

Columbia County Cellular Tower Antenna Application

For Office Use Only Application # 56637 Date Received 9/27 By MG Permit # 46135

Zoning Official TC Date 9-28-22 Flood Zone _____ Land Use _____ Zoning _____

FEMA Map # _____ Elevation _____ MFE _____ River _____ Plans Examiner TC Date 9-28-22

Comments _____

☐ NOC ☐ EH ☐ Deed or PA ☐ Site Plan ☐ State Road Info ☐ Well letter ☐ 911 Sheet ☐ Parent Parcel # _____

☐ Dev Permit # _____ ☐ In Floodway ☐ Letter of Auth. from Contractor ☐ F W Comp. letter

☐ Owner Builder Disclosure Statement ☐ Land Owner Affidavit ☐ Ellisville Water ☒ App Fee Paid ☒ Sub VF Form

Septic Permit No. NA OR City Water ☐ Fax _____

Applicant (Who will sign/pickup the permit) Crown Castle applicant/ GC pick up Phone 3035987996

Address 1299 SW Jasmine Trace, Palm City, FL 34990

Leasee Name Verizon Wireless Phone _____

911 Address 267 SW Crystal Gln, Lake City, FL 32025

Contractors Name Network Installation Specialists- Gerald Napier Phone 770-540-6838

Address 335 Wilbanks Dr., Ball Ground, GA 30107

Contractor Email permits@nis.us.com ***Include to get updates on this job.

Fee Simple Owner Name & Address Chris Bullard- P.O. Box 1432 Lake City, FL 32056

Bonding Co. Name & Address _____

Architect/Engineer Name & Address _____

Mortgage Lenders Name & Address _____

Circle the correct power company ☒ FL Power & Light ☐ Clay Elec. ☐ Suwannee Valley Elec. ☐ Duke Energy

Property ID Number 18-4S-17-08461-000 Estimated Construction Cost \$20,000

Subdivision Name _____ Lot _____ Block _____ Unit _____ Phase _____

Driving Directions from a Major Road _____

Construction of upgrade existing cell tower equipment ☒ Commercial OR ☐ Residential

Proposed Use/Occupancy Existing Communications Tower Number of Existing Dwellings on Property NA

Is the Building Fire Sprinkled? NA If Yes, blueprints Included NA Or Explain NA

Circle Proposed ☐ Culvert Permit or ☐ Culvert Waiver or ☐ D.O.T. Permit or ☒ Have an Existing Drive

Actual Distance of Structure from Property Lines - Front NA Side NA Side NA Rear NA

Number of Stories NA Heated Floor Area NA Total Floor Area NA Acreage _____

Zoning Applications applied for (Site & Development Plan, Special Exception, etc.) _____

Columbia County Building Permit Application

CODE: Florida Building Code 2017 and the 2014 National Electrical Code.

Application is hereby made to obtain a permit to do work and installations as indicated. I certify that no work or installation has commenced prior to the issuance of a permit and that all work be performed to meet the standards of all laws regulating construction in this jurisdiction.

TIME LIMITATIONS OF APPLICATION : An application for a permit for any proposed work shall be deemed to have been abandoned 180 days after the date of filing, unless pursued in good faith or a permit has been issued.

TIME LIMITATIONS OF PERMITS: Every permit issued shall become invalid unless the work authorized by such permit is commenced within 180 days after its issuance, or if the work authorized by such permit is suspended or abandoned for a period of 180 days after the time work is commenced. A valid permit receives an approved inspection every 180 days. Work shall be considered not suspended, abandoned or invalid when the permit has received an approved inspection within 180 days of the previous approved inspection.

FLORIDA'S CONSTRUCTION LIEN LAW: Protect Yourself and Your Investment: According to Florida Law, those who work on your property or provide materials, and are not paid-in-full, have a right to enforce their claim for payment against your property. This claim is known as a construction lien. If your contractor fails to pay subcontractors or material suppliers or neglects to make other legally required payments, the people who are owed money may look to your property for payment, even if you have paid your contractor in full. This means if a lien is filed against your property, it could be sold against your will to pay for labor, materials or other services which your contractor may have failed to pay.

NOTICE OF RESPONSIBILITY TO CONTRACTOR AND AGENT: YOU ARE HEREBY NOTIFIED as the recipient of a building permit from Columbia County, Florida, you will be held responsible to the County for any damage to sidewalks and/or road curbs and gutters, concrete features and structures, together with damage to drainage facilities, removal of sod, major changes to lot grades that result in ponding of water, or other damage to roadway and other public infrastructure facilities caused by you or your contractor, subcontractors, agents or representatives in the construction and/or improvement of the building and lot for which this permit is issued. No certificate of occupancy will be issued until all corrective work to these public infrastructures and facilities has been corrected.

WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOU PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. A NOTICE OF COMMENCEMENT MUST BE RECORDED AND POSTED ON THE JOB SITE BEFORE THE FIRST INSPECTION. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT.

OWNERS CERTIFICATION: I CERTIFY THAT ALL THE FOREGOING INFORMATION IS ACCURATE AND THAT ALL WORK WILL BE DONE IN COMPLIANCE WITH ALL APPLICABLE LAWS REGULATING CONSTRUCTION AND ZONING.

NOTICE TO OWNER: There are some properties that may have deed restrictions recorded upon them. These restrictions may limit or prohibit the work applied for in your building permit. You must verify if your property is encumbered by any restrictions or face possible litigation and or fines.

✓ Donovan Pieper [Signature]
Print Owners or Authorized Agents Name Owners or Agents Signature

****Property owners must sign here before any permit will be issued.**

****If this is an Owner Builder Permit Application then, ONLY the owner can sign the building permit when it is issued.**

CONTRACTORS AFFIDAVIT: By my signature I understand and agree that I have informed and provided this written statement to the owner of all the above written responsibilities in Columbia County for obtaining this Building Permit including all application and permit time limitations.

Gerald Napier
Contractor's Signature

Contractor's License Number CGC057560
Columbia County

Competency Card Number _____

Affirmed under penalty of perjury to by the Contractor and subscribed before me this 12th day of September 2022.

Personally known ☒ or Produced Identification _____

[Signature]

State of Florida Notary Signature (For the Contractor)





COLUMBIA COUNTY BUILDING DEPARTMENT
135 NE Hernando Ave, Suite B-21, Lake City, FL 32055
Phone: 386-758-1008 Fax: 386-758-2160

LETTER OF AUTHORIZATION TO SIGN FOR PERMITS

I, Gerald Napier (license holder name), licensed qualifier
for Network Installation Specialists, LLC (company name), do certify that
the below referenced person(s) listed on this form is/are contracted/hired by me, the license
holder, or is/are employed by me directly or through an employee leasing arrangement; or, is an
officer of the corporation; or, partner as defined in Florida Statutes Chapter 468, and the said
person(s) is/are under my direct supervision and control and is/are authorized to purchase
permits, call for inspections and sign on my behalf.

Printed Name of Person Authorized	Signature of Authorized Person
1. Jerry Feathers	1.
2. Robert Matthews	2.
3.	3.
4.	4.
5.	5.

I, the license holder, realize that I am responsible for all permits purchased, and all work done
under my license and fully responsible for compliance with all Florida Statutes, Codes, and
Local Ordinances. I understand that the State and County Licensing Boards have the power and
authority to discipline a license holder for violations committed by him/her, his/her agents,
officers, or employees and that I have full responsibility for compliance with all statutes, codes
and ordinances inherent in the privilege granted by issuance of such permits.

If at any time the person(s) you have authorized is/are no longer agents, employee(s), or
officer(s), you must notify this department in writing of the changes and submit a new letter of
authorization form, which will supersede all previous lists. Failure to do so may allow
unauthorized persons to use your name and/or license number to obtain permits.

Gerald Napier
License Holders Signature (Notarized)

CGC057560
License Number

09/12/2022
Date

NOTARY INFORMATION:

STATE OF: Florida COUNTY OF: Duval

The above license holder, whose name is Gerald Napier
personally appeared before me and is known by me or has produced identification
(type of I.D.) known by me on this 12th day of September, 20 22.

Daniel Bato
NOTARY'S SIGNATURE



1. The first part of the paper is devoted to a general discussion of the problem of the existence of solutions of the system of equations

$$\frac{dx}{dt} = f(x, y, z), \quad \frac{dy}{dt} = g(x, y, z), \quad \frac{dz}{dt} = h(x, y, z),$$

where f, g, h are continuous functions of x, y, z and satisfy the Lipschitz condition.

It is shown that if the functions f, g, h are bounded and the initial conditions are given at a point where the functions are continuous, then there exists a unique solution of the system of equations in a neighborhood of the initial point.

2. In the second part of the paper, the problem of the extension of the solution to the whole domain of definition of the functions f, g, h is considered.

It is shown that if the functions f, g, h are bounded and the initial conditions are given at a point where the functions are continuous, then the solution can be extended to the whole domain of definition of the functions f, g, h .

3. In the third part of the paper, the problem of the stability of the solution is considered.

It is shown that if the functions f, g, h are bounded and the initial conditions are given at a point where the functions are continuous, then the solution is stable with respect to the initial conditions.

4. In the fourth part of the paper, the problem of the dependence of the solution on the initial conditions is considered.

It is shown that if the functions f, g, h are bounded and the initial conditions are given at a point where the functions are continuous, then the solution depends continuously on the initial conditions.

5. In the fifth part of the paper, the problem of the dependence of the solution on the parameters of the system is considered.

It is shown that if the functions f, g, h are bounded and the initial conditions are given at a point where the functions are continuous, then the solution depends continuously on the parameters of the system.

6. In the sixth part of the paper, the problem of the dependence of the solution on the initial time is considered.

It is shown that if the functions f, g, h are bounded and the initial conditions are given at a point where the functions are continuous, then the solution depends continuously on the initial time.

Columbia County Property Appraiser

Jeff Hampton

2022 Working Values

updated: 9/22/2022

Parcel: 18-4S-17-08461-000 (31466)

Aerial Viewer Pictometry Google Maps

Owner & Property Info

Result: 1 of 1

Owner	BULLARD AUDREY S PO BOX 1733 LAKE CITY, FL 32056		
Site	1826 SW STATE ROAD 47, LAKE CITY		
Description*	COMM SE COR OF NE1/4 OFNW1/4, RUN S 10 FT FOR POB, RUN W 465.93 FT, N 306.97 FT, E 140.87 FT, N 108.15 FT, E 652.72 FT TO SR-47, S'LY ALONG R/W 475.02 FT, W 326.22 FT TO POB. 255-370, 740-677, 740-680, 894-677,		
Area	7.62 AC	S/T/R	18-4S-17
Use Code**	SINGLE FAMILY (0100)	Tax District	2

*The Description above is not to be used as the Legal Description for this parcel in any legal transaction.
**The Use Code is a FL Dept. of Revenue (DOR) code and is not maintained by the Property Appraiser's office. Please contact your city or county Planning & Zoning office for specific zoning information.

Property & Assessment Values

2021 Certified Values		2022 Working Values	
Mkt Land	\$74,676	Mkt Land	\$76,200
Ag Land	\$0	Ag Land	\$0
Building	\$235,804	Building	\$279,601
XFOB	\$29,464	XFOB	\$35,096
Just	\$339,944	Just	\$390,897
Class	\$0	Class	\$0
Appraised	\$339,944	Appraised	\$390,897
SOH Cap [?]	\$108,401	SOH Cap [?]	\$145,729
Assessed	\$231,543	Assessed	\$245,168
Exempt	HX HB WX \$50,500	Exempt	HX HB WX \$50,500
Total Taxable	county:\$181,043 city:\$0 other:\$0 school:\$206,043	Total Taxable	county:\$194,668 city:\$0 other:\$0 school:\$219,668



Sales History

Sale Date	Sale Price	Book/Page	Deed	V/I	Qualification (Codes)	RCode
NONE						

Building Characteristics

Bldg Sketch	Description*	Year Blt	Base SF	Actual SF	Bldg Value
Sketch	SINGLE FAM (0100)	1970	3211	5628	\$279,601

*Bldg Desc determinations are used by the Property Appraisers office solely for the purpose of determining a property's Just Value for ad valorem tax purposes and should not be used for any other purpose.

