Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

June 7, 2022

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

RE: **Notice of Exempt Modification for T-Mobile: CTHA534A**
Crown Site ID# 806378
126 Pioneer Heights Road, Somers, CT 06071
Latitude: 41° 56′ 55.98″ / Longitude: -72° 29′ 31.55″

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 115-foot mount on the existing 161'-5"-foot monopole tower located at 126 Pioneer Heights Road, Somers, CT. The property and tower are owned by Crown Castle. T-Mobile now intends to replace six (6) antennas and ancillary equipment at the 115 ft level. 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.

Panned Modification:

Tower:

Installed New:
(3) Ericsson Air 6419 B41 Antennas
(3) Commscope- W-65A-R1 Antennas
(3) Ericsson-Radio 4460 B25+ B66 RRU
(1) Hybrid Cable 6x24

Remove:
(6) Ericsson – AIR21 KRC118023-1_B2P_B4A Antennas
(3) Ericsson Twin Style 1BX -KRY 112 144/2 TMAs
(3) Ericsson Twin Style 1A-KRY 112 71/2 TMAs
(12) 1-5/8" Coaxial Cables

Ground:

Install New:
(1.) RBS 6601
(1) RP 6651
(1) PSU 4813 Voltage Booster
(1) IXRE Router

(3) Rectifiers for 6160 cabinet
(6) 40amp Breakers
(3) 50amp SPDS

The facility was approved by the Connecticut Siting Council on, Docket No58 on July 11, 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 Tim Keeney, First Selectman, Town of Somers and Jennifer Roy, Zoning Enforcement Officer, Town of Somers. Crown Castle is the property and tower owner.

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). Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Sincerely,

Jeffrey Barbadora
Site Acquisition Specialist
1800 W. Park Drive
Westborough, MA 01581
(781) 970-0053
Jeff.Barbadora@crowncastle.com

Attachments
cc:

Tim Keeney, First Selectman
Town of Somers
600 Main Street
Somers, CT 06071
860-763-8200

Jennifer Roy, Zoning Enforcement Officer
Town of Somers
600 Main Street
Somers, CT 06071
860-763-8220

Crown Castle – Property & Tower Owner

DOCKET NO. 58

AN APPLICATION OF HARTFORD CELLULAR COPANY FOR A 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.	CONNECTICUT SITING COUNCIL
	July 11, 1986.

D E C I S I O N A N D O R D E R

Pursuant to the foregoing opinion, the Connecticut Siting Council (Council) hereby directs that a Certificate of Environmental Compatibility and Public Need as provided by Section 16-50k of the General Statutes of Connecticut (CGS) be issued to the Hartford Cellular Company for the construction, maintenance, and operation of cellular mobile phone telecommunication towers and associated equipment in the towns of Glastonbury, Haddam, Hartford, Portland, Rocky Hill, Somers, Vernon, Windsor, and Willington subject to the conditions below.

1) The proposed Bloomfield and Middlefield sites are rejected without prejudice.

2) The antennas on the Glastonbury tower shall be mounted no higher than the 180' level of this existing tower.

3) The Portland and Rocky Hill towers shall be monopoles.

4) The towers shall be no taller than necessary to provide the proposed service, and in no event shall exceed total heights, including antennas, of

a) 193' at the Haddam site;

b) 173' at the Portland site;

c) 153' at the Rocky Hill site;

d) 173' at the Somers site;

e) 173' at the Vernon site;

f) 153' at the Willington site;

g) 173' at the Windsor site.

5) The Hartford site receive antennas shall be mounted below the top of the high point of the building to preclude visibility.

6) Any future actions requiring the removal of the existing Glastonbury tower to be shared by the certificate holder shall also apply to the equipment mounted on that tower by the certificate holder, regardless of that equipment's status under Chapter 277a of the CGS.

7) The certificate holder shall submit a development and management (D&M) plan for the Haddam, Portland, Rocky Hill, Somers, Vernon and Windsor sites pursuant to Sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies (RSA), except that irrelevant items in Section 16-50j-76 need only be identified as such. In addition to the requirements of Section 16-50j-76, the D&M plan shall provide plans for evergreen screening around the fenced perimeter at the Haddam, Somers, Vernon, and Windsor sites. The D&M plan shall include a proposal for painting the approved monopole structures to blend with the sky. The D&M plan must be approved prior to facility construction. Any changes to specifications in the D&M plan must be approved by the Council prior to facility operation.

8) All certified facilities shall be constructed, operated, and maintained as specified in the Council's record and in the

site plan required by order number 7.

9) The certificate holder shall comply with any future radiofrequency (RF) standards promulgated by state or federal regulatory agencies. Upon the establishment of any new governmental RF standards, the facilities granted in this decison shall continue to be in compliance with such standards.

10) The certificate holder shall permit public or private entities to share space on the towers approved herein, for due consideration received, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing. In addition to complying with Section 16-50j-73 of the RSA, the certificate holder shall notify the Council of the addition of any equipment to any approved tower.

11) A fence not lower than 8' shall surround each tower and associated equipment.

12) Unless necessary to comply with order 13, no lights shall be installed on any of these towers.

13) The facilities' construction and any future tower sharing shall be in accordance with all applicable federal, state, and municipal laws and regulations. Shared uses by entities not subject to jurisdiction pursuant to Section 16-50k of the CGS shall be subject to all applicable federal, state, and municipal laws and regulations.

14) Construction activities shall take place during daylight working hours.

15) This decision and order shall be void and the towers and associate equipment shall be dismantled and removed, or reapplication for any new use shall be made to the Council before any such new use is made, if the towers do not provide or permanently cease to provide cellular service following completion of construction.

16) This decision and order shall be void if all construction authorized herein is not completed within three years of the issuance of this decision, or within three years of the completion of any appeal if appeal of this decision is taken, unless otherwise approved by the Council.

Pursuant to CGS Section 16-50p, we hereby direct that a copy of the decision and order shall be served on each person listed below. A notice of the issuance shall be published in the Hartford Courant, Middletown Press, Manchester Journal Inquirer, and the Willimantic Chronicle.

The parties to the proceeding are:

Metro Mobile (applicant)
5 Eversley Avenue
Norwalk, Connecticut 06855
ATTN: Armand Mascioli
General Manager

Howard L. Slater, Esq. (its attorneys)
Scott A. Gursky, Esq.
Byrne, Slater,Sandler,
Shulman & Rouse, P.C.
111 Pearl Street
Hartford, Connecticut 06103

Richard Rubin, Esq.
Fleischman and Walsh, P.C.
1725 N Street, N.W.
Washington, D. C. 20036

Mr. William Wamester
1225 Randolph Road
Middletown, Connecticut 06457

The Southern New England Telephone Company
227 Church Street
New Haven, Connecticut 06506
ATTN: Peter J. Tyrrell, Esq.

Mr. James W. Tilney

represented by:
Patricia A. Ayars
Samuel Baily, Jr.
Robinson & Cole
One Commercial Plaza
Hartford, CT. 06103-3597

Mr. Samuel DuBosar, Chairman
Bessie Bennett, Esq.
Town Plan & Zoning Commission
P.O. Box 337
Bloomfield, Connecticut 06002

Town of Somers

represented by:

Mr. Robert F. Peters
Town Counsel
Tatoian, Devline, Peters
& Davis
11 South Road
P.O. Box 415
Somers, CT. 06071

Town of Haddam
represented by:

Lucy R. Petrella
Chairperson
Town Office Building
Route 9A
P.O. Box 87
Haddam, CT. 06438

Midstate Regional Planning Agency

represented by:

Thomas M.Gilligan
Regional Planner
P.O. Box 139
Middletown, CT. 06457

Dr. Donald P. LaSalle
Director
Talcott Mountain Science Center
Montevideo Road
Avon, Connecticut 06001

Barnard Tilson (service waived)
Secretary
Avon Planning and Zoning
60 West Main Street
Avon, Connecticut 06001

Alden Giddings
33 Privelege Road
Bloomfield, Connecticut 06002

Town of Bloomfield

represented by:

Joseph M.Suggs, Jr.
Deputy Mayor
Town Hall
880 Bloomfield Avenue
P.O. Box 337
Bloomfield, CT. 06002
(service waived)

Town of Middlefield represented by:

David Silverstone, Esq.
Silverstone & Koontz
37 Lewis Street
Hartford, CT. 06103

with a copy to:

Geoffrey Colegrove
Midstate Regional Planning Agency
100 DeKoven Drive
Middletown, CT. 06457

Zoning Commission represented by:
Town of Somers

Joseph A. Paradis
Chairman
Town Hall
600 Main Street
P.O. Box 803
Somers, CT. 06071

Barbara Sirwilo, Secretary (service waived)
Planning & Zoning Commission
Town of Rocky Hill
600 Old Main Street
P.O. Box 657
Rocky Hill, Connecticut 06067

H. Robert Goodrich (service waived)
Goodrich Lane
Portland, Connecticut 06480

The Honorable Richard P. Antonetti
State Representative (service waived)
5 Sachem Circle
Meriden, Connecticut 06450

John Hevrin
R.D. #1 - Plains Road
Haddam, Connecticut 06438

Norman and Darlene Manning (represented by)

Elizabeth Allen, Esq.
P.O. Box 467
Higganum, CT. 06441
(service waived)

CERTIFICATION

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

Dated at New Britain, Connecticut, this 11th day of July, 1986.

Council Members	Vote Cast
Gloria Dibble Pond Chairperson	Absent
Commissioner John Downey Designee: Patricia Shea	Yes
Commissioner Stanley Pac Designee: Christopher Cooper	Yes
Owen L. Clark	Yes
Mortimer A. Gelston	Yes
James G. Horsfall	Yes
Pamela B. Katz	Absent
William H. Smith	Yes
Colin C. Tait	Yes

STATE OF CONNECTICUT)
: ss. New Britain, July 11, 1986
COUNTY OF HARTFORD)

I hereby certify that the foregoing is a true and correct copy of the decision and order issued by the Connecticut Siting Council, State of Connecticut.

ATTEST:

Christopher S. Wood

Christopher S. Wood, Executive Director
Connecticut Siting Council

Town of Somers, CT

Property Listing Report

Map Block Lot	01-13-A	Building #	1	PID	1814	Account	00228200

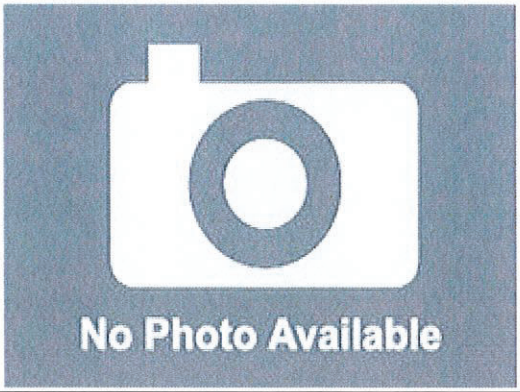
Property Information

Property Location	126 PIONEER HEIGHTS
Owner	FARNHAM LENA G & FAYE F GATELY
Co-Owner	C/O CROWN ATLANTIC CO LLC
Mailing Address	PMB 353 4017 WASHINGTON R MCMURRAY PA 15317
Land Use	299 Vac Comm Lnd
Land Class	C
Zoning Code	A-1
Census Tract	5382.01

Neighborhood	C
Acreage	0.5
Utilities	
Lot Setting/Desc	
Book / Page	0280/0125
Additional Info	

Photo

Sketch



Primary Construction Details

Year Built	0
Building Desc.	Vac Comm Lnd
Building Style	UNKNOWN
Building Grade	
Stories	
Occupancy	
Exterior Walls	
Exterior Walls 2	NA
Roof Style	
Roof Cover	
Interior Walls	
Interior Walls 2	NA
Interior Floors 1	
Interior Floors 2	NA

Heating Fuel	
Heating Type	
AC Type	
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Fin Bsmt Area	0
Fin Bsmt Quality	0
Bsmt Gar	0
Fireplaces	0

(*Industrial / Commercial Details)

Building Use	Vacant
Building Condition	
Sprinkler %	NA
Heat / AC	NA
Frame Type	NA
Baths / Plumbing	NA
Ceiling / Wall	NA
Rooms / Prtns	NA
Wall Height	NA
First Floor Use	NA
Foundation	NA

Report Created On 6/7/2022

Town of Somers, CT

Property Listing Report

Map Block Lot	01-13-A	Building #	1	PID	1814	Account	00228200

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	0	0
Extras	0	0
Improvements		
Outbuildings	111600	78200
Land	335000	234500
Total	446600	312700

Outbuilding and Extra Features

Type	Description
Fence, Chain	400 LF
PreCast Cell Shed	315 SF
PreCast Cell Shed	192 SF
Tower	160 LF
PreCast Cell Shed	200 SF

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	0	0

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
FARNHAM LENA G & FAYE F GATELY	0280/0125	2008-08-21	0
FARNHAM CLARENCE D JR ET AL	0255/0671	2005-11-28	0

Report Created On 6/7/2022

Town of Somers, Connecticut - Assessment Parcel Map

Parcel: 01-13-A **Address:** 126 PIONEER HEIGHTS

Map Produced May 2022

Approximate Scale: 1 inch = 100 feet

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Wednesday, June 8, 2022 10:53 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 777063289760: Your package has been delivered

Hi. Your package was delivered Wed, 06/08/2022 at 10:50am.

Delivered to 600 MAIN ST, SOMERS, CT 06071
Received by D.MURPHY

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 777063289760

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Somers Tim Keeney, First Selectman 600 Main Street SOMERS, CT, US, 06071
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Tue 6/07/2022 05:41 PM
DELIVERED TO	Shipping/Receiving
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	SOMERS, CT, US, 06071
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Wednesday, June 8, 2022 10:54 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 777063322990: Your package has been delivered

Hi. Your package was delivered Wed, 06/08/2022 at 10:50am.

Delivered to 600 MAIN ST, SOMERS, CT 06071
Received by D.MURPHY

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 777063322990

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Somers Jennifer Roy, CZEO 600 Main Street SOMERS, CT, US, 06071
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Tue 6/07/2022 05:41 PM
DELIVERED TO	Shipping/Receiving
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	SOMERS, CT, US, 06071
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

Date: **April 05, 2022**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Metro PCS* Co-Locate**	
	Site Number:	CTHA534A
	Site Name:	Crown Somers Lattice Tower
Crown Castle Designation:	**BU Number:**	806378
	Site Name:	HRT 086 943248
	JDE Job Number:	709736
	Work Order Number:	2097308
	Order Number:	609062 Rev. 0
Engineering Firm Designation:	**B+T Group Project Number:**	136290.007.01
Site Data:	**126 Pioneer Heights Rd, Somers, Tolland County, CT** **Latitude *41° 56' 55.98"*, Longitude *-72° 29' 31.55"*** **160 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.

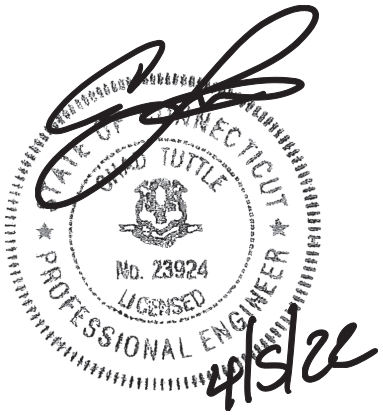
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration **Sufficient Capacity - 88.5%**

This analysis utilizes an ultimate 3-second gust wind speed of 117 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Carlon Bethell II

Respectfully submitted by:B+T Engineering, Inc.
COA: PEC.0001564; Expires: 02/01/2023



Chad E. Tuttle, P.E.

tnxTower Report - version 8.1.1.0

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 160 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:	117 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
113.0	114.0	3	Commscope	VV-65A-R1_TMO	4	1-5/8
		3	Ericsson	AIR 6419 B41_TMO		
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	Rfs Celwave	APXVAALL24_43-U-NA20_TMO		
	113.0	1	--	Sector Mount [SM 503-3]		

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)
157.0	158.0	1	Raycap	RVZDC-6627-PF-48_CCIV2	14	1-5/8
		3	Samsung Telecomm.	RF4439D-25A		
		3	Samsung Telecomm.	RF4440D-13A		
	157.0	2	Antel	LPA-80063/4CF		
		2	Antel	LPA-80063/4CFX5		
		6	Commscope	NHH-65B-R2B		
		2	Rfs Celwave	APL866513-42T6		
		3	Samsung Telecomm.	MT6407-77A		
		3	--	BSAMNT-SBS-1-2		
		3	Site Pro1	SPTB-NP Tie back Kit		
		1	--	Sector Mount [SM 505-3]		
147.0	147.0	3	Fujitsu	TA08025-B604	1	1-1/2
		3	Fujitsu	TA08025-B605		
		3	Jma Wireless	MX08FRO665-21		
		1	Raycap	RDIDC-9181-PF-48		
		1	--	Commscope MTC3975083 (3)		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
135.0	137.0	3	CCI Antennas	HPA-65R-BUU-H8	12 4 2	1-1/4 3/4 3/8
		3	CCI Antennas	TPA-65R-LCUUUU-H8		
		3	Ericsson	RRUS 11		
		3	Ericsson	RRUS 4415 B25		
		3	Ericsson	RRUS 4426 B66		
		3	Ericsson	WCS RRUS-32-B30		
		3	Kaelus	DBC0062F1V51-1		
		6	Powerwave Tech.	7020.00		
		3	Powerwave Tech.	7770.00		
		3	Powerwave Tech.	TT19-08BP111-001		
		2	Raycap	DC6-48-60-18-8F		
	135.0	1	--	Sector Mount [SM 504-3]		
125.0	126.0	3	Alcatel Lucent	TD-RRH8x20-25	3 1	1-1/4 5/8
		1	Rfs Celwave	APXV9ERR18-C-A20		
		2	Rfs Celwave	APXVSPP18-C-A20		
		3	Rfs Celwave	APXVTM14-C-120		
	125.0	3	Alcatel Lucent	1900MHz RRH (65MHz)		
		3	Alcatel Lucent	800MHz 2X50W RRH W/FILTER		
		1	--	Sector Mount [SM 402-3]		
57.0	60.0	1	Gps	GPS_A	1	1/2
	57.0	1	--	Side Arm Mount [SO 202-1]		
48.0	48.0	1	--	Side Arm Mount [SO 202-1]	1	1/2

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Tower Manufacturer Drawing	7175605	CCI Sites
Mount Analysis Report	10272575	CCI Sites
Tower Modification Drawing	866858	CCI Sites
Tower Modification Drawing/PMI	1278690	CCI Sites
Tower Modification Drawing	2961397	CCI Sites
Post Modification Inspection	2961404	CCI Sites
Tower Modification Drawing	3265393	CCI Sites
Post Modification Inspection	3684249	CCI Sites
Tower Modification Drawing	5615504	CCI Sites
Post Modification Inspection	5852475	CCI Sites
Tower Modification Drawing	7498454	CCI Sites
Post Modification Inspection	8011021	CCI Sites
Tower Modification Drawing	5264915	CCI Sites
Foundation Drawing	262063	CCI Sites

Document	Reference	Source
Geotech Report	1275233	CCI Sites
Crown CAD Package	Date: 03/28/2022	CCI Sites

3.1) Analysis Method

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

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	160 - 140	Leg	ROHN 2 STD	2	-19.913	38.684	51.5	Pass
T2	140 - 135	Leg	ROHN 2.5 EH	38	-25.397	78.149	32.5	Pass
T3	135 - 130	Leg	ROHN 2.5 EH	50	-35.767	78.149	45.8	Pass
T4	130 - 125	Leg	ROHN 2.5 EH	59	-44.078	78.149	56.4	Pass
T5	125 - 120	Leg	ROHN 2.5 EH	68	-53.774	78.149	68.8	Pass
T6	120 - 113.333	Leg	ROHN 3 EH	77	-63.946	99.059	64.6	Pass
T7	113.333 - 106.667	Leg	ROHN 3 EH	86	-77.956	99.059	78.7	Pass
T8	106.667 - 100	Leg	ROHN 3 EH	95	-91.616	129.331	70.8	Pass
T9	100 - 93.3333	Leg	ROHN 3.5 EH	107	-104.423	132.012	79.1	Pass
T10	93.3333 - 86.6667	Leg	ROHN 3.5 EH	116	-116.891	132.011	88.5	Pass
T11	86.6667 - 80	Leg	ROHN 3.5 EH	125	-128.480	161.634	79.5	Pass
T12	80 - 73.3333	Leg	ROHN 4 X-STR	137	-140.636	167.898	83.8	Pass
T13	73.3333 - 66.6667	Leg	ROHN 4 X-STR	146	-151.443	196.788	77.0	Pass
T14	66.6667 - 60	Leg	ROHN 4 X-STR	158	-162.824	196.814	82.7	Pass
T15	60 - 50	Leg	ROHN. 5 EH	170	-176.946	211.314	83.7	Pass
T16	50 - 40	Leg	ROHN. 5 EH	179	-193.191	265.798	72.7	Pass
T17	40 - 30	Leg	ROHN 5 X-STR	191	-209.685	265.818	78.9	Pass
T18	30 - 20	Leg	ROHN 5 X-STR	203	-225.572	283.206	79.6	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T19	20 - 0	Leg	B+T_BU 806378 - 6.625"x0.34" pipe w/ 2" SR	245	-258.236	306.709	84.2	Pass
T1	160 - 140	Diagonal	L1 3/4x1 3/4x3/16	9	-3.291	11.646	28.3	Pass
T2	140 - 135	Diagonal	L1 3/4x1 3/4x3/16	45	-3.312	8.949	37.0	Pass
T3	135 - 130	Diagonal	L1 3/4x1 3/4x3/16	54	-4.219	8.112	52.0	Pass
T4	130 - 125	Diagonal	L1 3/4x1 3/4x3/16	63	-4.298	7.371	58.3	Pass
T5	125 - 120	Diagonal	L2x2x3/16	72	-4.867	10.175	47.8	Pass
T6	120 - 113.333	Diagonal	L2 1/2x2 1/2x1/4	81	-5.423	19.771	27.4	Pass
T7	113.333 - 106.667	Diagonal	L2 1/2x2 1/2x1/4	90	-6.800	17.939	37.9	Pass
T8	106.667 - 100	Diagonal	L2 1/2x2 1/2x1/4	99	-6.753	15.768	42.8	Pass
T9	100 - 93.3333	Diagonal	L2 1/2x2 1/2x3/16	111	-6.763	12.495	54.1	Pass
T10	93.3333 - 86.6667	Diagonal	L2 1/2x2 1/2x1/4	120	-6.774	15.132	44.8	Pass
T11	86.6667 - 80	Diagonal	2L2 1/2x2 1/2x3/16x1/4	129	-7.420	38.394	19.3	Pass
T12	80 - 73.3333	Diagonal	L 3x3x3/16	141	-6.908	16.573	41.7	Pass
T13	73.3333 - 66.6667	Diagonal	L 3x3x3/16	150	-7.765	13.948	55.7	Pass
T14	66.6667 - 60	Diagonal	L 3x3x3/16	162	-7.575	12.860	58.9	Pass
T15	60 - 50	Diagonal	2L3x3x3/16x1/4	174	-8.757	39.409	22.2	Pass
T16	50 - 40	Diagonal	2L3x3x3/16x1/4	183	-9.702	35.624	27.2	Pass
T17	40 - 30	Diagonal	2L3x3x1/4x1/4	195	-9.855	45.249	21.8	Pass
T18	30 - 20	Diagonal	2L3x3x1/4x1/4	213	-10.695	72.440	14.8	Pass
T19	20 - 0	Diagonal	2L3 1/2x3 1/2x1/4x1/4	249	-10.871	56.951	19.1	Pass
T18	30 - 20	Horizontal	L3x3x3/16	205	-3.912	6.453	60.6	Pass
T8	106.667 - 100	Secondary Horizontal	L1 3/4x1 3/4x1/4	103	-1.590	7.913	20.1	Pass
T11	86.6667 - 80	Secondary Horizontal	L2x2x3/16	133	-2.229	6.440	34.6	Pass
T13	73.3333 - 66.6667	Secondary Horizontal	L1 3/4x1 3/4x1/4	154	-2.628	4.441	59.2	Pass
T14	66.6667 - 60	Secondary Horizontal	L2x2x3/16	166	-2.825	4.702	60.1	Pass
T16	50 - 40	Secondary Horizontal	L2 1/2x2 1/2x3/16	187	-3.351	7.398	45.3	Pass
T17	40 - 30	Secondary Horizontal	L3x3x1/4	199	-3.638	14.905	24.4	Pass
T1	160 - 140	Top Girt	L2x2x1/8	5	-0.622	4.273	14.6	Pass
T2	140 - 135	Top Girt	L2x2x1/8	40	-0.440	4.273	10.3	Pass
T18	30 - 20	Redund Horz 1 Bracing	L2x2x3/16	233	-3.912	13.765	28.4	Pass
T18	30 - 20	Redund Diag 1 Bracing	L2x2x3/16	231	-2.277	9.970	22.8	Pass
							Summary	
						Leg (T10)	88.5	Pass
						Diagonal (T14)	58.9	Pass
						Horizontal (T18)	60.6	Pass
						Secondary Horizontal	60.1	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
						(T14)		
						Top Girt (T1)	14.6	Pass
						Redund Horz 1 Bracing (T18)	28.4	Pass
						Redund Diag 1 Bracing (T18)	22.8	Pass
						Bolt Checks	84.0	Pass
						Rating =	88.5	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	Base	66.4	Pass
1,2	Base Foundation (Structure)	Base	41.4	Pass
1,2	Base Foundation (Soil Interaction)	Base	72.7	Pass

Structure Rating (max from all components) =	88.5%

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

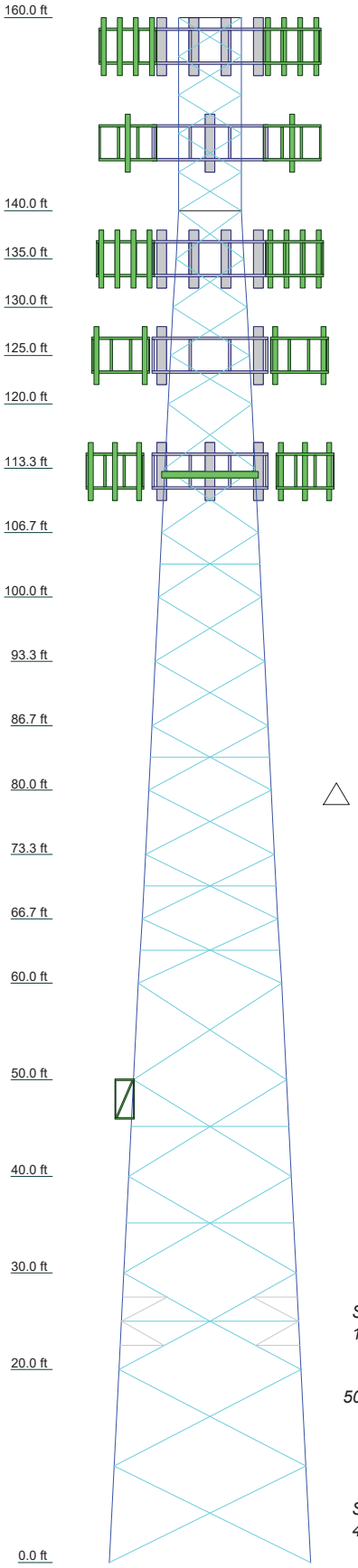
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	T19	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	A	ROHN 5 X-STR		ROHN. 5 EH		ROHN 4 X-STR				ROHN 3.5 EH			ROHN 3 EH				ROHN 2.5 EH		ROHN 2 STD
Leg Grade	A572-50																		
Diagonals	2L3 1/2x3 1/2x1/4x1/4	2L3x3x1/4x1/4		2L3x3x3/16x1/4		L 3x3x3/16			E	D	C	F	L2 1/2x2 1/2x1/4		B	L1 3/4x1 3/4x3/16			
Diagonal Grade	A572-50			A36															
Top Girts	N.A.																		L2x2x1/8
Horizontals	N.A.	L3x3x3/16				N.A.													
Sec. Horizontals	N.A.		L3x3x1/4	C	N.A.	L2x2x3/16	F	N.A.	L2x2x3/16	N.A.		F	N.A.						
Red. Horizontals	N.A.	L2x2x3/16				N.A.													
Red. Diagonals	N.A.	L2x2x3/16				N.A.													
Face Width (ft)	20.8646	18.8542	17.8125	16.7708	14.7708	14.0729	13.375	12.6771	11.9974	11.3151	10.6354	9.95833	9.28125	8.60417	8.09375	7.58333	7.07292	6.5625	6.52083
# Panels @ (ft)	2 @ 10	2 @ 5		3 @ 10					9 @ 6.66667							4 @ 5		5 @ 4	
Weight (K)	20.9	5.3	2.5	2.2	1.7	1.5	0.8	0.8	0.7	0.9	0.6	0.5	0.6	0.5	0.5	0.3	0.2	0.3	0.8



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	B+T_BU 806378 - 6.625"x0.34" pipe w/ 2" SR	D	L2 1/2x2 1/2x1/4
B	L2x2x3/16	E	2L2 1/2x2 1/2x3/16x1/4
C	L2 1/2x2 1/2x3/16	F	L1 3/4x1 3/4x1/4

MATERIAL STRENGTH

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

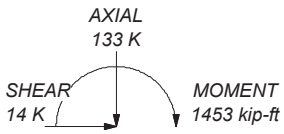
TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 117 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0'
8. TIA-222-H Annex S
9. TOWER RATING: 88.5%

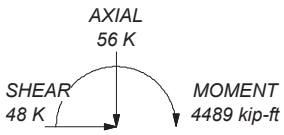
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 267 K
SHEAR: 30 K

UPLIFT: -228 K
SHEAR: 26 K



TORQUE 20 kip-ft
50 mph WIND - 1.500 in ICE



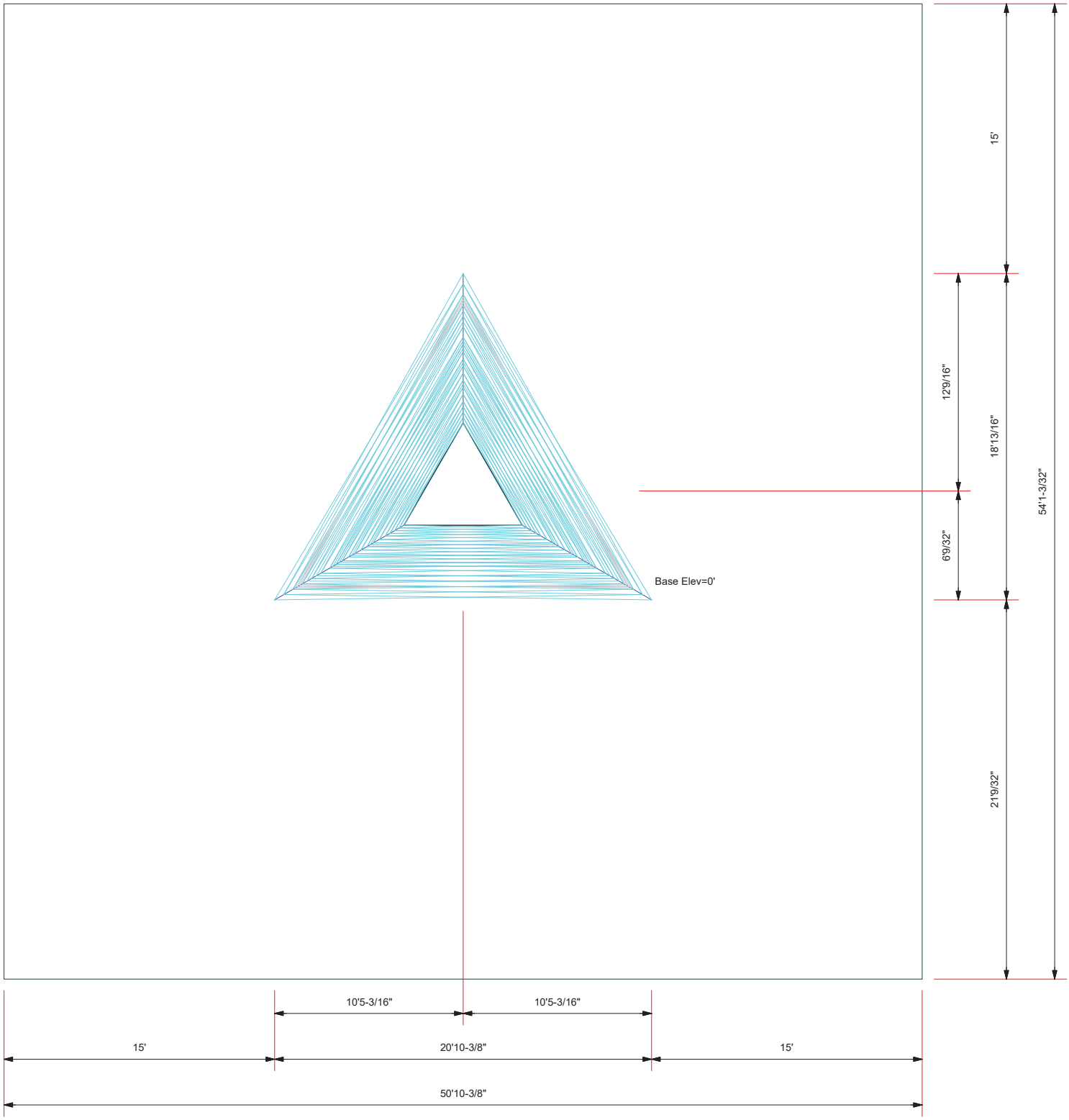
TORQUE 63 kip-ft
REACTIONS - 117 mph WIND

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

Job: 136290.007.01 - HRT 086 943248, CT (BU# 80637			
Project:			
Client: Crown Castle	Drawn by: Jayaraj B	App'd:	
Code: TIA-222-H	Date: 04/05/22	Scale: NTS	
Path: E:\SA Jobs\2022\April 2022\09\136290_806378_HRT 086 943248----Jayaraj---ShivaTrix_007_01\136290_007_01_HRT 086 943248_CT.eri		Dwg No. E-1	

Plot Plan

Total Area - 0.06 Acres



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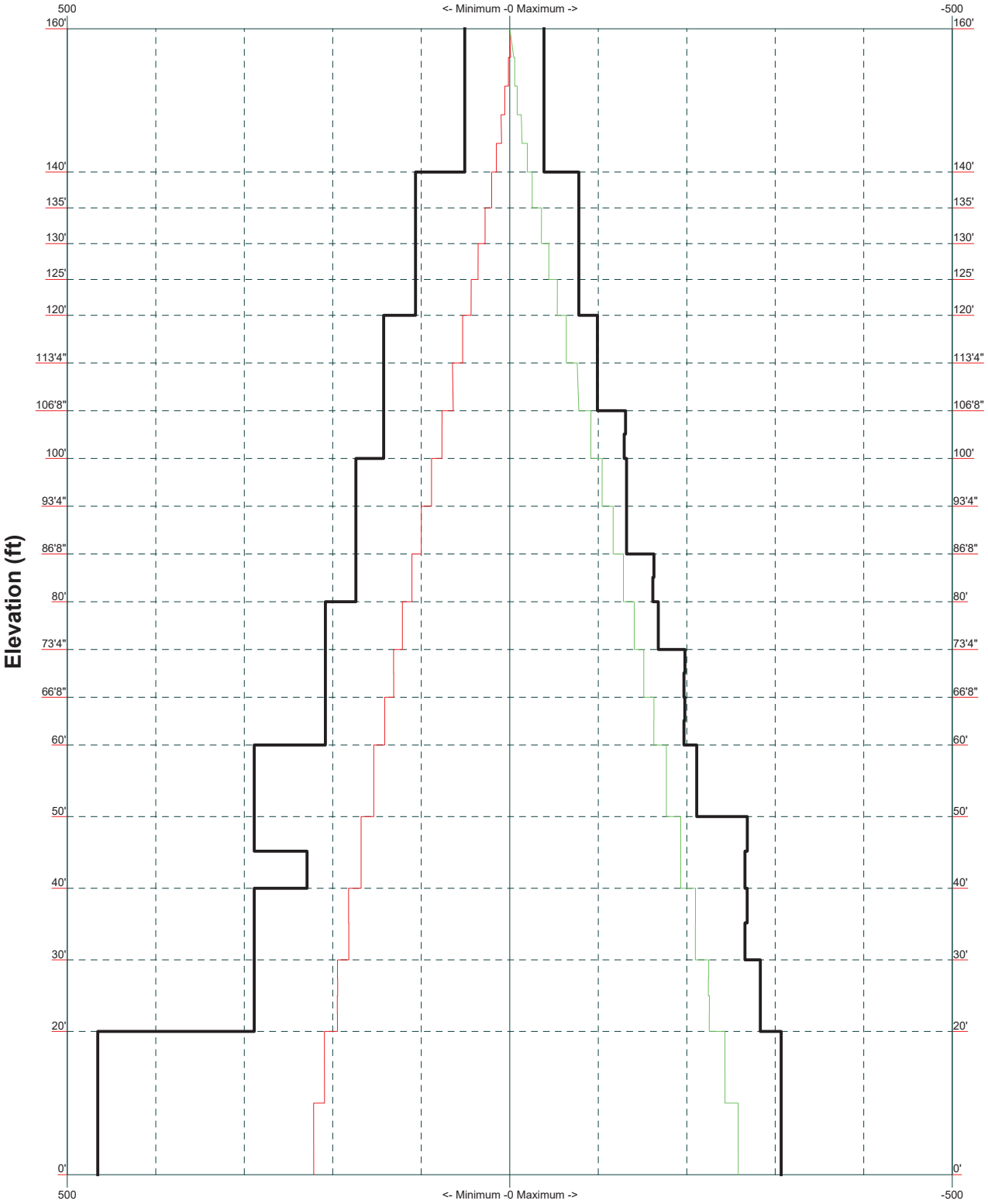
FAX: (918) 295-0265

Job: ***136290.007.01 - HRT 086 943248, CT (BU# 80637***		
Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 04/05/22	Scale: NTS
Path: E:\SA Jobs\2022\April 2022\09\136290_806378_HRT 086 943248-----Jayaraj---ShivaliTrix_007_01\136290_007_01_HRT 086 943248_CT.eri		Dwg No. E-2

TIA-222-H - 117 mph/50 mph 1.500 in Ice Exposure C

Leg Capacity ——— **Leg Compression (K)**



B+T GRP

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

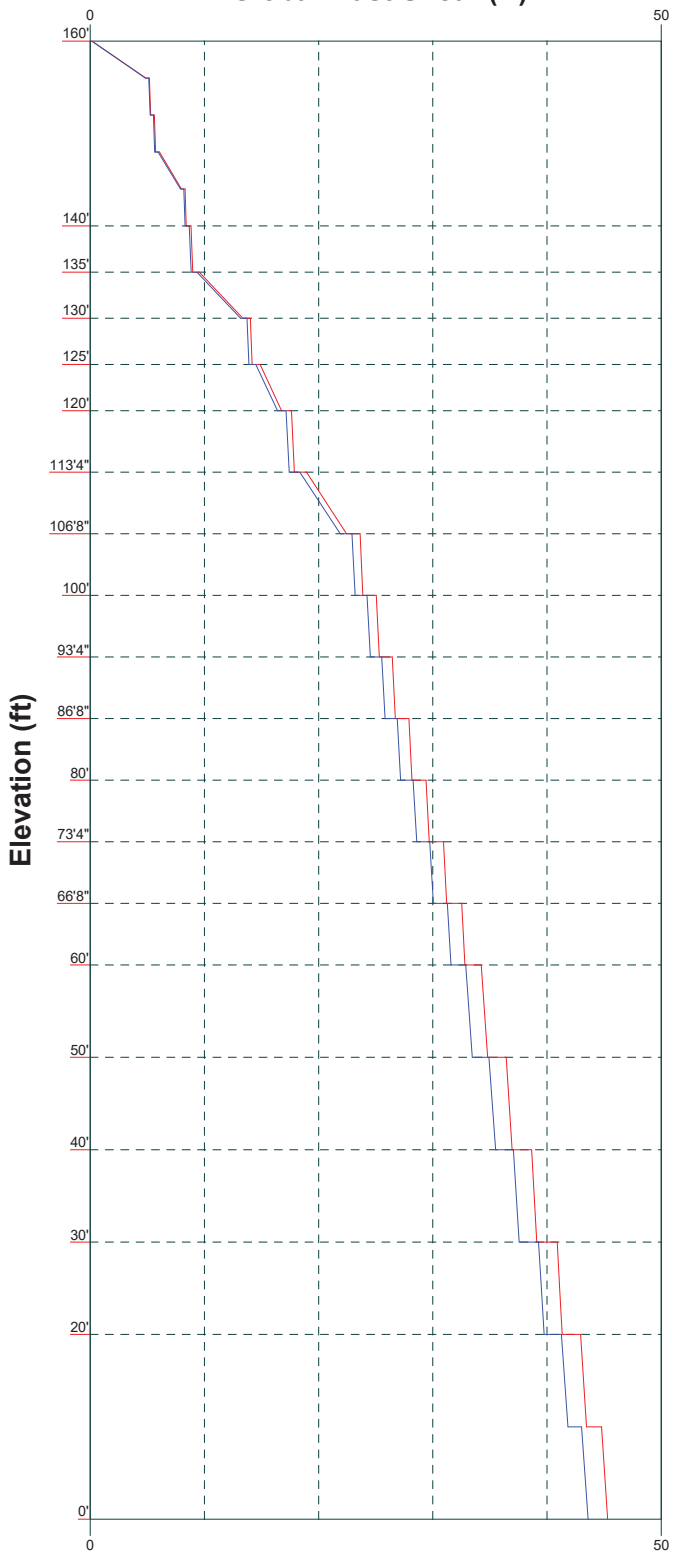
Job: ***136290.007.01 - HRT 086 943248, CT (BU# 80637***		
Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 04/05/22	Scale: NTS
Path: E:\SA Jobs\2022\April 2022\09\136290_806378_HRT 086 943248-----Jayaraj---ShivaTrix_007_01\136290_007_01_HRT 086 943248_CT.eri		Dwg No. E-3

TIA-222-H - 117 mph/50 mph 1.500 in Ice Exposure C

Maximum Values

Vx Vz Mx Mz

Global Mast Shear (K)



