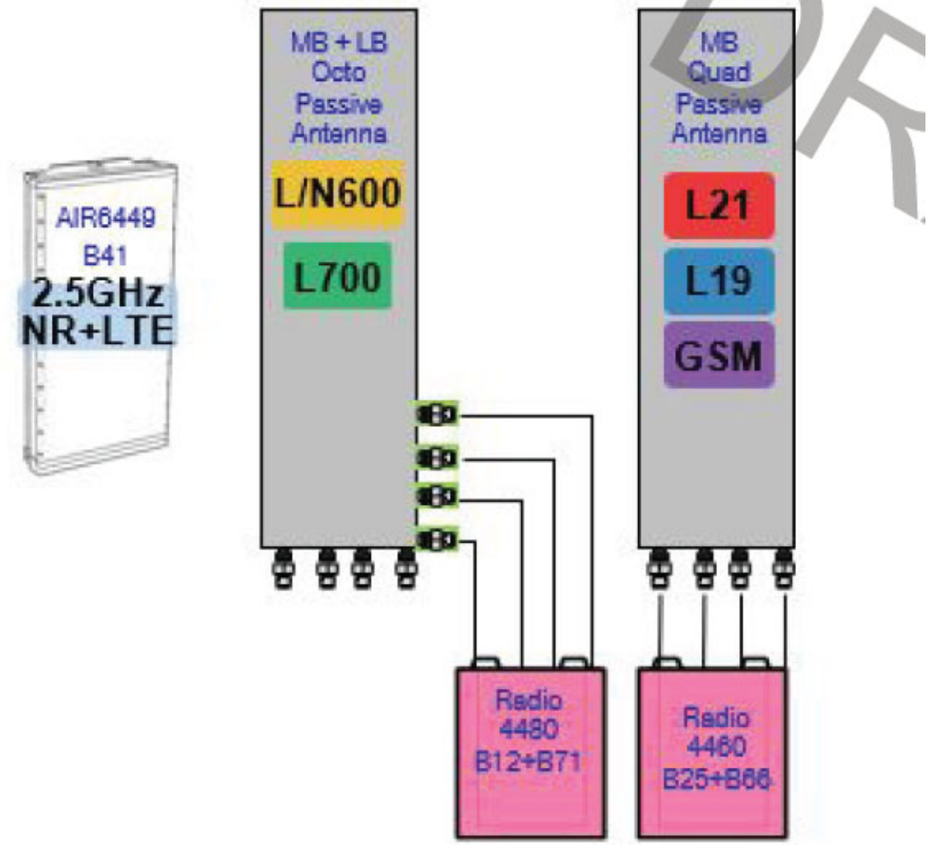
STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER

11/29/2021

SHEET NUMBER: C-3

REVISION: 2



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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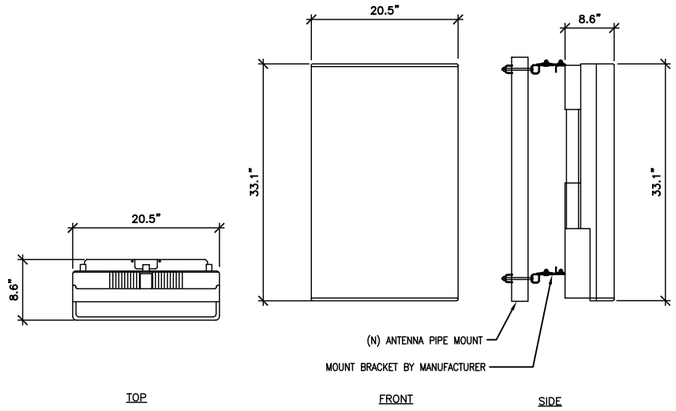
STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER

11/29/2021

SHEET NUMBER: C-4

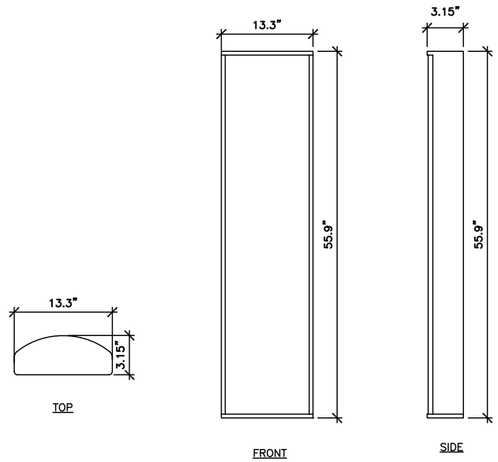
REVISION: 2

MANUFACTURER: ERICSSON
MODEL: AIR6449 B41
WEIGHT: 104 LBS (W/ MOUNT BRACKET 113)
DIMENSIONS: 33.1"H. X 20.5"W. X 8.6"D.
FREQUENCY: REFER TO RF DATA SHEET

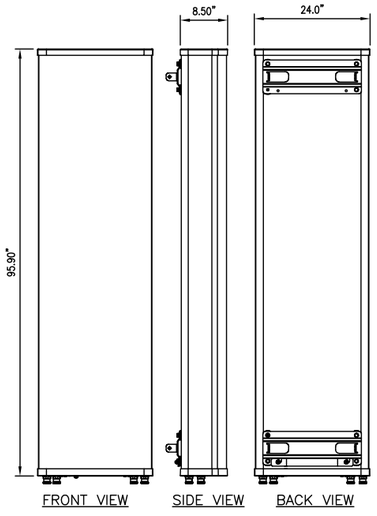


1 (N) AIR6449 B41 ANTENNA SPEC
SCALE: NOT TO SCALE

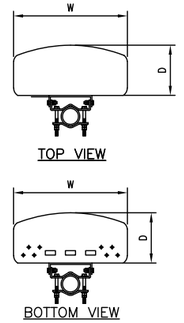
MANUFACTURER: RFS
MODEL: APX16DWV-16DWV-S-E-A20
WEIGHT: 40.7 LBS
DIMENSIONS: 55.9"H. X 13.3"W. X 3.15"D.
FREQUENCY: REFER TO RF DATA SHEET



2 (N) APX16DWV-16DWV-S-E-A20 ANTENNA SPEC
SCALE: NOT TO SCALE



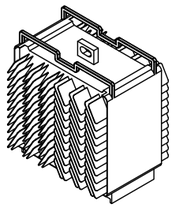
700MHz RFS ANTENNAS	
MODEL	WEIGHT (lb)
(8') APXVAALL24_43-UNA20	149.90
WEIGHT W/ MOUNTING BRACKET (lb):	154

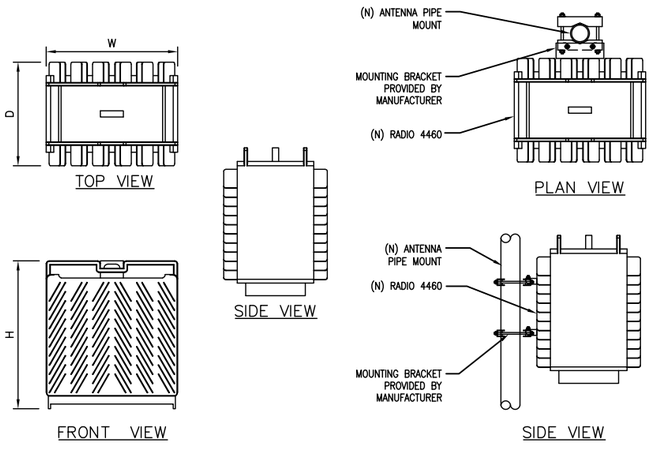


3 (N) APXVAALL24_43-UNA20 ANTENNA SPEC
SCALE: NOT TO SCALE

ERICSSON RADIO-4460 B25 B66

DIMENSIONS, WxDxH:	17.0"x15.1"x11.9"
MAX OUTPUT POWER:	4x80W (2x(2x80W))
TOTAL WEIGHT:	109 lbs
TEMPERATURE:	-40° TO 55° C

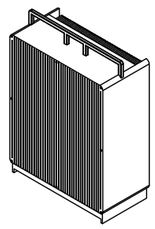


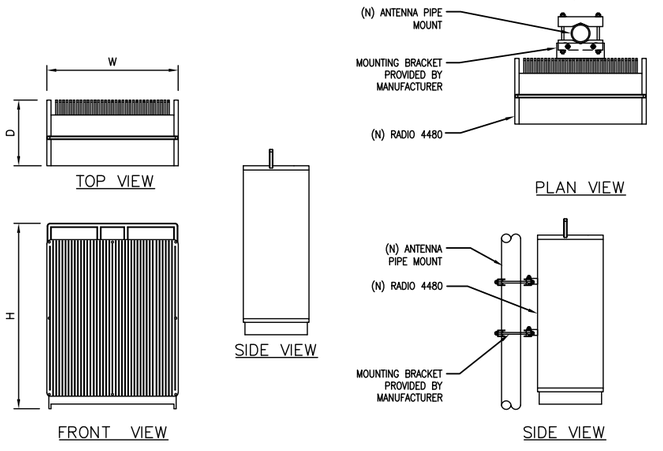


4 (N) RADIO 4460 SPEC
SCALE: NOT TO SCALE

ERICSSON RADIO-4480 B71 B85

DIMENSIONS, WxDxH:	21.8"x15.7"x7.5"
MAX OUTPUT POWER:	4x80W (2x(2x80W))
TOTAL WEIGHT:	93 lbs
TEMPERATURE:	-40° TO 55° C





5 (N) RADIO 4480 SPEC
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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BU #: **806478**
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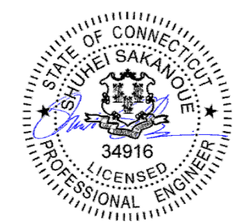
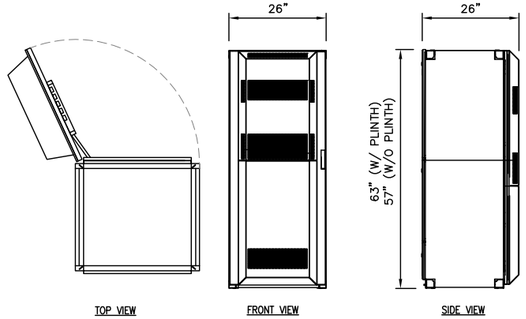


11/29/2021

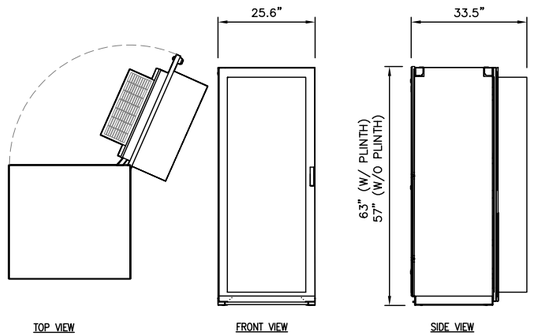
SHEET NUMBER: C-5

REVISION: 2



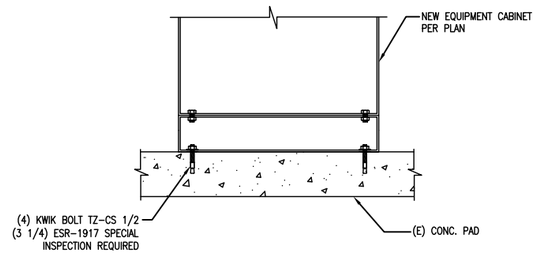
ERICSSON MODEL NO.:	B160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x26"x26" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	485 LBS
MAXIMUM WEIGHT:	2100± LBS

1 (N) B160 CABINET DETAIL
SCALE: NOT TO SCALE

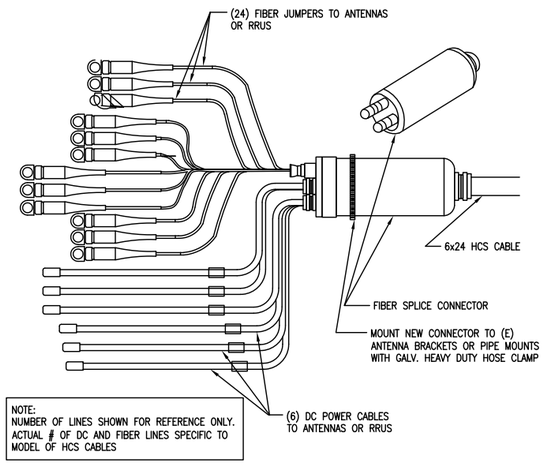


ERICSSON MODEL NO.:	6160
RACK SPACE:	19U
DIMENSIONS, HxWxD:	63"x25.6"x25.6" (W/ 6" PLINTH)
CABINET WEIGHT, EMPTY:	410 LBS
MAXIMUM WEIGHT:	770± LBS

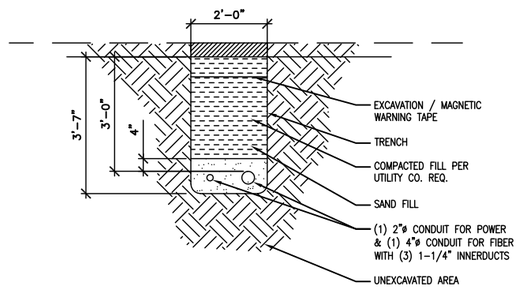
2 (N) 6160 CABINET DETAIL
SCALE: NOT TO SCALE



3 (N) EQUIPMENT CABINET MOUNTING DETAIL
SCALE: NOT TO SCALE



4 (N) 6X24 HCS CABLE DETAIL
SCALE: NOT TO SCALE



5 (N) CONDUIT TRENCH DETAIL
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER

11/29/2021

SHEET NUMBER: C-6
REVISION: 2

T-MOBILE PANEL SCHEDULE

MAIN: 200A MAIN BREAKER			**VOTAGE/PHASE:** 120/240V, 1-PHASE, 3-WIRE						**SHORT CIRCUIT CURRENT RATING:** --		
MOUNTING: INSIDE PPC ENCLOSURE			**ENCLOSURE:** NEMA 3R						**SURGE PROTECTION DEVICE:** YES		
					PHASE LOADS (VA)						
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	A	B	CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
6160	**7000**	**C**	**100**	1	7001		2	60	C	1	SURGE PROTECTION
	7000	**C**		3		7001	4		C	1	
6160 GFI	**180**	**C**	**20**	5	380		6	20	NC	200	TOWER LIGHTS
BLANK				7		200	8		NC	200	
				9	0		10				BLANK
				11		0	12				
				13	0		14				
				15		0	16				
				17	0		18				
				19		0	20				
				21	0		22				
				23		0	24				
BASE LOAD (VA) =					7381	7201					
25% OF CONTINUOUS LOAD (VA) =					1750	1750					
TOTAL LOAD (VA) =					9131	8951					
TOTAL LOAD (A) =					76	75					

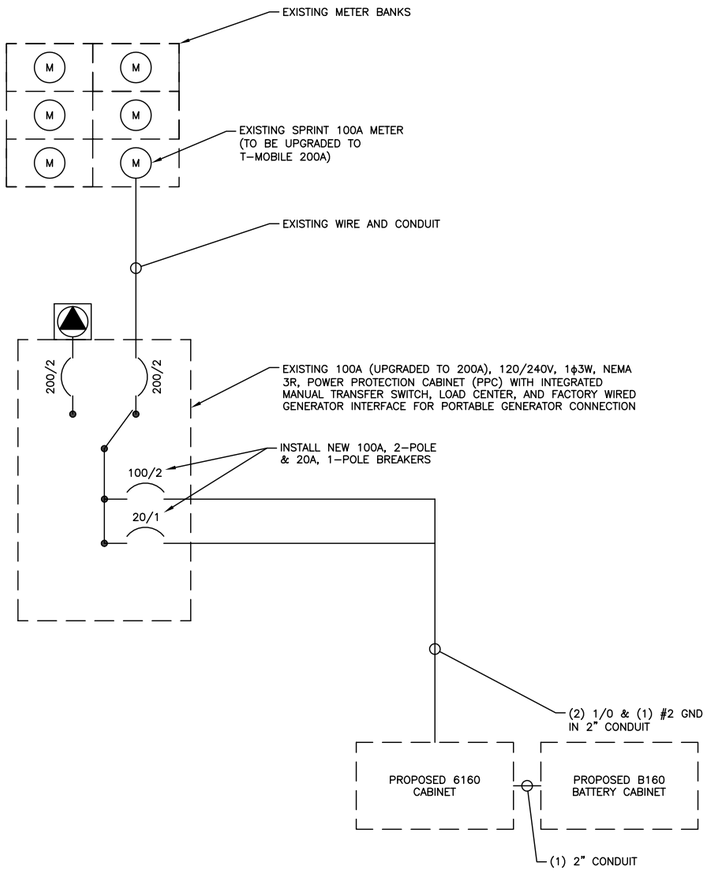
C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD

NEW BREAKER TO BE SAME TYPE AND HAVE SAME AIC RATING AS EXISTING. CUSTOMER HAS NOT PROVIDED LOADS FOR EQUIPMENT CABINETS THEREFORE THE CABINET LOADS SHOWN ARE ESTIMATED VALUES.

1 AC PANEL SCHEDULE
SCALE: NOT TO SCALE

NOTES:

1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, OR XHHW-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

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STATE OF CONNECTICUT
SHUHEI SAKAMOTO
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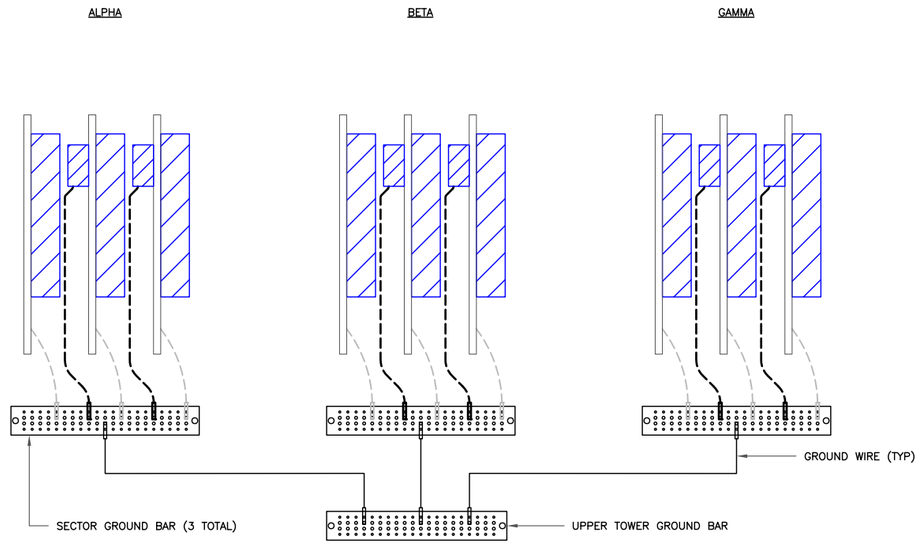
LICENSED PROFESSIONAL ENGINEER

11/29/2021

SHEET NUMBER: E-1

REVISION: 2



NOTE:

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

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

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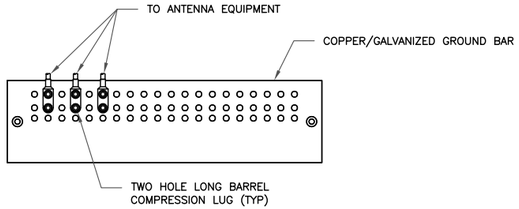
STATE OF CONNECTICUT
SHUHEI SAKAMOTO
34916
LICENSED PROFESSIONAL ENGINEER

11/29/2021

SHEET NUMBER: G-1

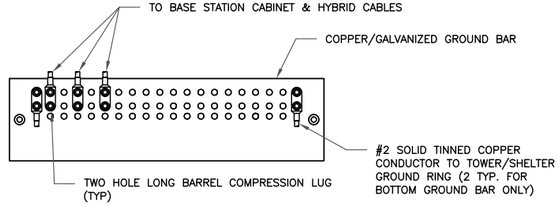
REVISION: 2



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.

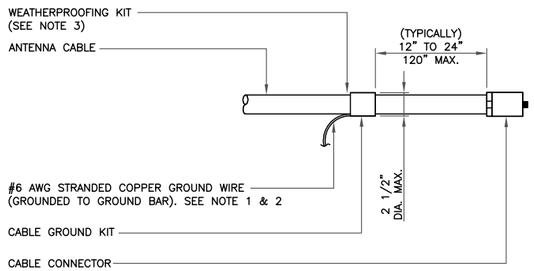
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



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.

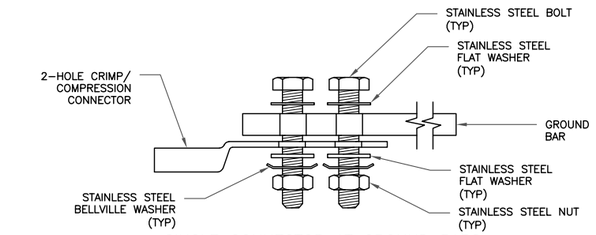
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. 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



4 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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T-MOBILE SITE NUMBER:
CT11935A

BU #: **806478**
HRT 080 953381

539 PLAINS RD
HADDAM, CT 06438

EXISTING 190'-0" SELF SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/15/2021	TJ	FINAL	SS
1	11/02/2021	TJ	SA REFERENCE	SS
2	11/29/2021	TJ	HYBRID QTY UPDATE	SS

STATE OF CONNECTICUT
SHUHEI SAKANOUE
34916
LICENSED PROFESSIONAL ENGINEER

11/29/2021

SHEET NUMBER: G-2
REVISION: 2

Exhibit D

Structural Analysis Report

Date: **September 24, 2021**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	**Site Number:**	CT11935A
	Site Name:	CT03XC165
Crown Castle Designation:	**BU Number:**	806478
	Site Name:	HRT 080 953381
	JDE Job Number:	682263
	Work Order Number:	2022966
	Order Number:	582282 Rev. 0
Engineering Firm Designation:	**B+T Group Project Number:**	100140.016.01
Site Data:	**539 Plains Rd, Haddam, Middlesex County, CT** **Latitude *41° 26' 35"*, Longitude *-72° 30' 22.4"*** **180 Foot - Self Support Tower**	

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

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

LC7: Proposed Equipment Configuration **Sufficient Capacity – 88.2%**

This analysis utilizes an ultimate 3-second gust wind speed of 122 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria

Structural analysis prepared by: Erik Perez

Respectfully submitted by: B+T Engineering, Inc.
COA: PEC.0001564; Expires: 02/10/2022

Chad E. Tuttle, P.E.

tnxTower Report - version 8.1.1.0

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 180 ft. self-support tower designed by Rohn.

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

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	122 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
150.0	150.0	3	Ericsson	AIR6449 B41_T-MOBILE	3	1-5/8
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	Ericsson	Radio 4480_TMOV2		
		3	RFS Celwave	APX16DWV-16DWV-S-E-A20		
		3	RFS Celwave	APXVAALL24_43-U-NA20_TMO		
		1	--	Sector Mount [SM 502-3]		
50.0	50.0	1	Gps	GPS_A	1	1/2
		1	--	Side Arm Mount [SO 305-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
182.0	186.0	1	--	19" Accelerator	6	1-5/8
		3	Ems Wireless	RR90-17-02DP		
	179.0	3	Ericsson	KRY 112 489/1		
	174.0	1	--	15' x 4" Mount Pipe		
178.0	179.0	6	Antel	LPA-80080/6CF	8	1-5/8
		3	Commscope	CBC78T-DS-43-2X		
		6	Commscope	JAHH-65B-R3B		
		3	Samsung Telecomm.	RFV01U-D1A		
		3	Samsung Telecomm.	RFV01U-D2A		
		3	Vzw	Sub6 Antenna - VZS01		
	178.0	1	Rfs Celwave	DB-B1-6C-8AB-0Z		
		1	Rfs Celwave	DB-T1-6Z-8AB-0Z		
		3	--	96” Long x P2 1/2" Mount Pipe		
		1	--	Sector Mount [SM 511-3]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	173.8	3	--	VZWSMART-SFK3		
165.0	167.0	3	CCI Antennas	DMP65R-BU8D	12 4 2 2	1-1/4 3/4 7/16 3/8
		3	CCI Antennas	OPA65R-BU6D		
		3	Ericsson	RRUS 32 B2		
		3	Ericsson	RRUS 32 B30		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 4478 B14		
		3	Powerwave Tech.	7770.00		
		6	Powerwave Tech.	LGP21401		
		3	Quintel Technology	QS66512-2		
		3	Raycap	DC6-48-60-18-8F		
	165.0	1	--	Sector Mount [SM 510-3]		
140.0	140.0	3	Fujitsu	TA08025-B604	1	1-1/2
		3	Fujitsu	TA08025-B605		
		3	JMA Wireless	MX08FRO665-20		
		1	Raycap	RDIDC-9181-PF-48		
		1	Commscope	MTC3975083 (3)		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Tower Manufacturer Drawing	1067089	CCI Sites
Mount Analysis Report	9978386	CCI Sites
Modification Details	1004663	CCI Sites
Tower Modification Drawing	1274944	CCI Sites
	1274944	CCI Sites
Post Modification Inspection	2393878	CCI Sites
Tower Modification Drawing	5864073	CCI Sites
Post Modification Inspection	6011748	CCI Sites
Foundation Drawing	300985	CCI Sites
Foundation Mapping	300985	CCI Sites
Geotech Report	1240448	CCI Sites
Crown CAD Package	Date: 09/18/2021	CCI Sites

3.1) Analysis Method

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

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the reinforced leg sections. These calculations are presented in Appendix C.

3.2) Assumptions

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

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	180 - 160	Leg	ROHN 2 STD	2	-25.622	38.684	66.2	Pass
T2	160 - 155	Leg	ROHN 2.5 EH	38	-34.110	78.151	43.6	Pass
T3	155 - 150	Leg	ROHN 2.5 EH	47	-41.898	78.148	53.6	Pass
T4	150 - 145	Leg	ROHN 2.5 EH	56	-51.517	78.149	65.9	Pass
T5	145 - 140	Leg	ROHN 2.5 EH	66	-60.941	98.081	62.1	Pass
T6	140 - 133.333	Leg	ROHN 3 EH	78	-71.958	99.059	72.6	Pass
T7	133.333 - 126.667	Leg	ROHN 3 EH	87	-84.605	129.274	65.4	Pass
T8	126.667 - 120	Leg	ROHN 3 EH	99	-95.576	139.089	68.7	Pass
T9	120 - 113.333	Leg	ROHN 3.5 EH	110	-107.406	161.556	66.5	Pass
T10	113.333 - 106.667	Leg	ROHN 3.5 EH	122	-117.864	161.594	72.9	Pass
T11	106.667 - 100	Leg	BT100140- Rohn 3.5EH w/ 2" SR	134	-129.298	244.582	52.9	Pass
T12	100 - 80	Leg	BT100140- Rohn 4EH w/ 2" SR	143	-159.896	286.747	55.8	Pass
T13	80 - 60	Leg	BT100140- Rohn 5EH w/ 2" SR (60-80)	164	-187.450	319.408	58.7	Pass
T14	60 - 40	Leg	BT100140- Rohn 5EH w/ 2" SR (40-60)	179	-214.961	400.743	53.6	Pass
T15	40 - 30	Leg	BT100140- Rohn 6EHS w/ 2" SR (30-40)	200	-230.629	373.300	61.8	Pass
T16	30 - 20	Leg	BT100140- Rohn 6EHS w/ 2" SR (20-30)	209	-243.457	439.396	55.4	Pass
T17	20 - 0	Leg	BT100140- Rohn 6EH w/ 2" SR	221	-272.485	437.361	62.3	Pass
T1	180 - 160	Diagonal	L2x2x1/4	10	-4.955	21.921	22.6	Pass
T2	160 - 155	Diagonal	L1 3/4x1 3/4x3/16	43	-4.261	8.960	47.6	Pass
T3	155 - 150	Diagonal	L1 3/4x1 3/4x3/16	52	-4.156	8.115	51.2	Pass
T4	150 - 145	Diagonal	L2x2x1/4	61	-5.328	14.435	36.9	Pass
T5	145 - 140	Diagonal	2L1 3/4x1 3/4x3/16x3/16	70	-5.194	10.763	48.3	Pass
T6	140 - 133.333	Diagonal	2L2x2x3/16x1/2	81	-6.446	34.333	18.8	Pass
T7	133.333 - 126.667	Diagonal	2L2x2x3/16x1/2	90	-6.400	31.258	20.5	Pass
T8	126.667 - 120	Diagonal	2L2x2x3/16x1/2	102	-6.684	29.165	22.9	Pass
T9	120 - 113.333	Diagonal	2L2 1/2x2 1/2x3/16x1/2	114	-6.669	43.852	15.2	Pass
T10	113.333 - 106.667	Diagonal	2L2 1/2x2 1/2x3/16x1/2	126	-6.926	41.968	16.5	Pass
T11	106.667 - 100	Diagonal	2L2 1/2x2 1/2x3/16x1/2	138	-6.345	41.098	15.4	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T12	100 - 80	Diagonal	2L3x3x3/16x1/2	147	-7.032	48.925	14.4	Pass
T13	80 - 60	Diagonal	2L3x3x3/16x1/4	168	-8.423	36.097	23.3	Pass
T14	60 - 40	Diagonal	2L3x3x1/4x1/4	183	-9.481	41.581	22.8	Pass
T15	40 - 30	Diagonal	2L3 1/2x3 1/2x1/4x1/4	204	-9.126	60.389	15.1	Pass
T16	30 - 20	Diagonal	2L3 1/2x3 1/2x1/4x1/4	213	-10.612	54.955	19.3	Pass
T17	20 - 0	Diagonal	L4x4x1/4	225	-10.147	20.932	48.5	Pass
T5	145 - 140	Secondary Horizontal	L2x2x1/4	74	-1.057	18.245	5.8	Pass
T7	133.333 - 126.667	Secondary Horizontal	L2x2x1/4	95	-1.467	13.793	10.6	Pass
T8	126.667 - 120	Secondary Horizontal	L2 1/2x2 1/2x1/4	107	-1.658	23.886	6.9	Pass
T9	120 - 113.333	Secondary Horizontal	L2 1/2x2 1/2x1/4	118	-1.863	21.189	8.8	Pass
T10	113.333 - 106.667	Secondary Horizontal	L2 1/2x2 1/2x1/4	130	-2.044	18.713	10.9	Pass
T14	60 - 40	Secondary Horizontal	L3x3x1/4	187	-3.728	13.215	28.2	Pass
T16	30 - 20	Secondary Horizontal	L3 1/2x3 1/2x1/4	217	-4.222	17.337	24.4	Pass
T1	180 - 160	Top Girt	L2x2x1/8	6	-0.125	4.273	2.9	Pass
							Summary	
						Leg (T10)	72.9	Pass
						Diagonal (T3)	51.2	Pass
						Secondary Horizontal (T14)	28.2	Pass
						Top Girt (T1)	2.9	Pass
						Bolt Checks	68.1	Pass
						Rating =	72.9	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Redundant Connections	120-126.7	17.3	Pass
1,2	Anchor Rods	Base	88.2	Pass
1,2	Anchor Rod Brackets	Base	68.7	Pass
1,2	Base Foundation (Structure)	Base	26.9	Pass
1,2	Base Foundation (Soil Interaction)	Base	76.5	Pass

Structure Rating (max from all components) =	**88.2%**

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

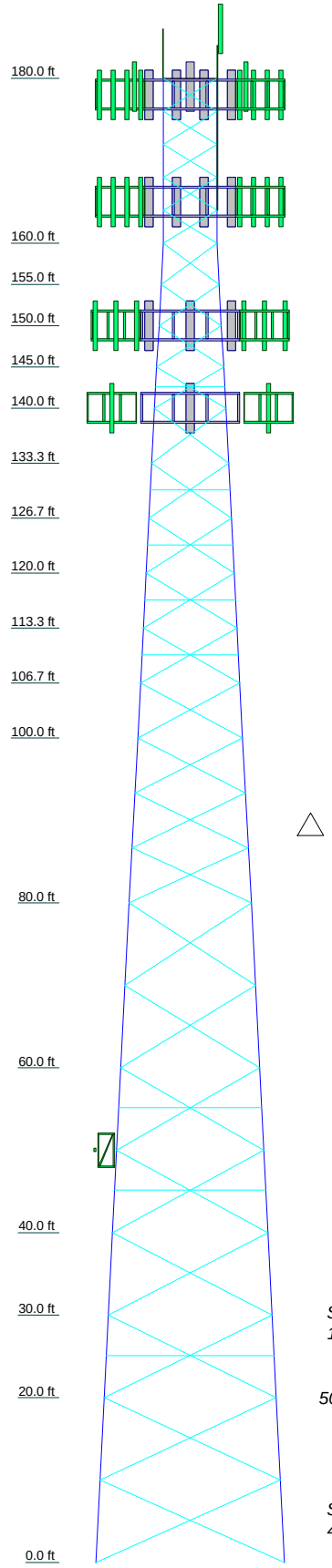
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	G	F	E	D	C	B	A	ROHN 3.5 EH		ROHN 3 EH			ROHN 2.5 EH				ROHN 2 STD
Leg Grade	A572-50																
Diagonals	L4x4x1/4	2L3 1/2x3 1/2x1/4x1/4		2L3x3x1/4x1/4	2L3x3x3/16x1/4	2L3x3x3/16x1/2	2L2 1/2x2 1/2x3/16x1/2			2L2x2x3/16x1/2			J	I	H		L2x2x1/4
Diagonal Grade		A572-50				A36								K	A36		A572-50
Top Girts						N.A.											L2x2x1/8
Sec. Horizontals	N.A.	L	N.A.	L3x3x1/4	N.A.		L2 1/2x2 1/2x1/4				I	N.A.	I				N.A.
Face Width (ft)	20.8646	19.8594	18.8542	16.7708	14.7708	12.6771	11.9974	11.3151	10.6354	9.95833	9.28125	8.60418	8.09115	7.58073	7.06771	6.5625	6.52083
# Panels @ (ft)	8 @ 10						9 @ 6.66667						4 @ 5			5 @ 4	
Weight (K)	29.9	3.1	2.6	5.1	3.7	3.8	1.0	0.9	0.9	0.8	0.7	0.6	0.5	0.3	0.2	0.2	1.0



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	BT100140- Rohn 3.5EH w/ 2" SR	G	BT100140- Rohn 6EH w/ 2" SR
B	BT100140- Rohn 4EH w/ 2" SR	H	L1 3/4x1 3/4x3/16
C	BT100140- Rohn 5EH w/ 2" SR (60-80)	I	L2x2x1/4
D	BT100140- Rohn 5EH w/ 2" SR (40-60)	J	2L1 3/4x1 3/4x3/16x3/16
E	BT100140- Rohn 6EHS w/ 2" SR (30-40)	K	A572-50
F	BT100140- Rohn 6EHS w/ 2" SR (20-30)	L	L3 1/2x3 1/2x1/4