Extra Features & Out Buildings (Codes)

Code	Desc	Year Blt	Value	Units	Dims
0020	BARN,FR	0	\$9,009.00	1.00	13 x 77
0260	PAVEMENT-ASPHALT	0	\$304.00	1.00	11 x 77
0020	BARN,FR	0	\$3,240.00	1.00	27 x 40
0294	SHED WOOD/VINYL	0	\$952.00	1.00	20 x 20
0261	PRCH, UOP	0	\$960.00	1.00	20 x 60
0261	PRCH, UOP	0	\$348.00	1.00	8 x 60

CROWN CASTLE USA INC.
ASSISTANT SECRETARY'S CERTIFICATE

I, Inge Pasman do hereby certify that I am the Assistant Secretary of CROWN CASTLE USA INC., a Pennsylvania corporation ("Company"), and further certify that:

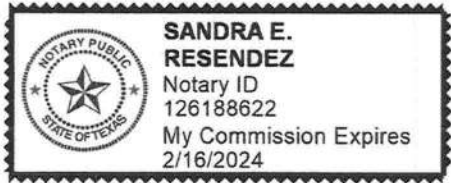
- 1. **Donovan** Pieper is a Services Delivery Supervisor of the Company and continues to hold such position as of the date below; and
- 2. pursuant to the Company's Commitment Authority Policy, dated December 6, 2021, a Services Delivery Supervisor is authorized to perform such acts as are necessary and appropriate to file and present on behalf of the Company such building, permitting, zoning and land use applications with the appropriate local, state or federal agencies, which are necessary to obtain zoning, construction and operation permits, land use changes, administrative permits, conditional use permits, zoning variances, special exceptions, building permits and any other permits and approvals that relate to the Company's operations.

IN WITNESS WHEREOF, I have hereunto subscribed my name this 4th day of April, 2022.

DocuSigned by:
Inge Pasman
CF4314280FCE49B...
Inge Pasman, Assistant Secretary
Crown Castle USA Inc.

STATE OF TEXAS
COUNTY OF HARRIS

This certificate was subscribed and sworn before me by means of an interactive two-way audio communication on the 4th day of April, 2022, by Inge Pasman, Assistant Secretary of CROWN CASTLE USA INC. This notarial act was an online notarization.



My Commission Expires: 2/16/2024

DocuSigned by:
Sandra E. Resendez
52179920DF0D4E8...
Notary Public

ASSISTANT SECRETARY'S CERTIFICATE

I, Inge Pasman, do hereby certify that I am the Assistant Secretary of each of CCTMO LLC, CROWN CASTLE SOUTH LLC, GLOBAL SIGNAL ACQUISITIONS LLC, GLOBAL SIGNAL ACQUISITIONS II LLC, GLOBAL SIGNAL ACQUISITIONS III LLC and GLOBAL SIGNAL ACQUISITIONS IV LLC (collectively, "Companies"), and further certify that:

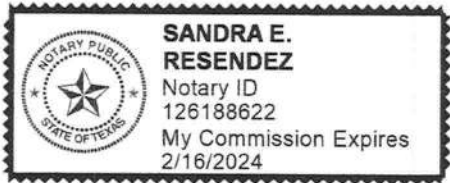
- 1. Donavan Pieper is a Services Delivery Supervisor of each of the Companies and continues to hold such position as of the date below; and
- 2. pursuant to each Company's Commitment Authority Policy, dated December 6, 2021, a Services Delivery Supervisor is authorized to perform such acts as are necessary and appropriate to file and present on behalf of the Companies, such building, permitting, zoning and land use applications with the appropriate local, state or federal agencies, which are necessary to obtain zoning, construction and operation permits, land use changes, administrative permits, conditional use permits, zoning variances, special exceptions, building permits and any other permits and approvals that relate to the Companies' operations.

IN WITNESS WHEREOF, I have hereunto subscribed my name this 6th day of April, 2022.

DocuSigned by:
Inge Pasman
7ABCDF04CD35430...
Inge Pasman, Assistant Secretary
CCTMO LLC
Crown Castle South LLC
Global Signal Acquisitions LLC
Global Signal Acquisitions II LLC
Global Signal Acquisitions III LLC
Global Signal Acquisitions IV LLC

STATE OF TEXAS
COUNTY OF HARRIS

This certificate was subscribed and sworn before me by means of an interactive two-way audio communication on the 6th day of April, 2022, by Inge Pasman, Assistant Secretary of each of the Companies. This notarial act was an online notarization.



My Commission Expires: 2/16/2024

DocuSigned by:
Sandra E Resendez
52179920DF0D4E8...
Notary Public

Date: July 26, 2022

FL COA# 31011

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351

Subject: Structural Analysis Report

Carrier Designation: Verizon Wireless Co-Locate
Site Number: 228815
Site Name: Lake City South

Crown Castle Designation: BU Number: 870081
Site Name: Lake City (SR 47 & US 41)
JDE Job Number: 723027
Work Order Number: 2138273
Order Number: 623632 Rev. 0

Engineering Firm Designation: TEP Project Number: 145283.722965

Site Data: 267 SW Crystal Gln, Lake City, Columbia County, FL 32025
Latitude 30° 8' 43.70", Longitude -82° 39' 10.90"
350 Foot - Guyed Tower



Tower Engineering Professionals is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above-mentioned tower.

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

LC7: Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 118 mph as required by the 2020 Florida Building Code, 7th Edition. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

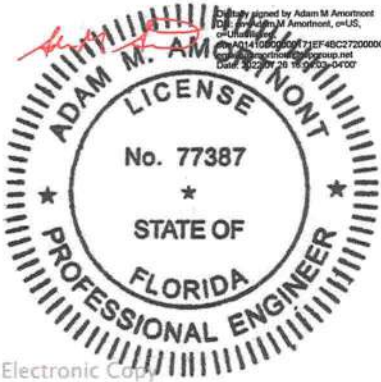
Structural analysis prepared by: Gautam Sopal, E.I. / WAT

Respectfully submitted by:

Adam M. Amortnont, P.E.

This item has been electronically signed and sealed by Adam M. Amortnont, P.E. on 7/26/2022 using a Digital Signature.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.



ONE SET of Analysis Report !!

TABLE OF CONTENTS

- 1) INTRODUCTION**
- 2) ANALYSIS CRITERIA**
 - Table 1 - Proposed Equipment Configuration
 - Table 2 - Other Considered Equipment
- 3) ANALYSIS PROCEDURE**
 - Table 3 - Documents Provided
 - 3.1) Analysis Method
 - 3.2) Assumptions
- 4) ANALYSIS RESULTS**
 - Table 4 - Section Capacity (Summary)
 - Table 5 - Tower Component Stresses vs. Capacity
 - 4.1) Recommendations
- 5) APPENDIX A**
 - tnxTower Output
- 6) APPENDIX B**
 - Base Level Drawing
- 7) APPENDIX C**
 - Additional Calculations

1) INTRODUCTION

This tower is a 350-ft guyed tower designed by FWT, Inc. and mapped by Pinnacle Towers, Inc. in December of 2000.

2) ANALYSIS CRITERIA

TIA-222 Revision: TIA-222-H
Risk Category: II
Wind Speed: 118 mph
Exposure Category: C
Topographic Factor: 1.0
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)
250.0	250.0	6	CSS	X7CQAP-665-VR0 w/ Mount Pipe	11 2 1	1-5/8 1-1/2 2
		3	Ericsson	AIR 6449 w/ Mount Pipe		
		1	JMA Wireless	X7CQAP-FRO-645-V w/ Mount Pipe		
		2	Raycap	RDC-4276-PF-48		
		8	Ericsson	RRUS 32		
		3	Commscope	TD-850B-LTE78-43		
		1	Raycap	RCMDC-6627-PF-48		
		4	Ericsson	4449		
		1	CSS	DBC-AP		
		1	Tower Mounts	Pipe Mount [PM 601-3]		
		1	Tower Mounts	Sector Mount [SM 503-3]		
		3	Commscope	VZWSMART-SFK3		
		3	Commscope	VZWSMART-SFK1		
		3	Tower Mounts	150" Long P2.5 STD		

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)
345.0	355.0	1	Decibel	DB420D-D	3	7/8
	345.0	2	Tower Mounts	Side Arm Mount [SO 602-3]		
	344.0	1	Decibel	DB228-B		
	334.0	1	Decibel	DB420D-D		
324.0	336.0	1	Sinclair	SD214	7	7/8
	333.0	4	Sinclair	SRL-224NM-4		
	324.0	2	Tower Mounts	Side Arm Mount [SO 602-3]		
270.0	278.0	4	Sinclair	SRL-224NM-4	2	7/8
	270.0	4	Tower Mounts	Side Arm Mount [SO 602-1]	1	1/2

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
255.0	271.0	1	RFS Celwave	PD322-2	1	1/2
	255.0	1	Tower Mounts	Side Arm Mount [SO 305-1]		
229.0	230.0	3	Commscope	FHH-65C-R3 w/ Mount Pipe	8	1-5/8
		3	Ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	Ericsson	Radio 4480_TMOV2		
	229.0	1	Tower Mounts	Sector Mount [SM 504-3]		
		1	Tower Mounts	Pipe Mount [PM 601-3]		
222.0	222.0	1	Tower Mounts	Sector Mount [SM 502-3]	3 1	1-3/16 7/8
	220.0	2	Commscope	DT465B-2XR w/ Mount Pipe		
		3	RFS Celwave	APXVSPP18-C w/ Mount Pipe		
		3	Ericsson	RRUS 82 W/SOLAR SHIELD		
		6	Ericsson	RRUS-11 800MHZ		
		3	Ericsson	RRUS 31 B25		
		3	Ericsson	800MHZ SMR FILTER		
		9	RFS Celwave	ACU-A20-N		
215.0	225.0	1	Decibel	DB567R90-CR	1	7/8
	215.0	1	Tower Mounts	Side Arm Mount [SO 602-1]		
201.0	203.0	3	Andrew	DBXNH-8585B-R2M w/ Mount Pipe	12 6 3 3	1-5/8 3/4 3/8 5/16
		6	Commscope	SBNHH-1D85B w/ Mount Pipe		
		3	Commscope	NNHH-65B-R4 w/ Mount Pipe		
		3	Ericsson	RRUS 4478 B14		
		3	Andrew	E15Z01P13		
		3	Ericsson	RRUS 32		
		3	Raycap	DC6-48-60-18-8F		
	201.0	1	Tower Mounts	Sector Mount [SM 502-3]		
164.0	166.0	1	Radiowaves	HPLPD2-11	1 1	7/8 3/8
		1	Ceragon	RFU-C-PD		
	165.0	1	Radiowaves	HPD4-11		
		1	Ceragon	RFU-C-PD		
	164.0	1	Andrew	HPX6-59-P3A/K		
		1	Tower Mounts	Pipe Mount [PM 601-3]		
156.0	157.0	9	Decibel	DB848H105ESX w/ Mount Pipe	7	7/8
	156.0	1	Tower Mounts	Sector Mount [SM 1305-3]		
11.0	11.0	1	Channel Master	1.2M	1	3/64
		1	Tower Mounts	Side Arm Mount [SO 301-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Geotechnical Report	1467434	CCISites
Tower Foundation Drawings	1467548	CCISites
Tower Manufacturer Drawings/ Tower Mapping Report	1467491	CCISites