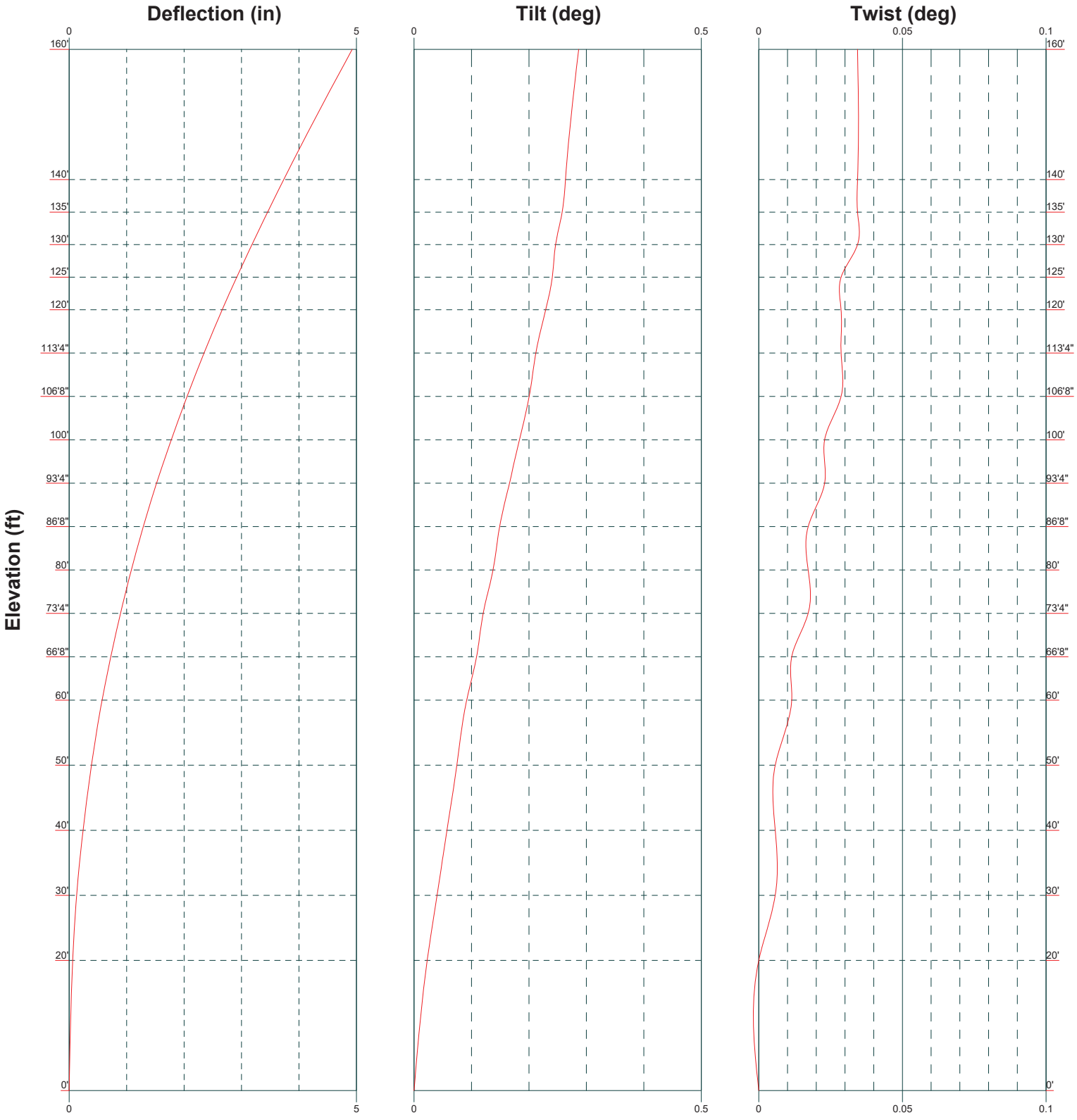
Global Mast Moment (kip-ft)

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

Job: 136290.007.01 - HRT 086 943248, CT (BU# 80637			
Project:			
Client: Crown Castle	Drawn by: Jayaraj B	App'd:	
Code: TIA-222-H	Date: 04/05/22	Scale: NTS	
Path: E:\SA Jobs\2022\April 2022\09\136290_806378_HRT 086 943248-----Jayaraj---ShivaliTrix_007_01\136290_007_01_HRT 086 943248_CT.eri		Dwg No. E-4	

TIA-222-H - Service - 60 mph

Maximum Values



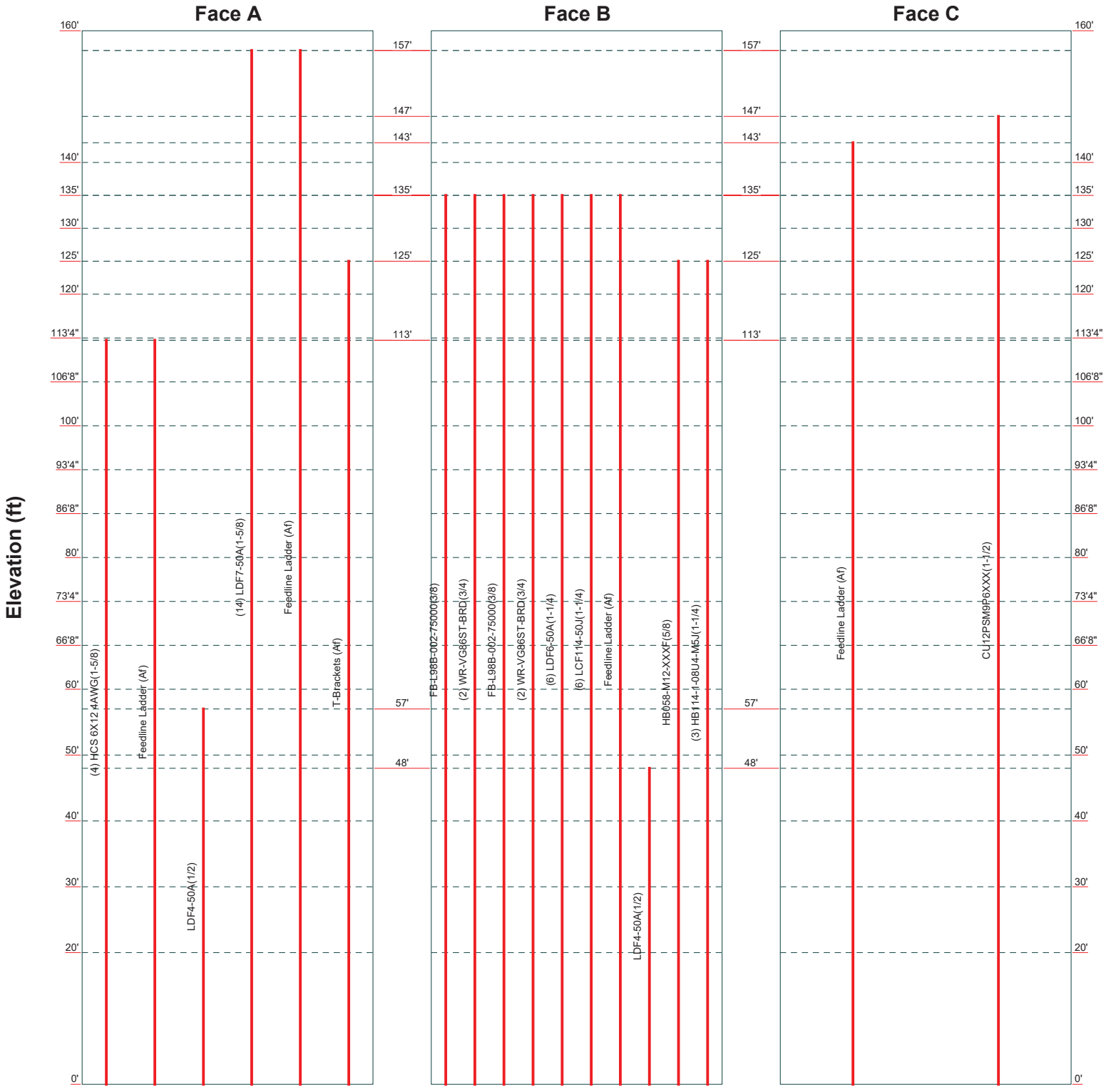
B+T GRP

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

Job: *136290.007.01 - HRT 086 943248, CT (BU# 80637*			
Project:			
Client: Crown Castle	Drawn by: Jayaraj B	App'd:	
Code: TIA-222-H	Date: 04/05/22	Scale: NTS	
Path: E:\SA Jobs\2022\April 2022\09\136290_806378_HRT 086 943248-----Jayaraj---ShivaTnx_007_01\136290_007_01_HRT 086 943248_CT.eri		Dwg No. E-5	

Feed Line Distribution Chart
0' - 160'

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



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

Job: 136290.007.01 - HRT 086 943248, CT (BU# 80637		
Project:		
Client: Crown Castle	Drawn by: Jayaraj B	App'd:
Code: TIA-222-H	Date: 04/05/22	Scale: NTS
Path: E:\SA Jobs\2022\April 2022\09\136290_806378_HRT 086 943248-----Jayaraj---ShivalTrix_007_01\136290_007_01_HRT 086 943248_CT.eri		Dwg No. E-7

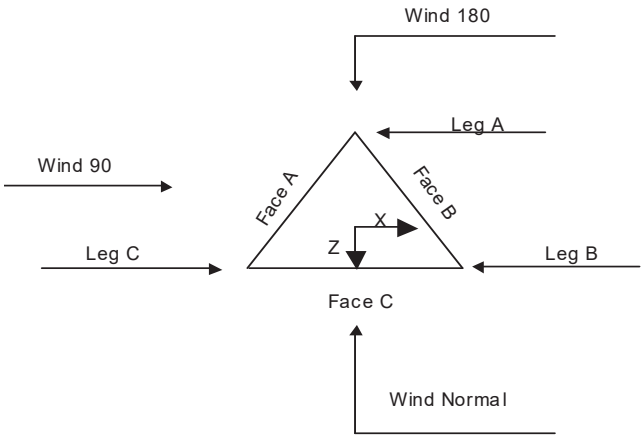
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 160' 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 20'10-3/8" at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in Tolland County, Connecticut.
Tower base elevation above sea level: 396'.
Basic wind speed of 117 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0'.
Nominal ice thickness of 1.500 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	160'-140'			6'6-1/4"	1	20'
T2	140'-135'			6'6-3/4"	1	5'
T3	135'-130'			7'7/8"	1	5'
T4	130'-125'			7'7"	1	5'
T5	125'-120'			8'1-1/8"	1	5'
T6	120'-113'4"			8'7-1/4"	1	6'8"
T7	113'4"-106'8"			9'3-3/8"	1	6'8"
T8	106'8"-100'			9'11-1/2"	1	6'8"
T9	100'-93'4"			10'7-5/8"	1	6'8"
T10	93'4"-86'8"			11'3-25/32"	1	6'8"
T11	86'8"-80'			11'11-31/32"	1	6'8"
T12	80'-73'4"			12'8-1/8"	1	6'8"
T13	73'4"-66'8"			13'4-1/2"	1	6'8"
T14	66'8"-60'			14'7/8"	1	6'8"
T15	60'-50'			14'9-1/4"	1	10'
T16	50'-40'			15'9-1/4"	1	10'
T17	40'-30'			16'9-1/4"	1	10'
T18	30'-20'			17'9-3/4"	1	10'
T19	20'-0'			18'10-1/4"	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	160'-140'	4'	X Brace	No	No	0.000	0.000
T2	140'-135'	5'	X Brace	No	No	0.000	0.000
T3	135'-130'	5'	X Brace	No	No	0.000	0.000
T4	130'-125'	5'	X Brace	No	No	0.000	0.000
T5	125'-120'	5'	X Brace	No	No	0.000	0.000
T6	120'-113'4"	6'8"	X Brace	No	No	0.000	0.000
T7	113'4"-106'8"	6'8"	X Brace	No	No	0.000	0.000
T8	106'8"-100'	6'8"	X Brace	No	Yes	0.000	0.000
T9	100'-93'4"	6'8"	X Brace	No	No	0.000	0.000
T10	93'4"-86'8"	6'8"	X Brace	No	No	0.000	0.000
T11	86'8"-80'	6'8"	X Brace	No	Yes	0.000	0.000
T12	80'-73'4"	6'8"	X Brace	No	No	0.000	0.000
T13	73'4"-66'8"	6'8"	X Brace	No	Yes	0.000	0.000
T14	66'8"-60'	6'8"	X Brace	No	Yes	0.000	0.000
T15	60'-50'	10'	X Brace	No	No	0.000	0.000
T16	50'-40'	10'	X Brace	No	Yes	0.000	0.000
T17	40'-30'	10'	X Brace	No	Yes	0.000	0.000
T18	30'-20'	5'	Double K1	No	Yes	0.000	0.000
T19	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 160'-140'	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 140'-135'	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T3 135'-130'	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T4 130'-125'	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T5 125'-120'	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T6 120'-113'4"	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T7 113'4"-106'8"	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T8 106'8"-100'	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T9 100'-93'4"	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T10 93'4"-86'8"	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T11 86'8"-80'	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Double Angle	2L2 1/2x2 1/2x3/16x1/4	A36 (36 ksi)
T12 80'-73'4"	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Single Angle	L 3x3x3/16	A36 (36 ksi)
T13 73'4"-66'8"	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Single Angle	L 3x3x3/16	A36 (36 ksi)
T14 66'8"-60'	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Single Angle	L 3x3x3/16	A36 (36 ksi)
T15 60'-50'	Pipe	ROHN. 5 EH	A572-50	Double Angle	2L3x3x3/16x1/4	A36

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T16 50'-40'	Pipe	ROHN. 5 EH	(50 ksi) A572-50 (50 ksi)	Double Angle	2L3x3x3/16x1/4	(36 ksi) A36 (36 ksi)
T17 40'-30'	Pipe	ROHN 5 X-STR	A572-50 (50 ksi)	Double Angle	2L3x3x1/4x1/4	A572-50 (50 ksi)
T18 30'-20'	Pipe	ROHN 5 X-STR	A572-50 (50 ksi)	Double Angle	2L3x3x1/4x1/4	A572-50 (50 ksi)
T19 20'-0'	Arbitrary Shape	B+T_BU 806378 - 6.625"x0.34" pipe w/ 2" SR	A572-50 (50 ksi)	Double Angle	2L3 1/2x3 1/2x1/4x1/4	A572-50 (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 160'-140'	Equal Angle	L2x2x1/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T2 140'-135'	Equal Angle	L2x2x1/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T18 30'-20'	None	Single Angle		A36 (36 ksi)	Equal Angle	L3x3x3/16	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
T8 106'8"-100'	Equal Angle	L1 3/4x1 3/4x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T11 86'8"-80'	Equal Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 73'4"-66'8"	Equal Angle	L1 3/4x1 3/4x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T14 66'8"-60'	Equal Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 50'-40'	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T17 40'-30'	Equal Angle	L3x3x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T18 30'-20'	A36 (36 ksi)	Horizontal (1)	Equal Angle	L2x2x3/16	1
		Diagonal (1)	Equal Angle	L2x2x3/16	1

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 160'-140'	0.000	0.188	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T2 140'-135'	0.000	0.188	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T3 135'-130'	0.000	0.188	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T4 130'-125'	0.000	0.188	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T5 125'-120'	0.000	0.188	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T6 120'-113'4"	0.000	0.188	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T7 113'4"-106'8"	0.000	0.188	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T8 106'8"-100'	0.000	0.188	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T9 100'-93'4"	0.000	0.500	A572-50 (50 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T10 93'4"-86'8"	0.000	0.500	A572-50 (50 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T11 86'8"-80'	0.000	0.500	A572-50 (50 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T12 80'-73'4"	0.000	0.500	A572-50 (50 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T13 73'4"-66'8"	0.000	0.500	A572-50 (50 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T14 66'8"-60'	0.000	0.500	A572-50 (50 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T15 60'-50'	0.000	0.250	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T16 50'-40'	0.000	0.250	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T17 40'-30'	0.000	0.250	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T18 30'-20'	0.000	0.250	A36 (36 ksi)	1.03	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T19 20'-0'	0.000	0.250	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 160'-140'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T2 140'-135'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T3 135'-130'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T4 130'-125'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T5 125'-120'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T6 120'-113'4"	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T7 113'4"-106'8"	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T8 106'8"-100'	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T9 100'-93'4"	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T10 93'4"-86'8"	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T11 86'8"-80'	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T12 80'-73'4"	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T13 73'4"-66'8"	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T14 66'8"-60'	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T15 60'-50'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T16 50'-40'	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T17 40'-30'	No	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	0.5	1
T18 30'-20'	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1
T19 20'-0'	Yes	No	1	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		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 160'-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
T2 140'-135'	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 135'-130'	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 130'-125'	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 125'-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
T6 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
T7 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
T8 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
T9 100'-93'4"	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 93'4"-86'8"	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 86'8"-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
T12 80'-73'4"	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
T13 73'4"-66'8"	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
T14 66'8"-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
T15 60'-50'	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 50'-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
T17 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
T18 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
T19 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 160'-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
T2 140'-135'	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 135'-130'	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 130'-125'	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 125'-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
T6 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
T7 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
T8 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
T9 100'-93'4"	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 93'4"-86'8"	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 86'8"-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
T12 80'-73'4"	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
T13 73'4"-66'8"	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
T14 66'8"-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
T15 60'-50'	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 50'-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
T17 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
T18 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
T19 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 160'-140'	Flange	0.625 A325N	4	0.500 A325N	1	0.500 A325N	1	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T2 140'-135'	Flange	0.750 A325N	0	0.500 A325N	1	0.500 A325N	1	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T3 135'-130'	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 130'-125'	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
T5 125'-120'	Flange	0.750 A325N	4	0.500 A325N	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T6 120'-113'4"	Flange	0.875 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
T7 113'4"-106'8"	Flange	0.875 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
T8 106'8"-100'	Flange	0.875 A325N	4	0.500 A325X	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	1
T9 100'-93'4"	Flange	0.875 A325N	0	0.500 A325N	0	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T10 93'4"-86'8"	Flange	0.875 A325N	0	0.500 A325N	0	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T11 86'8"-80'	Flange	0.875 A325N	4	0.500 A325N	0	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	1
T12 80'-73'4"	Flange	1.000 A325N	0	0.500 A325N	0	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T13 73'4"-66'8"	Flange	1.000 A325N	0	0.500 A325N	0	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	1
T14 66'8"-60'	Flange	1.000 A325N	4	0.500 A325N	0	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	1
T15 60'-50'	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 50'-40'	Flange	1.000 A325N	4	0.625 A325N	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	1
T17 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	1
T18 30'-20'	Flange	1.000 A325N	6	0.625 A325N	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	1	0.625 A325N	0
T19 20'-0'	Flange	1.000 A449	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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	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 160'-140'	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T2 140'-135'	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	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.
T3 135'-130'	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T4 130'-125'	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T5 125'-120'	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T6 120'-113'4"	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T7 113'4"-106'8"	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T8 106'8"-100'	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T9 100'-93'4"	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T10 93'4"-86'8"	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T11 86'8"-80'	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T12 80'-73'4"	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T13 73'4"-66'8"	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T14 66'8"-60'	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T15 60'-50'	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T16 50'-40'	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T17 40'-30'	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T18 30'-20'	0.625 A325N	1	0.625 A325N	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0
T19 20'-0'	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325N	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
HCS 6X12 4AWG(1-5/8)	A	No	No	Ar (CaAa)	113' - 0'	0.000	-0.35	4	4	0.850 0.750	1.660		0.002
Feedline Ladder (Af) *	A	No	No	Af (CaAa)	113' - 0'	0.000	-0.37	1	1	3.000	3.000		0.008
LDF4-50A(1/2)	A	No	No	Ar (CaAa)	57' - 0'	0.000	0.39	1	1	0.500	0.630		0.000
LDF7-50A(1-5/8)	A	No	No	Ar (CaAa)	157' - 0'	0.000	0.35	14	7	0.850 0.750	1.980		0.001
Feedline Ladder (Af) *	A	No	No	Af (CaAa)	157' - 0'	0.000	0.37	1	1	3.000	3.000		0.008
FB-L98B-002-	B	No	No	Ar (CaAa)	135' - 0'	0.000	-0.4	1	1	0.500	0.394		0.000

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
75000(3/8)													
WR-VG86ST-BRD(3/4)	B	No	No	Ar (CaAa)	135' - 0'	0.000	-0.4	2	2	0.850 0.750	0.795		0.001
FB-L98B-002-75000(3/8)	B	No	No	Ar (CaAa)	135' - 0'	0.000	-0.4	1	1	0.500	0.394		0.000
WR-VG86ST-BRD(3/4)	B	No	No	Ar (CaAa)	135' - 0'	0.000	-0.4	2	2	0.850 0.750	0.795		0.001
LDF6-50A(1-1/4)	B	No	No	Ar (CaAa)	135' - 0'	0.000	-0.42	6	3	0.850 0.750	1.550		0.001
LCF114-50J(1-1/4)	B	No	No	Ar (CaAa)	135' - 0'	0.000	-0.37	6	3	0.850 0.750	1.580		0.001
Feedline Ladder (Af)	B	No	No	Af (CaAa)	135' - 0'	0.000	-0.385	1	1	3.000	3.000		0.008
*													
LDF4-50A(1/2)	B	No	No	Ar (CaAa)	48' - 0'	0.000	-0.35	1	1	0.500	0.630		0.000
HB058-M12-XXXF(5/8)	B	No	No	Ar (CaAa)	125' - 0'	0.000	-0.35	1	1	0.500	0.840		0.000
HB114-1-08U4-M5J(1-1/4)	B	No	No	Ar (CaAa)	125' - 0'	0.000	-0.35	3	3	0.850 0.750	1.540		0.001
T-Brackets (Af)	A	No	No	Af (CaAa)	125' - 0'	0.000	-0.35	1	1	1.000	1.000		0.008
*													
Feedline Ladder (Af)	C	No	No	Af (CaAa)	143' - 0'	0.000	0.35	1	1	3.000	3.000		0.008
*													
CU12PSM9P6XXX(1-1/2)	C	No	No	Ar (CaAa)	147' - 0'	0.000	0.37	1	1	0.850 0.750	1.600		0.002
*													
*													
*													

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	160'-140'	A	0.000	0.000	55.624	0.000	0.338
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	2.620	0.000	0.042

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
T2	140'-135'	A	0.000	0.000	16.360	0.000	0.099
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	3.300	0.000	0.054
T3	135'-130'	A	0.000	0.000	16.360	0.000	0.099
		B	0.000	0.000	13.874	0.000	0.093
		C	0.000	0.000	3.300	0.000	0.054
T4	130'-125'	A	0.000	0.000	16.360	0.000	0.099
		B	0.000	0.000	13.874	0.000	0.093
		C	0.000	0.000	3.300	0.000	0.054
T5	125'-120'	A	0.000	0.000	17.193	0.000	0.141
		B	0.000	0.000	16.604	0.000	0.111
		C	0.000	0.000	3.300	0.000	0.054
T6	120'-113'4"	A	0.000	0.000	22.924	0.000	0.189
		B	0.000	0.000	22.138	0.000	0.148
		C	0.000	0.000	4.400	0.000	0.072
T7	113'4"-106'8"	A	0.000	0.000	30.296	0.000	0.303
		B	0.000	0.000	22.138	0.000	0.148
		C	0.000	0.000	4.400	0.000	0.072
T8	106'8"-100'	A	0.000	0.000	30.684	0.000	0.309
		B	0.000	0.000	22.138	0.000	0.148
		C	0.000	0.000	4.400	0.000	0.072
T9	100'-93'4"	A	0.000	0.000	30.684	0.000	0.309
		B	0.000	0.000	22.138	0.000	0.148
		C	0.000	0.000	4.400	0.000	0.072
T10	93'4"-86'8"	A	0.000	0.000	30.684	0.000	0.309
		B	0.000	0.000	22.138	0.000	0.148
		C	0.000	0.000	4.400	0.000	0.072
T11	86'8"-80'	A	0.000	0.000	30.684	0.000	0.309
		B	0.000	0.000	22.138	0.000	0.148
		C	0.000	0.000	4.400	0.000	0.072
T12	80'-73'4"	A	0.000	0.000	30.684	0.000	0.309
		B	0.000	0.000	22.138	0.000	0.148
		C	0.000	0.000	4.400	0.000	0.072
T13	73'4"-66'8"	A	0.000	0.000	30.684	0.000	0.309
		B	0.000	0.000	22.138	0.000	0.148
		C	0.000	0.000	4.400	0.000	0.072
T14	66'8"-60'	A	0.000	0.000	30.684	0.000	0.309
		B	0.000	0.000	22.138	0.000	0.148
		C	0.000	0.000	4.400	0.000	0.072
T15	60'-50'	A	0.000	0.000	46.468	0.000	0.464
		B	0.000	0.000	33.207	0.000	0.221
		C	0.000	0.000	6.600	0.000	0.108
T16	50'-40'	A	0.000	0.000	46.657	0.000	0.464
		B	0.000	0.000	33.711	0.000	0.223
		C	0.000	0.000	6.600	0.000	0.108
T17	40'-30'	A	0.000	0.000	46.657	0.000	0.464
		B	0.000	0.000	33.837	0.000	0.223
		C	0.000	0.000	6.600	0.000	0.108
T18	30'-20'	A	0.000	0.000	46.657	0.000	0.464
		B	0.000	0.000	33.837	0.000	0.223
		C	0.000	0.000	6.600	0.000	0.108
T19	20'-0'	A	0.000	0.000	93.313	0.000	0.929
		B	0.000	0.000	67.675	0.000	0.446
		C	0.000	0.000	13.200	0.000	0.215

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	160'-140'	A	1.483	0.000	0.000	62.911	0.000	1.304
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	5.587	0.000	0.111
T2	140'-135'	A	1.471	0.000	0.000	18.470	0.000	0.382
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	6.241	0.000	0.132
T3	135'-130'	A	1.465	0.000	0.000	18.456	0.000	0.381
		B		0.000	0.000	29.893	0.000	0.424
		C		0.000	0.000	6.230	0.000	0.131
T4	130'-125'	A	1.460	0.000	0.000	18.441	0.000	0.380
		B		0.000	0.000	29.837	0.000	0.423
		C		0.000	0.000	6.219	0.000	0.131
T5	125'-120'	A	1.454	0.000	0.000	20.713	0.000	0.448
		B		0.000	0.000	38.055	0.000	0.520
		C		0.000	0.000	6.207	0.000	0.130
T6	120'-113'4"	A	1.447	0.000	0.000	27.584	0.000	0.595
		B		0.000	0.000	50.620	0.000	0.690
		C		0.000	0.000	8.258	0.000	0.173
T7	113'4"-106'8"	A	1.438	0.000	0.000	42.737	0.000	0.872
		B		0.000	0.000	50.477	0.000	0.686
		C		0.000	0.000	8.235	0.000	0.172
T8	106'8"-100'	A	1.429	0.000	0.000	43.462	0.000	0.883
		B		0.000	0.000	50.326	0.000	0.682
		C		0.000	0.000	8.211	0.000	0.171
T9	100'-93'4"	A	1.420	0.000	0.000	43.384	0.000	0.880
		B		0.000	0.000	50.166	0.000	0.678
		C		0.000	0.000	8.186	0.000	0.171
T10	93'4"-86'8"	A	1.410	0.000	0.000	43.300	0.000	0.876
		B		0.000	0.000	49.996	0.000	0.674
		C		0.000	0.000	8.159	0.000	0.170
T11	86'8"-80'	A	1.399	0.000	0.000	43.211	0.000	0.872
		B		0.000	0.000	49.814	0.000	0.670
		C		0.000	0.000	8.130	0.000	0.169
T12	80'-73'4"	A	1.387	0.000	0.000	43.115	0.000	0.867
		B		0.000	0.000	49.618	0.000	0.665
		C		0.000	0.000	8.099	0.000	0.167
T13	73'4"-66'8"	A	1.375	0.000	0.000	43.011	0.000	0.863
		B		0.000	0.000	49.407	0.000	0.659
		C		0.000	0.000	8.066	0.000	0.166
T14	66'8"-60'	A	1.361	0.000	0.000	42.898	0.000	0.858
		B		0.000	0.000	49.176	0.000	0.654
		C		0.000	0.000	8.029	0.000	0.165
T15	60'-50'	A	1.342	0.000	0.000	66.431	0.000	1.300
		B		0.000	0.000	73.283	0.000	0.969
		C		0.000	0.000	11.967	0.000	0.245
T16	50'-40'	A	1.315	0.000	0.000	67.042	0.000	1.294
		B		0.000	0.000	75.218	0.000	0.978
		C		0.000	0.000	11.861	0.000	0.241
T17	40'-30'	A	1.283	0.000	0.000	66.572	0.000	1.275
		B		0.000	0.000	74.981	0.000	0.964
		C		0.000	0.000	11.730	0.000	0.237
T18	30'-20'	A	1.240	0.000	0.000	65.963	0.000	1.251
		B		0.000	0.000	73.825	0.000	0.937
		C		0.000	0.000	11.560	0.000	0.231
T19	20'-0'	A	1.132	0.000	0.000	128.811	0.000	2.379
		B		0.000	0.000	141.743	0.000	1.739
		C		0.000	0.000	22.252	0.000	0.434

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	160'-140'	-2.354	-12.448	-2.504	-9.867
T2	140'-135'	-4.165	-10.907	-4.942	-7.847
T3	135'-130'	-2.254	-20.883	-2.214	-20.243
T4	130'-125'	-2.364	-21.974	-2.330	-21.302
T5	125'-120'	-2.438	-23.111	-2.850	-22.858
T6	120'-113'4"	-2.484	-23.683	-3.015	-24.196
T7	113'4"-106'8"	-6.284	-21.170	-7.053	-21.307
T8	106'8"-100'	-6.229	-20.715	-7.097	-20.981
T9	100'-93'4"	-6.997	-22.935	-7.908	-23.201
T10	93'4"-86'8"	-7.281	-23.956	-8.254	-24.275
T11	86'8"-80'	-6.792	-22.941	-7.884	-23.547
T12	80'-73'4"	-7.281	-24.463	-8.574	-25.535
T13	73'4"-66'8"	-6.854	-23.532	-8.183	-24.702
T14	66'8"-60'	-6.942	-23.982	-8.363	-25.359
T15	60'-50'	-8.843	-29.543	-10.165	-30.773
T16	50'-40'	-8.148	-28.535	-9.444	-30.858
T17	40'-30'	-8.221	-29.165	-9.613	-31.984
T18	30'-20'	-7.228	-26.459	-8.678	-29.479
T19	20'-0'	-9.248	-32.712	-10.585	-35.352