MATERIAL STRENGTH

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

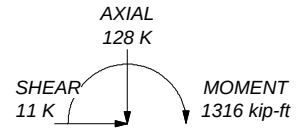
TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 122 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0'
8. TIA-222-H Annex S
9. TOWER RATING: 72.9%

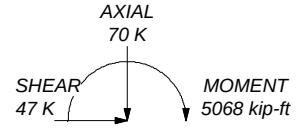
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 279 K
SHEAR: 29 K

UPLIFT: -229 K
SHEAR: 25 K



TORQUE 12 kip-ft
50 mph WIND - 1.000 in ICE

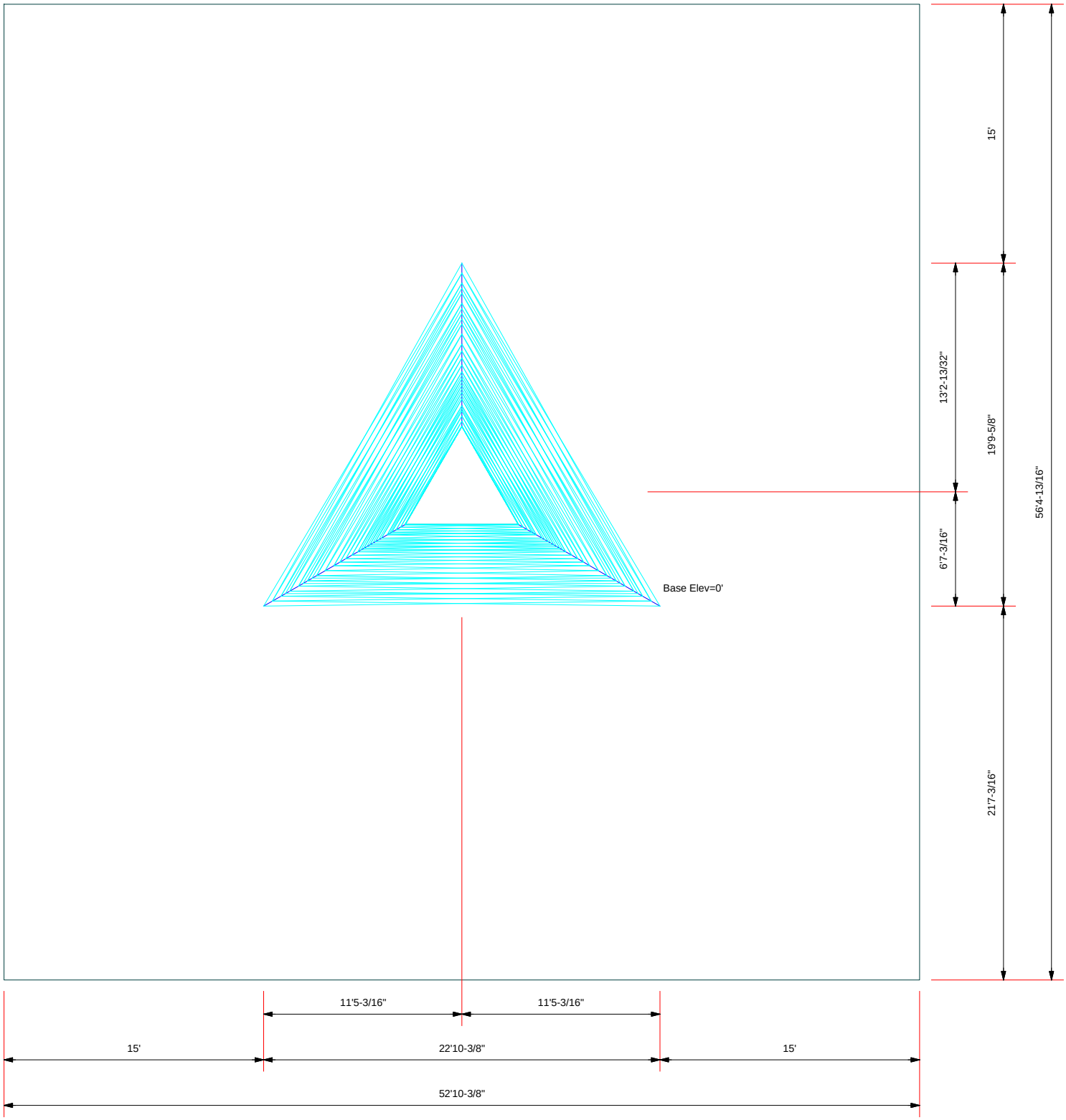


TORQUE 52 kip-ft
REACTIONS - 122 mph WIND

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

Job: 100140.016.01 - HRT 080 953381, CT (BU# 80647			
Project:			
Client: Crown Castle	Drawn by: Sahana	App'd:	
Code: TIA-222-H	Date: 09/22/21	Scale: NTS	
Path:		Dwg No. E-1	

Plot Plan
Total Area - 0.07 Acres



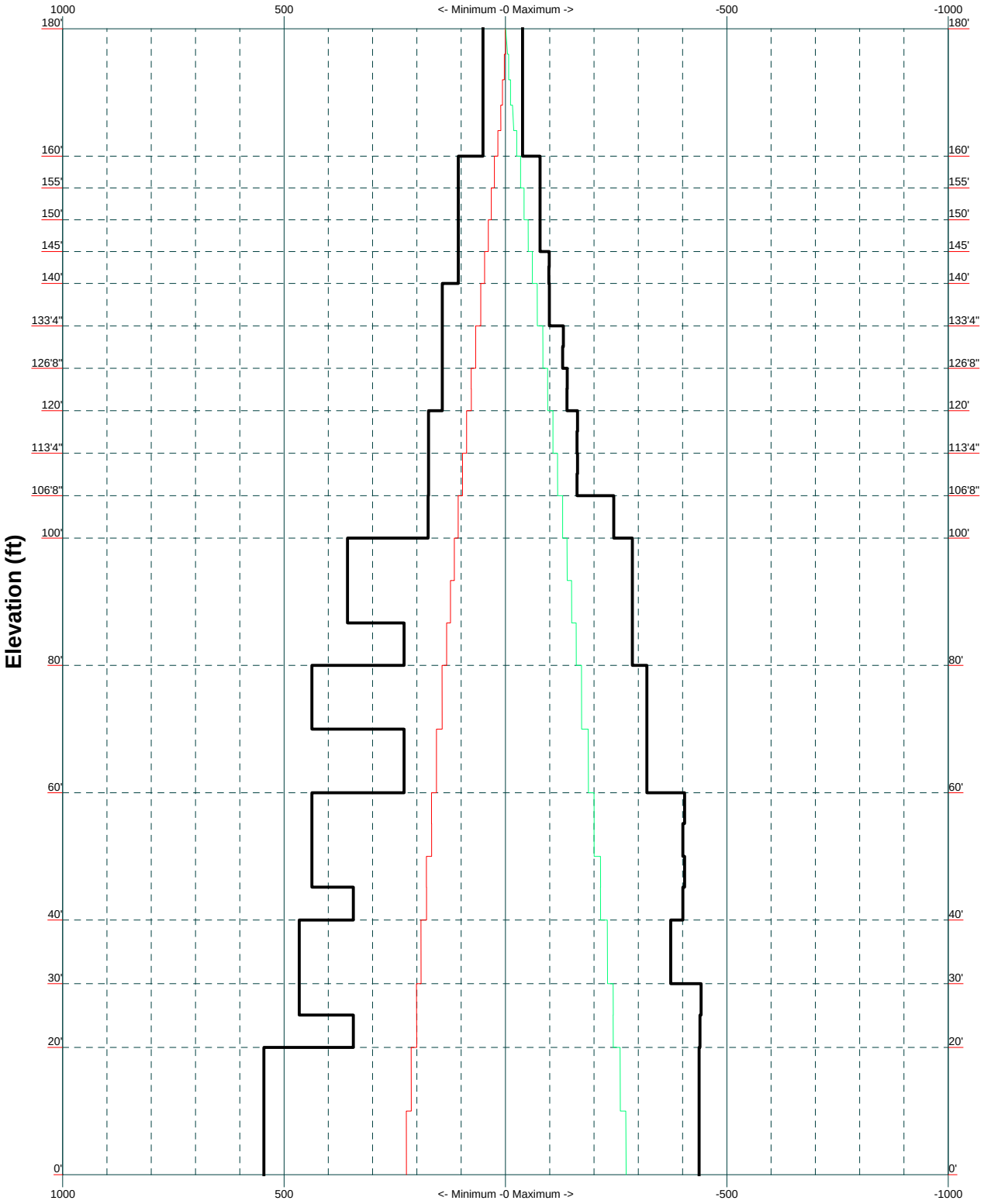
B+T GRP

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

Job: ***100140.016.01 - HRT 080 953381, CT (BU# 80647***		
Project:		
Client: Crown Castle	Drawn by: Sahana	App'd:
Code: TIA-222-H	Date: 09/22/21	Scale: NTS
Path:		Dwg No. E-2

TIA-222-H - 122 mph/50 mph 1.000 in Ice Exposure B

Leg Capacity ——— Leg Compression (K)



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FAX: (918) 295-0265

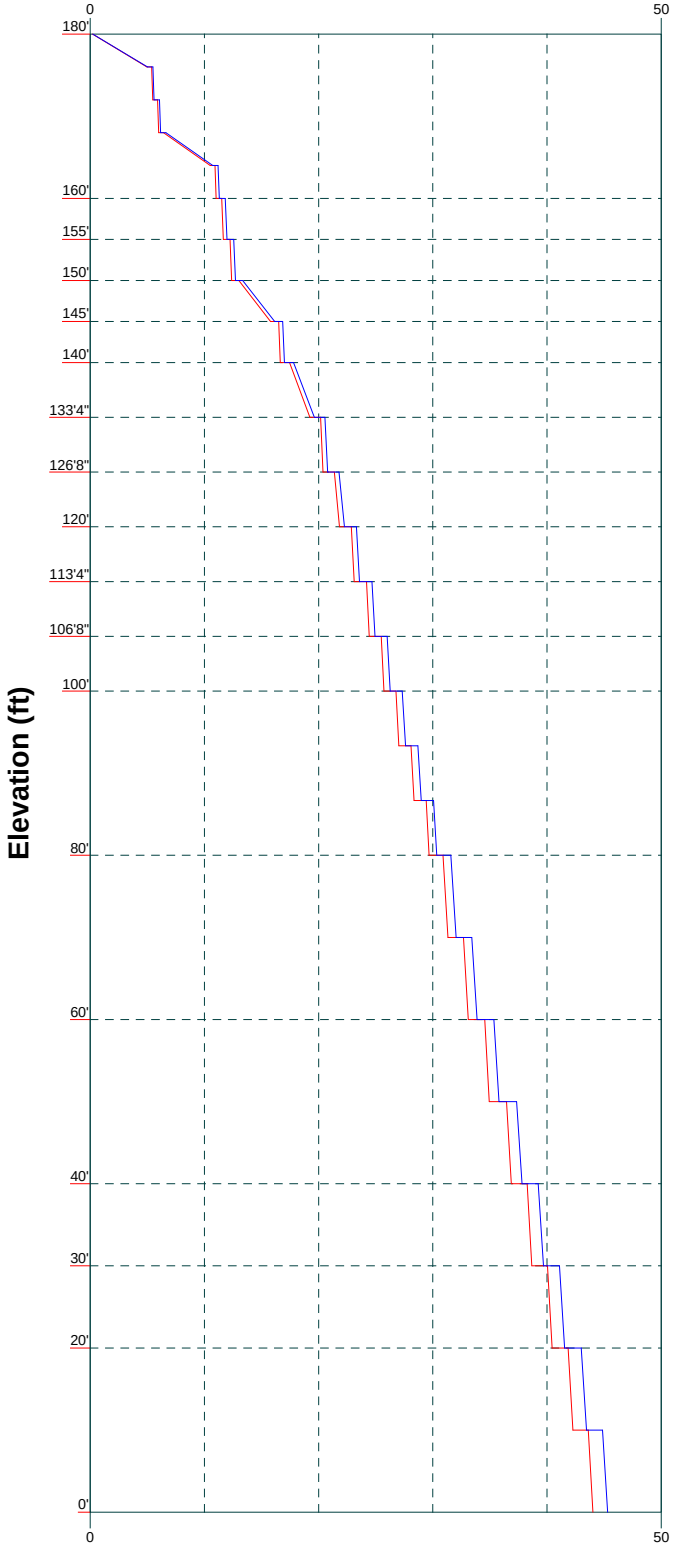
Job: ***100140.016.01 - HRT 080 953381, CT (BU# 80647***		
Project:		
Client: Crown Castle	Drawn by: Sahana	App'd:
Code: TIA-222-H	Date: 09/22/21	Scale: NTS
Path:		Dwg No. E-3

TIA-222-H - 122 mph/50 mph 1.000 in Ice Exposure B

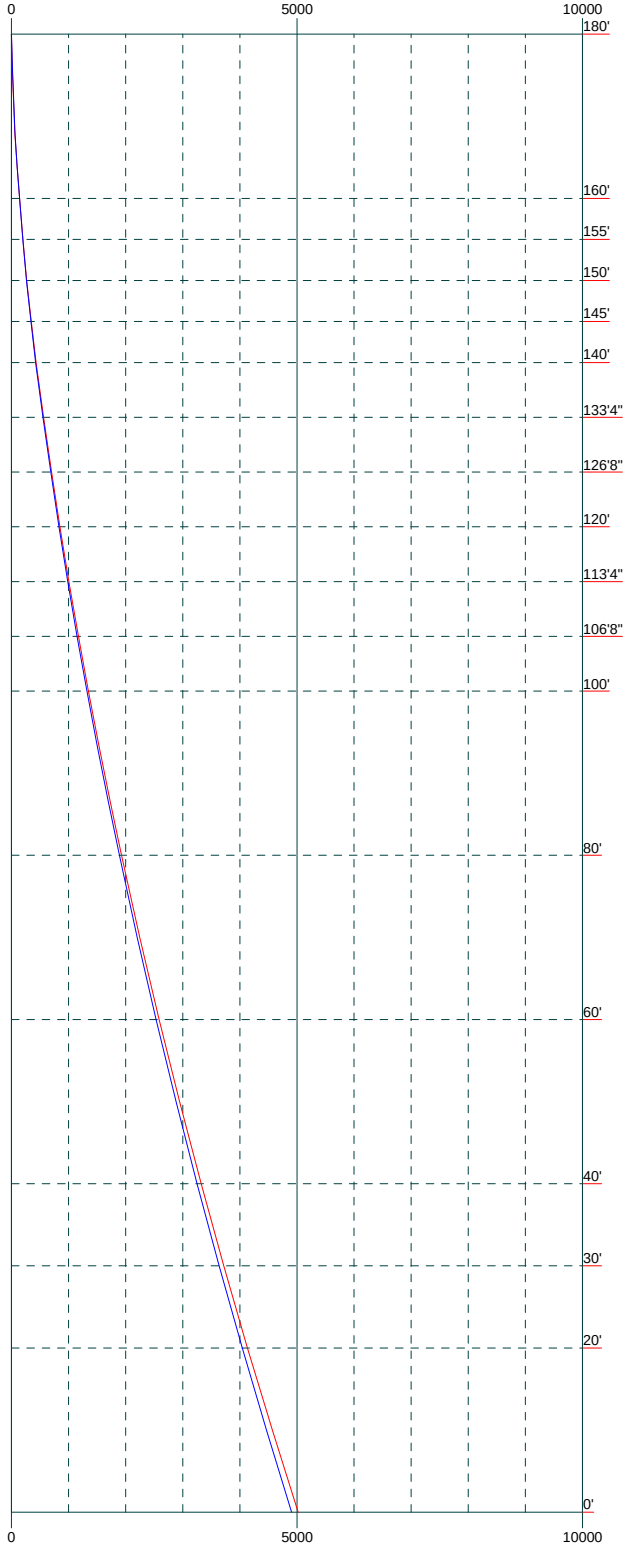
Maximum Values

Vx Vz Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



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1717 S. Boulder, Suite 300
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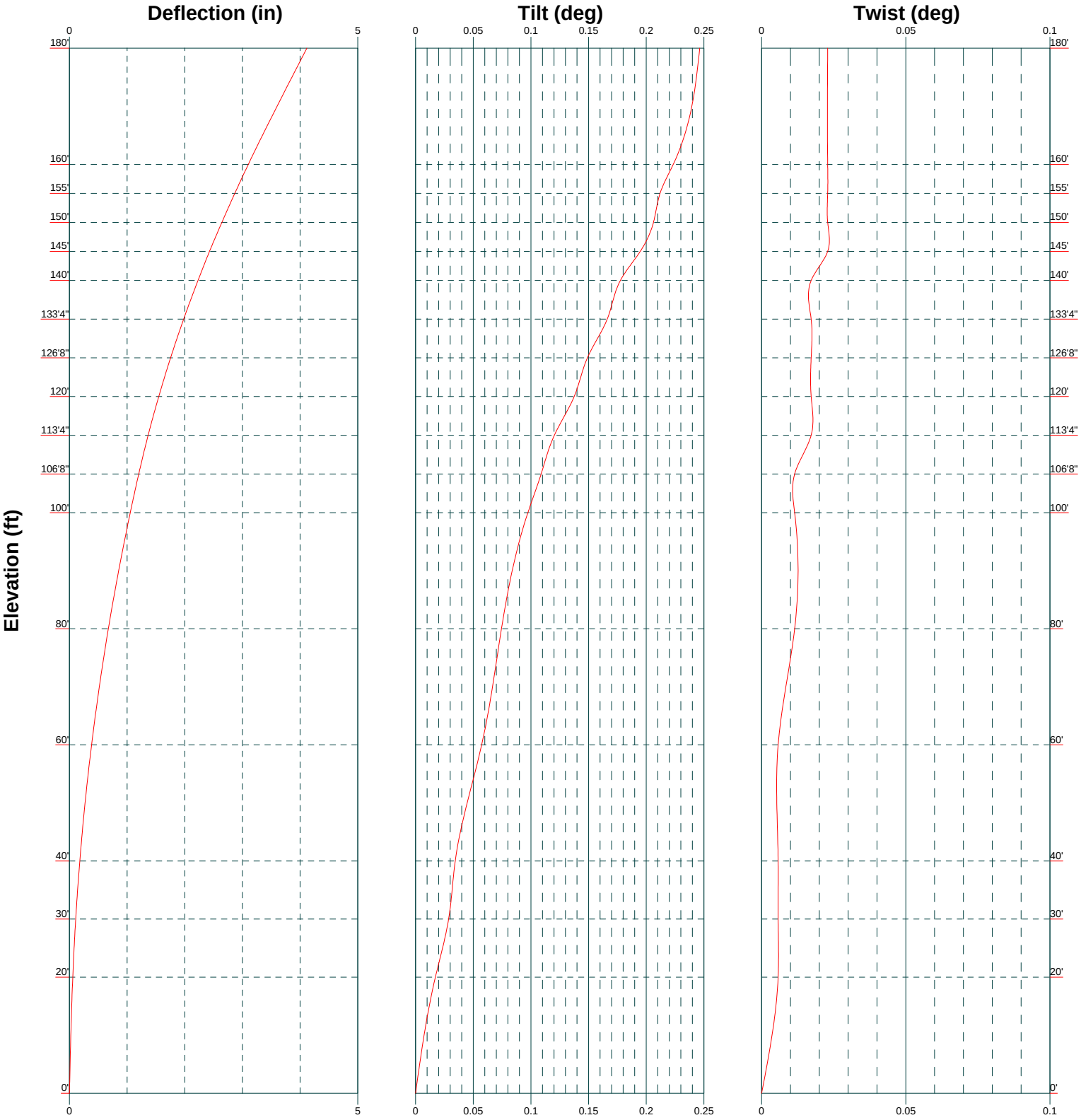
FAX: (918) 295-0265

Job: 100140.016.01 - HRT 080 953381, CT (BU# 80647		
Project:		
Client: Crown Castle	Drawn by: Sahana	App'd:
Code: TIA-222-H	Date: 09/22/21	Scale: NTS
Path:		Dwg No. E-4

TIA-222-H - Service - 60 mph

Maximum Values



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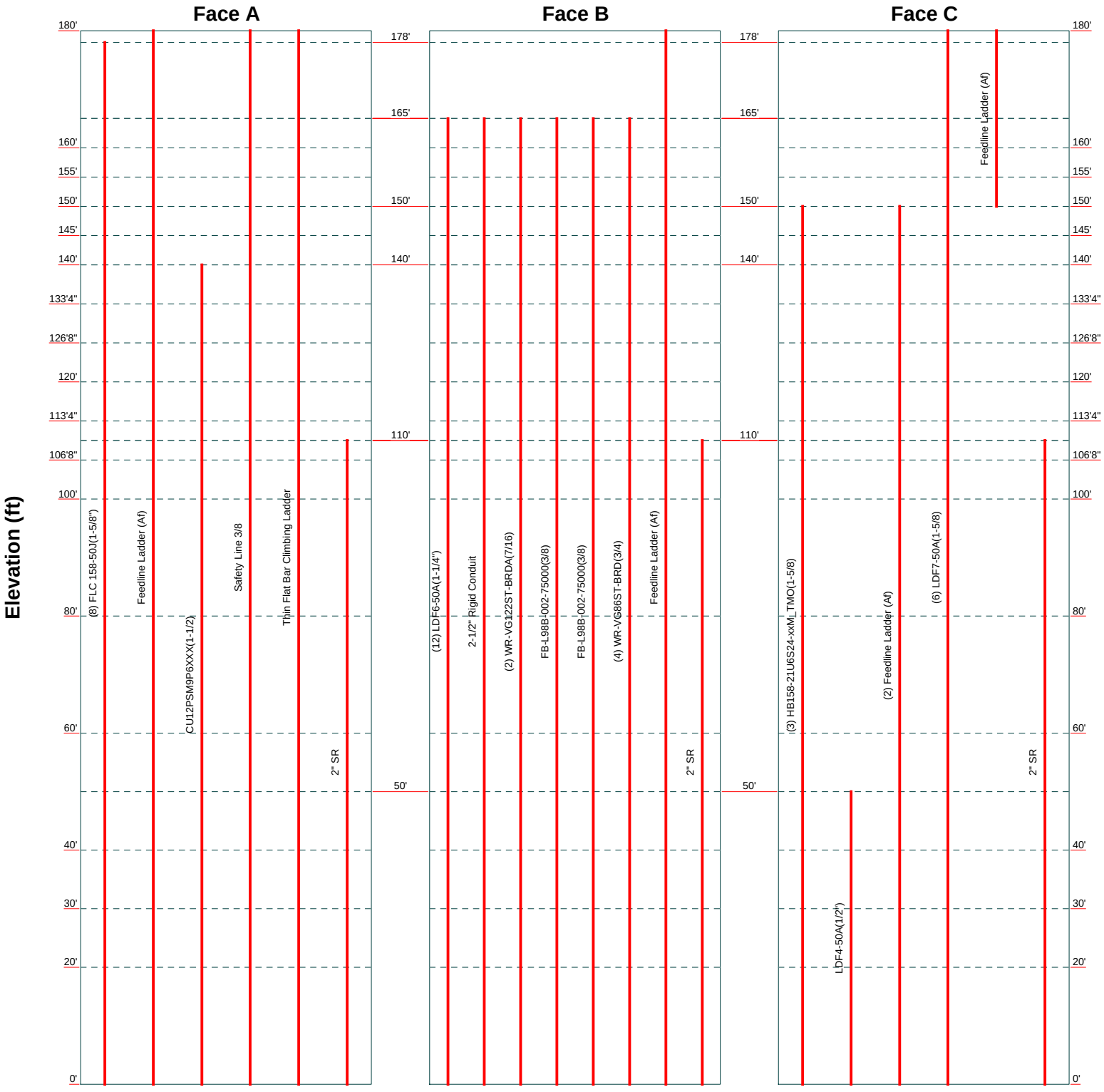
B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: ***100140.016.01 - HRT 080 953381, CT (BU# 80647***		
Project:		
Client: Crown Castle	Drawn by: Sahana	App'd:
Code: TIA-222-H	Date: 09/22/21	Scale: NTS
Path:		Dwg No. E-5

Feed Line Distribution Chart
0' - 180'

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



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

Job: ***100140.016.01 - HRT 080 953381, CT (BU# 80647***		
Project:		
Client: Crown Castle	Drawn by: Sahana	App'd:
Code: TIA-222-H	Date: 09/22/21	Scale: NTS
Path:		Dwg No. E-7

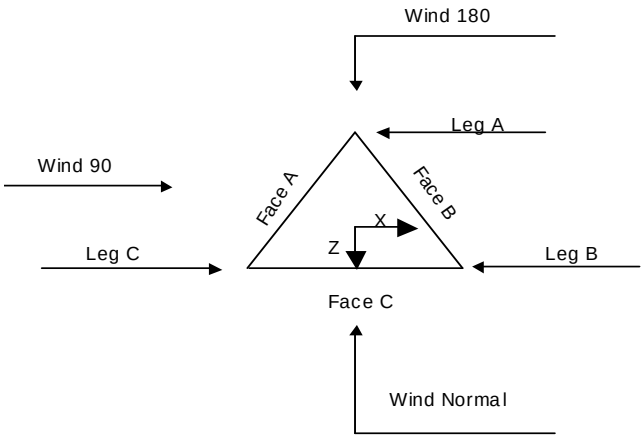
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180' above the ground line.
The base of the tower is set at an elevation of 0' above the ground line.
The face width of the tower is 6'6-1/4" at the top and 22'10-3/8" at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in Middlesex County, Connecticut.
Tower base elevation above sea level: 504'.
Basic wind speed of 122 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0'.
Nominal ice thickness of 1.000 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
TIA-222-H Annex S.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180'-160'			6'6-1/4"	1	20'
T2	160'-155'			6'6-3/4"	1	5'
T3	155'-150'			7'13/16"	1	5'
T4	150'-145'			7'6-31/32"	1	5'
T5	145'-140'			8'1-3/32"	1	5'
T6	140'-133'4"			8'7-1/4"	1	6'8"
T7	133'4"-126'8"			9'3-3/8"	1	6'8"
T8	126'8"-120'			9'11-1/2"	1	6'8"
T9	120'-113'4"			10'7-5/8"	1	6'8"
T10	113'4"-106'8"			11'3-25/32"	1	6'8"
T11	106'8"-100'			11'11-31/32"	1	6'8"
T12	100'-80'			12'8-1/8"	1	20'
T13	80'-60'			14'9-1/4"	1	20'
T14	60'-40'			16'9-1/4"	1	20'
T15	40'-30'			18'10-1/4"	1	10'
T16	30'-20'			19'10-5/16"	1	10'
T17	20'-0'			20'10-3/8"	1	20'

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	180'-160'	4'	X Brace	No	No	0.000	0.000
T2	160'-155'	5'	X Brace	No	No	0.000	0.000
T3	155'-150'	5'	X Brace	No	No	0.000	0.000
T4	150'-145'	5'	X Brace	No	No	0.000	0.000
T5	145'-140'	5'	X Brace	No	Yes	0.000	0.000
T6	140'-133'4"	6'8"	X Brace	No	No	0.000	0.000
T7	133'4"-126'8"	6'8"	X Brace	No	Yes	0.000	0.000
T8	126'8"-120'	6'8"	X Brace	No	Yes	0.000	0.000
T9	120'-113'4"	6'8"	X Brace	No	Yes	0.000	0.000
T10	113'4"-106'8"	6'8"	X Brace	No	Yes	0.000	0.000
T11	106'8"-100'	6'8"	X Brace	No	No	0.000	0.000
T12	100'-80'	6'8"	X Brace	No	No	0.000	0.000
T13	80'-60'	10'	X Brace	No	No	0.000	0.000
T14	60'-40'	10'	X Brace	No	Yes	0.000	0.000
T15	40'-30'	10'	X Brace	No	No	0.000	0.000
T16	30'-20'	10'	X Brace	No	Yes	0.000	0.000
T17	20'-0'	10'	X Brace	No	No	0.000	0.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180'-160'	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A572-50 (50 ksi)
T2 160'-155'	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T3 155'-150'	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T4 150'-145'	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A572-50 (50 ksi)
T5 145'-140'	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Double Equal Angle	2L1 3/4x1 3/4x3/16x3/16	A36 (36 ksi)
T6 140'-133'4"	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Double Equal Angle	2L2x2x3/16x1/2	A36 (36 ksi)
T7 133'4"-126'8"	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Double Equal Angle	2L2x2x3/16x1/2	A36 (36 ksi)
T8 126'8"-120'	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Double Equal Angle	2L2x2x3/16x1/2	A36 (36 ksi)
T9 120'-113'4"	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Double Equal Angle	2L2 1/2x2 1/2x3/16x1/2	A36 (36 ksi)
T10 113'4"-106'8"	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Double Equal Angle	2L2 1/2x2 1/2x3/16x1/2	A36 (36 ksi)
T11 106'8"-100'	Arbitrary Shape	BT100140- Rohn 3.5EH w/ 2" SR	A572-50 (50 ksi)	Double Equal Angle	2L2 1/2x2 1/2x3/16x1/2	A36 (36 ksi)
T12 100'-80'	Arbitrary Shape	BT100140- Rohn 4EH w/ 2" SR	A572-50 (50 ksi)	Double Equal Angle	2L3x3x3/16x1/2	A36 (36 ksi)
T13 80'-60'	Arbitrary Shape	BT100140- Rohn 5EH w/ 2" SR (60-80)	A572-50 (50 ksi)	Double Equal Angle	2L3x3x3/16x1/4	A36 (36 ksi)
T14 60'-40'	Arbitrary Shape	BT100140- Rohn 5EH w/ 2" SR (40-60)	A572-50 (50 ksi)	Double Equal Angle	2L3x3x1/4x1/4	A572-50 (50 ksi)
T15 40'-30'	Arbitrary Shape	BT100140- Rohn 6EHS w/ 2" SR (30-40)	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4x1/4	A572-50 (50 ksi)
T16 30'-20'	Arbitrary Shape	BT100140- Rohn 6EHS w/ 2" SR (20-30)	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4x1/4	A572-50 (50 ksi)
T17 20'-0'	Arbitrary Shape	BT100140- Rohn 6EH w/ 2"	A572-50	Equal Angle	L4x4x1/4	A572-50

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
		SR	(50 ksi)			(50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 180'-160'	Single Angle	L2x2x1/8	A36 (36 ksi)	Flat Bar		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T5 145'-140'	Equal Angle	L2x2x1/4	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)
T7 133'4"-126'8"	Equal Angle	L2x2x1/4	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)
T8 126'8"-120'	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T9 120'-113'4"	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T10 113'4"-106'8"	Equal Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T14 60'-40'	Equal Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T16 30'-20'	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 180'-160'	0.000	0.188	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T2 160'-155'	0.000	0.188	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T3 155'-150'	0.000	0.188	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T4 150'-145'	0.000	0.188	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T5 145'-140'	0.000	0.188	A36	1.03	1	1.05	58.500	Mid-Pt	Mid-Pt

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
T6 140'-133'4"	0.000	0.500	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T7 133'4"-126'8"	0.000	0.500	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T8 126'8"-120'	0.000	0.500	A36 (36 ksi)	1.1	1	1.1	Mid-Pt	Mid-Pt	Mid-Pt
T9 120'-113'4"	0.000	0.500	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T10 113'4"-106'8"	0.000	0.500	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T11 106'8"-100'	0.000	0.500	A36 (36 ksi)	1.1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T12 100'-80'	0.000	0.500	A36 (36 ksi)	1.1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T13 80'-60'	0.000	0.250	A36 (36 ksi)	1.1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T14 60'-40'	0.000	0.250	A36 (36 ksi)	1.1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T15 40'-30'	0.000	0.250	A36 (36 ksi)	1.1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T16 30'-20'	0.000	0.250	A36 (36 ksi)	1.1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T17 20'-0'	0.000	0.500	A36 (36 ksi)	1.1	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1]: Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 180'-160'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T2 160'-155'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T3 155'-150'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T4 150'-145'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T5 145'-140'	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T6 140'-133'4"	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T7 133'4"-126'8"	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T8 126'8"-120'	No	No	0.5	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T9 120'-113'4"	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T10 113'4"-106'8"	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T11	Yes	No	0.78	1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
106'8"-100'				1	1	1	1	1	1	1
T12 100'-80'	Yes	No	0.8	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T13 80'-60'	Yes	No	0.83	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T14 60'-40'	No	No	0.85	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T15 40'-30'	Yes	No	0.85	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T16 30'-20'	No	No	0.85	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T17 20'-0'	Yes	No	0.865	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 180'-160'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 160'-155'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T3 155'-150'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T4 150'-145'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T5 145'-140'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T6 140'-133'4"	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T7 133'4"-126'8"	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T8 126'8"-120'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T9 120'-113'4"	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 113'4"-106'8"	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T11 106'8"-100'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T12 100'-80'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T13 80'-60'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T14 60'-40'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T15 40'-30'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T16 30'-20'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T17 20'-0'	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 180'-160'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 160'-155'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T3 155'-150'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T4 150'-145'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T5 145'-140'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T6 140'-133'4"	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T7 133'4"-126'8"	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T8 126'8"-120'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T9 120'-113'4"	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 113'4"-106'8"	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T11 106'8"-100'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T12 100'-80'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T13 80'-60'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T14 60'-40'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T15 40'-30'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T16 30'-20'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T17 20'-0'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 180'-160'	Flange	0.625 A325N	4	0.500 A325X	1	0.500 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T2 160'-155'	Flange	0.750 A325N	0	0.500 A325N	1	0.500 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T3 155'-150'	Flange	0.750 A325N	0	0.500 A325N	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T4 150'-145'	Flange	0.750 A325N	0	0.500 A325X	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T5 145'-140'	Flange	0.750 A325N	4	0.500 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325X	1
T6 140'-133'4"	Flange	0.875 A325N	0	0.500 A325N	2	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T7 133'4"-126'8"	Flange	0.875 A325N	0	0.500 A325N	2	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325X	1
T8 126'8"-120'	Flange	0.875 A325N	4	0.500 A325N	2	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	1
T9 120'-113'4"	Flange	0.875 A325N	0	0.500 A325N	2	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	1
T10 113'4"-106'8"	Flange	0.875 A325N	0	0.500 A325N	2	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	1
T11 106'8"-100'	Flange	0.875 A325N	4	0.500 A325N	2	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T12 100'-80'	Flange	1.000 A325N	4	0.500 A325N	2	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T13 80'-60'	Flange	1.000 A325N	4	0.625 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T14 60'-40'	Flange	1.000 A325N	6	0.625 A325N	1	0.625 A325X	0	0.625 A325X	0	0.625 A325X	0	0.625 A325X	0	0.625 A325N	1
T15 40'-30'	Flange	1.000 A325N	0	0.625 A325N	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T16 30'-20'	Flange	1.000 A325N	6	0.625 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	1
T17 20'-0'	Flange	1.000 A449	0	0.625 A325N	2	0.625 A325X	0	0.625 A325X	0	0.625 A325X	0	0.625 A325X	0	0.625 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
FLC 158-50J(1-5/8")	A	No	No	Ar (CaAa)	178' - 0'	0.000	0.39	8	6	1.500 0.750	2.015		0.001
Feedline Ladder (Af) *	A	No	No	Af (CaAa)	180' - 0'	0.000	0.385	1	1	3.000	3.000		0.008
CU12PSM9P6XXX(1-1/2) *	A	No	No	Ar (CaAa)	140' - 0'	-1.000	-0.49	1	1	0.850 0.750	1.600		0.002
LDF6-50A(1-1/4")	B	No	No	Ar (CaAa)	165' - 0'	0.000	-0.4	12	6	0.500	1.550		0.001
2-1/2" Rigid Conduit	B	No	No	Ar (CaAa)	165' - 0'	0.000	-0.36	1	1	0.850 0.750	2.500		0.003
WR-VG122ST-BRDA(7/16)	B	No	No	Ar (CaAa)	165' - 0'	0.000	-0.36	2	2	0.500	0.460		0.000
FB-L98B-002-75000(3/8)	B	No	No	Ar (CaAa)	165' - 0'	0.000	-0.36	1	1	0.500	0.394		0.000
FB-L98B-002-75000(3/8)	B	No	No	Ar (CaAa)	165' - 0'	2.500	-0.37	1	1	0.394	0.394		0.000
WR-VG86ST-BRD(3/4)	B	No	No	Ar (CaAa)	165' - 0'	0.000	-0.37	4	2	0.500	0.795		0.001
Feedline Ladder (Af) *	B	No	No	Af (CaAa)	180' - 0'	0.000	-0.39	1	1	3.000	3.000		0.008
HB158-21U6S24-xxM_TMO (1-5/8)	C	No	No	Ar (CaAa)	150' - 0'	0.000	-0.38	3	3	0.850 0.750	1.996		0.003
LDF4-50A(1/2")	C	No	No	Ar (CaAa)	50' - 0'	0.000	-0.35	1	1	0.630	0.630		0.000
Feedline Ladder (Af) *	C	No	No	Af (CaAa)	150' - 0'	-0.750	-0.42	2	1	3.000	3.000		0.008
LDF7-50A(1-5/8)	C	No	No	Ar (CaAa)	180' - 0'	-1.500	-0.37	6	6	0.500	1.980		0.001
Feedline Ladder (Af)	C	No	No	Af (CaAa)	180' - 150'	-0.750	-0.41	1	1	3.000	3.000		0.008