3.1) Analysis Method

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

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. Tower Engineering Professionals 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)	ϕP_{allow} (k)	% Capacity	Pass / Fail
T1	350 - 341.945	Leg	2 1/4	2	-3.40	113.53	3.0	Pass
T2	341.945 - 340	Leg	2 1/4	23	-5.30	171.18	3.1	Pass
T3	340 - 320	Leg	2 1/4	37	-26.80	113.53	23.6	Pass
T4	320 - 300	Leg	2 1/4	89	-35.40	113.53	31.2	Pass
T5	300 - 280	Leg	3	141	-60.90	251.58	24.2	Pass
T6	280 - 260	Leg	3	190	-74.18	251.58	29.5	Pass
T7	260 - 240	Leg	3	241	-74.59	251.58	29.6	Pass
T8	240 - 220	Leg	3	293	-109.46	251.58	43.5	Pass
T9	220 - 200	Leg	3	344	-111.65	251.58	44.4	Pass
T10	200 - 180	Leg	3 1/2	394	-105.98	369.17	28.7	Pass
T11	180 - 160	Leg	3 1/2	445	-125.23	369.17	33.9	Pass
T12	160 - 140	Leg	3 1/2	496	-107.34	369.17	29.1	Pass
T13	140 - 120	Leg	3 1/2	547	-126.89	369.17	34.4	Pass
T14	120 - 100	Leg	3 1/2	598	-139.60	369.17	37.8	Pass
T15	100 - 80	Leg	3 1/2	651	-122.06	369.17	33.1	Pass
T16	80 - 60	Leg	3 1/2	702	-122.98	369.17	33.3	Pass
T17	60 - 40	Leg	3 1/2	753	-132.80	369.17	36.0	Pass
T18	40 - 20	Leg	3 1/2	804	-137.33	369.17	37.2	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (k)	ϕP_{allow} (k)	% Capacity	Pass / Fail
T19	20 - 8.05469	Leg	3 1/2	855	-135.78	369.17	36.8	Pass
T20	8.05469 - 6	Leg	3 1/2	884	-127.74	435.19	29.4	Pass
T21	6 - 2.66927	Leg	3 1/2	899	-134.93	384.88	35.1	Pass
T22	2.66927 - 0	Leg	3 1/2	914	-135.30	428.91	31.5	Pass
T1	350 - 341.945	Diagonal	3/4	9	2.42	15.03	16.1	Pass
T2	341.945 - 340	Diagonal	3/4	34	3.26	15.03	21.7	Pass
T3	340 - 320	Diagonal	3/4	84	3.58	15.03	23.8	Pass
T4	320 - 300	Diagonal	3/4	99	3.68	15.03	24.5	Pass
T5	300 - 280	Diagonal	7/8	166	6.11	20.46	29.9	Pass
T6	280 - 260	Diagonal	7/8	235	5.39	20.46	26.3	Pass
T7	260 - 240	Diagonal	2x1/2	250	9.67	34.02	28.4	Pass
T8	240 - 220	Diagonal	2x1/2	333	10.08	34.02	29.6	Pass
T9	220 - 200	Diagonal	7/8	352	3.47	20.46	17.0	Pass
T10	200 - 180	Diagonal	7/8	408	10.57	20.46	51.7	Pass
T11	180 - 160	Diagonal	7/8	495	9.66	20.46	47.2	Pass
T12	160 - 140	Diagonal	7/8	544	3.83	20.46	18.7	Pass
T13	140 - 120	Diagonal	7/8	556	7.66	20.46	37.4	Pass
T14	120 - 100	Diagonal	7/8	643	6.91	20.46	33.8	Pass
T15	100 - 80	Diagonal	3/4	694	4.53	15.03	30.1	Pass
T16	80 - 60	Diagonal	3/4	714	3.51	15.03	23.3	Pass
T17	60 - 40	Diagonal	3/4	779	3.97	15.03	26.4	Pass
T18	40 - 20	Diagonal	3/4	850	2.06	15.03	13.7	Pass
T19	20 - 8.05469	Diagonal	3/4	859	3.08	15.03	20.5	Pass
T20	8.05469 - 6	Diagonal	3/4	892	3.66	15.03	24.3	Pass
T21	6 - 2.66927	Diagonal	2x1/2	911	0.01	34.02	0.0	Pass
T1	350 - 341.945	Horizontal	L2x2x3/16	14	-1.01	15.18	6.7	Pass
T3	340 - 320	Horizontal	L2x2x3/16	80	5.38	24.32	22.1	Pass
T4	320 - 300	Horizontal	L2x2x3/16	104	-2.44	15.18	16.1	Pass
T5	300 - 280	Horizontal	L2x2x1/4	172	-4.32	20.05	21.6	Pass
T6	280 - 260	Horizontal	L2x2x1/4	232	-3.58	20.05	17.9	Pass
T7	260 - 240	Horizontal	L2 1/2x2 1/2x1/4	256	-6.48	29.14	22.2	Pass
T8	240 - 220	Horizontal	L2 1/2x2 1/2x1/4	336	12.10	40.48	29.9	Pass
T9	220 - 200	Horizontal	L2x2x1/4	367	-1.93	20.05	9.6	Pass
T10	200 - 180	Horizontal	L2x2x1/4	411	-6.75	20.22	33.4	Pass
T11	180 - 160	Horizontal	L2x2x1/4	488	10.89	31.91	34.1	Pass
T12	160 - 140	Horizontal	L2x2x1/4	522	-1.86	20.22	9.2	Pass
T13	140 - 120	Horizontal	L2x2x1/4	562	-4.80	20.22	23.7	Pass
T14	120 - 100	Horizontal	L2x2x1/4	641	8.73	31.91	27.4	Pass
T15	100 - 80	Horizontal	L2x2x3/16	691	-2.82	15.50	18.2	Pass
T16	80 - 60	Horizontal	L2x2x3/16	717	-2.19	15.50	14.1	Pass
T17	60 - 40	Horizontal	L2x2x3/16	794	4.86	24.32	20.0	Pass
T18	40 - 20	Horizontal	L2x2x3/16	818	-2.38	15.50	15.3	Pass
T19	20 - 8.05469	Horizontal	L2x2x3/16	866	-2.35	15.50	15.2	Pass
T1	350 - 341.945	Top Girt	L2x2x3/16	6	-0.08	15.18	0.5	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (k)	ϕP_{allow} (k)	% Capacity	Pass / Fail
T2	341.945 - 340	Top Girt	L2x2x3/16	26	-2.34	15.18	15.4	Pass
T3	340 - 320	Top Girt	L2x2x3/16	41	-1.33	15.18	8.8	Pass
T4	320 - 300	Top Girt	L2x2x3/16	92	-0.93	15.18	6.1	Pass
T5	300 - 280	Top Girt	L2x2x1/4	143	-1.54	20.05	7.7	Pass
T6	280 - 260	Top Girt	L2x2x1/4	193	-2.12	20.05	10.6	Pass
T7	260 - 240	Top Girt	L2 1/2x2 1/2x1/4	246	-1.29	29.14	4.4	Pass
T8	240 - 220	Top Girt	L2 1/2x2 1/2x1/4	295	-3.67	29.14	12.6	Pass
T9	220 - 200	Top Girt	L2x2x1/4	346	-1.93	20.05	9.6	Pass
T10	200 - 180	Top Girt	L2x2x1/4	397	-2.29	20.22	11.3	Pass
T11	180 - 160	Top Girt	L2x2x1/4	450	-3.45	20.22	17.1	Pass
T12	160 - 140	Top Girt	L2x2x1/4	501	-1.86	20.22	9.2	Pass
T13	140 - 120	Top Girt	L2x2x1/4	552	-2.20	20.22	10.9	Pass
T14	120 - 100	Top Girt	L2x2x1/4	601	-2.45	20.22	12.1	Pass
T15	100 - 80	Top Girt	L2x2x3/16	653	-2.12	15.50	13.6	Pass
T16	80 - 60	Top Girt	L2x2x3/16	704	-2.13	15.50	13.7	Pass
T17	60 - 40	Top Girt	L2x2x3/16	755	-2.30	15.50	14.8	Pass
T18	40 - 20	Top Girt	L2x2x3/16	806	-2.38	15.50	15.3	Pass
T19	20 - 8.05469	Top Girt	L2x2x3/16	857	-2.35	15.50	15.2	Pass
T20	8.05469 - 6	Top Girt	L2x2x3/16	886	-2.65	15.50	17.1	Pass
T21	6 - 2.66927	Top Girt	L3x3x3/8	901	20.41	71.78	28.4	Pass
T2	341.945 - 340	Bottom Girt	L2x2x3/16	29	-1.59	15.18	10.5	Pass
T3	340 - 320	Bottom Girt	L2x2x3/16	44	-0.73	15.18	4.8	Pass
T4	320 - 300	Bottom Girt	L2x2x3/16	95	-1.34	15.18	8.8	Pass
T5	300 - 280	Bottom Girt	L2x2x1/4	145	-2.11	20.05	10.5	Pass
T6	280 - 260	Bottom Girt	L2x2x1/4	198	-1.28	20.05	6.4	Pass
T7	260 - 240	Bottom Girt	L2 1/2x2 1/2x1/4	247	-3.66	29.14	12.6	Pass
T8	240 - 220	Bottom Girt	L2 1/2x2 1/2x1/4	300	-2.09	29.14	7.2	Pass
T9	220 - 200	Bottom Girt	L2x2x1/4	349	-1.93	20.05	9.6	Pass
T10	200 - 180	Bottom Girt	L2x2x1/4	402	-3.86	20.22	19.1	Pass
T11	180 - 160	Bottom Girt	L2x2x1/4	453	-2.17	20.22	10.7	Pass
T12	160 - 140	Bottom Girt	L2x2x1/4	504	-1.86	20.22	9.2	Pass
T13	140 - 120	Bottom Girt	L2x2x1/4	553	-2.90	20.22	14.3	Pass
T14	120 - 100	Bottom Girt	L2x2x1/4	606	-2.42	20.22	12.0	Pass
T15	100 - 80	Bottom Girt	L2x2x3/16	656	-2.12	15.50	13.6	Pass
T16	80 - 60	Bottom Girt	L2x2x3/16	707	-2.13	15.50	13.7	Pass
T17	60 - 40	Bottom Girt	L2x2x3/16	758	-2.30	15.50	14.8	Pass
T18	40 - 20	Bottom Girt	L2x2x3/16	809	-2.38	15.50	15.3	Pass
T20	8.05469 - 6	Bottom Girt	L2x2x3/16	889	6.01	24.32	24.7	Pass
T21	6 - 2.66927	Bottom Girt	L2x2x1/4	904	-2.47	27.80	8.9	Pass
T22	2.66927 - 0	Bottom Girt	18x3/8	916	-3.12	223.25	4.5	Pass
T3	340 - 320	Guy A@335.836	7/8	953	18.14	50.21	36.1	Pass
T5	300 - 280	Guy A@295.836	7/8	948	18.99	50.21	37.8	Pass
T8	240 - 220	Guy A@235.836	1	942	27.54	65.83	41.8	Pass
T11	180 - 160	Guy A@175.836	7/8	936	20.95	50.21	41.7	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (k)	ϕP_{allow} (k)	% Capacity	Pass / Fail
T14	120 - 100	Guy A@115.836	3/4	930	14.04	36.73	38.2	Pass
T17	60 - 40	Guy A@55.8359	9/16	924	7.37	22.05	33.4	Pass
T3	340 - 320	Guy B@335.836	7/8	951	18.41	50.21	36.7	Pass
T5	300 - 280	Guy B@295.836	7/8	945	19.20	50.21	38.2	Pass
T8	240 - 220	Guy B@235.836	1	939	27.30	65.83	41.5	Pass
T11	180 - 160	Guy B@175.836	7/8	933	20.38	50.21	40.6	Pass
T14	120 - 100	Guy B@115.836	3/4	927	13.65	36.73	37.2	Pass
T17	60 - 40	Guy B@55.8359	9/16	921	7.18	22.05	32.6	Pass
T3	340 - 320	Guy C@335.836	7/8	950	18.34	50.21	36.5	Pass
T5	300 - 280	Guy C@295.836	7/8	944	18.88	50.21	37.6	Pass
T8	240 - 220	Guy C@235.836	1	937	27.36	65.83	41.6	Pass
T11	180 - 160	Guy C@175.836	7/8	931	20.77	50.21	41.4	Pass
T14	120 - 100	Guy C@115.836	3/4	925	14.03	36.73	38.2	Pass
T17	60 - 40	Guy C@55.8359	9/16	919	7.40	22.05	33.6	Pass
							Summary	
						Leg (T9)	44.4	Pass
						Diagonal (T10)	51.7	Pass
						Horizontal (T11)	34.1	Pass
						Top Girt (T21)	28.4	Pass
						Bottom Girt (T20)	24.7	Pass
						Guy A (T8)	41.8	Pass
						Guy B (T8)	41.5	Pass
						Guy C (T8)	41.6	Pass
						Bolt Checks	47.7	Pass
						RATING =	51.7	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Mast Foundation Structural	-	1.2	Pass
1,2	Mast Foundation Soil Interaction	-	36.7	Pass
1,2	Guy Anchor Structural	-	82.9	Pass
1,2	Guy Anchor Soil Interaction	-	30.3	Pass