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	7	LDF7-50A(1-5/8)	140.00 - 157.00	0.6000	0.6000
T1	9	Feedline Ladder (Af)	140.00 - 157.00	0.6000	0.6000
T1	24	Feedline Ladder (Af)	140.00 - 143.00	0.6000	0.6000
T1	26	CU12PSM9P6XXX(1-1/2)	140.00 - 147.00	0.6000	0.6000
T2	7	LDF7-50A(1-5/8)	135.00 - 140.00	0.6000	0.6000
T2	9	Feedline Ladder (Af)	135.00 - 140.00	0.6000	0.6000
T2	24	Feedline Ladder (Af)	135.00 - 140.00	0.6000	0.6000
T2	26	CU12PSM9P6XXX(1-1/2)	135.00 - 140.00	0.6000	0.6000
T3	7	LDF7-50A(1-5/8)	130.00 - 135.00	0.6000	0.6000
T3	9	Feedline Ladder (Af)	130.00 - 135.00	0.6000	0.6000
T3	11	FB-L98B-002-75000(3/8)	130.00 - 135.00	0.6000	0.6000
T3	12	WR-VG86ST-BRD(3/4)	130.00 - 135.00	0.6000	0.6000
T3	13	FB-L98B-002-75000(3/8)	130.00 - 135.00	0.6000	0.6000
T3	14	WR-VG86ST-BRD(3/4)	130.00 - 135.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	15	LDF6-50A(1-1/4)	130.00 - 135.00	0.6000	0.6000
T3	16	LCF114-50J(1-1/4)	130.00 - 135.00	0.6000	0.6000
T3	17	Feedline Ladder (Af)	130.00 - 135.00	0.6000	0.6000
T3	24	Feedline Ladder (Af)	130.00 - 135.00	0.6000	0.6000
T3	26	CU12PSM9P6XXX(1-1/2)	130.00 - 135.00	0.6000	0.6000
T4	7	LDF7-50A(1-5/8)	125.00 - 130.00	0.6000	0.6000
T4	9	Feedline Ladder (Af)	125.00 - 130.00	0.6000	0.6000
T4	11	FB-L98B-002-75000(3/8)	125.00 - 130.00	0.6000	0.6000
T4	12	WR-VG86ST-BRD(3/4)	125.00 - 130.00	0.6000	0.6000
T4	13	FB-L98B-002-75000(3/8)	125.00 - 130.00	0.6000	0.6000
T4	14	WR-VG86ST-BRD(3/4)	125.00 - 130.00	0.6000	0.6000
T4	15	LDF6-50A(1-1/4)	125.00 - 130.00	0.6000	0.6000
T4	16	LCF114-50J(1-1/4)	125.00 - 130.00	0.6000	0.6000
T4	17	Feedline Ladder (Af)	125.00 - 130.00	0.6000	0.6000
T4	24	Feedline Ladder (Af)	125.00 - 130.00	0.6000	0.6000
T4	26	CU12PSM9P6XXX(1-1/2)	125.00 - 130.00	0.6000	0.6000
T5	7	LDF7-50A(1-5/8)	120.00 - 125.00	0.6000	0.6000
T5	9	Feedline Ladder (Af)	120.00 - 125.00	0.6000	0.6000
T5	11	FB-L98B-002-75000(3/8)	120.00 - 125.00	0.6000	0.6000
T5	12	WR-VG86ST-BRD(3/4)	120.00 - 125.00	0.6000	0.6000
T5	13	FB-L98B-002-75000(3/8)	120.00 - 125.00	0.6000	0.6000
T5	14	WR-VG86ST-BRD(3/4)	120.00 - 125.00	0.6000	0.6000
T5	15	LDF6-50A(1-1/4)	120.00 - 125.00	0.6000	0.6000
T5	16	LCF114-50J(1-1/4)	120.00 - 125.00	0.6000	0.6000
T5	17	Feedline Ladder (Af)	120.00 - 125.00	0.6000	0.6000
T5	20	HB058-M12-XXXF(5/8)	120.00 - 125.00	0.6000	0.6000
T5	21	HB114-1-08U4-M5J(1-1/4)	120.00 - 125.00	0.6000	0.6000
T5	22	T-Brackets (Af)	120.00 - 125.00	0.6000	0.6000
T5	24	Feedline Ladder (Af)	120.00 - 125.00	0.6000	0.6000
T5	26	CU12PSM9P6XXX(1-1/2)	120.00 - 125.00	0.6000	0.6000
T6	7	LDF7-50A(1-5/8)	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
T6	9	Feedline Ladder (Af)	113.33 - 120.00	0.6000	0.6000
T6	11	FB-L98B-002-75000(3/8)	113.33 - 120.00	0.6000	0.6000
T6	12	WR-VG86ST-BRD(3/4)	113.33 - 120.00	0.6000	0.6000
T6	13	FB-L98B-002-75000(3/8)	113.33 - 120.00	0.6000	0.6000
T6	14	WR-VG86ST-BRD(3/4)	113.33 - 120.00	0.6000	0.6000
T6	15	LDF6-50A(1-1/4)	113.33 - 120.00	0.6000	0.6000
T6	16	LCF114-50J(1-1/4)	113.33 - 120.00	0.6000	0.6000
T6	17	Feedline Ladder (Af)	113.33 - 120.00	0.6000	0.6000
T6	20	HB058-M12-XXXF(5/8)	113.33 - 120.00	0.6000	0.6000
T6	21	HB114-1-08U4-M5J(1-1/4)	113.33 - 120.00	0.6000	0.6000
T6	22	T-Brackets (Af)	113.33 - 120.00	0.6000	0.6000
T6	24	Feedline Ladder (Af)	113.33 - 120.00	0.6000	0.6000
T6	26	CU12PSM9P6XXX(1-1/2)	113.33 - 120.00	0.6000	0.6000
T7	1	HCS 6X12 4AWG(1-5/8)	106.67 - 113.00	0.6000	0.6000
T7	3	Feedline Ladder (Af)	106.67 - 113.00	0.6000	0.6000
T7	7	LDF7-50A(1-5/8)	106.67 - 113.33	0.6000	0.6000
T7	9	Feedline Ladder (Af)	106.67 - 113.33	0.6000	0.6000
T7	11	FB-L98B-002-75000(3/8)	106.67 - 113.33	0.6000	0.6000
T7	12	WR-VG86ST-BRD(3/4)	106.67 - 113.33	0.6000	0.6000
T7	13	FB-L98B-002-75000(3/8)	106.67 - 113.33	0.6000	0.6000
T7	14	WR-VG86ST-BRD(3/4)	106.67 - 113.33	0.6000	0.6000
T7	15	LDF6-50A(1-1/4)	106.67 - 113.33	0.6000	0.6000
T7	16	LCF114-50J(1-1/4)	106.67 - 113.33	0.6000	0.6000
T7	17	Feedline Ladder (Af)	106.67 - 113.33	0.6000	0.6000
T7	20	HB058-M12-XXXF(5/8)	106.67 - 113.33	0.6000	0.6000
T7	21	HB114-1-08U4-M5J(1-1/4)	106.67 - 113.33	0.6000	0.6000
T7	22	T-Brackets (Af)	106.67 - 113.33	0.6000	0.6000
T7	24	Feedline Ladder (Af)	106.67 - 113.33	0.6000	0.6000
T7	26	CU12PSM9P6XXX(1-1/2)	106.67 - 113.33	0.6000	0.6000
T8	1	HCS 6X12 4AWG(1-5/8)	100.00 - 106.67	0.6000	0.6000
T8	3	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
T8	7	LDF7-50A(1-5/8)	100.00 - 106.67	0.6000	0.6000
T8	9	Feedline Ladder (Af)	100.00 - 106.67	0.6000	0.6000
T8	11	FB-L98B-002-75000(3/8)	100.00 - 106.67	0.6000	0.6000
T8	12	WR-VG86ST-BRD(3/4)	100.00 - 106.67	0.6000	0.6000
T8	13	FB-L98B-002-75000(3/8)	100.00 - 106.67	0.6000	0.6000
T8	14	WR-VG86ST-BRD(3/4)	100.00 - 106.67	0.6000	0.6000
T8	15	LDF6-50A(1-1/4)	100.00 - 106.67	0.6000	0.6000
T8	16	LCF114-50J(1-1/4)	100.00 - 106.67	0.6000	0.6000
T8	17	Feedline Ladder (Af)	100.00 - 106.67	0.6000	0.6000
T8	20	HB058-M12-XXXF(5/8)	100.00 - 106.67	0.6000	0.6000
T8	21	HB114-1-08U4-M5J(1-1/4)	100.00 - 106.67	0.6000	0.6000
T8	22	T-Brackets (Af)	100.00 - 106.67	0.6000	0.6000
T8	24	Feedline Ladder (Af)	100.00 - 106.67	0.6000	0.6000
T8	26	CU12PSM9P6XXX(1-1/2)	100.00 - 106.67	0.6000	0.6000
T9	1	HCS 6X12 4AWG(1-5/8)	93.33 - 100.00	0.6000	0.6000
T9	3	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T9	7	LDF7-50A(1-5/8)	93.33 - 100.00	0.6000	0.6000
T9	9	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T9	11	FB-L98B-002-75000(3/8)	93.33 - 100.00	0.6000	0.6000
T9	12	WR-VG86ST-BRD(3/4)	93.33 - 100.00	0.6000	0.6000
T9	13	FB-L98B-002-75000(3/8)	93.33 - 100.00	0.6000	0.6000
T9	14	WR-VG86ST-BRD(3/4)	93.33 - 100.00	0.6000	0.6000
T9	15	LDF6-50A(1-1/4)	93.33 - 100.00	0.6000	0.6000
T9	16	LCF114-50J(1-1/4)	93.33 - 100.00	0.6000	0.6000
T9	17	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T9	20	HB058-M12-XXXF(5/8)	93.33 - 100.00	0.6000	0.6000
T9	21	HB114-1-08U4-M5J(1-1/4)	93.33 - 100.00	0.6000	0.6000
T9	22	T-Brackets (Af)	93.33 - 100.00	0.6000	0.6000
T9	24	Feedline Ladder (Af)	93.33 - 100.00	0.6000	0.6000
T9	26	CU12PSM9P6XXX(1-1/2)	93.33 - 100.00	0.6000	0.6000
T10	1	HCS 6X12 4AWG(1-5/8)	86.67 - 93.33	0.6000	0.6000
T10	3	Feedline Ladder (Af)	86.67 - 93.33	0.6000	0.6000
T10	7	LDF7-50A(1-5/8)	86.67 - 93.33	0.6000	0.6000
T10	9	Feedline Ladder (Af)	86.67 - 93.33	0.6000	0.6000
T10	11	FB-L98B-002-75000(3/8)	86.67 - 93.33	0.6000	0.6000
T10	12	WR-VG86ST-BRD(3/4)	86.67 - 93.33	0.6000	0.6000
T10	13	FB-L98B-002-75000(3/8)	86.67 - 93.33	0.6000	0.6000
T10	14	WR-VG86ST-BRD(3/4)	86.67 - 93.33	0.6000	0.6000
T10	15	LDF6-50A(1-1/4)	86.67 - 93.33	0.6000	0.6000
T10	16	LCF114-50J(1-1/4)	86.67 - 93.33	0.6000	0.6000
T10	17	Feedline Ladder (Af)	86.67 - 93.33	0.6000	0.6000
T10	20	HB058-M12-XXXF(5/8)	86.67 - 93.33	0.6000	0.6000
T10	21	HB114-1-08U4-M5J(1-1/4)	86.67 - 93.33	0.6000	0.6000
T10	22	T-Brackets (Af)	86.67 - 93.33	0.6000	0.6000
T10	24	Feedline Ladder (Af)	86.67 - 93.33	0.6000	0.6000
T10	26	CU12PSM9P6XXX(1-1/2)	86.67 - 93.33	0.6000	0.6000
T11	1	HCS 6X12 4AWG(1-5/8)	80.00 - 86.67	0.6000	0.6000
T11	3	Feedline Ladder (Af)	80.00 - 86.67	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T11	7	LDF7-50A(1-5/8)	80.00 - 86.67	0.6000	0.6000
T11	9	Feedline Ladder (Af)	80.00 - 86.67	0.6000	0.6000
T11	11	FB-L98B-002-75000(3/8)	80.00 - 86.67	0.6000	0.6000
T11	12	WR-VG86ST-BRD(3/4)	80.00 - 86.67	0.6000	0.6000
T11	13	FB-L98B-002-75000(3/8)	80.00 - 86.67	0.6000	0.6000
T11	14	WR-VG86ST-BRD(3/4)	80.00 - 86.67	0.6000	0.6000
T11	15	LDF6-50A(1-1/4)	80.00 - 86.67	0.6000	0.6000
T11	16	LCF114-50J(1-1/4)	80.00 - 86.67	0.6000	0.6000
T11	17	Feedline Ladder (Af)	80.00 - 86.67	0.6000	0.6000
T11	20	HB058-M12-XXXF(5/8)	80.00 - 86.67	0.6000	0.6000
T11	21	HB114-1-08U4-M5J(1-1/4)	80.00 - 86.67	0.6000	0.6000
T11	22	T-Brackets (Af)	80.00 - 86.67	0.6000	0.6000
T11	24	Feedline Ladder (Af)	80.00 - 86.67	0.6000	0.6000
T11	26	CU12PSM9P6XXX(1-1/2)	80.00 - 86.67	0.6000	0.6000
T12	1	HCS 6X12 4AWG(1-5/8)	73.33 - 80.00	0.6000	0.6000
T12	3	Feedline Ladder (Af)	73.33 - 80.00	0.6000	0.6000
T12	7	LDF7-50A(1-5/8)	73.33 - 80.00	0.6000	0.6000
T12	9	Feedline Ladder (Af)	73.33 - 80.00	0.6000	0.6000
T12	11	FB-L98B-002-75000(3/8)	73.33 - 80.00	0.6000	0.6000
T12	12	WR-VG86ST-BRD(3/4)	73.33 - 80.00	0.6000	0.6000
T12	13	FB-L98B-002-75000(3/8)	73.33 - 80.00	0.6000	0.6000
T12	14	WR-VG86ST-BRD(3/4)	73.33 - 80.00	0.6000	0.6000
T12	15	LDF6-50A(1-1/4)	73.33 - 80.00	0.6000	0.6000
T12	16	LCF114-50J(1-1/4)	73.33 - 80.00	0.6000	0.6000
T12	17	Feedline Ladder (Af)	73.33 - 80.00	0.6000	0.6000
T12	20	HB058-M12-XXXF(5/8)	73.33 - 80.00	0.6000	0.6000
T12	21	HB114-1-08U4-M5J(1-1/4)	73.33 - 80.00	0.6000	0.6000
T12	22	T-Brackets (Af)	73.33 - 80.00	0.6000	0.6000
T12	24	Feedline Ladder (Af)	73.33 - 80.00	0.6000	0.6000
T12	26	CU12PSM9P6XXX(1-1/2)	73.33 - 80.00	0.6000	0.6000
T13	1	HCS 6X12 4AWG(1-5/8)	66.67 - 73.33	0.6000	0.6000
T13	3	Feedline Ladder (Af)	66.67 - 73.33	0.6000	0.6000
T13	7	LDF7-50A(1-5/8)	66.67 - 73.33	0.6000	0.6000
T13	9	Feedline Ladder (Af)	66.67 - 73.33	0.6000	0.6000
T13	11	FB-L98B-002-75000(3/8)	66.67 - 73.33	0.6000	0.6000
T13	12	WR-VG86ST-BRD(3/4)	66.67 - 73.33	0.6000	0.6000
T13	13	FB-L98B-002-75000(3/8)	66.67 - 73.33	0.6000	0.6000
T13	14	WR-VG86ST-BRD(3/4)	66.67 - 73.33	0.6000	0.6000
T13	15	LDF6-50A(1-1/4)	66.67 - 73.33	0.6000	0.6000
T13	16	LCF114-50J(1-1/4)	66.67 - 73.33	0.6000	0.6000
T13	17	Feedline Ladder (Af)	66.67 - 73.33	0.6000	0.6000
T13	20	HB058-M12-XXXF(5/8)	66.67 - 73.33	0.6000	0.6000
T13	21	HB114-1-08U4-M5J(1-1/4)	66.67 - 73.33	0.6000	0.6000
T13	22	T-Brackets (Af)	66.67 - 73.33	0.6000	0.6000
T13	24	Feedline Ladder (Af)	66.67 - 73.33	0.6000	0.6000
T13	26	CU12PSM9P6XXX(1-1/2)	66.67 - 73.33	0.6000	0.6000
T14	1	HCS 6X12 4AWG(1-5/8)	60.00 - 66.67	0.6000	0.6000
T14	3	Feedline Ladder (Af)	60.00 - 66.67	0.6000	0.6000
T14	7	LDF7-50A(1-5/8)	60.00 - 66.67	0.6000	0.6000
T14	9	Feedline Ladder (Af)	60.00 - 66.67	0.6000	0.6000
T14	11	FB-L98B-002-75000(3/8)	60.00 - 66.67	0.6000	0.6000
T14	12	WR-VG86ST-BRD(3/4)	60.00 - 66.67	0.6000	0.6000
T14	13	FB-L98B-002-75000(3/8)	60.00 - 66.67	0.6000	0.6000
T14	14	WR-VG86ST-BRD(3/4)	60.00 - 66.67	0.6000	0.6000
T14	15	LDF6-50A(1-1/4)	60.00 - 66.67	0.6000	0.6000
T14	16	LCF114-50J(1-1/4)	60.00 - 66.67	0.6000	0.6000
T14	17	Feedline Ladder (Af)	60.00 - 66.67	0.6000	0.6000
T14	20	HB058-M12-XXXF(5/8)	60.00 - 66.67	0.6000	0.6000
T14	21	HB114-1-08U4-M5J(1-1/4)	60.00 - 66.67	0.6000	0.6000
T14	22	T-Brackets (Af)	60.00 - 66.67	0.6000	0.6000
T14	24	Feedline Ladder (Af)	60.00 - 66.67	0.6000	0.6000
T14	26	CU12PSM9P6XXX(1-1/2)	60.00 - 66.67	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T15	1	HCS 6X12 4AWG(1-5/8)	50.00 - 60.00	0.6000	0.6000
T15	3	Feedline Ladder (Af)	50.00 - 60.00	0.6000	0.6000
T15	5	LDF4-50A(1/2)	50.00 - 57.00	0.6000	0.6000
T15	7	LDF7-50A(1-5/8)	50.00 - 60.00	0.6000	0.6000
T15	9	Feedline Ladder (Af)	50.00 - 60.00	0.6000	0.6000
T15	11	FB-L98B-002-75000(3/8)	50.00 - 60.00	0.6000	0.6000
T15	12	WR-VG86ST-BRD(3/4)	50.00 - 60.00	0.6000	0.6000
T15	13	FB-L98B-002-75000(3/8)	50.00 - 60.00	0.6000	0.6000
T15	14	WR-VG86ST-BRD(3/4)	50.00 - 60.00	0.6000	0.6000
T15	15	LDF6-50A(1-1/4)	50.00 - 60.00	0.6000	0.6000
T15	16	LCF114-50J(1-1/4)	50.00 - 60.00	0.6000	0.6000
T15	17	Feedline Ladder (Af)	50.00 - 60.00	0.6000	0.6000
T15	20	HB058-M12-XXXF(5/8)	50.00 - 60.00	0.6000	0.6000
T15	21	HB114-1-08U4-M5J(1-1/4)	50.00 - 60.00	0.6000	0.6000
T15	22	T-Brackets (Af)	50.00 - 60.00	0.6000	0.6000
T15	24	Feedline Ladder (Af)	50.00 - 60.00	0.6000	0.6000
T15	26	CU12PSM9P6XXX(1-1/2)	50.00 - 60.00	0.6000	0.6000
T16	1	HCS 6X12 4AWG(1-5/8)	40.00 - 50.00	0.6000	0.6000
T16	3	Feedline Ladder (Af)	40.00 - 50.00	0.6000	0.6000
T16	5	LDF4-50A(1/2)	40.00 - 50.00	0.6000	0.6000
T16	7	LDF7-50A(1-5/8)	40.00 - 50.00	0.6000	0.6000
T16	9	Feedline Ladder (Af)	40.00 - 50.00	0.6000	0.6000
T16	11	FB-L98B-002-75000(3/8)	40.00 - 50.00	0.6000	0.6000
T16	12	WR-VG86ST-BRD(3/4)	40.00 - 50.00	0.6000	0.6000
T16	13	FB-L98B-002-75000(3/8)	40.00 - 50.00	0.6000	0.6000
T16	14	WR-VG86ST-BRD(3/4)	40.00 - 50.00	0.6000	0.6000
T16	15	LDF6-50A(1-1/4)	40.00 - 50.00	0.6000	0.6000
T16	16	LCF114-50J(1-1/4)	40.00 - 50.00	0.6000	0.6000
T16	17	Feedline Ladder (Af)	40.00 - 50.00	0.6000	0.6000
T16	19	LDF4-50A(1/2)	40.00 - 48.00	0.6000	0.6000
T16	20	HB058-M12-XXXF(5/8)	40.00 - 50.00	0.6000	0.6000
T16	21	HB114-1-08U4-M5J(1-1/4)	40.00 - 50.00	0.6000	0.6000
T16	22	T-Brackets (Af)	40.00 - 50.00	0.6000	0.6000
T16	24	Feedline Ladder (Af)	40.00 - 50.00	0.6000	0.6000
T16	26	CU12PSM9P6XXX(1-1/2)	40.00 - 50.00	0.6000	0.6000
T17	1	HCS 6X12 4AWG(1-5/8)	30.00 - 40.00	0.6000	0.6000
T17	3	Feedline Ladder (Af)	30.00 - 40.00	0.6000	0.6000
T17	5	LDF4-50A(1/2)	30.00 - 40.00	0.6000	0.6000
T17	7	LDF7-50A(1-5/8)	30.00 - 40.00	0.6000	0.6000
T17	9	Feedline Ladder (Af)	30.00 - 40.00	0.6000	0.6000
T17	11	FB-L98B-002-75000(3/8)	30.00 - 40.00	0.6000	0.6000
T17	12	WR-VG86ST-BRD(3/4)	30.00 - 40.00	0.6000	0.6000
T17	13	FB-L98B-002-75000(3/8)	30.00 - 40.00	0.6000	0.6000
T17	14	WR-VG86ST-BRD(3/4)	30.00 - 40.00	0.6000	0.6000
T17	15	LDF6-50A(1-1/4)	30.00 - 40.00	0.6000	0.6000
T17	16	LCF114-50J(1-1/4)	30.00 - 40.00	0.6000	0.6000
T17	17	Feedline Ladder (Af)	30.00 - 40.00	0.6000	0.6000
T17	19	LDF4-50A(1/2)	30.00 - 40.00	0.6000	0.6000
T17	20	HB058-M12-XXXF(5/8)	30.00 - 40.00	0.6000	0.6000
T17	21	HB114-1-08U4-M5J(1-1/4)	30.00 - 40.00	0.6000	0.6000
T17	22	T-Brackets (Af)	30.00 - 40.00	0.6000	0.6000
T17	24	Feedline Ladder (Af)	30.00 - 40.00	0.6000	0.6000
T17	26	CU12PSM9P6XXX(1-1/2)	30.00 - 40.00	0.6000	0.6000
T18	1	HCS 6X12 4AWG(1-5/8)	20.00 - 30.00	0.6000	0.6000
T18	3	Feedline Ladder (Af)	20.00 - 30.00	0.6000	0.6000
T18	5	LDF4-50A(1/2)	20.00 - 30.00	0.6000	0.6000
T18	7	LDF7-50A(1-5/8)	20.00 - 30.00	0.6000	0.6000
T18	9	Feedline Ladder (Af)	20.00 - 30.00	0.6000	0.6000
T18	11	FB-L98B-002-75000(3/8)	20.00 - 30.00	0.6000	0.6000
T18	12	WR-VG86ST-BRD(3/4)	20.00 - 30.00	0.6000	0.6000
T18	13	FB-L98B-002-75000(3/8)	20.00 - 30.00	0.6000	0.6000
T18	14	WR-VG86ST-BRD(3/4)	20.00 - 30.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T18	15	LDF6-50A(1-1/4)	20.00 - 30.00	0.6000	0.6000
T18	16	LCF114-50J(1-1/4)	20.00 - 30.00	0.6000	0.6000
T18	17	Feedline Ladder (Af)	20.00 - 30.00	0.6000	0.6000
T18	19	LDF4-50A(1/2)	20.00 - 30.00	0.6000	0.6000
T18	20	HB058-M12-XXXF(5/8)	20.00 - 30.00	0.6000	0.6000
T18	21	HB114-1-08U4-M5J(1-1/4)	20.00 - 30.00	0.6000	0.6000
T18	22	T-Brackets (Af)	20.00 - 30.00	0.6000	0.6000
T18	24	Feedline Ladder (Af)	20.00 - 30.00	0.6000	0.6000
T18	26	CU12PSM9P6XXX(1-1/2)	20.00 - 30.00	0.6000	0.6000
T19	1	HCS 6X12 4AWG(1-5/8)	0.00 - 20.00	0.6000	0.6000
T19	3	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T19	5	LDF4-50A(1/2)	0.00 - 20.00	0.6000	0.6000
T19	7	LDF7-50A(1-5/8)	0.00 - 20.00	0.6000	0.6000
T19	9	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T19	11	FB-L98B-002-75000(3/8)	0.00 - 20.00	0.6000	0.6000
T19	12	WR-VG86ST-BRD(3/4)	0.00 - 20.00	0.6000	0.6000
T19	13	FB-L98B-002-75000(3/8)	0.00 - 20.00	0.6000	0.6000
T19	14	WR-VG86ST-BRD(3/4)	0.00 - 20.00	0.6000	0.6000
T19	15	LDF6-50A(1-1/4)	0.00 - 20.00	0.6000	0.6000
T19	16	LCF114-50J(1-1/4)	0.00 - 20.00	0.6000	0.6000
T19	17	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T19	19	LDF4-50A(1/2)	0.00 - 20.00	0.6000	0.6000
T19	20	HB058-M12-XXXF(5/8)	0.00 - 20.00	0.6000	0.6000
T19	21	HB114-1-08U4-M5J(1-1/4)	0.00 - 20.00	0.6000	0.6000
T19	22	T-Brackets (Af)	0.00 - 20.00	0.6000	0.6000
T19	24	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T19	26	CU12PSM9P6XXX(1-1/2)	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
(2) APL866513-42T6 w/ Mount Pipe	A	From Leg	4.000 0' 0'	0.000	157'	No Ice 1/2" Ice 1" Ice 2" Ice	3.960 4.440 4.930 5.980	4.250 4.740 5.250 6.300	0.034 0.074 0.122 0.243
(2) LPA-80063/4CF w/ Mount Pipe	B	From Leg	4.000 0' 0'	0.000	157'	No Ice 1/2" Ice 1" Ice 2" Ice	6.385 6.784 7.192 8.035	6.603 7.232 7.876 9.214	0.038 0.104 0.176 0.344
(2) LPA-80063/4CFX5 w/ Mount Pipe	C	From Leg	4.000 0' 0'	0.000	157'	No Ice 1/2" Ice 1" Ice 2" Ice	6.385 6.784 7.192 8.035	6.603 7.232 7.876 9.214	0.038 0.104 0.176 0.344
(2) NHH-65B-R2B w/ Mount Pipe	A	From Leg	4.000 0' 0'	0.000	157'	No Ice 1/2" Ice 1" Ice 2" Ice	4.090 4.480 4.880 5.700	3.290 3.670 4.060 4.860	0.069 0.132 0.205 0.385
(2) NHH-65B-R2B w/ Mount Pipe	B	From Leg	4.000 0'	0.000	157'	No Ice 1/2" Ice	4.090 4.480	3.290 3.670	0.069 0.132

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" Ice	4.880	4.060	0.205
						2" Ice	5.700	4.860	0.385
(2) NHH-65B-R2B w/ Mount Pipe	C	From Leg	4.000	0.000	157'	No Ice	4.090	3.290	0.069
			0'			1/2" Ice	4.480	3.670	0.132
			0'			1" Ice	4.880	4.060	0.205
						2" Ice	5.700	4.860	0.385
MT6407-77A w/ Mount Pipe	A	From Leg	4.000	0.000	157'	No Ice	4.907	2.682	0.096
			0'			1/2" Ice	5.256	3.145	0.136
			0'			1" Ice	5.615	3.624	0.180
						2" Ice	6.362	4.631	0.288
MT6407-77A w/ Mount Pipe	B	From Leg	4.000	0.000	157'	No Ice	4.907	2.682	0.096
			0'			1/2" Ice	5.256	3.145	0.136
			0'			1" Ice	5.615	3.624	0.180
						2" Ice	6.362	4.631	0.288
MT6407-77A w/ Mount Pipe	C	From Leg	4.000	0.000	157'	No Ice	4.907	2.682	0.096
			0'			1/2" Ice	5.256	3.145	0.136
			0'			1" Ice	5.615	3.624	0.180
						2" Ice	6.362	4.631	0.288
RF4439D-25A	A	From Leg	4.000	0.000	157'	No Ice	1.865	1.252	0.075
			0'			1/2" Ice	2.035	1.394	0.093
			1'			1" Ice	2.212	1.544	0.114
						2" Ice	2.589	1.866	0.165
RF4439D-25A	B	From Leg	4.000	0.000	157'	No Ice	1.865	1.252	0.075
			0'			1/2" Ice	2.035	1.394	0.093
			1'			1" Ice	2.212	1.544	0.114
						2" Ice	2.589	1.866	0.165
RF4439D-25A	C	From Leg	4.000	0.000	157'	No Ice	1.865	1.252	0.075
			0'			1/2" Ice	2.035	1.394	0.093
			1'			1" Ice	2.212	1.544	0.114
						2" Ice	2.589	1.866	0.165
RF4440D-13A	A	From Leg	4.000	0.000	157'	No Ice	1.865	1.129	0.073
			0'			1/2" Ice	2.035	1.267	0.090
			1'			1" Ice	2.212	1.411	0.110
						2" Ice	2.589	1.723	0.159
RF4440D-13A	B	From Leg	4.000	0.000	157'	No Ice	1.865	1.129	0.073
			0'			1/2" Ice	2.035	1.267	0.090
			1'			1" Ice	2.212	1.411	0.110
						2" Ice	2.589	1.723	0.159
RF4440D-13A	C	From Leg	4.000	0.000	157'	No Ice	1.865	1.129	0.073
			0'			1/2" Ice	2.035	1.267	0.090
			1'			1" Ice	2.212	1.411	0.110
						2" Ice	2.589	1.723	0.159
RVZDC-6627-PF-48_CCIV2	C	From Leg	4.000	0.000	157'	No Ice	4.056	3.098	0.032
			0'			1/2" Ice	4.316	3.335	0.068
			1'			1" Ice	4.582	3.580	0.109
						2" Ice	5.138	4.092	0.203
15' x 2" Pipe Mount	A	From Leg	4.000	0.000	157'	No Ice	3.563	3.563	0.055
			0'			1/2" Ice	5.091	5.091	0.081
			0'			1" Ice	6.635	6.635	0.118
						2" Ice	9.775	9.775	0.219
15' x 2" Pipe Mount	B	From Leg	4.000	0.000	157'	No Ice	3.563	3.563	0.055
			0'			1/2" Ice	5.091	5.091	0.081
			0'			1" Ice	6.635	6.635	0.118
						2" Ice	9.775	9.775	0.219
15' x 2" Pipe Mount	C	From Leg	4.000	0.000	157'	No Ice	3.563	3.563	0.055
			0'			1/2" Ice	5.091	5.091	0.081
			0'			1" Ice	6.635	6.635	0.118

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
						2" Ice	9.775	9.775	0.219
Mount Reinforcement Specifications	C	None		0.000	157'	No Ice	28.630	28.630	0.280
						1/2" Ice	37.310	37.310	0.670
						1" Ice	45.800	45.800	0.940
						2" Ice	62.380	62.380	1.630
Side Arm Mount [SO 102-3]	C	None		0.000	157'	No Ice	3.600	3.600	0.075
						1/2" Ice	4.180	4.180	0.105
						1" Ice	4.750	4.750	0.135
						2" Ice	5.900	5.900	0.195
Sector Mount [SM 505-3]	C	None		0.000	157'	No Ice	31.660	31.660	1.725
						1/2" Ice	44.640	44.640	2.356
						1" Ice	57.440	57.440	3.189
						2" Ice	82.680	82.680	5.447
*									
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000 0' 0'	0.000	147'	No Ice	8.010	4.230	0.108
						1/2" Ice	8.520	4.690	0.194
						1" Ice	9.040	5.160	0.292
						2" Ice	10.110	6.120	0.522
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.000 0' 0'	0.000	147'	No Ice	8.010	4.230	0.108
						1/2" Ice	8.520	4.690	0.194
						1" Ice	9.040	5.160	0.292
						2" Ice	10.110	6.120	0.522
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.000 0' 0'	0.000	147'	No Ice	8.010	4.230	0.108
						1/2" Ice	8.520	4.690	0.194
						1" Ice	9.040	5.160	0.292
						2" Ice	10.110	6.120	0.522
TA08025-B604	A	From Leg	4.000 0' 0'	0.000	147'	No Ice	1.964	0.981	0.064
						1/2" Ice	2.138	1.112	0.081
						1" Ice	2.320	1.250	0.100
						2" Ice	2.705	1.548	0.148
TA08025-B604	B	From Leg	4.000 0' 0'	0.000	147'	No Ice	1.964	0.981	0.064
						1/2" Ice	2.138	1.112	0.081
						1" Ice	2.320	1.250	0.100
						2" Ice	2.705	1.548	0.148
TA08025-B604	C	From Leg	4.000 0' 0'	0.000	147'	No Ice	1.964	0.981	0.064
						1/2" Ice	2.138	1.112	0.081
						1" Ice	2.320	1.250	0.100
						2" Ice	2.705	1.548	0.148
TA08025-B605	A	From Leg	4.000 0' 0'	0.000	147'	No Ice	1.964	1.129	0.075
						1/2" Ice	2.138	1.267	0.093
						1" Ice	2.320	1.411	0.114
						2" Ice	2.705	1.723	0.164
TA08025-B605	B	From Leg	4.000 0' 0'	0.000	147'	No Ice	1.964	1.129	0.075
						1/2" Ice	2.138	1.267	0.093
						1" Ice	2.320	1.411	0.114
						2" Ice	2.705	1.723	0.164
TA08025-B605	C	From Leg	4.000 0' 0'	0.000	147'	No Ice	1.964	1.129	0.075
						1/2" Ice	2.138	1.267	0.093
						1" Ice	2.320	1.411	0.114
						2" Ice	2.705	1.723	0.164
RDIDC-9181-PF-48	A	From Leg	4.000 0' 0'	0.000	147'	No Ice	2.012	1.168	0.022
						1/2" Ice	2.189	1.311	0.040
						1" Ice	2.373	1.461	0.060
						2" Ice	2.763	1.784	0.110
(2) 8' x 2" Mount Pipe	A	From Leg	4.000 0' 0'	0.000	147'	No Ice	1.900	1.900	0.029
						1/2" Ice	2.728	2.728	0.044
						1" Ice	3.401	3.401	0.063

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
						2" Ice	4.396	4.396	0.119
(2) 8' x 2" Mount Pipe	B	From Leg	4.000 0' 0'	0.000	147'	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
(2) 8' x 2" Mount Pipe	C	From Leg	4.000 0' 0'	0.000	147'	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.029 0.044 0.063 0.119
Commscope MTC3975083 (3)	C	None		0.000	147'	No Ice 1/2" Ice 1" Ice 2" Ice	23.850 34.120 44.390 64.930	23.850 34.120 44.390 64.930	1.260 1.803 2.345 3.431
*									
7770.00 w/ Mount Pipe	A	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	5.746 6.179 6.607 7.488	4.254 5.014 5.711 7.155	0.055 0.103 0.157 0.287
7770.00 w/ Mount Pipe	B	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	5.746 6.179 6.607 7.488	4.254 5.014 5.711 7.155	0.055 0.103 0.157 0.287
7770.00 w/ Mount Pipe	C	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	5.746 6.179 6.607 7.488	4.254 5.014 5.711 7.155	0.055 0.103 0.157 0.287
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	12.250 13.190 14.160 16.140	8.330 9.230 10.150 12.050	0.105 0.194 0.297 0.543
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	12.250 13.190 14.160 16.140	8.330 9.230 10.150 12.050	0.105 0.194 0.297 0.543
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	12.250 13.190 14.160 16.140	8.330 9.230 10.150 12.050	0.105 0.194 0.297 0.543
TPA-65R-LCUUUU-H8 w/ Mount Pipe	A	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	11.850 12.770 13.710 15.640	8.990 9.880 10.790 12.660	0.115 0.210 0.319 0.580
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	11.850 12.770 13.710 15.640	8.990 9.880 10.790 12.660	0.115 0.210 0.319 0.580
TPA-65R-LCUUUU-H8 w/ Mount Pipe	C	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	11.850 12.770 13.710 15.640	8.990 9.880 10.790 12.660	0.115 0.210 0.319 0.580
TT19-08BP111-001	A	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	0.545 0.641 0.743 0.971	0.442 0.530 0.626 0.840	0.016 0.022 0.029 0.049
TT19-08BP111-001	B	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice	0.545 0.641 0.743	0.442 0.530 0.626	0.016 0.022 0.029

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
						2" Ice	0.971	0.840	0.049
TT19-08BP111-001	C	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	0.545 0.641 0.743 0.971	0.442 0.530 0.626 0.840	0.016 0.022 0.029 0.049
(2) 7020.00	A	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	0.102 0.147 0.199 0.326	0.175 0.239 0.311 0.476	0.002 0.005 0.009 0.022
(2) 7020.00	B	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	0.102 0.147 0.199 0.326	0.175 0.239 0.311 0.476	0.002 0.005 0.009 0.022
(2) 7020.00	C	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	0.102 0.147 0.199 0.326	0.175 0.239 0.311 0.476	0.002 0.005 0.009 0.022
DC6-48-60-18-8F	A	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	0.850 1.356 1.532 1.914	0.850 1.356 1.532 1.914	0.019 0.036 0.055 0.101
DC6-48-60-18-8F	C	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	0.850 1.356 1.532 1.914	0.850 1.356 1.532 1.914	0.019 0.036 0.055 0.101
RRUS 11	A	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	2.784 2.992 3.207 3.658	1.187 1.334 1.490 1.833	0.048 0.068 0.092 0.150
RRUS 11	B	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	2.784 2.992 3.207 3.658	1.187 1.334 1.490 1.833	0.048 0.068 0.092 0.150
RRUS 11	C	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	2.784 2.992 3.207 3.658	1.187 1.334 1.490 1.833	0.048 0.068 0.092 0.150
RRUS 4415 B25	A	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	1.644 1.804 1.972 2.329	0.679 0.791 0.913 1.183	0.044 0.056 0.071 0.109
RRUS 4415 B25	B	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	1.644 1.804 1.972 2.329	0.679 0.791 0.913 1.183	0.044 0.056 0.071 0.109
RRUS 4415 B25	C	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	1.644 1.804 1.972 2.329	0.679 0.791 0.913 1.183	0.044 0.056 0.071 0.109
DBC0062F1V51-1	A	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	0.220 0.289 0.366 0.543	0.711 0.818 0.932 1.182	0.007 0.012 0.018 0.037
DBC0062F1V51-1	B	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	0.220 0.289 0.366 0.543	0.711 0.818 0.932 1.182	0.007 0.012 0.018 0.037

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
DBC0062F1V51-1	C	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	0.220 0.289 0.366 0.543	0.711 0.818 0.932 1.182	0.007 0.012 0.018 0.037
RRUS 4426 B66	A	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	1.644 1.804 1.972 2.329	0.725 0.842 0.969 1.244	0.048 0.061 0.076 0.115
RRUS 4426 B66	B	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	1.644 1.804 1.972 2.329	0.725 0.842 0.969 1.244	0.048 0.061 0.076 0.115
RRUS 4426 B66	C	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	1.644 1.804 1.972 2.329	0.725 0.842 0.969 1.244	0.048 0.061 0.076 0.115
WCS RRUS-32-B30	A	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	3.314 3.558 3.809 4.333	2.424 2.638 2.860 3.324	0.077 0.105 0.136 0.211
WCS RRUS-32-B30	B	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	3.314 3.558 3.809 4.333	2.424 2.638 2.860 3.324	0.077 0.105 0.136 0.211
WCS RRUS-32-B30	C	From Leg	4.000 0' 2'	0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	3.314 3.558 3.809 4.333	2.424 2.638 2.860 3.324	0.077 0.105 0.136 0.211
Sector Mount [SM 504-3]	C	None		0.000	135'	No Ice 1/2" Ice 1" Ice 2" Ice	31.050 43.830 56.440 81.280	31.050 43.830 56.440 81.280	1.708 2.326 3.143 5.358
*									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.000 0' 1'	0.000	125'	No Ice 1/2" Ice 1" Ice 2" Ice	4.600 5.050 5.500 6.440	4.010 4.450 4.890 5.820	0.095 0.160 0.235 0.419
APXV9ERR18-C-A20 w/ Mount Pipe	B	From Leg	4.000 0' 1'	0.000	125'	No Ice 1/2" Ice 1" Ice 2" Ice	4.600 5.050 5.500 6.440	4.010 4.450 4.890 5.820	0.095 0.160 0.235 0.419
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000 0' 1'	0.000	125'	No Ice 1/2" Ice 1" Ice 2" Ice	4.600 5.050 5.500 6.440	4.010 4.450 4.890 5.820	0.095 0.160 0.235 0.419
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.000 0' 1'	0.000	125'	No Ice 1/2" Ice 1" Ice 2" Ice	4.090 4.480 4.880 5.710	2.860 3.230 3.610 4.400	0.077 0.127 0.185 0.331
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000 0' 1'	0.000	125'	No Ice 1/2" Ice 1" Ice 2" Ice	4.090 4.480 4.880 5.710	2.860 3.230 3.610 4.400	0.077 0.127 0.185 0.331
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000 0' 1'	0.000	125'	No Ice 1/2" Ice 1" Ice 2" Ice	4.090 4.480 4.880 5.710	2.860 3.230 3.610 4.400	0.077 0.127 0.185 0.331

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
TD-RRH8x20-25	A	From Leg	4.000 0' 1'	0.000	125'	No Ice 1/2" Ice 1" Ice 2" Ice	4.045 4.298 4.557 5.098	1.535 1.714 1.901 2.295	0.070 0.097 0.128 0.201
TD-RRH8x20-25	B	From Leg	4.000 0' 1'	0.000	125'	No Ice 1/2" Ice 1" Ice 2" Ice	4.045 4.298 4.557 5.098	1.535 1.714 1.901 2.295	0.070 0.097 0.128 0.201
TD-RRH8x20-25	C	From Leg	4.000 0' 1'	0.000	125'	No Ice 1/2" Ice 1" Ice 2" Ice	4.045 4.298 4.557 5.098	1.535 1.714 1.901 2.295	0.070 0.097 0.128 0.201
800MHz 2X50W RRH W/FILTER	A	From Leg	4.000 0' 0'	0.000	125'	No Ice 1/2" Ice 1" Ice 2" Ice	2.058 2.240 2.429 2.829	1.932 2.109 2.293 2.684	0.064 0.086 0.111 0.172
800MHz 2X50W RRH W/FILTER	B	From Leg	4.000 0' 0'	0.000	125'	No Ice 1/2" Ice 1" Ice 2" Ice	2.058 2.240 2.429 2.829	1.932 2.109 2.293 2.684	0.064 0.086 0.111 0.172
800MHz 2X50W RRH W/FILTER	C	From Leg	4.000 0' 0'	0.000	125'	No Ice 1/2" Ice 1" Ice 2" Ice	2.058 2.240 2.429 2.829	1.932 2.109 2.293 2.684	0.064 0.086 0.111 0.172
1900MHz RRH (65MHz)	A	From Leg	4.000 0' 0'	0.000	125'	No Ice 1/2" Ice 1" Ice 2" Ice	2.313 2.517 2.728 3.174	2.375 2.581 2.794 3.243	0.060 0.084 0.111 0.176
1900MHz RRH (65MHz)	B	From Leg	4.000 0' 0'	0.000	125'	No Ice 1/2" Ice 1" Ice 2" Ice	2.313 2.517 2.728 3.174	2.375 2.581 2.794 3.243	0.060 0.084 0.111 0.176
1900MHz RRH (65MHz)	C	From Leg	4.000 0' 0'	0.000	125'	No Ice 1/2" Ice 1" Ice 2" Ice	2.313 2.517 2.728 3.174	2.375 2.581 2.794 3.243	0.060 0.084 0.111 0.176
Sector Mount [SM 402-3]	C	None		0.000	125'	No Ice 1/2" Ice 1" Ice 2" Ice	18.870 26.470 33.990 48.840	18.870 26.470 33.990 48.840	0.851 1.210 1.696 3.044
*									
VV-65A-R1_TMO w/ Mount Pipe	A	From Leg	4.000 0' 1'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	4.460 4.910 5.360 6.320	2.690 3.100 3.520 4.410	0.054 0.097 0.149 0.281
VV-65A-R1_TMO w/ Mount Pipe	B	From Leg	4.000 0' 1'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	4.460 4.910 5.360 6.320	2.690 3.100 3.520 4.410	0.054 0.097 0.149 0.281
VV-65A-R1_TMO w/ Mount Pipe	C	From Leg	4.000 0' 1'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	4.460 4.910 5.360 6.320	2.690 3.100 3.520 4.410	0.054 0.097 0.149 0.281
AIR 6419 B41_TMO w/ Mount Pipe	A	From Leg	4.000 0' 1'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	6.580 7.060 7.570 8.620	3.500 3.900 4.320 5.200	0.111 0.162 0.220 0.359

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
AIR 6419 B41_TMO w/ Mount Pipe	B	From Leg	4.000 0' 1'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	6.580 7.060 7.570 8.620	3.500 3.900 4.320 5.200	0.111 0.162 0.220 0.359
AIR 6419 B41_TMO w/ Mount Pipe	C	From Leg	4.000 0' 1'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	6.580 7.060 7.570 8.620	3.500 3.900 4.320 5.200	0.111 0.162 0.220 0.359
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	A	From Leg	4.000 0' 1'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.183 0.311 0.453 0.782
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	B	From Leg	4.000 0' 1'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.183 0.311 0.453 0.782
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	C	From Leg	4.000 0' 1'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	14.690 15.460 16.230 17.820	6.870 7.550 8.250 9.670	0.183 0.311 0.453 0.782
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.000 0' 1'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	1.970 2.147 2.331 2.721	1.587 1.749 1.918 2.280	0.073 0.093 0.116 0.170
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.000 0' 1'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	1.970 2.147 2.331 2.721	1.587 1.749 1.918 2.280	0.073 0.093 0.116 0.170
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.000 0' 1'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	1.970 2.147 2.331 2.721	1.587 1.749 1.918 2.280	0.073 0.093 0.116 0.170
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.000 0' 1'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	2.139 2.321 2.511 2.912	1.686 1.850 2.022 2.387	0.109 0.131 0.156 0.217
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.000 0' 1'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	2.139 2.321 2.511 2.912	1.686 1.850 2.022 2.387	0.109 0.131 0.156 0.217
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.000 0' 1'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	2.139 2.321 2.511 2.912	1.686 1.850 2.022 2.387	0.109 0.131 0.156 0.217
5' x 2" Pipe Mount	A	From Leg	4.000 0' 0'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	1.188 1.496 1.807 2.458	1.188 1.496 1.807 2.458	0.018 0.027 0.040 0.076
5' x 2" Pipe Mount	B	From Leg	4.000 0' 0'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	1.188 1.496 1.807 2.458	1.188 1.496 1.807 2.458	0.018 0.027 0.040 0.076
5' x 2" Pipe Mount	C	From Leg	4.000 0' 0'	0.000	113'	No Ice 1/2" Ice 1" Ice 2" Ice	1.188 1.496 1.807 2.458	1.188 1.496 1.807 2.458	0.018 0.027 0.040 0.076
15' x 2" Pipe Mount	A	From Leg	4.000	0.000	113'	No Ice	3.563	3.563	0.055

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	5.091	5.091	0.081
			0'			1" Ice	6.635	6.635	0.118
						2" Ice	9.775	9.775	0.219
15' x 2" Pipe Mount	B	From Leg	4.000	0.000	113'	No Ice	3.563	3.563	0.055
			0'			1/2" Ice	5.091	5.091	0.081
			0'			1" Ice	6.635	6.635	0.118
						2" Ice	9.775	9.775	0.219
15' x 2" Pipe Mount	C	From Leg	4.000	0.000	113'	No Ice	3.563	3.563	0.055
			0'			1/2" Ice	5.091	5.091	0.081
			0'			1" Ice	6.635	6.635	0.118
						2" Ice	9.775	9.775	0.219
10' x 2" Mount Pipe	A	From Leg	4.000	0.000	113'	No Ice	2.375	2.375	0.037
			0'			1/2" Ice	3.403	3.403	0.054
			0'			1" Ice	4.448	4.448	0.079
						2" Ice	5.911	5.911	0.148
10' x 2" Mount Pipe	B	From Leg	4.000	0.000	113'	No Ice	2.375	2.375	0.037
			0'			1/2" Ice	3.403	3.403	0.054
			0'			1" Ice	4.448	4.448	0.079
						2" Ice	5.911	5.911	0.148
10' x 2" Mount Pipe	C	From Leg	4.000	0.000	113'	No Ice	2.375	2.375	0.037
			0'			1/2" Ice	3.403	3.403	0.054
			0'			1" Ice	4.448	4.448	0.079
						2" Ice	5.911	5.911	0.148
Pipe Mount [PM 601-3]	C	None		0.000	113'	No Ice	3.170	3.170	0.195
						1/2" Ice	3.790	3.790	0.232
						1" Ice	4.420	4.420	0.279
						2" Ice	5.760	5.760	0.401
Sector Mount [SM 503-3]	C	None		0.000	113'	No Ice	30.430	30.430	1.690
						1/2" Ice	43.020	43.020	2.296
						1" Ice	55.430	55.430	3.097
						2" Ice	79.890	79.890	5.269
*									
GPS_A	A	From Leg	2.000	0.000	57'	No Ice	0.255	0.255	0.001
			0'			1/2" Ice	0.320	0.320	0.005
			3'			1" Ice	0.393	0.393	0.010
						2" Ice	0.561	0.561	0.025
Side Arm Mount [SO 202-1]	A	From Leg	1.000	0.000	57'	No Ice	1.780	2.970	0.110
			0'			1/2" Ice	2.240	3.570	0.133
			0'			1" Ice	2.750	4.190	0.163
						2" Ice	3.890	5.550	0.249
*									
Side Arm Mount [SO 202-1]	C	From Leg	1.000	0.000	48'	No Ice	1.780	2.970	0.110
			0'			1/2" Ice	2.240	3.570	0.133
			0'			1" Ice	2.750	4.190	0.163
						2" Ice	3.890	5.550	0.249
*									
*									
*									

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
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	160 - 140	Leg	Max Tension	23	15.146	-0.018	-0.016
			Max. Compression	10	-19.913	0.087	0.014
			Max. Mx	6	-1.668	0.733	-0.015

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	24	-1.561	0.002	-0.844
			Max. Vy	19	-1.314	0.581	0.015
			Max. Vx	12	1.358	0.001	-0.511
		Diagonal	Max Tension	25	3.228	0.000	0.000
			Max. Compression	12	-3.291	0.000	0.000
			Max. Mx	38	0.504	0.027	-0.000
			Max. My	20	-2.298	0.003	0.005
			Max. Vy	38	-0.023	0.027	-0.000
			Max. Vx	20	-0.001	0.000	0.000
		Top Girt	Max Tension	6	0.623	0.000	0.000
			Max. Compression	19	-0.622	0.000	0.000
			Max. Mx	26	-0.004	-0.053	0.000
			Max. My	26	-0.007	0.000	0.000
			Max. Vy	26	0.032	0.000	0.000
			Max. Vx	26	0.000	0.000	0.000
T2	140 - 135	Leg	Max Tension	23	20.426	-0.070	-0.025
			Max. Compression	10	-25.397	0.037	0.016
			Max. Mx	14	18.380	-0.073	-0.006
			Max. My	8	-2.986	0.009	-0.056
			Max. Vy	14	0.039	-0.073	-0.006
			Max. Vx	8	0.053	0.009	0.014
		Diagonal	Max Tension	23	3.048	0.000	0.000
			Max. Compression	10	-3.312	0.000	0.000
			Max. Mx	27	0.354	0.019	0.003
			Max. My	30	0.614	0.017	0.003
			Max. Vy	37	0.021	0.018	-0.003
			Max. Vx	30	-0.001	0.000	0.000
		Top Girt	Max Tension	22	0.342	0.000	0.000
			Max. Compression	3	-0.316	0.000	0.000
			Max. Mx	26	0.025	-0.053	0.000
			Max. My	26	0.022	0.000	0.002
			Max. Vy	26	0.032	0.000	0.000
			Max. Vx	26	-0.001	0.000	0.000
T3	135 - 130	Leg	Max Tension	23	27.886	-0.026	-0.038
			Max. Compression	10	-35.767	0.070	0.024
			Max. Mx	14	25.026	-0.073	-0.006
			Max. My	20	-4.730	-0.009	-0.259
			Max. Vy	10	0.039	0.070	0.024
			Max. Vx	8	-0.132	-0.009	0.258
		Diagonal	Max Tension	12	4.261	0.000	0.000
			Max. Compression	12	-4.219	0.000	0.000
			Max. Mx	38	1.308	0.023	0.002
			Max. My	16	-4.163	-0.002	-0.004
			Max. Vy	38	0.023	0.021	-0.002
			Max. Vx	28	-0.001	0.000	0.000
T4	130 - 125	Leg	Max Tension	23	35.857	-0.120	-0.032
			Max. Compression	10	-44.078	0.021	0.038
			Max. Mx	10	-44.052	0.143	0.032
			Max. My	20	-4.791	-0.009	-0.259
			Max. Vy	10	-0.054	0.143	0.032
			Max. Vx	20	-0.147	-0.009	-0.259
		Diagonal	Max Tension	13	4.231	0.000	0.000
			Max. Compression	12	-4.298	0.000	0.000
			Max. Mx	38	0.491	0.028	-0.003
			Max. My	20	3.849	0.013	-0.004
			Max. Vy	36	0.025	0.024	-0.004
			Max. Vx	36	0.002	0.000	0.000
T5	125 - 120	Leg	Max Tension	23	43.666	-0.040	-0.056
			Max. Compression	10	-53.774	0.143	0.032
			Max. Mx	10	-53.774	0.143	0.032
			Max. My	20	-6.043	-0.016	-0.371