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
*													
Safety Line 3/8	A	No	No	Ar (CaAa)	180' - 0'	0.000	0.02	1	1	0.375	0.375		0.000
Thin Flat Bar Climbing Ladder	A	No	No	Af (CaAa)	180' - 0'	0.000	0	1	1	2.000	2.000		0.004
*													
2" SR	A	No	No	Ar (CaAa)	110' - 0'	0.000	0.5	1	1	2.000	2.000		0.000
2" SR	B	No	No	Ar (CaAa)	110' - 0'	0.000	0.5	1	1	2.000	2.000		0.000
2" SR	C	No	No	Ar (CaAa)	110' - 0'	0.000	0.5	1	1	2.000	2.000		0.000
*													

Feed Line/Linear Appurtenances - Entered As Area

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

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180'-160'	A	0.000	0.000	46.433	0.000	0.385
		B	0.000	0.000	22.994	0.000	0.236
		C	0.000	0.000	33.760	0.000	0.266
T2	160'-155'	A	0.000	0.000	12.414	0.000	0.100
		B	0.000	0.000	15.494	0.000	0.110
		C	0.000	0.000	8.440	0.000	0.067
T3	155'-150'	A	0.000	0.000	12.414	0.000	0.100
		B	0.000	0.000	15.494	0.000	0.110
		C	0.000	0.000	8.440	0.000	0.067
T4	150'-145'	A	0.000	0.000	12.414	0.000	0.100
		B	0.000	0.000	15.494	0.000	0.110
		C	0.000	0.000	13.934	0.000	0.146
T5	145'-140'	A	0.000	0.000	12.414	0.000	0.100
		B	0.000	0.000	15.494	0.000	0.110
		C	0.000	0.000	13.934	0.000	0.146
T6	140'-133'4"	A	0.000	0.000	17.619	0.000	0.149
		B	0.000	0.000	20.658	0.000	0.147
		C	0.000	0.000	18.579	0.000	0.195
T7	133'4"-126'8"	A	0.000	0.000	17.619	0.000	0.149
		B	0.000	0.000	20.658	0.000	0.147
		C	0.000	0.000	18.579	0.000	0.195
T8	126'8"-120'	A	0.000	0.000	17.619	0.000	0.149
		B	0.000	0.000	20.658	0.000	0.147
		C	0.000	0.000	18.579	0.000	0.195
T9	120'-113'4"	A	0.000	0.000	17.619	0.000	0.149

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
		B	0.000	0.000	20.658	0.000	0.147
		C	0.000	0.000	18.579	0.000	0.195
T10	113'4"-106'8"	A	0.000	0.000	18.286	0.000	0.149
		B	0.000	0.000	21.325	0.000	0.147
		C	0.000	0.000	19.245	0.000	0.195
T11	106'8"-100'	A	0.000	0.000	18.952	0.000	0.149
		B	0.000	0.000	21.992	0.000	0.147
		C	0.000	0.000	19.912	0.000	0.195
T12	100'-80'	A	0.000	0.000	56.857	0.000	0.447
		B	0.000	0.000	65.975	0.000	0.441
		C	0.000	0.000	59.736	0.000	0.584
T13	80'-60'	A	0.000	0.000	56.857	0.000	0.447
		B	0.000	0.000	65.975	0.000	0.441
		C	0.000	0.000	59.736	0.000	0.584
T14	60'-40'	A	0.000	0.000	56.857	0.000	0.447
		B	0.000	0.000	65.975	0.000	0.441
		C	0.000	0.000	60.366	0.000	0.586
T15	40'-30'	A	0.000	0.000	28.428	0.000	0.223
		B	0.000	0.000	32.987	0.000	0.221
		C	0.000	0.000	30.498	0.000	0.294
T16	30'-20'	A	0.000	0.000	28.428	0.000	0.223
		B	0.000	0.000	32.987	0.000	0.221
		C	0.000	0.000	30.498	0.000	0.294
T17	20'-0'	A	0.000	0.000	56.857	0.000	0.447
		B	0.000	0.000	65.975	0.000	0.441
		C	0.000	0.000	60.996	0.000	0.587

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180'-160'	A	1.001	0.000	0.000	80.358	0.000	1.163
		B		0.000	0.000	34.217	0.000	0.537
		C		0.000	0.000	56.156	0.000	0.727
T2	160'-155'	A	0.994	0.000	0.000	21.469	0.000	0.308
		B		0.000	0.000	23.643	0.000	0.318
		C		0.000	0.000	14.020	0.000	0.181
T3	155'-150'	A	0.991	0.000	0.000	21.455	0.000	0.307
		B		0.000	0.000	23.614	0.000	0.317
		C		0.000	0.000	14.012	0.000	0.180
T4	150'-145'	A	0.987	0.000	0.000	21.440	0.000	0.307
		B		0.000	0.000	23.584	0.000	0.316
		C		0.000	0.000	24.020	0.000	0.340
T5	145'-140'	A	0.984	0.000	0.000	21.424	0.000	0.306
		B		0.000	0.000	23.553	0.000	0.316
		C		0.000	0.000	24.002	0.000	0.339
T6	140'-133'4"	A	0.980	0.000	0.000	30.914	0.000	0.443
		B		0.000	0.000	31.354	0.000	0.420
		C		0.000	0.000	31.975	0.000	0.451
T7	133'4"-126'8"	A	0.975	0.000	0.000	30.877	0.000	0.442
		B		0.000	0.000	31.294	0.000	0.418
		C		0.000	0.000	31.942	0.000	0.450
T8	126'8"-120'	A	0.970	0.000	0.000	30.839	0.000	0.440
		B		0.000	0.000	31.232	0.000	0.417
		C		0.000	0.000	31.907	0.000	0.448
T9	120'-113'4"	A	0.964	0.000	0.000	30.799	0.000	0.439
		B		0.000	0.000	31.166	0.000	0.415

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
		C		0.000	0.000	31.870	0.000	0.447
T10	113'4"-106'8"	A	0.959	0.000	0.000	32.063	0.000	0.449
		B		0.000	0.000	32.403	0.000	0.425
		C		0.000	0.000	33.137	0.000	0.457
T11	106'8"-100'	A	0.953	0.000	0.000	33.317	0.000	0.459
		B		0.000	0.000	33.628	0.000	0.435
		C		0.000	0.000	34.394	0.000	0.467
T12	100'-80'	A	0.940	0.000	0.000	99.607	0.000	1.364
		B		0.000	0.000	100.354	0.000	1.293
		C		0.000	0.000	102.861	0.000	1.389
T13	80'-60'	A	0.916	0.000	0.000	98.995	0.000	1.343
		B		0.000	0.000	99.409	0.000	1.272
		C		0.000	0.000	102.289	0.000	1.369
T14	60'-40'	A	0.886	0.000	0.000	98.199	0.000	1.316
		B		0.000	0.000	98.180	0.000	1.245
		C		0.000	0.000	103.948	0.000	1.361
T15	40'-30'	A	0.855	0.000	0.000	48.692	0.000	0.644
		B		0.000	0.000	48.461	0.000	0.609
		C		0.000	0.000	52.733	0.000	0.676
T16	30'-20'	A	0.827	0.000	0.000	48.321	0.000	0.632
		B		0.000	0.000	47.888	0.000	0.596
		C		0.000	0.000	52.330	0.000	0.663
T17	20'-0'	A	0.754	0.000	0.000	94.743	0.000	1.202
		B		0.000	0.000	92.846	0.000	1.131
		C		0.000	0.000	102.602	0.000	1.262

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	180'-160'	4.527	-12.871	4.943	-12.312
T2	160'-155'	5.064	-18.965	5.435	-18.039
T3	155'-150'	5.356	-20.025	5.750	-19.042
T4	150'-145'	7.348	-15.928	8.351	-15.529
T5	145'-140'	7.137	-15.648	8.192	-15.273
T6	140'-133'4"	7.386	-17.172	8.116	-16.450
T7	133'4"-126'8"	7.121	-16.794	7.980	-16.246
T8	126'8"-120'	7.138	-16.955	8.173	-16.685
T9	120'-113'4"	7.145	-17.045	8.336	-17.037
T10	113'4"-106'8"	7.237	-17.279	8.410	-17.160
T11	106'8"-100'	8.080	-19.056	9.199	-18.639
T12	100'-80'	8.091	-19.269	9.506	-19.321
T13	80'-60'	9.705	-22.847	11.219	-22.583
T14	60'-40'	9.318	-21.867	11.409	-21.899
T15	40'-30'	10.639	-24.242	13.167	-23.909
T16	30'-20'	9.405	-21.830	12.102	-22.161
T17	20'-0'	10.814	-24.894	13.878	-25.229

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	3	FLC 158-50J(1-5/8")	160.00 - 178.00	0.6000	0.6000
T1	4	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T1	8	LDF6-50A(1-1/4")	160.00 - 165.00	0.6000	0.6000
T1	9	2-1/2" Rigid Conduit	160.00 - 165.00	0.6000	0.6000
T1	10	WR-VG122ST-BRDA(7/16)	160.00 - 165.00	0.0000	0.0000
T1	11	FB-L98B-002-75000(3/8)	160.00 - 165.00	0.0000	0.0000
T1	12	FB-L98B-002-75000(3/8)	160.00 - 165.00	0.6000	0.6000
T1	13	WR-VG86ST-BRD(3/4)	160.00 - 165.00	0.6000	0.6000
T1	14	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T1	22	LDF7-50A(1-5/8)	160.00 - 180.00	0.6000	0.6000
T1	24	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.6000
T1	26	Safety Line 3/8	160.00 - 180.00	0.6000	0.6000
T1	27	Thin Flat Bar Climbing Ladder	160.00 - 180.00	0.6000	0.6000
T2	3	FLC 158-50J(1-5/8")	155.00 - 160.00	0.6000	0.6000
T2	4	Feedline Ladder (Af)	155.00 - 160.00	0.6000	0.6000
T2	8	LDF6-50A(1-1/4")	155.00 - 160.00	0.6000	0.6000
T2	9	2-1/2" Rigid Conduit	155.00 - 160.00	0.6000	0.6000
T2	10	WR-VG122ST-BRDA(7/16)	155.00 - 160.00	0.0000	0.0000
T2	11	FB-L98B-002-75000(3/8)	155.00 - 160.00	0.0000	0.0000
T2	12	FB-L98B-002-75000(3/8)	155.00 - 160.00	0.6000	0.6000
T2	13	WR-VG86ST-BRD(3/4)	155.00 - 160.00	0.6000	0.6000
T2	14	Feedline Ladder (Af)	155.00 - 160.00	0.6000	0.6000
T2	22	LDF7-50A(1-5/8)	155.00 - 160.00	0.6000	0.6000
T2	24	Feedline Ladder (Af)	155.00 - 160.00	0.6000	0.6000
T2	26	Safety Line 3/8	155.00 - 160.00	0.6000	0.6000
T2	27	Thin Flat Bar Climbing Ladder	155.00 - 160.00	0.6000	0.6000
T3	3	FLC 158-50J(1-5/8")	150.00 - 155.00	0.6000	0.6000
T3	4	Feedline Ladder (Af)	150.00 - 155.00	0.6000	0.6000
T3	8	LDF6-50A(1-1/4")	150.00 - 155.00	0.6000	0.6000
T3	9	2-1/2" Rigid Conduit	150.00 - 155.00	0.6000	0.6000
T3	10	WR-VG122ST-BRDA(7/16)	150.00 - 155.00	0.0000	0.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	11	FB-L98B-002-75000(3/8)	150.00 - 155.00	0.0000	0.0000
T3	12	FB-L98B-002-75000(3/8)	150.00 - 155.00	0.6000	0.6000
T3	13	WR-VG86ST-BRD(3/4)	150.00 - 155.00	0.6000	0.6000
T3	14	Feedline Ladder (Af)	150.00 - 155.00	0.6000	0.6000
T3	22	LDF7-50A(1-5/8)	150.00 - 155.00	0.6000	0.6000
T3	24	Feedline Ladder (Af)	150.00 - 155.00	0.6000	0.6000
T3	26	Safety Line 3/8	150.00 - 155.00	0.6000	0.6000
T3	27	Thin Flat Bar Climbing Ladder	150.00 - 155.00	0.6000	0.6000
T4	3	FLC 158-50J(1-5/8")	145.00 - 150.00	0.6000	0.6000
T4	4	Feedline Ladder (Af)	145.00 - 150.00	0.6000	0.6000
T4	8	LDF6-50A(1-1/4")	145.00 - 150.00	0.6000	0.6000
T4	9	2-1/2" Rigid Conduit	145.00 - 150.00	0.6000	0.6000
T4	10	WR-VG122ST-BRDA(7/16)	145.00 - 150.00	0.0000	0.0000
T4	11	FB-L98B-002-75000(3/8)	145.00 - 150.00	0.0000	0.0000
T4	12	FB-L98B-002-75000(3/8)	145.00 - 150.00	0.6000	0.6000
T4	13	WR-VG86ST-BRD(3/4)	145.00 - 150.00	0.6000	0.6000
T4	14	Feedline Ladder (Af)	145.00 - 150.00	0.6000	0.6000
T4	17	HB158-21U6S24-xxM_TMO (1-5/8)	145.00 - 150.00	0.6000	0.6000
T4	19	Feedline Ladder (Af)	145.00 - 150.00	0.6000	0.6000
T4	22	LDF7-50A(1-5/8)	145.00 - 150.00	0.6000	0.6000
T4	26	Safety Line 3/8	145.00 - 150.00	0.6000	0.6000
T4	27	Thin Flat Bar Climbing Ladder	145.00 - 150.00	0.6000	0.6000
T5	3	FLC 158-50J(1-5/8")	140.00 - 145.00	0.6000	0.6000
T5	4	Feedline Ladder (Af)	140.00 - 145.00	0.6000	0.6000
T5	8	LDF6-50A(1-1/4")	140.00 - 145.00	0.6000	0.6000
T5	9	2-1/2" Rigid Conduit	140.00 - 145.00	0.6000	0.6000
T5	10	WR-VG122ST-BRDA(7/16)	140.00 - 145.00	0.0000	0.0000
T5	11	FB-L98B-002-75000(3/8)	140.00 - 145.00	0.0000	0.0000
T5	12	FB-L98B-002-75000(3/8)	140.00 - 145.00	0.6000	0.6000
T5	13	WR-VG86ST-BRD(3/4)	140.00 - 145.00	0.6000	0.6000
T5	14	Feedline Ladder (Af)	140.00 - 145.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	17	HB158-21U6S24-xxM_TMO (1-5/8)	140.00 - 145.00	0.6000	0.6000
T5	19	Feedline Ladder (Af)	140.00 - 145.00	0.6000	0.6000
T5	22	LDF7-50A(1-5/8)	140.00 - 145.00	0.6000	0.6000
T5	26	Safety Line 3/8	140.00 - 145.00	0.6000	0.6000
T5	27	Thin Flat Bar Climbing Ladder	140.00 - 145.00	0.6000	0.6000
T6	3	FLC 158-50J(1-5/8")	133.33 - 140.00	0.6000	0.6000
T6	4	Feedline Ladder (Af)	133.33 - 140.00	0.6000	0.6000
T6	6	CU12PSM9P6XXX(1-1/2)	133.33 - 140.00	0.6000	0.6000
T6	8	LDF6-50A(1-1/4")	133.33 - 140.00	0.6000	0.6000
T6	9	2-1/2" Rigid Conduit	133.33 - 140.00	0.6000	0.6000
T6	10	WR-VG122ST-BRDA(7/16)	133.33 - 140.00	0.0000	0.0000
T6	11	FB-L98B-002-75000(3/8)	133.33 - 140.00	0.0000	0.0000
T6	12	FB-L98B-002-75000(3/8)	133.33 - 140.00	0.6000	0.6000
T6	13	WR-VG86ST-BRD(3/4)	133.33 - 140.00	0.6000	0.6000
T6	14	Feedline Ladder (Af)	133.33 - 140.00	0.6000	0.6000
T6	17	HB158-21U6S24-xxM_TMO (1-5/8)	133.33 - 140.00	0.6000	0.6000
T6	19	Feedline Ladder (Af)	133.33 - 140.00	0.6000	0.6000
T6	22	LDF7-50A(1-5/8)	133.33 - 140.00	0.6000	0.6000
T6	26	Safety Line 3/8	133.33 - 140.00	0.6000	0.6000
T6	27	Thin Flat Bar Climbing Ladder	133.33 - 140.00	0.6000	0.6000
T7	3	FLC 158-50J(1-5/8")	126.67 - 133.33	0.6000	0.6000
T7	4	Feedline Ladder (Af)	126.67 - 133.33	0.6000	0.6000
T7	6	CU12PSM9P6XXX(1-1/2)	126.67 - 133.33	0.6000	0.6000
T7	8	LDF6-50A(1-1/4")	126.67 - 133.33	0.6000	0.6000
T7	9	2-1/2" Rigid Conduit	126.67 - 133.33	0.6000	0.6000
T7	10	WR-VG122ST-BRDA(7/16)	126.67 - 133.33	0.0000	0.0000
T7	11	FB-L98B-002-75000(3/8)	126.67 - 133.33	0.0000	0.0000
T7	12	FB-L98B-002-75000(3/8)	126.67 - 133.33	0.6000	0.6000
T7	13	WR-VG86ST-BRD(3/4)	126.67 - 133.33	0.6000	0.6000
T7	14	Feedline Ladder (Af)	126.67 - 133.33	0.6000	0.6000
T7	17	HB158-21U6S24-xxM_TMO (1-5/8)	126.67 - 133.33	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	19	Feedline Ladder (Af)	126.67 - 133.33	0.6000	0.6000
T7	22	LDF7-50A(1-5/8)	126.67 - 133.33	0.6000	0.6000
T7	26	Safety Line 3/8	126.67 - 133.33	0.6000	0.6000
T7	27	Thin Flat Bar Climbing Ladder	126.67 - 133.33	0.6000	0.6000
T8	3	FLC 158-50J(1-5/8")	120.00 - 126.67	0.6000	0.6000
T8	4	Feedline Ladder (Af)	120.00 - 126.67	0.6000	0.6000
T8	6	CU12PSM9P6XXX(1-1/2)	120.00 - 126.67	0.6000	0.6000
T8	8	LDF6-50A(1-1/4")	120.00 - 126.67	0.6000	0.6000
T8	9	2-1/2" Rigid Conduit	120.00 - 126.67	0.6000	0.6000
T8	10	WR-VG122ST-BRDA(7/16)	120.00 - 126.67	0.0000	0.0000
T8	11	FB-L98B-002-75000(3/8)	120.00 - 126.67	0.0000	0.0000
T8	12	FB-L98B-002-75000(3/8)	120.00 - 126.67	0.6000	0.6000
T8	13	WR-VG86ST-BRD(3/4)	120.00 - 126.67	0.6000	0.6000
T8	14	Feedline Ladder (Af)	120.00 - 126.67	0.6000	0.6000
T8	17	HB158-21U6S24-xxM_TMO (1-5/8)	120.00 - 126.67	0.6000	0.6000
T8	19	Feedline Ladder (Af)	120.00 - 126.67	0.6000	0.6000
T8	22	LDF7-50A(1-5/8)	120.00 - 126.67	0.6000	0.6000
T8	26	Safety Line 3/8	120.00 - 126.67	0.6000	0.6000
T8	27	Thin Flat Bar Climbing Ladder	120.00 - 126.67	0.6000	0.6000
T9	3	FLC 158-50J(1-5/8")	113.33 - 120.00	0.6000	0.6000
T9	4	Feedline Ladder (Af)	113.33 - 120.00	0.6000	0.6000
T9	6	CU12PSM9P6XXX(1-1/2)	113.33 - 120.00	0.6000	0.6000
T9	8	LDF6-50A(1-1/4")	113.33 - 120.00	0.6000	0.6000
T9	9	2-1/2" Rigid Conduit	113.33 - 120.00	0.6000	0.6000
T9	10	WR-VG122ST-BRDA(7/16)	113.33 - 120.00	0.0000	0.0000
T9	11	FB-L98B-002-75000(3/8)	113.33 - 120.00	0.0000	0.0000
T9	12	FB-L98B-002-75000(3/8)	113.33 - 120.00	0.6000	0.6000
T9	13	WR-VG86ST-BRD(3/4)	113.33 - 120.00	0.6000	0.6000
T9	14	Feedline Ladder (Af)	113.33 - 120.00	0.6000	0.6000
T9	17	HB158-21U6S24-xxM_TMO (1-5/8)	113.33 - 120.00	0.6000	0.6000
T9	19	Feedline Ladder (Af)	113.33 - 120.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	22	LDF7-50A(1-5/8)	113.33 - 120.00	0.6000	0.6000
T9	26	Safety Line 3/8	113.33 - 120.00	0.6000	0.6000
T9	27	Thin Flat Bar Climbing Ladder	113.33 - 120.00	0.6000	0.6000
T10	3	FLC 158-50J(1-5/8")	106.67 - 113.33	0.6000	0.6000
T10	4	Feedline Ladder (Af)	106.67 - 113.33	0.6000	0.6000
T10	6	CU12PSM9P6XXX(1-1/2)	106.67 - 113.33	0.6000	0.6000
T10	8	LDF6-50A(1-1/4")	106.67 - 113.33	0.6000	0.6000
T10	9	2-1/2" Rigid Conduit	106.67 - 113.33	0.6000	0.6000
T10	10	WR-VG122ST-BRDA(7/16)	106.67 - 113.33	0.0000	0.0000
T10	11	FB-L98B-002-75000(3/8)	106.67 - 113.33	0.0000	0.0000
T10	12	FB-L98B-002-75000(3/8)	106.67 - 113.33	0.6000	0.6000
T10	13	WR-VG86ST-BRD(3/4)	106.67 - 113.33	0.6000	0.6000
T10	14	Feedline Ladder (Af)	106.67 - 113.33	0.6000	0.6000
T10	17	HB158-21U6S24-xxM_TMO (1-5/8)	106.67 - 113.33	0.6000	0.6000
T10	19	Feedline Ladder (Af)	106.67 - 113.33	0.6000	0.6000
T10	22	LDF7-50A(1-5/8)	106.67 - 113.33	0.6000	0.6000
T10	26	Safety Line 3/8	106.67 - 113.33	0.6000	0.6000
T10	27	Thin Flat Bar Climbing Ladder	106.67 - 113.33	0.6000	0.6000
T10	29	2" SR	106.67 - 110.00	0.6000	0.6000
T10	30	2" SR	106.67 - 110.00	0.6000	0.6000
T10	31	2" SR	106.67 - 110.00	0.6000	0.6000
T11	3	FLC 158-50J(1-5/8")	100.00 - 106.67	0.6000	0.6000
T11	4	Feedline Ladder (Af)	100.00 - 106.67	0.6000	0.6000
T11	6	CU12PSM9P6XXX(1-1/2)	100.00 - 106.67	0.6000	0.6000
T11	8	LDF6-50A(1-1/4")	100.00 - 106.67	0.6000	0.6000
T11	9	2-1/2" Rigid Conduit	100.00 - 106.67	0.6000	0.6000
T11	10	WR-VG122ST-BRDA(7/16)	100.00 - 106.67	0.0000	0.0000
T11	11	FB-L98B-002-75000(3/8)	100.00 - 106.67	0.0000	0.0000
T11	12	FB-L98B-002-75000(3/8)	100.00 - 106.67	0.6000	0.6000
T11	13	WR-VG86ST-BRD(3/4)	100.00 - 106.67	0.6000	0.6000
T11	14	Feedline Ladder (Af)	100.00 - 106.67	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T11	17	HB158-21U6S24-xxM_TMO (1-5/8)	100.00 - 106.67	0.6000	0.6000
T11	19	Feedline Ladder (Af)	100.00 - 106.67	0.6000	0.6000
T11	22	LDF7-50A(1-5/8)	100.00 - 106.67	0.6000	0.6000
T11	26	Safety Line 3/8	100.00 - 106.67	0.6000	0.6000
T11	27	Thin Flat Bar Climbing Ladder	100.00 - 106.67	0.6000	0.6000
T11	29	2" SR	100.00 - 106.67	0.6000	0.6000
T11	30	2" SR	100.00 - 106.67	0.6000	0.6000
T11	31	2" SR	100.00 - 106.67	0.6000	0.6000
T12	3	FLC 158-50J(1-5/8")	80.00 - 100.00	0.6000	0.6000
T12	4	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T12	6	CU12PSM9P6XXX(1-1/2)	80.00 - 100.00	0.6000	0.6000
T12	8	LDF6-50A(1-1/4")	80.00 - 100.00	0.6000	0.6000
T12	9	2-1/2" Rigid Conduit	80.00 - 100.00	0.6000	0.6000
T12	10	WR-VG122ST-BRDA(7/16)	80.00 - 100.00	0.0000	0.0000
T12	11	FB-L98B-002-75000(3/8)	80.00 - 100.00	0.0000	0.0000
T12	12	FB-L98B-002-75000(3/8)	80.00 - 100.00	0.6000	0.6000
T12	13	WR-VG86ST-BRD(3/4)	80.00 - 100.00	0.6000	0.6000
T12	14	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T12	17	HB158-21U6S24-xxM_TMO (1-5/8)	80.00 - 100.00	0.6000	0.6000
T12	19	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T12	22	LDF7-50A(1-5/8)	80.00 - 100.00	0.6000	0.6000
T12	26	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T12	27	Thin Flat Bar Climbing Ladder	80.00 - 100.00	0.6000	0.6000
T12	29	2" SR	80.00 - 100.00	0.6000	0.6000
T12	30	2" SR	80.00 - 100.00	0.6000	0.6000
T12	31	2" SR	80.00 - 100.00	0.6000	0.6000
T13	3	FLC 158-50J(1-5/8")	60.00 - 80.00	0.6000	0.6000
T13	4	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T13	6	CU12PSM9P6XXX(1-1/2)	60.00 - 80.00	0.6000	0.6000
T13	8	LDF6-50A(1-1/4")	60.00 - 80.00	0.6000	0.6000
T13	9	2-1/2" Rigid Conduit	60.00 - 80.00	0.6000	0.6000
T13	10	WR-VG122ST-BRDA(7/16)	60.00 - 80.00	0.0000	0.0000
T13	11	FB-L98B-002-75000(3/8)	60.00 - 80.00	0.0000	0.0000
T13	12	FB-L98B-002-75000(3/8)	60.00 - 80.00	0.6000	0.6000
T13	13	WR-VG86ST-BRD(3/4)	60.00 - 80.00	0.6000	0.6000
T13	14	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T13	17	HB158-21U6S24-xxM_TMO (1-5/8)	60.00 - 80.00	0.6000	0.6000
T13	19	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T13	22	LDF7-50A(1-5/8)	60.00 - 80.00	0.6000	0.6000
T13	26	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T13	27	Thin Flat Bar Climbing Ladder	60.00 - 80.00	0.6000	0.6000
T13	29	2" SR	60.00 - 80.00	0.6000	0.6000
T13	30	2" SR	60.00 - 80.00	0.6000	0.6000
T13	31	2" SR	60.00 - 80.00	0.6000	0.6000
T14	3	FLC 158-50J(1-5/8")	40.00 - 60.00	0.6000	0.6000
T14	4	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T14	6	CU12PSM9P6XXX(1-1/2)	40.00 - 60.00	0.6000	0.6000
T14	8	LDF6-50A(1-1/4")	40.00 - 60.00	0.6000	0.6000
T14	9	2-1/2" Rigid Conduit	40.00 - 60.00	0.6000	0.6000
T14	10	WR-VG122ST-BRDA(7/16)	40.00 - 60.00	0.0000	0.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T14	11	FB-L98B-002-75000(3/8)	40.00 - 60.00	0.0000	0.0000
T14	12	FB-L98B-002-75000(3/8)	40.00 - 60.00	0.6000	0.6000
T14	13	WR-VG86ST-BRD(3/4)	40.00 - 60.00	0.6000	0.6000
T14	14	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T14	17	HB158-21U6S24-xxM_TMO (1-5/8)	40.00 - 60.00	0.6000	0.6000
T14	18	LDF4-50A(1/2")	40.00 - 50.00	0.6000	0.6000
T14	19	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T14	22	LDF7-50A(1-5/8)	40.00 - 60.00	0.6000	0.6000
T14	26	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T14	27	Thin Flat Bar Climbing Ladder	40.00 - 60.00	0.6000	0.6000
T14	29	2" SR	40.00 - 60.00	0.6000	0.6000
T14	30	2" SR	40.00 - 60.00	0.6000	0.6000
T14	31	2" SR	40.00 - 60.00	0.6000	0.6000
T15	3	FLC 158-50J(1-5/8")	30.00 - 40.00	0.6000	0.6000
T15	4	Feedline Ladder (Af)	30.00 - 40.00	0.6000	0.6000
T15	6	CU12PSM9P6XXX(1-1/2)	30.00 - 40.00	0.6000	0.6000
T15	8	LDF6-50A(1-1/4")	30.00 - 40.00	0.6000	0.6000
T15	9	2-1/2" Rigid Conduit	30.00 - 40.00	0.6000	0.6000
T15	10	WR-VG122ST-BRDA(7/16)	30.00 - 40.00	0.0000	0.0000
T15	11	FB-L98B-002-75000(3/8)	30.00 - 40.00	0.0000	0.0000
T15	12	FB-L98B-002-75000(3/8)	30.00 - 40.00	0.6000	0.6000
T15	13	WR-VG86ST-BRD(3/4)	30.00 - 40.00	0.6000	0.6000
T15	14	Feedline Ladder (Af)	30.00 - 40.00	0.6000	0.6000
T15	17	HB158-21U6S24-xxM_TMO (1-5/8)	30.00 - 40.00	0.6000	0.6000
T15	18	LDF4-50A(1/2")	30.00 - 40.00	0.6000	0.6000
T15	19	Feedline Ladder (Af)	30.00 - 40.00	0.6000	0.6000
T15	22	LDF7-50A(1-5/8)	30.00 - 40.00	0.6000	0.6000
T15	26	Safety Line 3/8	30.00 - 40.00	0.6000	0.6000
T15	27	Thin Flat Bar Climbing Ladder	30.00 - 40.00	0.6000	0.6000
T15	29	2" SR	30.00 - 40.00	0.6000	0.6000
T15	30	2" SR	30.00 - 40.00	0.6000	0.6000
T15	31	2" SR	30.00 - 40.00	0.6000	0.6000
T16	3	FLC 158-50J(1-5/8")	20.00 - 30.00	0.6000	0.6000
T16	4	Feedline Ladder (Af)	20.00 - 30.00	0.6000	0.6000
T16	6	CU12PSM9P6XXX(1-1/2)	20.00 - 30.00	0.6000	0.6000
T16	8	LDF6-50A(1-1/4")	20.00 - 30.00	0.6000	0.6000
T16	9	2-1/2" Rigid Conduit	20.00 - 30.00	0.6000	0.6000
T16	10	WR-VG122ST-BRDA(7/16)	20.00 - 30.00	0.0000	0.0000
T16	11	FB-L98B-002-75000(3/8)	20.00 - 30.00	0.0000	0.0000
T16	12	FB-L98B-002-75000(3/8)	20.00 - 30.00	0.6000	0.6000
T16	13	WR-VG86ST-BRD(3/4)	20.00 - 30.00	0.6000	0.6000
T16	14	Feedline Ladder (Af)	20.00 - 30.00	0.6000	0.6000
T16	17	HB158-21U6S24-xxM_TMO (1-5/8)	20.00 - 30.00	0.6000	0.6000
T16	18	LDF4-50A(1/2")	20.00 - 30.00	0.6000	0.6000
T16	19	Feedline Ladder (Af)	20.00 - 30.00	0.6000	0.6000
T16	22	LDF7-50A(1-5/8)	20.00 - 30.00	0.6000	0.6000
T16	26	Safety Line 3/8	20.00 - 30.00	0.6000	0.6000
T16	27	Thin Flat Bar Climbing Ladder	20.00 - 30.00	0.6000	0.6000
T16	29	2" SR	20.00 - 30.00	0.6000	0.6000
T16	30	2" SR	20.00 - 30.00	0.6000	0.6000
T16	31	2" SR	20.00 - 30.00	0.6000	0.6000
T17	3	FLC 158-50J(1-5/8")	0.00 - 20.00	0.6000	0.6000
T17	4	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T17	6	CU12PSM9P6XXX(1-1/2)	0.00 - 20.00	0.6000	0.6000
T17	8	LDF6-50A(1-1/4")	0.00 - 20.00	0.6000	0.6000
T17	9	2-1/2" Rigid Conduit	0.00 - 20.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T17	10	WR-VG122ST-BRDA(7/16)	0.00 - 20.00	0.0000	0.0000
T17	11	FB-L98B-002-75000(3/8)	0.00 - 20.00	0.0000	0.0000
T17	12	FB-L98B-002-75000(3/8)	0.00 - 20.00	0.6000	0.6000
T17	13	WR-VG86ST-BRD(3/4)	0.00 - 20.00	0.6000	0.6000
T17	14	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T17	17	HB158-21U6S24-xxM_TMO (1-5/8)	0.00 - 20.00	0.6000	0.6000
T17	18	LDF4-50A(1/2")	0.00 - 20.00	0.6000	0.6000
T17	19	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T17	22	LDF7-50A(1-5/8)	0.00 - 20.00	0.6000	0.6000
T17	26	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000
T17	27	Thin Flat Bar Climbing Ladder	0.00 - 20.00	0.6000	0.6000
T17	29	2" SR	0.00 - 20.00	0.6000	0.6000
T17	30	2" SR	0.00 - 20.00	0.6000	0.6000
T17	31	2" SR	0.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod 5/8" x 6'	C	From Leg	0.000 0' 3'	0.000	180'	No Ice 1/2" Ice 1" Ice	0.375 0.989 1.619	0.375 0.989 1.619	0.006 0.010 0.019
*									
19" Accelerator	B	From Leg	0.000 0' 4'	0.000	182'	No Ice 1/2" Ice 1" Ice	7.600 8.110 8.620	7.600 8.110 8.620	0.250 0.331 0.412
(3) RR90-17-02DP w/ Mount Pipe	B	From Leg	0.500 0' 4'	0.000	182'	No Ice 1/2" Ice 1" Ice	4.470 5.080 5.700	2.920 3.500 4.100	0.034 0.067 0.108
(3) KRY 112 489/1	B	From Leg	0.500 0' -3'	0.000	182'	No Ice 1/2" Ice 1" Ice	0.560 0.659 0.765	0.366 0.449 0.543	0.015 0.021 0.027
15' x 4" Mount Pipe	B	From Leg	0.000 0' -8'	0.000	182'	No Ice 1/2" Ice 1" Ice	5.362 8.296 9.858	5.362 8.296 9.858	0.180 0.227 0.283
*									
(2) LPA-80080/6CF w/ Mount Pipe	A	From Leg	4.000 0' 1'	0.000	178'	No Ice 1/2" Ice 1" Ice	4.564 5.105 5.612	10.259 11.427 12.312	0.046 0.113 0.187
(2) LPA-80080/6CF w/ Mount Pipe	B	From Leg	4.000 0' 1'	0.000	178'	No Ice 1/2" Ice 1" Ice	4.564 5.105 5.612	10.259 11.427 12.312	0.046 0.113 0.187
(2) LPA-80080/6CF w/ Mount Pipe	C	From Leg	4.000 0' 1'	0.000	178'	No Ice 1/2" Ice 1" Ice	4.564 5.105 5.612	10.259 11.427 12.312	0.046 0.113 0.187
DB-B1-6C-8AB-0Z	A	From Leg	4.000 0' 0'	0.000	178'	No Ice 1/2" Ice 1" Ice	4.800 5.070 5.348	2.000 2.193 2.393	0.044 0.080 0.120