Structure Rating (max from all components) =	82.9%
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- Notes:
- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
 - 2) Rating per TIA-222-H Section 15.5

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Lake City (SR 47 & US 41) (BU 870081)	Page 1 of 38
	Project TEP No. 145283.722965	Date 16:23:19 07/26/22
	Client Crown Castle	Designed by anearning

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 350' 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 4' at the top and tapered at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:
Tower is located in Columbia County, Florida.
Tower base elevation above sea level: 140'.
Basic wind speed of 118 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0'.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Safety factor used in guy design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$.
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 |

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	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearing

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	350'-341'11-13/32"			4'	1	8'19/32"
T2	341'11-13/32"-340'			4'	1	1'11-13/32"
T3	340'-320'			4'	1	20'
T4	320'-300'			4'	1	20'
T5	300'-280'			4'	1	20'
T6	280'-260'			4'	1	20'
T7	260'-240'			4'	1	20'
T8	240'-220'			4'	1	20'
T9	220'-200'			4'	1	20'
T10	200'-180'			4'	1	20'
T11	180'-160'			4'	1	20'
T12	160'-140'			4'	1	20'
T13	140'-120'			4'	1	20'
T14	120'-100'			4'	1	20'
T15	100'-80'			4'	1	20'
T16	80'-60'			4'	1	20'
T17	60'-40'			4'	1	20'
T18	40'-20'			4'	1	20'
T19	20'-8'19/32"			4'	1	11'11-13/32"
T20	8'19/32"-6'			4'	1	2'19/32"
T21	6'-2'8-1/32"			4'	1	3'3-31/32"
T22	2'8-1/32"-0'			1'9-3/8"	1	2'8-1/32"

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	350'-341'11-13/32"	3'10-11/16"	TX Brace	No	Yes	3.2813	0.0000
T2	341'11-13/32"-340'	1'8-1/32"	TX Brace	No	Yes	0.0000	3.2813
T3	340'-320'	3'10-11/16"	TX Brace	No	Yes	3.2813	3.2813
T4	320'-300'	3'10-11/16"	TX Brace	No	Yes	3.2813	3.2813
T5	300'-280'	3'10-11/16"	TX Brace	No	Yes	3.2813	3.2813
T6	280'-260'	3'10-11/16"	TX Brace	No	Yes	3.2813	3.2813
T7	260'-240'	3'10-11/16"	TX Brace	No	Yes	3.2813	3.2813
T8	240'-220'	3'10-11/16"	TX Brace	No	Yes	3.2813	3.2813
T9	220'-200'	3'10-11/16"	TX Brace	No	Yes	3.2813	3.2813
T10	200'-180'	3'10-11/16"	TX Brace	No	Yes	3.2813	3.2813
T11	180'-160'	3'10-11/16"	TX Brace	No	Yes	3.2813	3.2813
T12	160'-140'	3'10-11/16"	TX Brace	No	Yes	3.2813	3.2813
T13	140'-120'	3'10-11/16"	TX Brace	No	Yes	3.2813	3.2813
T14	120'-100'	3'10-11/16"	TX Brace	No	Yes	3.2813	3.2813
T15	100'-80'	3'10-11/16"	TX Brace	No	Yes	3.2813	3.2813
T16	80'-60'	3'10-11/16"	TX Brace	No	Yes	3.2813	3.2813
T17	60'-40'	3'10-11/16"	TX Brace	No	Yes	3.2813	3.2813
T18	40'-20'	3'10-11/16"	TX Brace	No	Yes	3.2813	3.2813
T19	20'-8'19/32"	3'10-11/16"	TX Brace	No	Yes	3.2813	0.0000
T20	8'19/32"-6'	1'9-3/8"	TX Brace	No	Yes	0.0000	3.2813
T21	6'-2'8-1/32"	3'3"	TX Brace	No	Yes	1.0000	0.0000

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	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearring

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T22	2'8-1/32"-0'	1'11-1/32"	X Brace	No	Yes	0.0000	9.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 350'-341'11-13/32"	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	3/4	A36 (36 ksi)
T2 341'11-13/32"-340'	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	3/4	A36 (36 ksi)
T3 340'-320'	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	3/4	A36 (36 ksi)
T4 320'-300'	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	3/4	A36 (36 ksi)
T5 300'-280'	Solid Round	3	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T6 280'-260'	Solid Round	3	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T7 260'-240'	Solid Round	3	A572-50 (50 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T8 240'-220'	Solid Round	3	A572-50 (50 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T9 220'-200'	Solid Round	3	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T10 200'-180'	Solid Round	3 1/2	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T11 180'-160'	Solid Round	3 1/2	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T12 160'-140'	Solid Round	3 1/2	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T13 140'-120'	Solid Round	3 1/2	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T14 120'-100'	Solid Round	3 1/2	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T15 100'-80'	Solid Round	3 1/2	A572-50 (50 ksi)	Solid Round	3/4	A36 (36 ksi)
T16 80'-60'	Solid Round	3 1/2	A572-50 (50 ksi)	Solid Round	3/4	A36 (36 ksi)
T17 60'-40'	Solid Round	3 1/2	A572-50 (50 ksi)	Solid Round	3/4	A36 (36 ksi)
T18 40'-20'	Solid Round	3 1/2	A572-50 (50 ksi)	Solid Round	3/4	A36 (36 ksi)
T19 20'-8'19/32"	Solid Round	3 1/2	A572-50 (50 ksi)	Solid Round	3/4	A36 (36 ksi)
T20 8'19/32"-6'	Solid Round	3 1/2	A572-50 (50 ksi)	Solid Round	3/4	A36 (36 ksi)
T21 6'-2'8-1/32"	Solid Round	3 1/2	A572-50 (50 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T22 2'8-1/32"-0'	Solid Round	3 1/2	A572-50 (50 ksi)	Flat Bar		A36 (36 ksi)

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	Project TEP No. 145283.722965	Date 16:23:19 07/26/22
	Client Crown Castle	Designed by anearring

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 350'-341'11-13/32"	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T2 341'11-13/32"-340'	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T3 340'-320'	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T4 320'-300'	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T5 300'-280'	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T6 280'-260'	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T7 260'-240'	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T8 240'-220'	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T9 220'-200'	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T10 200'-180'	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T11 180'-160'	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T12 160'-140'	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T13 140'-120'	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T14 120'-100'	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T15 100'-80'	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T16 80'-60'	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T17 60'-40'	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T18 40'-20'	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T19 20'-8'-19/32"	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T20 8'-19/32"-6'	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T21 6'-2'-8'-1/32"	Single Angle	L3x3x3/8	A36 (36 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T22 2'-8'-1/32"-0'	Single Angle		A36 (36 ksi)	Flat Bar	18x3/8	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
T1 350'-341'11-13/32"	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)

inxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	5 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearing

Tower Elevation	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
ft							
2"							
T2	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
341'11"-13/32"-340'							
T3 340'-320'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T4 320'-300'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T5 300'-280'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T6 280'-260'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T7 260'-240'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T8 240'-220'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T9 220'-200'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T10 200'-180'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T11 180'-160'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T12 160'-140'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T13 140'-120'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T14 120'-100'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T15 100'-80'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T16 80'-60'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T17 60'-40'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T18 40'-20'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T19 20'-8"19/32"	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T20 8"19/32"-6'	None	Solid Round		A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T21 6'-2'8-1/32"	None	Solid Round		A572-50 (50 ksi)	Single Angle	L3x3x3/8	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_r	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
ft	ft ²	in							
T1	0.00	0.0000	A36 (36 ksi)	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
350'-341'11"-13/32"									
T2	0.00	0.0000	A36 (36 ksi)	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
341'11"-13/32"-340'									
T3 340'-320'	0.00	0.0000	A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Lake City (SR 47 & US 41) (BU 870081)	Page 6 of 38
	Project TEP No. 145283.722965	Date 16:23:19 07/26/22
	Client Crown Castle	Designed by anearning

Tower Elevation	Gusset Area (per face)	Gusset Thickness	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
ft	ft ²	in							
T4 320'-300'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T5 300'-280'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T6 280'-260'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T7 260'-240'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T8 240'-220'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T9 220'-200'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T10 200'-180'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T11 180'-160'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T12 160'-140'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T13 140'-120'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T14 120'-100'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T15 100'-80'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T16 80'-60'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T17 60'-40'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T18 40'-20'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T19 20'-8'19/32"	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T20 8'19/32"-6'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T21 6'-2'8-1/32"	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt
T22 2'8-1/32"-0'	0.00	0.0000	(36 ksi) A36	1	1	1	Mid-Pt	Mid-Pt	Mid-Pt

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹						
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
T1 350'-341'11-1/32"	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 341'11-13/32"-340'	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 340'-320'	Yes	Yes	1	1	1	1	1	1	1	1

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	7 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearing

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors ¹							
			Legs	X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
T4 320'-300'	Yes	Yes	1	1	1	1	1	1	1	1
T5 300'-280'	Yes	Yes	1	1	1	1	1	1	1	1
T6 280'-260'	Yes	Yes	1	1	1	1	1	1	1	1
T7 260'-240'	Yes	Yes	1	1	1	1	1	1	1	1
T8 240'-220'	Yes	Yes	1	1	1	1	1	1	1	1
T9 220'-200'	Yes	Yes	1	1	1	1	1	1	1	1
T10 200'-180'	Yes	Yes	1	1	1	1	1	1	1	1
T11 180'-160'	Yes	Yes	1	1	1	1	1	1	1	1
T12 160'-140'	Yes	Yes	1	1	1	1	1	1	1	1
T13 140'-120'	Yes	Yes	1	1	1	1	1	1	1	1
T14 120'-100'	Yes	Yes	1	1	1	1	1	1	1	1
T15 100'-80'	Yes	Yes	1	1	1	1	1	1	1	1
T16 80'-60'	Yes	Yes	1	1	1	1	1	1	1	1
T17 60'-40'	Yes	Yes	1	1	1	1	1	1	1	1
T18 40'-20'	Yes	Yes	1	1	1	1	1	1	1	1
T19 20'-8'19/32"	Yes	Yes	1	1	1	1	1	1	1	1
T20 8'19/32"-6'	Yes	Yes	1	1	1	1	1	1	1	1
T21 6'-2'8-1/32"	Yes	Yes	1	1	1	1	1	1	1	1
T22 2'8-1/32"-0'	Yes	Yes	1	1	1	1	1	1	1	1