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	10	0.054	0.143	0.032
			Max. Vx	20	0.175	-0.016	-0.371
		Diagonal	Max Tension	12	4.849	0.000	0.000
			Max. Compression	12	-4.867	0.000	0.000
			Max. Mx	38	1.418	0.033	0.002
			Max. My	4	-4.749	-0.003	0.007
			Max. Vy	38	0.029	0.029	-0.003
			Max. Vx	28	-0.002	0.000	0.000
T6	120 - 113.333	Leg	Max Tension	23	53.239	-0.392	-0.067
			Max. Compression	10	-63.946	0.028	0.055
			Max. Mx	10	-63.906	0.421	0.066
			Max. My	20	-6.216	-0.016	-0.371
			Max. Vy	10	-0.106	0.421	0.066
			Max. Vx	8	0.149	-0.016	0.370
		Diagonal	Max Tension	12	5.327	0.000	0.000
			Max. Compression	10	-5.423	0.000	0.000
			Max. Mx	27	1.233	0.065	0.008
			Max. My	8	4.678	0.051	0.011
			Max. Vy	27	-0.042	0.065	0.008
			Max. Vx	30	-0.003	0.000	0.000
T7	113.333 - 106.667	Leg	Max Tension	23	64.711	-0.392	-0.067
			Max. Compression	10	-77.956	-0.063	0.037
			Max. Mx	10	-76.249	0.421	0.066
			Max. My	20	-8.395	-0.057	-0.555
			Max. Vy	14	-1.204	-0.391	-0.016
			Max. Vx	8	1.093	0.002	0.175
		Diagonal	Max Tension	12	6.541	0.000	0.000
			Max. Compression	10	-6.800	0.000	0.000
			Max. Mx	38	1.825	0.067	0.005
			Max. My	22	-5.974	-0.001	-0.011
			Max. Vy	38	-0.044	0.067	0.005
			Max. Vx	29	-0.003	0.000	0.000
T8	106.667 - 100	Leg	Max Tension	23	76.591	0.078	-0.026
			Max. Compression	10	-91.673	-0.063	0.037
			Max. Mx	10	-91.629	0.589	-0.001
			Max. My	20	-8.729	-0.057	-0.555
			Max. Vy	10	0.229	0.589	-0.001
			Max. Vx	20	-0.266	-0.057	-0.555
		Diagonal	Max Tension	13	6.617	0.048	-0.003
			Max. Compression	10	-6.753	0.000	0.000
			Max. Mx	27	1.752	0.078	-0.010
			Max. My	20	5.751	0.062	-0.012
			Max. Vy	27	-0.047	0.078	-0.010
			Max. Vx	36	0.003	0.000	0.000
		Secondary Horizontal	Max Tension	20	0.384	0.000	0.000
			Max. Compression	21	-0.322	0.000	0.000
			Max. Mx	30	0.156	0.036	0.002
			Max. My	22	-0.213	0.013	0.006
			Max. Vy	30	-0.033	0.036	0.002
			Max. Vx	37	-0.002	0.000	0.000
T9	100 - 93.3333	Leg	Max Tension	23	88.417	-0.386	-0.062
			Max. Compression	10	-104.423	-0.115	0.024
			Max. Mx	10	-104.354	0.408	0.062
			Max. My	20	-9.465	-0.003	-0.360
			Max. Vy	10	-0.130	0.408	0.062
			Max. Vx	8	-0.139	-0.003	0.360
		Diagonal	Max Tension	16	6.563	0.000	0.000
			Max. Compression	10	-6.763	0.000	0.000
			Max. Mx	27	1.629	0.068	-0.007

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	35	-2.124	0.056	-0.009
			Max. Vy	37	0.045	0.062	0.006
			Max. Vx	35	0.003	0.000	0.000
T10	93.3333 - 86.6667	Leg	Max Tension	23	99.985	0.001	-0.050
			Max. Compression	10	-116.891	0.408	0.062
			Max. Mx	10	-116.891	0.408	0.062
			Max. My	20	-9.944	-0.027	-0.453
			Max. Vy	10	0.117	0.408	0.062
			Max. Vx	20	0.128	-0.027	-0.453
		Diagonal	Max Tension	10	6.762	0.000	0.000
			Max. Compression	10	-6.774	0.000	0.000
			Max. Mx	27	1.641	0.081	0.009
			Max. My	36	-1.093	0.058	-0.010
			Max. Vy	37	0.051	0.072	-0.010
			Max. Vx	36	0.003	0.000	0.000
T11	86.6667 - 80	Leg	Max Tension	23	110.563	-0.704	0.005
			Max. Compression	10	-128.535	-0.027	0.048
			Max. Mx	10	-128.480	0.845	-0.004
			Max. My	20	-10.264	-0.027	-0.453
			Max. Vy	10	0.314	0.845	-0.004
			Max. Vx	20	-0.216	-0.027	-0.453
		Diagonal	Max Tension	23	6.875	-0.082	0.004
			Max. Compression	10	-7.420	0.000	0.000
			Max. Mx	27	1.525	-0.133	0.017
			Max. My	36	-2.115	-0.089	0.020
			Max. Vy	37	-0.077	-0.120	-0.014
			Max. Vx	36	0.005	0.000	0.000
		Secondary Horizontal	Max Tension	20	0.432	0.000	0.000
			Max. Compression	21	-0.363	0.000	0.000
			Max. Mx	35	0.073	0.051	0.001
			Max. My	22	-0.290	0.015	0.005
			Max. Vy	35	0.040	0.051	0.001
			Max. Vx	37	-0.001	0.000	0.000
T12	80 - 73.3333	Leg	Max Tension	23	121.397	-0.090	-0.048
			Max. Compression	10	-140.636	-0.142	0.011
			Max. Mx	33	6.921	-0.270	-0.014
			Max. My	20	-11.165	-0.004	-0.522
			Max. Vy	10	-0.093	0.107	0.046
			Max. Vx	20	0.151	-0.004	-0.522
		Diagonal	Max Tension	10	6.977	0.000	0.000
			Max. Compression	10	-6.908	0.000	0.000
			Max. Mx	27	1.841	0.096	0.012
			Max. My	36	-1.110	0.073	-0.013
			Max. Vy	37	0.059	0.088	-0.012
			Max. Vx	36	0.003	0.000	0.000
T13	73.3333 - 66.6667	Leg	Max Tension	23	131.275	-0.967	0.012
			Max. Compression	10	-151.503	0.107	0.046
			Max. Mx	10	-151.480	1.137	-0.012
			Max. My	20	-11.389	-0.004	-0.522
			Max. Vy	10	0.565	1.137	-0.012
			Max. Vx	20	-0.233	-0.004	-0.522
		Diagonal	Max Tension	23	7.149	0.057	-0.001
			Max. Compression	10	-7.765	0.000	0.000
			Max. Mx	27	1.368	0.119	-0.015
			Max. My	36	1.366	0.115	-0.017
			Max. Vy	37	0.064	0.112	0.013
			Max. Vx	36	0.004	0.000	0.000
		Secondary	Max Tension	20	0.605	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
		Horizontal					
			Max. Compression	21	-0.515	0.000	0.000
			Max. Mx	35	0.084	0.062	0.003
			Max. My	38	-0.092	0.061	0.004
			Max. Vy	35	0.043	0.062	0.003
			Max. Vx	38	-0.002	0.000	0.000
T14	66.6667 - 60	Leg	Max Tension	23	141.349	-0.911	0.021
			Max. Compression	10	-162.876	-0.703	0.016
			Max. Mx	10	-162.853	1.079	-0.021
			Max. My	20	-12.271	-0.008	-0.894
			Max. Vy	10	-0.573	1.079	-0.021
			Max. Vx	20	0.354	-0.008	-0.894
		Diagonal	Max Tension	11	7.025	0.040	0.003
			Max. Compression	10	-7.575	0.000	0.000
			Max. Mx	27	1.892	0.099	0.016
			Max. My	35	-2.270	0.069	-0.018
			Max. Vy	37	0.063	0.095	-0.015
			Max. Vx	35	-0.004	0.000	0.000
		Secondary Horizontal	Max Tension	22	0.574	0.019	-0.001
			Max. Compression	11	-0.486	0.000	0.000
			Max. Mx	37	0.082	0.061	0.005
			Max. My	38	0.029	0.061	0.005
			Max. Vy	37	0.045	0.061	0.005
			Max. Vx	38	-0.002	0.000	0.000
T15	60 - 50	Leg	Max Tension	23	153.724	0.003	-0.083
			Max. Compression	10	-176.946	0.537	0.151
			Max. Mx	33	13.019	-0.737	-0.021
			Max. My	20	-13.329	-0.144	-1.198
			Max. Vy	10	0.181	0.537	0.151
			Max. Vx	20	0.222	-0.144	-1.198
		Diagonal	Max Tension	10	8.609	0.000	0.000
			Max. Compression	10	-8.757	0.000	0.000
			Max. Mx	37	1.072	-0.234	0.025
			Max. My	18	-8.343	-0.038	0.035
			Max. Vy	37	-0.111	-0.234	0.025
			Max. Vx	29	0.007	0.000	0.000
T16	50 - 40	Leg	Max Tension	23	168.039	-1.824	0.020
			Max. Compression	10	-193.241	-0.206	0.078
			Max. Mx	10	-193.238	2.141	-0.019
			Max. My	20	-13.818	-0.144	-1.198
			Max. Vy	10	0.696	2.141	-0.019
			Max. Vx	20	-0.384	-0.144	-1.198
		Diagonal	Max Tension	23	8.762	-0.135	-0.008
			Max. Compression	10	-9.702	0.000	0.000
			Max. Mx	27	2.599	-0.214	0.036
			Max. My	20	6.545	-0.159	0.042
			Max. Vy	37	-0.111	-0.206	-0.032
			Max. Vx	36	-0.007	0.000	0.000
		Secondary Horizontal	Max Tension	20	0.835	0.000	0.000
			Max. Compression	21	-0.730	0.000	0.000
			Max. Mx	36	0.351	0.091	0.003
			Max. My	22	-0.584	0.033	0.009
			Max. Vy	36	0.059	0.091	0.003
			Max. Vx	37	-0.002	0.000	0.000
T17	40 - 30	Leg	Max Tension	23	182.066	-2.467	0.001
			Max. Compression	10	-209.771	2.949	0.001
			Max. Mx	10	-209.685	-3.306	0.005
			Max. My	20	-15.487	-0.447	-2.044
			Max. Vy	10	1.256	2.949	0.001

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	20	0.577	-0.447	-2.044
		Diagonal	Max Tension	23	8.804	-0.197	0.023
			Max. Compression	10	-9.855	0.000	0.000
			Max. Mx	37	0.628	-0.331	0.034
			Max. My	18	-9.582	-0.031	0.059
			Max. Vy	37	-0.140	-0.331	0.034
			Max. Vx	35	0.009	0.000	0.000
		Secondary Horizontal	Max Tension	20	1.484	0.000	0.000
			Max. Compression	21	-1.282	0.000	0.000
			Max. Mx	36	-0.228	0.163	0.014
			Max. My	22	-1.029	0.063	0.019
			Max. Vy	36	0.083	0.163	0.014
			Max. Vx	37	-0.004	0.000	0.000
T18	30 - 20	Leg	Max Tension	23	194.903	-2.113	0.090
			Max. Compression	10	-225.572	2.499	-0.091
			Max. Mx	10	-224.521	3.545	0.066
			Max. My	20	-16.156	-0.447	-2.044
			Max. Vy	10	-2.756	3.545	0.066
			Max. Vx	24	0.585	-0.436	1.982
		Diagonal	Max Tension	23	9.512	-0.141	-0.005
			Max. Compression	10	-10.696	0.000	0.000
			Max. Mx	10	7.061	-0.232	0.006
			Max. My	37	-0.162	-0.029	0.014
			Max. Vy	27	-0.083	-0.155	0.013
			Max. Vx	29	0.004	0.000	0.000
		Horizontal	Max Tension	20	0.692	0.000	0.000
			Max. Compression	21	-0.614	0.000	0.000
			Max. Mx	37	0.409	0.119	0.097
			Max. My	27	0.041	0.112	0.097
			Max. Vy	37	-0.072	0.119	0.097
			Max. Vx	27	0.012	0.000	0.000
		Redund Horz 1 Bracing	Max Tension	10	2.591	0.000	0.000
			Max. Compression	23	-2.189	0.000	0.000
			Max. Mx	26	0.788	-0.024	0.000
			Max. My	26	0.853	0.000	0.001
			Max. Vy	26	0.021	0.000	0.000
			Max. Vx	26	-0.001	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	23	1.286	0.000	0.000
			Max. Compression	10	-1.701	0.000	0.000
			Max. Mx	26	-0.276	-0.029	0.000
			Max. My	26	-0.259	0.000	-0.001
			Max. Vy	26	0.022	0.000	0.000
			Max. Vx	26	-0.001	0.000	0.000
T19	20 - 0	Leg	Max Tension	23	221.605	-0.916	-0.091
			Max. Compression	10	-258.236	0.000	-0.000
			Max. Mx	27	-110.600	-2.484	0.014
			Max. My	20	-19.216	-0.083	-1.443
			Max. Vy	27	-0.457	-2.484	0.014
			Max. Vx	20	-0.303	-0.083	-1.443
		Diagonal	Max Tension	10	10.094	0.000	0.000
			Max. Compression	10	-10.871	0.000	0.000
			Max. Mx	37	-0.124	-0.474	0.041
			Max. My	20	7.038	-0.292	0.071
			Max. Vy	37	-0.172	-0.474	0.041
			Max. Vx	36	-0.010	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	257.447	24.079	-15.672
	Max. H_x	18	257.447	24.079	-15.672
	Max. H_z	7	-213.294	-20.467	13.493
	Min. Vert	7	-213.294	-20.467	13.493
	Min. H_x	7	-213.294	-20.467	13.493
	Min. H_z	18	257.447	24.079	-15.672
Leg B	Max. Vert	10	266.502	-25.504	-16.097
	Max. H_x	23	-228.228	21.956	14.031
	Max. H_z	23	-228.228	21.956	14.031
	Min. Vert	23	-228.228	21.956	14.031
	Min. H_x	10	266.502	-25.504	-16.097
	Min. H_z	10	266.502	-25.504	-16.097
Leg A	Max. Vert	2	253.094	-0.515	27.960
	Max. H_x	21	15.226	4.943	1.196
	Max. H_z	2	253.094	-0.515	27.960
	Min. Vert	15	-207.404	0.450	-23.714
	Min. H_x	8	20.444	-5.008	1.595
	Min. H_z	15	-207.404	0.450	-23.714

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	46.694	-0.000	-0.000	-25.675	29.202	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	56.033	-0.002	-44.195	-4235.726	33.944	-17.308
0.9 Dead+1.0 Wind 0 deg - No Ice	42.025	-0.002	-44.195	-4228.024	25.184	-17.308
1.2 Dead+1.0 Wind 30 deg - No Ice	56.033	20.840	-36.089	-3507.367	-1973.005	-33.389
0.9 Dead+1.0 Wind 30 deg - No Ice	42.025	20.840	-36.089	-3499.665	-1981.766	-33.389
1.2 Dead+1.0 Wind 60 deg - No Ice	56.033	37.203	-21.472	-2090.312	-3531.406	-53.775
0.9 Dead+1.0 Wind 60 deg - No Ice	42.025	37.203	-21.472	-2082.609	-3540.167	-53.775
1.2 Dead+1.0 Wind 90 deg - No Ice	56.033	45.957	0.002	-31.908	-4323.750	-62.582
0.9 Dead+1.0 Wind 90 deg - No Ice	42.025	45.957	0.002	-24.206	-4332.510	-62.582
1.2 Dead+1.0 Wind 120 deg - No Ice	56.033	41.627	24.029	2230.428	-3883.022	-42.639
0.9 Dead+1.0 Wind 120 deg - No Ice	42.025	41.627	24.029	2238.131	-3891.782	-42.639
1.2 Dead+1.0 Wind 150 deg - No Ice	56.033	22.073	38.220	3630.984	-2078.684	-5.424
0.9 Dead+1.0 Wind 150 deg - No Ice	42.025	22.073	38.220	3638.686	-2087.445	-5.424
1.2 Dead+1.0 Wind 180 deg - No Ice	56.033	0.002	41.653	3993.055	36.140	17.308
0.9 Dead+1.0 Wind 180 deg - No Ice	42.025	0.002	41.653	4000.757	27.380	17.308

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 210 deg - No Ice	56.033	-20.840	36.089	3445.747	2043.090	33.389
0.9 Dead+1.0 Wind 210 deg - No Ice	42.025	-20.840	36.089	3453.449	2034.329	33.389
1.2 Dead+1.0 Wind 240 deg - No Ice	56.033	-39.405	22.743	2119.216	3758.285	53.775
0.9 Dead+1.0 Wind 240 deg - No Ice	42.025	-39.405	22.743	2126.919	3749.525	53.775
1.2 Dead+1.0 Wind 270 deg - No Ice	56.033	-45.957	-0.002	-29.712	4393.834	62.582
0.9 Dead+1.0 Wind 270 deg - No Ice	42.025	-45.957	-0.002	-22.010	4385.074	62.582
1.2 Dead+1.0 Wind 300 deg - No Ice	56.033	-39.426	-22.758	-2201.524	3796.311	42.639
0.9 Dead+1.0 Wind 300 deg - No Ice	42.025	-39.426	-22.758	-2193.821	3787.551	42.639
1.2 Dead+1.0 Wind 330 deg - No Ice	56.033	-22.073	-38.220	-3692.604	2148.769	5.424
0.9 Dead+1.0 Wind 330 deg - No Ice	42.025	-22.073	-38.220	-3684.902	2140.008	5.424
1.2 Dead+1.0 Ice+1.0 Temp	132.950	-0.000	-0.000	-131.655	67.348	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	132.950	-0.001	-13.377	-1419.372	67.157	-5.889
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	132.950	6.550	-11.349	-1228.729	-565.689	-12.657
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	132.950	11.644	-6.724	-778.580	-1052.157	-19.060
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	132.950	13.962	0.001	-131.846	-1266.196	-19.853
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	132.950	12.327	7.120	545.938	-1105.657	-12.300
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	132.950	6.746	11.687	994.967	-582.530	-1.954
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	132.950	0.001	12.979	1128.406	67.538	5.889
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	132.950	-6.550	11.349	965.418	700.385	12.657
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	132.950	-11.989	6.923	529.098	1210.803	19.060
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	132.950	-13.962	-0.001	-131.465	1400.891	19.853
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	132.950	-11.982	-6.920	-795.421	1216.402	12.300
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	132.950	-6.746	-11.687	-1258.278	717.225	1.954
Dead+Wind 0 deg - Service	46.694	-0.001	-12.363	-1193.645	28.898	-4.796
Dead+Wind 30 deg - Service	46.694	5.834	-10.102	-991.488	-528.648	-9.248
Dead+Wind 60 deg - Service	46.694	10.410	-6.009	-597.768	-961.495	-14.891
Dead+Wind 90 deg - Service	46.694	12.851	0.001	-25.979	-1181.365	-17.327
Dead+Wind 120 deg - Service	46.694	11.635	6.716	602.264	-1058.832	-11.804
Dead+Wind 150 deg - Service	46.694	6.175	10.692	991.416	-557.902	-1.499
Dead+Wind 180 deg - Service	46.694	0.001	11.659	1092.175	29.506	4.796
Dead+Wind 210 deg - Service	46.694	-5.834	10.102	940.138	587.051	9.248
Dead+Wind 240 deg - Service	46.694	-11.020	6.360	571.478	1063.304	14.891
Dead+Wind 270 deg - Service	46.694	-12.851	-0.001	-25.371	1239.768	17.327
Dead+Wind 300 deg - Service	46.694	-11.026	-6.365	-628.555	1073.831	11.804
Dead+Wind 330 deg - Service	46.694	-6.175	-10.692	-1042.767	616.306	1.499

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-46.694	0.000	0.000	46.694	0.000	0.000%
2	-0.002	-56.033	-44.195	0.002	56.033	44.195	0.000%
3	-0.002	-42.025	-44.195	0.002	42.025	44.195	0.000%
4	20.840	-56.033	-36.089	-20.840	56.033	36.089	0.000%
5	20.840	-42.025	-36.089	-20.840	42.025	36.089	0.000%
6	37.203	-56.033	-21.472	-37.203	56.033	21.472	0.000%
7	37.203	-42.025	-21.472	-37.203	42.025	21.472	0.000%
8	45.957	-56.033	0.002	-45.957	56.033	-0.002	0.000%
9	45.957	-42.025	0.002	-45.957	42.025	-0.002	0.000%
10	41.627	-56.033	24.029	-41.627	56.033	-24.029	0.000%
11	41.627	-42.025	24.029	-41.627	42.025	-24.029	0.000%
12	22.073	-56.033	38.220	-22.073	56.033	-38.220	0.000%
13	22.073	-42.025	38.220	-22.073	42.025	-38.220	0.000%
14	0.002	-56.033	41.653	-0.002	56.033	-41.653	0.000%
15	0.002	-42.025	41.653	-0.002	42.025	-41.653	0.000%
16	-20.840	-56.033	36.089	20.840	56.033	-36.089	0.000%
17	-20.840	-42.025	36.089	20.840	42.025	-36.089	0.000%
18	-39.405	-56.033	22.743	39.405	56.033	-22.743	0.000%
19	-39.405	-42.025	22.743	39.405	42.025	-22.743	0.000%
20	-45.957	-56.033	-0.002	45.957	56.033	0.002	0.000%
21	-45.957	-42.025	-0.002	45.957	42.025	0.002	0.000%
22	-39.426	-56.033	-22.758	39.426	56.033	22.758	0.000%
23	-39.426	-42.025	-22.758	39.426	42.025	22.758	0.000%
24	-22.073	-56.033	-38.220	22.073	56.033	38.220	0.000%
25	-22.073	-42.025	-38.220	22.073	42.025	38.220	0.000%
26	0.000	-132.950	0.000	0.000	132.950	0.000	0.000%
27	-0.001	-132.950	-13.377	0.001	132.950	13.377	0.000%
28	6.550	-132.950	-11.349	-6.550	132.950	11.349	0.000%
29	11.644	-132.950	-6.724	-11.644	132.950	6.724	0.000%
30	13.962	-132.950	0.001	-13.962	132.950	-0.001	0.000%
31	12.327	-132.950	7.120	-12.327	132.950	-7.120	0.000%
32	6.746	-132.950	11.687	-6.746	132.950	-11.687	0.000%
33	0.001	-132.950	12.979	-0.001	132.950	-12.979	0.000%
34	-6.550	-132.950	11.349	6.550	132.950	-11.349	0.000%
35	-11.989	-132.950	6.923	11.989	132.950	-6.923	0.000%
36	-13.962	-132.950	-0.001	13.962	132.950	0.001	0.000%
37	-11.982	-132.950	-6.920	11.982	132.950	6.920	0.000%
38	-6.746	-132.950	-11.687	6.746	132.950	11.687	0.000%
39	-0.001	-46.694	-12.363	0.001	46.694	12.363	0.000%
40	5.834	-46.694	-10.102	-5.834	46.694	10.102	0.000%
41	10.410	-46.694	-6.009	-10.410	46.694	6.009	0.000%
42	12.851	-46.694	0.001	-12.851	46.694	-0.001	0.000%
43	11.635	-46.694	6.716	-11.635	46.694	-6.716	0.000%
44	6.175	-46.694	10.692	-6.175	46.694	-10.692	0.000%
45	0.001	-46.694	11.659	-0.001	46.694	-11.659	0.000%
46	-5.834	-46.694	10.102	5.834	46.694	-10.102	0.000%
47	-11.020	-46.694	6.360	11.020	46.694	-6.360	0.000%
48	-12.851	-46.694	-0.001	12.851	46.694	0.001	0.000%
49	-11.026	-46.694	-6.365	11.026	46.694	6.365	0.000%
50	-6.175	-46.694	-10.692	6.175	46.694	10.692	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	160 - 140	4.925	49	0.286	0.034
T2	140 - 135	3.734	49	0.265	0.034
T3	135 - 130	3.455	49	0.258	0.033
T4	130 - 125	3.180	49	0.249	0.032
T5	125 - 120	2.918	49	0.239	0.031
T6	120 - 113.333	2.662	49	0.227	0.029
T7	113.333 - 106.667	2.349	49	0.214	0.028
T8	106.667 - 100	2.051	49	0.199	0.026
T9	100 - 93.3333	1.778	49	0.182	0.024
T10	93.3333 - 86.6667	1.521	49	0.167	0.021
T11	86.6667 - 80	1.289	49	0.151	0.019
T12	80 - 73.3333	1.083	49	0.135	0.018
T13	73.3333 - 66.6667	0.894	49	0.121	0.015
T14	66.6667 - 60	0.724	49	0.106	0.012
T15	60 - 50	0.573	49	0.091	0.010
T16	50 - 40	0.388	49	0.075	0.008
T17	40 - 30	0.242	49	0.058	0.006
T18	30 - 20	0.130	43	0.040	0.004
T19	20 - 0	0.061	43	0.022	0.003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
157'	(2) APL866513-42T6 w/ Mount Pipe	49	4.742	0.283	0.034	103129
147'	MX08FRO665-21 w/ Mount Pipe	49	4.139	0.273	0.035	39665
135'	7770.00 w/ Mount Pipe	49	3.455	0.258	0.033	95370
125'	APXVSPP18-C-A20 w/ Mount Pipe	49	2.918	0.239	0.031	43528
113'	VV-65A-R1_TMO w/ Mount Pipe	49	2.334	0.213	0.028	49866
57'	GPS_A	49	0.512	0.086	0.009	23359
48'	Side Arm Mount [SO 202-1]	49	0.356	0.071	0.007	34087

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	160 - 140	17.685	11	1.020	0.124
T2	140 - 135	13.428	11	0.947	0.123
T3	135 - 130	12.429	11	0.923	0.121
T4	130 - 125	11.441	11	0.892	0.117
T5	125 - 120	10.501	11	0.856	0.111
T6	120 - 113.333	9.585	11	0.813	0.105
T7	113.333 - 106.667	8.464	11	0.766	0.100
T8	106.667 - 100	7.393	11	0.711	0.094
T9	100 - 93.3333	6.413	11	0.651	0.087
T10	93.3333 - 86.6667	5.491	11	0.599	0.077
T11	86.6667 - 80	4.658	11	0.543	0.069
T12	80 - 73.3333	3.917	11	0.484	0.064
T13	73.3333 - 66.6667	3.234	11	0.433	0.054

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T14	66.6667 - 60	2.621	11	0.382	0.045
T15	60 - 50	2.074	11	0.328	0.035
T16	50 - 40	1.409	11	0.268	0.028
T17	40 - 30	0.882	11	0.207	0.020
T18	30 - 20	0.477	11	0.144	0.015
T19	20 - 0	0.222	11	0.081	0.010

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
157'	(2) APL866513-42T6 w/ Mount Pipe	11	17.031	1.010	0.124	29219
147'	MX08FRO665-21 w/ Mount Pipe	11	14.877	0.975	0.125	11238
135'	7770.00 w/ Mount Pipe	11	12.429	0.923	0.121	28060
125'	APXVSPP18-C-A20 w/ Mount Pipe	11	10.501	0.856	0.111	12310
113'	VV-65A-R1_TMO w/ Mount Pipe	11	8.409	0.763	0.100	14200
57'	GPS_A	11	1.856	0.308	0.032	6396
48'	Side Arm Mount [SO 202-1]	11	1.294	0.257	0.026	9590

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	160	Leg	A325N	0.625	4	3.787	20.340	0.186 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.500	1	3.228	6.199	0.521 ✔	1.05	Member Bearing
		Top Girt	A325N	0.500	1	0.623	4.133	0.151 ✔	1.05	Member Bearing
T2	140	Diagonal	A325N	0.500	1	3.048	6.199	0.492 ✔	1.05	Member Bearing
		Top Girt	A325N	0.500	1	0.440	4.133	0.107 ✔	1.05	Member Bearing
T3	135	Diagonal	A325N	0.500	1	4.261	6.199	0.687 ✔	1.05	Member Bearing
T4	130	Diagonal	A325N	0.500	1	4.231	6.199	0.682 ✔	1.05	Member Bearing
T5	125	Leg	A325N	0.750	4	10.916	30.101	0.363 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.500	1	4.849	6.199	0.782 ✔	1.05	Member Bearing
T6	120	Diagonal	A325X	0.500	1	5.327	7.504	0.710 ✔	1.05	Gusset Bearing
T7	113.333	Diagonal	A325X	0.500	1	6.541	7.504	0.872 ✔	1.05	Gusset Bearing
T8	106.667	Leg	A325N	0.875	4	19.148	41.556	0.461 ✔	1.05	Bolt Tension
		Diagonal	A325X	0.500	1	6.617	7.504	0.882 ✔	1.05	Gusset Bearing
		Secondary Horizontal	A325N	0.625	1	1.590	7.178	0.222 ✔	1.05	Gusset Bearing
T11	86.6667	Leg	A325N	0.875	4	27.639	41.556	0.665 ✔	1.05	Bolt Tension
		Secondary Horizontal	A325N	0.625	1	2.229	6.831	0.326 ✔	1.05	Member Block Shear

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
T13	73.3333	Secondary Horizontal	A325N	0.625	1	2.628	8.128	0.323 ✔	1.05	Member Block Shear
T14	66.6667	Leg	A325N	1.000	4	35.331	54.517	0.648 ✔	1.05	Bolt Tension
		Secondary Horizontal	A325N	0.625	1	2.825	6.831	0.414 ✔	1.05	Member Block Shear
T15	60	Diagonal	A325N	0.625	1	8.609	13.920	0.618 ✔	1.05	Gusset Bearing
T16	50	Leg	A325N	1.000	4	41.993	54.517	0.770 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	8.762	13.920	0.629 ✔	1.05	Gusset Bearing
		Secondary Horizontal	A325N	0.625	1	3.351	8.482	0.395 ✔	1.05	Member Bearing
T17	40	Diagonal	A325N	0.625	1	8.804	13.920	0.632 ✔	1.05	Gusset Bearing
		Secondary Horizontal	A325N	0.625	1	3.638	10.440	0.348 ✔	1.05	Member Bearing
T18	30	Leg	A325N	1.000	6	32.462	54.517	0.595 ✔	1.05	Bolt Tension
		Diagonal	A325N	0.625	1	9.512	13.920	0.683 ✔	1.05	Gusset Bearing
		Horizontal	A325N	0.625	1	3.912	7.830	0.500 ✔	1.05	Member Bearing
		Redund Horz 1 Bracing	A325N	0.625	1	3.912	8.135	0.481 ✔	1.05	Member Block Shear
		Redund Diag 1 Bracing	A325N	0.625	1	2.277	8.135	0.280 ✔	1.05	Member Block Shear
T19	20	Diagonal	A325N	0.625	1	10.094	13.920	0.725 ✔	1.05	Gusset Bearing

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 $\frac{P_u}{\phi P_n}$
T1	160 - 140	ROHN 2 STD	20'	4'	61.0 K=1.00	1.075	-19.913	36.842	0.540 [1] ✔
T2	140 - 135	ROHN 2.5 EH	5'3/32"	5'3/32"	65.0 K=1.00	2.254	-25.397	74.427	0.341 [1] ✔
T3	135 - 130	ROHN 2.5 EH	5'3/32"	5'3/32"	65.0 K=1.00	2.254	-35.767	74.427	0.481 [1] ✔
T4	130 - 125	ROHN 2.5 EH	5'3/32"	5'3/32"	65.0 K=1.00	2.254	-44.078	74.427	0.592 [1] ✔
T5	125 - 120	ROHN 2.5 EH	5'3/32"	5'3/32"	65.0 K=1.00	2.254	-53.774	74.427	0.722 [1] ✔
T6	120 - 113.333	ROHN 3 EH	6'8-1/8"	6'8-1/8"	70.5 K=1.00	3.016	-63.946	94.342	0.678 [1] ✔
T7	113.333 - 106.667	ROHN 3 EH	6'8-1/8"	6'8-1/8"	70.5 K=1.00	3.016	-77.956	94.342	0.826 [1] ✔
T8	106.667 - 100	ROHN 3 EH	6'8-1/8"	3'5-3/8"	36.4 K=1.00	3.016	-91.616	123.172	0.744 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T9	100 - 93.3333	ROHN 3.5 EH	6'8-1/8"	6'8-1/8"	61.3 K=1.00	3.678	-104.423	125.726	0.831 [1] ✔
T10	93.3333 - 86.6667	ROHN 3.5 EH	6'8-1/8"	6'8-1/8"	61.3 K=1.00	3.678	-116.891	125.725	0.930 [1] ✔
T11	86.6667 - 80	ROHN 3.5 EH	6'8-1/8"	3'5-3/16"	31.5 K=1.00	3.678	-128.480	153.937	0.835 [1] ✔
T12	80 - 73.3333	ROHN 4 X-STR	6'8-5/32"	6'8-5/32"	54.3 K=1.00	4.407	-140.636	159.903	0.880 [1] ✔
T13	73.3333 - 66.6667	ROHN 4 X-STR	6'8-5/32"	3'5-3/32"	27.8 K=1.00	4.407	-151.443	187.417	0.808 [1] ✔
T14	66.6667 - 60	ROHN 4 X-STR	6'8-5/32"	3'5-1/32"	27.8 K=1.00	4.407	-162.824	187.442	0.869 [1] ✔
T15	60 - 50	ROHN. 5 EH	10'7/32"	10'7/32"	65.4 K=1.00	6.112	-176.946	201.251	0.879 [1] ✔
T16	50 - 40	ROHN. 5 EH	10'7/32"	5'1-15/16"	33.7 K=1.00	6.112	-193.191	253.141	0.763 [1] ✔
T17	40 - 30	ROHN 5 X-STR	10'7/32"	5'1-29/32"	33.7 K=1.00	6.112	-209.685	253.160	0.828 [1] ✔
T18	30 - 20	ROHN 5 X-STR	10'7/32"	2'6-1/16"	16.3 K=1.00	6.112	-225.572	269.720	0.836 [1] ✔
T19	20 - 0	B+T_BU 806378 - 6.625"x0.34" pipe w/ 2" SR	20'13/32"	10'7/32"	75.6 K=1.00	9.855	-258.236	292.104	0.884 [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	160 - 140	L1 3/4x1 3/4x3/16	7'8-3/16"	3'7-15/32"	126.6 K=1.00	0.621	-3.291	11.092	0.297 [1] ✔
T2	140 - 135	L1 3/4x1 3/4x3/16	8'5-15/32"	4'1-19/32"	144.4 K=1.00	0.621	-3.312	8.523	0.389 [1] ✔
T3	135 - 130	L1 3/4x1 3/4x3/16	8'10-15/32"	4'4-3/32"	151.7 K=1.00	0.621	-4.219	7.725	0.546 [1] ✔
T4	130 - 125	L1 3/4x1 3/4x3/16	9'3-19/32"	4'6-21/32"	159.1 K=1.00	0.621	-4.298	7.020	0.612 [1] ✔
T5	125 - 120	L2x2x3/16	9'8-25/32"	4'9-1/4"	145.3 K=1.00	0.715	-4.867	9.691	0.502 [1] ✔
T6	120 - 113.333	L2 1/2x2 1/2x1/4	11'1-7/8"	5'6-1/32"	134.5 K=1.00	1.190	-5.423	18.829	0.288 [1] ✔
T7	113.333 - 106.667	L2 1/2x2 1/2x1/4	11'8-15/32"	5'9-5/16"	141.2 K=1.00	1.190	-6.800	17.085	0.398 [1] ✔
T8	106.667 - 100	L2 1/2x2 1/2x1/4	12'3-7/32"	6'1-15/16"	150.6 K=1.00	1.190	-6.753	15.017	0.450 [1] ✔
T9	100 - 93.3333	L2 1/2x2 1/2x3/16	12'10-1/8"	6'5-3/32"	147.3 K=0.95	0.902	-6.763	11.900	0.568 [1] ✔
T10	93.3333 - 86.6667	L2 1/2x2 1/2x1/4	13'5-5/32"	6'8-5/8"	153.7 K=0.94	1.190	-6.774	14.411	0.470 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	86.6667 - 80	2L2 1/2x2 1/2x3/16x1/4	14'5/16"	7'3/16"	113.1 K=1.00	1.805	-7.420	36.566	0.203 [1]
T12	80 - 73.3333	2L 'a' > 40.153 in - 129 L 3x3x3/16	14'7-19/32"	7'3-5/8"	140.6 K=0.96	1.090	-6.908	15.784	0.438 [1]
T13	73.3333 - 66.6667	L 3x3x3/16	15'3-3/32"	7'7-3/8"	153.2 K=1.00	1.090	-7.765	13.284	0.585 [1]
T14	66.6667 - 60	L 3x3x3/16	15'10-21/32"	7'11-5/32"	159.6 K=1.00	1.090	-7.575	12.248	0.618 [1]
T15	60 - 50	2L3x3x3/16x1/4	18'3-1/16"	9'5/16"	121.9 K=1.00	2.180	-8.757	37.533	0.233 [1]
T16	50 - 40	2L 'a' > 51.562 in - 174 2L3x3x3/16x1/4	19'1-3/16"	9'6-7/8"	129.3 K=1.00	2.180	-9.702	33.927	0.286 [1]
T17	40 - 30	2L 'a' > 54.686 in - 183 2L3x3x1/4x1/4	19'11-23/32"	10'1/4"	135.4 K=1.00	2.875	-9.855	43.094	0.229 [1]
T18	30 - 20	2L 'a' > 57.429 in - 195 2L3x3x1/4x1/4	10'8-1/16"	10'1-29/32"	105.1 K=1.00	2.875	-10.695	68.991	0.155 [1]
T19	20 - 0	2L3 1/2x3 1/2x1/4x1/4 2L 'a' > 63.481 in - 249	22'8-1/4"	11'1-3/16"	129.0 K=1.00	3.375	-10.871	54.239	0.200 [1]