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
DB-T1-6Z-8AB-0Z	B	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	4.800 5.070	2.000 2.193	0.044 0.080
			0'			1" Ice	5.348	2.393	0.120
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	5.500 5.970	4.380 4.840	0.096 0.169
			1'			1" Ice	6.450	5.300	0.254
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	5.500 5.970	4.380 4.840	0.096 0.169
			1'			1" Ice	6.450	5.300	0.254
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	5.500 5.970	4.380 4.840	0.096 0.169
			1'			1" Ice	6.450	5.300	0.254
Sub6 Antenna - VZS01	A	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	4.700 4.988	1.844 2.067	0.087 0.116
			1'			1" Ice	5.284	2.297	0.150
Sub6 Antenna - VZS01	B	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	4.700 4.988	1.844 2.067	0.087 0.116
			1'			1" Ice	5.284	2.297	0.150
Sub6 Antenna - VZS01	C	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	4.700 4.988	1.844 2.067	0.087 0.116
			1'			1" Ice	5.284	2.297	0.150
RFV01U-D1A	A	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	1.875 2.045	1.250 1.393	0.084 0.103
			1'			1" Ice	2.223	1.543	0.124
RFV01U-D1A	B	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	1.875 2.045	1.250 1.393	0.084 0.103
			1'			1" Ice	2.223	1.543	0.124
RFV01U-D1A	C	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	1.875 2.045	1.250 1.393	0.084 0.103
			1'			1" Ice	2.223	1.543	0.124
RFV01U-D2A	A	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	1.875 2.045	1.013 1.145	0.070 0.087
			1'			1" Ice	2.223	1.284	0.106
RFV01U-D2A	B	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	1.875 2.045	1.013 1.145	0.070 0.087
			1'			1" Ice	2.223	1.284	0.106
RFV01U-D2A	C	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	1.875 2.045	1.013 1.145	0.070 0.087
			1'			1" Ice	2.223	1.284	0.106
CBC78T-DS-43-2X	A	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	0.368 0.446	0.512 0.605	0.021 0.027
			1'			1" Ice	0.531	0.705	0.035
CBC78T-DS-43-2X	B	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	0.368 0.446	0.512 0.605	0.021 0.027
			1'			1" Ice	0.531	0.705	0.035
CBC78T-DS-43-2X	C	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	0.368 0.446	0.512 0.605	0.021 0.027
			1'			1" Ice	0.531	0.705	0.035
8'x2 1/2" Pipe Mount	A	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	2.300 3.132	2.300 3.132	0.041 0.057
			0'			1" Ice	3.620	3.620	0.080
8'x2 1/2" Pipe Mount	B	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	2.300 3.132	2.300 3.132	0.041 0.057
			0'			1" Ice	3.620	3.620	0.080
8'x2 1/2" Pipe Mount	C	From Leg	4.000 0'	0.000	178'	No Ice 1/2" Ice	2.300 3.132	2.300 3.132	0.041 0.057
			0'			1" Ice	3.620	3.620	0.080

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
(2) L 2 1/2x2 1/2x1/4x8'	A	From Leg	4.000 0' -4'2"	0.000	178'	No Ice 1/2" Ice 1" Ice	2.000 2.551 3.109	0.007 0.025 0.051	0.062 0.074 0.092
(2) L 2 1/2x2 1/2x1/4x8'	B	From Leg	4.000 0' -4'2"	0.000	178'	No Ice 1/2" Ice 1" Ice	2.000 2.551 3.109	0.007 0.025 0.051	0.062 0.074 0.092
(2) L 2 1/2x2 1/2x1/4x8'	C	From Leg	4.000 0' -4'2"	0.000	178'	No Ice 1/2" Ice 1" Ice	2.000 2.551 3.109	0.007 0.025 0.051	0.062 0.074 0.092
Sector Mount [SM 511-3]	C	None		0.000	178'	No Ice 1/2" Ice 1" Ice	41.210 58.100 74.620	41.210 58.100 74.620	2.466 3.171 4.086
*									
7770.00 w/ Mount Pipe	A	From Leg	4.000 0' 2'	0.000	165'	No Ice 1/2" Ice 1" Ice	5.746 6.179 6.607	4.254 5.014 5.711	0.055 0.103 0.157
7770.00 w/ Mount Pipe	B	From Leg	4.000 0' 2'	0.000	165'	No Ice 1/2" Ice 1" Ice	5.746 6.179 6.607	4.254 5.014 5.711	0.055 0.103 0.157
7770.00 w/ Mount Pipe	C	From Leg	4.000 0' 2'	0.000	165'	No Ice 1/2" Ice 1" Ice	5.746 6.179 6.607	4.254 5.014 5.711	0.055 0.103 0.157
DMP65R-BU8D w/ Mount Pipe	A	From Leg	4.000 0' 2'	0.000	165'	No Ice 1/2" Ice 1" Ice	15.890 16.810 17.760	7.890 8.740 9.600	0.139 0.252 0.380
DMP65R-BU8D w/ Mount Pipe	B	From Leg	4.000 0' 2'	0.000	165'	No Ice 1/2" Ice 1" Ice	15.890 16.810 17.760	7.890 8.740 9.600	0.139 0.252 0.380
DMP65R-BU8D w/ Mount Pipe	C	From Leg	4.000 0' 2'	0.000	165'	No Ice 1/2" Ice 1" Ice	15.890 16.810 17.760	7.890 8.740 9.600	0.139 0.252 0.380
OPA65R-BU6D w/ Mount Pipe	A	From Leg	4.000 0' 2'	0.000	165'	No Ice 1/2" Ice 1" Ice	12.250 13.000 13.760	6.050 6.710 7.390	0.089 0.176 0.275
OPA65R-BU6D w/ Mount Pipe	B	From Leg	4.000 0' 2'	0.000	165'	No Ice 1/2" Ice 1" Ice	12.250 13.000 13.760	6.050 6.710 7.390	0.089 0.176 0.275
OPA65R-BU6D w/ Mount Pipe	C	From Leg	4.000 0' 2'	0.000	165'	No Ice 1/2" Ice 1" Ice	12.250 13.000 13.760	6.050 6.710 7.390	0.089 0.176 0.275
QS66512-2 w/ Mount Pipe	A	From Leg	4.000 0' 2'	0.000	165'	No Ice 1/2" Ice 1" Ice	4.040 4.420 4.820	4.180 4.570 4.970	0.137 0.206 0.287
QS66512-2 w/ Mount Pipe	B	From Leg	4.000 0' 2'	0.000	165'	No Ice 1/2" Ice 1" Ice	4.040 4.420 4.820	4.180 4.570 4.970	0.137 0.206 0.287
QS66512-2 w/ Mount Pipe	C	From Leg	4.000 0' 2'	0.000	165'	No Ice 1/2" Ice 1" Ice	4.040 4.420 4.820	4.180 4.570 4.970	0.137 0.206 0.287
(2) LGP21401	A	From Leg	4.000 0' 2'	0.000	165'	No Ice 1/2" Ice 1" Ice	1.104 1.239 1.381	0.207 0.274 0.348	0.014 0.021 0.030
(2) LGP21401	B	From Leg	4.000 0' 2'	0.000	165'	No Ice 1/2" Ice 1" Ice	1.104 1.239 1.381	0.207 0.274 0.348	0.014 0.021 0.030
(2) LGP21401	C	From Leg	4.000 0'	0.000	165'	No Ice 1/2" Ice	1.104 1.239	0.207 0.274	0.014 0.021

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'			1" Ice	1.381	0.348	0.030
RRUS 4449 B5/B12	A	From Leg	4.000	0.000	165'	No Ice	1.968	1.408	0.071
			0'			1/2" Ice	2.144	1.564	0.090
			2'			1" Ice	2.328	1.727	0.111
RRUS 4449 B5/B12	B	From Leg	4.000	0.000	165'	No Ice	1.968	1.408	0.071
			0'			1/2" Ice	2.144	1.564	0.090
			2'			1" Ice	2.328	1.727	0.111
RRUS 4449 B5/B12	C	From Leg	4.000	0.000	165'	No Ice	1.968	1.408	0.071
			0'			1/2" Ice	2.144	1.564	0.090
			2'			1" Ice	2.328	1.727	0.111
RRUS 4478 B14	A	From Leg	4.000	0.000	165'	No Ice	1.843	1.059	0.060
			0'			1/2" Ice	2.012	1.197	0.076
			2'			1" Ice	2.190	1.342	0.094
RRUS 4478 B14	B	From Leg	4.000	0.000	165'	No Ice	1.843	1.059	0.060
			0'			1/2" Ice	2.012	1.197	0.076
			2'			1" Ice	2.190	1.342	0.094
RRUS 4478 B14	C	From Leg	4.000	0.000	165'	No Ice	1.843	1.059	0.060
			0'			1/2" Ice	2.012	1.197	0.076
			2'			1" Ice	2.190	1.342	0.094
DC6-48-60-18-8F	A	From Leg	1.000	0.000	165'	No Ice	1.212	1.212	0.033
			0'			1/2" Ice	1.892	1.892	0.055
			2'			1" Ice	2.105	2.105	0.080
DC6-48-60-18-8F	B	From Leg	1.000	0.000	165'	No Ice	1.212	1.212	0.033
			0'			1/2" Ice	1.892	1.892	0.055
			2'			1" Ice	2.105	2.105	0.080
DC6-48-60-18-8F	C	From Leg	1.000	0.000	165'	No Ice	1.212	1.212	0.033
			0'			1/2" Ice	1.892	1.892	0.055
			2'			1" Ice	2.105	2.105	0.080
RRUS 32 B30	A	From Leg	4.000	0.000	165'	No Ice	2.692	1.573	0.060
			0'			1/2" Ice	2.912	1.756	0.080
			2'			1" Ice	3.138	1.945	0.104
RRUS 32 B30	B	From Leg	4.000	0.000	165'	No Ice	2.692	1.573	0.060
			0'			1/2" Ice	2.912	1.756	0.080
			2'			1" Ice	3.138	1.945	0.104
RRUS 32 B30	C	From Leg	4.000	0.000	165'	No Ice	2.692	1.573	0.060
			0'			1/2" Ice	2.912	1.756	0.080
			2'			1" Ice	3.138	1.945	0.104
RRUS 32 B2	A	From Leg	4.000	0.000	165'	No Ice	2.731	1.668	0.053
			0'			1/2" Ice	2.953	1.855	0.074
			2'			1" Ice	3.182	2.049	0.098
RRUS 32 B2	B	From Leg	4.000	0.000	165'	No Ice	2.731	1.668	0.053
			0'			1/2" Ice	2.953	1.855	0.074
			2'			1" Ice	3.182	2.049	0.098
RRUS 32 B2	C	From Leg	4.000	0.000	165'	No Ice	2.731	1.668	0.053
			0'			1/2" Ice	2.953	1.855	0.074
			2'			1" Ice	3.182	2.049	0.098
Sector Mount [SM 510-3]	C	None		0.000	165'	No Ice	39.970	39.970	2.396
						1/2" Ice	56.450	56.450	3.077
						1" Ice	72.590	72.590	3.960
*									
AIR6449 B41_T-MOBILE	A	From Leg	4.000	0.000	150'	No Ice	5.270	2.030	0.115
			0'			1/2" Ice	5.700	2.360	0.154
			0'			1" Ice	6.140	2.700	0.197
AIR6449 B41_T-MOBILE	B	From Leg	4.000	0.000	150'	No Ice	5.270	2.030	0.115
			0'			1/2" Ice	5.700	2.360	0.154
			0'			1" Ice	6.140	2.700	0.197
AIR6449 B41_T-MOBILE	C	From Leg	4.000	0.000	150'	No Ice	5.270	2.030	0.115

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0'			1/2" Ice	5.700	2.360	0.154
			0'			1" Ice	6.140	2.700	0.197
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	A	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	14.690 15.460	6.870 7.550	0.183 0.311
			0'			1" Ice	16.230	8.250	0.453
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	B	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	14.690 15.460	6.870 7.550	0.183 0.311
			0'			1" Ice	16.230	8.250	0.453
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	C	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	14.690 15.460	6.870 7.550	0.183 0.311
			0'			1" Ice	16.230	8.250	0.453
APX16DWV-16DWV-S-E-A 20 w/ Mount Pipe	A	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	6.290 6.860	2.760 3.270	0.061 0.105
			0'			1" Ice	7.450	3.790	0.157
APX16DWV-16DWV-S-E-A 20 w/ Mount Pipe	B	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	6.290 6.860	2.760 3.270	0.061 0.105
			0'			1" Ice	7.450	3.790	0.157
APX16DWV-16DWV-S-E-A 20 w/ Mount Pipe	C	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	6.290 6.860	2.760 3.270	0.061 0.105
			0'			1" Ice	7.450	3.790	0.157
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	2.139 2.321	1.686 1.850	0.109 0.131
			0'			1" Ice	2.511	2.022	0.156
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	2.139 2.321	1.686 1.850	0.109 0.131
			0'			1" Ice	2.511	2.022	0.156
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	2.139 2.321	1.686 1.850	0.109 0.131
			0'			1" Ice	2.511	2.022	0.156
Radio 4480_TMOV2	A	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	2.878 3.091	1.397 1.558	0.081 0.103
			0'			1" Ice	3.312	1.727	0.128
Radio 4480_TMOV2	B	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	2.878 3.091	1.397 1.558	0.081 0.103
			0'			1" Ice	3.312	1.727	0.128
Radio 4480_TMOV2	C	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	2.878 3.091	1.397 1.558	0.081 0.103
			0'			1" Ice	3.312	1.727	0.128
10'-11" horizontal x 3" Pipe Mount	A	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	3.600 4.830	0.030 0.070	0.088 0.114
			0'			1" Ice	6.080	0.130	0.148
10'-11" horizontal x 3" Pipe Mount	B	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	3.600 4.830	0.030 0.070	0.088 0.114
			0'			1" Ice	6.080	0.130	0.148
10'-11" horizontal x 3" Pipe Mount	C	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	3.600 4.830	0.030 0.070	0.088 0.114
			0'			1" Ice	6.080	0.130	0.148
6' x 2" Mount Pipe	A	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	1.425 1.925	1.425 1.925	0.022 0.033
			0'			1" Ice	2.294	2.294	0.048
6' x 2" Mount Pipe	B	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	1.425 1.925	1.425 1.925	0.022 0.033
			0'			1" Ice	2.294	2.294	0.048
6' x 2" Mount Pipe	C	From Leg	4.000 0'	0.000	150'	No Ice 1/2" Ice	1.425 1.925	1.425 1.925	0.022 0.033
			0'			1" Ice	2.294	2.294	0.048
Sector Mount [SM 502-3]	C	None		0.000	150'	No Ice	29.820	29.820	1.673

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1/2" Ice	42.210	42.210	2.266
						1" Ice	54.430	54.430	3.052
*									
MX08FRO665-20 w/ Mount Pipe	A	From Leg	4.000 0' 0'	0.000	140'	No Ice 1/2" Ice 1" Ice	8.010 8.520 9.040	4.230 4.690 5.160	0.098 0.184 0.281
MX08FRO665-20 w/ Mount Pipe	B	From Leg	4.000 0' 0'	0.000	140'	No Ice 1/2" Ice 1" Ice	8.010 8.520 9.040	4.230 4.690 5.160	0.098 0.184 0.281
MX08FRO665-20 w/ Mount Pipe	C	From Leg	4.000 0' 0'	0.000	140'	No Ice 1/2" Ice 1" Ice	8.010 8.520 9.040	4.230 4.690 5.160	0.098 0.184 0.281
TA08025-B604	A	From Leg	4.000 0' 0'	0.000	140'	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	0.981 1.112 1.250	0.064 0.081 0.100
TA08025-B604	B	From Leg	4.000 0' 0'	0.000	140'	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	0.981 1.112 1.250	0.064 0.081 0.100
TA08025-B604	C	From Leg	4.000 0' 0'	0.000	140'	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	0.981 1.112 1.250	0.064 0.081 0.100
TA08025-B605	A	From Leg	4.000 0' 0'	0.000	140'	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	1.129 1.267 1.411	0.075 0.093 0.114
TA08025-B605	B	From Leg	4.000 0' 0'	0.000	140'	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	1.129 1.267 1.411	0.075 0.093 0.114
TA08025-B605	C	From Leg	4.000 0' 0'	0.000	140'	No Ice 1/2" Ice 1" Ice	1.964 2.138 2.320	1.129 1.267 1.411	0.075 0.093 0.114
RDIDC-9181-PF-48	A	From Leg	4.000 0' 0'	0.000	140'	No Ice 1/2" Ice 1" Ice	2.012 2.189 2.373	1.168 1.311 1.461	0.022 0.040 0.060
(2) 8' x 2" Mount Pipe	A	From Leg	4.000 0' 0'	0.000	140'	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
(2) 8' x 2" Mount Pipe	B	From Leg	4.000 0' 0'	0.000	140'	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
(2) 8' x 2" Mount Pipe	C	From Leg	4.000 0' 0'	0.000	140'	No Ice 1/2" Ice 1" Ice	1.900 2.728 3.401	1.900 2.728 3.401	0.029 0.044 0.063
Commscope MTC3975083 (3)	C	None		0.000	140'	No Ice 1/2" Ice 1" Ice	23.850 34.120 44.390	23.850 34.120 44.390	1.260 1.803 2.345
*									
*									
GPS_A	C	From Leg	3.000 0' 0'	0.000	50'	No Ice 1/2" Ice 1" Ice	0.255 0.320 0.393	0.255 0.320 0.393	0.001 0.005 0.010
Side Arm Mount [SO 305-1]	C	From Leg	1.500 0' 0'	0.000	50'	No Ice 1/2" Ice 1" Ice	0.530 0.780 1.060	1.520 2.070 2.660	0.030 0.044 0.064
*									
(4) L2x2x1/4 (RD)	A	From Leg	0.500 0' 0'	0.000	126'8" - 120'	No Ice 1/2" Ice 1" Ice	0.944 1.273 1.610	0.005 0.021 0.044	0.016 0.022 0.032

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(4) L2x2x1/4 (RD)	B	From Leg	0.500 0' 0'	0.000	126'8" - 120'	No Ice 1/2" Ice 1" Ice	0.944 1.273 1.610	0.005 0.021 0.044	0.016 0.022 0.032
(4) L2x2x1/4 (RD)	C	From Leg	0.500 0' 0'	0.000	126'8" - 120'	No Ice 1/2" Ice 1" Ice	0.944 1.273 1.610	0.005 0.021 0.044	0.016 0.022 0.032
(4) L2x2x1/4 (RH)	A	From Leg	0.500 0' 0'	0.000	126'8" - 120'	No Ice 1/2" Ice 1" Ice	0.825 1.115 1.412	0.005 0.021 0.044	0.014 0.019 0.028
(4) L2x2x1/4 (RH)	B	From Leg	0.500 0' 0'	0.000	126'8" - 120'	No Ice 1/2" Ice 1" Ice	0.825 1.115 1.412	0.005 0.021 0.044	0.014 0.019 0.028
(4) L2x2x1/4 (RH)	C	From Leg	0.500 0' 0'	0.000	126'8" - 120'	No Ice 1/2" Ice 1" Ice	0.825 1.115 1.412	0.005 0.021 0.044	0.014 0.019 0.028
*									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp

Comb. No.	Description
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	180 - 160	Leg	Max Tension	7	16.993	0.106	0.015
			Max. Compression	10	-25.622	-0.081	0.022
			Max. Mx	22	-1.750	1.134	-0.032
			Max. My	20	-1.991	0.005	1.170
			Max. Vy	6	1.054	-0.435	0.006
			Max. Vx	8	-1.090	-0.013	0.467
		Diagonal	Max Tension	25	4.761	0.000	0.000
			Max. Compression	24	-4.955	0.000	0.000
			Max. Mx	10	3.840	0.037	0.000
			Max. My	24	-2.485	0.004	-0.005
			Max. Vy	31	-0.023	0.034	0.000
			Max. Vx	24	0.001	0.000	0.000
		Top Girt	Max Tension	14	0.197	0.000	0.000
			Max. Compression	11	-0.125	0.000	0.000
			Max. Mx	26	0.082	-0.036	0.000
			Max. My	26	0.076	0.000	0.000
			Max. Vy	26	-0.022	0.000	0.000
			Max. Vx	26	-0.000	0.000	0.000
T2	160 - 155	Leg	Max Tension	7	24.925	-0.090	0.028
			Max. Compression	10	-34.110	0.076	0.030
			Max. Mx	22	23.327	0.110	-0.022
			Max. My	8	-4.815	-0.015	0.192
			Max. Vy	14	0.068	-0.098	0.011
			Max. Vx	8	-0.128	-0.015	0.192
		Diagonal	Max Tension	25	4.117	0.000	0.000
			Max. Compression	24	-4.261	0.000	0.000
			Max. Mx	31	0.557	0.015	0.002
			Max. My	24	-4.237	-0.001	-0.003
			Max. Vy	29	0.015	0.012	0.002
			Max. Vx	38	0.001	0.000	0.000
T3	155 - 150	Leg	Max Tension	7	31.920	-0.099	0.021
			Max. Compression	10	-41.898	0.123	0.032
			Max. Mx	10	-41.898	0.123	0.032

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	8	-5.082	-0.015	0.192
			Max. Vy	18	-0.036	0.123	-0.021
			Max. Vx	8	0.102	-0.015	0.192
		Diagonal	Max Tension	24	4.244	0.000	0.000
			Max. Compression	25	-4.156	0.000	0.000
			Max. Mx	27	0.961	0.019	0.002
			Max. My	8	3.359	0.012	0.003
			Max. Vy	27	-0.016	0.019	0.002
			Max. Vx	31	-0.001	0.000	0.000
T4	150 - 145	Leg	Max Tension	7	38.670	0.002	0.012
			Max. Compression	10	-51.517	-0.042	0.024
			Max. Mx	10	-51.436	0.123	0.032
			Max. My	8	-6.803	-0.026	0.229
			Max. Vy	18	0.060	0.123	-0.021
			Max. Vx	8	-0.102	-0.026	0.229
		Diagonal	Max Tension	25	5.119	0.000	0.000
			Max. Compression	24	-5.328	0.000	0.000
			Max. Mx	10	3.379	0.028	0.001
			Max. My	24	-5.318	-0.010	-0.005
			Max. Vy	27	-0.023	0.028	0.002
			Max. Vx	24	0.001	0.000	0.000
T5	145 - 140	Leg	Max Tension	7	47.055	-0.078	0.019
			Max. Compression	2	-60.941	0.055	-0.017
			Max. Mx	2	-60.879	0.296	0.003
			Max. My	8	-7.179	-0.026	0.229
			Max. Vy	10	-0.151	0.296	-0.005
			Max. Vx	8	0.154	-0.026	0.229
		Diagonal	Max Tension	12	5.243	0.000	0.000
			Max. Compression	24	-5.194	0.000	0.000
			Max. Mx	2	4.510	-0.039	-0.005
			Max. My	10	3.700	-0.039	-0.009
			Max. Vy	27	0.030	-0.037	0.006
			Max. Vx	10	0.002	0.000	0.000
		Secondary Horizontal	Max Tension	22	0.221	0.000	0.000
			Max. Compression	11	-0.176	0.004	0.003
			Max. Mx	34	0.087	0.019	0.001
			Max. My	6	-0.091	0.010	0.006
			Max. Vy	34	-0.023	0.019	0.001
			Max. Vx	6	-0.002	0.000	0.000
T6	140 - 133.333	Leg	Max Tension	7	55.904	-0.004	0.025
			Max. Compression	2	-71.958	-0.055	-0.020
			Max. Mx	14	53.525	-0.087	0.021
			Max. My	8	-8.479	-0.039	0.352
			Max. Vy	18	0.058	0.060	-0.019
			Max. Vx	8	-0.119	-0.039	0.352
		Diagonal	Max Tension	13	6.249	0.000	0.000
			Max. Compression	12	-6.446	0.000	0.000
			Max. Mx	27	1.098	-0.051	-0.003
			Max. My	24	-6.370	0.006	0.016
			Max. Vy	29	-0.037	-0.043	-0.004
			Max. Vx	24	-0.003	0.000	0.000
T7	133.333 - 126.667	Leg	Max Tension	7	67.268	-0.512	-0.001
			Max. Compression	2	-84.605	-0.501	-0.007
			Max. Mx	2	-84.511	0.683	0.000
			Max. My	8	-9.121	-0.102	0.440
			Max. Vy	10	0.362	0.683	-0.000
			Max. Vx	8	-0.219	-0.102	0.440
		Diagonal	Max Tension	13	6.361	-0.041	-0.005
			Max. Compression	12	-6.400	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	2	5.390	-0.060	-0.007
			Max. My	10	4.386	-0.060	-0.015
			Max. Vy	27	0.040	-0.059	-0.009
			Max. Vx	10	0.003	0.000	0.000
		Secondary Horizontal	Max Tension	8	0.471	0.012	-0.007
			Max. Compression	9	-0.379	0.009	0.007
			Max. Mx	31	0.122	0.026	0.001
			Max. My	11	0.363	0.007	-0.008
			Max. Vy	31	-0.026	0.026	0.001
			Max. Vx	10	-0.002	0.010	-0.008
T8	126.667 - 120	Leg	Max Tension	7	77.334	0.319	0.011
			Max. Compression	2	-95.576	-0.565	-0.011
			Max. Mx	10	-95.442	0.817	0.003
			Max. My	8	-9.616	-0.111	0.521
			Max. Vy	10	-0.443	0.817	0.003
			Max. Vx	8	-0.253	-0.111	0.521
		Diagonal	Max Tension	13	6.333	-0.044	-0.007
			Max. Compression	12	-6.684	0.000	0.000
			Max. Mx	27	1.014	-0.065	-0.009
			Max. My	8	-4.601	0.002	-0.017
			Max. Vy	29	-0.043	-0.057	-0.007
			Max. Vx	10	0.003	0.000	0.000
		Secondary Horizontal	Max Tension	8	0.616	0.018	-0.012
			Max. Compression	9	-0.501	0.014	0.013
			Max. Mx	31	0.129	0.038	0.003
			Max. My	6	-0.385	0.021	0.014
			Max. Vy	31	-0.035	0.038	0.003
			Max. Vx	6	-0.003	0.000	0.000
T9	120 - 113.333	Leg	Max Tension	7	87.630	-0.842	-0.000
			Max. Compression	10	-107.406	-0.742	0.015
			Max. Mx	10	-107.332	1.091	0.001
			Max. My	8	-10.339	-0.137	0.639
			Max. Vy	10	0.554	1.091	0.001
			Max. Vx	8	-0.296	-0.137	0.639
		Diagonal	Max Tension	13	6.532	-0.069	-0.011
			Max. Compression	12	-6.669	0.000	0.000
			Max. Mx	10	5.655	-0.096	0.003
			Max. My	10	-6.078	0.024	-0.023
			Max. Vy	27	0.055	-0.089	-0.011
			Max. Vx	10	-0.004	0.000	0.000
		Secondary Horizontal	Max Tension	8	0.788	0.017	-0.010
			Max. Compression	9	-0.640	0.017	0.011
			Max. Mx	32	0.107	0.040	0.003
			Max. My	6	-0.460	0.022	0.012
			Max. Vy	32	-0.036	0.040	0.003
			Max. Vx	6	-0.003	0.000	0.000
T10	113.333 - 106.667	Leg	Max Tension	7	97.023	-0.830	-0.001
			Max. Compression	10	-117.864	-0.515	0.029
			Max. Mx	10	-117.830	1.068	-0.001
			Max. My	8	-10.608	-0.137	0.639
			Max. Vy	10	-0.578	1.068	-0.001
			Max. Vx	8	0.275	-0.137	0.639
		Diagonal	Max Tension	13	6.540	-0.072	-0.003
			Max. Compression	12	-6.926	0.000	0.000
			Max. Mx	10	5.212	-0.102	0.008
			Max. My	10	3.718	-0.102	-0.022
			Max. Vy	27	0.058	-0.098	-0.013

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	10	0.004	0.000	0.000
		Secondary Horizontal	Max Tension	8	0.712	0.023	-0.009
			Max. Compression	9	-0.564	0.015	0.011
			Max. Mx	31	0.167	0.047	0.002
			Max. My	8	-0.544	0.021	0.011
			Max. Vy	31	-0.038	0.047	0.002
			Max. Vx	8	-0.002	0.000	0.000
T11	106.667 - 100	Leg	Max Tension	7	106.721	0.299	0.019
			Max. Compression	10	-129.298	3.889	0.049
			Max. Mx	10	-129.298	3.889	0.049
			Max. My	8	-11.374	-0.122	0.344
			Max. Vy	10	-0.697	3.889	0.049
			Max. Vx	8	0.116	-0.122	0.344
		Diagonal	Max Tension	12	6.425	0.000	0.000
			Max. Compression	12	-6.345	0.000	0.000
			Max. Mx	27	1.516	-0.093	-0.011
			Max. My	8	4.623	-0.067	-0.016
			Max. Vy	29	-0.061	-0.090	0.011
			Max. Vx	30	0.004	0.000	0.000
T12	100 - 80	Leg	Max Tension	7	132.717	-2.804	0.020
			Max. Compression	10	-159.896	2.778	0.061
			Max. Mx	10	-139.103	3.889	0.049
			Max. My	8	-13.840	-0.030	0.391
			Max. Vy	18	0.332	3.837	-0.028
			Max. Vx	8	-0.125	-0.030	0.391
		Diagonal	Max Tension	12	7.120	0.000	0.000
			Max. Compression	12	-7.032	0.000	0.000
			Max. Mx	27	1.393	-0.138	0.017
			Max. My	10	-6.200	-0.042	-0.025
			Max. Vy	29	-0.083	-0.136	-0.017
			Max. Vx	37	-0.005	0.000	0.000
T13	80 - 60	Leg	Max Tension	7	155.902	-3.092	0.053
			Max. Compression	10	-187.450	1.286	0.081
			Max. Mx	6	152.552	-3.112	0.053
			Max. My	8	-15.956	-0.247	0.667
			Max. Vy	18	0.249	3.064	-0.051
			Max. Vx	8	-0.147	-0.052	0.540
		Diagonal	Max Tension	12	8.429	0.000	0.000
			Max. Compression	12	-8.423	0.000	0.000
			Max. Mx	29	1.472	-0.183	0.022
			Max. My	10	-7.747	-0.032	-0.026
			Max. Vy	29	-0.091	-0.183	0.022
			Max. Vx	30	0.005	0.000	0.000
T14	60 - 40	Leg	Max Tension	7	178.468	2.331	0.022
			Max. Compression	10	-214.961	1.388	0.065
			Max. Mx	10	-214.937	9.208	-0.007
			Max. My	8	-16.900	-0.739	0.859
			Max. Vy	10	-2.677	9.208	-0.007
			Max. Vx	8	0.279	-0.739	0.859
		Diagonal	Max Tension	13	9.046	-0.149	0.005
			Max. Compression	12	-9.893	0.000	0.000
			Max. Mx	29	1.115	-0.254	-0.035
			Max. My	31	-2.754	-0.226	-0.040
			Max. Vy	29	-0.118	-0.254	-0.035
			Max. Vx	31	-0.007	0.000	0.000
		Secondary Horizontal	Max Tension	10	2.469	0.060	-0.000
			Max. Compression	7	-1.899	0.046	0.010
			Max. Mx	32	0.325	0.121	0.010
			Max. My	8	-1.718	0.059	0.012