¹Note: 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 350'-341'11-13/32"	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1	0.0000	1

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	9 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearring

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
T18 40'-20'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T19 20'-8'19/32"	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T20 8'19/32"-6'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T21 6'-2'8-1/32"	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T22 2'8-1/32"-0'	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	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 350'-341'11"-13/32"	Flange	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T2 341'11"-13/32"-340'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T3 340'-320'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T4 320'-300'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T5 300'-280'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T6 280'-260'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T7 260'-240'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T8 240'-220'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T9 220'-200'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T10 200'-180'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T11 180'-160'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T12 160'-140'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T13 140'-120'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T14 120'-100'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T15 100'-80'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T16 80'-60'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T17 60'-40'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Lake City (SR 47 & US 41) (BU 870081)	Page 10 of 38
	Project TEP No. 145283.722965	Date 16:23:19 07/26/22
	Client Crown Castle	Designed by anearing

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.
T18 40'-20'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T19 20'-8'19/32"	Flange	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T20 8'19/32"-6'	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T21 6'-2'8-1/32"	Flange	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0
T22 2'8-1/32"-0'	Flange	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0

Guy Data

Guy Elevation ft	Guy Grade	Guy Size	Initial Tension K	%	Guy Modulus ksi	Guy Weight plf	L _u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
55.8359	EHS	A 9/16	3.50	10%	23000	0.671	180'6-27/32"	173'	0.0000	0'	100%
		B 9/16	3.50	10%	23000	0.671	180'6-27/32"	173'	0.0000	0'	100%
		C 9/16	3.50	10%	23000	0.671	180'6-27/32"	173'	0.0000	0'	100%
115.836	EHS	A 3/4	5.83	10%	24000	1.155	207'1-5/16"	173'	0.0000	0'	100%
		B 3/4	5.83	10%	24000	1.155	207'1-5/16"	173'	0.0000	0'	100%
		C 3/4	5.83	10%	24000	1.155	207'1-5/16"	173'	0.0000	0'	100%
175.836	EHS	A 7/8	7.97	10%	24000	1.581	245'8-13/32"	173'	0.0000	0'	100%
		B 7/8	7.97	10%	24000	1.581	245'8-13/32"	173'	0.0000	0'	100%
		C 7/8	7.97	10%	24000	1.581	245'8-13/32"	173'	0.0000	0'	100%
235.836	EHS	A 1	10.45	10%	24000	2.100	291'7-5/16"	173'	0.0000	0'	100%
		B 1	10.45	10%	24000	2.100	291'7-5/16"	173'	0.0000	0'	100%
		C 1	10.45	10%	24000	2.100	291'7-5/16"	173'	0.0000	0'	100%
295.836	EHS	A 7/8	7.97	10%	24000	1.581	341'10-11/16	173'	0.0000	0'	100%
		B 7/8	7.97	10%	24000	1.581	"	173'	0.0000	0'	100%
		C 7/8	7.97	10%	24000	1.581	341'10-11/16	173'	0.0000	0'	100%
							"				
							341'10-11/16				
							"				
335.836	EHS	A 7/8	7.97	10%	24000	1.581	376'11-7/8"	173'	0.0000	0'	100%
		B 7/8	7.97	10%	24000	1.581	376'11-7/8"	173'	0.0000	0'	100%
		C 7/8	7.97	10%	24000	1.581	376'11-7/8"	173'	0.0000	0'	100%

Guy Data(cont'd)

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
55.8359	Face						
115.836	Face						
175.836	Face						
235.836	Face						
295.836	Face						
335.836	Face						

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Lake City (SR 47 & US 41) (BU 870081)	Page 11 of 38
	Project TEP No. 145283.722965	Date 16:23:19 07/26/22
	Client Crown Castle	Designed by anearring

Guy Data (cont'd)

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap	Pull-Off Grade	Pull-Off Type	Pull-Off Size
55'10-3/32"	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
115'10-3/32"	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
175'10-3/32"	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
235'10-3/32"	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
295'10-3/32"	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
335'10-3/32"	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	

Guy Data (cont'd)

Guy Elevation ft	Cable Weight A K	Cable Weight B K	Cable Weight C K	Cable Weight D K	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
55.8359	0.12	0.12	0.12		3'1-5/16"	3'1-5/16"	3'1-5/16"	
					3.0 sec/pulse	3.0 sec/pulse	3.0 sec/pulse	
115.836	0.24	0.24	0.24		4'2-13/32"	4'2-13/32"	4'2-13/32"	
					3.5 sec/pulse	3.5 sec/pulse	3.5 sec/pulse	
175.836	0.39	0.39	0.39		5'10-11/16"	5'10-11/16"	5'10-11/16"	
					4.2 sec/pulse	4.2 sec/pulse	4.2 sec/pulse	
235.836	0.61	0.61	0.61		8'4-3/16"	8'4-3/16"	8'4-3/16"	
					5.0 sec/pulse	5.0 sec/pulse	5.0 sec/pulse	
295.836	0.54	0.54	0.54		11'3-1/4"	11'3-1/4"	11'3-1/4"	
					5.8 sec/pulse	5.8 sec/pulse	5.8 sec/pulse	
335.836	0.60	0.60	0.60		13'7-13/16"	13'7-13/16"	13'7-13/16"	
					6.4 sec/pulse	6.4 sec/pulse	6.4 sec/pulse	

Guy Data (cont'd)

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm		Pull Off		Diagonal	
			K _x	K _y	K _x	K _y	K _x	K _y
55.8359	No	No			0.7	0.7	1	1
115.836	No	No			0.7	0.7	1	1
175.836	No	No			0.7	0.7	1	1
235.836	No	No			0.7	0.7	1	1
295.836	No	No			0.7	0.7	1	1
335.836	No	No			0.7	0.7	1	1

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	12 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearing

Guy Data (cont'd)

Guy Elevation ft	Torque-Arm				Pull Off				Diagonal			
	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U
55.8359	0.0000	0	0.0000	1	0.0000	0	0.0000	1	0.0000	0	0.0000	1
115.836	0.6250	0	0.0000	0.75	A325N	0	0.0000	1	A325N	0	0.0000	1
175.836	0.6250	0	0.0000	0.75	A325N	0	0.0000	1	A325N	0	0.0000	1
235.836	0.6250	0	0.0000	0.75	A325N	0	0.0000	1	A325N	0	0.0000	1
295.836	0.6250	0	0.0000	0.75	A325N	0	0.0000	1	A325N	0	0.0000	1
335.836	0.6250	0	0.0000	0.75	A325N	0	0.0000	1	A325N	0	0.0000	1

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q _z psf	q _z Ice psf	Ice Thickness in
55.8359	A	27'11-1/32"	28		
	B	27'11-1/32"	28		
	C	27'11-1/32"	28		
115.836	A	57'11-1/32"	32		
	B	57'11-1/32"	32		
	C	57'11-1/32"	32		
175.836	A	87'11-1/32"	35		
	B	87'11-1/32"	35		
	C	87'11-1/32"	35		
235.836	A	117'11-1/32"	38		
	B	117'11-1/32"	38		
	C	117'11-1/32"	38		
295.836	A	147'11-1/32"	39		
	B	147'11-1/32"	39		
	C	147'11-1/32"	39		
335.836	A	167'11-1/32"	40		
	B	167'11-1/32"	40		
	C	167'11-1/32"	40		

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 plf
* FACE A*													
LDF7-50A(1-5/8)	A	No	No	Ar (CaAa)	250' - 0'	0.0000	-0.2	7	4	0.5000	1.9800		0.82
LDF7-50A(1-5/8)	A	No	No	Ar (CaAa)	250' - 0'	0.0000	0.3	4	4	0.5000	1.9800		0.82
MLC HYBRID 6X12	A	No	No	Ar (CaAa)	250' - 0'	2.0000	0.34	2	2	0.5000	1.5500		1.85

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	14 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearring

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 plf
RLSS 8AWG DC(3/4")	C	No	No	Ar (CaAa)	201' - 0'	5.0000	0.1	1	1	0.5000	0.7350		0.49
FB-L98B-002- 50000(3/8")	C	No	No	Ar (CaAa)	201' - 0'	5.0000	0.03	2	2	0.5000	0.3937		0.06
RLSS 8AWG DC(3/4")	C	No	No	Ar (CaAa)	201' - 0'	4.0000	-0.015	1	1	0.5000	0.7350		0.49
RLSS 8AWG DC(3/4")	C	No	No	Ar (CaAa)	201' - 0'	0.0000	-0.02	2	1	0.5000	0.7350		0.49
ATCB-B01-00 1(5/16) *	C	No	No	Ar (CaAa)	201' - 0'	3.0000	-0.02	1	1	0.5000	0.3150		0.07
LMR-400(3/8") *	C	No	No	Ar (CaAa)	164' - 0'	0.0000	0.45	1	1	0.5000	0.4050		0.07
EC5-50(7/8") *	A	No	No	Ar (CaAa)	164' - 0'	0.0000	-0.45	1	1	0.5000	1.1020		0.36
Waveguide Brackets *	C	No	No	Af (CaAa)	350' - 0'	0.0000	0	1	1	1.7500	1.7500		1.27
RPM 777 380(3/8")	C	No	No	Ar (CaAa)	210' - 0'	0.0000	0.5	2	2	0.3800	0.3800		0.22
RPM 777 380(3/8") **** **** ****	C	No	No	Ar (CaAa)	350' - 210'	0.0000	0.5	1	1	0.3800	0.3800		0.22

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
T1	350'-341'11"-13/32'	A	0.000	0.000	5.336	0.000	0.04
		B	0.000	0.000	3.421	0.000	0.01
		C	0.000	0.000	2.655	0.000	0.01
T2	341'11"-13/32"-340'	A	0.000	0.000	1.289	0.000	0.01
		B	0.000	0.000	1.250	0.000	0.00
		C	0.000	0.000	0.641	0.000	0.00
T3	340'-320'	A	0.000	0.000	13.250	0.000	0.11
		B	0.000	0.000	16.129	0.000	0.05
		C	0.000	0.000	6.593	0.000	0.03
T4	320'-300'	A	0.000	0.000	13.250	0.000	0.11
		B	0.000	0.000	29.233	0.000	0.08
		C	0.000	0.000	6.593	0.000	0.03
T5	300'-280'	A	0.000	0.000	13.250	0.000	0.11
		B	0.000	0.000	29.233	0.000	0.08
		C	0.000	0.000	6.593	0.000	0.03
T6	280'-260'	A	0.000	0.000	13.250	0.000	0.11
		B	0.000	0.000	32.203	0.000	0.09
		C	0.000	0.000	6.593	0.000	0.03
T7	260'-240'	A	0.000	0.000	40.130	0.000	0.27
		B	0.000	0.000	36.118	0.000	0.10
		C	0.000	0.000	6.593	0.000	0.03
T8	240'-220'	A	0.000	0.000	67.897	0.000	0.43
		B	0.000	0.000	36.433	0.000	0.10
		C	0.000	0.000	20.849	0.000	0.09
T9	220'-200'	A	0.000	0.000	75.884	0.000	0.50
		B	0.000	0.000	36.433	0.000	0.10