[1] P_u / ϕP_n controls

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 $\frac{P_u}{\phi P_n}$
T18	30 - 20	L3x3x3/16	18'4"	8'9-25/32"	225.3 K=1.00	1.090	-3.912	6.146	0.637 [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 $\frac{P_u}{\phi P_n}$
T8	106.667 - 100	L1 3/4x1 3/4x1/4	10'3-7/16"	4'11-31/32"	175.7 K=1.00	0.813	-1.590	7.536	0.211 [1]
T11	86.6667 - 80	L2x2x3/16	12'3-15/16"	5'11-31/32"	182.7 K=1.00	0.715	-2.229	6.134	0.363 [1]
T13	73.3333 -	L1 3/4x1 3/4x1/4	13'8-19/	6'8-1/32'	234.5	0.813	-2.628	4.230	0.621 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	66.6667		32"	'	K=1.00				✔
T14	66.6667 - 60	L2x2x3/16	14'4-31/32"	7'7/32"	213.8 K=1.00	0.715	-2.825	4.478	0.631 [1] ✔
T16	50 - 40	L2 1/2x2 1/2x3/16	16'3-1/16"	7'10-3/4"	191.4 K=1.00	0.902	-3.351	7.046	0.476 [1] ✔
T17	40 - 30	L3x3x1/4	17'3-5/16"	8'4-7/8"	170.4 K=1.00	1.440	-3.638	14.195	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	160 - 140	L2x2x1/8	6'6-1/4"	6'1-3/8"	184.6 K=1.00	0.484	-0.622	4.070	0.153 [1] ✔
T2	140 - 135	L2x2x1/8	6'6-3/4"	6'1-3/8"	184.6 K=1.00	0.484	-0.440	4.070	0.108 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (1) 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 $\frac{P_u}{\phi P_n}$
T18	30 - 20	L2x2x3/16	4'7"	4'1-7/32"	124.9 K=1.00	0.715	-3.912	13.110	0.298 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) 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 $\frac{P_u}{\phi P_n}$
T18	30 - 20	L2x2x3/16	5'4-1/32"	4'9-27/32"	146.8 K=1.00	0.715	-2.277	9.495	0.240 [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	160 - 140	ROHN 2 STD	20'	4'	61.0	1.075	15.146	48.354	0.313 [1] ✔
T2	140 - 135	ROHN 2.5 EH	5'3/32"	5'3/32"	65.0	2.254	20.426	101.409	0.201 [1] ✔
T3	135 - 130	ROHN 2.5 EH	5'3/32"	5'3/32"	65.0	2.254	27.886	101.409	0.275 [1] ✔
T4	130 - 125	ROHN 2.5 EH	5'3/32"	5'3/32"	65.0	2.254	35.857	101.409	0.354 [1] ✔
T5	125 - 120	ROHN 2.5 EH	5'3/32"	5'3/32"	65.0	2.254	43.666	101.409	0.431 [1] ✔
T6	120 - 113.333	ROHN 3 EH	6'8-1/8"	6'8-1/8"	70.5	3.016	53.239	135.717	0.392 [1] ✔
T7	113.333 - 106.667	ROHN 3 EH	6'8-1/8"	6'8-1/8"	70.5	3.016	64.711	135.717	0.477 [1] ✔
T8	106.667 - 100	ROHN 3 EH	6'8-1/8"	3'5-3/8"	36.4	3.016	76.591	135.717	0.564 [1] ✔
T9	100 - 93.3333	ROHN 3.5 EH	6'8-1/8"	6'8-1/8"	61.3	3.678	88.417	165.529	0.534 [1] ✔
T10	93.3333 - 86.6667	ROHN 3.5 EH	6'8-1/8"	6'8-1/8"	61.3	3.678	99.985	165.529	0.604 [1] ✔
T11	86.6667 - 80	ROHN 3.5 EH	6'8-1/8"	3'2-31/32"	29.8	3.678	110.563	165.529	0.668 [1] ✔
T12	80 - 73.3333	ROHN 4 X-STR	6'8-5/32"	6'8-5/32"	54.3	4.407	121.397	198.335	0.612 [1] ✔
T13	73.3333 - 66.6667	ROHN 4 X-STR	6'8-5/32"	3'3-1/16"	26.4	4.407	131.275	198.335	0.662 [1] ✔
T14	66.6667 - 60	ROHN 4 X-STR	6'8-5/32"	3'3-3/32"	26.5	4.407	141.349	198.335	0.713 [1] ✔
T15	60 - 50	ROHN. 5 EH	10'7/32"	10'7/32"	65.4	6.112	153.724	275.039	0.559 [1] ✔
T16	50 - 40	ROHN. 5 EH	10'7/32"	4'10-1/4"	31.7	6.112	168.039	275.039	0.611 [1] ✔
T17	40 - 30	ROHN 5 X-STR	10'7/32"	4'10-9/32"	31.7	6.112	182.066	275.039	0.662 [1] ✔
T18	30 - 20	ROHN 5 X-STR	10'7/32"	2'6-1/16"	16.3	6.112	194.903	275.039	0.709 [1] ✔
T19	20 - 0	B+T_BU 806378 - 6.625"x0.34" pipe w/ 2" SR	20'13/32"	10'7/32"	75.6	9.855	221.605	443.471	0.500 [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	160 - 140	L1 3/4x1 3/4x3/16	7'8-3/16"	3'7-15/32"	83.3	0.378	3.228	16.440	0.196 [1] ✔
T2	140 - 135	L1 3/4x1 3/4x3/16	8'5-15/32"	4'1-19/32"	94.7	0.378	3.048	16.440	0.185 [1] ✔
T3	135 - 130	L1 3/4x1 3/4x3/16	8'10-15/32"	4'4-3/32"	99.4	0.378	4.261	16.440	0.259 [1] ✔
T4	130 - 125	L1 3/4x1 3/4x3/16	9'3-19/32"	4'6-21/32"	104.1	0.378	4.231	16.440	0.257 [1] ✔
T5	125 - 120	L2x2x3/16	9'8-25/32"	4'9-1/4"	94.8	0.448	4.849	19.504	0.249 [1] ✔
T6	120 - 113.333	L2 1/2x2 1/2x1/4	11'1-7/8"	5'6-1/32"	87.5	0.775	5.327	33.726	0.158 [1] ✔
T7	113.333 - 106.667	L2 1/2x2 1/2x1/4	11'8-15/32"	5'9-5/16"	91.8	0.775	6.541	33.726	0.194 [1] ✔
T8	106.667 - 100	L2 1/2x2 1/2x1/4	12'3-7/32"	6'1-15/16"	96.2	0.775	6.617	33.726	0.196 [1] ✔
T9	100 - 93.3333	L2 1/2x2 1/2x3/16	12'10-1/8"	6'5-3/32"	99.1	0.902	6.563	29.225	0.225 [1] ✔
T10	93.3333 - 86.6667	L2 1/2x2 1/2x1/4	13'5-5/32"	6'8-5/8"	104.9	1.190	6.762	38.556	0.175 [1] ✔
T11	86.6667 - 80	2L2 1/2x2 1/2x3/16x1/4	14'5/16"	7'3/16"	108.2	1.805	6.875	58.472	0.118 [1] ✔
T12	80 - 73.3333	2L 'a' > 40.153 in - 129 L 3x3x3/16	14'7-19/32"	7'3-5/8"	93.3	1.090	6.977	35.311	0.198 [1] ✔
T13	73.3333 - 66.6667	L 3x3x3/16	15'3-3/32"	7'7-3/8"	97.3	1.090	7.149	35.311	0.202 [1] ✔
T14	66.6667 - 60	L 3x3x3/16	15'10-21/32"	7'11-5/32"	101.3	1.090	7.025	35.311	0.199 [1] ✔
T15	60 - 50	2L3x3x3/16x1/4	18'3-1/16"	9'5/16"	116.9	1.424	8.609	61.937	0.139 [1] ✔
T16	50 - 40	2L 'a' > 51.562 in - 175 2L3x3x3/16x1/4	19'1-3/16"	9'6-7/8"	122.3	1.424	8.762	61.937	0.141 [1] ✔
T17	40 - 30	2L 'a' > 54.686 in - 183 2L3x3x1/4x1/4	19'11-23/32"	10'1/4"	129.3	1.875	8.804	91.406	0.096 [1] ✔
T18	30 - 20	2L 'a' > 57.429 in - 195 2L3x3x1/4x1/4	10'8-1/16"	10'1-29/32"	93.1	1.875	9.512	91.406	0.104 [1] ✔
T19	20 - 0	2L3 1/2x3 1/2x1/4x1/4 2L 'a' > 60.930 in - 256	21'9-15/32"	10'7-13/16"	118.5	2.250	10.094	109.688	0.092 [1] ✔

[1] P_u / ϕP_n controls

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 $\frac{P_u}{\phi P_n}$
T18	30 - 20	L3x3x3/16	18'4"	8'9-25/32"	171.3	0.712	3.912	30.973	0.126 [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 $\frac{P_u}{\phi P_n}$
T8	106.667 - 100	L1 3/4x1 3/4x1/4	10'3-7/16"	4'11-31/32"	226.8	0.469	1.590	20.391	0.078 [1] ✔
T11	86.6667 - 80	L2x2x3/16	12'3-15/16"	5'11-31/32"	233.3	0.431	2.229	18.739	0.119 [1] ✔
T13	73.3333 - 66.6667	L1 3/4x1 3/4x1/4	13'8-19/32"	6'8-1/32"	302.7	0.469	2.628	20.391	0.129 [1] ✔
T14	66.6667 - 60	L2x2x3/16	14'4-31/32"	7'7/32"	273.0	0.431	2.825	18.739	0.151 [1] ✔
T16	50 - 40	L2 1/2x2 1/2x3/16	16'3-1/16"	7'10-3/4"	243.6	0.571	3.351	24.840	0.135 [1] ✔
T17	40 - 30	L3x3x1/4	17'3-5/16"	8'4-7/8"	216.9	0.939	3.638	40.863	0.089 [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	160 - 140	L2x2x1/8	6'6-1/4"	6'1-3/8"	121.2	0.305	0.623	13.254	0.047 [1] ✔
T2	140 - 135	L2x2x1/8	6'6-3/4"	6'1-3/8"	121.2	0.305	0.440	13.254	0.033 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (1) 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 $\frac{P_u}{\phi P_n}$
T18	30 - 20	L2x2x3/16	4'7"	4'1-7/32"	84.6	0.431	3.912	18.739	0.209 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
									✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) 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 $\frac{P_u}{\phi P_n}$
T18	30 - 20	L2x2x3/16	5'4-1/32''	4'9-27/32''	98.6	0.431	2.277	18.739	0.122 [1] ✔

[1] P_u / ϕP_n controls

Section Capacity Table

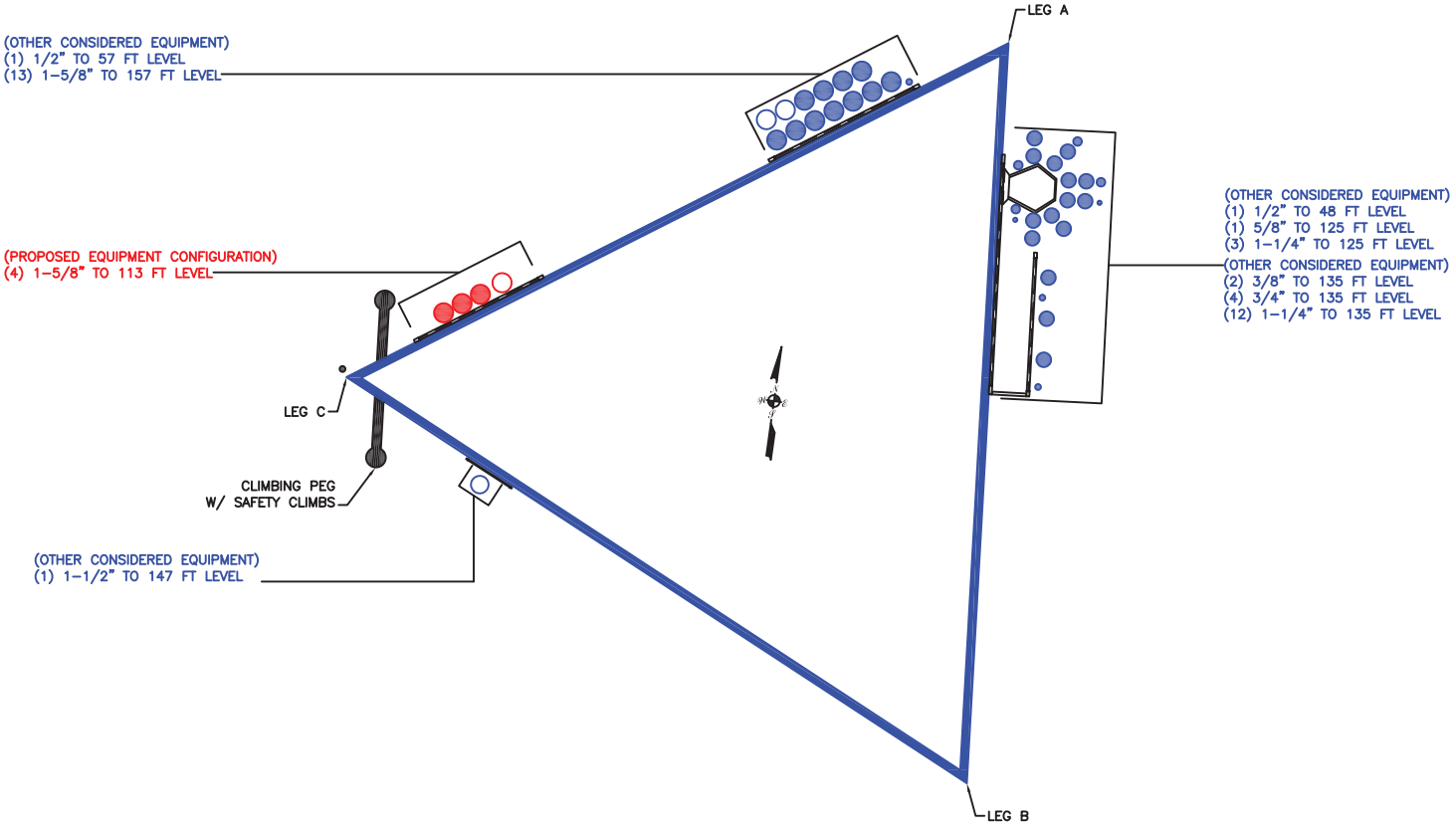
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	160 - 140	Leg	ROHN 2 STD	2	-19.913	38.684	51.5	Pass
T2	140 - 135	Leg	ROHN 2.5 EH	38	-25.397	78.149	32.5	Pass
T3	135 - 130	Leg	ROHN 2.5 EH	50	-35.767	78.149	45.8	Pass
T4	130 - 125	Leg	ROHN 2.5 EH	59	-44.078	78.149	56.4	Pass
T5	125 - 120	Leg	ROHN 2.5 EH	68	-53.774	78.149	68.8	Pass
T6	120 - 113.333	Leg	ROHN 3 EH	77	-63.946	99.059	64.6	Pass
T7	113.333 - 106.667	Leg	ROHN 3 EH	86	-77.956	99.059	78.7	Pass
T8	106.667 - 100	Leg	ROHN 3 EH	95	-91.616	129.331	70.8	Pass
T9	100 - 93.3333	Leg	ROHN 3.5 EH	107	-104.423	132.012	79.1	Pass
T10	93.3333 - 86.6667	Leg	ROHN 3.5 EH	116	-116.891	132.011	88.5	Pass
T11	86.6667 - 80	Leg	ROHN 3.5 EH	125	-128.480	161.634	79.5	Pass
T12	80 - 73.3333	Leg	ROHN 4 X-STR	137	-140.636	167.898	83.8	Pass
T13	73.3333 - 66.6667	Leg	ROHN 4 X-STR	146	-151.443	196.788	77.0	Pass
T14	66.6667 - 60	Leg	ROHN 4 X-STR	158	-162.824	196.814	82.7	Pass
T15	60 - 50	Leg	ROHN. 5 EH	170	-176.946	211.314	83.7	Pass
T16	50 - 40	Leg	ROHN. 5 EH	179	-193.191	265.798	72.7	Pass
T17	40 - 30	Leg	ROHN 5 X-STR	191	-209.685	265.818	78.9	Pass
T18	30 - 20	Leg	ROHN 5 X-STR	203	-225.572	283.206	79.6	Pass
T19	20 - 0	Leg	B+T_BU 806378 - 6.625"x0.34" pipe w/ 2" SR	245	-258.236	306.709	84.2	Pass
T1	160 - 140	Diagonal	L1 3/4x1 3/4x3/16	9	-3.291	11.646	28.3	Pass
T2	140 - 135	Diagonal	L1 3/4x1 3/4x3/16	45	-3.312	8.949	37.0	Pass
T3	135 - 130	Diagonal	L1 3/4x1 3/4x3/16	54	-4.219	8.112	52.0	Pass
T4	130 - 125	Diagonal	L1 3/4x1 3/4x3/16	63	-4.298	7.371	58.3	Pass
T5	125 - 120	Diagonal	L2x2x3/16	72	-4.867	10.175	47.8	Pass
T6	120 - 113.333	Diagonal	L2 1/2x2 1/2x1/4	81	-5.423	19.771	27.4	Pass
T7	113.333 - 106.667	Diagonal	L2 1/2x2 1/2x1/4	90	-6.800	17.939	37.9	Pass
T8	106.667 - 100	Diagonal	L2 1/2x2 1/2x1/4	99	-6.753	15.768	42.8	Pass
T9	100 - 93.3333	Diagonal	L2 1/2x2 1/2x3/16	111	-6.763	12.495	54.1	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T10	93.3333 - 86.6667	Diagonal	L2 1/2x2 1/2x1/4	120	-6.774	15.132	44.8	Pass
T11	86.6667 - 80	Diagonal	2L2 1/2x2 1/2x3/16x1/4	129	-7.420	38.394	19.3	Pass
T12	80 - 73.3333	Diagonal	L 3x3x3/16	141	-6.908	16.573	41.7	Pass
T13	73.3333 - 66.6667	Diagonal	L 3x3x3/16	150	-7.765	13.948	55.7	Pass
T14	66.6667 - 60	Diagonal	L 3x3x3/16	162	-7.575	12.860	58.9	Pass
T15	60 - 50	Diagonal	2L3x3x3/16x1/4	174	-8.757	39.409	22.2	Pass
T16	50 - 40	Diagonal	2L3x3x3/16x1/4	183	-9.702	35.624	27.2	Pass
T17	40 - 30	Diagonal	2L3x3x1/4x1/4	195	-9.855	45.249	21.8	Pass
T18	30 - 20	Diagonal	2L3x3x1/4x1/4	213	-10.695	72.440	14.8	Pass
T19	20 - 0	Diagonal	2L3 1/2x3 1/2x1/4x1/4	249	-10.871	56.951	19.1	Pass
T18	30 - 20	Horizontal	L3x3x3/16	205	-3.912	6.453	60.6	Pass
T8	106.667 - 100	Secondary Horizontal	L1 3/4x1 3/4x1/4	103	-1.590	7.913	20.1	Pass
T11	86.6667 - 80	Secondary Horizontal	L2x2x3/16	133	-2.229	6.440	34.6	Pass
T13	73.3333 - 66.6667	Secondary Horizontal	L1 3/4x1 3/4x1/4	154	-2.628	4.441	59.2	Pass
T14	66.6667 - 60	Secondary Horizontal	L2x2x3/16	166	-2.825	4.702	60.1	Pass
T16	50 - 40	Secondary Horizontal	L2 1/2x2 1/2x3/16	187	-3.351	7.398	45.3	Pass
T17	40 - 30	Secondary Horizontal	L3x3x1/4	199	-3.638	14.905	24.4	Pass
T1	160 - 140	Top Girt	L2x2x1/8	5	-0.622	4.273	14.6	Pass
T2	140 - 135	Top Girt	L2x2x1/8	40	-0.440	4.273	10.3	Pass
T18	30 - 20	Redund Horz 1 Bracing	L2x2x3/16	233	-3.912	13.765	28.4	Pass
T18	30 - 20	Redund Diag 1 Bracing	L2x2x3/16	231	-2.277	9.970	22.8	Pass

	Summary	
Leg (T10)	88.5	Pass
Diagonal (T14)	58.9	Pass
Horizontal (T18)	60.6	Pass
Secondary Horizontal (T14)	60.1	Pass
Top Girt (T1)	14.6	Pass
Redund Horz 1 Bracing (T18)	28.4	Pass
Redund Diag 1 Bracing (T18)	22.8	Pass
Bolt Checks	84.0	Pass
RATING =	**88.5**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806378

APPENDIX C

ADDITIONAL CALCULATIONS

PROJECT **136290.007.01 - HRT 086 943248, CT**

SUBJECT **Reinforced Tower Legs**

DATE **04/05/22**

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 Member		Modification				BP & Angle?	Section Geometry																		Leg Capacity								Results
								Custom Area Input			Custom MOIxx Input			Custom MOIyy Input			Leg Comp. Load Pu (k)	Leg Fy (ksi)	Reinf. Fy (ksi)	L (in)	a (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	
	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)																			
Analysis	0-20	Custom	Custom	Built Up	Pinned	No	No	6.71	3.14	9.85	33.2	0.8	45.5	33.2	0.8	45.5	258.24	50	50	120.2	19.5	1.0	1.00	1.0		61.5122	35.6	0.90		443.5	315.6	244.0	O.K. @ 0.7	77.9%	Passing

PROJECT	**136290.007.01 - HRT 086 943248, CT**				
SUBJECT	**Bolted Angle Connection Analysis**				
DATE	**04/05/22**	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	81.6%

	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	60-80	Diagonal	1	L3X3X(3/16+3/16)	A36	1	1/2	A325N	0.75	1.5		Allowable						7.15	7.57	8.84	8.84	81.6%	Compression - Bolt Shear
2	80-86.7	Diagonal	2	2 1/2X2 1/2X(3/16+3/16	A36	1	1/2	A325N	0.75	1.25		Allowable						6.88	7.42	17.67	17.67	40.0%	Compression - Bolt Shear
3	86.7-93.4	Diagonal	1	L2 1/2X2 1/2X(1/4+3/16)	A36	1	1/2	A325N	0.75	1.25		Allowable						6.76	6.77	8.84	8.84	73.0%	Compression - Bolt Shear
4	93.4-100	Diagonal	1	2 1/2X2 1/2X(3/16+3/16	A36	1	1/2	A325N	0.75	1.25		Allowable						6.56	6.76	8.84	8.84	72.9%	Compression - Bolt Shear

Self Support Anchor Rod Capacity

Site Info	
BU #	806378
Site Name	HRT 086 943248, CT
Order #	609062, Rev# 0

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

Applied Loads		
	Comp.	Uplift
Axial Force (kips)	267.00	228.00
Shear Force (kips)	30.00	26.00

**TIA-222-H Section 15.5 Applied*

Considered Eccentricity	
Leg Mod Eccentricity (in)	0.000
Anchor Rod N.A Shift (in)	0.000
Total Eccentricity (in)	0.000

**Anchor Rod Eccentricity Applied*

Connection Properties

Anchor Rod Data

(6) 1" ø bolts (A449 N; Fy=92 ksi, Fu=120 ksi)

l_{ar} (in): 0

Analysis Results

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

Pu_t = 38	ϕPn_t = 54.54	**Stress Rating**
Vu = 4.33	ϕVn = 35.34	**66.4%**
Mu = n/a	ϕMn = n/a	**Pass**

Pier and Pad Foundation

BU # :	806378
Site Name:	HRT 086 943248, C
App. Number:	609062, 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}:	267	kips
Compression Shear, Vu_comp:	30	kips
Uplift, P_{uplift}:	228	kips
Uplift Shear, V_{u_uplift}:	26	kips
Tower Height, **H**:	160	ft
Base Face Width, **BW**:	20.86	ft
BP Dist. Above Fdn, bp_{dist}:	3	in

Pier Properties

Pier Shape:	Circular	
Pier Diameter, **dpier**:	3.5	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	9	
Pier Rebar Quantity, **mc**:	16	
Pier Tie/Spiral Size, **St**:	3	
Pier Tie/Spiral Quantity, **mt**:	12	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	12	ft
Pad Width, W_1:	10	ft
Pad Thickness, **T**:	2	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	7	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	11	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

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

Soil Properties

Total Soil Unit Weight, γ:	117	pcf
Ultimate Gross Bearing, Qult:	16.500	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	34	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:	0.3	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	10.5	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Uplift (kips)	298.70	228.00	**72.7%**	**Pass**
Lateral (Sliding) (kips)	114.59	26.00	**21.6%**	**Pass**
Bearing Pressure (ksf)	12.38	4.37	**33.6%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	1318.44	315.00	**22.8%**	**Pass**
*Pier Flexure (Tension) (kip*ft)*	879.83	273.00	**29.6%**	**Pass**
Pier Compression (kip)	2315.08	285.18	**11.7%**	**Pass**
*Pad Flexure (kip*ft)*	565.50	143.49	**24.2%**	**Pass**
Pad Shear - 1-way (kips)	194.10	43.73	**21.5%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.059	**34.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	1037.39	189.00	**17.4%**	**Pass**
Pad Shear - 2-way (Uplift) (ksi)	0.164	0.071	**41.4%**	**Pass**
*Flexural 2-way (Tension) (kip*ft)*	1037.39	163.80	**15.0%**	**Pass**

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

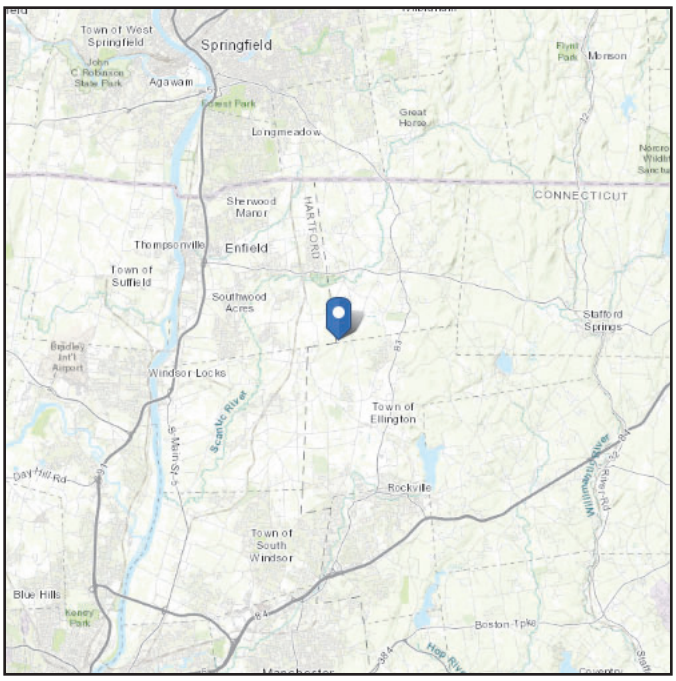
Structural Rating*:	**41.4%**
Soil Rating*:	**72.7%**

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: 396.21 ft (NAVD 88)
Latitude: 41.948883
Longitude: -72.492097



Wind

Results:

Wind Speed	117 Vmph
10-year MRI	75 Vmph
25-year MRI	83 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Tue Apr 05 2022

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

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

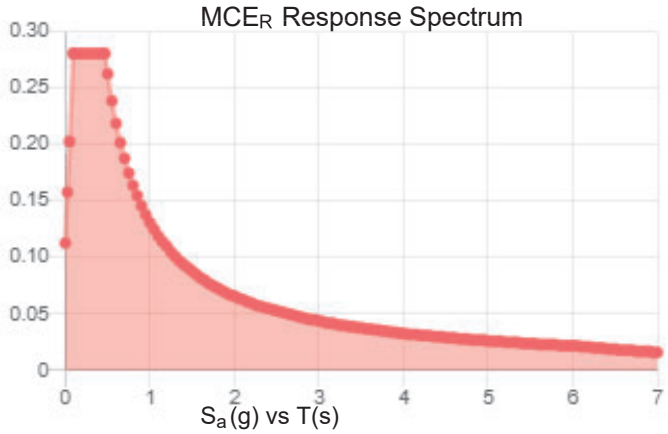
Seismic

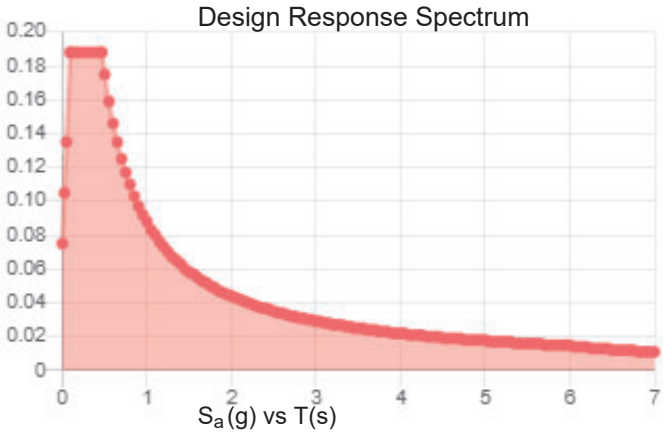
Site Soil Class: D - Default (see Section 11.4.3)

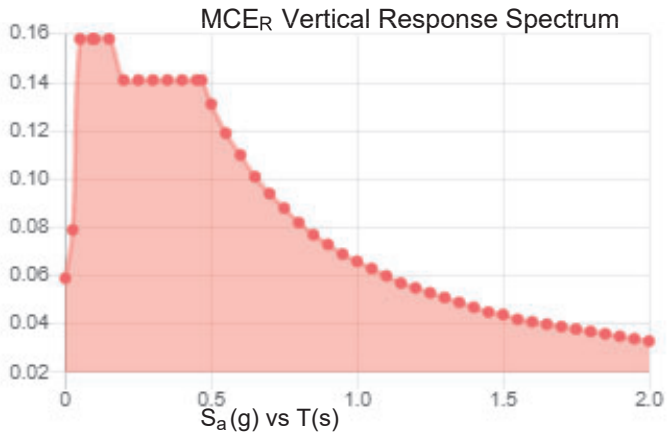
Results:

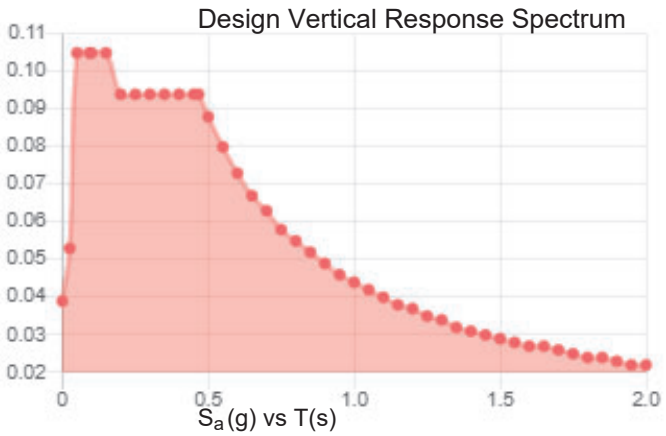
S_S :	0.176	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.093
F_v :	2.4	PGA_M :	0.148
S_{MS} :	0.281	F_{PGA} :	1.6
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.188	C_v :	0.7

Seismic Design Category B









Data Accessed: **Tue Apr 05 2022**

Date Source:

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

Ice

Results:

Ice Thickness:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Tue Apr 05 2022

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Date: **April 1, 2022**

USA Engineering, Inc.
2818 Cypress Ridge Blvd., Suite 110
Wesley Chapel, FL 33544
(813) 994-0365

Subject:	**Mount Analysis Report**	
Carrier Designation:	**T-Mobile Anchor_Phase 3**	
	Carrier Site Number:	CTHA534A
	Carrier Site Name:	Crown Somers Lattice Tower
Crown Castle Designation:	**Crown Castle BU Number:**	806378
	Crown Castle Site Name:	HRT 086 943248
	Crown Castle JDE Job Number:	709736
	Crown Castle Order Number:	609062, Rev. 0
Engineering Firm Designation:	**USA Engineering Designation:**	22-00394
Site Data:	**126 PIONEER HEIGHTS RD, SOMERS, TOLLAND COUNTY, CT, 06071** **Latitude 41° 56' 55.98" Longitude -72° 29' 31.55"**	
Structure Information:	**Tower Height & Type:**	161.4 ft Self Support
	Mount Elevation:	113 ft
	Mount Type:	12.5 ft V-Frame Mount

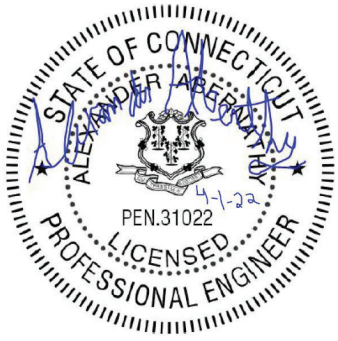
USA Engineering is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of T-Mobile's antenna mounting system with the proposed appurtenance and equipment addition on the above mentioned supporting tower structure. Analysis of the existing supporting tower structure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

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

V-Frame Mount (typical) **Sufficient**

This analysis utilizes an ultimate 3-second gust wind speed of 117 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria."

Mount structural analysis prepared by: Nicole Hoffman, EI
Respectfully Submitted by:



Alexander Abernathy, PE
CT PE No: PEN.0031022

TABLE OF CONTENTS

1) INTRODUCTION

This is an existing 3-sector 12.5' V-Frame Mount, designed by Site Pro.

2) ANALYSIS CRITERIA

Building Code:	2015 International Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	117 mph
Exposure Category:	C
Ice Thickness:	1.5 in
Wind Speed with Ice:	30 mph
Seismic S_s:	0.176
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:	250 lb

Table 1 - Final Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
113	114	3	COMMSCOPE	VV-65A-R1_TMO	12.5' V-Frame Mount (Site-Pro #VFA12-HD)
		3	ERICSSON	AIR 6419 B41_TMO	
		3	RFS/CELWAVE	APXVAALL24_43-U-NA20_TMO	
		3	ERICSSON	RADIO 4449 B71 B85A_T-MOBILE	
		3	ERICSSON	RADIO 4460 B2/B25 B66_TMO	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown App	Order Number 609062, Rev. 0	Dated 03/28/22	CCI Site
Structural Analysis Report	B+T Group	Dated 10/05/21	CCI Site
Antenna Mount Pictures	-	Dated 05/16/21	CCI Site

3.1) Analysis Method

RISA-3D (Version 17.0.4), 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, using Microsoft Excel, by USA Engineering was used to calculate wind loading on all appurtenances, dishes, and mount members for various load cases. Selected output from the analysis is included in Appendix B.

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

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

5) The structure and all components are assumed to be plumb, in good condition; and free from deformation, rust, corrosion, and cracks.
6) The supporting documents and drawings provided to *USA Engineering, Inc.* resemble the actual field conditions.

This analysis may be affected if any assumptions are not valid or have been made in error. USA Engineering 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 (V-Frame Mount)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,3	Solid Rod	M27	113	83.1	Pass
	Antenna Pipe	POSITION_2	113	59.3	Pass
2,3	Tower Connection	-	113	16.3	Pass

Structure Rating (max from all components) =	83.1%

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

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 (lb)[3]	Notes
N62	Existing	515	Tower Leg	ROHN 3 EH	1415	2
N61	Existing	634				

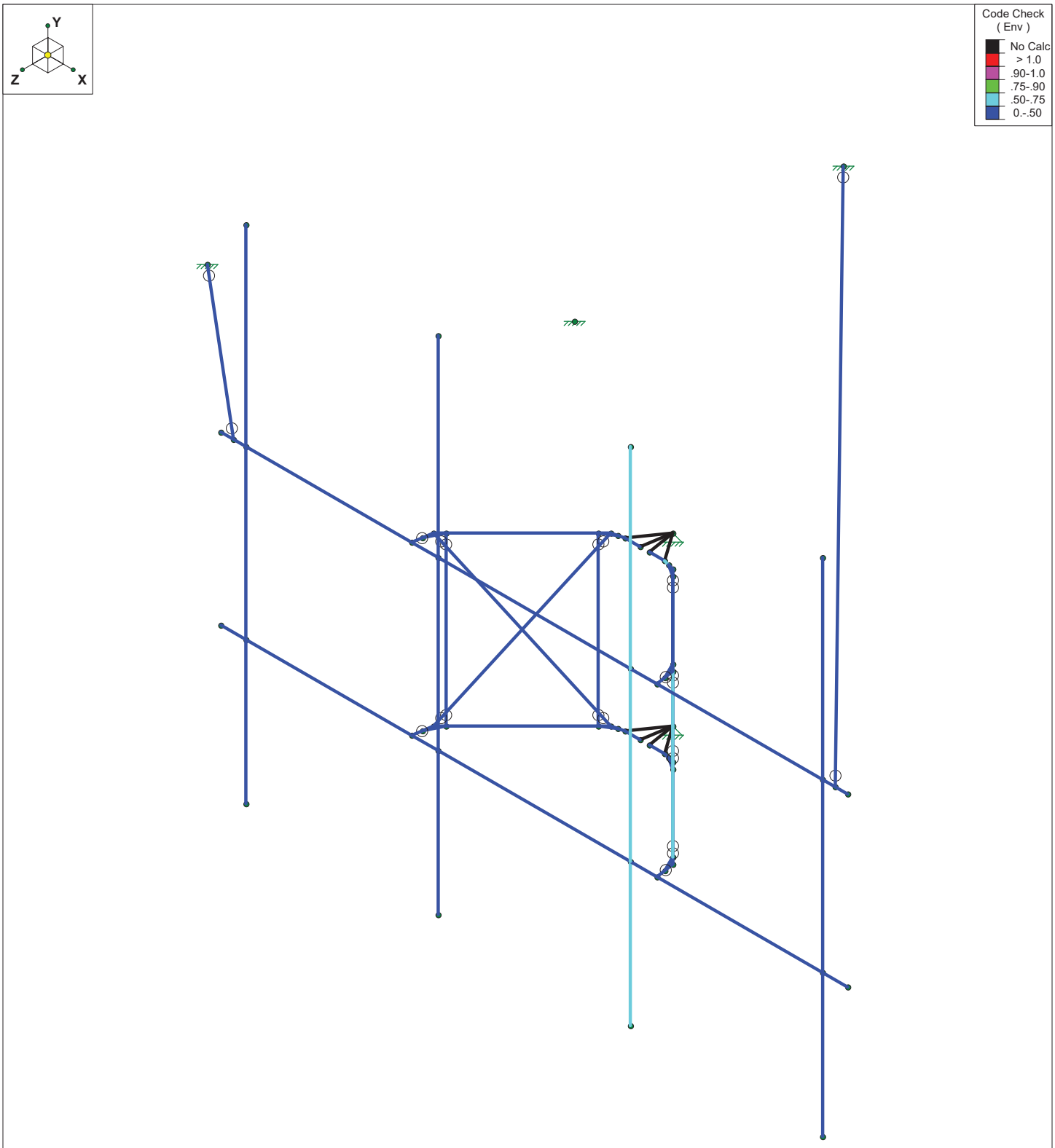
Notes:
1) Tieback connection point is within 25% of either end of the connected tower member
2) Tieback connection point is NOT within 25% of either end of the connected tower member
3) Reduced member compressive capacity according to CED-STD-10294 *Standard for Installation of Mounts and Appurtenances*

4.1) Recommendations

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

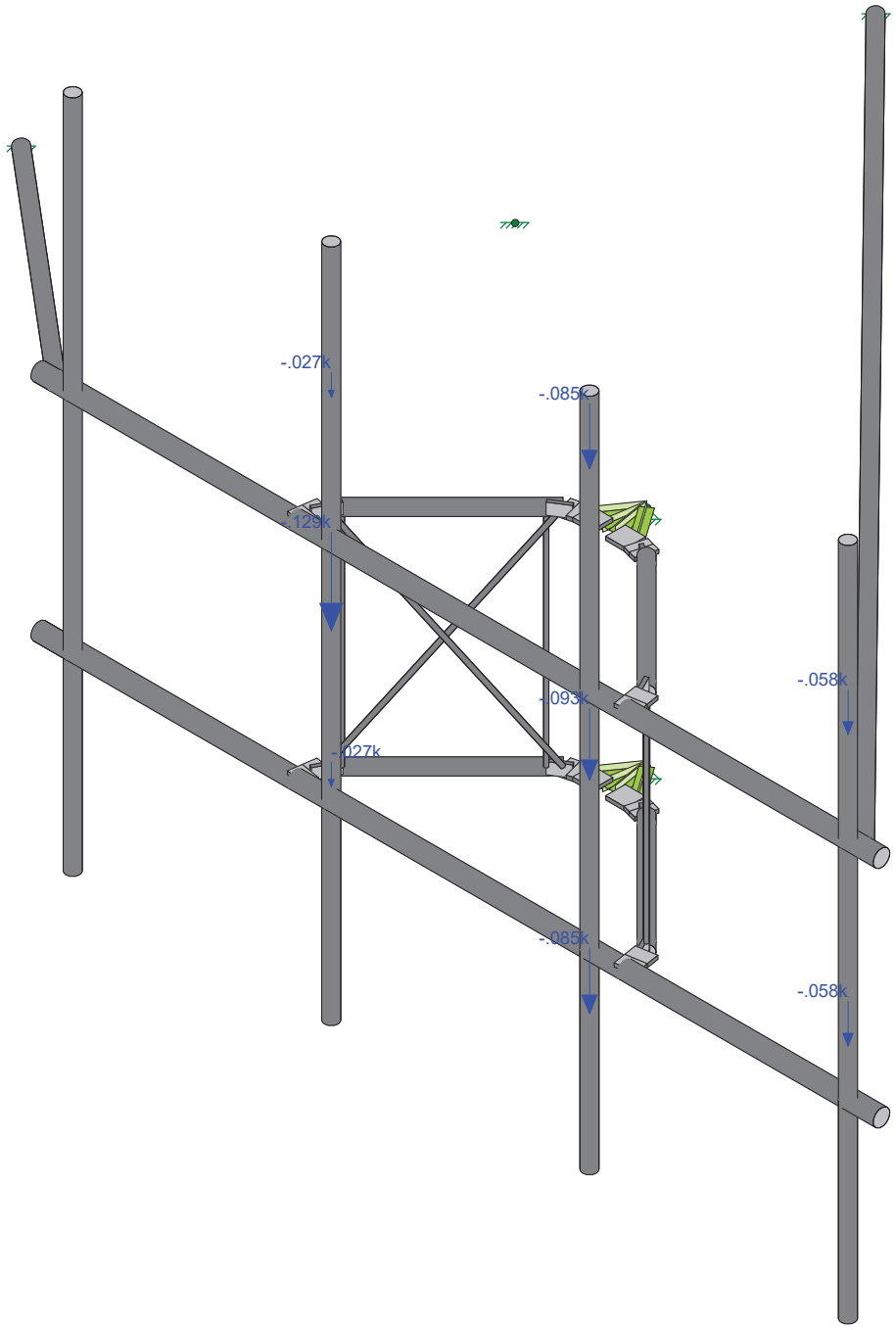
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

USA Engineering, Inc.	Site-Pro #VFA12-HD	SK - 1
Nicole Hoffman, EI		Mar 31, 2022 at 9:11 AM
		Site-Pro #VFA12-HD.r3d



Loads: BLC 1, DEAD LOAD
Envelope Only Solution

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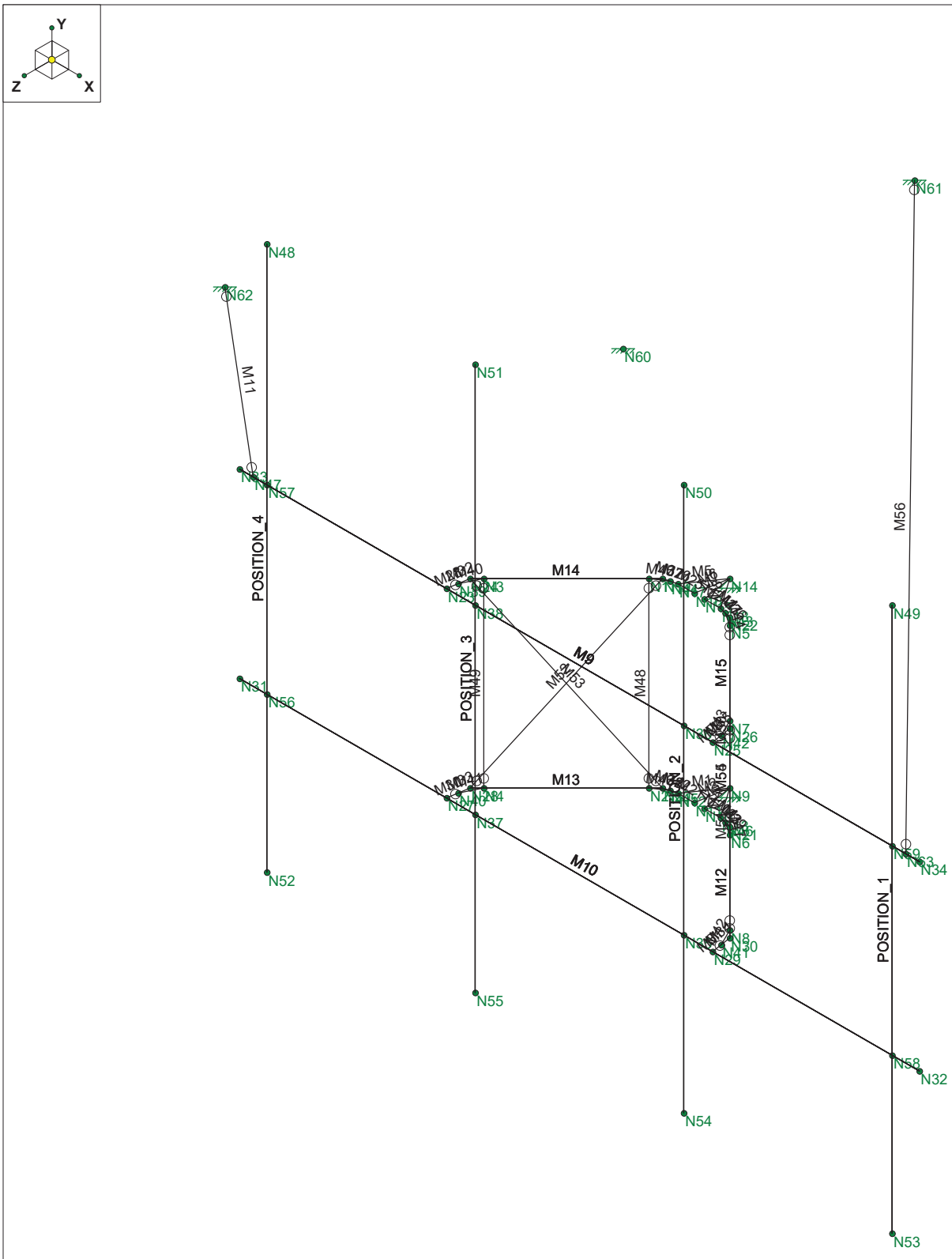