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	32	-0.067	0.121	0.010
			Max. Vx	28	0.003	0.000	0.000
T15	40 - 30	Leg	Max Tension	7	190.682	-2.072	0.039
			Max. Compression	10	-230.629	1.063	0.051
			Max. Mx	37	15.834	-2.294	-0.029
			Max. My	8	-19.928	-0.178	0.931
			Max. Vy	33	-0.365	-2.285	0.017
			Max. Vx	8	-0.141	-0.178	0.931
		Diagonal	Max Tension	12	9.033	0.000	0.000
			Max. Compression	12	-9.126	0.000	0.000
			Max. Mx	29	0.566	-0.334	-0.040
			Max. My	37	-2.705	-0.301	0.043
			Max. Vy	29	-0.144	-0.334	-0.040
			Max. Vx	37	-0.008	0.000	0.000
T16	30 - 20	Leg	Max Tension	7	200.829	-1.320	0.033
			Max. Compression	10	-243.457	-0.548	-0.030
			Max. Mx	10	-243.383	10.000	-0.002
			Max. My	8	-20.722	-0.178	0.931
			Max. Vy	27	2.296	-6.976	0.010
			Max. Vx	8	0.251	-0.178	0.931
		Diagonal	Max Tension	13	9.767	-0.223	0.017
			Max. Compression	12	-10.612	0.000	0.000
			Max. Mx	27	2.197	-0.332	-0.048
			Max. My	31	1.739	-0.330	-0.052
			Max. Vy	29	-0.147	-0.332	0.046
			Max. Vx	31	0.008	0.000	0.000
		Secondary Horizontal	Max Tension	10	2.316	0.092	-0.000
			Max. Compression	7	-1.806	0.070	0.013
			Max. Mx	30	1.224	0.162	0.011
			Max. My	6	-1.750	0.093	0.015
			Max. Vy	30	-0.082	0.162	0.011
			Max. Vx	28	0.003	0.000	0.000
T17	20 - 0	Leg	Max Tension	7	223.781	-3.626	0.054
			Max. Compression	10	-272.485	0.000	-0.000
			Max. Mx	27	-100.195	9.554	-0.002
			Max. My	8	-23.033	-0.208	1.326
			Max. Vy	27	-1.665	-6.976	0.010
			Max. Vx	8	-0.249	-0.208	1.326
		Diagonal	Max Tension	13	9.759	0.000	0.000
			Max. Compression	12	-10.147	0.000	0.000
			Max. Mx	29	-1.178	0.273	0.028
			Max. My	30	5.476	0.179	0.034
			Max. Vy	29	0.100	0.273	0.028
			Max. Vx	30	-0.005	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	277.255	25.209	-15.284
	Max. H_x	18	277.255	25.209	-15.284
	Max. H_z	7	-229.156	-21.133	12.914
	Min. Vert	7	-229.156	-21.133	12.914
	Min. H_x	7	-229.156	-21.133	12.914
	Min. H_z	18	277.255	25.209	-15.284

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg B	Max. Vert	10	279.298	-24.847	-15.678
	Max. H_x	23	-226.517	20.726	13.231
	Max. H_z	23	-226.517	20.726	13.231
	Min. Vert	23	-226.517	20.726	13.231
	Min. H_x	10	279.298	-24.847	-15.678
	Min. H_z	10	279.298	-24.847	-15.678
Leg A	Max. Vert	2	276.989	0.632	28.930
	Max. H_x	20	25.135	4.845	1.921
	Max. H_z	2	276.989	0.632	28.930
	Min. Vert	15	-222.746	-0.588	-24.114
	Min. H_x	9	18.260	-4.801	1.393
	Min. H_z	15	-222.746	-0.588	-24.114

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	58.371	0.000	-0.000	-23.903	-25.489	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	70.045	-0.044	-46.010	-5022.416	-23.890	23.947
0.9 Dead+1.0 Wind 0 deg - No Ice	52.534	-0.044	-46.010	-5015.245	-16.244	23.947
1.2 Dead+1.0 Wind 30 deg - No Ice	70.045	22.141	-38.441	-4231.296	-2449.165	10.912
0.9 Dead+1.0 Wind 30 deg - No Ice	52.534	22.141	-38.441	-4224.125	-2441.519	10.912
1.2 Dead+1.0 Wind 60 deg - No Ice	70.045	38.482	-22.220	-2455.587	-4233.988	-24.699
0.9 Dead+1.0 Wind 60 deg - No Ice	52.534	38.482	-22.220	-2448.416	-4226.342	-24.699
1.2 Dead+1.0 Wind 90 deg - No Ice	70.045	44.696	0.044	-21.987	-4907.050	-51.738
0.9 Dead+1.0 Wind 90 deg - No Ice	52.534	44.696	0.044	-14.816	-4899.404	-51.738
1.2 Dead+1.0 Wind 120 deg - No Ice	70.045	40.499	23.436	2505.163	-4405.825	-44.291
0.9 Dead+1.0 Wind 120 deg - No Ice	52.534	40.499	23.436	2512.333	-4398.178	-44.291
1.2 Dead+1.0 Wind 150 deg - No Ice	70.045	22.620	39.183	4259.858	-2506.509	-37.132
0.9 Dead+1.0 Wind 150 deg - No Ice	52.534	22.620	39.183	4267.029	-2498.862	-37.132
1.2 Dead+1.0 Wind 180 deg - No Ice	70.045	0.044	43.353	4750.246	-37.283	-23.947
0.9 Dead+1.0 Wind 180 deg - No Ice	52.534	0.044	43.353	4757.417	-29.636	-23.947
1.2 Dead+1.0 Wind 210 deg - No Ice	70.045	-22.141	38.441	4173.929	2387.993	-10.912
0.9 Dead+1.0 Wind 210 deg - No Ice	52.534	-22.141	38.441	4181.100	2395.639	-10.912
1.2 Dead+1.0 Wind 240 deg - No Ice	70.045	-40.783	23.549	2505.622	4358.841	24.699
0.9 Dead+1.0 Wind 240 deg - No Ice	52.534	-40.783	23.549	2512.793	4366.488	24.699
1.2 Dead+1.0 Wind 270 deg - No Ice	70.045	-44.696	-0.044	-35.380	4845.878	51.738

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.0 Wind 270 deg - No Ice	52.534	-44.696	-0.044	-28.209	4853.524	51.738
1.2 Dead+1.0 Wind 300 deg - No Ice	70.045	-38.199	-22.107	-2455.127	4158.627	44.291
0.9 Dead+1.0 Wind 300 deg - No Ice	52.534	-38.199	-22.107	-2447.957	4166.273	44.291
1.2 Dead+1.0 Wind 330 deg - No Ice	70.045	-22.620	-39.183	-4317.225	2445.336	37.132
0.9 Dead+1.0 Wind 330 deg - No Ice	52.534	-22.620	-39.183	-4310.054	2452.982	37.132
1.2 Dead+1.0 Ice+1.0 Temp	128.144	0.000	-0.000	-86.618	-59.699	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	128.144	-0.009	-11.205	-1314.397	-58.459	6.813
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	128.144	5.356	-9.295	-1113.193	-650.962	2.154
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	128.144	9.170	-5.295	-672.458	-1074.406	-6.175
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	128.144	10.827	0.009	-85.377	-1253.490	-12.349
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	128.144	9.786	5.660	532.907	-1130.269	-12.118
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	128.144	5.519	9.560	968.093	-668.638	-9.145
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	128.144	0.009	10.800	1109.145	-60.939	-6.813
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	128.144	-5.356	9.295	939.957	531.564	-2.154
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	128.144	-9.521	5.497	515.230	982.735	6.175
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	128.144	-10.827	-0.009	-87.858	1134.092	12.349
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	128.144	-9.435	-5.458	-690.134	983.144	12.118
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	128.144	-5.519	-9.560	-1141.329	549.240	9.145
Dead+Wind 0 deg - Service	58.371	-0.011	-11.806	-1301.071	-23.784	6.131
Dead+Wind 30 deg - Service	58.371	5.683	-9.867	-1098.879	-644.141	2.818
Dead+Wind 60 deg - Service	58.371	9.877	-5.703	-644.674	-1100.666	-6.254
Dead+Wind 90 deg - Service	58.371	11.471	0.011	-22.198	-1272.800	-13.153
Dead+Wind 120 deg - Service	58.371	10.391	6.013	624.096	-1144.416	-11.276
Dead+Wind 150 deg - Service	58.371	5.805	10.055	1072.951	-658.740	-9.474
Dead+Wind 180 deg - Service	58.371	0.011	11.129	1198.576	-27.194	-6.131
Dead+Wind 210 deg - Service	58.371	-5.683	9.867	1051.074	593.163	-2.818
Dead+Wind 240 deg - Service	58.371	-10.463	6.041	624.213	1097.051	6.254
Dead+Wind 270 deg - Service	58.371	-11.471	-0.011	-25.608	1221.822	13.153
Dead+Wind 300 deg - Service	58.371	-9.805	-5.674	-644.557	1046.076	11.276
Dead+Wind 330 deg - Service	58.371	-5.805	-10.055	-1120.757	607.763	9.474

Solution Summary

Load Comb.	Sum of Applied Forces PX	PY	PZ	Sum of Reactions PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-58.371	0.000	-0.000	58.371	0.000	0.000%
2	-0.044	-70.045	-46.010	0.044	70.045	46.010	0.000%
3	-0.044	-52.534	-46.010	0.044	52.534	46.010	0.000%
4	22.141	-70.045	-38.441	-22.141	70.045	38.441	0.000%
5	22.141	-52.534	-38.441	-22.141	52.534	38.441	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
6	38.482	-70.045	-22.220	-38.482	70.045	22.220	0.000%
7	38.482	-52.534	-22.220	-38.482	52.534	22.220	0.000%
8	44.696	-70.045	0.044	-44.696	70.045	-0.044	0.000%
9	44.696	-52.534	0.044	-44.696	52.534	-0.044	0.000%
10	40.499	-70.045	23.436	-40.499	70.045	-23.436	0.000%
11	40.499	-52.534	23.436	-40.499	52.534	-23.436	0.000%
12	22.620	-70.045	39.183	-22.620	70.045	-39.183	0.000%
13	22.620	-52.534	39.183	-22.620	52.534	-39.183	0.000%
14	0.044	-70.045	43.353	-0.044	70.045	-43.353	0.000%
15	0.044	-52.534	43.353	-0.044	52.534	-43.353	0.000%
16	-22.141	-70.045	38.441	22.141	70.045	-38.441	0.000%
17	-22.141	-52.534	38.441	22.141	52.534	-38.441	0.000%
18	-40.783	-70.045	23.549	40.783	70.045	-23.549	0.000%
19	-40.783	-52.534	23.549	40.783	52.534	-23.549	0.000%
20	-44.696	-70.045	-0.044	44.696	70.045	0.044	0.000%
21	-44.696	-52.534	-0.044	44.696	52.534	0.044	0.000%
22	-38.199	-70.045	-22.107	38.199	70.045	22.107	0.000%
23	-38.199	-52.534	-22.107	38.199	52.534	22.107	0.000%
24	-22.620	-70.045	-39.183	22.620	70.045	39.183	0.000%
25	-22.620	-52.534	-39.183	22.620	52.534	39.183	0.000%
26	0.000	-128.144	0.000	-0.000	128.144	0.000	0.000%
27	-0.009	-128.144	-11.205	0.009	128.144	11.205	0.000%
28	5.356	-128.144	-9.295	-5.356	128.144	9.295	0.000%
29	9.170	-128.144	-5.295	-9.170	128.144	5.295	0.000%
30	10.827	-128.144	0.009	-10.827	128.144	-0.009	0.000%
31	9.786	-128.144	5.660	-9.786	128.144	-5.660	0.000%
32	5.519	-128.144	9.560	-5.519	128.144	-9.560	0.000%
33	0.009	-128.144	10.800	-0.009	128.144	-10.800	0.000%
34	-5.356	-128.144	9.295	5.356	128.144	-9.295	0.000%
35	-9.521	-128.144	5.497	9.521	128.144	-5.497	0.000%
36	-10.827	-128.144	-0.009	10.827	128.144	0.009	0.000%
37	-9.435	-128.144	-5.458	9.435	128.144	5.458	0.000%
38	-5.519	-128.144	-9.560	5.519	128.144	9.560	0.000%
39	-0.011	-58.371	-11.806	0.011	58.371	11.806	0.000%
40	5.683	-58.371	-9.867	-5.683	58.371	9.867	0.000%
41	9.877	-58.371	-5.703	-9.877	58.371	5.703	0.000%
42	11.471	-58.371	0.011	-11.471	58.371	-0.011	0.000%
43	10.391	-58.371	6.013	-10.391	58.371	-6.013	0.000%
44	5.805	-58.371	10.055	-5.805	58.371	-10.055	0.000%
45	0.011	-58.371	11.129	-0.011	58.371	-11.129	0.000%
46	-5.683	-58.371	9.867	5.683	58.371	-9.867	0.000%
47	-10.463	-58.371	6.041	10.463	58.371	-6.041	0.000%
48	-11.471	-58.371	-0.011	11.471	58.371	0.011	0.000%
49	-9.805	-58.371	-5.674	9.805	58.371	5.674	0.000%
50	-5.805	-58.371	-10.055	5.805	58.371	10.055	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	4.118	43	0.249	0.025
T2	160 - 155	3.103	39	0.221	0.024
T3	155 - 150	2.868	39	0.213	0.023
T4	150 - 145	2.644	39	0.204	0.021
T5	145 - 140	2.429	39	0.193	0.020

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T6	140 - 133.333	2.230	39	0.180	0.019
T7	133.333 - 126.667	1.981	43	0.167	0.018
T8	126.667 - 120	1.754	43	0.151	0.017
T9	120 - 113.333	1.549	43	0.135	0.015
T10	113.333 - 106.667	1.365	43	0.121	0.014
T11	106.667 - 100	1.202	43	0.106	0.013
T12	100 - 80	1.055	43	0.098	0.012
T13	80 - 60	0.675	43	0.075	0.009
T14	60 - 40	0.384	43	0.056	0.007
T15	40 - 30	0.180	43	0.036	0.005
T16	30 - 20	0.109	43	0.026	0.004
T17	20 - 0	0.058	43	0.016	0.003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
182'	19" Accelerator	43	4.118	0.249	0.025	109676
180'	Lightning Rod 5/8" x 6'	43	4.118	0.249	0.025	109676
178'	(2) LPA-80080/6CF w/ Mount Pipe	43	4.014	0.246	0.025	109676
165'	7770.00 w/ Mount Pipe	39	3.347	0.229	0.025	36559
150'	AIR6449 B41_T-MOBILE	39	2.644	0.204	0.021	28867
140'	MX08FRO665-20 w/ Mount Pipe	39	2.230	0.180	0.019	27103
126'8"	(4) L2x2x1/4 (RD)	43	1.754	0.151	0.017	24641
123'4"	(4) L2x2x1/4 (RD)	43	1.649	0.143	0.016	24504
120'	(4) L2x2x1/4 (RD)	43	1.549	0.135	0.015	24325
50'	GPS_A	43	0.272	0.046	0.006	56917

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	15.973	10	0.953	0.098
T2	160 - 155	12.052	10	0.856	0.094
T3	155 - 150	11.143	10	0.825	0.090
T4	150 - 145	10.274	10	0.789	0.084
T5	145 - 140	9.444	10	0.746	0.079
T6	140 - 133.333	8.672	10	0.698	0.076
T7	133.333 - 126.667	7.708	10	0.645	0.071
T8	126.667 - 120	6.826	10	0.586	0.066
T9	120 - 113.333	6.028	10	0.524	0.061
T10	113.333 - 106.667	5.314	10	0.470	0.057
T11	106.667 - 100	4.679	10	0.413	0.053
T12	100 - 80	4.105	10	0.382	0.048
T13	80 - 60	2.629	10	0.293	0.037
T14	60 - 40	1.496	10	0.217	0.027
T15	40 - 30	0.700	10	0.139	0.019
T16	30 - 20	0.423	10	0.102	0.015
T17	20 - 0	0.229	19	0.064	0.012

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
182'	19" Accelerator	10	15.973	0.953	0.098	30797
180'	Lightning Rod 5/8" x 6'	10	15.973	0.953	0.098	30797
178'	(2) LPA-80080/6CF w/ Mount Pipe	10	15.570	0.944	0.098	30797
165'	7770.00 w/ Mount Pipe	10	12.998	0.883	0.097	10265
150'	AIR6449 B41_T-MOBILE	10	10.274	0.789	0.084	7549
140'	MX08FRO665-20 w/ Mount Pipe	10	8.672	0.698	0.076	7062
126'8"	(4) L2x2x1/4 (RD)	10	6.826	0.586	0.066	6404
123'4"	(4) L2x2x1/4 (RD)	10	6.416	0.555	0.063	6356
120'	(4) L2x2x1/4 (RD)	10	6.028	0.524	0.061	6296
50'	GPS_A	10	1.057	0.178	0.022	14631

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	180	Leg	A325N	0.625	4	4.248	20.340	0.209 ✔	1.05	Bolt Tension
		Diagonal	A325X	0.500	1	4.761	7.504	0.634 ✔	1.05	Gusset Bearing
		Top Girt	A325N	0.500	1	0.197	4.133	0.048 ✔	1.05	Member Bearing
T2	160	Diagonal	A325N	0.500	1	4.117	6.199	0.664 ✔	1.05	Member Bearing
T3	155	Diagonal	A325N	0.500	1	4.244	6.199	0.685 ✔	1.05	Member Bearing
T4	150	Diagonal	A325X	0.500	1	5.119	7.504	0.682 ✔	1.05	Gusset Bearing
T5	145	Leg	A325N	0.750	4	11.764	30.101	0.391 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.500	1	5.243	7.504	0.699 ✔	1.05	Gusset Bearing
		Secondary Horizontal	A325X	0.625	1	1.057	7.178	0.147 ✔	1.05	Gusset Bearing
T6	140	Diagonal	A325N	0.500	2	3.125	11.011	0.284 ✔	1.05	Member Block Shear
T7	133.333	Diagonal	A325N	0.500	2	3.181	11.011	0.289 ✔	1.05	Member Block Shear
		Secondary Horizontal	A325X	0.625	1	1.467	12.492	0.117 ✔	1.05	Member Block Shear
T8	126.667	Leg	A325N	0.875	4	19.311	41.556	0.465 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.500	2	3.166	11.011	0.288 ✔	1.05	Member Block Shear
		Secondary Horizontal	A325N	0.625	1	1.658	10.440	0.159 ✔	1.05	Member Bearing
T9	120	Diagonal	A325N	0.500	2	3.266	13.050	0.250 ✔	1.05	Member Block Shear
		Secondary Horizontal	A325N	0.625	1	1.863	10.440	0.178 ✔	1.05	Member Bearing
T10	113.333	Diagonal	A325N	0.500	2	3.270	13.050	0.251 ✔	1.05	Member Block Shear
		Secondary Horizontal	A325N	0.625	1	2.044	10.440	0.196 ✔	1.05	Member Bearing

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T11	106.667	Leg	A325N	0.875	4	26.680	41.556	0.642 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.500	2	3.212	13.050	0.246 ✔	1.05	Member Block Shear
T12	100	Leg	A325N	1.000	4	33.179	54.517	0.609 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.500	2	3.560	14.070	0.253 ✔	1.05	Member Block Shear
T13	80	Leg	A325N	1.000	4	38.975	54.517	0.715 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	8.429	13.920	0.606 ✔	1.05	Gusset Bearing
T14	60	Leg	A325N	1.000	6	29.691	54.517	0.545 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	9.046	13.920	0.650 ✔	1.05	Gusset Bearing
		Secondary Horizontal	A325N	0.625	1	3.728	10.440	0.357 ✔	1.05	Member Bearing
T15	40	Diagonal	A325N	0.625	1	9.033	13.920	0.649 ✔	1.05	Gusset Bearing
T16	30	Leg	A325N	1.000	6	33.421	54.517	0.613 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	9.767	13.920	0.702 ✔	1.05	Gusset Bearing
		Secondary Horizontal	A325N	0.625	1	4.222	10.440	0.404 ✔	1.05	Member Bearing
T17	20	Diagonal	A325N	0.625	2	4.879	13.025	0.375 ✔	1.05	Member Block Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $P_u / \phi P_n$
T1	180 - 160	ROHN 2 STD	20'	4'	61.0 K=1.00	1.075	-25.622	36.842	0.695 [1] ✔
T2	160 - 155	ROHN 2.5 EH	5'3/32"	5'3/32"	65.0 K=1.00	2.254	-34.110	74.429	0.458 [1] ✔
T3	155 - 150	ROHN 2.5 EH	5'3/32"	5'3/32"	65.0 K=1.00	2.254	-41.898	74.427	0.563 [1] ✔
T4	150 - 145	ROHN 2.5 EH	5'3/32"	5'3/32"	65.0 K=1.00	2.254	-51.517	74.427	0.692 [1] ✔
T5	145 - 140	ROHN 2.5 EH	5'3/32"	2'6-31/32"	33.5 K=1.00	2.254	-60.941	93.410	0.652 [1] ✔
T6	140 - 133.333	ROHN 3 EH	6'8-1/8"	6'8-1/8"	70.5 K=1.00	3.016	-71.958	94.342	0.763 [1] ✔
T7	133.333 - 126.667	ROHN 3 EH	6'8-1/8"	3'5-15/32"	36.5 K=1.00	3.016	-84.605	123.118	0.687 [1] ✔
T8	126.667 - 120	ROHN 3 EH	6'8-1/8"	3'5-3/8"	18.2 K=0.50	3.016	-95.576	132.466	0.722 [1] ✔
T9	120 - 113.333	ROHN 3.5 EH	6'8-1/8"	3'5-5/16"	31.6 K=1.00	3.678	-107.406	153.863	0.698 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T10	113.333 - 106.667	ROHN 3.5 EH	6'8-1/8"	3'5-1/4"	31.6 K=1.00	3.678	-117.864	153.899	0.766 [1] ✔
T11	106.667 - 100	BT100140- Rohn 3.5EH w/ 2" SR	6'8-1/8"	6'8-1/8"	61.4 K=0.78	6.820	-129.298	232.935	0.555 [1] ✔
T12	100 - 80	BT100140- Rohn 4EH w/ 2" SR	20'7/16"	6'8-5/32"	54.6 K=0.80	7.549	-159.896	273.092	0.586 [1] ✔
T13	80 - 60	BT100140- Rohn 5EH w/ 2" SR (60-80)	20'13/32"	10'7/32"	65.5 K=0.83	9.253	-187.450	304.198	0.616 [1] ✔
T14	60 - 40	BT100140- Rohn 5EH w/ 2" SR (40-60)	20'7/16"	5'1-13/16"	34.5 K=0.85	9.253	-214.961	381.660	0.563 [1] ✔
T15	40 - 30	BT100140- Rohn 6EHS w/ 2" SR (30-40)	10'7/32"	10'7/32"	55.0 K=0.85	9.855	-230.629	355.524	0.649 [1] ✔
T16	30 - 20	BT100140- Rohn 6EHS w/ 2" SR (20-30)	10'7/32"	5'1-19/32"	28.2 K=0.85	9.855	-243.457	418.472	0.582 [1] ✔
T17	20 - 0	BT100140- Rohn 6EH w/ 2" SR	20'13/32"	10'7/32"	55.0 K=0.87	11.547	-272.485	416.534	0.654 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L2x2x1/4	7'8-3/16"	3'7-15/32"	113.4 K=1.02	0.938	-4.955	20.877	0.237 [1] ✔
T2	160 - 155	L1 3/4x1 3/4x3/16	8'5-7/16"	4'1-9/16"	144.3 K=1.00	0.621	-4.261	8.534	0.499 [1] ✔
T3	155 - 150	L1 3/4x1 3/4x3/16	8'10-7/16"	4'4-3/32"	151.7 K=1.00	0.621	-4.156	7.728	0.538 [1] ✔
T4	150 - 145	L2x2x1/4	9'3-9/16"	4'6-5/8"	139.7 K=1.00	0.938	-5.328	13.748	0.388 [1] ✔
T5	145 - 140	2L1 3/4x1 3/4x3/16x3/16	9'8-25/32"	4'10-1/2"	185.2 K=1.00	1.242	-5.194	10.250	0.507 [1] ✔
T6	140 - 133.333	2L 'a' > 28.068 in - 70 2L2x2x3/16x1/2	11'1-7/8"	5'5-9/32"	105.8 K=1.00	1.430	-6.446	32.698	0.197 [1] ✔
T7	133.333 - 126.667	2L 'a' > 31.235 in - 81 2L2x2x3/16x1/2	11'8-15/32"	5'10-9/16"	114.3 K=1.00	1.430	-6.400	29.769	0.215 [1] ✔
T8	126.667 - 120	2L 'a' > 33.766 in - 90 2L2x2x3/16x1/2	12'3-7/32"	6'1-15/16"	119.8 K=1.00	1.430	-6.684	27.776	0.241 [1] ✔
T9	120 - 113.333	2L 'a' > 35.377 in - 102 2L2 1/2x2 1/2x3/16x1/2	12'10-1/8"	6'5-3/32"	100.2 K=1.00	1.805	-6.669	41.764	0.160 [1] ✔
T10	113.333 - 106.667	2L 'a' > 36.772 in - 114 2L2 1/2x2 1/2x3/16x1/2	13'5-5/32"	6'8-5/8"	104.8 K=1.00	1.805	-6.926	39.969	0.173 [1] ✔
		2L 'a' > 38.454 in - 126							

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	106.667 - 100	2L2 1/2x2 1/2x3/16x1/2	14'5/16"	6'10-3/16"	106.8 K=1.00	1.805	-6.345	39.141	0.162 [1] ✔
T12	100 - 80	2L 'a' > 39.199 in - 138 2L3x3x3/16x1/2	15'10-21/32"	7'9-5/32"	101.9 K=1.00	2.180	-7.032	46.595	0.151 [1] ✔
T13	80 - 60	2L 'a' > 44.357 in - 147 2L3x3x3/16x1/4	19'1-3/16"	9'5-7/16"	127.6 K=1.00	2.180	-8.423	34.378	0.245 [1] ✔
T14	60 - 40	2L 'a' > 54.001 in - 168 2L3x3x1/4x1/4	20'10-5/8"	10'5-11/16"	141.5 K=1.00	2.875	-9.481	39.600	0.239 [1] ✔
T15	40 - 30	2L 'a' > 60.029 in - 183 2L3 1/2x3 1/2x1/4x1/4	21'9-15/32"	10'8-31/32"	125.0 K=1.00	3.375	-9.126	57.513	0.159 [1] ✔
T16	30 - 20	2L 'a' > 61.473 in - 204 2L3 1/2x3 1/2x1/4x1/4	22'8-1/4"	11'3-25/32"	131.6 K=1.00	3.375	-10.612	52.338	0.203 [1] ✔
T17	20 - 0	2L 'a' > 64.727 in - 213 L4x4x1/4	24'6"	12'9/32"	166.9 K=0.92	1.940	-10.147	19.935	0.509 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T5	145 - 140	L2x2x1/4	8'4-3/32"	4'19/32"	124.3 K=1.00	0.938	-1.057	17.377	0.061 [1] ✔
T7	133.333 - 126.667	L2x2x1/4	9'7-9/32"	4'7-29/32"	143.0 K=1.00	0.938	-1.467	13.136	0.112 [1] ✔
T8	126.667 - 120	L2 1/2x2 1/2x1/4	10'3-7/16"	4'11-31/32"	122.1 K=1.00	1.190	-1.658	22.748	0.073 [1] ✔
T9	120 - 113.333	L2 1/2x2 1/2x1/4	10'11-19/32"	5'3-25/32"	129.9 K=1.00	1.190	-1.863	20.180	0.092 [1] ✔
T10	113.333 - 106.667	L2 1/2x2 1/2x1/4	11'7-3/4"	5'7-7/8"	138.2 K=1.00	1.190	-2.044	17.822	0.115 [1] ✔
T14	60 - 40	L3x3x1/4	18'3-13/16"	8'11-1/8"	181.0 K=1.00	1.440	-3.728	12.586	0.296 [1] ✔
T16	30 - 20	L3 1/2x3 1/2x1/4	20'4-3/16"	9'10-25/32"	171.2 K=1.00	1.690	-4.222	16.511	0.256 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L2x2x1/8	6'6-1/4"	6'1-3/8"	184.6 K=1.00	0.484	-0.125	4.070	0.031 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	ROHN 2 STD	20'	4'	61.0	1.075	16.993	48.354	0.351 [1] ✔
T2	160 - 155	ROHN 2.5 EH	5'3/32"	5'3/32"	65.0	2.254	24.925	101.409	0.246 [1] ✔
T3	155 - 150	ROHN 2.5 EH	5'3/32"	5'3/32"	65.0	2.254	31.920	101.409	0.315 [1] ✔
T4	150 - 145	ROHN 2.5 EH	5'3/32"	5'3/32"	65.0	2.254	38.670	101.409	0.381 [1] ✔
T5	145 - 140	ROHN 2.5 EH	5'3/32"	2'6-31/32"	33.5	2.254	47.055	101.409	0.464 [1] ✔
T6	140 - 133.333	ROHN 3 EH	6'8-1/8"	6'8-1/8"	70.5	3.016	55.904	135.717	0.412 [1] ✔
T7	133.333 - 126.667	ROHN 3 EH	6'8-1/8"	3'2-21/32"	34.0	3.016	67.268	135.717	0.496 [1] ✔
T8	126.667 - 120	ROHN 3 EH	6'8-1/8"	3'2-3/4"	34.1	3.016	77.334	135.717	0.570 [1] ✔
T9	120 - 113.333	ROHN 3.5 EH	6'8-1/8"	3'2-27/32"	29.7	3.678	87.630	165.529	0.529 [1] ✔
T10	113.333 - 106.667	ROHN 3.5 EH	6'8-1/8"	3'2-29/32"	29.8	3.678	97.023	165.529	0.586 [1] ✔
T11	106.667 - 100	BT100140- Rohn 3.5EH w/ 2" SR	6'8-1/8"	6'8-1/8"	78.7	6.820	106.721	306.900	0.348 [1] ✔
T12	100 - 80	BT100140- Rohn 4EH w/ 2" SR	20'7/16"	6'8-5/32"	68.3	7.549	132.717	339.705	0.391 [1] ✔
T13	80 - 60	BT100140- Rohn 5EH w/ 2" SR (60-80)	20'13/32"	10'7/32"	78.9	9.253	155.902	416.385	0.374 [1] ✔
T14	60 - 40	BT100140- Rohn 5EH w/ 2" SR (40-60)	20'7/16"	4'10-13/32"	38.4	9.253	178.438	416.385	0.429 [1] ✔
T15	40 - 30	BT100140- Rohn 6EHS w/ 2" SR (30-40)	10'7/32"	10'7/32"	64.7	9.855	190.682	443.471	0.430 [1] ✔
T16	30 - 20	BT100140- Rohn 6EHS w/ 2" SR (20-30)	10'7/32"	4'10-5/8"	31.5	9.855	200.829	443.471	0.453 [1] ✔
T17	20 - 0	BT100140- Rohn 6EH w/ 2" SR	20'13/32"	10'7/32"	63.6	11.547	223.781	519.615	0.431 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L2x2x1/4	7'8-3/16"	3'7-15/32"	73.4	0.586	4.761	28.583	0.167 [1] ✔
T2	160 - 155	L1 3/4x1 3/4x3/16	8'5-7/16"	4'1-9/16"	94.6	0.378	4.117	16.440	0.250 [1] ✔
T3	155 - 150	L1 3/4x1 3/4x3/16	8'10-7/16"	4'4-3/32"	99.3	0.378	4.244	16.440	0.258 [1] ✔
T4	150 - 145	L2x2x1/4	9'3-9/16"	4'6-5/8"	91.8	0.586	5.119	28.583	0.179 [1] ✔
T5	145 - 140	2L1 3/4x1 3/4x3/16x3/16	9'8-25/32"	4'10-1/2"	109.0	0.756	5.243	32.880	0.159 [1] ✔
T6	140 - 133.333	2L 'a' > 28.068 in - 70 2L2x2x3/16x1/2	11'1-7/8"	5'5-9/32"	109.0	0.896	6.249	38.997	0.160 [1] ✔
T7	133.333 - 126.667	2L 'a' > 31.235 in - 82 2L2x2x3/16x1/2	11'8-15/32"	5'10-9/16"	114.3	0.896	6.361	38.997	0.163 [1] ✔
T8	126.667 - 120	2L 'a' > 33.766 in - 91 2L2x2x3/16x1/2	12'3-7/32"	6'1-15/16"	119.8	0.896	6.333	38.997	0.162 [1] ✔
T9	120 - 113.333	2L 'a' > 35.377 in - 103 2L2 1/2x2 1/2x3/16x1/2	12'10-1/8"	6'5-3/32"	99.1	1.178	6.532	51.231	0.128 [1] ✔
T10	113.333 - 106.667	2L 'a' > 36.772 in - 115 2L2 1/2x2 1/2x3/16x1/2	13'5-5/32"	6'8-5/8"	103.6	1.178	6.540	51.231	0.128 [1] ✔
T11	106.667 - 100	2L 'a' > 38.454 in - 127 2L2 1/2x2 1/2x3/16x1/2	14'5/16"	6'10-3/16"	108.2	1.178	6.425	51.231	0.125 [1] ✔
T12	100 - 80	2L 'a' > 39.199 in - 139 2L3x3x3/16x1/2	15'10-21/32"	7'9-5/32"	101.3	1.459	7.120	63.466	0.112 [1] ✔
T13	80 - 60	2L 'a' > 44.357 in - 148 2L3x3x3/16x1/4	19'1-3/16"	9'5-7/16"	122.3	1.424	8.429	61.937	0.136 [1] ✔
T14	60 - 40	2L 'a' > 54.001 in - 169 2L3x3x1/4x1/4	19'11-23/32"	10'5/16"	129.3	1.875	9.046	91.406	0.099 [1] ✔
T15	40 - 30	2L 'a' > 57.451 in - 193 2L3 1/2x3 1/2x1/4x1/4	21'9-15/32"	10'8-31/32"	119.5	2.250	9.033	109.688	0.082 [1] ✔
T16	30 - 20	2L 'a' > 61.473 in - 205 2L3 1/2x3 1/2x1/4x1/4	22'8-1/4"	11'3-25/32"	124.4	2.250	9.767	109.688	0.089 [1] ✔
T17	20 - 0	2L 'a' > 64.727 in - 214 L4x4x1/4	24'6"	12'9/32"	117.3	1.314	9.759	64.076	0.152 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T5	145 - 140	L2x2x1/4	8'4-3/32"	4'19/32"	159.6	0.563	1.057	27.440	0.039 [1] ✔
T7	133.333 - 126.667	L2x2x1/4	9'7-9/32"	4'7-29/32"	183.6	0.563	1.467	27.440	0.053 [1] ✔
T8	126.667 - 120	L2 1/2x2 1/2x1/4	10'3-7/16"	4'11-31/32"	156.0	0.752	1.658	32.707	0.051 [1] ✔
T9	120 - 113.333	L2 1/2x2 1/2x1/4	10'11-19/32"	5'3-25/32"	165.9	0.752	1.863	32.707	0.057 [1] ✔
T10	113.333 - 106.667	L2 1/2x2 1/2x1/4	11'7-3/4"	5'7-7/8"	176.5	0.752	2.044	32.707	0.062 [1] ✔
T14	60 - 40	L3x3x1/4	17'3-5/16"	8'4-7/8"	216.9	0.939	3.728	40.863	0.091 [1] ✔
T16	30 - 20	L3 1/2x3 1/2x1/4	20'4-3/16"	9'10-25/32"	218.0	1.127	4.222	49.019	0.086 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 160	L2x2x1/8	6'6-1/4"	6'1-3/8"	121.2	0.305	0.197	13.254	0.015 [1] ✔