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	15 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearing

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
T10	200'-180'	C	0.000	0.000	43.438	0.000	0.18
		A	0.000	0.000	75.884	0.000	0.50
		B	0.000	0.000	36.433	0.000	0.10
T11	180'-160'	C	0.000	0.000	101.966	0.000	0.40
		A	0.000	0.000	76.325	0.000	0.50
		B	0.000	0.000	36.433	0.000	0.10
T12	160'-140'	C	0.000	0.000	102.128	0.000	0.40
		A	0.000	0.000	78.088	0.000	0.50
		B	0.000	0.000	43.921	0.000	0.12
T13	140'-120'	C	0.000	0.000	108.392	0.000	0.41
		A	0.000	0.000	78.088	0.000	0.50
		B	0.000	0.000	45.793	0.000	0.12
T14	120'-100'	C	0.000	0.000	109.796	0.000	0.42
		A	0.000	0.000	78.088	0.000	0.50
		B	0.000	0.000	45.793	0.000	0.12
T15	100'-80'	C	0.000	0.000	109.796	0.000	0.42
		A	0.000	0.000	78.088	0.000	0.50
		B	0.000	0.000	45.793	0.000	0.12
T16	80'-60'	C	0.000	0.000	109.796	0.000	0.42
		A	0.000	0.000	78.088	0.000	0.50
		B	0.000	0.000	45.793	0.000	0.12
T17	60'-40'	C	0.000	0.000	109.796	0.000	0.42
		A	0.000	0.000	78.088	0.000	0.50
		B	0.000	0.000	45.793	0.000	0.12
T18	40'-20'	C	0.000	0.000	109.796	0.000	0.42
		A	0.000	0.000	78.088	0.000	0.50
		B	0.000	0.000	45.793	0.000	0.12
T19	20'-8'19/32"	C	0.000	0.000	109.796	0.000	0.42
		A	0.000	0.000	46.653	0.000	0.30
		B	0.000	0.000	27.351	0.000	0.07
T20	8'19/32"-6'	C	0.000	0.000	65.577	0.000	0.25
		A	0.000	0.000	8.032	0.000	0.05
		B	0.000	0.000	4.705	0.000	0.01
T21	6'-2'8-1/32"	C	0.000	0.000	11.280	0.000	0.04
		A	0.000	0.000	13.019	0.000	0.08
		B	0.000	0.000	7.626	0.000	0.02
T22	2'8-1/32"-0'	C	0.000	0.000	18.285	0.000	0.07
		A	0.000	0.000	10.434	0.000	0.07
		B	0.000	0.000	6.112	0.000	0.02
		C	0.000	0.000	14.654	0.000	0.06

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
T1	350'-341'11-13/32"	-0.9965	-0.9802	-0.9965	-0.9802
T2	341'11-13/32"-340'	-0.3451	-1.2217	-0.3451	-1.2217
T3	340'-320'	-0.2365	-2.2998	-0.2365	-2.2998
T4	320'-300'	0.7425	-4.1089	0.7425	-4.1089
T5	300'-280'	0.6936	-3.8513	0.6936	-3.8513
T6	280'-260'	0.8583	-4.0265	0.8583	-4.0265
T7	260'-240'	-0.7111	-4.6442	-0.7111	-4.6442
T8	240'-220'	-1.5254	-4.4233	-1.5254	-4.4233
T9	220'-200'	-2.0604	-2.7429	-2.0604	-2.7429
T10	200'-180'	-3.5463	-0.4646	-3.5402	-0.4638
T11	180'-160'	-3.6032	-0.4262	-3.5982	-0.4256
T12	160'-140'	-2.7239	0.0280	-2.7214	0.0280

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	16 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearring

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
T13	140'-120'	-2.4629	0.1003	-2.4617	0.1003
T14	120'-100'	-2.4617	0.1003	-2.4617	0.1003
T15	100'-80'	-2.4729	0.1007	-2.4729	0.1007
T16	80'-60'	-2.4729	0.1007	-2.4729	0.1007
T17	60'-40'	-2.4729	0.1007	-2.4729	0.1007
T18	40'-20'	-2.4729	0.1007	-2.4729	0.1007
T19	20'-8'19/32"	-2.5004	0.1030	-2.5004	0.1030
T20	8'19/32"-6'	-2.1823	0.0950	-2.1823	0.0950
T21	6'-2'8-1/32"	-1.5932	0.1621	-1.5932	0.1621
T22	2'8-1/32"-0'	-0.8557	0.2280	-0.8557	0.2280

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
12" x 24" Beacon	C	From Leg	0.00 0' 3'	0.0000	350'	No Ice	1.00	1.00	0.03
2.4" Dia x 2.5-ft Mount Pipe	C	From Leg	0.00 0' 1'	0.0000	350'	No Ice	0.46	0.46	0.01
5/8"x6-ft L Rod	A	From Leg	0.00 0' 3'	0.0000	350'	No Ice	0.38	0.38	0.01
8"x15" Dia. Beacon	A	From Leg	0.50 0' 0'	0.0000	210'	No Ice	0.42	0.42	0.05
8"x15" Dia. Beacon	C	From Leg	0.50 0' 0'	0.0000	210'	No Ice	0.42	0.42	0.05
345 DB228-B	A	From Leg	1.00 0' -1'	0.0000	345'	No Ice	7.30	7.30	0.07
DB420D-D	B	From Leg	6.00 0' 10'	0.0000	345'	No Ice	3.33	3.33	0.03
DB420D-D	B	From Leg	6.00 0' -11'	0.0000	345'	No Ice	3.33	3.33	0.03
(2) 2.4" Dia x 6-ft Pipe	A	From Leg	6.00 0' 0'	0.0000	345'	No Ice	1.43	1.43	0.02
(2) 2.4" Dia x 6-ft Pipe	B	From Leg	6.00 0' 0'	0.0000	345'	No Ice	1.43	1.43	0.02
(2) 2.4" Dia x 6-ft Pipe	C	From Leg	6.00 0' 0'	0.0000	345'	No Ice	1.43	1.43	0.02
(2) Side Arm Mount [SO 602-3] ***324***	C	None		0.0000	345'	No Ice	16.09	16.09	0.44

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	17 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearring

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>		<i>C_AA_A Front ft²</i>	<i>C_AA_A Side ft²</i>	<i>Weight K</i>
SRL-224NM-4	A	From Leg	6.00 0' 9'	0.0000	324'	No Ice	2.60	2.60	0.04
SD214	A	From Leg	6.00 0' 12'	0.0000	324'	No Ice	6.56	6.56	0.05
(2) SRL-224NM-4	B	From Leg	6.00 0' 9'	0.0000	324'	No Ice	2.60	2.60	0.04
SRL-224NM-4	C	From Leg	6.00 0' 9'	0.0000	324'	No Ice	2.60	2.60	0.04
(2) 2.4" Dia x 6-ft Pipe	A	From Leg	6.00 0' 0'	0.0000	324'	No Ice	1.43	1.43	0.02
(2) 2.4" Dia x 6-ft Pipe	B	From Leg	6.00 0' 0'	0.0000	324'	No Ice	1.43	1.43	0.02
(2) 2.4" Dia x 6-ft Pipe	C	From Leg	6.00 0' 0'	0.0000	324'	No Ice	1.43	1.43	0.02
(2) Side Arm Mount [SO 602-3] ***270***	C	None		0.0000	324'	No Ice	16.09	16.09	0.44
(2) SRL-224NM-4	B	From Leg	6.00 0' 8'	0.0000	270'	No Ice	2.60	2.60	0.04
(2) SRL-224NM-4	C	From Leg	6.00 0' 8'	0.0000	270'	No Ice	2.60	2.60	0.04
(2) 2.4" Dia x 6-ft Pipe	B	From Leg	6.00 0' 0'	0.0000	270'	No Ice	1.43	1.43	0.02
(2) 2.4" Dia x 6-ft Pipe	C	From Leg	6.00 0' 0'	0.0000	270'	No Ice	1.43	1.43	0.02
(2) Side Arm Mount [SO 602-1]	B	From Leg	3.00 0' 0'	0.0000	270'	No Ice	2.58	10.83	0.15
(2) Side Arm Mount [SO 602-1] ***255***	C	From Leg	3.00 0' 0'	0.0000	270'	No Ice	2.58	10.83	0.15
PD322-2	B	From Leg	3.00 0' 16'	0.0000	255'	No Ice	2.25	2.25	0.03
2.4" Dia x 2.5-ft Mount Pipe	B	From Leg	3.00 0' 0'	0.0000	255'	No Ice	0.46	0.46	0.01
Side Arm Mount [SO 305-1]	B	From Leg	1.50 0' 0'	0.0000	255'	No Ice	0.53	1.52	0.03
(2) X7CQAP-665-VR0 w/ Mount Pipe ***250***	A	From Leg	4.00 0' 0'	0.0000	250'	No Ice	8.88	6.44	0.09
(3) X7CQAP-665-VR0 w/	B	From Leg	4.00	0.0000	250'	No Ice	8.88	6.44	0.09

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	18 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearring

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft²	C _A A _A Side ft²	Weight K
Mount Pipe			0'						
X7CQAP-665-VR0 w/ Mount Pipe	C	From Leg	4.00 0'	0.0000	250'	No Ice	8.88	6.44	0.09
AIR 6449 w/ Mount Pipe	A	From Leg	4.00 0'	0.0000	250'	No Ice	5.18	2.72	0.12
AIR 6449 w/ Mount Pipe	B	From Leg	4.00 0'	0.0000	250'	No Ice	5.18	2.72	0.12
AIR 6449 w/ Mount Pipe	C	From Leg	4.00 0'	0.0000	250'	No Ice	5.18	2.72	0.12
X7CQAP-FRO-645-V w/ Mount Pipe	C	From Leg	4.00 0'	0.0000	250'	No Ice	12.64	8.29	0.09
(2) RDC-4276-PF-48	A	From Leg	4.00 0'	0.0000	250'	No Ice	5.09	2.32	0.03
(3) RRUS 32	A	From Leg	4.00 0'	0.0000	250'	No Ice	2.86	1.78	0.06
(2) RRUS 32	B	From Leg	4.00 0'	0.0000	250'	No Ice	2.86	1.78	0.06
(3) RRUS 32	C	From Leg	4.00 0'	0.0000	250'	No Ice	2.86	1.78	0.06
TD-850B-LTE78-43	A	From Leg	4.00 0'	0.0000	250'	No Ice	1.98	0.83	0.05
TD-850B-LTE78-43	B	From Leg	4.00 0'	0.0000	250'	No Ice	1.98	0.83	0.05
TD-850B-LTE78-43	C	From Leg	4.00 0'	0.0000	250'	No Ice	1.98	0.83	0.05
RCMDC-6627-PF-48	A	From Leg	4.00 0'	0.0000	250'	No Ice	4.06	3.10	0.03
(2) 4449	B	From Leg	4.00 0'	0.0000	250'	No Ice	1.97	1.40	0.07
(2) 4449	C	From Leg	4.00 0'	0.0000	250'	No Ice	1.97	1.40	0.07
DBC-AP	C	From Leg	4.00 0'	0.0000	250'	No Ice	0.32	0.13	0.01
2.4" Dia. x 10.5' Mount Pipe	A	From Leg	4.00 0'	0.0000	250'	No Ice	2.49	2.49	0.04
2.4" Dia. x 10.5' Mount Pipe	C	From Leg	4.00 0'	0.0000	250'	No Ice	2.49	2.49	0.04
(2) L2 1/2x2 1/2x1/4 x 8-ft	A	From Leg	2.00	0.0000	250'	No Ice	3.33	3.33	0.03