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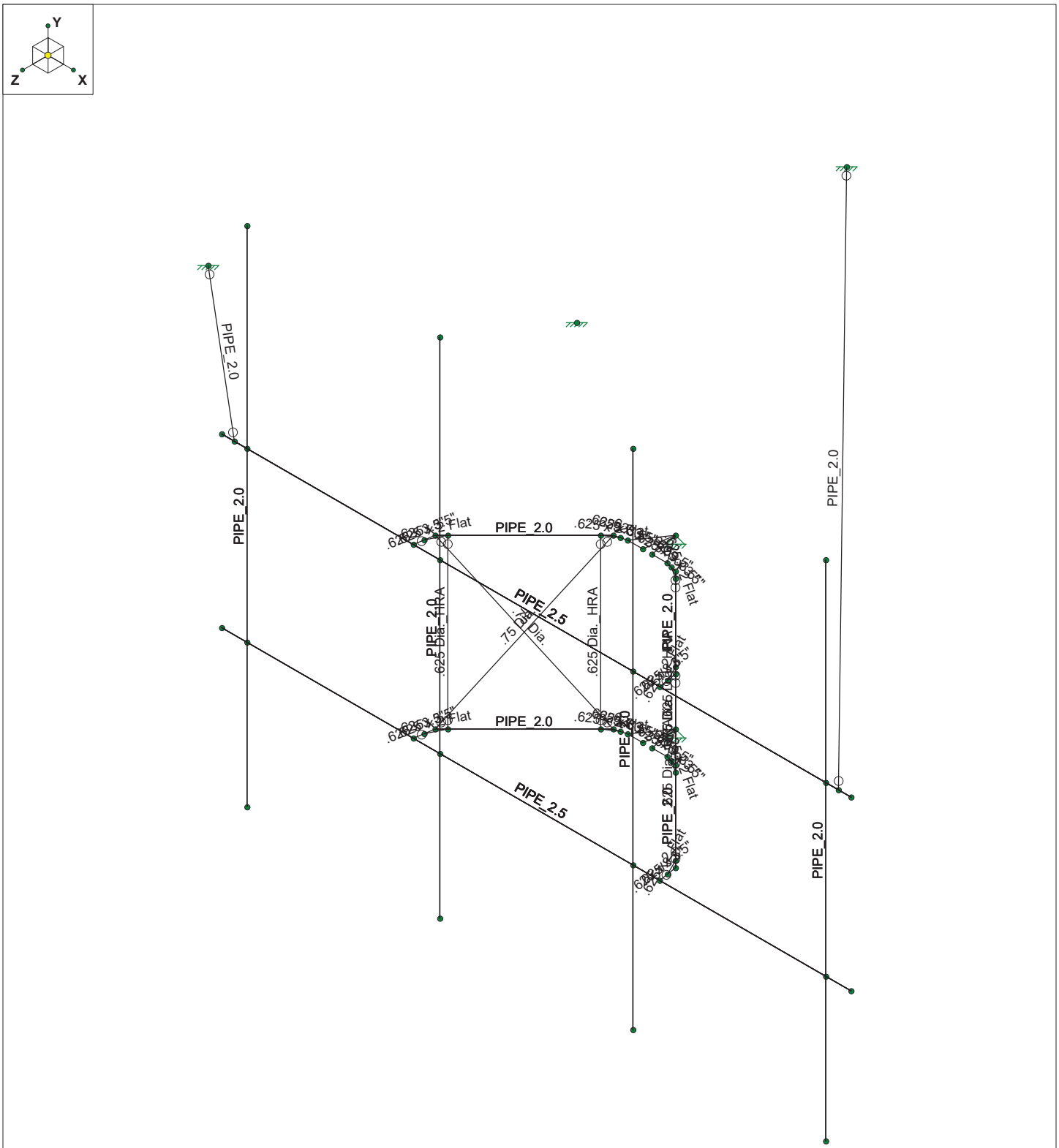

Envelope Only Solution

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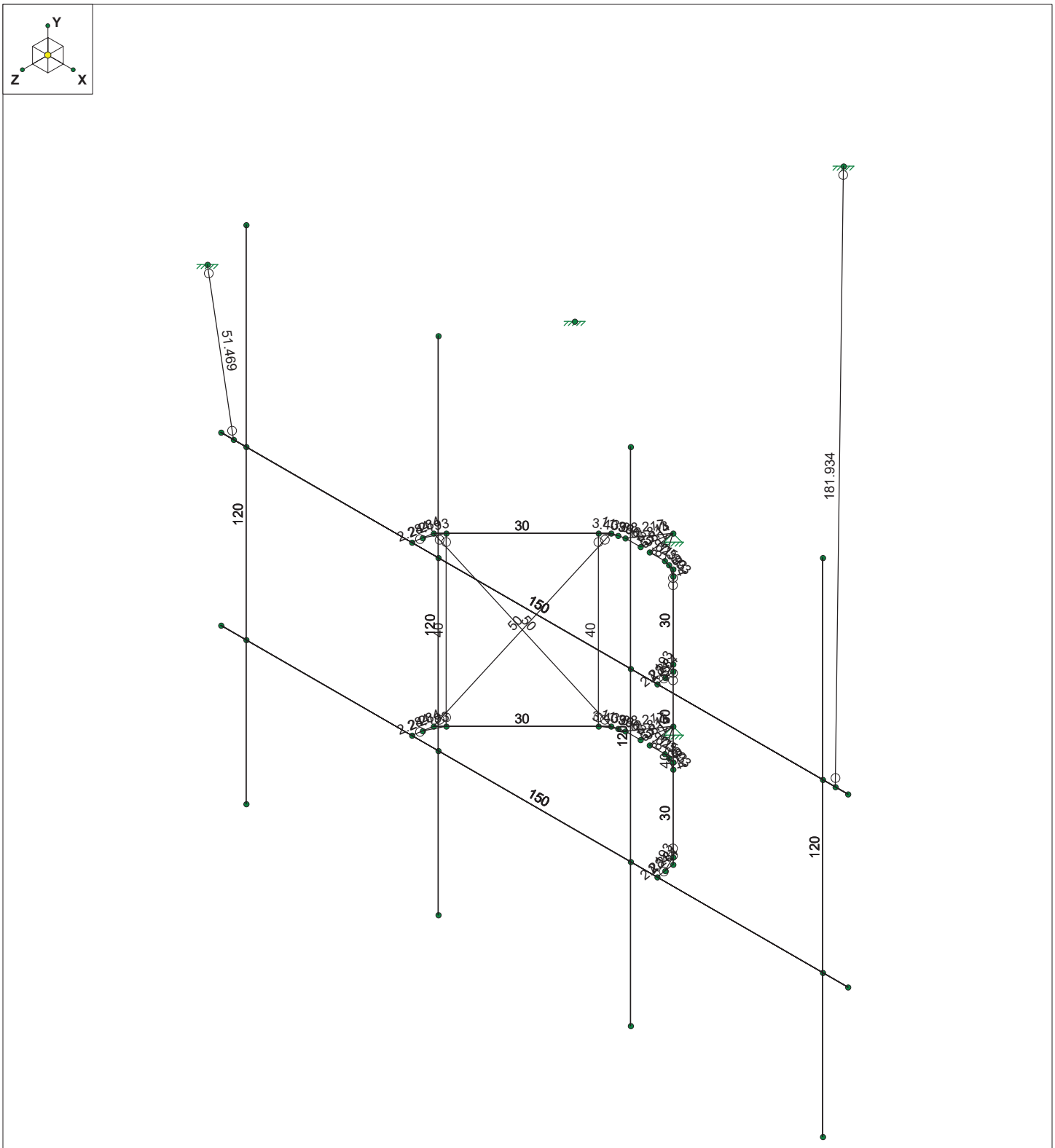


Member Length (in) Displayed
Envelope Only Solution

USA Engineering, Inc.	Site-Pro #VFA12-HD	SK - 5
Nicole Hoffman, EI		Mar 31, 2022 at 9:12 AM
		Site-Pro #VFA12-HD.r3d

APPENDIX B

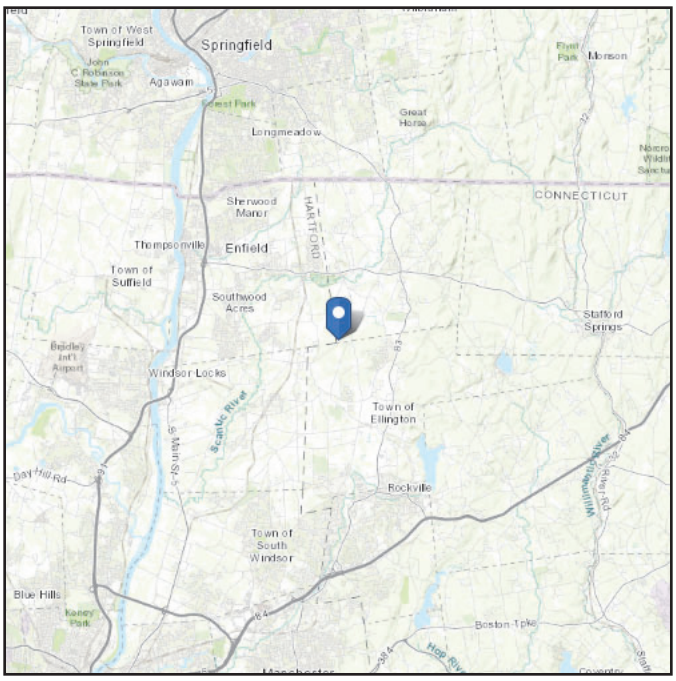
SOFTWARE INPUT CALCULATIONS

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: 395.3 ft (NAVD 88)
Latitude: 41.948889
Longitude: -72.492222



Wind

Results:

Wind Speed	117 Vmph
10-year MRI	75 Vmph
25-year MRI	83 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Thu Mar 31 2022

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

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

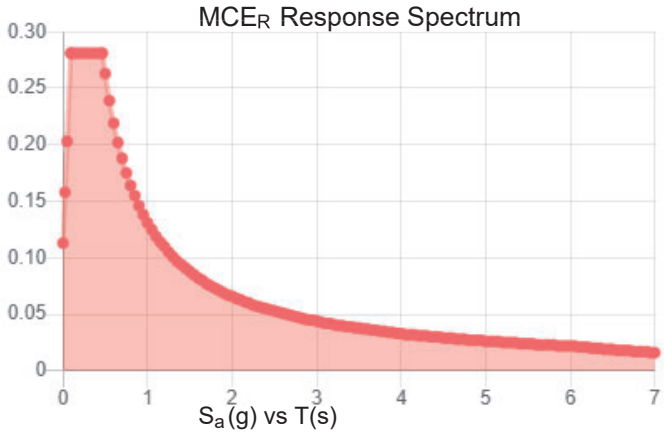
Seismic

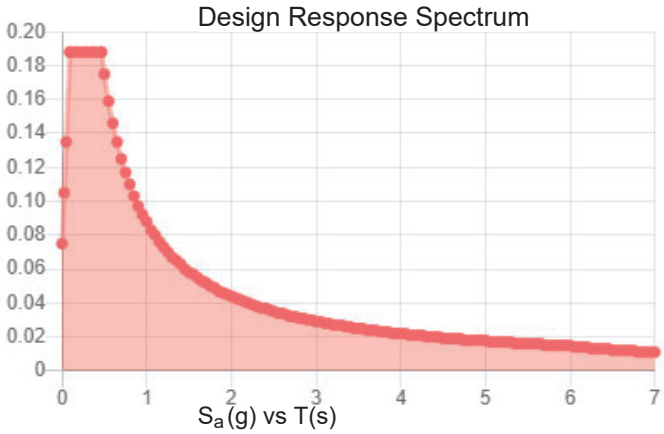
Site Soil Class: D - Default (see Section 11.4.3)

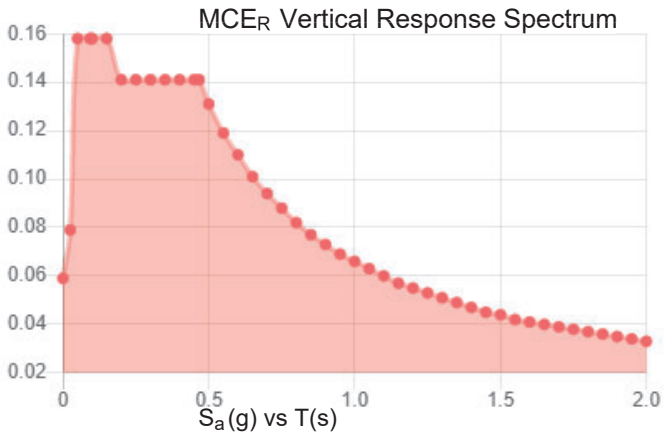
Results:

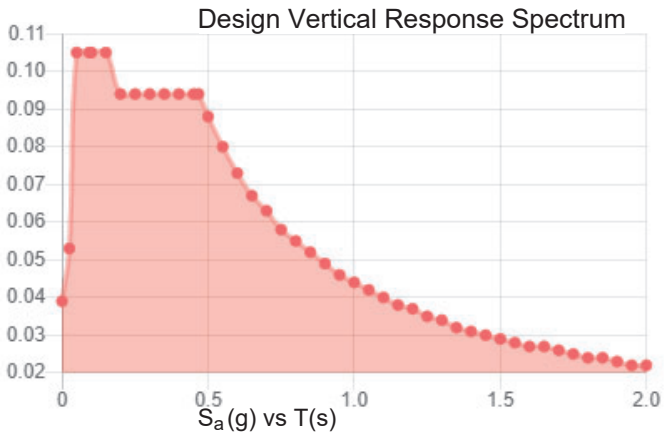
S_S :	0.176	S_{D1} :	0.088
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.093
F_v :	2.4	PGA_M :	0.148
S_{MS} :	0.281	F_{PGA} :	1.6
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.188	C_v :	0.7

Seismic Design Category B









Data Accessed: **Thu Mar 31 2022**

Date Source:

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

Ice

Results:

Ice Thickness:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Thu Mar 31 2022

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

USA ENGINEERING

Site Name :	22-00394

TIA-222-H : Design Wind Force on Appurtenances

Design Parameters

Annex S: Analysis of Existing Antenna Supporting Structures	
K_{ea} / F_w	0.95

2.6.4 Basic Wind Speed and Design Ice Thickness	
V (mph), Basic Ultimate Wind Speed, 3-second gust :	117
V_i (mph), Basic Ultimate Wind Speed with ice :	50
t_i (in), Design Ice Thickness :	1.50

2.6.5 Exposure Category and Velocity Pressure Coefficient			
Exposure Category, **B**, **C** or **D** :	C	Z_g :	900
z (ft), AGL elevation of discrete appurtenance :	114	α :	9.5
		K_z min :	0.85
		K_z max :	2.01
		K_e :	1.30

2.6.6 Topographic Effects			
Topographic Category, **1**, **2**, **3**, **4** or **Site-Specific** :	1		
Topographic Feature (Site-Specific) :	Flat/Rolling Terrain	K_t :	-
z (ft), height AGL at the base of the structure :	-	f :	-
H (ft), height of crest above surrounding terrain :	-	K_h :	-
L (ft), distance to the crest from surrounding terrain (Site-Specific) :	-	K_1 :	-
x (ft), distance from the crest (Site-Specific) :	-	K_{zt} :	1.00

2.6.7 Rooftop Wind Speed-Up Factor			
Structures/Appurtenances supported on enclosed buildings :	No		
z_r (ft), height of structure above rooftop :	-		
H_a (ft), height of windward side of building :	-		
W_a (ft), width of windward side of building :	-	H_1 :	-
X_b (ft), horizontal distance from windward face to center of structure :	-	H_2 :	-
H (ft), height of parapet :	-	K_s :	1.00

2.6.8 Ground Elevation Factor			
z_s (ft), mean elevation of base of structure above sea level :	-	K_s :	1.00

2.6.9 Gust Effect Factor			
Structure: (**M**)onopole, (**S**)elf-support, (**G**)uyed, (**A**)ppurtenance :	A	G_h :	1.00
h (ft), height of structure from base (only affects G_h for SS) :	161	K_d :	0.95

2.6.10 Design Ice Thickness			
Consider Ice (Override) :	-	K_{iz} :	1.13
Risk Category, **I**, **II**, **III** or **IV** :	II	t_d :	1.70

2.6.11.6 Velocity Pressure	
$q_z = 0.00256\ K_z K_{zt} K_h K_e K_d V^2$ (psf) :	41.1
$q_{zi} = 0.00256\ K_z K_{zt} K_s K_e K_d V_i^2$ (psf) :	7.5

2.6.11.2 Design Wind Force on Appurtenances

Antenna(s) — K_a = 0.90

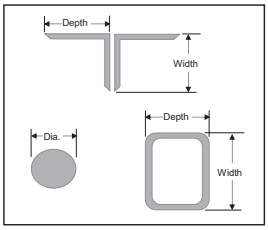
Description			# of Items	(F)lat (HSS) (R)ound	Element Height (in)	Element Width or Dia. (in)	Element Depth or Dia. (in)	(HSS) Thickness (in)	Wind-Tunnel EPA (Override) (ft^2)		Weight (lb)	No Ice				Ice			
Sector	Position	Model							Front	Side		Front		Side		Front	Side	Ice Weight (lb)
												θ (°)	F_A (lb)	θ (°)	F_A (lb)	F_A (lb)	F_A (lb)	
All Sectors	1	AIR 6419 B41_TMO	1	F	36.25	20.91	9.02	-	-	-	96.5	0	234	90	107	54	28	166.16
All Sectors	2	APXVAALL24_43-U-NA20_TMO	1	F	95.9	24	8.5	-	-	-	149.9	0	750	90	323	160	80	414.72
All Sectors	3	VV-65A-R1_TMO	1	F	54.7	12	4.6	-	-	-	33.3	0	218	90	101	53	31	133.92
								-	-	-						-	-	-

RRU(s) / TMA(s) / Diplexer(s) / Filter(s) — K_a = 0.90

Description			# of Items	(F)lat (HSS) (R)ound	Element Height (in)	Element Width or Dia. (in)	Element Depth or Dia. (in)	(HSS) Thickness (in)	Wind-Tunnel EPA (Override) (ft^2)		Weight (lb)	No Ice				Ice		
Sector	Position	Model							Front	Side		Front		Side		Front	Side	Ice Weight (lb)
												θ (°)	F_A (lb)	θ (°)	F_A (lb)	F_A (lb)	F_A (lb)	
All Sectors	2	RADIO 4449 B71 B85A_T-MOBILE	1	F	17.91	13.2	10.63	-	-	-	73.21	90	59	0	73	17	20	79.28
All Sectors	3	RADIO 4460 B2/B25 B66_TMO	1	F	17	15.1	11.9	-	-	-	109	90	62	0	79	18	21	88.00
								-	-	-						-	-	-

Uniform Distributed Load

Member	Width or Dia. (in)	Depth (in)	(HSS) Thickness (in)	No Ice	Ice	
				UWL (lb/ft)	UWL (lb/ft)	UDL of Ice (lb/ft)
Pipe	2.875	-	-	11	4	9.49
Pipe	2.375	-	-	9	4	8.45
Solid Rod	0.75	-	-	3	3	5.08
Solid Rod	0.625	-	-	2	3	4.82
Other	2	0.625	-	12	6	7.87
Other	0.625	3.5	-	22	8	10.90
		-	-		-	-
		-	-		-	-
		-	-		-	-
		-	-		-	-
		-	-		-	-
		-	-		-	-



Annex C: Design Wind Force on Typical Microwave Antennas

Description			θ (°)	Diameter (in)	Dish Type: P / PR / CS / G	C_A / C_S	No Ice	Ice	
Sector	Position	Model					F_{AM} / F_{SM} (lb)	F_{AM} / F_{SM} (lb)	Ice Weight (lb)
								-	
								-	
								-	
								-	
								-	
								-	
								-	
								-	
								-	
								-	
								-	
								-	

TIA-222-H : 2.7 Seismic Load Effects

Design Parameters

Table 2-3: Importance Factors	
Structure Risk Category	**II**
Importance Factor, I	1.00

2.7.8.1 Amplification Factor	
Structure Height (ft)	**161.4**
Mount Rad Center (ft)	**113**
Amplification Factor, A_s	1.00

2.7.4 Seismic Design Parameters	
Short Periods, S_S	**0.176**
Period of 1 Second, S_1	**0.055**
Long-Period Transition Period, T_L	**8**
Fundamental Period of Structure, T	**0.146**

Loads	
Dead Load of Structures and Appurtenances, D (lb)	**1017**
Dead Load of Guy Assemblies, D_g (lb)	**0**

2.7.5 Design Spectral Response Acceleration Parameters	
Short-period Site Coefficients, F_a	**1.6**
Long-period Site Coefficients, F_v	**2.4**
Design spectral response acceleration parameters at short periods, S_{DS}	**0.188**
Design spectral response acceleration parameters at a period of 1 second, S_{D1}	**0.088**

2.7.6 Vertical Seismic Load Effect

Vertical Seismic Load Effect, E_v (lb) = 0.2 S_{DS} (D + D_g) =	**38.24**

2.7.7 Horizontal Seismic Load Effect

Redundancy Factor, ρ	1.00		
Effects of Horizontal Seismic Forces, Q_E	95.60	Total Weight, W (lb)	1017
		Seismic Response Coefficient, C_s	0.094
		Response Modification Coefficient, R	2
		Total Seismic Shear Force, V_s	95.60
Horizontal Seismic Load Effect, E_h (lb) = ρ Q_E			**95.60**

Note: Seismic loads do not control.

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	None
Cold Formed Steel Code	None
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	None

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

Joint Coordinates and Temperatures

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
1	N1	-8.927223	40	8.927223	0	
2	N2	-8.927223	0	8.927223	0	
3	N3	-27.135223	40	27.135223	0	
4	N4	-27.135223	0	27.135223	0	
5	N5	8.927223	40	8.927223	0	
6	N6	8.927223	0	8.927223	0	
7	N7	27.135223	40	27.135223	0	
8	N8	27.135223	0	27.135223	0	
9	N9	0	0	0	0	
10	N10	1.102459	0	6.724627	0	
11	N11	-1.096784	0	6.724627	0	
12	N12	-4.721784	0	6.724627	0	
13	N13	4.727459	0	6.724627	0	
14	N14	0	40	-1.8e-15	0	
15	N15	1.102459	40	6.724627	0	
16	N16	-1.096784	40	6.724627	0	
17	N17	-4.721784	40	6.724627	0	
18	N18	4.727459	40	6.724627	0	
19	N19	-7.424621	40	7.424621	0	
20	N20	-7.424621	0	7.424621	0	
21	N21	7.424621	0	7.424621	0	
22	N22	7.424621	40	7.424621	0	
23	N23	-29.35	40	33.150325	0	
24	N24	-28.637825	40	28.637825	0	
25	N25	29.35	40	33.150325	0	
26	N26	28.637825	40	28.637825	0	
27	N27	-29.35	-7.1e-15	33.150325	0	
28	N28	-28.637825	0	28.637825	0	
29	N29	29.35	7.1e-15	33.150325	0	
30	N30	28.637825	0	28.637825	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [in]	Y [in]	Z [in]	Temp [F]	Detach From Diap...
31	N31	-75	1.42e-14	33.150325	0	
32	N32	75	3.55e-14	33.150325	0	
33	N33	-75	40	33.150325	0	
34	N34	75	40	33.150325	0	
35	N35	23	0	33.150325	0	
36	N36	23	39.999996	33.150325	0	
37	N37	-23	0	33.150325	0	
38	N38	-23	39.999996	33.150325	0	
39	N39	-28.993912	40	30.894075	0	
40	N40	-28.993912	-3.55e-15	30.894075	0	
41	N41	28.993912	3.55e-15	30.894075	0	
42	N42	28.993912	40	30.894075	0	
43	N43	6.07604	40	7.074624	0	
44	N44	-6.073203	40	7.074624	0	
45	N45	-6.073203	0	7.074624	0	
46	N46	6.07604	0	7.074624	0	
47	N47	-72	40	33.150325	0	
48	N48	-69	86	33.150325	0	
49	N49	69	86	33.150325	0	
50	N50	23	85.999996	33.150325	0	
51	N51	-23	85.999996	33.150325	0	
52	N52	-69	-34	33.150325	0	
53	N53	69	-34	33.150325	0	
54	N54	23	-34	33.150325	0	
55	N55	-23	-34	33.150325	0	
56	N56	-69	1.42e-14	33.150325	0	
57	N57	-69	40	33.150325	0	
58	N58	69	3.55e-14	33.150325	0	
59	N59	69	40	33.150325	0	
60	N60	-55.685433	40	-32.15	0	
61	N61	-55.685433	40	-96.45	0	
62	N62	-111.370867	40	0.	0	
63	N63	72	40	33.150325	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N14	Reaction	Reaction	Reaction			
2	N9	Reaction	Reaction	Reaction			
3	N60	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N61	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N62	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...Density[k/ft...		Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	58	1.2
3	A992	29000	11154	.3	.65	.49	50	1.1	58	1.2
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Sha...	Type	Design List	Material	Design Rules
1	M1	N12	N9			RIGID	None	None	RIGID	Typical
2	M2	N9	N11			RIGID	None	None	RIGID	Typical
3	M3	N9	N10			RIGID	None	None	RIGID	Typical
4	M4	N9	N13			RIGID	None	None	RIGID	Typical
5	M5	N17	N14			RIGID	None	None	RIGID	Typical
6	M6	N14	N16			RIGID	None	None	RIGID	Typical
7	M7	N14	N15			RIGID	None	None	RIGID	Typical
8	M8	N14	N18			RIGID	None	None	RIGID	Typical
9	M9	N33	N34			PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical
10	M10	N31	N32			PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical
11	M11	N47	N62			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
12	M12	N21	N30			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
13	M13	N20	N28			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
14	M14	N19	N24			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
15	M15	N22	N26			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
16	POSITION_4	N48	N52			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
17	POSITION_3	N51	N55			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
18	POSITION_2	N50	N54			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
19	POSITION_1	N49	N53			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical
20	M20	N13	N10		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
21	M21	N11	N12		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
22	M22	N12	N45		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
23	M23	N13	N46		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
24	M24	N18	N15		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
25	M25	N16	N17		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
26	M26	N17	N44		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
27	M27	N18	N43		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
28	M28	N23	N39		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
29	M29	N25	N42		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
30	M30	N27	N40		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
31	M31	N29	N41		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
32	M32	N39	N24		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
33	M33	N40	N28		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
34	M34	N41	N30		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
35	M35	N42	N26		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
36	M36	N43	N22		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
37	M37	N44	N19		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
38	M38	N45	N20		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
39	M39	N46	N21		90	.625 x 3.5"	Beam	None	A36 Gr.36	Typical
40	M40	N39	N3			.625 x 2 Flat	Beam	None	A36 Gr.36	Typical
41	M41	N40	N4			.625 x 2 Flat	Beam	None	A36 Gr.36	Typical
42	M42	N41	N8			.625 x 2 Flat	Beam	None	A36 Gr.36	Typical
43	M43	N42	N7			.625 x 2 Flat	Beam	None	A36 Gr.36	Typical
44	M44	N5	N43			.625 x 2 Flat	Beam	None	A36 Gr.36	Typical
45	M45	N44	N1			.625 x 2 Flat	Beam	None	A36 Gr.36	Typical
46	M46	N2	N45			.625 x 2 Flat	Beam	None	A36 Gr.36	Typical
47	M47	N46	N6			.625 x 2 Flat	Beam	None	A36 Gr.36	Typical
48	M48	N1	N2			.625 Dia._H...	Beam	None	A36 Gr.36	Typical
49	M49	N3	N4			.625 Dia._H...	Beam	None	A36 Gr.36	Typical
50	M50	N5	N6			.625 Dia._H...	Beam	None	A36 Gr.36	Typical
51	M51	N7	N8			.625 Dia._H...	Beam	None	A36 Gr.36	Typical
52	M52	N19	N28			.75 Dia.	Beam	None	A36 Gr.36	Typical
53	M53	N20	N24			.75 Dia.	Beam	None	A36 Gr.36	Typical
54	M54	N21	N26			.75 Dia.	Beam	None	A36 Gr.36	Typical
55	M55	N30	N22			.75 Dia.	Beam	None	A36 Gr.36	Typical
56	M56	N63	N61			PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes	** NA **			None
2	M2						Yes	** NA **			None
3	M3						Yes	** NA **			None
4	M4						Yes	** NA **			None
5	M5						Yes	** NA **			None
6	M6						Yes	** NA **			None
7	M7						Yes	** NA **			None
8	M8						Yes	** NA **			None
9	M9						Yes				None
10	M10						Yes				None
11	M11	BenPIN	BenPIN				Yes				None
12	M12						Yes				None
13	M13						Yes				None
14	M14						Yes				None
15	M15						Yes				None
16	POSITION_4						Yes				None
17	POSITION_3						Yes				None
18	POSITION_2						Yes				None
19	POSITION_1						Yes				None
20	M20						Yes				None
21	M21						Yes				None
22	M22						Yes				None
23	M23						Yes				None
24	M24						Yes				None
25	M25						Yes				None
26	M26						Yes				None
27	M27						Yes	Default			None
28	M28	BenPIN					Yes	Default			None
29	M29	BenPIN					Yes	Default			None
30	M30	BenPIN					Yes	Default			None
31	M31	BenPIN					Yes	Default			None
32	M32						Yes				None
33	M33						Yes				None
34	M34						Yes				None
35	M35						Yes				None
36	M36						Yes				None
37	M37						Yes				None
38	M38						Yes				None
39	M39						Yes				None
40	M40						Yes				None
41	M41						Yes				None
42	M42						Yes				None
43	M43						Yes				None
44	M44						Yes				None
45	M45						Yes				None
46	M46						Yes				None
47	M47						Yes				None
48	M48	BenPIN	BenPIN				Yes	Default			None
49	M49	BenPIN	BenPIN				Yes	Default			None
50	M50	BenPIN	BenPIN				Yes				None
51	M51	BenPIN	BenPIN				Yes				None
52	M52	BenPIN	BenPIN			Euler Buc...	Yes	Default			None
53	M53	BenPIN	BenPIN			Euler Buc...	Yes				None
54	M54	BenPIN	BenPIN			Euler Buc...	Yes				None
55	M55	BenPIN	BenPIN			Euler Buc...	Yes				None
56	M56	BenPIN	BenPIN				Yes				None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M9	PIPE_2.5	150	58.7	58.7	Lbyy						Lateral
2	M10	PIPE_2.5	150	58.7	58.7	Lbyy						Lateral
3	M11	PIPE_2.0	51.469			Lbyy						Lateral
4	M12	PIPE_2.0	30			Lbyy						Lateral
5	M13	PIPE_2.0	30			Lbyy						Lateral
6	M14	PIPE_2.0	30			Lbyy						Lateral
7	M15	PIPE_2.0	30			Lbyy						Lateral
8	POSITION_4	PIPE_2.0	120			Lbyy						Lateral
9	POSITION_3	PIPE_2.0	120			Lbyy						Lateral
10	POSITION_2	PIPE_2.0	120			Lbyy						Lateral
11	POSITION_1	PIPE_2.0	120			Lbyy						Lateral
12	M20	.625 x 3.5"	3.625			Lbyy						Lateral
13	M21	.625 x 3.5"	3.625			Lbyy						Lateral
14	M22	.625 x 3.5"	1.396			Lbyy						Lateral
15	M23	.625 x 3.5"	1.393			Lbyy						Lateral
16	M24	.625 x 3.5"	3.625			Lbyy						Lateral
17	M25	.625 x 3.5"	3.625			Lbyy						Lateral
18	M26	.625 x 3.5"	1.396			Lbyy						Lateral
19	M27	.625 x 3.5"	1.393			Lbyy						Lateral
20	M28	.625 x 3.5"	2.284			Lbyy						Lateral
21	M29	.625 x 3.5"	2.284			Lbyy						Lateral
22	M30	.625 x 3.5"	2.284			Lbyy						Lateral
23	M31	.625 x 3.5"	2.284			Lbyy						Lateral
24	M32	.625 x 3.5"	2.284			Lbyy						Lateral
25	M33	.625 x 3.5"	2.284			Lbyy						Lateral
26	M34	.625 x 3.5"	2.284			Lbyy						Lateral
27	M35	.625 x 3.5"	2.284			Lbyy						Lateral
28	M36	.625 x 3.5"	1.393			Lbyy						Lateral
29	M37	.625 x 3.5"	1.396			Lbyy						Lateral
30	M38	.625 x 3.5"	1.396			Lbyy						Lateral
31	M39	.625 x 3.5"	1.393			Lbyy						Lateral
32	M40	.625 x 2 Flat	4.193			Lbyy						Lateral
33	M41	.625 x 2 Flat	4.193			Lbyy						Lateral
34	M42	.625 x 2 Flat	4.193			Lbyy						Lateral
35	M43	.625 x 2 Flat	4.193			Lbyy						Lateral
36	M44	.625 x 2 Flat	3.4			Lbyy						Lateral
37	M45	.625 x 2 Flat	3.403			Lbyy						Lateral
38	M46	.625 x 2 Flat	3.403			Lbyy						Lateral
39	M47	.625 x 2 Flat	3.4			Lbyy						Lateral
40	M48	.625 Dia._H...	40	30	30	Lbyy						Lateral
41	M49	.625 Dia._H...	40	30	30	Lbyy						Lateral
42	M50	.625 Dia._H...	40	30	30	Lbyy						Lateral
43	M51	.625 Dia._H...	40	30	30	Lbyy						Lateral
44	M52	.75 Dia.	50			Lbyy						Lateral
45	M53	.75 Dia.	50			Lbyy						Lateral
46	M54	.75 Dia.	50			Lbyy						Lateral
47	M55	.75 Dia.	50			Lbyy						Lateral
48	M56	PIPE_2.0	181.934			Lbyy						Lateral

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	DEAD LOAD	DL		-1			8			
2	LIVE LOAD (Lv)	LL				1				
3	WIND FRONT	WLZ					8	48		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
4	WIND SIDE	WLX					8	48		
5	Wind Front @ 30 mph	WLZ					8	48		
6	Wind Side @ 30 mph	WLX					8	48		
7	UDL	LL								
8	LIVE LOAD (Lm)	LL				1				
9	DEAD LOAD (ICE)	DL					8	48		
10	WIND FRONT (ICE)	WLZ					8	48		
11	WIND SIDE (ICE)	WLX					8	48		

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	DEAD LOAD	Y...	Y		1	1																				
2	1.4 DEAD LOAD	Y...	Y		1	1.4																				
3	DEAD LOAD + Lv	Y...	Y		1	1	2	1																		
4	1.2 DEAD LOAD + 1.5 Lv	Y...	Y		1	1.2	2	1.5																		
5	DEAD LOAD + UDL	Y...	Y		1	1													7	1						
6	1.2 DEAD LOAD + 1.5 UDL	Y...	Y		1	1.2													7	1.5						
7	1.2 DEAD LOAD + 1.0 WIND 0	Y...	Y		1	1.2			3	1																
8	1.2 DEAD LOAD + 1.0 WIND 30	Y...	Y		1	1.2			3	.869	4	.5														
9	1.2 DEAD LOAD + 1.0 WIND 60	Y...	Y		1	1.2			3	.5	4	.869														
10	1.2 DEAD LOAD + 1.0 WIND 90	Y...	Y		1	1.2					4	1														
11	1.2 DEAD LOAD + 1.0 WIND 120	Y...	Y		1	1.2			3	-.5	4	.869														
12	1.2 DEAD LOAD + 1.0 WIND 150	Y...	Y		1	1.2			3	-.8...	4	.5														
13	1.2 DEAD LOAD + 1.0 WIND 180	Y...	Y		1	1.2			3	-1																
14	1.2 DEAD LOAD + 1.0 WIND 210	Y...	Y		1	1.2			3	-.8...	4	-.5														
15	1.2 DEAD LOAD + 1.0 WIND 240	Y...	Y		1	1.2			3	-.5	4	-.8...														
16	1.2 DEAD LOAD + 1.0 WIND 270	Y...	Y		1	1.2					4	-1														
17	1.2 DEAD LOAD + 1.0 WIND 300	Y...	Y		1	1.2			3	.5	4	-.8...														
18	1.2 DEAD LOAD + 1.0 WIND 330	Y...	Y		1	1.2			3	.869	4	-.5														
19	0.9 DEAD LOAD + 1.0 WIND 0	Y...	Y		1	.9			3	1																
20	0.9 DEAD LOAD + 1.0 WIND 30	Y...	Y		1	.9			3	.869	4	.5														
21	0.9 DEAD LOAD + 1.0 WIND 60	Y...	Y		1	.9			3	.5	4	.869														
22	0.9 DEAD LOAD + 1.0 WIND 90	Y...	Y		1	.9					4	1														
23	0.9 DEAD LOAD + 1.0 WIND 120	Y...	Y		1	.9			3	-.5	4	.869														
24	0.9 DEAD LOAD + 1.0 WIND 150	Y...	Y		1	.9			3	-.8...	4	.5														
25	0.9 DEAD LOAD + 1.0 WIND 180	Y...	Y		1	.9			3	-1																
26	0.9 DEAD LOAD + 1.0 WIND 210	Y...	Y		1	.9			3	-.8...	4	-.5														
27	0.9 DEAD LOAD + 1.0 WIND 240	Y...	Y		1	.9			3	-.5	4	-.8...														
28	0.9 DEAD LOAD + 1.0 WIND 270	Y...	Y		1	.9					4	-1														
29	0.9 DEAD LOAD + 1.0 WIND 300	Y...	Y		1	.9			3	.5	4	-.8...														
30	0.9 DEAD LOAD + 1.0 WIND 330	Y...	Y		1	.9			3	.869	4	-.5														
31	1.2 DEAD LOAD + 1.5 LIVE LOAD + 1.0 ...	Y...	Y		1	1.2							5	1					8	1.5						
32	1.2 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	1.2							5	.869	6	.5			8	1.5						
33	1.2 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	1.2							5	.5	6	.869			8	1.5						
34	1.2 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	1.2									6	1			8	1.5						
35	1.2 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	1.2							5	-.5	6	.869			8	1.5						
36	1.2 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	1.2							5	-.8...	6	.5			8	1.5						
37	1.2 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	1.2							5	-1					8	1.5						
38	1.2 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	1.2							5	-.8...	6	-.5			8	1.5						
39	1.2 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	1.2							5	-.5	6	-.8...			8	1.5						
40	1.2 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	1.2									6	-1			8	1.5						
41	1.2 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	1.2							5	.5	6	-.8...			8	1.5						
42	1.2 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	1.2							5	.869	6	-.5			8	1.5						
43	0.9 DEAD LOAD + 1.5 LIVE LOAD + 1.0 ...	Y...	Y		1	.9							5	1					8	1.5						
44	0.9 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	.9							5	.869	6	.5			8	1.5						

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
45	0.9 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	.9							5	.5	6	.869			8	1.5				
46	0.9 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	.9									6	1			8	1.5				
47	0.9 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	.9							5	-.5	6	.869			8	1.5				
48	0.9 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	.9							5	-.8...	6	.5			8	1.5				
49	0.9 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	.9							5	-1					8	1.5				
50	0.9 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	.9							5	-.8...	6	-.5			8	1.5				
51	0.9 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	.9							5	-.5	6	-.8...			8	1.5				
52	0.9 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	.9									6	-1			8	1.5				
53	0.9 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	.9							5	.5	6	-.8...			8	1.5				
54	0.9 DEAD LOAD + 1.5 LIVE LOAD + 1.0...	Y...	Y		1	.9							5	.869	6	-.5			8	1.5				
55	1.0 DEAD LOAD + 1.0 DEAD LOAD (ICE)	Y...	Y		1	1									9	1								
56	1.2 DEAD LOAD + 1.0 DEAD LOAD (IC...	Y...	Y		1	1.2									9	1	10	1						
57	1.2 DEAD LOAD + 1.0 DEAD LOAD (IC...	Y...	Y		1	1.2									9	1	10	.869	11	.5				
58	1.2 DEAD LOAD + 1.0 DEAD LOAD (IC...	Y...	Y		1	1.2									9	1	10	.5	11	.869				
59	1.2 DEAD LOAD + 1.0 DEAD LOAD (IC...	Y...	Y		1	1.2									9	1			11	1				
60	1.2 DEAD LOAD + 1.0 DEAD LOAD (IC...	Y...	Y		1	1.2									9	1	10	-.5	11	.869				
61	1.2 DEAD LOAD + 1.0 DEAD LOAD (IC...	Y...	Y		1	1.2									9	1	10	-.8...	11	-.5				
62	1.2 DEAD LOAD + 1.0 DEAD LOAD (IC...	Y...	Y		1	1.2									9	1	10	-1						
63	1.2 DEAD LOAD + 1.0 DEAD LOAD (IC...	Y...	Y		1	1.2									9	1	10	-.8...	11	-.5				
64	1.2 DEAD LOAD + 1.0 DEAD LOAD (IC...	Y...	Y		1	1.2									9	1	10	-.5	11	-.8...				
65	1.2 DEAD LOAD + 1.0 DEAD LOAD (IC...	Y...	Y		1	1.2									9	1			11	-1				
66	1.2 DEAD LOAD + 1.0 DEAD LOAD (IC...	Y...	Y		1	1.2									9	1	10	.5	11	-.8...				
67	1.2 DEAD LOAD + 1.0 DEAD LOAD (IC...	Y...	Y		1	1.2									9	1	10	.869	11	-.5				