[1] P_u / ϕP_n controls

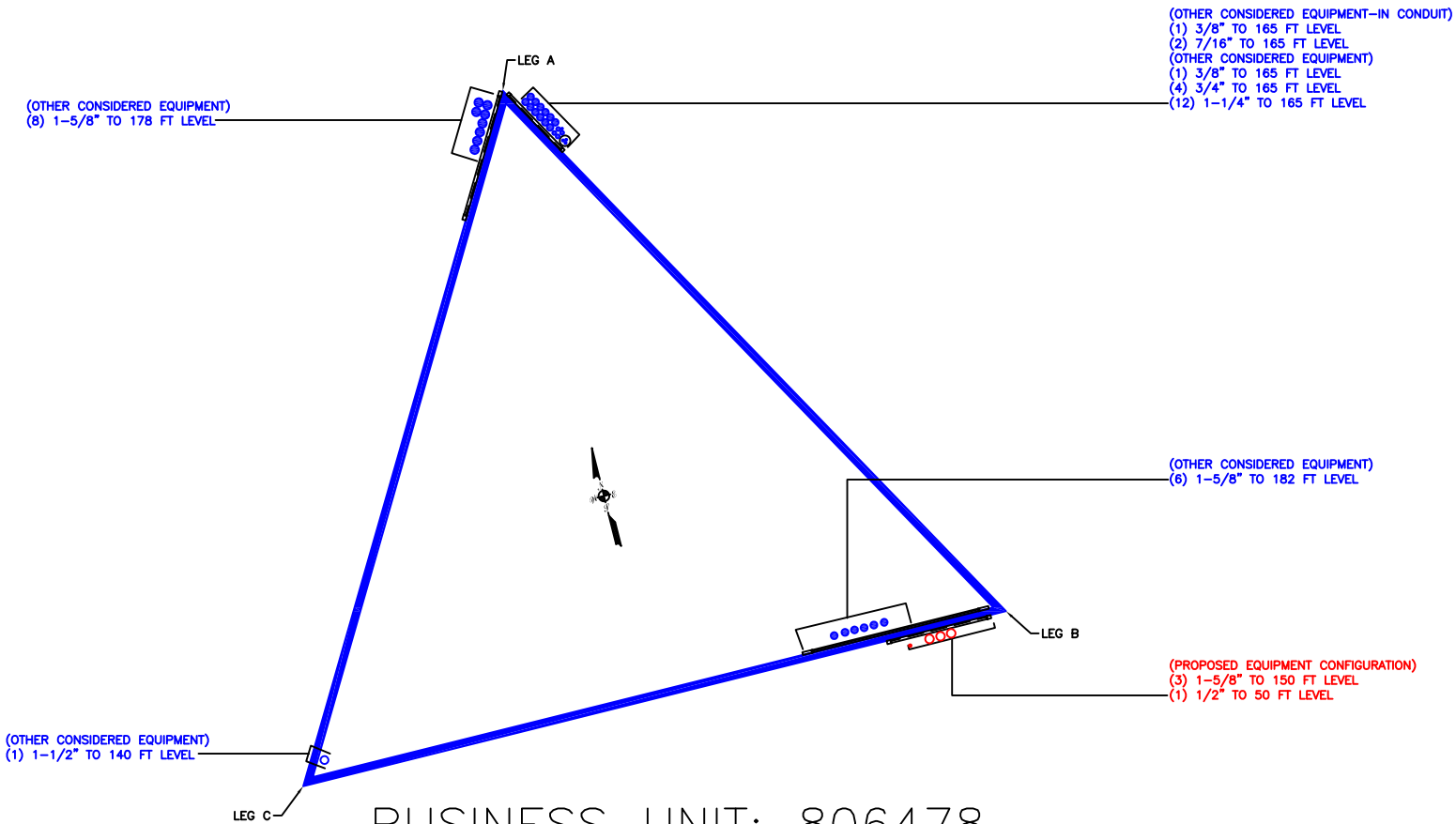
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	180 - 160	Leg	ROHN 2 STD	2	-25.622	38.684	66.2	Pass
T2	160 - 155	Leg	ROHN 2.5 EH	38	-34.110	78.151	43.6	Pass
T3	155 - 150	Leg	ROHN 2.5 EH	47	-41.898	78.148	53.6	Pass
T4	150 - 145	Leg	ROHN 2.5 EH	56	-51.517	78.149	65.9	Pass
T5	145 - 140	Leg	ROHN 2.5 EH	66	-60.941	98.081	62.1	Pass
T6	140 - 133.333	Leg	ROHN 3 EH	78	-71.958	99.059	72.6	Pass
T7	133.333 - 126.667	Leg	ROHN 3 EH	87	-84.605	129.274	65.4	Pass
T8	126.667 - 120	Leg	ROHN 3 EH	99	-95.576	139.089	68.7	Pass
T9	120 - 113.333	Leg	ROHN 3.5 EH	110	-107.406	161.556	66.5	Pass
T10	113.333 -	Leg	ROHN 3.5 EH	122	-117.864	161.594	72.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
	106.667							
T11	106.667 - 100	Leg	BT100140- Rohn 3.5EH w/ 2" SR	134	-129.298	244.582	52.9	Pass
T12	100 - 80	Leg	BT100140- Rohn 4EH w/ 2" SR	143	-159.896	286.747	55.8	Pass
T13	80 - 60	Leg	BT100140- Rohn 5EH w/ 2" SR (60-80)	164	-187.450	319.408	58.7	Pass
T14	60 - 40	Leg	BT100140- Rohn 5EH w/ 2" SR (40-60)	179	-214.961	400.743	53.6	Pass
T15	40 - 30	Leg	BT100140- Rohn 6EHS w/ 2" SR (30-40)	200	-230.629	373.300	61.8	Pass
T16	30 - 20	Leg	BT100140- Rohn 6EHS w/ 2" SR (20-30)	209	-243.457	439.396	55.4	Pass
T17	20 - 0	Leg	BT100140- Rohn 6EH w/ 2" SR	221	-272.485	437.361	62.3	Pass
T1	180 - 160	Diagonal	L2x2x1/4	10	-4.955	21.921	22.6	Pass
T2	160 - 155	Diagonal	L1 3/4x1 3/4x3/16	43	-4.261	8.960	47.6	Pass
T3	155 - 150	Diagonal	L1 3/4x1 3/4x3/16	52	-4.156	8.115	51.2	Pass
T4	150 - 145	Diagonal	L2x2x1/4	61	-5.328	14.435	36.9	Pass
T5	145 - 140	Diagonal	2L1 3/4x1 3/4x3/16x3/16	70	-5.194	10.763	48.3	Pass
T6	140 - 133.333	Diagonal	2L2x2x3/16x1/2	81	-6.446	34.333	18.8	Pass
T7	133.333 - 126.667	Diagonal	2L2x2x3/16x1/2	90	-6.400	31.258	20.5	Pass
T8	126.667 - 120	Diagonal	2L2x2x3/16x1/2	102	-6.684	29.165	22.9	Pass
T9	120 - 113.333	Diagonal	2L2 1/2x2 1/2x3/16x1/2	114	-6.669	43.852	15.2	Pass
T10	113.333 - 106.667	Diagonal	2L2 1/2x2 1/2x3/16x1/2	126	-6.926	41.968	16.5	Pass
T11	106.667 - 100	Diagonal	2L2 1/2x2 1/2x3/16x1/2	138	-6.345	41.098	15.4	Pass
T12	100 - 80	Diagonal	2L3x3x3/16x1/2	147	-7.032	48.925	14.4	Pass
T13	80 - 60	Diagonal	2L3x3x3/16x1/4	168	-8.423	36.097	23.3	Pass
T14	60 - 40	Diagonal	2L3x3x1/4x1/4	183	-9.481	41.581	22.8	Pass
T15	40 - 30	Diagonal	2L3 1/2x3 1/2x1/4x1/4	204	-9.126	60.389	15.1	Pass
T16	30 - 20	Diagonal	2L3 1/2x3 1/2x1/4x1/4	213	-10.612	54.955	19.3	Pass
T17	20 - 0	Diagonal	L4x4x1/4	225	-10.147	20.932	48.5	Pass
T5	145 - 140	Secondary Horizontal	L2x2x1/4	74	-1.057	18.245	5.8	Pass
T7	133.333 - 126.667	Secondary Horizontal	L2x2x1/4	95	-1.467	13.793	10.6	Pass
T8	126.667 - 120	Secondary Horizontal	L2 1/2x2 1/2x1/4	107	-1.658	23.886	6.9	Pass
T9	120 - 113.333	Secondary Horizontal	L2 1/2x2 1/2x1/4	118	-1.863	21.189	8.8	Pass
T10	113.333 - 106.667	Secondary Horizontal	L2 1/2x2 1/2x1/4	130	-2.044	18.713	10.9	Pass
T14	60 - 40	Secondary Horizontal	L3x3x1/4	187	-3.728	13.215	28.2	Pass
T16	30 - 20	Secondary Horizontal	L3 1/2x3 1/2x1/4	217	-4.222	17.337	24.4	Pass
T1	180 - 160	Top Girt	L2x2x1/8	6	-0.125	4.273	2.9	Pass
							Summary	
						Leg (T10)	72.9	Pass
						Diagonal (T3)	51.2	Pass
						Secondary Horizontal (T14)	28.2	Pass
						Top Girt (T1)	2.9	Pass
						Bolt Checks	68.1	Pass
						RATING =	**72.9**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806478

APPENDIX C

ADDITIONAL CALCULATIONS

PROJECT	**100140.016.01 - HRT 080 953381, CT**
SUBJECT	**Reinforced Tower Legs**
DATE	**09-22-21**

v3.4.2

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

Tower Information	
TIA-222 Rev.	H
Apply TIA-222-H Section 15.5	Yes

Calculation Type	Original Membe		Modification				BP & Angle?	Section Geometry																		Leg Capacity									Results
								Custom Area Input			Custom MOIxx Input			Custom MOIyy Input																					
	Elevation (ft)	Leg Type	Type	Analysis Method	Intermediate Connection	Leg Crushing?		Area $_{LEG}$ (in^2)	Area $_{MOD}$ (in^2)	Area $_{Gross}$ (in^2)	I $_{LEG}$ (in^4)	I $_{MOD}$ (in^4)	I $_{Gross}$ (in^4)	I $_{LEG}$ (in^4)	I $_{MOD}$ (in^4)	I $_{Gross}$ (in^4)	Leg Comp. Load Pu (k)	Leg Fy (ksi)	Reinf. Fy (ksi)	L (in)	a (in)	Gap (in)	K Leg	K Mod	K Comp.	Custom h (in)	Fe (ksi)	Fcr (ksi)	Φ	Leg Crushing Capacity (k)	Reinf. Leg Tension Yield Capacity (k)	Reinf. Leg Comp. Capacity (k)	Original leg Capacity (k)	Spacing Req.	Leg Load Final Rating	
Analysis	100-110.7	Custom	Custom	Parallel	Pinned	No	No	3.69	3.14	6.82	6.3	0.8	144.3	6.3	0.8	10.4	129.3	50	105	80.1	36.0	0.0	1.0	1.00	1.0		11.1456	9.8	0.90		462.8	233.0	126.0	Exceeded @ 4.13	52.9%	Passing
Analysis	80-100	Custom	Custom	Parallel	Pinned	No	No	4.41	3.14	7.55	9.6	0.8	167.3	9.6	0.8	10.4	159.9	50	105	80.2	36.0	0.0	1.0	1.00	1.0		11.1369	9.8	0.90		495.2	273.9	159.9	Exceeded @ 4.23	55.6%	Passing
Analysis	60-80	Custom	Custom	Parallel	Pinned	No	No	6.11	3.14	9.25	20.7	0.8	220.0	20.7	0.8	21.5	187.45	50	105	120.2	36.0	0.0	1.0	1.00	1.0		4.951	4.3	0.90		571.8	304.6	201.2	Exceeded @ 2.92	58.6%	Passing
Analysis	40-60	Custom	Custom	Parallel	Pinned	No	No	6.11	3.14	9.25	20.7	0.8	220.0	20.7	0.8	21.5	214.96	50	105	61.8	36.0	0.0	1.0	1.00	1.0		18.7277	16.4	0.90		571.8	383.4	253.2	Exceeded @ 5.68	53.4%	Passing
Analysis	30-40	Custom	Custom	Parallel	Pinned	No	No	6.71	3.14	9.85	33.2	0.8	261.6	33.2	0.8	34.0	230.63	50	105	120.2	36.0	0.0	1.0	1.00	1.0		4.951	4.3	0.90		599.0	358.3	244.0	Exceeded @ 3.09	61.3%	Passing
Analysis	20-30	Custom	Custom	Parallel	Pinned	No	No	6.71	3.14	9.85	33.2	0.8	261.6	33.2	0.8	34.0	243.46	50	105	61.6	36.0	0.0	1.0	1.00	1.0		18.8614	16.5	0.90		599.0	419.3	285.6	Exceeded @ 6.02	55.3%	Passing
Analysis	0-20	Custom	Custom	Parallel	Pinned	No	No	8.40	3.14	11.55	40.5	0.8	284.5	40.5	0.8	41.3	272.49	50	105	120.2	36.0	0.0	1.0	1.00	1.0		4.951	4.3	0.90		674.9	417.3	303.6	Exceeded @ 2.97	62.2%	Passing

PROJECT	**100140.016.01 - HRT 080 953381, CT**
SUBJECT	**Bolted Angle Connection Analysis**
DATE	**09-22-21** PAGE 1 OF 1

v2.5.0

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

TIA-222 Rev.	H
Apply TIA-222-H Section 15.5?	Yes

Max Rating	17.3%

	Elevation (ft)	Component	Angle			Bolt						Coping Dimensions (in)						Tens. Load (k)	Comp. Load (k)	Tens. Capacity (k)	Comp. Capacity (k)	Rating	Limit State
			Qty	Size	Grade	Qty	Size	Grade	Edge Dist. (in)	Gage (in)	Pitch (in)	Coping	A	B	C	D	E						
1	120 - 126.7	Redundant Horizontal	1	L2X2X1/4	A36	1	5/8	A325N	Auto Calc	Auto Calc		Allowable						1.65	1.65	9.11	13.81	17.3%	Tension - Mbr. Block Shear
2	120 - 126.7	Redundant Diagonal	1	L2X2X1/4	A36	1	5/8	A325N	Auto Calc	Auto Calc		Allowable						1.01	1.09	9.11	13.81	10.5%	Tension - Mbr. Block Shear

Anchor Rod Check for Self Supporting Towers

v8.4.4

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74119

Site Data	
BU#:	806478
Site Name:	HRT 080 953381, CT
Order #:	582282 Rev. 0
TIA Rev.	H
Apply TIA-222-H Section 15.5	Yes
Seismic Design Category:	B
No. of Mods:	1
Grout Present:	No

Leg Base Reactions			
		Wind/Ice	
Download, Pu:		279.0	kips
Download Shear, Vu:		29.0	kips
Uplift, Pu:		229.0	kips
Uplift Shear, Vu:		25.0	kips

Anchor Rod Data				
	Existing	New 1		
Qty:	6	2		
Diam:	1	1		in
Rod Material:	A449 (1/4 to 1 Incl.)	A193 Gr B7		
$l_{ar:}$	1.50	3.50		in
Do Mods Resist Shear?		No		
Strength (Fu):	120	125		ksi
Yield (Fy):	92	105		ksi
Gross Area (Ag):	4.71	1.57		in^2
Net Area (An):	3.64	1.21		in^2

Anchor Rod Calculations			
	Existing	New 1	
Put (k):	28.63	28.6	
ϕRnt (k):	54.54	56.8	
Puc (k):	34.88	34.9	
ϕRnc (k):	65.03	74.2	
ϕRnb (k):	64.58	71.1	
Uplift Vu (k):	4.17	0.0	
Download Vu (k):	4.83	0.0	
ϕRnv (k):	35.34	36.8	
ϕRnvc (k):	29.26	33.4	
Uplift Mu (k-in):	4.06	0.0	
Download Mu (k-in):	4.71	0.0	
ϕMn (k-in):	13.01	14.8	
Anchor Rod Stress Ratio:	**0.926**	**0.504**	

Anchor Rod Rating: **88.2%** **Pass**

Eccentric Load Calculations		
e=	0	in

PROJECT	**100140.016.01 - HRT 080 953381, CT**
SUBJECT	**Anchor Rod Bracket Analysis**
DATE	**09-22-21**
v4.6.1	

TIA-222 Rev. **H**
Apply TIA-222-H Section 15.5? **Yes**

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

Analysis Criteria		
Design/Analysis	Analysis	
Load Type	Current Load	
Current load	28.6	kips
AR Capacity	74.2	kips

Tower Type	Self Support	

Manufacturers Tower Prop.		
Leg Thickness	0.432	in
Leg Grade	A572-50	
Fy	50	ksi
Fu	65	ksi
Base Plate Gr.	A36	
Fy	36	ksi
Fu	58	ksi

Post-Installed Adhesive AR Mod.		
ARB Type	Welded	
Size	1	in
Grade	A193 Gr B7	
Fy	105	ksi
Fu	125	ksi

Anchor Rod Bracket Analysis Checks		
Tube Bearing	45.8%	-
Tube Compression	68.7%	-
Gusset Shear	10.3%	-
Gusset Flexure	13.5%	-
Welds: Gusset to Tower and BP	10.9%	-
Welds: Gusset to Tube	9.1%	-
Welds: Geometry	N/A	
Tower Punching	12.0%	-
Tube Punching	3.9%	-
Utilization	**68.7%**	

Bracket Properties

Gusset			Pipe/Tube			Weld - Gusset to Pipe/Tube		
Thickness	0.5	in	Size	L.25 SCh 80 Pipe		FEXX	70	ksi
Width at Tube	5.1875	in	Total Length	18	in	Weld Type	Double Fillet	
Height at Leg	18	in	Length above Gusset	0	in	Fillet Size	3/8	in
Height at Tube	18	in	Length below Gusset	0	in			
Grade	A572-50		Grade	A500 Grade C (Square)				
Fy	50	ksi	Fy	50	ksi			
Fu	65	ksi	Fu	62	ksi			

Weld - Gusset to Tower			Weld - Gusset to Base Plate	
FEXX	70	ksi		
Weld Type	CJP - Single Bevel		Weld Type	Floating
Fillet Size	7/16	in		
Bevel Depth	7/16	in		

Pier and Pad Foundation

BU # :	806478
Site Name:	HRT 080 953381, C
App. Number:	582282 Rev. 0

TIA-222 Revision:	H
Tower Type:	Self Support

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

Superstructure Analysis Reactions

Compression, P_{comp}:	279	kips
Compression Shear, Vu_comp:	29	kips
Uplift, P_{uplift}:	229	kips
Uplift Shear, V_{u_uplift}:	25	kips
Tower Height, **H**:	180	ft
Base Face Width, **BW**:	22.8646	ft
BP Dist. Above Fdn, bp_{dist}:	2.5	in

Pier Properties

Pier Shape:	Square	
Pier Diameter, **dpier**:	5	ft
Ext. Above Grade, **E**:	0.33333333	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	18	
Pier Tie/Spiral Size, **St**:	3	
Pier Tie/Spiral Quantity, **mt**:	7	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	9.66666667	ft
Pad Width, W_1:	7.33333333	ft
Pad Thickness, **T**:	2	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	9	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	4	
Pad Clear Cover, cc_{pad}:	3	in

0.18% min steel assumed

Material Properties

Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties

Total Soil Unit Weight, γ:	122	pcf
Ultimate Net Bearing, Qnet:	30.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	32	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:	0.4	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Uplift (kips)	284.92	229.00	**76.5%**	**Pass**
Lateral (Sliding) (kips)	73.30	25.00	**32.5%**	**Pass**
Bearing Pressure (ksf)	23.38	6.82	**27.8%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	2021.73	232.00	**10.9%**	**Pass**
*Pier Flexure (Tension) (kip*ft)*	1196.93	200.00	**15.9%**	**Pass**
Pier Compression (kip)	8751.60	315.00	**3.4%**	**Pass**
*Pad Flexure (kip*ft)*	337.92	26.63	**7.5%**	**Pass**
Pad Shear - 1-way (kips)	139.60	0.00	**0.0%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.015	**8.9%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	675.84	139.20	**19.6%**	**Pass**
Pad Shear - 2-way (Uplift) (ksi)	0.164	0.046	**26.9%**	**Pass**
*Flexural 2-way (Tension) (kip*ft)*	675.84	120.00	**16.9%**	**Pass**

0.5% min steel assumed

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

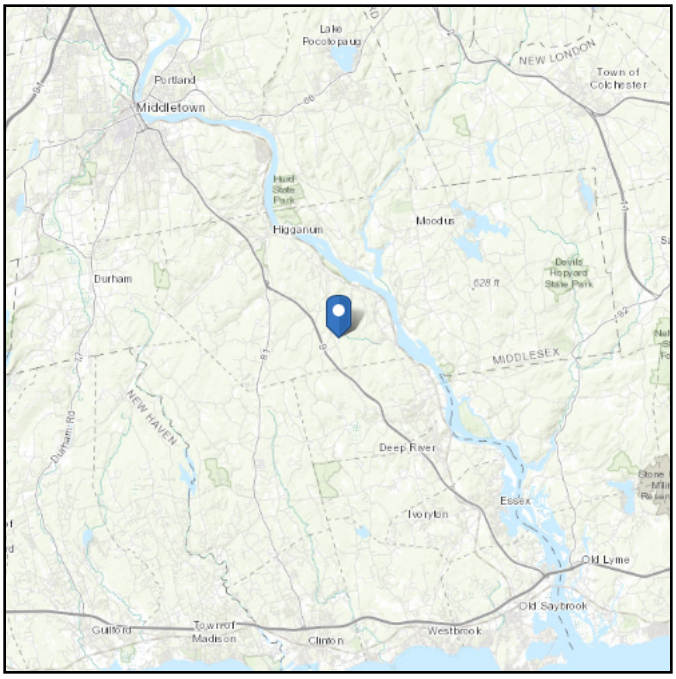
Structural Rating*:	**26.9%**
Soil Rating*:	**76.5%**

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Elevation: 504.12 ft (NAVD 88)
Latitude: 41.443056
Longitude: -72.506222



Wind

Results:

Wind Speed:	122 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	94 Vmph
100-year MRI	100 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Mon Sep 20 2021

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

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

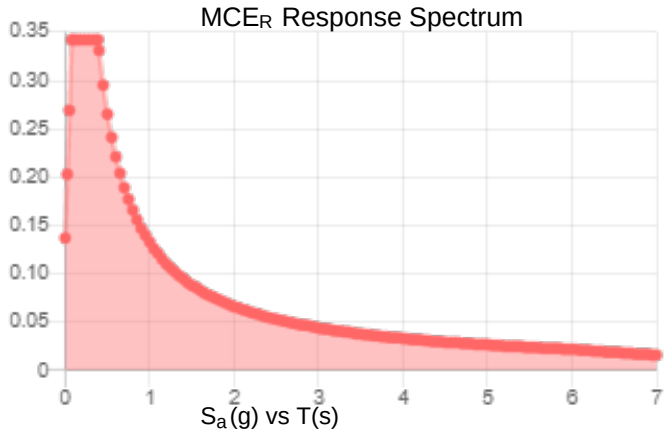
Seismic

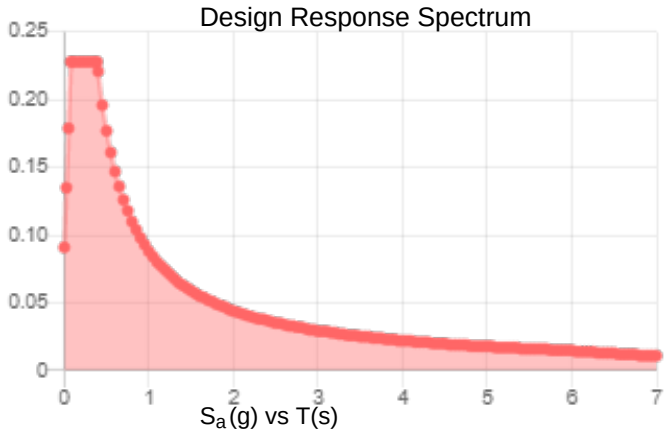
Site Soil Class: D - Default (see Section 11.4.3)

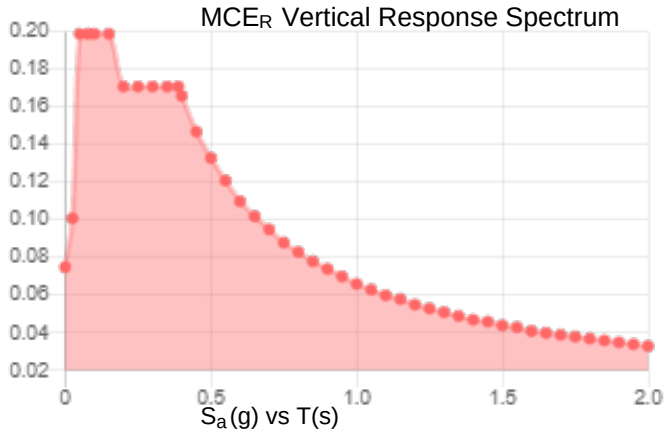
Results:

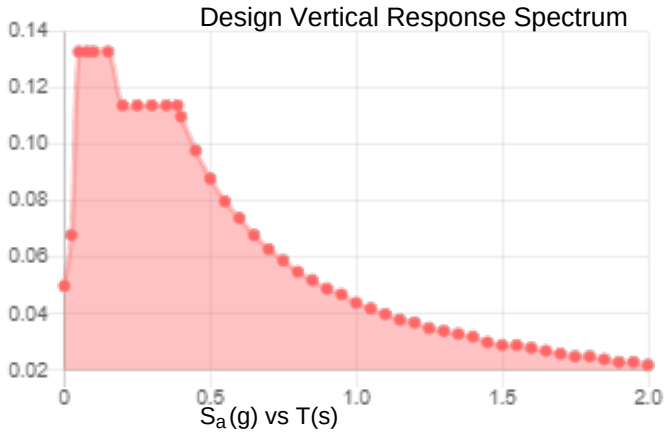
S_S :	0.214	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.12
F_v :	2.4	PGA_M :	0.187
S_{MS} :	0.342	F_{PGA} :	1.56
S_{M1} :	0.133	I_e :	1
S_{DS} :	0.228	C_v :	0.727

Seismic Design Category B









Data Accessed: Mon Sep 20 2021

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Mon Sep 20 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 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Exhibit E

Mount Analysis

Date: September 16, 2021

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

Subject:	**Mount Analysis Report**	
Carrier Designation:	**T-Mobile Equipment Change-Out**	
	Carrier Site Number:	CT11935A
	Carrier Site Name:	CT11935A
Crown Castle Designation:	**BU Number:**	806478
	Site Name:	HRT 080 953381
	JDE Job Number:	682263
	Order Number:	582282, Rev.0
Engineering Firm Designation:	**B+T Group Report Designation:**	100140.015.01
Site Data:	**539 Plains RD, Haddam, CT, Middlesex, 06438.** **Latitude 41° 26' 35.00" Longitude -72° 30' 22.40"**	
Structure Information:	**Tower Height & Type:**	**180 ft. Self-Support Tower**
	Mount Elevation:	**150 ft.**
	Mount Type:	**12 ft. Sector Mount**

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

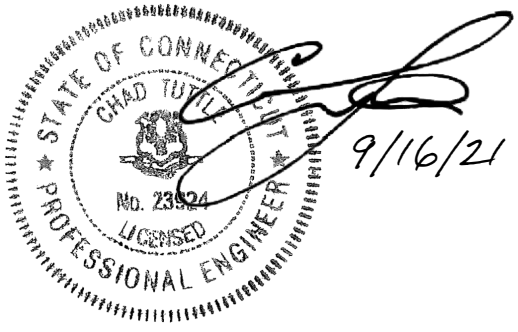
The purpose of the analysis is to determine acceptability of the mount's stress level. Based on our analysis we have determined the stress level to be:

Sector Mount (typical) **Sufficient**

This analysis utilizes an ultimate 3-second gust wind speed of 122 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount structural analysis prepared by: Erik Perez

Respectfully submitted by: B&T Engineering, Inc.
COA: PEC.0001564 Expires: 02/10/2022



Chad E. Tuttle, P.E.

TABLE OF CONTENTS

1) INTRODUCTION

This is an existing 3 - Sector 12' Sector Mount, designed by ROHN (Part# D930522).

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	122 mph
Exposure Category:	B
Topographic Factor at Base:	1
Topographic Factor at Mount:	1
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.214
Seismic S_1:	0.055
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Qty.	Manufacturer	Model / Type	Mount / Modification Details
150	150	3	Ericsson	AIR6449 B41_T-MOBILE+0	12 ft. Sector Mount
		3	RFS/Celwave	APX16DWV-16DWVS-E-A20	
		3	RFS/Celwave	APXVAALL24_43-UNA20_TMO	
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO	
		3	Ericsson	Radio 4480_TMOV2	
50	50	1	GPS	GPS_A	-

Table 2 - Documents Provided

Document	Remarks	Reference	Source
CCI Order	Existing and Proposed Equipment's	--	Crown Castle
RFDS		Date: 08/13/2021	
Previous MA	Hudson Design Group, LLC	Date: 07/10/2018	Crown Castle

3) ANALYSIS PROCEDURE

3.1) Analysis Method

RISA-3D (Version 19.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

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

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision D). In addition, this analysis is in accordance with OTHER SOW.

Manufacturers drawing were used to create the model.