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job		Page
	Lake City (SR 47 & US 41) (BU 870081)		19 of 38
	Project		Date
	TEP No. 145283.722965		16:23:19 07/26/22
	Client		Designed by
	Crown Castle		aneering

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
			0'						
			5'						
(2) L2 1/2x2 1/2x1/4 x 8-ft	B	From Leg	2.00	0.0000	250'	No Ice	3.33	3.33	0.03
			0'						
			5'						
(2) L2 1/2x2 1/2x1/4 x 8-ft	C	From Leg	2.00	0.0000	250'	No Ice	3.33	3.33	0.03
			0'						
			5'						
2.9" Dia. x 12' Pipe	A	From Leg	4.00	0.0000	250'	No Ice	3.46	3.46	0.07
			0'						
			5'						
2.9" Dia. x 12' Pipe	B	From Leg	4.00	0.0000	250'	No Ice	3.46	3.46	0.07
			0'						
			5'						
2.9" Dia. x 12' Pipe	C	From Leg	4.00	0.0000	250'	No Ice	3.46	3.46	0.07
			0'						
			5'						
(2) 2.4" Dia. x 10-ft Mount Pipe	A	From Leg	2.00	0.0000	250'	No Ice	2.38	2.38	0.04
			0'						
			2'6"						
(2) 2.4" Dia. x 10-ft Mount Pipe	B	From Leg	2.00	0.0000	250'	No Ice	2.38	2.38	0.04
			0'						
			2'6"						
(2) 2.4" Dia. x 10-ft Mount Pipe	C	From Leg	2.00	0.0000	250'	No Ice	2.38	2.38	0.04
			0'						
			2'6"						
Pipe Mount [PM 601-3]	C	None		0.0000	250'	No Ice	3.17	3.17	0.20
Sector Mount [SM 503-3]	C	None		0.0000	250'	No Ice	30.43	30.43	1.69
FHH-65C-R3 w/ Mount Pipe	A	From Leg	4.00	0.0000	229'	No Ice	6.09	4.48	0.10
			0'						
			1'						
FHH-65C-R3 w/ Mount Pipe	B	From Leg	4.00	0.0000	229'	No Ice	6.09	4.48	0.10
			0'						
			1'						
FHH-65C-R3 w/ Mount Pipe	C	From Leg	4.00	0.0000	229'	No Ice	6.09	4.48	0.10
			0'						
			1'						
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00	0.0000	229'	No Ice	5.19	2.71	0.13
			0'						
			1'						
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00	0.0000	229'	No Ice	5.19	2.71	0.13
			0'						
			1'						
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00	0.0000	229'	No Ice	5.19	2.71	0.13
			0'						
			1'						
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00	0.0000	229'	No Ice	2.14	1.69	0.11
			0'						
			1'						
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00	0.0000	229'	No Ice	2.14	1.69	0.11
			0'						
			1'						
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.00	0.0000	229'	No Ice	2.14	1.69	0.11
			0'						
			1'						
Radio 4480_TMOV2	A	From Leg	4.00	0.0000	229'	No Ice	2.88	1.40	0.08

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	20 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearring

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
Radio 4480_TMOV2	B	From Leg	4.00 0' 1'	0.0000	229'	No Ice	2.88	1.40	0.08
Radio 4480_TMOV2	C	From Leg	4.00 0' 1'	0.0000	229'	No Ice	2.88	1.40	0.08
(2) 2.4" Dia. x 10-ft Mount Pipe	A	From Leg	4.00 0' 1'	0.0000	229'	No Ice	2.38	2.38	0.04
(2) 2.4" Dia. x 10-ft Mount Pipe	B	From Leg	4.00 0' 0'	0.0000	229'	No Ice	2.38	2.38	0.04
(2) 2.4" Dia. x 10-ft Mount Pipe	C	From Leg	4.00 0' 0'	0.0000	229'	No Ice	2.38	2.38	0.04
(2) 2.4" Dia x 6-ft Pipe	A	From Leg	2.00 0' 0'	0.0000	229'	No Ice	1.43	1.43	0.02
(2) 2.4" Dia x 6-ft Pipe	B	From Leg	2.00 0' 0'	0.0000	229'	No Ice	1.43	1.43	0.02
(2) 2.4" Dia x 6-ft Pipe	C	From Leg	2.00 0' 0'	0.0000	229'	No Ice	1.43	1.43	0.02
Sector Mount [SM 504-3]	C	None		0.0000	229'	No Ice	31.05	31.05	1.71
Pipe Mount [PM 601-3] ***222***	C	None		0.0000	229'	No Ice	3.17	3.17	0.20
DT465B-2XR w/ Mount Pipe	A	From Leg	4.00 0' -2'	0.0000	222'	No Ice	5.50	4.38	0.09
DT465B-2XR w/ Mount Pipe	B	From Leg	4.00 0' -2'	0.0000	222'	No Ice	5.50	4.38	0.09
APXVSPP18-C w/ Mount Pipe	A	From Leg	4.00 0' -2'	0.0000	222'	No Ice	4.60	4.01	0.09
APXVSPP18-C w/ Mount Pipe	B	From Leg	4.00 0' -2'	0.0000	222'	No Ice	4.60	4.01	0.09
APXVSPP18-C w/ Mount Pipe	C	From Leg	4.00 0' -2'	0.0000	222'	No Ice	4.60	4.01	0.09
RRUS 82 W/SOLAR SHIELD	A	From Leg	4.00 0' -2'	0.0000	222'	No Ice	2.98	1.43	0.06
RRUS 82 W/SOLAR SHIELD	B	From Leg	4.00 0' -2'	0.0000	222'	No Ice	2.98	1.43	0.06
RRUS 82 W/SOLAR SHIELD	C	From Leg	4.00 0' -2'	0.0000	222'	No Ice	2.98	1.43	0.06
(2) RRUS-11 800MHZ	A	From Leg	4.00 0' -2'	0.0000	222'	No Ice	2.52	1.30	0.05
(2) RRUS-11 800MHZ	B	From Leg	4.00 0' -2'	0.0000	222'	No Ice	2.52	1.30	0.05

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	21 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearring

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft²	C _{AA} Side ft²	Weight K
(2) RRUS-11 800MHZ	C	From Leg	0' -2' 4.00	0.0000	222'	No Ice	2.52	1.30	0.05
RRUS 31 B25	A	From Leg	0' -2' 4.00	0.0000	222'	No Ice	1.62	1.28	0.06
RRUS 31 B25	B	From Leg	0' -2' 4.00	0.0000	222'	No Ice	1.62	1.28	0.06
RRUS 31 B25	C	From Leg	0' -2' 4.00	0.0000	222'	No Ice	1.62	1.28	0.06
800MHZ SMR FILTER	A	From Leg	0' -2' 4.00	0.0000	222'	No Ice	0.65	0.22	0.01
800MHZ SMR FILTER	B	From Leg	0' -2' 4.00	0.0000	222'	No Ice	0.65	0.22	0.01
800MHZ SMR FILTER	C	From Leg	0' -2' 4.00	0.0000	222'	No Ice	0.65	0.22	0.01
(3) ACU-A20-N	A	From Leg	0' -2' 4.00	0.0000	222'	No Ice	0.07	0.12	0.00
(3) ACU-A20-N	B	From Leg	0' -2' 4.00	0.0000	222'	No Ice	0.07	0.12	0.00
(3) ACU-A20-N	C	From Leg	0' -2' 4.00	0.0000	222'	No Ice	0.07	0.12	0.00
(2) 2.4" Dia x 8-ft Mount Pipe	A	From Leg	0' -2' 4.00	0.0000	222'	No Ice	1.90	1.90	0.03
(2) 2.4" Dia x 8-ft Mount Pipe	B	From Leg	0' -2' 4.00	0.0000	222'	No Ice	1.90	1.90	0.03
(3) 2.4" Dia x 8-ft Mount Pipe	C	From Leg	0' -2' 4.00	0.0000	222'	No Ice	1.90	1.90	0.03
Sector Mount [SM 502-3] ***215***	C	None	0'	0.0000	222'	No Ice	29.82	29.82	1.67
DB567R90-CR	C	From Leg	0' 10' 6.00	0.0000	215'	No Ice	7.00	7.00	0.07
2.4" Dia x 6-ft Pipe	C	From Leg	0' 0' 6.00	0.0000	215'	No Ice	1.43	1.43	0.02
Side Arm Mount [SO 602-1]	C	From Leg	0' 0' 3.00	0.0000	215'	No Ice	2.58	10.83	0.15
201 DBXNH-8585B-R2M w/ Mount Pipe	A	From Leg	0' 0' 4.00	0.0000	201'	No Ice	4.09	3.30	0.07
DBXNH-8585B-R2M w/	B	From Leg	2' 4.00	0.0000	201'	No Ice	4.09	3.30	0.07

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	22 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearring

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
Mount Pipe			0'						
DBXNH-8585B-R2M w/ Mount Pipe	C	From Leg	4.00 0'	0.0000	201'	No Ice	4.09	3.30	0.07
(2) SBNHH-1D85B w/ Mount Pipe	A	From Leg	4.00 0'	0.0000	201'	No Ice	4.09	3.30	0.07
(2) SBNHH-1D85B w/ Mount Pipe	B	From Leg	4.00 0'	0.0000	201'	No Ice	4.09	3.30	0.07
(2) SBNHH-1D85B w/ Mount Pipe	C	From Leg	4.00 0'	0.0000	201'	No Ice	4.09	3.30	0.07
NNHH-65B-R4 w/ Mount Pipe	A	From Leg	4.00 0'	0.0000	201'	No Ice	7.55	4.23	0.11
NNHH-65B-R4 w/ Mount Pipe	B	From Leg	4.00 0'	0.0000	201'	No Ice	7.55	4.23	0.11
NNHH-65B-R4 w/ Mount Pipe	C	From Leg	4.00 0'	0.0000	201'	No Ice	7.55	4.23	0.11
(3) RRUS 4478 B14	A	From Leg	4.00 0'	0.0000	201'	No Ice	1.84	1.06	0.06
E15Z01P13	A	From Leg	4.00 0'	0.0000	201'	No Ice	0.78	0.60	0.02
E15Z01P13	B	From Leg	4.00 0'	0.0000	201'	No Ice	0.78	0.60	0.02
E15Z01P13	C	From Leg	4.00 0'	0.0000	201'	No Ice	0.78	0.60	0.02
RRUS 32	A	From Leg	4.00 0'	0.0000	201'	No Ice	2.86	1.78	0.06
RRUS 32	B	From Leg	4.00 0'	0.0000	201'	No Ice	2.86	1.78	0.06
RRUS 32	C	From Leg	4.00 0'	0.0000	201'	No Ice	2.86	1.78	0.06
DC6-48-60-18-8F	A	From Leg	4.00 0'	0.0000	201'	No Ice	1.21	1.21	0.03
DC6-48-60-18-8F	B	From Leg	4.00 0'	0.0000	201'	No Ice	1.21	1.21	0.03
DC6-48-60-18-8F	C	From Leg	4.00 0'	0.0000	201'	No Ice	1.21	1.21	0.03
Sector Mount [SM 502-3] ***164***	C	None		0.0000	201'	No Ice	29.82	29.82	1.67
RFU-C-PD	A	From Leg	1.00 0'	0.0000	164'	No Ice	0.52	0.22	0.01