Joint Loads and Enforced Displacements (BLC 2 : LIVE LOAD (Lv))

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,ra...
1	N32	L	Y	-.25

Joint Loads and Enforced Displacements (BLC 8 : LIVE LOAD (Lm))

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,ra...
1	N49	L	Y	-.25

Member Point Loads (BLC 1 : DEAD LOAD)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	POSITION_1	Y	-.058	%25
2	POSITION_2	Y	-.085	%10
3	POSITION_3	Y	-.027	%20
4	POSITION_1	Y	-.058	%65
5	POSITION_2	Y	-.085	%80
6	POSITION_3	Y	-.027	%70
7	POSITION_2	Y	-.093	%50
8	POSITION_3	Y	-.129	%50

Member Point Loads (BLC 3 : WIND FRONT)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	POSITION_1	Z	-.117	%25
2	POSITION_2	Z	-.375	%10
3	POSITION_3	Z	-.109	%20
4	POSITION_1	Z	-.117	%65
5	POSITION_2	Z	-.375	%80
6	POSITION_3	Z	-.109	%70
7	POSITION_2	Z	-.059	%50
8	POSITION_3	Z	-.062	%50

Member Point Loads (BLC 4 : WIND SIDE)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	POSITION_1	X	-.053	%25
2	POSITION_2	X	-.162	%10
3	POSITION_3	X	-.051	%20
4	POSITION_1	X	-.053	%65
5	POSITION_2	X	-.162	%80
6	POSITION_3	X	-.051	%70
7	POSITION_2	X	-.073	%50
8	POSITION_3	X	-.079	%50

Member Point Loads (BLC 5 : Wind Front @ 30 mph)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	POSITION_1	Z	-.008	%25
2	POSITION_2	Z	-.026	%10
3	POSITION_3	Z	-.008	%20
4	POSITION_1	Z	-.008	%65
5	POSITION_2	Z	-.026	%80
6	POSITION_3	Z	-.008	%70
7	POSITION_2	Z	-.004	%50
8	POSITION_3	Z	-.004	%50

Member Point Loads (BLC 6 : Wind Side @ 30 mph)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	POSITION_1	X	-.004	%25
2	POSITION_2	X	-.011	%10
3	POSITION_3	X	-.004	%20
4	POSITION_1	X	-.004	%65
5	POSITION_2	X	-.011	%80
6	POSITION_3	X	-.004	%70
7	POSITION_2	X	-.005	%50
8	POSITION_3	X	-.005	%50

Member Point Loads (BLC 9 : DEAD LOAD (ICE))

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	POSITION_1	Y	-.083	%25
2	POSITION_2	Y	-.207	%10
3	POSITION_3	Y	-.067	%20
4	POSITION_1	Y	-.083	%65
5	POSITION_2	Y	-.207	%80
6	POSITION_3	Y	-.067	%70
7	POSITION_2	Y	-.079	%50
8	POSITION_3	Y	-.088	%50

Member Point Loads (BLC 10 : WIND FRONT (ICE))

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	POSITION_1	Z	-.027	%25
2	POSITION_2	Z	-.08	%10
3	POSITION_3	Z	-.026	%20
4	POSITION_1	Z	-.027	%65
5	POSITION_2	Z	-.08	%80
6	POSITION_3	Z	-.026	%70
7	POSITION_2	Z	-.017	%50
8	POSITION_3	Z	-.018	%50

Member Point Loads (BLC 11 : WIND SIDE (ICE))

Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]

Member Point Loads (BLC 11 : WIND SIDE (ICE)) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[in,%]
1	POSITION_1	X	-.014	%25
2	POSITION_2	X	-.04	%10
3	POSITION_3	X	-.015	%20
4	POSITION_1	X	-.014	%65
5	POSITION_2	X	-.04	%80
6	POSITION_3	X	-.015	%70
7	POSITION_2	X	-.02	%50
8	POSITION_3	X	-.021	%50

Member Distributed Loads (BLC 3 : WIND FRONT)

	Member Label	Direction	Start Magnitude[k/ft...	End Magnitude[k/ft,...	Start Location[in,%]	End Location[in,%]
1	M9	PZ	-.011	-.011	0	0
2	M10	PZ	-.011	-.011	0	0
3	M11	PZ	-.009	-.009	0	0
4	M12	PZ	-.009	-.009	0	0
5	M13	PZ	-.009	-.009	0	0
6	M14	PZ	-.009	-.009	0	0
7	M15	PZ	-.009	-.009	0	0
8	POSITION_4	PZ	-.009	-.009	0	0
9	POSITION_3	PZ	-.009	-.009	0	0
10	POSITION_2	PZ	-.009	-.009	0	0
11	POSITION_1	PZ	-.009	-.009	0	0
12	M56	PZ	-.009	-.009	0	0
13	M52	PZ	-.003	-.003	0	0
14	M53	PZ	-.003	-.003	0	0
15	M54	PZ	-.003	-.003	0	0
16	M55	PZ	-.003	-.003	0	0
17	M48	PZ	-.002	-.002	0	0
18	M49	PZ	-.002	-.002	0	0
19	M50	PZ	-.002	-.002	0	0
20	M51	PZ	-.002	-.002	0	0
21	M40	PZ	-.012	-.012	0	0
22	M41	PZ	-.012	-.012	0	0
23	M42	PZ	-.012	-.012	0	0
24	M43	PZ	-.012	-.012	0	0
25	M44	PZ	-.012	-.012	0	0
26	M45	PZ	-.012	-.012	0	0
27	M46	PZ	-.012	-.012	0	0
28	M47	PZ	-.012	-.012	0	0
29	M20	PZ	-.004	-.004	0	0
30	M21	PZ	-.004	-.004	0	0
31	M22	PZ	-.004	-.004	0	0
32	M23	PZ	-.004	-.004	0	0
33	M24	PZ	-.004	-.004	0	0
34	M25	PZ	-.004	-.004	0	0
35	M26	PZ	-.004	-.004	0	0
36	M27	PZ	-.004	-.004	0	0
37	M28	PZ	-.004	-.004	0	0
38	M29	PZ	-.004	-.004	0	0
39	M30	PZ	-.004	-.004	0	0
40	M31	PZ	-.004	-.004	0	0
41	M32	PZ	-.004	-.004	0	0
42	M33	PZ	-.004	-.004	0	0
43	M34	PZ	-.004	-.004	0	0
44	M35	PZ	-.004	-.004	0	0

Member Distributed Loads (BLC 3 : WIND FRONT) (Continued)

	Member Label	Direction	Start Magnitude[k/ft...	End Magnitude[k/ft,...	Start Location[in,%]	End Location[in,%]
45	M36	PZ	-.004	-.004	0	0
46	M37	PZ	-.004	-.004	0	0
47	M38	PZ	-.004	-.004	0	0
48	M39	PZ	-.004	-.004	0	0

Member Distributed Loads (BLC 4 : WIND SIDE)

	Member Label	Direction	Start Magnitude[k/ft...	End Magnitude[k/ft,...	Start Location[in,%]	End Location[in,%]
1	M9	PX	-.011	-.011	0	0
2	M10	PX	-.011	-.011	0	0
3	M11	PX	-.009	-.009	0	0
4	M12	PX	-.009	-.009	0	0
5	M13	PX	-.009	-.009	0	0
6	M14	PX	-.009	-.009	0	0
7	M15	PX	-.009	-.009	0	0
8	POSITION_4	PX	-.009	-.009	0	0
9	POSITION_3	PX	-.009	-.009	0	0
10	POSITION_2	PX	-.009	-.009	0	0
11	POSITION_1	PX	-.009	-.009	0	0
12	M56	PX	-.009	-.009	0	0
13	M52	PX	-.003	-.003	0	0
14	M53	PX	-.003	-.003	0	0
15	M54	PX	-.003	-.003	0	0
16	M55	PX	-.003	-.003	0	0
17	M48	PX	-.002	-.002	0	0
18	M49	PX	-.002	-.002	0	0
19	M50	PX	-.002	-.002	0	0
20	M51	PX	-.002	-.002	0	0
21	M40	PX	-.012	-.012	0	0
22	M41	PX	-.012	-.012	0	0
23	M42	PX	-.012	-.012	0	0
24	M43	PX	-.012	-.012	0	0
25	M44	PX	-.012	-.012	0	0
26	M45	PX	-.012	-.012	0	0
27	M46	PX	-.012	-.012	0	0
28	M47	PX	-.012	-.012	0	0
29	M20	PX	-.004	-.004	0	0
30	M21	PX	-.004	-.004	0	0
31	M22	PX	-.004	-.004	0	0
32	M23	PX	-.004	-.004	0	0
33	M24	PX	-.004	-.004	0	0
34	M25	PX	-.004	-.004	0	0
35	M26	PX	-.004	-.004	0	0
36	M27	PX	-.004	-.004	0	0
37	M28	PX	-.004	-.004	0	0
38	M29	PX	-.004	-.004	0	0
39	M30	PX	-.004	-.004	0	0
40	M31	PX	-.004	-.004	0	0
41	M32	PX	-.004	-.004	0	0
42	M33	PX	-.004	-.004	0	0
43	M34	PX	-.004	-.004	0	0
44	M35	PX	-.004	-.004	0	0
45	M36	PX	-.004	-.004	0	0
46	M37	PX	-.004	-.004	0	0
47	M38	PX	-.004	-.004	0	0
48	M39	PX	-.004	-.004	0	0

Member Distributed Loads (BLC 5 : Wind Front @ 30 mph)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,...	Start Location[in,%]	End Location[in,%]
1	M9	PZ	-.0007612	-.0007612	0	0
2	M10	PZ	-.0007612	-.0007612	0	0
3	M11	PZ	-.0006228	-.0006228	0	0
4	M12	PZ	-.0006228	-.0006228	0	0
5	M13	PZ	-.0006228	-.0006228	0	0
6	M14	PZ	-.0006228	-.0006228	0	0
7	M15	PZ	-.0006228	-.0006228	0	0
8	POSITION_4	PZ	-.0006228	-.0006228	0	0
9	POSITION_3	PZ	-.0006228	-.0006228	0	0
10	POSITION_2	PZ	-.0006228	-.0006228	0	0
11	POSITION_1	PZ	-.0006228	-.0006228	0	0
12	M56	PZ	-.0006228	-.0006228	0	0
13	M52	PZ	-.0002076	-.0002076	0	0
14	M53	PZ	-.0002076	-.0002076	0	0
15	M54	PZ	-.0002076	-.0002076	0	0
16	M55	PZ	-.0002076	-.0002076	0	0
17	M48	PZ	-.0001384	-.0001384	0	0
18	M49	PZ	-.0001384	-.0001384	0	0
19	M50	PZ	-.0001384	-.0001384	0	0
20	M51	PZ	-.0001384	-.0001384	0	0
21	M40	PZ	-.0008304	-.0008304	0	0
22	M41	PZ	-.0008304	-.0008304	0	0
23	M42	PZ	-.0008304	-.0008304	0	0
24	M43	PZ	-.0008304	-.0008304	0	0
25	M44	PZ	-.0008304	-.0008304	0	0
26	M45	PZ	-.0008304	-.0008304	0	0
27	M46	PZ	-.0008304	-.0008304	0	0
28	M47	PZ	-.0008304	-.0008304	0	0
29	M20	PZ	-.0002768	-.0002768	0	0
30	M21	PZ	-.0002768	-.0002768	0	0
31	M22	PZ	-.0002768	-.0002768	0	0
32	M23	PZ	-.0002768	-.0002768	0	0
33	M24	PZ	-.0002768	-.0002768	0	0
34	M25	PZ	-.0002768	-.0002768	0	0
35	M26	PZ	-.0002768	-.0002768	0	0
36	M27	PZ	-.0002768	-.0002768	0	0
37	M28	PZ	-.0002768	-.0002768	0	0
38	M29	PZ	-.0002768	-.0002768	0	0
39	M30	PZ	-.0002768	-.0002768	0	0
40	M31	PZ	-.0002768	-.0002768	0	0
41	M32	PZ	-.0002768	-.0002768	0	0
42	M33	PZ	-.0002768	-.0002768	0	0
43	M34	PZ	-.0002768	-.0002768	0	0
44	M35	PZ	-.0002768	-.0002768	0	0
45	M36	PZ	-.0002768	-.0002768	0	0
46	M37	PZ	-.0002768	-.0002768	0	0
47	M38	PZ	-.0002768	-.0002768	0	0
48	M39	PZ	-.0002768	-.0002768	0	0

Member Distributed Loads (BLC 6 : Wind Side @ 30 mph)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,...	Start Location[in,%]	End Location[in,%]
1	M9	PX	-.0007612	-.0007612	0	0
2	M10	PX	-.0007612	-.0007612	0	0
3	M11	PX	-.0006228	-.0006228	0	0
4	M12	PX	-.0006228	-.0006228	0	0
5	M13	PX	-.0006228	-.0006228	0	0

Member Distributed Loads (BLC 6 : Wind Side @ 30 mph) (Continued)

	Member Label	Direction	Start Magnitude[k/ft...	End Magnitude[k/ft,...	Start Location[in,%]	End Location[in,%]
6	M14	PX	-.0006228	-.0006228	0	0
7	M15	PX	-.0006228	-.0006228	0	0
8	POSITION_4	PX	-.0006228	-.0006228	0	0
9	POSITION_3	PX	-.0006228	-.0006228	0	0
10	POSITION_2	PX	-.0006228	-.0006228	0	0
11	POSITION_1	PX	-.0006228	-.0006228	0	0
12	M56	PX	-.0006228	-.0006228	0	0
13	M52	PX	-.0002076	-.0002076	0	0
14	M53	PX	-.0002076	-.0002076	0	0
15	M54	PX	-.0002076	-.0002076	0	0
16	M55	PX	-.0002076	-.0002076	0	0
17	M48	PX	-.0001384	-.0001384	0	0
18	M49	PX	-.0001384	-.0001384	0	0
19	M50	PX	-.0001384	-.0001384	0	0
20	M51	PX	-.0001384	-.0001384	0	0
21	M40	PX	-.0008304	-.0008304	0	0
22	M41	PX	-.0008304	-.0008304	0	0
23	M42	PX	-.0008304	-.0008304	0	0
24	M43	PX	-.0008304	-.0008304	0	0
25	M44	PX	-.0008304	-.0008304	0	0
26	M45	PX	-.0008304	-.0008304	0	0
27	M46	PX	-.0008304	-.0008304	0	0
28	M47	PX	-.0008304	-.0008304	0	0
29	M20	PX	-.0002768	-.0002768	0	0
30	M21	PX	-.0002768	-.0002768	0	0
31	M22	PX	-.0002768	-.0002768	0	0
32	M23	PX	-.0002768	-.0002768	0	0
33	M24	PX	-.0002768	-.0002768	0	0
34	M25	PX	-.0002768	-.0002768	0	0
35	M26	PX	-.0002768	-.0002768	0	0
36	M27	PX	-.0002768	-.0002768	0	0
37	M28	PX	-.0002768	-.0002768	0	0
38	M29	PX	-.0002768	-.0002768	0	0
39	M30	PX	-.0002768	-.0002768	0	0
40	M31	PX	-.0002768	-.0002768	0	0
41	M32	PX	-.0002768	-.0002768	0	0
42	M33	PX	-.0002768	-.0002768	0	0
43	M34	PX	-.0002768	-.0002768	0	0
44	M35	PX	-.0002768	-.0002768	0	0
45	M36	PX	-.0002768	-.0002768	0	0
46	M37	PX	-.0002768	-.0002768	0	0
47	M38	PX	-.0002768	-.0002768	0	0
48	M39	PX	-.0002768	-.0002768	0	0

Member Distributed Loads (BLC 9 : DEAD LOAD (ICE))

	Member Label	Direction	Start Magnitude[k/ft...	End Magnitude[k/ft,...	Start Location[in,%]	End Location[in,%]
1	M9	Y	-.009	-.009	0	0
2	M10	Y	-.009	-.009	0	0
3	M11	Y	-.008	-.008	0	0
4	M12	Y	-.008	-.008	0	0
5	M13	Y	-.008	-.008	0	0
6	M14	Y	-.008	-.008	0	0
7	M15	Y	-.008	-.008	0	0
8	POSITION_4	Y	-.008	-.008	0	0
9	POSITION_3	Y	-.008	-.008	0	0
10	POSITION_2	Y	-.008	-.008	0	0

Member Distributed Loads (BLC 9 : DEAD LOAD (ICE)) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,...	Start Location[in,%]	End Location[in,%]
11	POSITION_1	Y	-.008	-.008	0	0
12	M56	Y	-.008	-.008	0	0
13	M52	Y	-.005	-.005	0	0
14	M53	Y	-.005	-.005	0	0
15	M54	Y	-.005	-.005	0	0
16	M55	Y	-.005	-.005	0	0
17	M48	Y	-.005	-.005	0	0
18	M49	Y	-.005	-.005	0	0
19	M50	Y	-.005	-.005	0	0
20	M51	Y	-.005	-.005	0	0
21	M40	Y	-.008	-.008	0	0
22	M41	Y	-.008	-.008	0	0
23	M42	Y	-.008	-.008	0	0
24	M43	Y	-.008	-.008	0	0
25	M44	Y	-.008	-.008	0	0
26	M45	Y	-.008	-.008	0	0
27	M46	Y	-.008	-.008	0	0
28	M47	Y	-.008	-.008	0	0
29	M20	Y	-.011	-.011	0	0
30	M21	Y	-.011	-.011	0	0
31	M22	Y	-.011	-.011	0	0
32	M23	Y	-.011	-.011	0	0
33	M24	Y	-.011	-.011	0	0
34	M25	Y	-.011	-.011	0	0
35	M26	Y	-.011	-.011	0	0
36	M27	Y	-.011	-.011	0	0
37	M28	Y	-.011	-.011	0	0
38	M29	Y	-.011	-.011	0	0
39	M30	Y	-.011	-.011	0	0
40	M31	Y	-.011	-.011	0	0
41	M32	Y	-.011	-.011	0	0
42	M33	Y	-.011	-.011	0	0
43	M34	Y	-.011	-.011	0	0
44	M35	Y	-.011	-.011	0	0
45	M36	Y	-.011	-.011	0	0
46	M37	Y	-.011	-.011	0	0
47	M38	Y	-.011	-.011	0	0
48	M39	Y	-.011	-.011	0	0

Member Distributed Loads (BLC 10 : WIND FRONT (ICE))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,...	Start Location[in,%]	End Location[in,%]
1	M9	PZ	-.004	-.004	0	0
2	M10	PZ	-.004	-.004	0	0
3	M11	PZ	-.004	-.004	0	0
4	M12	PZ	-.004	-.004	0	0
5	M13	PZ	-.004	-.004	0	0
6	M14	PZ	-.004	-.004	0	0
7	M15	PZ	-.004	-.004	0	0
8	POSITION_4	PZ	-.004	-.004	0	0
9	POSITION_3	PZ	-.004	-.004	0	0
10	POSITION_2	PZ	-.004	-.004	0	0
11	POSITION_1	PZ	-.004	-.004	0	0
12	M56	PZ	-.004	-.004	0	0
13	M52	PZ	-.003	-.003	0	0
14	M53	PZ	-.003	-.003	0	0
15	M54	PZ	-.003	-.003	0	0

Member Distributed Loads (BLC 10 : WIND FRONT (ICE)) (Continued)

	Member Label	Direction	Start Magnitude[k/ft...	End Magnitude[k/ft,...	Start Location[in,%]	End Location[in,%]
16	M55	PZ	-.003	-.003	0	0
17	M48	PZ	-.003	-.003	0	0
18	M49	PZ	-.003	-.003	0	0
19	M50	PZ	-.003	-.003	0	0
20	M51	PZ	-.003	-.003	0	0
21	M40	PZ	-.006	-.006	0	0
22	M41	PZ	-.006	-.006	0	0
23	M42	PZ	-.006	-.006	0	0
24	M43	PZ	-.006	-.006	0	0
25	M44	PZ	-.006	-.006	0	0
26	M45	PZ	-.006	-.006	0	0
27	M46	PZ	-.006	-.006	0	0
28	M47	PZ	-.006	-.006	0	0
29	M20	PZ	-.005	-.005	0	0
30	M21	PZ	-.005	-.005	0	0
31	M22	PZ	-.005	-.005	0	0
32	M23	PZ	-.005	-.005	0	0
33	M24	PZ	-.005	-.005	0	0
34	M25	PZ	-.005	-.005	0	0
35	M26	PZ	-.005	-.005	0	0
36	M27	PZ	-.005	-.005	0	0
37	M28	PZ	-.005	-.005	0	0
38	M29	PZ	-.005	-.005	0	0
39	M30	PZ	-.005	-.005	0	0
40	M31	PZ	-.005	-.005	0	0
41	M32	PZ	-.005	-.005	0	0
42	M33	PZ	-.005	-.005	0	0
43	M34	PZ	-.005	-.005	0	0
44	M35	PZ	-.005	-.005	0	0
45	M36	PZ	-.005	-.005	0	0
46	M37	PZ	-.005	-.005	0	0
47	M38	PZ	-.005	-.005	0	0
48	M39	PZ	-.005	-.005	0	0

Member Distributed Loads (BLC 11 : WIND SIDE (ICE))

	Member Label	Direction	Start Magnitude[k/ft...	End Magnitude[k/ft,...	Start Location[in,%]	End Location[in,%]
1	M9	PX	-.004	-.004	0	0
2	M10	PX	-.004	-.004	0	0
3	M11	PX	-.004	-.004	0	0
4	M12	PX	-.004	-.004	0	0
5	M13	PX	-.004	-.004	0	0
6	M14	PX	-.004	-.004	0	0
7	M15	PX	-.004	-.004	0	0
8	POSITION_4	PX	-.004	-.004	0	0
9	POSITION_3	PX	-.004	-.004	0	0
10	POSITION_2	PX	-.004	-.004	0	0
11	POSITION_1	PX	-.004	-.004	0	0
12	M56	PX	-.004	-.004	0	0
13	M52	PX	-.003	-.003	0	0
14	M53	PX	-.003	-.003	0	0
15	M54	PX	-.003	-.003	0	0
16	M55	PX	-.003	-.003	0	0
17	M48	PX	-.003	-.003	0	0
18	M49	PX	-.003	-.003	0	0
19	M50	PX	-.003	-.003	0	0
20	M51	PX	-.003	-.003	0	0

Member Distributed Loads (BLC 11 : WIND SIDE (ICE)) (Continued)

	Member Label	Direction	Start Magnitude[k/ft...	End Magnitude[k/ft,...	Start Location[in,%]	End Location[in,%]
21	M40	PX	-.006	-.006	0	0
22	M41	PX	-.006	-.006	0	0
23	M42	PX	-.006	-.006	0	0
24	M43	PX	-.006	-.006	0	0
25	M44	PX	-.006	-.006	0	0
26	M45	PX	-.006	-.006	0	0
27	M46	PX	-.006	-.006	0	0
28	M47	PX	-.006	-.006	0	0
29	M20	PX	-.005	-.005	0	0
30	M21	PX	-.005	-.005	0	0
31	M22	PX	-.005	-.005	0	0
32	M23	PX	-.005	-.005	0	0
33	M24	PX	-.005	-.005	0	0
34	M25	PX	-.005	-.005	0	0
35	M26	PX	-.005	-.005	0	0
36	M27	PX	-.005	-.005	0	0
37	M28	PX	-.005	-.005	0	0
38	M29	PX	-.005	-.005	0	0
39	M30	PX	-.005	-.005	0	0
40	M31	PX	-.005	-.005	0	0
41	M32	PX	-.005	-.005	0	0
42	M33	PX	-.005	-.005	0	0
43	M34	PX	-.005	-.005	0	0
44	M35	PX	-.005	-.005	0	0
45	M36	PX	-.005	-.005	0	0
46	M37	PX	-.005	-.005	0	0
47	M38	PX	-.005	-.005	0	0
48	M39	PX	-.005	-.005	0	0

Member Area Loads

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
No Data to Print ...						

Envelope Member End Reactions

	Member	Member End		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[k-ft]	LC	y-y Mo...	LC	z-z Mo...	LC
1	M1	I	max	1.183	67	-.065	45	.203	65	-.024	21	.069	24	-.06	48
2			min	-.182	24	-.493	61	.01	22	-.097	61	-.166	67	-.338	61
3		J	max	1.183	67	-.065	45	.203	65	-.024	21	.098	25	.016	14
4			min	-.182	24	-.493	61	.01	22	-.097	61	-.098	19	-.016	32
5	M2	I	max	0	56	.003	56	0	62	0	54	0	56	.002	56
6			min	0	62	.001	25	0	56	0	61	0	62	0	25
7		J	max	0	56	.003	56	0	62	0	54	0	56	0	59
8			min	0	62	.001	25	0	56	0	61	0	62	0	24
9	M3	I	max	0	56	.003	56	0	56	0	66	0	62	.002	56
10			min	0	62	.001	25	0	62	0	19	0	56	0	25
11		J	max	0	56	.003	56	0	56	0	66	0	62	0	65
12			min	0	62	.001	25	0	62	0	19	0	56	0	23
13	M4	I	max	2.389	57	.79	59	-.069	28	.034	63	.098	25	.088	63
14			min	.196	26	.281	29	-.4	59	.005	44	-.098	19	.022	22
15		J	max	2.389	57	.79	59	-.069	28	.034	63	.025	26	-.162	28
16			min	.196	26	.281	29	-.4	59	.005	44	-.3	57	-.454	59
17	M5	I	max	.829	30	-.099	49	.033	29	-.022	24	.271	12	-.057	44
18			min	-1.543	12	-.642	66	-.214	60	-.147	56	-.185	30	-.391	65
19		J	max	.829	30	-.099	49	.033	29	-.022	24	.181	25	.051	56

Envelope Member End Reactions (Continued)

	Member	Member End		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[k-ft]	LC	y-y Mo...	LC	z-z Mo...	LC
20			min	-1.543	12	-.642	66	-.214	60	-.147	56	-.184	7	-.008	25
21	M6	I	max	0	56	.003	56	0	62	0	54	0	56	.002	56
22			min	0	62	.001	25	0	56	0	59	0	62	0	25
23		J	max	0	56	.003	56	0	62	0	54	0	56	0	60
24			min	0	62	.001	25	0	56	0	59	0	62	0	20
25	M7	I	max	0	56	.003	56	0	56	0	67	0	62	.002	56
26			min	0	62	.001	25	0	62	0	44	0	56	0	25
27		J	max	0	56	.003	56	0	56	0	67	0	62	0	63
28			min	0	62	.001	25	0	62	0	44	0	56	0	24
29	M8	I	max	.099	20	1.175	56	.403	66	.1	56	.181	25	.118	67
30			min	-2.394	64	.284	26	.046	22	0	25	-.184	7	.021	24
31		J	max	.099	20	1.175	56	.403	66	.1	56	.304	62	-.164	29
32			min	-2.394	64	.284	26	.046	22	0	25	-.113	19	-.687	58
33	M9	I	max	0	67	0	67	0	67	0	67	0	67	0	67
34			min	0	1	0	1	0	1	0	1	0	1	0	1
35		J	max	0	67	0	67	0	67	0	67	0	67	0	67
36			min	0	1	0	1	0	1	0	1	0	1	0	1
37	M10	I	max	0	67	0	67	0	67	0	67	0	67	0	67
38			min	0	1	0	1	0	1	0	1	0	1	0	1
39		J	max	0	67	.375	4	0	67	0	67	0	67	0	67
40			min	0	1	0	1	0	1	0	1	0	1	0	1
41	M11	I	max	.497	23	.026	67	.014	24	.064	30	0	67	0	67
42			min	-.508	17	.007	19	-.014	18	-.071	12	0	1	0	1
43		J	max	.504	23	-.007	54	.014	30	.064	30	0	67	0	67
44			min	-.515	17	-.026	56	-.014	12	-.071	12	0	1	0	1
45	M12	I	max	1.332	57	1.156	59	.215	57	.057	63	.041	25	-.08	29
46			min	-.151	26	.103	30	-.035	26	.012	19	-.052	7	-.206	59
47		J	max	1.653	58	-.023	22	.02	26	.031	62	.061	8	.281	60
48			min	.166	27	-1.018	67	-.201	57	.008	43	-.056	26	.048	30
49	M13	I	max	.686	67	.635	64	.06	24	-.023	21	.051	7	-.032	47
50			min	-.243	24	.044	54	-.105	67	-.09	61	-.042	25	-.165	61
51		J	max	.857	66	.048	53	.088	67	-.019	21	.068	12	.177	64
52			min	.049	48	-.454	66	-.043	24	-.077	61	-.055	30	.038	19
53	M14	I	max	.656	30	.327	57	.19	12	-.021	24	.081	19	-.036	46
54			min	-.795	12	-.007	64	-.16	30	-.115	67	-.089	13	-.208	65
55		J	max	.08	67	.437	67	.132	30	-.017	24	.148	24	.147	57
56			min	-.45	60	-.016	17	-.15	12	-.106	67	-.162	18	.033	24
57	M15	I	max	.375	20	.246	18	.083	20	.085	56	.102	13	-.081	28
58			min	-.717	14	-.106	62	-.164	14	.008	25	-.092	19	-.354	56
59		J	max	.022	58	.672	67	.123	15	.082	56	.096	20	.148	67
60			min	-.452	15	-.101	10	-.054	21	.004	25	-.098	14	.047	24
61	POSITION...	I	max	0	67	0	21	0	18	0	67	0	67	0	67
62			min	0	1	0	65	0	60	0	1	0	1	0	1
63		J	max	0	67	0	59	0	58	0	67	0	67	0	67
64			min	0	1	0	16	0	16	0	1	0	1	0	1
65	POSITION...	I	max	0	67	0	10	0	7	0	67	0	67	0	67
66			min	0	1	0	61	0	62	0	1	0	1	0	1
67		J	max	0	67	0	59	0	57	0	67	0	67	0	67
68			min	0	1	0	28	0	14	0	1	0	1	0	1
69	POSITION...	I	max	0	67	0	10	.001	7	0	67	0	67	0	67
70			min	0	1	0	65	-.001	13	0	1	0	1	0	1
71		J	max	0	67	0	59	0	7	0	67	0	67	0	67
72			min	0	1	0	16	0	13	0	1	0	1	0	1
73	POSITION...	I	max	.375	54	0	22	0	32	0	67	0	67	0	67
74			min	0	1	-.002	40	0	14	0	1	0	1	0	1
75		J	max	0	67	0	59	0	18	0	67	0	67	0	67
76			min	0	1	0	28	0	62	0	1	0	1	0	1

Envelope Member End Reactions (Continued)

	Member	Member End		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[k-ft]	LC	y-y Mo...	LC	z-z Mo...	LC
77	M20	I	max	0	25	0	62	-.001	54	0	67	0	67	0	62
78			min	0	7	0	56	-.003	56	0	1	0	19	0	56
79		J	max	0	25	0	56	.003	67	0	67	0	67	0	62
80			min	0	7	0	62	.001	19	0	1	0	19	0	56
81	M21	I	max	0	25	0	62	-.001	54	0	67	0	67	0	62
82			min	0	7	0	56	-.003	56	0	1	0	19	0	56
83		J	max	0	25	0	56	.003	67	0	67	0	67	0	62
84			min	0	7	0	62	.001	19	0	1	0	19	0	56
85	M22	I	max	1.022	67	.136	24	-.064	45	-.081	22	-.008	49	.069	24
86			min	-.122	24	-.624	67	-.481	61	-.293	61	-.195	57	-.166	67
87		J	max	1.022	67	.136	24	-.063	45	-.081	22	-.016	49	.055	25
88			min	-.122	24	-.623	67	-.479	61	-.293	61	-.25	61	-.099	7
89	M23	I	max	2.068	57	1.253	57	-.279	29	.317	60	-.109	27	.3	57
90			min	.205	26	.061	26	-.769	59	.115	30	-.333	56	-.025	26
91		J	max	2.067	57	1.252	57	-.278	29	.317	60	-.142	27	.155	56
92			min	.205	26	.062	26	-.767	59	.115	30	-.42	56	-.036	25
93	M24	I	max	0	13	0	62	-.001	54	0	67	0	67	0	62
94			min	0	19	0	56	-.003	56	0	1	0	19	0	56
95		J	max	0	13	0	56	.003	67	0	67	0	67	0	62
96			min	0	19	0	62	.001	19	0	1	0	19	0	56
97	M25	I	max	0	25	0	62	-.001	54	0	67	0	67	0	62
98			min	0	7	0	56	-.003	56	0	1	0	19	0	56
99		J	max	0	25	0	56	.003	67	0	67	0	67	0	62
100			min	0	7	0	62	.001	19	0	1	0	19	0	56
101	M26	I	max	.645	30	.883	12	-.098	50	-.082	24	.006	43	.271	12
102			min	-1.276	12	-.519	30	-.646	66	-.364	66	-.204	64	-.185	30
103		J	max	.645	30	.883	12	-.097	50	-.082	24	-.005	43	.171	13
104			min	-1.276	12	-.519	30	-.643	66	-.364	66	-.279	64	-.128	19
105	M27	I	max	.029	20	.118	20	-.287	26	.521	56	-.107	19	.113	19
106			min	-2.081	64	-1.259	61	-1.19	56	.111	26	-.466	59	-.304	62
107		J	max	.029	20	.118	20	-.286	26	.521	56	-.141	19	.106	19
108			min	-2.081	64	-1.259	61	-1.187	56	.111	26	-.601	59	-.191	13
109	M28	I	max	.981	18	.579	18	.4	57	-.055	24	0	67	0	67
110			min	-.934	24	-.548	24	.05	48	-.261	57	0	1	0	1
111		J	max	.982	18	.579	18	.404	57	-.055	24	.077	57	.104	24
112			min	-.934	24	-.548	24	.051	48	-.261	57	.01	48	-.11	18
113	M29	I	max	.592	20	.378	14	.567	66	.252	67	0	67	0	67
114			min	-.659	14	-.336	20	.199	23	.059	24	0	1	0	1
115		J	max	.592	20	.379	14	.571	66	.252	67	.108	66	.064	20
116			min	-.659	14	-.336	20	.2	23	.059	24	.038	23	-.072	14
117	M30	I	max	.362	30	.209	30	.584	64	-.064	20	0	67	0	67
118			min	-.403	12	-.237	12	.065	54	-.269	64	0	1	0	1
119		J	max	.362	30	.209	30	.588	64	-.064	20	.111	64	.045	12
120			min	-.403	12	-.237	12	.066	54	-.269	64	.013	54	-.04	30
121	M31	I	max	.416	8	.19	26	1.189	59	.352	60	0	67	0	67
122			min	-.332	26	-.245	8	.191	29	.064	30	0	1	0	1
123		J	max	.416	8	.191	26	1.192	59	.352	60	.227	59	.047	8
124			min	-.332	26	-.245	8	.193	29	.064	30	.037	29	-.036	26
125	M32	I	max	.145	18	.267	18	.711	57	-.034	24	-.015	24	.106	24
126			min	-.051	24	-.222	24	.166	24	-.162	57	-.071	57	-.112	18
127		J	max	.145	18	.267	18	.715	57	-.034	24	.065	57	.148	24
128			min	-.051	24	-.222	24	.167	24	-.162	57	.008	48	-.163	18
129	M33	I	max	.001	30	.077	30	1.002	64	-.039	20	-.018	19	.045	12
130			min	-.262	56	-.121	12	.173	43	-.158	64	-.087	64	-.041	30
131		J	max	.001	30	.078	30	1.006	64	-.039	20	.104	64	.069	12
132			min	-.262	56	-.122	12	.175	43	-.158	64	.01	54	-.055	30
133	M34	I	max	-.035	20	.155	63	1.777	59	.189	60	-.02	30	.048	8

Envelope Member End Reactions (Continued)

	Member	Member End		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[k-ft]	LC	y-y Mo...	LC	z-z Mo...	LC
134			min	-.503	65	-.078	20	.279	29	.036	30	-.129	60	-.036	26
135		J	max	-.035	20	.155	63	1.781	59	.189	60	.21	59	.062	8
136			min	-.503	65	-.078	20	.28	29	.036	30	.032	29	-.057	26
137	M35	I	max	.164	8	.133	26	.654	67	.153	56	-.019	24	.064	20
138			min	-.022	64	-.173	8	.283	24	.032	24	-.053	67	-.074	14
139		J	max	.164	8	.133	26	.658	67	.153	56	.072	66	.096	20
140			min	-.022	64	-.173	8	.284	24	.032	24	.033	23	-.098	14
141	M36	I	max	.034	20	.119	20	-.548	30	.253	56	.053	56	.103	19
142			min	-1.705	61	-1.108	61	-2.717	56	.049	26	.002	26	-.184	13
143		J	max	.034	20	.118	20	-.548	30	.253	56	-.056	19	.092	19
144			min	-1.705	61	-1.107	61	-2.715	56	.049	26	-.264	59	-.101	13
145	M37	I	max	.375	30	.701	12	-.192	54	-.043	24	.052	67	.164	13
146			min	-.816	12	-.409	30	-1.487	65	-.205	67	.007	25	-.123	19
147		J	max	.375	30	.701	12	-.191	54	-.043	24	-.002	54	.089	13
148			min	-.816	12	-.409	30	-1.485	65	-.205	67	-.121	64	-.081	19
149	M38	I	max	.656	57	.117	24	-.168	47	-.044	21	.026	63	.053	25
150			min	-.078	24	-.465	57	-1.05	61	-.162	61	.006	22	-.096	7
151		J	max	.656	57	.117	24	-.167	47	-.044	21	-.004	48	.042	25
152			min	-.078	24	-.465	57	-1.047	61	-.162	61	-.096	61	-.05	7
153	M39	I	max	1.043	57	.865	57	-.563	26	.153	62	.009	15	.147	56
154			min	.133	26	.035	26	-1.168	59	.052	19	-.017	56	-.035	25
155		J	max	1.043	57	.864	57	-.563	26	.153	62	-.058	27	.052	7
156			min	.134	26	.036	26	-1.166	59	.052	19	-.151	56	-.04	25
157	M40	I	max	.898	30	.307	57	.049	18	-.01	24	.002	12	.171	57
158			min	-.95	12	.06	24	-.048	24	-.051	57	-.002	30	.04	24
159		J	max	.9	30	.303	57	.05	18	-.01	24	.016	18	.065	63
160			min	-.952	12	.059	24	-.049	24	-.051	57	-.015	24	.001	48
161	M41	I	max	.391	18	.415	64	.018	30	-.012	20	0	24	.223	64
162			min	-.336	24	.072	19	-.019	12	-.047	64	-.001	56	.043	43
163		J	max	.393	18	.411	64	.019	30	-.012	20	.006	30	.078	64
164			min	-.339	24	.071	19	-.02	12	-.047	64	-.006	12	.006	54
165	M42	I	max	.778	57	.588	62	.014	26	.05	62	.003	56	.388	59
166			min	-.236	26	.074	19	-.024	57	.01	30	0	26	.064	29
167		J	max	.779	57	.583	62	.015	26	.05	62	.005	26	.184	59
168			min	-.238	26	.073	19	-.024	57	.01	30	-.007	8	.034	29
169	M43	I	max	.482	20	.162	7	.034	14	.047	56	0	20	.184	67
170			min	-.734	14	.022	50	-.026	20	.008	24	-.002	14	.065	23
171		J	max	.485	20	.16	7	.035	14	.047	56	.01	14	.156	66
172			min	-.737	14	.02	50	-.027	20	.008	24	-.009	20	.036	22
173	M44	I	max	.054	21	1.535	58	.005	22	.049	56	.007	18	-.085	20
174			min	-.529	15	.261	30	-.029	65	.008	25	-.004	24	-.268	56
175		J	max	.056	21	1.531	58	.004	21	.049	56	.003	19	-.16	30
176			min	-.532	15	.26	30	-.029	64	.008	25	-.007	13	-.702	58
177	M45	I	max	.291	30	-.093	43	.027	12	-.009	24	.006	30	-.033	43
178			min	-.494	12	-.843	65	-.018	30	-.047	67	-.007	12	-.364	65
179		J	max	.289	30	-.094	43	.026	11	-.009	24	.003	9	-.007	47
180			min	-.492	12	-.847	65	-.017	29	-.047	67	-.002	27	-.139	61
181	M46	I	max	.515	66	.577	57	.004	23	-.01	21	.002	14	-.008	54
182			min	-.057	23	.105	48	-.018	67	-.037	61	-.001	20	-.152	64
183		J	max	.516	66	.573	57	.004	24	-.01	21	.002	24	-.038	48
184			min	-.059	23	.104	48	-.019	67	-.037	61	-.004	67	-.303	61
185	M47	I	max	1.1	58	-.192	3	.043	57	.029	62	.001	26	-.161	28
186			min	.057	27	-.455	2	.002	26	.009	19	-.008	57	-.434	56
187		J	max	1.099	58	-.193	3	.042	57	.029	62	.005	62	-.079	29
188			min	.06	27	-.456	2	.003	27	.009	19	0	30	-.318	59
189	M48	I	max	.592	64	.005	65	.005	62	0	29	0	67	0	67
190			min	-.067	18	-.005	59	-.005	56	0	59	0	1	0	1

Envelope Member End Reactions (Continued)