3.2) Assumptions

1. The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design, TIA Standards, and/or manufacturer's specifications.
2. The configuration of antennas, mounts, and other appurtenances are as specified in Table-1.
3. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected members unless otherwise specified in this report.
4. Mount areas and weights are determined from field measurements, standard material properties, and/or manufacturer product data.
   The following assumptions have been included in the analysis of the mount:

Component	Section	Length	Note
Proposed Mount Pipe	2" Std. Pipe	9'-0"	In Position 2
Mount Pipe	2" Std. Pipe	6'-0"	In Position 1,3
Tieback	3" Std. Pipe	10'-11"	--

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

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

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

Notes	Component	Centerline (ft)	Critical Member	% Capacity	Pass / Fail
1,2	Face Horizontals	150	21	16.2	Pass
	Mount pipes	150	27	37.2	Pass
	Support Arms	150	5	35.9	Pass
	Verticals	150	11	30.2	Pass
	Diagonals	150	15	28.9	Pass
	Tiebacks	150	31	11.5	Pass
	Connection Plates	150	4	38.8	Pass
3	Connection Bolts	150	-	15.2	Pass

Structure Rating (max from all components) =	38.8%

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

Table 4 - Tieback Connection Data Table

Tower Connection Node No.	Existing / Proposed	Resultant End Reaction (lb)	Connected Member Type	Connected Member Size	Member Compressive Capacity[3] (lb)	Notes
51	Existing	903.26	Leg	ROHN 2.5 EH	1172.22	2
24	Existing	668.79	Leg	ROHN 2.5 EH	1172.22	2

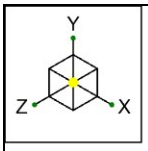
Notes:
1) Tieback connection point is within 25% of either end of the connected tower member
2) Tieback connection point is NOT within 25% of either end of the connected tower member
3) Reduced member compressive capacity according to CED-STD-10294 *Standard for Installation of Mounts and Appurtenances*

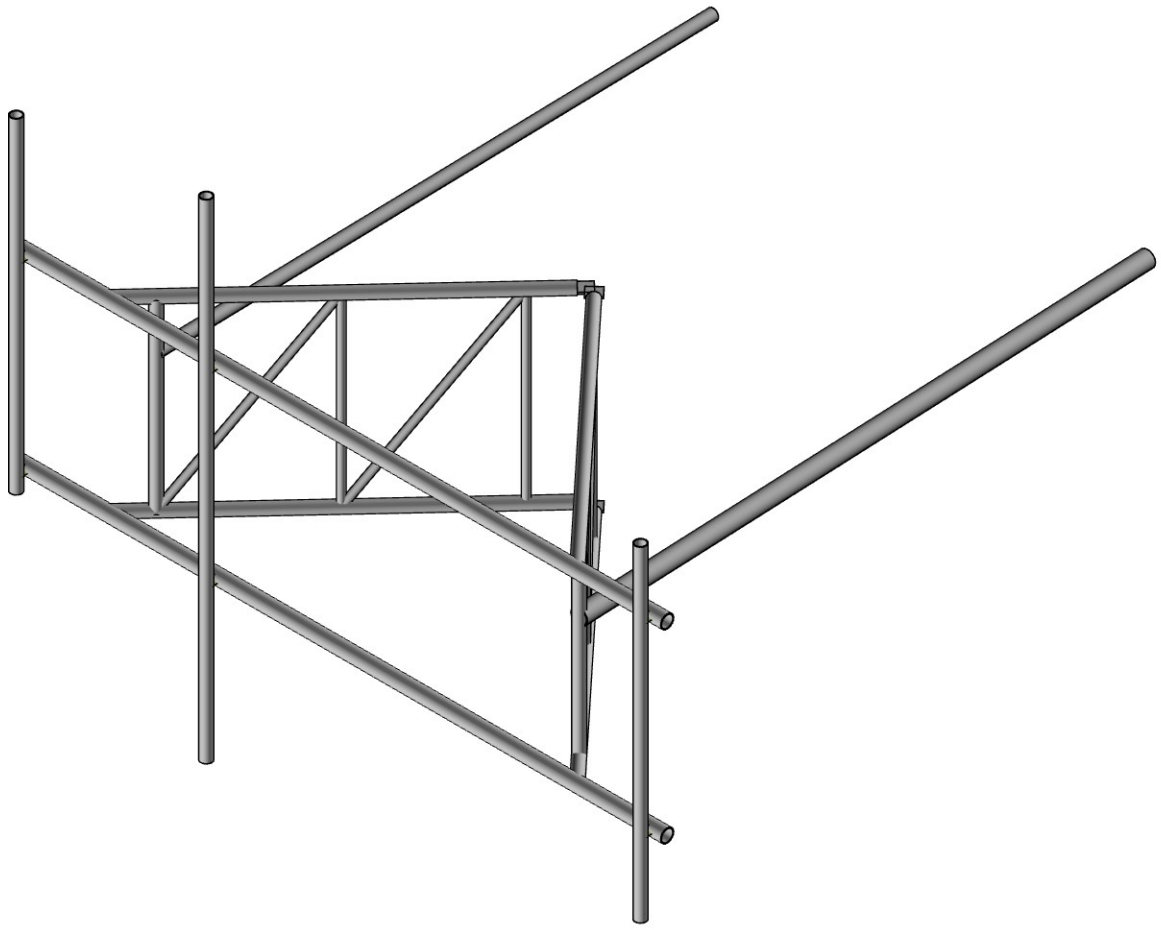
4.1) Recommendations

The ROHN (Part# D930522) mount has sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

APPENDIX A

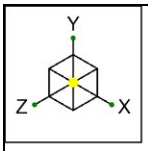
WIRE FRAME AND RENDERED MODELS

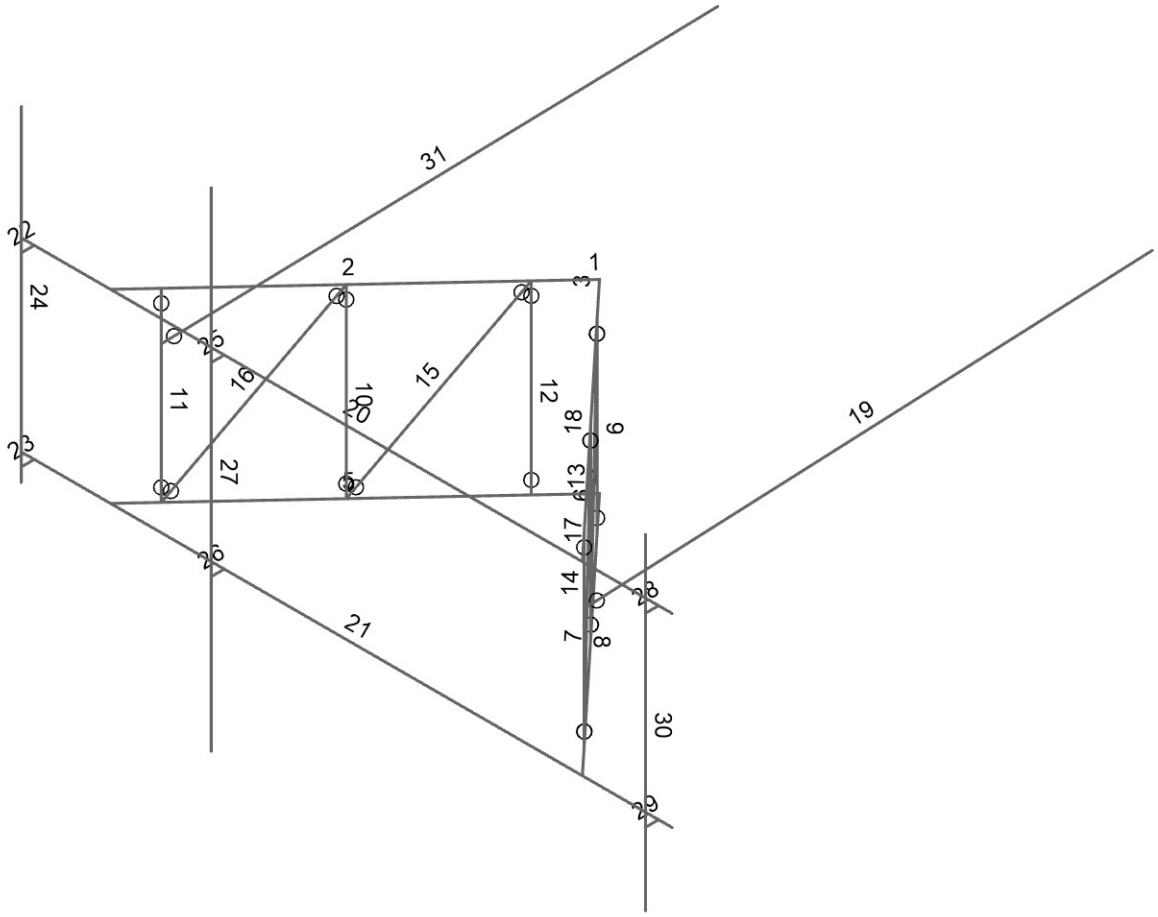




Envelope Only Solution

B+T Group	806478 - HRT 080 953381	SK-1
AS		Sep 15, 2021
100140.015.01		100140_015_01_HRT 080 953381…





Envelope Only Solution

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AS		Sep 15, 2021
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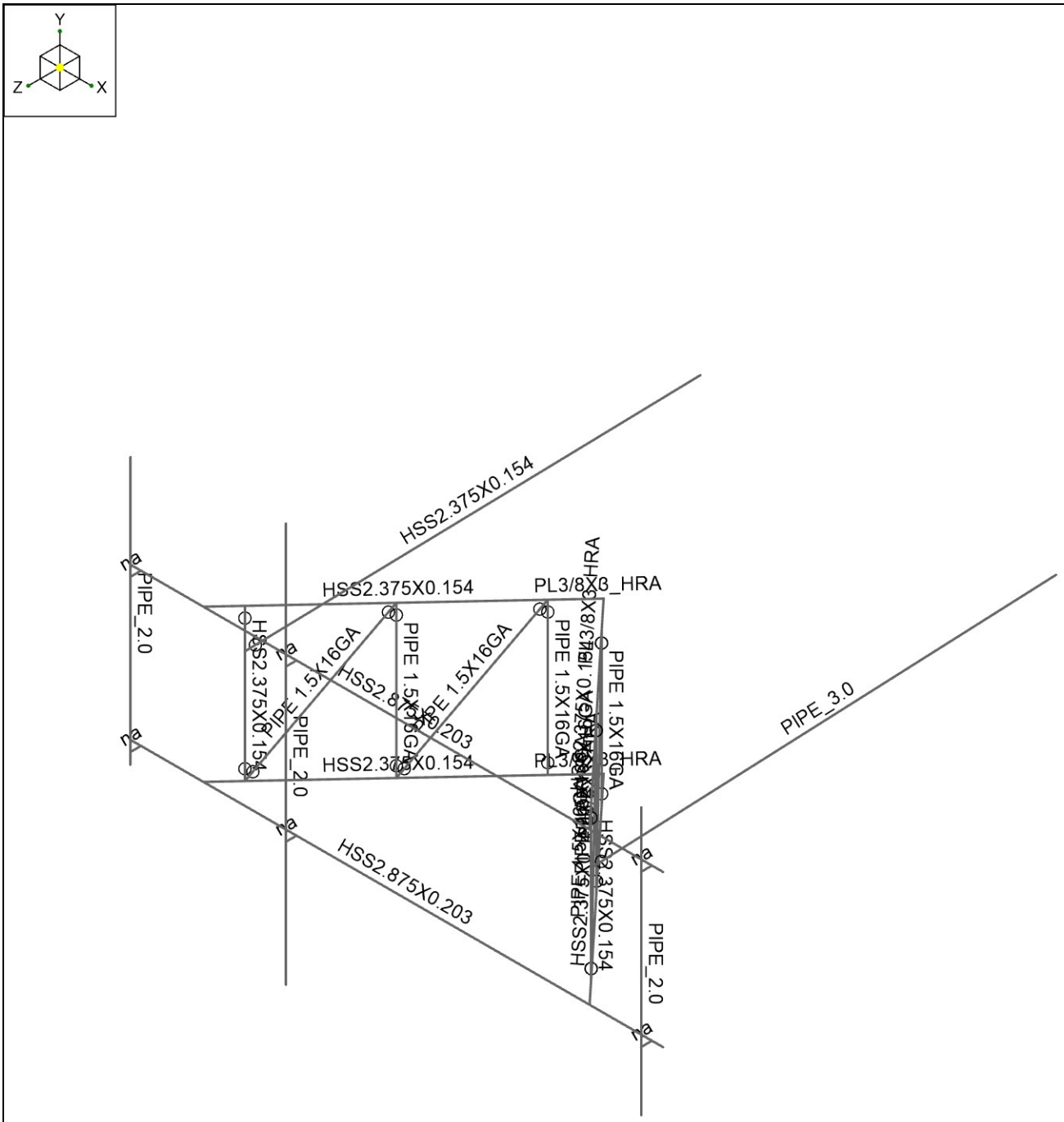

Envelope Only Solution

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AS		Sep 15, 2021
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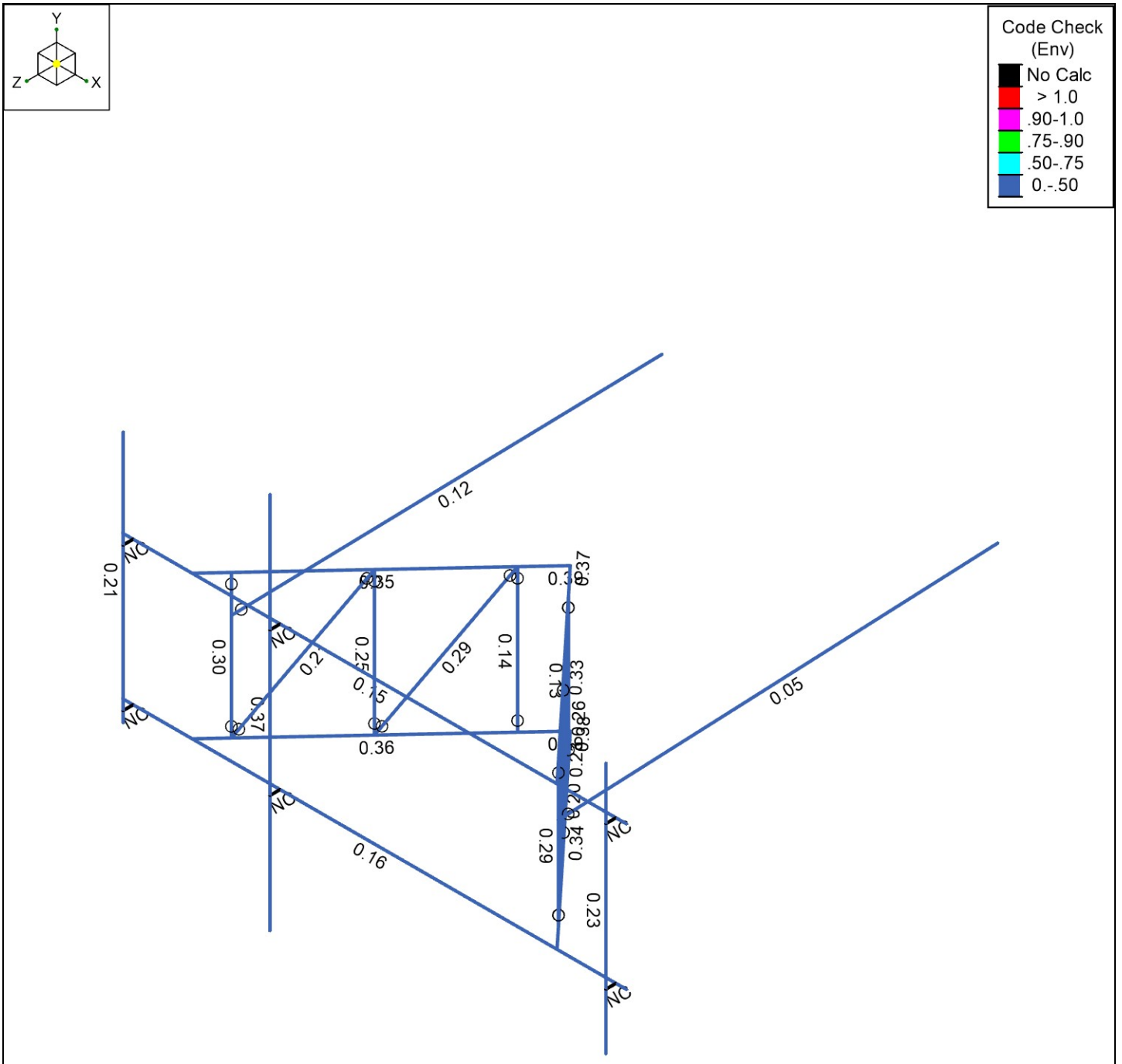
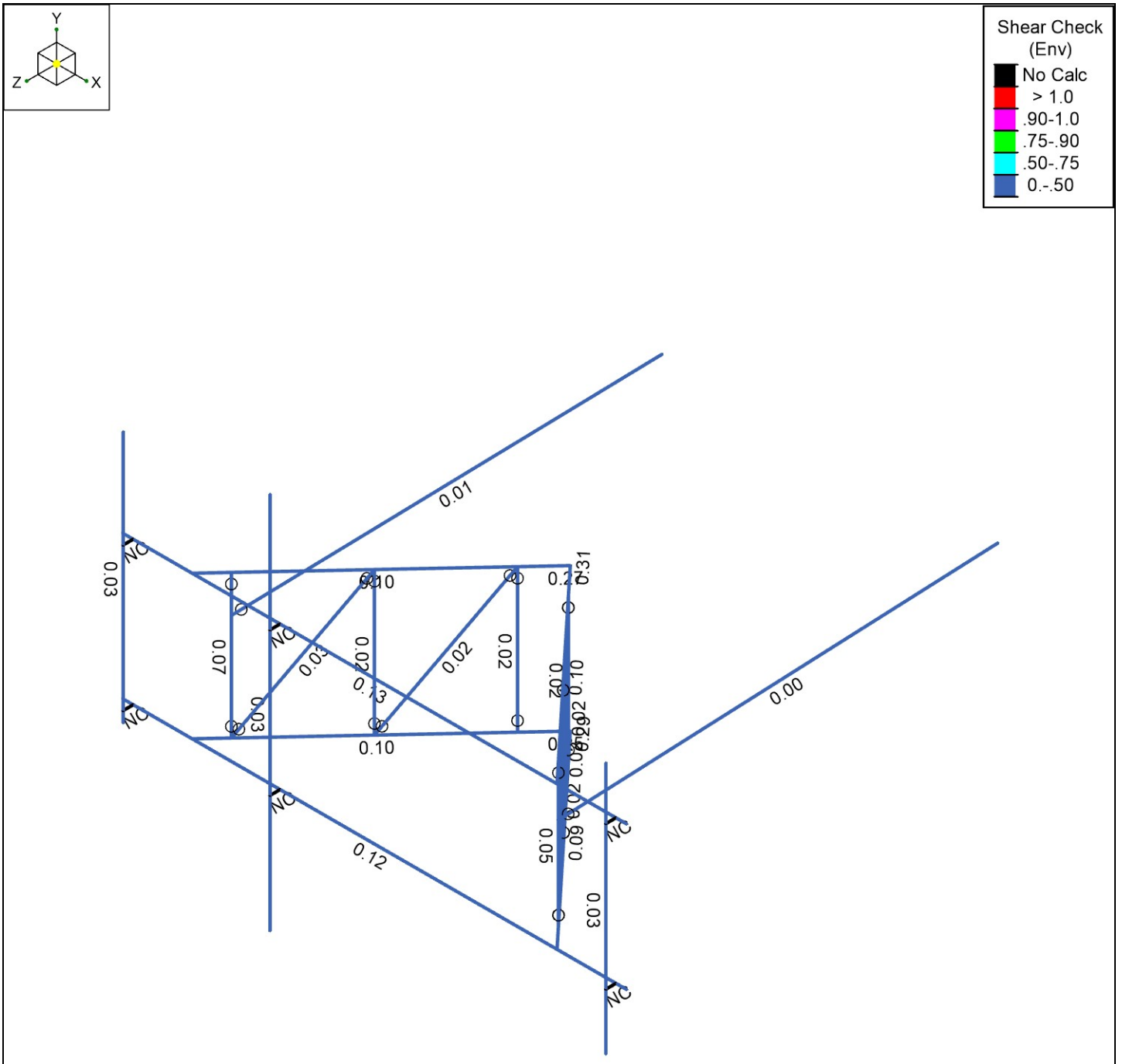


Member Code Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	806478 - HRT 080 953381	SK-8
AS		Sep 15, 2021
100140.015.01		100140_015_01_HRT 080 953381…



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

B+T Group	806478 - HRT 080 953381	SK-9
AS		Sep 15, 2021
100140.015.01		100140_015_01_HRT 080 953381…

APPENDIX B

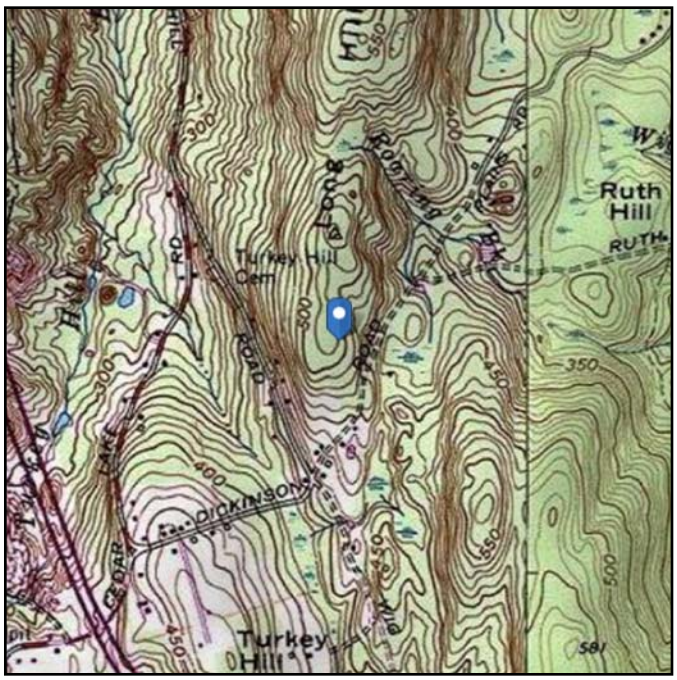
SOFTWARE INPUT CALCULATIONS

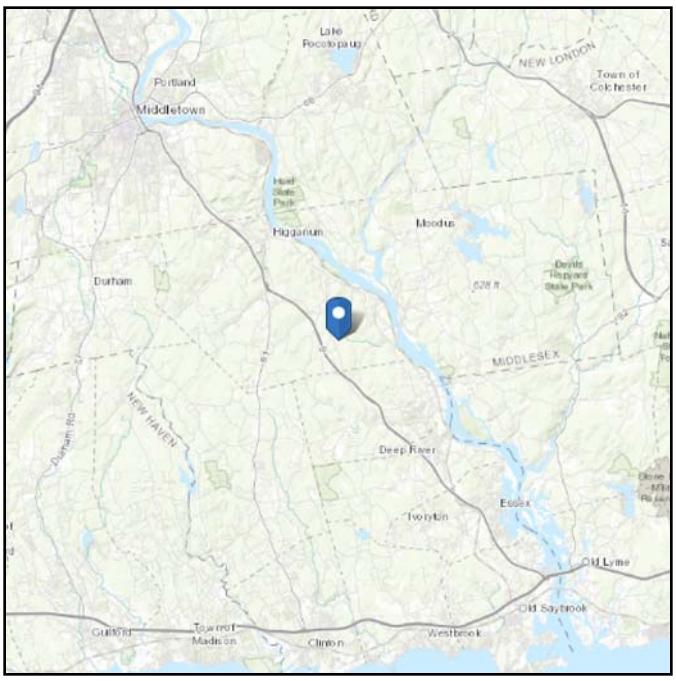
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Elevation: 504.12 ft (NAVD 88)
Latitude: 41.443056
Longitude: -72.506222





Wind

Results:

Wind Speed:	122 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	94 Vmph
100-year MRI	100 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Wed Sep 15 2021

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

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

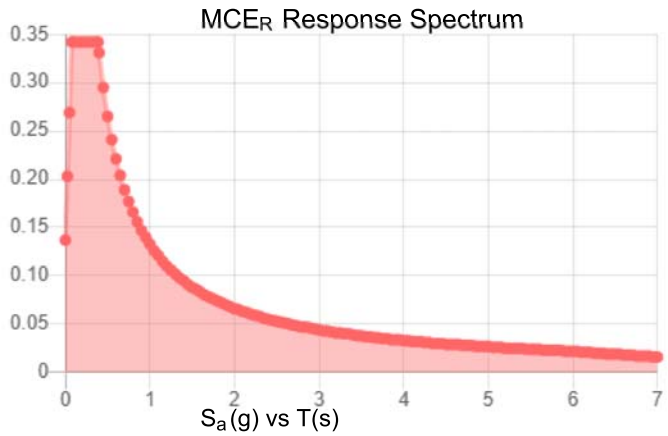
Seismic

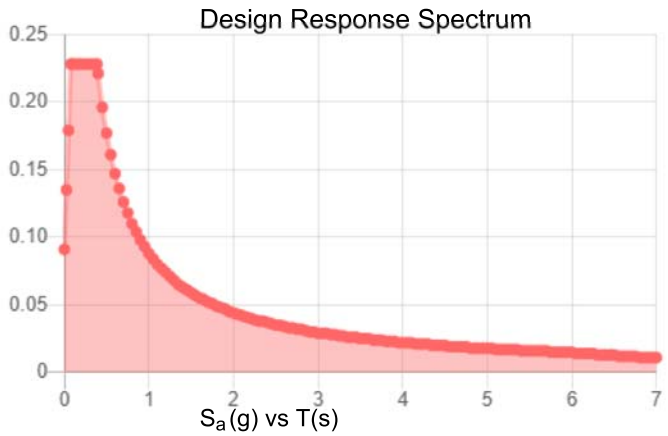
Site Soil Class: D - Default (see Section 11.4.3)

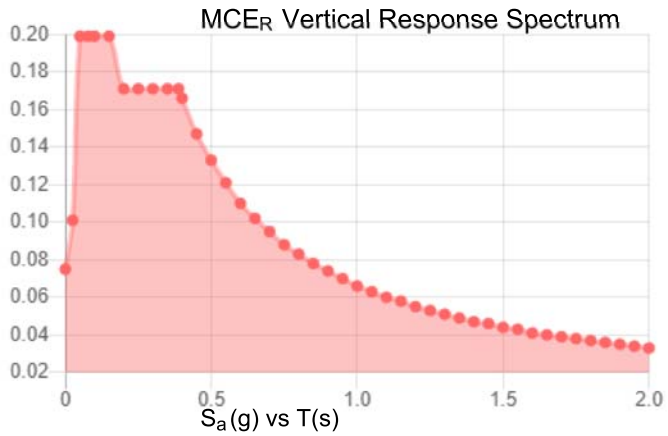
Results:

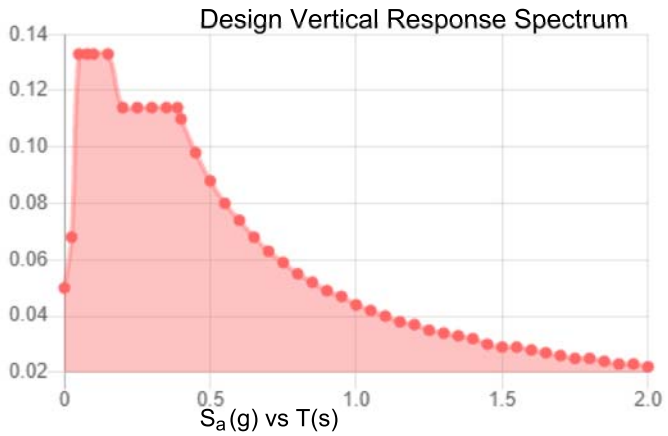
S_S :	0.214	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.12
F_v :	2.4	PGA_M :	0.187
S_{MS} :	0.342	F_{PGA} :	1.56
S_{M1} :	0.133	I_e :	1
S_{DS} :	0.228	C_v :	0.727

Seismic Design Category B









Data Accessed: Wed Sep 15 2021

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Wed Sep 15 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 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

PROJECT	**100140.015.01 - HRT 080 95**		**KSC**
SUBJECT	**Sector Mount Analysis**		
DATE	**09/15/21**	PAGE	OF

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

Tower Type		:	SST		
Ground Elevation	z_s	:	504	ft	[ASCE7 Hazard Tool]
Tower Height		:	180.00	ft	
Mount Elevation		:	150.00	ft	
Antenna Elevation		:	150.00	ft	
Crest Height		:	0	ft	
Risk Category		:	II		[Table 2-1]
Exposure Category		:	B		[Sec. 2.6.5.1.2]
Topography Category		:	1.00		[Sec. 2.6.6.2]
Wind Velocity	V	:	122	mph	[ASCE7 Hazard Tool]
Ice wind Velocity	V_i	:	50	mph	[ASCE7 Hazard Tool]
Service Velocity	V_s	:	30	mph	[ASCE7 Hazard Tool]
Base Ice thickness	t_i	:	1.00	in	[ASCE7 Hazard Tool]
Seismic Design Cat.		:	B		[ASCE7 Hazard Tool]
	S_S	:	0.21		
	S_1	:	0.06		
	S_{DS}	:	0.23		
	S_{D1}	:	0.09		

Gust Factor	G_h	:	1.00		[Sec. 16.6]
Pressure Coefficient	K_z	:	1.11		[Sec. 2.6.5.2]
Topography Factor	K_{zt}	:	1.00		[Sec. 2.6.6]
Elevation Factor	K_e	:	0.98		[Sec. 2.6.8]
Directionality Factor	K_d	:	0.95		[Sec. 16.6]
Shielding Factor	K_a	:	0.90		[Sec. 16.6]
Design Ice Thickness	t_{iz}	:	1.16	in	[Sec. 2.6.10]

Importance Factor	I_e	:	1		[Table 2-3]
Response Coefficient	C_s	:	0.114		[Sec. 2.7.7.1]
Amplification	A_s	:	2.333333		[Sec. 16.7]

	q_z	:	39.44	psf

PROJECT	**100140.015.01 - HRT 080 95**		**KSC**
SUBJECT	**Sector Mount Analysis**		
DATE	**09/15/21**	PAGE	OF

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

Manufacturer	Model	Qty	Aspect Ratio	C_a flat/round	EPA_N (ft^2)	EPA_T (ft^2)	$EPA_{N\text{-}Ice}$ (ft^2)	$EPA_{T\text{-}Ice}$ (ft^2)	$F_{A\ No\ Ice\ (N)}$	$F_{A\ No\ Ice\ (T)}$	$F_{A\ Ice\ (N)}$	$F_{A\ Ice\ (T)}$
RFS/CELWAVE	APX16DWV-16DWVS-E-A20	0.5	4.61	1.29	3.13	0.75	3.73	1.26	0.12	0.03	0.02	0.01
RFS/CELWAVE	APX16DWV-16DWVS-E-A20	0.5	4.61	1.29	3.13	0.75	3.73	1.26	0.12	0.03	0.02	0.01
ERICSSON	RADIO 4460 B2/B25 B66_TMC	1	1.13	1.20	1.78	1.40	2.34	1.91	0.08	0.06	0.01	0.01
RFS/CELWAVE	APXVAALL24_43-U-NA20_TMC	0.5	4.00	1.27	7.34	2.66	8.11	3.34	0.29	0.10	0.05	0.02
RFS/CELWAVE	APXVAALL24_43-U-NA20_TMC	0.5	4.00	1.27	7.34	2.66	8.11	3.34	0.29	0.10	0.05	0.02
ERICSSON	Radio 4480_TMOV2	1	1.40	1.20	2.40	1.15	3.05	1.66	0.10	0.05	0.02	0.01
ERICSSON	AIR6449 B41_T-MOBILE	0.5	1.61	1.20	2.64	1.02	3.07	1.35	0.10	0.04	0.02	0.01
ERICSSON	AIR6449 B41_T-MOBILE	0.5	1.61	1.20	2.64	1.02	3.07	1.35	0.10	0.04	0.02	0.01

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Node Coordinates

	Label	X [ft]	Y [ft]	Z [ft]	Detach From Diaphragm
1	1	-4.346356	0	4.66146	
2	2	-0.155177	0	0.166427	
3	3	0	0	0	
4	4	4.346356	0	4.66146	
5	5	0.155177	0	0.166427	
6	6	-4.346356	-3.416667	4.66146	
7	7	-0.155177	-3.416667	0.166427	
8	8	0	-3.416667	0	
9	9	4.346356	-3.416667	4.66146	
10	10	0.155177	-3.416667	0.166427	
11	11	3.89527	0	4.177671	
12	12	0.606262	-3.416667	0.650215	
13	13	-3.89527	0	4.177671	
14	14	-0.606262	-3.416667	0.650215	
15	15	0.606262	0	0.650215	
16	16	3.89527	-3.416667	4.177671	
17	17	-0.606262	0	0.650215	
18	18	-2.250766	-3.416667	2.413943	
19	19	-2.250766	0	2.413943	
20	20	-3.89527	-3.416667	4.177671	
21	21	2.250766	-3.416667	2.413943	
22	22	2.250766	0	2.413943	
23	23	3.89527	-1.214989	4.177671	
24	24	3.412357	-1.214989	-6.76929	
25	25	-6	0	4.66146	
26	26	6	0	4.66146	
27	27	-6	-3.41667	4.66146	
28	28	6	-3.41667	4.66146	
29	29	-5.75	0	4.66146	
30	30	-5.75	0	4.90146	
31	31	-5.75	-3.41667	4.66146	
32	32	-5.75	-3.41667	4.90146	
33	33	-5.75	2.33333	4.90146	
34	34	-5.75	-3.66667	4.90146	
35	35	-2.25	0	4.66146	
36	36	-2.25	0	4.90146	
37	37	-2.25	-3.41667	4.66146	
38	38	-2.25	-3.41667	4.90146	
39	39	-2.25	2.791669	4.90146	
40	40	-2.25	-6.208332	4.90146	
41	41	5.75	0	4.66146	
42	42	5.75	0	4.90146	
43	43	5.75	-3.41667	4.66146	
44	44	5.75	-3.41667	4.90146	
45	45	5.75	1.25	4.90146	
46	46	5.75	-4.75	4.90146	
47	47	3.412357	0	-6.76929	
48	49	-4.156199	0	-6.339833	
49	50	-3.89527	-0.887398	4.177671	
50	51	-4.156199	-0.887398	-6.339833	

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]
1	8	Reaction	Reaction	Reaction
2	3	Reaction	Reaction	Reaction
3	51	Reaction	Reaction	Reaction
4	24	Reaction	Reaction	Reaction

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	MF-H1	HSS2.875X0.203	Beam	Pipe	A53 Gr.B	Typical	1.59	1.45	1.45	2.89
2	MF-P1	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
3	F1-S1	HSS2.375X0.154	Beam	Pipe	A53 Gr.B	Typical	1	0.627	0.627	1.25
4	F1-V1	HSS2.375X0.154	Column	Pipe	A53 Gr.B	Typical	1	0.627	0.627	1.25
5	F1-V2	PIPE 1.5X16GA	Column	Pipe	A53 Gr.B	Typical	0.282	0.073	0.073	0.146
6	F1-D1	PIPE 1.5X16GA	VBrace	Pipe	A53 Gr.B	Typical	0.282	0.073	0.073	0.146
7	Tieback	HSS2.375X0.154	Beam	Pipe	A53 Gr.B	Typical	1	0.627	0.627	1.25
8	F1-CP1	PL3/8X3_HRA	Beam	RECT	A36 Gr.36	Typical	1.14	0.014	0.855	0.05
9	Tieback 2	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	1	2	3	90	F1-CP1	Beam	RECT	A36 Gr.36	Typical
2	2	1	2		F1-S1	Beam	Pipe	A53 Gr.B	Typical
3	3	5	3	90	F1-CP1	Beam	RECT	A36 Gr.36	Typical
4	4	7	8	90	F1-CP1	Beam	RECT	A36 Gr.36	Typical
5	5	6	7		F1-S1	Beam	Pipe	A53 Gr.B	Typical
6	6	10	8	90	F1-CP1	Beam	RECT	A36 Gr.36	Typical
7	7	9	10		F1-S1	Beam	Pipe	A53 Gr.B	Typical
8	8	11	16		F1-V1	Column	Pipe	A53 Gr.B	Typical
9	9	15	12		F1-V2	Column	Pipe	A53 Gr.B	Typical
10	10	19	18		F1-V2	Column	Pipe	A53 Gr.B	Typical
11	11	13	20		F1-V1	Column	Pipe	A53 Gr.B	Typical
12	12	17	14		F1-V2	Column	Pipe	A53 Gr.B	Typical
13	13	15	21		F1-D1	VBrace	Pipe	A53 Gr.B	Typical
14	14	22	16		F1-D1	VBrace	Pipe	A53 Gr.B	Typical
15	15	17	18		F1-D1	VBrace	Pipe	A53 Gr.B	Typical
16	16	19	20		F1-D1	VBrace	Pipe	A53 Gr.B	Typical
17	17	21	22		F1-V2	Column	Pipe	A53 Gr.B	Typical
18	18	5	4		F1-S1	Beam	Pipe	A53 Gr.B	Typical
19	19	23	24		Tieback 2	Beam	Pipe	A53 Gr.B	Typical
20	20	25	26		MF-H1	Beam	Pipe	A53 Gr.B	Typical
21	21	27	28		MF-H1	Beam	Pipe	A53 Gr.B	Typical
22	22	29	30		RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
23	23	31	32		RIGID	None	None	RIGID	Typical
24	24	33	34		MF-P1	Column	Pipe	A53 Gr.B	Typical
25	25	35	36		RIGID	None	None	RIGID	Typical
26	26	37	38		RIGID	None	None	RIGID	Typical
27	27	39	40		MF-P1	Column	Pipe	A53 Gr.B	Typical
28	28	41	42		RIGID	None	None	RIGID	Typical
29	29	43	44		RIGID	None	None	RIGID	Typical
30	30	45	46		MF-P1	Column	Pipe	A53 Gr.B	Typical
31	31	50	51		Tieback	Beam	Pipe	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	Physical	Deflection Ratio Options	Seismic DR
1	1			Yes	Default	None
2	2			Yes	N/A	None
3	3			Yes	Default	None
4	4			Yes	Default	None
5	5			Yes	N/A	None
6	6			Yes	Default	None
7	7			Yes	N/A	None
8	8	BenPIN	BenPIN	Yes	** NA **	None
9	9	BenPIN	BenPIN	Yes	** NA **	None
10	10	BenPIN	BenPIN	Yes	** NA **	None
11	11	BenPIN	BenPIN	Yes	** NA **	None
12	12	BenPIN	BenPIN	Yes	** NA **	None
13	13	BenPIN	BenPIN	Yes	** NA **	None
14	14	BenPIN	BenPIN	Yes	** NA **	None
15	15	BenPIN	BenPIN	Yes	** NA **	None
16	16	BenPIN	BenPIN	Yes	** NA **	None
17	17	BenPIN	BenPIN	Yes	** NA **	None
18	18			Yes	N/A	None
19	19	BenPIN		Yes	N/A	None
20	20			Yes	N/A	None
21	21			Yes	N/A	None
22	22			Yes	** NA **	None
23	23			Yes	** NA **	None
24	24			Yes	** NA **	None
25	25			Yes	** NA **	None
26	26			Yes	** NA **	None
27	27			Yes	** NA **	None
28	28			Yes	** NA **	None
29	29			Yes	** NA **	None
30	30			Yes	** NA **	None
31	31	BenPIN		Yes	N/A	None

Hot Rolled Steel Design Parameters

	Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	Lcomp top [ft]	Function
1	1	F1-CP1	0.228			Lbyy	Lateral
2	2	F1-S1	6.146			Lbyy	Lateral
3	3	F1-CP1	0.228			Lbyy	Lateral
4	4	F1-CP1	0.228			Lbyy	Lateral
5	5	F1-S1	6.146			Lbyy	Lateral
6	6	F1-CP1	0.228			Lbyy	Lateral
7	7	F1-S1	6.146			Lbyy	Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length [ft]	Lb y-y [ft]	Lb z-z [ft]	Lcomp top [ft]	Function
8	8	F1-V1	3.417	2.917	2.917	Lbyy	Lateral
9	9	F1-V2	3.417	3	3	Lbyy	Lateral
10	10	F1-V2	3.417	3	3	Lbyy	Lateral
11	11	F1-V1	3.417	2.917	2.917	Lbyy	Lateral
12	12	F1-V2	3.417	3	3	Lbyy	Lateral
13	13	F1-D1	4.182	3.917	3.917	Lbyy	Lateral
14	14	F1-D1	4.182	3.917	3.917	Lbyy	Lateral
15	15	F1-D1	4.182	3.917	3.917	Lbyy	Lateral
16	16	F1-D1	4.182	3.917	3.917	Lbyy	Lateral
17	17	F1-V2	3.417	3	3	Lbyy	Lateral
18	18	F1-S1	6.146			Lbyy	Lateral
19	19	Tieback 2	10.958			Lbyy	Lateral
20	20	MF-H1	12			Lbyy	Lateral
21	21	MF-H1	12			Lbyy	Lateral
22	24	MF-P1	6			Lbyy	Lateral
23	27	MF-P1	9			Lbyy	Lateral
24	30	MF-P1	6			Lbyy	Lateral
25	31	Tieback	10.521			Lbyy	Lateral

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	30	Y	-0.02	%10
2	30	Y	-0.02	%90
3	30	Y	-0.109	%50
4	30	Y	0	0
5	30	Y	0	0
6	27	Y	-0.075	%5
7	27	Y	-0.075	%90
8	27	Y	-0.081	%50
9	27	Y	0	0
10	27	Y	0	0
11	24	Y	-0.057	%45
12	24	Y	-0.057	%90
13	24	Y	0	0
14	24	Y	0	0
15	24	Y	0	0

Member Point Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	30	Z	-0.124	%10
2	30	Z	-0.124	%90
3	30	Z	-0.076	%50
4	30	Z	0	0
5	30	Z	0	0
6	27	Z	-0.289	%5
7	27	Z	-0.289	%90
8	27	Z	-0.102	%50
9	27	Z	0	0
10	27	Z	0	0
11	24	Z	-0.104	%45
12	24	Z	-0.104	%90
13	24	Z	0	0
14	24	Z	0	0

Member Point Loads (BLC 2 : 0 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
15	24	Z	0	0

Member Point Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	30	X	-0.03	%10
2	30	X	-0.03	%90
3	30	X	-0.06	%50
4	30	X	0	0
5	30	X	0	0
6	27	X	-0.105	%5
7	27	X	-0.105	%90
8	27	X	-0.049	%50
9	27	X	0	0
10	27	X	0	0
11	24	X	-0.04	%45
12	24	X	-0.04	%90
13	24	X	0	0
14	24	X	0	0
15	24	X	0	0

Member Point Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	30	Z	-0.025	%10
2	30	Z	-0.025	%90
3	30	Z	-0.013	%50
4	30	Z	0	0
5	30	Z	0	0
6	27	Z	-0.054	%5
7	27	Z	-0.054	%90
8	27	Z	-0.017	%50
9	27	Z	0	0
10	27	Z	0	0
11	24	Z	-0.02	%45
12	24	Z	-0.02	%90
13	24	Z	0	0
14	24	Z	0	0
15	24	Z	0	0

Member Point Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	30	X	-0.008	%10
2	30	X	-0.008	%90
3	30	X	-0.01	%50
4	30	X	0	0
5	30	X	0	0
6	27	X	-0.022	%5
7	27	X	-0.022	%90
8	27	X	-0.008	%50
9	27	X	0	0
10	27	X	0	0
11	24	X	-0.009	%45
12	24	X	-0.009	%90

Member Point Loads (BLC 5 : 90 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
13	24	X	0	0
14	24	X	0	0
15	24	X	0	0

Member Point Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	30	Z	-0.008	%10
2	30	Z	-0.008	%90
3	30	Z	-0.005	%50
4	30	Z	0	0
5	30	Z	0	0
6	27	Z	-0.018	%5
7	27	Z	-0.018	%90
8	27	Z	-0.006	%50
9	27	Z	0	0
10	27	Z	0	0
11	24	Z	-0.006	%45
12	24	Z	-0.006	%90
13	24	Z	0	0
14	24	Z	0	0
15	24	Z	0	0

Member Point Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	30	X	-0.002	%10
2	30	X	-0.002	%90
3	30	X	-0.004	%50
4	30	X	0	0
5	30	X	0	0
6	27	X	-0.006	%5
7	27	X	-0.006	%90
8	27	X	-0.003	%50
9	27	X	0	0
10	27	X	0	0
11	24	X	-0.002	%45
12	24	X	-0.002	%90
13	24	X	0	0
14	24	X	0	0
15	24	X	0	0

Member Point Loads (BLC 8 : Ice)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	30	Y	-0.056	%10
2	30	Y	-0.056	%90
3	30	Y	-0.041	%50
4	30	Y	0	0
5	30	Y	0	0
6	27	Y	-0.191	%5
7	27	Y	-0.191	%90
8	27	Y	-0.048	%50
9	27	Y	0	0
10	27	Y	0	0

Member Point Loads (BLC 8 : Ice) (Continued)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
11	24	Y	-0.098	%45
12	24	Y	-0.098	%90
13	24	Y	0	0
14	24	Y	0	0
15	24	Y	0	0

Member Point Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	30	Z	-0.011	%10
2	30	Z	-0.011	%90
3	30	Z	-0.029	%50
4	30	Z	0	0
5	30	Z	0	0
6	27	Z	-0.04	%5
7	27	Z	-0.04	%90
8	27	Z	-0.022	%50
9	27	Z	0	0
10	27	Z	0	0
11	24	Z	-0.031	%45
12	24	Z	-0.031	%90
13	24	Z	0	0
14	24	Z	0	0
15	24	Z	0	0

Member Point Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	30	X	-0.011	%10
2	30	X	-0.011	%90
3	30	X	-0.029	%50
4	30	X	0	0
5	30	X	0	0
6	27	X	-0.04	%5
7	27	X	-0.04	%90
8	27	X	-0.022	%50
9	27	X	0	0
10	27	X	0	0
11	24	X	-0.031	%45
12	24	X	-0.031	%90
13	24	X	0	0
14	24	X	0	0
15	24	X	0	0

Member Point Loads (BLC 15 : Maint LL 1)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	2	Y	-0.25	%50

Member Point Loads (BLC 16 : Maint LL 2)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	5	Y	-0.25	%50

Member Point Loads (BLC 17 : Maint LL 3)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	18	Y	-0.25	%50

Member Point Loads (BLC 18 : Maint LL 4)

	Member Label	Direction	Magnitude [k, k-ft]	Location [(ft, %)]
1	7	Y	-0.25	%50

Member Distributed Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.002	-0.002	0	%100
2	2	Z	-0.008	-0.008	0	%100
3	3	Z	-0.002	-0.002	0	%100
4	4	Z	-0.002	-0.002	0	%100
5	5	Z	-0.008	-0.008	0	%100
6	6	Z	-0.002	-0.002	0	%100
7	7	Z	-0.008	-0.008	0	%100
8	8	Z	-0.007	-0.007	0	%100
9	9	Z	-0.005	-0.005	0	%100
10	10	Z	-0.005	-0.005	0	%100
11	11	Z	-0.007	-0.007	0	%100
12	12	Z	-0.005	-0.005	0	%100
13	13	Z	-0.005	-0.005	0	%100
14	14	Z	-0.005	-0.005	0	%100
15	15	Z	-0.005	-0.005	0	%100
16	16	Z	-0.005	-0.005	0	%100
17	17	Z	-0.005	-0.005	0	%100
18	18	Z	-0.008	-0.008	0	%100
19	19	Z	-0.012	-0.012	0	%100
20	20	Z	-0.01	-0.01	0	%100
21	21	Z	-0.01	-0.01	0	%100
22	24	Z	-0.008	-0.008	0	%100
23	27	Z	-0.008	-0.008	0	%100
24	30	Z	-0.008	-0.008	0	%100
25	31	Z	-0.008	-0.008	0	%100

Member Distributed Loads (BLC 3 : 90 Wind - No Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.002	-0.002	0	%100
2	2	X	-0.008	-0.008	0	%100
3	3	X	-0.002	-0.002	0	%100
4	4	X	-0.002	-0.002	0	%100
5	5	X	-0.008	-0.008	0	%100
6	6	X	-0.002	-0.002	0	%100
7	7	X	-0.008	-0.008	0	%100
8	8	X	-0.007	-0.007	0	%100
9	9	X	-0.005	-0.005	0	%100
10	10	X	-0.005	-0.005	0	%100
11	11	X	-0.007	-0.007	0	%100
12	12	X	-0.005	-0.005	0	%100
13	13	X	-0.005	-0.005	0	%100
14	14	X	-0.005	-0.005	0	%100
15	15	X	-0.005	-0.005	0	%100

Member Distributed Loads (BLC 3 : 90 Wind - No Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
16	16	X	-0.005	-0.005	0	%100
17	17	X	-0.005	-0.005	0	%100
18	18	X	-0.008	-0.008	0	%100
19	19	X	-0.012	-0.012	0	%100
20	20	X	-0.01	-0.01	0	%100
21	21	X	-0.01	-0.01	0	%100
22	24	X	-0.008	-0.008	0	%100
23	27	X	-0.008	-0.008	0	%100
24	30	X	-0.008	-0.008	0	%100
25	31	X	-0.008	-0.008	0	%100

Member Distributed Loads (BLC 4 : 0 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.003	-0.003	0	%100
2	2	Z	-0.001	-0.001	0	%100
3	3	Z	-0.003	-0.003	0	%100
4	4	Z	-0.003	-0.003	0	%100
5	5	Z	-0.001	-0.001	0	%100
6	6	Z	-0.003	-0.003	0	%100
7	7	Z	-0.001	-0.001	0	%100
8	8	Z	-0.002	-0.002	0	%100
9	9	Z	-0.001	-0.001	0	%100
10	10	Z	-0.001	-0.001	0	%100
11	11	Z	-0.002	-0.002	0	%100
12	12	Z	-0.001	-0.001	0	%100
13	13	Z	-0.001	-0.001	0	%100
14	14	Z	-0.001	-0.001	0	%100
15	15	Z	-0.001	-0.001	0	%100
16	16	Z	-0.001	-0.001	0	%100
17	17	Z	-0.001	-0.001	0	%100
18	18	Z	-0.001	-0.001	0	%100
19	19	Z	-0.002	-0.002	0	%100
20	20	Z	-0.002	-0.002	0	%100
21	21	Z	-0.002	-0.002	0	%100
22	24	Z	-0.001	-0.001	0	%100
23	27	Z	-0.001	-0.001	0	%100
24	30	Z	-0.001	-0.001	0	%100
25	31	Z	-0.001	-0.001	0	%100

Member Distributed Loads (BLC 5 : 90 Wind - Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.003	-0.003	0	%100
2	2	X	-0.001	-0.001	0	%100
3	3	X	-0.003	-0.003	0	%100
4	4	X	-0.003	-0.003	0	%100
5	5	X	-0.001	-0.001	0	%100
6	6	X	-0.003	-0.003	0	%100
7	7	X	-0.001	-0.001	0	%100
8	8	X	-0.002	-0.002	0	%100
9	9	X	-0.001	-0.001	0	%100
10	10	X	-0.001	-0.001	0	%100
11	11	X	-0.002	-0.002	0	%100
12	12	X	-0.001	-0.001	0	%100

Member Distributed Loads (BLC 5 : 90 Wind - Ice) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
13	13	X	-0.001	-0.001	0	%100
14	14	X	-0.001	-0.001	0	%100
15	15	X	-0.001	-0.001	0	%100
16	16	X	-0.001	-0.001	0	%100
17	17	X	-0.001	-0.001	0	%100
18	18	X	-0.001	-0.001	0	%100
19	19	X	-0.002	-0.002	0	%100
20	20	X	-0.002	-0.002	0	%100
21	21	X	-0.002	-0.002	0	%100
22	24	X	-0.001	-0.001	0	%100
23	27	X	-0.001	-0.001	0	%100
24	30	X	-0.001	-0.001	0	%100
25	31	X	-0.001	-0.001	0	%100

Member Distributed Loads (BLC 6 : 0 Wind - Service)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-1e-04	-1e-04	0	%100
2	2	Z	-0.0003	-0.0003	0	%100
3	3	Z	-1e-04	-1e-04	0	%100
4	4	Z	-1e-04	-1e-04	0	%100
5	5	Z	-0.0003	-0.0003	0	%100
6	6	Z	-1e-04	-1e-04	0	%100
7	7	Z	-0.0003	-0.0003	0	%100
8	8	Z	-0.0003	-0.0003	0	%100
9	9	Z	-0.0002	-0.0002	0	%100
10	10	Z	-0.0002	-0.0002	0	%100
11	11	Z	-0.0003	-0.0003	0	%100
12	12	Z	-0.0002	-0.0002	0	%100
13	13	Z	-0.0002	-0.0002	0	%100
14	14	Z	-0.0002	-0.0002	0	%100
15	15	Z	-0.0002	-0.0002	0	%100
16	16	Z	-0.0002	-0.0002	0	%100
17	17	Z	-0.0002	-0.0002	0	%100
18	18	Z	-0.0003	-0.0003	0	%100
19	19	Z	-0.0004	-0.0004	0	%100
20	20	Z	-0.0003	-0.0003	0	%100
21	21	Z	-0.0003	-0.0003	0	%100
22	24	Z	-0.0003	-0.0003	0	%100
23	27	Z	-0.0003	-0.0003	0	%100
24	30	Z	-0.0003	-0.0003	0	%100
25	31	Z	-0.0003	-0.0003	0	%100

Member Distributed Loads (BLC 7 : 90 Wind - Service)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-1e-04	-1e-04	0	%100
2	2	X	-0.0003	-0.0003	0	%100
3	3	X	-1e-04	-1e-04	0	%100
4	4	X	-1e-04	-1e-04	0	%100
5	5	X	-0.0003	-0.0003	0	%100
6	6	X	-1e-04	-1e-04	0	%100
7	7	X	-0.0003	-0.0003	0	%100
8	8	X	-0.0003	-0.0003	0	%100
9	9	X	-0.0002	-0.0002	0	%100

Member Distributed Loads (BLC 7 : 90 Wind - Service) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
10	10	X	-0.0002	-0.0002	0	%100
11	11	X	-0.0003	-0.0003	0	%100
12	12	X	-0.0002	-0.0002	0	%100
13	13	X	-0.0002	-0.0002	0	%100
14	14	X	-0.0002	-0.0002	0	%100
15	15	X	-0.0002	-0.0002	0	%100
16	16	X	-0.0002	-0.0002	0	%100
17	17	X	-0.0002	-0.0002	0	%100
18	18	X	-0.0003	-0.0003	0	%100
19	19	X	-0.0004	-0.0004	0	%100
20	20	X	-0.0003	-0.0003	0	%100
21	21	X	-0.0003	-0.0003	0	%100
22	24	X	-0.0003	-0.0003	0	%100
23	27	X	-0.0003	-0.0003	0	%100
24	30	X	-0.0003	-0.0003	0	%100
25	31	X	-0.0003	-0.0003	0	%100

Member Distributed Loads (BLC 8 : Ice)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Y	-0.006	-0.006	0	%100
2	2	Y	-0.005	-0.005	0	%100
3	3	Y	-0.006	-0.006	0	%100
4	4	Y	-0.006	-0.006	0	%100
5	5	Y	-0.005	-0.005	0	%100
6	6	Y	-0.006	-0.006	0	%100
7	7	Y	-0.005	-0.005	0	%100
8	8	Y	-0.005	-0.005	0	%100
9	9	Y	-0.004	-0.004	0	%100
10	10	Y	-0.004	-0.004	0	%100
11	11	Y	-0.005	-0.005	0	%100
12	12	Y	-0.004	-0.004	0	%100
13	13	Y	-0.004	-0.004	0	%100
14	14	Y	-0.004	-0.004	0	%100
15	15	Y	-0.004	-0.004	0	%100
16	16	Y	-0.004	-0.004	0	%100
17	17	Y	-0.004	-0.004	0	%100
18	18	Y	-0.005	-0.005	0	%100
19	19	Y	-0.007	-0.007	0	%100
20	20	Y	-0.006	-0.006	0	%100
21	21	Y	-0.006	-0.006	0	%100
22	24	Y	-0.005	-0.005	0	%100
23	27	Y	-0.005	-0.005	0	%100
24	30	Y	-0.005	-0.005	0	%100
25	31	Y	-0.005	-0.005	0	%100

Member Distributed Loads (BLC 9 : 0 Seismic)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	Z	-0.0009	-0.0009	0	%100
2	2	Z	-0.001	-0.001	0	%100
3	3	Z	-0.0009	-0.0009	0	%100
4	4	Z	-0.0009	-0.0009	0	%100
5	5	Z	-0.001	-0.001	0	%100
6	6	Z	-0.0009	-0.0009	0	%100

Member Distributed Loads (BLC 9 : 0 Seismic) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
7	7	Z	-0.001	-0.001	0	%100
8	8	Z	-0.001	-0.001	0	%100
9	9	Z	-0.0003	-0.0003	0	%100
10	10	Z	-0.0003	-0.0003	0	%100
11	11	Z	-0.001	-0.001	0	%100
12	12	Z	-0.0003	-0.0003	0	%100
13	13	Z	-0.0003	-0.0003	0	%100
14	14	Z	-0.0003	-0.0003	0	%100
15	15	Z	-0.0003	-0.0003	0	%100
16	16	Z	-0.0003	-0.0003	0	%100
17	17	Z	-0.0003	-0.0003	0	%100
18	18	Z	-0.001	-0.001	0	%100
19	19	Z	-0.002	-0.002	0	%100
20	20	Z	-0.002	-0.002	0	%100
21	21	Z	-0.002	-0.002	0	%100
22	24	Z	-0.001	-0.001	0	%100
23	27	Z	-0.001	-0.001	0	%100
24	30	Z	-0.001	-0.001	0	%100
25	31	Z	-0.001	-0.001	0	%100

Member Distributed Loads (BLC 10 : 90 Seismic)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	1	X	-0.0009	-0.0009	0	%100
2	2	X	-0.001	-0.001	0	%100
3	3	X	-0.0009	-0.0009	0	%100
4	4	X	-0.0009	-0.0009	0	%100
5	5	X	-0.001	-0.001	0	%100
6	6	X	-0.0009	-0.0009	0	%100
7	7	X	-0.001	-0.001	0	%100
8	8	X	-0.001	-0.001	0	%100
9	9	X	-0.0003	-0.0003	0	%100
10	10	X	-0.0003	-0.0003	0	%100
11	11	X	-0.001	-0.001	0	%100
12	12	X	-0.0003	-0.0003	0	%100
13	13	X	-0.0003	-0.0003	0	%100
14	14	X	-0.0003	-0.0003	0	%100
15	15	X	-0.0003	-0.0003	0	%100
16	16	X	-0.0003	-0.0003	0	%100
17	17	X	-0.0003	-0.0003	0	%100
18	18	X	-0.001	-0.001	0	%100
19	19	X	-0.002	-0.002	0	%100
20	20	X	-0.002	-0.002	0	%100
21	21	X	-0.002	-0.002	0	%100
22	24	X	-0.001	-0.001	0	%100
23	27	X	-0.001	-0.001	0	%100
24	30	X	-0.001	-0.001	0	%100
25	31	X	-0.001	-0.001	0	%100

Node Loads and Enforced Displacements (BLC 11 : Live Load a)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	31	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 12 : Live Load b)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	37	L	Y	-0.5

Node Loads and Enforced Displacements (BLC 13 : Live Load c)

	Node Label	L, D, M	Direction	Magnitude [(k, k-ft), (in, rad), (k*s²/ft, k*s²*ft)]
1	43	L	Y	-0.5

Basic Load Cases

	BLC Description	Category	Y Gravity	Nodal	Point	Distributed
1	Dead	DL	-1		15	
2	0 Wind - No Ice	WLZ			15	25
3	90 Wind - No Ice	WLX			15	25
4	0 Wind - Ice	WLZ			15	25
5	90 Wind - Ice	WLX			15	25
6	0 Wind - Service	WLZ			15	25
7	90 Wind - Service	WLX			15	25
8	Ice	OL1			15	25
9	0 Seismic	ELZ			15	25
10	90 Seismic	ELX			15	25
11	Live Load a	LL		1		
12	Live Load b	LL		1		
13	Live Load c	LL		1		
14	Live Load d	LL				
15	Maint LL 1	LL			1	
16	Maint LL 2	LL			1	
17	Maint LL 3	LL			1	
18	Maint LL 4	LL			1	
19	Maint LL 5	LL				
20	Maint LL 6	LL				
21	Maint LL 7	LL				
22	Maint LL 8	LL				
23	Maint LL 9	LL				
24	Maint LL 10	LL				
25	Maint LL 11	LL				
26	Maint LL 12	LL				
27	Maint LL 13	LL				
28	Maint LL 14	LL				
29	Maint LL 15	LL				

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4 Dead	Yes	Y	1	1.4						
2	1.2 D + 1.0 - 0 W	Yes	Y	1	1.2	2	1				
3	1.2 D + 1.0 - 30 W	Yes	Y	1	1.2	2	0.866	3	0.5		
4	1.2 D + 1.0 - 60 W	Yes	Y	1	1.2	3	0.866	2	0.5		
5	1.2 D + 1.0 - 90 W	Yes	Y	1	1.2	3	1				
6	1.2 D + 1.0 - 120 W	Yes	Y	1	1.2	3	0.866	2	-0.5		
7	1.2 D + 1.0 - 150 W	Yes	Y	1	1.2	2	-0.866	3	0.5		
8	1.2 D + 1.0 - 180 W	Yes	Y	1	1.2	2	-1				
9	1.2 D + 1.0 - 210 W	Yes	Y	1	1.2	2	-0.866	3	-0.5		
10	1.2 D + 1.0 - 240 W	Yes	Y	1	1.2	3	-0.866	2	-0.5		
11	1.2 D + 1.0 - 270 W	Yes	Y	1	1.2	3	-1				

Load Combinations (Continued)

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

Load Combinations (Continued)

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

Envelope Node Reactions

	Node Label		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	8	max	1.182	65	1.168	20	3.326	14	0	100	0	100	0	100
2		min	-1.398	47	0.496	2	0.497	8	0	1	0	1	0	1
3	3	max	1.401	41	1.292	14	-0.515	2	0	100	0	100	0	100
4		min	-1.184	71	0.535	8	-3.283	20	0	1	0	1	0	1
5	51	max	0.064	5	0.048	22	0.885	4	0	100	0	100	0	100
6		min	-0.065	11	0.021	4	-0.901	10	0	1	0	1	0	1
7	24	max	0.039	5	0.085	17	0.647	11	0	100	0	100	0	100
8		min	-0.039	11	0.046	11	-0.666	5	0	1	0	1	0	1
9	Totals:	max	1.521	5	2.584	20	2.275	2						
10		min	-1.521	11	1.141	2	-2.275	8						

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
1	1	PL3/8X3_HRA	0.388	0	24	0.275	0.005	y	73	35.751	36.936	0.292	2.308	1.018	H1-1b
2	2	HSS2.375X0.154	0.347	5.506	45	0.103	6.146		24	20.206	31.5	1.872	1.872	2.212	H1-1b
3	3	PL3/8X3_HRA	0.371	0	64	0.313	0.228	y	25	35.751	36.936	0.292	2.308	1.134	H1-1b

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Eqn
4	4	PL3/8X3_HRA	0.388	0	25	0.251	0	y	68	35.751	36.936	0.292	2.308	1.076	H1-1b
5	5	HSS2.375X0.154	0.359	5.442	48	0.095	6.146		22	20.206	31.5	1.872	1.872	2.142	H1-1b
6	6	PL3/8X3_HRA	0.378	0	63	0.291	0.228	y	20	35.751	36.936	0.292	2.308	1.078	H1-1b
7	7	HSS2.375X0.154	0.34	5.442	64	0.09	6.146		19	20.206	31.5	1.872	1.872	2.129	H1-1b
8	8	HSS2.375X0.154	0.285	1.21	5	0.048	0		5	28.502	31.5	1.872	1.872	1.355	H1-1b
9	9	PIPE 1.5X16GA	0.129	3.417	66	0.022	3.417		5	6.881	8.891	0.339	0.339	1	H1-1b*
10	10	PIPE 1.5X16GA	0.249	2.029	47	0.019	3.417		5	6.881	8.891	0.339	0.339	1	H1-1a
11	11	HSS2.375X0.154	0.302	0.89	4	0.073	0.854		10	28.502	31.5	1.872	1.872	1.159	H1-1b
12	12	PIPE 1.5X16GA	0.137	3.417	22	0.023	3.417		5	6.881	8.891	0.339	0.339	1	H1-1b*
13	13	PIPE 1.5X16GA	0.257	2.047	64	0.016	4.182		45	5.744	8.891	0.339	0.339	1	H1-1a
14	14	PIPE 1.5X16GA	0.197	0	65	0.018	4.182		9	5.744	8.891	0.339	0.339	1	H1-1b*
15	15	PIPE 1.5X16GA	0.289	2.047	24	0.018	4.182		7	5.744	8.891	0.339	0.339	1	H1-1a
16	16	PIPE 1.5X16GA	0.21	2.047	48	0.029	4.182		7	5.744	8.891	0.339	0.339	1	H1-1a
17	17	PIPE 1.5X16GA	0.235	1.388	64	0.017	3.417		5	6.881	8.891	0.339	0.339	1.136	H1-1a
18	18	HSS2.375X0.154	0.327	0.64	66	0.096	0		15	20.206	31.5	1.872	1.872	2.184	H1-1b
19	19	PIPE_3.0	0.049	5.479	11	0.004	10.958		23	34.288	65.205	5.749	5.749	1.136	H1-1b
20	20	HSS2.875X0.203	0.153	3.75	52	0.127	1.75		2	15.797	50.085	3.596	3.596	2.011	H1-1b
21	21	HSS2.875X0.203	0.162	3.75	58	0.117	1.75		8	15.797	50.085	3.596	3.596	2.067	H1-1b
22	24	PIPE_2.0	0.212	2.375	42	0.029	2.375		20	20.867	32.13	1.872	1.872	2.214	H1-1b
23	27	PIPE_2.0	0.372	2.719	8	0.032	2.719		8	12.144	32.13	1.872	1.872	2.689	H1-1b
24	30	PIPE_2.0	0.227	1.25	70	0.032	4.625		16	20.867	32.13	1.872	1.872	1.565	H1-1b
25	31	HSS2.375X0.154	0.115	5.26	5	0.005	10.521		11	8.887	31.5	1.872	1.872	1.136	H1-1b

APPENDIX D

ADDITIONAL CALCUATIONS

PROJECT	**100140.015.01 - HRT 080 953381, CT**				**KSC**
SUBJECT	**Sector Mount Analysis**				
DATE	**09/16/21**	PAGE	1	OF	1

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

[REF: AISC 360-05]

Reactions at Bolted Connection

Tension	:	3.326	k
Vertical Shear	:	1.168	k
Horizontal Shear	:	1.182	k
Torsion	:	0	k.ft
Moment from Horizontal Forces	:	0	k.ft
Moment from Vertical Forces	:	0	k.ft

Bolt Parameters

Bolt Grade	:	A325	
Bolt Diameter	:	0.625	in
Nominal Bolt Area	:	0.307	in^2
Bolt spacing, Horizontal	:	6	in
Bolt spacing, Vertical	:	6	in
Bolt edge distance, plate height	:	1.5	in
Bolt edge distance, plate width	:	1.5	in
Total Number of Bolts	:	4	bolts

Summary of Forces

Shear Resultant Force	:	1.66	k
Force from Horz. Moment	:	0.00	k
Force from Vert. Moment	:	0.00	k
Shear Load / Bolt	:	0.42	k
Tension Load / Bolt	:	0.83	k
Resultant from Moments / Bolt	:	0.00	k

Bolt Checks

Nominal Tensile Stress, F_{nt}	:	90.00	ksi	[AISC Table J3.2]
Available Tensile Stress, ΦR_{nt}	:	20.72	k/bolt	[Eq. J3-1]
Unity Check, Bolt Tension	:	**4.01%**		**OKAY**
Nominal Shear Stress, F_{nv}	:	48.00	ksi	[AISC Table J3.2]
Available Shear Stress, ΦR_{nv}	:	11.05	k/bolt	[Eq. J3-1]
Unity Check, Bolt Shear	:	**11.28%**		**OKAY**
Unity Check, Combined	:	**15.29%**		**OKAY**
Available Bearing Strength, ΦR_n	:	34.66	k/bolt	
Unity Check, Bolt Bearing	:	**1.20%**		**OKAY**

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11935A

806478
539 Plains Road
Haddam, Connecticut 06438

November 17, 2021

EBI Project Number: 6221006879

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**17.81%**

November 17, 2021

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

Emissions Analysis for Site: CT11935A - 806478

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **539 Plains Road** in **Haddam, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 539 Plains Road in Haddam, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower. For power density calculations, the broadcast footprint of the AIR6449 antenna has been considered. Due to the beamforming nature of this antenna, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

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

1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.

3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

7) 1 LTE Traffic channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 60 Watts.

8) 1 LTE Broadcast channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 20 Watts.

9) 1 NR Traffic channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

10) 1 NR Broadcast channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts.

11) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

12) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

13) The antennas used in this modeling are the RFS APX16DWV-16DWV-S-E-A20 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector A, the RFS APX16DWV-16DWV-S-E-A20 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector B, the RFS APX16DWV-16DWV-S-E-A20 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and

associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

14) The antenna mounting height centerline of the proposed antennas is 150 feet above ground level (AGL).

15) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.9 dBd / 15.9 dBd / 15.9 dBd	Gain:	15.9 dBd / 15.9 dBd / 15.9 dBd	Gain:	15.9 dBd / 15.9 dBd / 15.9 dBd
Height (AGL):	150 feet	Height (AGL):	150 feet	Height (AGL):	150 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts
ERP (W):	14,005.63	ERP (W):	14,005.63	ERP (W):	14,005.63
Antenna A1 MPE %:	**2.43%**	Antenna B1 MPE %:	**2.43%**	Antenna C1 MPE %:	**2.43%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20	Make / Model:	RFS APXVAALL24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd
Height (AGL):	150 feet	Height (AGL):	150 feet	Height (AGL):	150 feet
Channel Count:	5	Channel Count:	5	Channel Count:	5
Total TX Power (W):	200 Watts	Total TX Power (W):	200 Watts	Total TX Power (W):	200 Watts
ERP (W):	4,151.83	ERP (W):	4,151.83	ERP (W):	4,151.83
Antenna A2 MPE %:	**1.71%**	Antenna B2 MPE %:	**1.71%**	Antenna C2 MPE %:	**1.71%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz
Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd
Height (AGL):	150 feet	Height (AGL):	150 feet	Height (AGL):	150 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	36,356.09	ERP (W):	36,356.09	ERP (W):	36,356.09
Antenna A3 MPE %:	**6.30%**	Antenna B3 MPE %:	**6.30%**	Antenna C3 MPE %:	**6.30%**

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	10.44%
Omnipt - VoiceStream	0.05%
Metro PCS	0.41%
AT&T	3.45%
Verizon	3.16%
Nextel	0.3%
Site Total MPE % :	17.81%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	10.44%
T-Mobile Sector B Total:	10.44%
T-Mobile Sector C Total:	10.44%
Site Total MPE % :	17.81%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz GSM	4	1167.14	150.0	8.09	1900 MHz GSM	1000	0.81%
T-Mobile 1900 MHz LTE	2	2334.27	150.0	8.09	1900 MHz LTE	1000	0.81%
T-Mobile 2100 MHz LTE	2	2334.27	150.0	8.09	2100 MHz LTE	1000	0.81%
T-Mobile 600 MHz LTE	2	591.73	150.0	2.05	600 MHz LTE	400	0.51%
T-Mobile 600 MHz NR	1	1577.94	150.0	2.74	600 MHz NR	400	0.68%
T-Mobile 700 MHz LTE	2	695.22	150.0	2.41	700 MHz LTE	467	0.52%
T-Mobile 2500 MHz LTE 1C & 2C Traffic	1	11044.63	150.0	19.15	2500 MHz LTE 1C & 2C Traffic	1000	1.91%
T-Mobile 2500 MHz LTE 1C & 2C Broadcast	1	1074.06	150.0	1.86	2500 MHz LTE 1C & 2C Broadcast	1000	0.19%
T-Mobile 2500 MHz NR Traffic	1	22089.26	150.0	38.30	2500 MHz NR Traffic	1000	3.83%
T-Mobile 2500 MHz NR Broadcast	1	2148.13	150.0	3.72	2500 MHz NR Broadcast	1000	0.37%
						Total:	**10.44%**

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

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	10.44%
Sector B:	10.44%
Sector C:	10.44%
T-Mobile Maximum MPE % (Sector A):	10.44%
Site Total:	17.81%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **17.81%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

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1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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