	Member	Member End		Axial[k]	LC	y Shear...	LC	z Shear...	LC	Torque[k-ft]	LC	y-y Mo...	LC	z-z Mo...	LC
191		J	max	.613	64	.005	59	.005	56	0	29	0	67	0	67
192			min	-.063	30	-.005	65	-.005	62	0	59	0	1	0	1
193	M49	I	max	.559	66	.005	65	.005	62	0	26	0	67	0	67
194			min	-.029	18	-.005	59	-.005	56	0	4	0	1	0	1
195		J	max	.58	66	.005	59	.005	56	0	26	0	67	0	67
196			min	-.026	30	-.005	65	-.005	62	0	4	0	1	0	1
197	M50	I	max	1.179	59	.005	65	.005	62	0	28	0	67	0	67
198			min	-.091	18	-.005	59	-.005	56	0	4	0	1	0	1
199		J	max	1.2	59	.005	59	.005	56	0	28	0	67	0	67
200			min	-.087	18	-.005	65	-.005	62	0	4	0	1	0	1
201	M51	I	max	1.091	66	.005	65	.005	62	0	28	0	67	0	67
202			min	-.051	10	-.005	59	-.005	56	0	4	0	1	0	1
203		J	max	1.112	66	.005	59	.005	56	0	28	0	67	0	67
204			min	-.048	22	-.005	65	-.005	62	0	4	0	1	0	1
205	M52	I	max	-.165	54	.013	67	.005	64	0	29	0	67	0	67
206			min	-1.853	64	-.003	23	-.005	8	-.002	60	0	1	0	1
207		J	max	-.161	54	.003	24	.005	58	0	29	0	67	0	67
208			min	-1.834	65	-.013	66	-.005	14	-.002	60	0	1	0	1
209	M53	I	max	.922	57	.013	60	.005	63	0	25	0	67	0	67
210			min	0	56	-.003	29	-.005	8	-.002	57	0	1	0	1
211		J	max	.897	57	.003	30	.005	58	0	25	0	67	0	67
212			min	0	56	-.013	60	-.005	14	-.002	57	0	1	0	1
213	M54	I	max	.817	2	.007	15	.005	30	0	20	0	67	0	67
214			min	0	3	-.003	20	-.005	11	0	14	0	1	0	1
215		J	max	.81	2	.003	21	.005	24	0	20	0	67	0	67
216			min	0	3	-.007	14	-.005	17	0	14	0	1	0	1
217	M55	I	max	-.437	30	.013	58	.005	60	0	27	0	67	0	67
218			min	-3.487	56	-.003	26	-.005	17	-.001	4	0	1	0	1
219		J	max	-.44	30	.003	27	.005	67	0	27	0	67	0	67
220			min	-3.505	56	-.013	57	-.005	11	-.001	4	0	1	0	1
221	M56	I	max	.593	30	.092	67	.047	23	.025	4	0	67	0	67
222			min	-.609	12	.024	19	-.047	17	-.011	26	0	1	0	1
223		J	max	.618	30	-.024	54	.047	29	.025	4	0	67	0	67
224			min	-.634	12	-.092	56	-.047	11	-.011	26	0	1	0	1

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N14	max	.485	23	1.852	56	.577	19	0	67	0	67	0	67
2		min	-1.115	66	.432	26	-2.659	62	0	1	0	1	0	1
3	N9	max	1.036	4	1.248	63	2.549	56	0	67	0	67	0	67
4		min	-.119	28	.427	20	.052	25	0	1	0	1	0	1
5	N60	max	0	67	0	67	0	67	0	67	0	67	0	67
6		min	0	1	0	1	0	1	0	1	0	1	0	1
7	N61	max	.401	30	.093	62	.473	30	.018	4	0	67	.018	4
8		min	-.411	12	.023	30	-.484	12	-.008	26	0	1	-.008	26
9	N62	max	.392	23	.026	65	.316	23	.049	30	0	67	.041	30
10		min	-.403	17	.007	24	-.321	17	-.055	12	0	1	-.046	12
11	Totals:	max	1.33	22	3.094	67	2.247	19						
12		min	-1.33	16	.915	19	-2.247	13						

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

	Member	Shape	Code ...	Loc[in]	LC	Shear Ch...	Loc[in]	Dir	LC	phi*Pnc ...	phi*Pnt [...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	M27	.625 x 3.5"	.693	1.393	62	.831	1.393	y	56	70.653	70.875	.923	5.168	1...	H1-1b
2	M26	.625 x 3.5"	.322	1.396	64	.571	0	y	64	70.652	70.875	.923	5.168	1...	H1-1b
3	M31	.625 x 3.5"	.252	2.284	58	.541	2.284	y	60	70.279	70.875	.923	5.168	1...	H1-1b
4	M23	.625 x 3.5"	.499	1.393	56	.526	1.393	y	59	70.653	70.875	.923	5.168	1...	H1-1b
5	M22	.625 x 3.5"	.292	1.396	57	.463	1.396	y	63	70.652	70.875	.923	5.168	1...	H1-1b
6	M36	.625 x 3.5"	.302	1.393	62	.418	1.393	y	56	70.653	70.875	.923	5.168	1...	H1-1b
7	M30	.625 x 3.5"	.123	2.284	64	.413	0	y	64	70.279	70.875	.923	5.168	1...	H1-1b
8	M28	.625 x 3.5"	.089	2.284	57	.403	0	y	57	70.279	70.875	.923	5.168	1...	H1-1b
9	M29	.625 x 3.5"	.124	2.284	64	.387	2.284	y	67	70.279	70.875	.923	5.168	1...	H1-1b
10	M37	.625 x 3.5"	.139	1.396	64	.327	0	y	64	70.652	70.875	.923	5.168	1...	H1-1b
11	M34	.625 x 3.5"	.232	2.284	58	.294	0	y	62	70.279	70.875	.923	5.168	1...	H1-1b
12	M39	.625 x 3.5"	.180	1.393	56	.261	1.393	y	59	70.653	70.875	.923	5.168	1...	H1-1b
13	M38	.625 x 3.5"	.113	1.396	57	.260	1.396	y	63	70.652	70.875	.923	5.168	1...	H1-1b
14	M32	.625 x 3.5"	.083	0	57	.250	0	y	57	70.279	70.875	.923	5.168	1...	H1-1b
15	M33	.625 x 3.5"	.120	2.284	64	.246	0	y	64	70.279	70.875	.923	5.168	1...	H1-1b
16	M44	.625 x 2 Flat	.427	3.4	62	.236	0	y	56	39.75	40.5	.527	1.688	1...	H1-1b
17	M35	.625 x 3.5"	.086	2.284	64	.234	2.284	y	67	70.279	70.875	.923	5.168	1...	H1-1b
18	M45	.625 x 2 Flat	.220	0	64	.190	3.403	y	66	39.749	40.5	.527	1.688	1...	H1-1b
19	M42	.625 x 2 Flat	.244	0	59	.182	0	y	62	39.365	40.5	.527	1.688	1...	H1-1b
20	M40	.625 x 2 Flat	.105	0	62	.167	0	y	57	39.365	40.5	.527	1.688	1...	H1-1b
21	M41	.625 x 2 Flat	.138	0	66	.162	0	y	64	39.365	40.5	.527	1.688	1...	H1-1b
22	M12	PIPE_2.0	.427	2.188	58	.155	0		60	29.81	32.13	1.872	1.872	2...	H1-1b
23	M43	.625 x 2 Flat	.112	0	65	.143	0	y	56	39.365	40.5	.527	1.688	1...	H1-1b
24	M46	.625 x 2 Flat	.188	3.403	57	.143	0	y	63	39.749	40.5	.527	1.688	1...	H1-1b
25	M9	PIPE_2.5	.263	45.3...	17	.120	103.1...		13	41.696	50.715	3.596	3.596	1...	H1-1b
26	M15	PIPE_2.0	.326	2.188	64	.119	28.125		67	29.81	32.13	1.872	1.872	2...	H1-1b
27	M13	PIPE_2.0	.229	2.188	66	.117	0		64	29.81	32.13	1.872	1.872	2...	H1-1b
28	M14	PIPE_2.0	.209	2.188	62	.112	27.813		67	29.81	32.13	1.872	1.872	2...	H1-1b
29	M47	.625 x 2 Flat	.285	0	56	.110	3.4	y	62	39.75	40.5	.527	1.688	1...	H1-1b
30	M10	PIPE_2.5	.209	104....	65	.078	46.875		11	41.696	50.715	3.596	3.596	2...	H1-1b
31	POSITION_4	PIPE_2.0	.110	85	12	.078	85		11	9.837	32.13	1.872	1.872	2...	H1-1b
32	POSITION_1	PIPE_2.0	.278	46.25	13	.067	46.25		18	9.837	32.13	1.872	1.872	3...	H1-1b
33	POSITION_2	PIPE_2.0	.593	45	7	.048	46.25		12	9.837	32.13	1.872	1.872	2...	H1-1b
34	M11	PIPE_2.0	.020	51.4...	23	.045	0		12	25.77	32.13	1.872	1.872	1...	H1-1b*
35	POSITION_3	PIPE_2.0	.222	46.25	7	.042	46.25		11	9.837	32.13	1.872	1.872	2...	H1-1b
36	M56	PIPE_2.0	.212	90.9...	67	.024	0		57	4.279	32.13	1.872	1.872	1...	H1-1b
37	M52	.75 Dia.	.129	0	64	.017	0		59	1.404	14.314	.179	.179	1...	H1-1b*
38	M53	.75 Dia.	.000	0	67	.014	50		57	1.404	14.314	.179	.179	1	H1-1a
39	M51	.625 Dia._H...	.622	21.6...	66	.012	0		4	1.88	9.94	.104	.104	1	H1-1a
40	M49	.625 Dia._H...	.339	21.6...	66	.012	0		4	1.88	9.94	.104	.104	1	H1-1a
41	M48	.625 Dia._H...	.357	21.6...	64	.010	0		59	1.88	9.94	.104	.104	1	H1-1a
42	M55	.75 Dia.	.245	50	56	.010	0		58	1.404	14.314	.179	.179	1...	H1-1a*
43	M50	.625 Dia._H...	.669	21.6...	59	.008	0		59	1.88	9.94	.104	.104	1...	H1-1a
44	M54	.75 Dia.	.000	0	67	.005	50		14	1.404	14.314	.179	.179	1	H1-1a
45	M25	.625 x 3.5"	.000	3.625	62	.000	3.625	z	67	69.385	70.875	.923	5.168	2...	H1-1b
46	M21	.625 x 3.5"	.000	3.625	62	.000	3.625	z	67	69.385	70.875	.923	5.168	2...	H1-1b
47	M24	.625 x 3.5"	.000	0	62	.000	0	z	67	69.385	70.875	.923	5.168	2...	H1-1b
48	M20	.625 x 3.5"	.000	0	62	.000	0	z	67	69.385	70.875	.923	5.168	2...	H1-1b

APPENDIX D

ADDITIONAL CALCULATIONS

USA ENGINEERING

Project Name: 22-00394
Date: 3/31/2022
Engineer: NH
Antenna Mount Model: Site Pro

Single Bolt - Pinned Connection

DESIGN PARAMETERS:

RISA Reactions

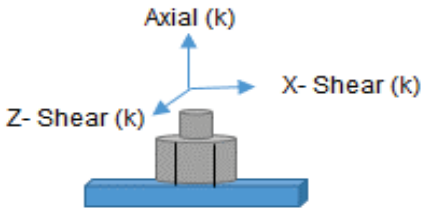
Axial (k)	1.852
X-Shear (k)	2.689
Z-Shear (k)	1.115

Bolt Design

Diameter (in)	3/4
Material	Group A
Thread Cond. / Loading	Group A - N / S
Clear Distance, l_c (in)	1.123

Connected Element Design

Thickness, t (in)	0.375
Specified Min. Yield Stress, F_y (ksi)	36
Specified Min. Tensile Strength, F_u (ksi)	58



RESULTS:

Shear Bolt Capacity

Design Capacity, V_{ult} (k)	17.9
Required Capacity, V_{max} (k)	2.911
16.3%	PASS

Bearing Strength at Bolt Holes

Design Bearing Strength, ΦR_n (k)	21.9827
13.2%	PASS

Tensile Bolt Capacity

Design Capacity, T_{ult} (k)	29.8
Required Capacity, T_{max} (k)	1.852
6.2%	PASS

Combined Tensile & Shear

$(T_{max} / T_{ult})^{5/3} + (V_{max} / V_{ult})^{5/3} \leq 1.0$	0.0582
5.8%	PASS

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: CTHA534A

Crown Somers Lattice Tower
126 Pioneer Heights Road
Somers, Connecticut 06071

April 21, 2022

EBI Project Number: 6222002669

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**28.73%**

21 B Street, Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

April 21, 2022

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

Emissions Analysis for Site: CTHA534A - Crown Somers Lattice Tower

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **126 Pioneer Heights Road** in **Somers, 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 126 Pioneer Heights Road in Somers, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

4) 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.

5) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 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 Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Commscope VV-65A-R1 for the 1900 MHz / 2100 MHz / 2100 MHz channel(s) in Sector A, the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Commscope VV-65A-R1 for the 1900 MHz / 2100 MHz / 2100 MHz channel(s) in Sector B, the Ericsson AIR 6419 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAALL24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Commscope VV-65A-R1 for the 1900 MHz / 2100 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all

calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

14) The antenna mounting height centerline of the proposed antennas is 114 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:	Ericsson AIR 6419	Make / Model:	Ericsson AIR 6419	Make / Model:	Ericsson AIR 6419
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:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd	Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd	Gain:	22.05 dBd / 15.55 dBd / 22.05 dBd / 15.55 dBd
Height (AGL):	114 feet	Height (AGL):	114 feet	Height (AGL):	114 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240.00 Watts	Total TX Power (W):	240.00 Watts	Total TX Power (W):	240.00 Watts
ERP (W):	31,011.95	ERP (W):	31,011.95	ERP (W):	31,011.95
Antenna A1 MPE %:	**9.56%**	Antenna B1 MPE %:	**9.56%**	Antenna C1 MPE %:	**9.56%**
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):	114 feet	Height (AGL):	114 feet	Height (AGL):	114 feet
Channel Count:	5	Channel Count:	5	Channel Count:	5
Total TX Power (W):	200.00 Watts	Total TX Power (W):	200.00 Watts	Total TX Power (W):	200.00 Watts
ERP (W):	4,151.83	ERP (W):	4,151.83	ERP (W):	4,151.83
Antenna A2 MPE %:	**3.05%**	Antenna B2 MPE %:	**3.05%**	Antenna C2 MPE %:	**3.05%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Commscope VV-65A-R1	Make / Model:	Commscope VV-65A-R1	Make / Model:	Commscope VV-65A-R1
Frequency Bands:	1900 MHz / 2100 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz / 2100 MHz
Gain:	15.55 dBd / 16.05 dBd / 16.05 dBd	Gain:	15.55 dBd / 16.05 dBd / 16.05 dBd	Gain:	15.55 dBd / 16.05 dBd / 16.05 dBd
Height (AGL):	114 feet	Height (AGL):	114 feet	Height (AGL):	114 feet
Channel Count:	6	Channel Count:	6	Channel Count:	6
Total TX Power (W):	300.00 Watts	Total TX Power (W):	300.00 Watts	Total TX Power (W):	300.00 Watts
ERP (W):	11,555.97	ERP (W):	11,555.97	ERP (W):	11,555.97
Antenna A3 MPE %:	**3.56%**	Antenna B3 MPE %:	**3.56%**	Antenna C3 MPE %:	**3.56%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector A):	16.17%
Dish	0.8%
AT&T	3.06%
Nextel	0.26%
Verizon	7.73%
Sprint	0.71%
Site Total MPE % :	28.73%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	16.17%
T-Mobile Sector B Total:	16.17%
T-Mobile Sector C Total:	16.17%
Site Total MPE % :	28.73%

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 2500 MHz LTE 1C & 2C Traffic	1	9619.47	114.0	29.65	2500 MHz LTE 1C & 2C Traffic	1000	2.96%
T-Mobile 2500 MHz LTE 1C & 2C Broadcast	1	717.84	114.0	2.21	2500 MHz LTE 1C & 2C Broadcast	1000	0.22%
T-Mobile 2500 MHz NR Traffic	1	19238.94	114.0	59.30	2500 MHz NR Traffic	1000	5.93%
T-Mobile 2500 MHz NR Broadcast	1	1435.69	114.0	4.43	2500 MHz NR Broadcast	1000	0.44%
T-Mobile 600 MHz LTE	2	591.73	114.0	3.65	600 MHz LTE	400	0.91%
T-Mobile 600 MHz NR	1	1577.94	114.0	4.86	600 MHz NR	400	1.22%
T-Mobile 700 MHz LTE	2	695.22	114.0	4.29	700 MHz LTE	467	0.92%
T-Mobile 1900 MHz LTE	2	2153.53	114.0	13.28	1900 MHz LTE	1000	1.33%
T-Mobile 2100 MHz UMTS	2	1208.15	114.0	7.45	2100 MHz UMTS	1000	0.74%
T-Mobile 2100 MHz LTE	2	2416.30	114.0	14.90	2100 MHz LTE	1000	1.49%
						Total:	**16.17%**

• 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:	16.17%
Sector B:	16.17%
Sector C:	16.17%
T-Mobile Maximum MPE % (Sector A):	16.17%
Site Total:	28.73%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **28.73%** 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.

T-Mobile

METRO PCS SITE NUMBER: CTHA534A
METRO PCS SITE NAME: CROWN SOMERS LATTICE TOWER
SITE TYPE: SELF-SUPPORT TOWER
TOWER HEIGHT: 161'-5"

BUSINESS UNIT #: 806378
SITE ADDRESS: 126 PIONEER HEIGHTS RD SOMERS, CT 06071
COUNTY: TOLLAND
JURISDICTION: CONNECTICUT SITING COUNCIL

T-MOBILE ANCHOR SITE CONFIGURATION: 67D5D998E 6160

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	HRT 086 943248
SITE ADDRESS:	126 PIONEER HEIGHTS RD SOMERS, CT 06071
COUNTY:	TOLLAND
MAP/PARCEL #:	09013129-1814
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.948883°
LONGITUDE:	-72.492097°
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	400 FT
CURRENT ZONING:	A-1
JURISDICTION:	CONNECTICUT SITING COUNCIL
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	FARNHAM LENA G & FAY GATELY 4017 WASHINGTON RD MCMURRAY, PA 15317
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	NORTHEAST UTILITIES
TELCO PROVIDER:	NOT PROVIDED

PROJECT TEAM

A&E FIRM:	B+T GROUP 1717 S. BOULDER AVE. TULSA, OK 74119 MARVIN PHILLIPS marvin.phillips@btgrp.com
CROWN CASTLE USA INC. DISTRICT CONTACTS:	1200 MACARTHUR BLVD, SUITE 200 MAHWAH, NJ 07430 TRICIA PELON - PROJECT MANAGER TRICIA.PELON@CROWNCASTLE.COM JASON D'AMICO - CONSTRUCTION MANAGER JASON.DAMICO@CROWNCASTLE.COM

DRAWING INDEX

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

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR ---. 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
- INSTALL (6) ANTENNAS
- INSTALL (3) RRHs
- INSTALL (1) 6/24 4AWG HYBRID CABLE

GROUND SCOPE OF WORK:
- INSTALL (1) RP 6651
- INSTALL (1) RBS 6601
- INSTALL (3) RECTIFIERS FOR 6160 CABINET
- INSTALL (6) 40AMP BREAKERS
- INSTALL (3) ADDITIONAL 50 AMP SPD'S
- INSTALL (1) IXRE ROUTER
- INSTALL (1) PSU4813 VOLTAGE BOOSTER

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	2015 IBC
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	B+T GROUP
DATED:	4/5/22
MOUNT ANALYSIS:	USA ENGINEERING, INC
DATED:	4/1/22
RFDS REVISION:	6
DATED:	3/10/22
ORDER ID:	609062
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
1200 MACARTHUR BLVD, SUITE 200
MAHWAH, NJ 07430

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

METRO PCS SITE NUMBER:
CTHA534A

BU #: **806378**
HRT 086 943248

126 PIONEER HEIGHTS RD
SOMERS, CT 06071

EXISTING
161'-5" SELF-SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	ORIG./QC
A	4/26/22	ANP	PRELIMINARY REVIEW	MTJ
0	5/27/22	ANP	CONSTRUCTION	MTJ

5/27/22

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/23

SHEET NUMBER: T-1
REVISION: 0

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

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
   4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
   4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERYIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON–PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER–ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "METRO PCS".
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 · · ·
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1717 S. BOULDER
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METRO PCS SITE NUMBER:
CTHA534A

BU #: **806378**
HRT 086 943248

126 PIONEER HEIGHTS RD
SOMERS, CT 06071

EXISTING
161'-5" SELF-SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	4/26/22	ANP	PRELIMINARY REVIEW	MTJ
0	5/27/22	ANP	CONSTRUCTION	MTJ

STATE OF CONNECTICUT · CHAD TUTTLE · No. 23924 · LICENSED PROFESSIONAL ENGINEER · 5/27/22

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/23

SHEET NUMBER: T-2 **REVISION:** 0

1 OVERALL SITE PLAN
SCALE: 30' 15' 0 30' 1"=30'-0" (FULL SIZE) 1"=60'-0" (11x17)

N

SITE PLAN DISCLAIMER:

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

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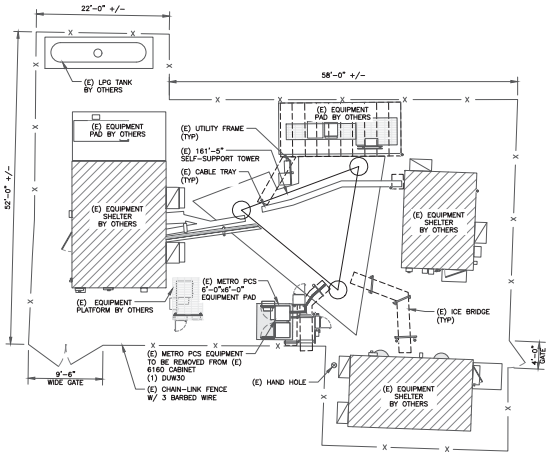
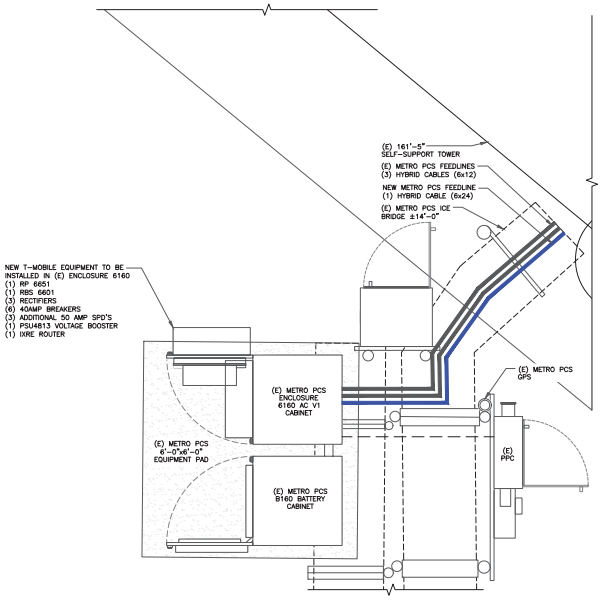
5/27/22

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/23

SHEET NUMBER: C-1.1
REVISION: 0



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



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

NOTES:

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

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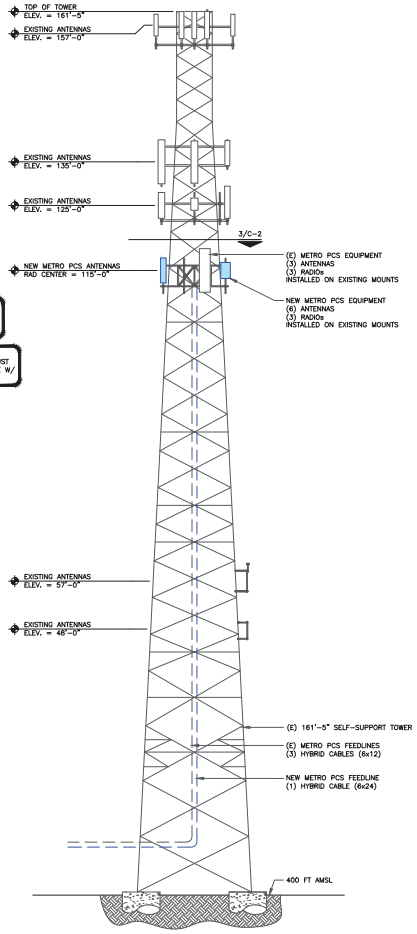
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/23

SHEET NUMBER: C-1.2
REVISION: 0



1 FINAL ELEVATION
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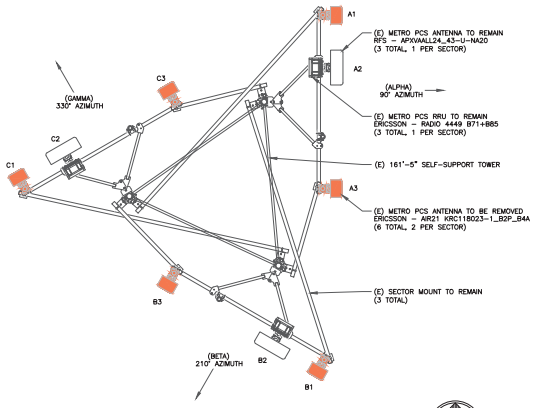
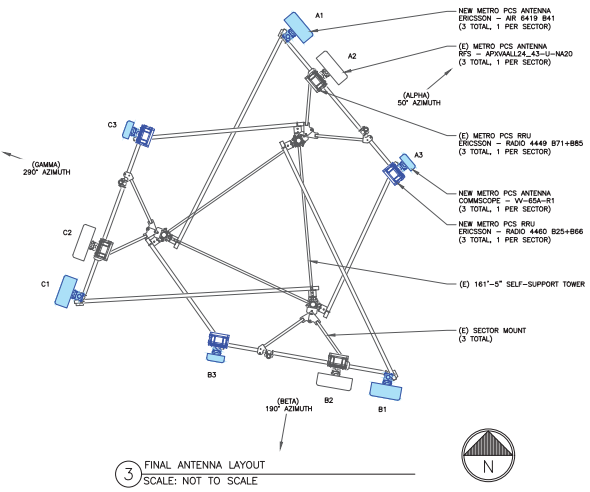


2 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE



3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

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B&T ENGINEERING, INC.
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SHEET NUMBER: C-2
REVISION: 0

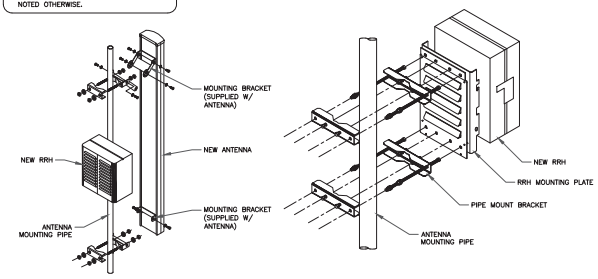
RF SYSTEM SCHEDULE

SECTOR	ANTENNA	TECH	MANUFACTURER	ANTENNA MODEL	AZIMUTH	M-TILT	E-TILT	RAD CENTER	TMA/RRU	FEEDLINE TYPE
ALPHA	A1	L2500/N2500	ERICSSON	AIR 6419 B41	50°	0°	2°/2°	115'-0"	–	–
	A2	L700/L600/N600	RFS	APXVAALL24_43-U-NA20	50°	0°	2°/2°	115'-0"	4449 B71+B85	(1) 6x12 HYBRID
	A3	L2100/L1900/ U2100	COMMSCOPE	VV-65A-R1	50°	0°	2°/2°	115'-0"	4460 B25+B66	(1) 6/24 HYBRID
BETA	B1	L2500/N2500	ERICSSON	AIR 6419 B41	190°	0°	2°/2°	115'-0"	–	–
	B2	L700/L600/N600	RFS	APXVAALL24_43-U-NA20	190°	0°	2°/2°	115'-0"	4449 B71+B85	(1) 6x12 HYBRID
	B3	L2100/L1900/ U2100	COMMSCOPE	VV-65A-R1	190°	0°	2°/2°	115'-0"	4460 B25+B66	–
GAMMA	C1	L2500/N2500	ERICSSON	AIR 6419 B41	290°	0°	2°/2°	115'-0"	–	–
	C2	L700/L600/N600	RFS	APXVAALL24_43-U-NA20	290°	0°	2°/2°	115'-0"	4449 B71+B85	(1) 6x12 HYBRID
	C3	L2100/L1900/ U2100	COMMSCOPE	VV-65A-R1	290°	0°	2°/2°	115'-0"	4460 B25+B66	–

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE

INSTALLER NOTES:

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



2 ANTENNA WITH RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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

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

METRO PCS SITE NUMBER:
CTHA534A

BU #: **806378**
HRT 086 943248

126 PIONEER HEIGHTS RD
SOMERS, CT 06071

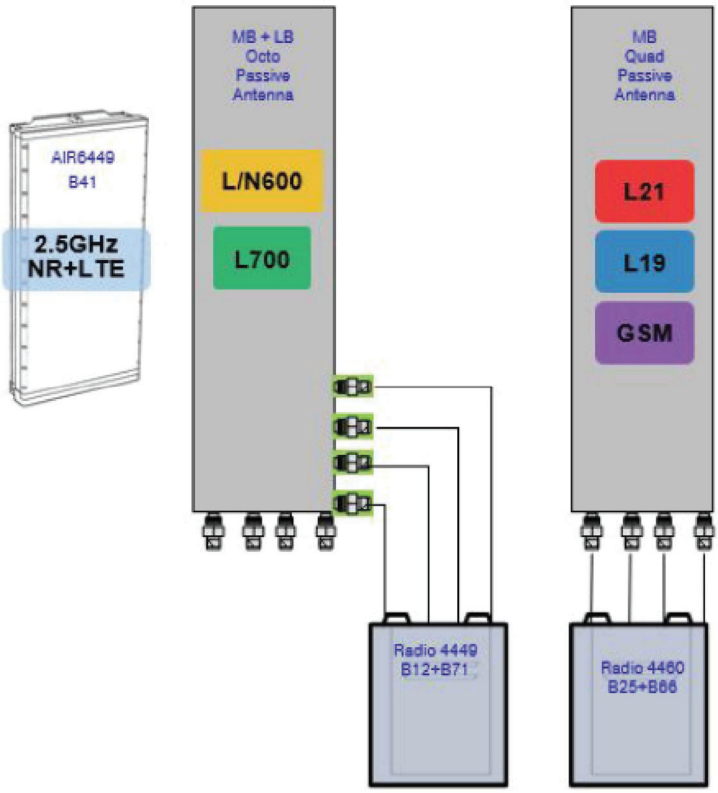
EXISTING
161'-5" SELF-SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QC
A	4/26/22	ANP	PRELIMINARY REVIEW	MTJ
0	5/27/22	ANP	CONSTRUCTION	MTJ

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/23

SHEET NUMBER: C-3
REVISION: 0



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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

B+T GRP
1717 S. BOULDER
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EXISTING
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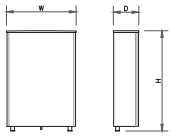
0	5/27/22	ANP	CONSTRUCTION	MTJ

5/27/22

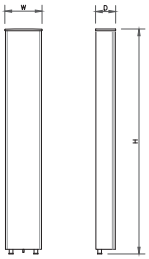
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/23

SHEET NUMBER:	REVISION:
C-4	0



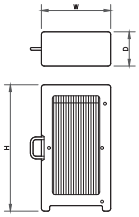
ANTENNA SPECS	
MANUFACTURER	ERICSSON
MODEL #	AIR 6419 B41
WIDTH	20.91"
DEPTH	9.02"
HEIGHT	36.25"
WEIGHT	96.50 LBS

1 ANTENNA SPECS
SCALE: NOT TO SCALE



ANTENNA SPECS	
MANUFACTURER	COMMSCOPE
MODEL #	VV-65A-R1
WIDTH	12.00"
DEPTH	4.60"
HEIGHT	54.70"
WEIGHT	33.30 LBS

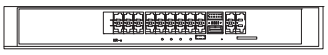
2 ANTENNA SPECS
SCALE: NOT TO SCALE



RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	4460 B25+B66
WIDTH	15.10"
DEPTH	11.90"
HEIGHT	17.0"
WEIGHT	109.0 LBS

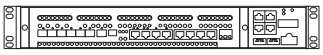
3 RRU SPECS
SCALE: NOT TO SCALE

4 PSU 4813 VOLTAGE BOOSTER SPECS
SCALE: NOT TO SCALE



NOKIA CSR IXR3 V1 ROUTER
WEIGHT: 11.2 LBS.
SIZE (HxWxD): 1.75x17.25x10.0 IN.

5 NOKIA CSR IXR3 V1 ROUTER
SCALE: NOT TO SCALE



ERICSSON – RBS 6601
WEIGHT: 22.0 LBS.
SIZE (HxWxD): 2.6x19.0x13.78 IN.

6 ERICSSON – RBS 6601
SCALE: NOT TO SCALE

7 NOT USED
SCALE: NOT TO SCALE

8 NOT USED
SCALE: NOT TO SCALE

T··Mobile···
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METRO PCS SITE NUMBER:
CTHA534A

BU #: **806378**
HRT 086 943248

126 PIONEER HEIGHTS RD
SOMERS, CT 06071

EXISTING
161'-5" SELF-SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QC
A	4/26/22	ANP	PRELIMINARY REVIEW	MTJ
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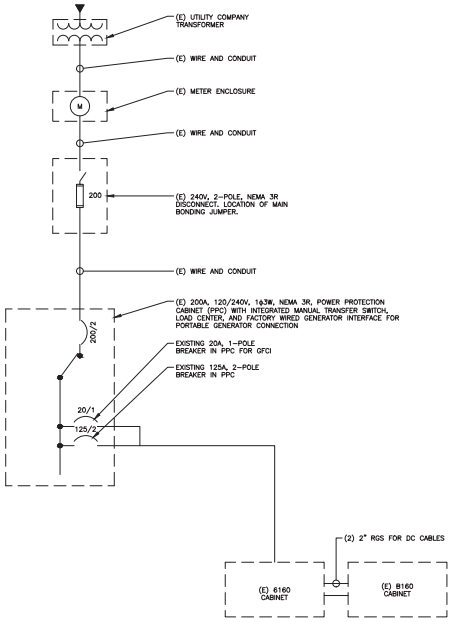
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/23

SHEET NUMBER: C-5
REVISION: 0

FINAL PANEL SCHEDULE							
LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
TVSS	2	30A	1	2	60A	2	BTS 1
			3	4			
SITE LIGHT	1	15A	5	6	20A	1	GFCI BELOW
6160	2	125A	7	8	20A	1	FIBER CAB
			9	10	20A	1	6160 PLUG
			11	12			
			13	14			
			15	16			
			17	18			
			19	20			
			21	22			
			23	24			
RATED VOLTAGE: ■120/240 □ _____ 1 PHASE, 3 WIRE			BRANCH POLES: □12		■24	□30 □42	APPROVED MFRS
RATED AMPS: □100 ■200 □400 □ _____			CABINET: ■SURFACE □FLUSH				NEMA □1 ■3R □4X
□MAIN LUGS ONLY ■MAIN 200 AMPS ■BREAKER □FUSED SWITCH			■HINGED DOOR				■KEYED DOOR LATCH
□FUSED ■CIRCUIT BREAKER BRANCH DEVICES			□ _____ TO BE GFCI BREAKERS				FULL NEUTRAL BUS GROUND BAR
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 10,000 AMPS SYMMETRICAL							

FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING DOCUMENTS AND PHOTOS

1 FINAL T-MOBILE PANEL DETAIL
SCALE: NOT TO SCALE



NOTES:

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

2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

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

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TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

METRO PCS SITE NUMBER:
CTHA534A

BU #: **806378**
HRT 086 943248

126 PIONEER HEIGHTS RD
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EXISTING
161'-5" SELF-SUPPORT TOWER

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5/27/22

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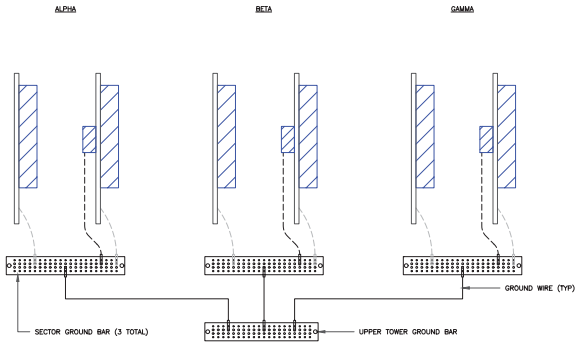
PEC.0001564
Expires 2/10/23

SHEET NUMBER: E-1
REVISION: 0



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

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
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5/27/22

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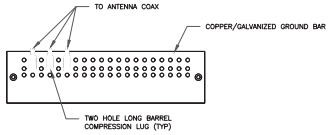
PEC.0001564
Expires 2/10/23

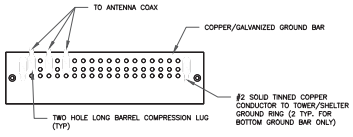
SHEET NUMBER: G-1
REVISION: 0



NOTES:

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

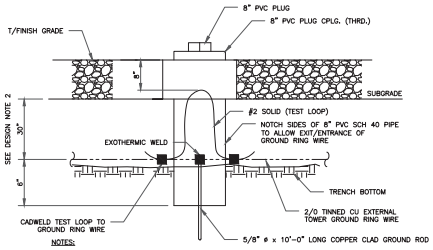
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

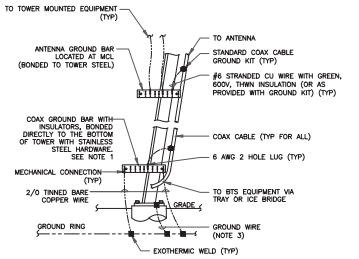
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

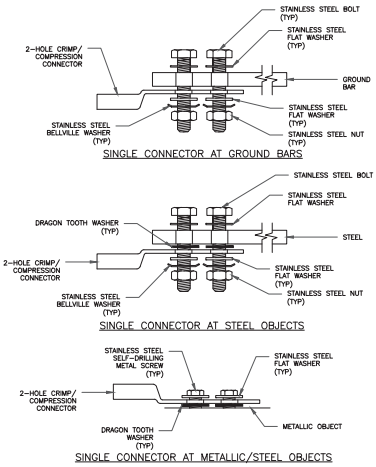
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



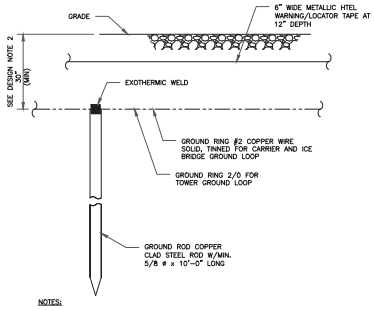
NOTES:

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

4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

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

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

T-Mobile
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METRO PCS SITE NUMBER:
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BU #: **806378**
HRT 086 943248

126 PIONEER HEIGHTS RD
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EXISTING
161'-5" SELF-SUPPORT TOWER

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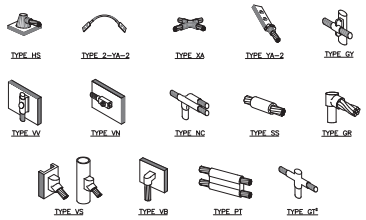
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/23

SHEET NUMBER:	REVISION:
G-2	0

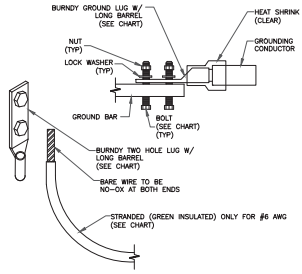


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

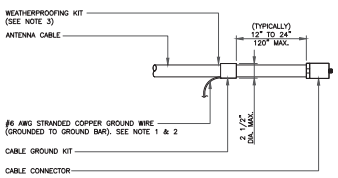
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

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

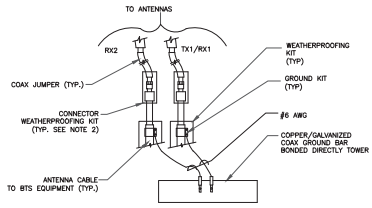
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

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

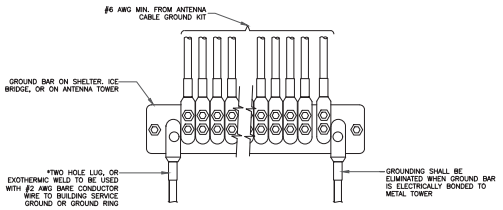
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



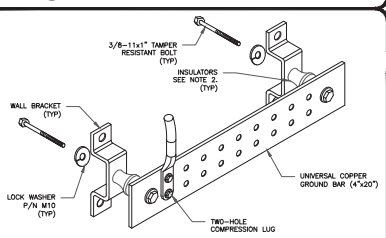
NOTES:

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

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



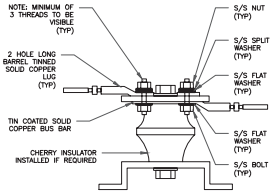
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



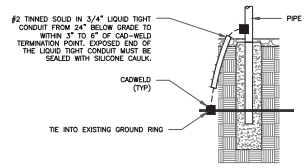
NOTES:

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

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

T-Mobile
35 GRIFFIN ROAD
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1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

METRO PCS SITE NUMBER:
CTHA534A

BU #: **806378**
HRT 086 943248

126 PIONEER HEIGHTS RD
SOMERS, CT 06071

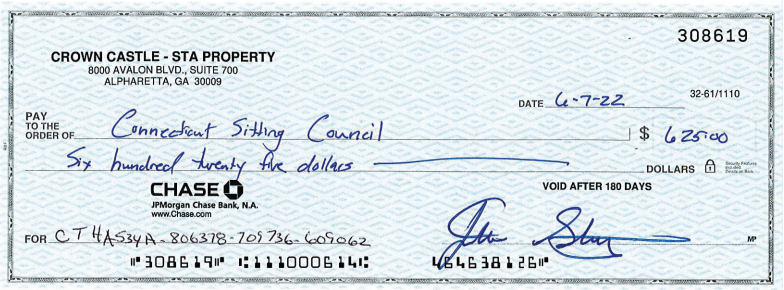
EXISTING
161'-5" SELF-SUPPORT TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	4/26/22	ANP	PRELIMINARY REVIEW	MTJ
0	5/27/22	ANP	CONSTRUCTION	MTJ

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/23

SHEET NUMBER: G-3
REVISION: 0



308619

CROWN CASTLE - STA PROPERTY
8000 AVALON BLVD., SUITE 700
ALPHARETTA, GA 30009

32-61/1110

DATE 6-7-22

PAY TO THE ORDER OF Connecticut Siting Council $ 625.00

Six hundred twenty five dollars DOLLARS

CHASE
JPMorgan Chase Bank, N.A.
www.Chase.com

VOID AFTER 180 DAYS

FOR CTHA534A-806378-709736-609062

⑈308619⑈ ⑆111000614⑆ 464638126⑈