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	24 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearning

Load Combinations

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

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Mast	Max. Vert	5	360.53	-2.81	-0.25
	Max. H _x	11	360.17	2.90	0.09
	Max. H _z	2	356.71	0.18	3.33
	Max. M _x	1	0.00	-0.04	0.02
	Max. M _z	1	0.00	-0.04	0.02
	Max. Torsion	13	1.50	1.34	2.77
	Min. Vert	1	279.15	-0.04	0.02
	Min. H _x	5	360.53	-2.81	-0.25
	Min. H _z	8	355.89	-0.00	-2.96
	Min. M _x	1	0.00	-0.04	0.02
	Min. M _z	1	0.00	-0.04	0.02
	Min. Torsion	7	-1.70	-1.64	-2.46
	Max. Vert	8	-19.72	-0.00	11.99
Guy C @ 173 ft Elev 0 ft Azimuth 180 deg	Max. H _x	11	-86.06	4.57	72.84
	Max. H _z	2	-151.18	0.03	132.94
	Min. Vert	2	-151.18	0.03	132.94
	Min. H _x	5	-86.43	-4.57	73.31
	Min. H _z	8	-19.72	-0.00	11.99
Guy B @ 173 ft Elev 0 ft Azimuth 60 deg	Max. Vert	4	-19.34	10.21	-5.89
	Max. H _x	10	-152.30	115.63	-66.77
	Max. H _z	4	-19.34	10.21	-5.89

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	25 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearring

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Guy A @ 173 ft Elev 0 ft Azimuth -60 deg	Min. Vert	10	-152.30	115.63	-66.77
	Min. H _x	4	-19.34	10.21	-5.89
	Min. H _z	10	-152.30	115.63	-66.77
	Max. Vert	12	-19.79	-10.46	-6.04
	Max. H _x	12	-19.79	-10.46	-6.04
	Max. H _z	12	-19.79	-10.46	-6.04
	Min. Vert	6	-151.24	-115.07	-66.49
	Min. H _x	6	-151.24	-115.07	-66.49
	Min. H _z	6	-151.24	-115.07	-66.49

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	279.15	0.04	-0.02	0.00	0.00	-0.01
1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy	356.71	-0.18	-3.33	0.00	0.00	-0.31
1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy	359.56	1.08	-2.86	0.00	0.00	1.34
1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy	357.72	2.38	-1.37	0.00	0.00	0.80
1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy	360.53	2.81	0.25	0.00	0.00	0.22
1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy	356.80	2.69	1.59	0.00	0.00	1.23
1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy	357.30	1.64	2.46	0.00	0.00	1.70
1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy	355.89	0.00	2.96	0.00	0.00	0.17
1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy	359.25	-1.57	2.48	0.00	0.00	-1.17
1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy	357.26	-2.60	1.50	0.00	0.00	-0.84
1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy	360.17	-2.90	-0.09	0.00	0.00	0.59
1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy	356.40	-2.46	-1.63	0.00	0.00	-0.42
1.2 Dead+1.0 Wind 330 deg - No Ice+1.0 Guy	357.22	-1.34	-2.77	0.00	0.00	-1.50
Dead+Wind 0 deg - Service+Guy	282.45	-0.03	-0.99	0.00	0.00	-0.07
Dead+Wind 30 deg - Service+Guy	282.36	0.43	-0.88	0.00	0.00	0.37
Dead+Wind 60 deg - Service+Guy	282.36	0.78	-0.45	0.00	0.00	0.21
Dead+Wind 90 deg - Service+Guy	282.36	0.91	-0.01	0.00	0.00	0.06
Dead+Wind 120 deg - Service+Guy	282.45	0.81	0.45	0.00	0.00	0.31
Dead+Wind 150 deg - Service+Guy	282.36	0.47	0.80	0.00	0.00	0.36
Dead+Wind 180 deg - Service+Guy	282.38	0.00	0.92	0.00	0.00	-0.02
Dead+Wind 210 deg -	282.34	-0.43	0.80	0.00	0.00	-0.33

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	26 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearning

Load Combination	Vertical	Shear _x	Shear _y	Overturning Moment, M _x	Overturning Moment, M _y	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Service+Guy						
Dead+Wind 240 deg - Service+Guy	282.45	-0.76	0.43	0.00	0.00	-0.25
Dead+Wind 270 deg - Service+Guy	282.36	-0.92	-0.09	0.00	0.00	0.19
Dead+Wind 300 deg - Service+Guy	282.38	-0.78	-0.51	0.00	0.00	-0.04
Dead+Wind 330 deg - Service+Guy	282.37	-0.47	-0.84	0.00	0.00	-0.29

Maximum Tower Deflections - Service Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
T1	350 - 341.945	1.301	22	0.0250	0.1644
T2	341.945 - 340	1.315	22	0.0253	0.1600
T3	340 - 320	1.314	22	0.0257	0.1549
T4	320 - 300	1.389	22	0.0256	0.1316
T5	300 - 280	1.376	22	0.0298	0.0781
T6	280 - 260	1.502	22	0.0303	0.1872
T7	260 - 240	1.579	22	0.0173	0.2067
T8	240 - 220	1.496	22	0.0095	0.1568
T9	220 - 200	1.525	22	0.0144	0.2558
T10	200 - 180	1.404	22	0.0326	0.3399
T11	180 - 160	1.129	22	0.0330	0.2437
T12	160 - 140	1.091	22	0.0265	0.3362
T13	140 - 120	0.967	22	0.0311	0.2925
T14	120 - 100	0.718	14	0.0279	0.1620
T15	100 - 80	0.712	14	0.0202	0.2373
T16	80 - 60	0.750	15	0.0253	0.3112
T17	60 - 40	0.528	14	0.0318	0.1300
T18	40 - 20	0.470	21	0.0368	0.2020
T19	20 - 8.05469	0.298	21	0.0472	0.1264
T20	8.05469 - 6	0.093	14	0.0516	0.0445
T21	6 - 2.66927	0.067	21	0.0520	0.0370
T22	2.66927 - 0	0.030	21	0.0526	0.0194

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
350'	12" x 24" Beacon	22	1.301	0.0250	0.1644	28496
345'	DB228-B	22	1.313	0.0250	0.1644	28496
335'10-3/32"	Guy	22	1.321	0.0261	0.1469	18774
324'	SRL-224NM-4	22	1.376	0.0256	0.1377	26080
295'10-3/32"	Guy	22	1.390	0.0308	0.0993	19555
270'	(2) SRL-224NM-4	22	1.563	0.0246	0.2149	24217
255'	PD322-2	22	1.562	0.0141	0.1969	24458
250'	(2) X7CQAP-665-VR0 w/ Mount	22	1.537	0.0113	0.1791	274814
	Pipe					
235'10-3/32"	Guy	22	1.494	0.0105	0.1651	20163
229'	FHH-65C-R3 w/ Mount Pipe	22	1.508	0.0114	0.1960	166179

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	27 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearning

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
222'	DT465B-2XR w/ Mount Pipe	22	1.523	0.0134	0.2415	18792
215'	DB567R90-CR	22	1.518	0.0184	0.2912	15515
210'	8"x15" Dia. Beacon	22	1.497	0.0235	0.3212	16784
201'	DBXNH-8585B-R2M w/ Mount Pipe	22	1.417	0.0319	0.3416	15665
175'10-3/32"	Guy	22	1.104	0.0312	0.2501	13353
166'	HPLPD2-11	22	1.092	0.0274	0.3047	190685
165'	HPD4-11	22	1.092	0.0272	0.3108	78896
164'	HPX6-59-P3A/K	22	1.093	0.0269	0.3168	49868
156'	(3) DB848H105ESX w/ Mount Pipe	22	1.083	0.0268	0.3455	19847
115'10-3/32"	Guy	14	0.696	0.0260	0.1597	13773
55'10-3/32"	Guy	14	0.502	0.0327	0.1271	15780
11'	1.2M	14	0.138	0.0508	0.0595	15798

Bolt Design Data

Section No.	Elevation	Component Type	Bolt Grade	Bolt Size	Number Of Bolts	Maximum Load per Bolt	Allowable Load per Bolt	Ratio Load Allowable	Allowable Ratio	Criteria
	ft			in		K	K			
T2	341.945	Leg	A325N	0.7500	3	1.25	30.10	0.041	1.05	Bolt Tension
T3	340	Leg	A325N	0.7500	3	2.84	30.10	0.094	1.05	Bolt Tension
T4	320	Leg	A325N	0.7500	3	3.94	30.10	0.131	1.05	Bolt Tension
T5	300	Leg	A325N	0.7500	3	6.77	30.10	0.225	1.05	Bolt Tension
T6	280	Leg	A325N	0.7500	3	8.17	30.10	0.271	1.05	Bolt Tension
T7	260	Leg	A325N	0.7500	3	6.35	30.10	0.211	1.05	Bolt Tension
T8	240	Leg	A325N	0.7500	3	12.17	30.10	0.404	1.05	Bolt Tension
T9	220	Leg	A325N	0.7500	3	11.49	30.10	0.382	1.05	Bolt Tension
T10	200	Leg	A325N	0.7500	3	11.78	30.10	0.391	1.05	Bolt Tension
T11	180	Leg	A325N	0.7500	3	11.45	30.10	0.380	1.05	Bolt Tension
T12	160	Leg	A325N	0.7500	3	11.30	30.10	0.376	1.05	Bolt Tension
T13	140	Leg	A325N	0.7500	3	14.11	30.10	0.469	1.05	Bolt Tension
T14	120	Leg	A325N	0.7500	3	12.75	30.10	0.423	1.05	Bolt Tension
T15	100	Leg	A325N	0.7500	3	13.57	30.10	0.451	1.05	Bolt Tension
T16	80	Leg	A325N	0.7500	3	13.05	30.10	0.434	1.05	Bolt Tension
T17	60	Leg	A325N	0.7500	3	14.76	30.10	0.490	1.05	Bolt Tension
T18	40	Leg	A325N	0.7500	3	15.06	30.10	0.500	1.05	Bolt Tension
T20	8.05469	Leg	A325N	0.7500	3	13.98	30.10	0.465	1.05	Bolt Tension

Guy Design Data

Section No.	Elevation	Size	Initial Tension	Breaking Load	Actual T _n	Allowable ϕT_n	Required S.F.	Actual S.F.
	ft		K	K	K	K		
T3	335'10-3/32"	7/8 EHS	7.97	79.70	18.14	50.21	0.952	2.636
	(A) (953)							
	335'10-3/32"	7/8 EHS	7.97	79.70	18.12	50.21	0.952	2.639
	(A) (954)							
	335'10-3/32"	7/8 EHS	7.97	79.70	18.41	50.21	0.952	2.597
	(B) (951)							
	335'10-3/32"	7/8 EHS	7.97	79.70	18.26	50.21	0.952	2.618

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	28 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearring

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T _n K	Allowable φT _n K	Required S.F.	Actual S.F.
T5	(B) (952)							
	335'10-3/32"	7/8 EHS	7.97	79.70	18.02	50.21	0.952	2.653
	(C) (949)							
	335'10-3/32"	7/8 EHS	7.97	79.70	18.34	50.21	0.952	2.607
	(C) (950)							
	295'10-3/32"	7/8 EHS	7.97	79.70	18.56	50.21	0.952	2.576
	(A) (947)							
	295'10-3/32"	7/8 EHS	7.97	79.70	18.99	50.21	0.952	2.519
	(A) (948)							
	295'10-3/32"	7/8 EHS	7.97	79.70	19.20	50.21	0.952	2.491
T8	(B) (945)							
	295'10-3/32"	7/8 EHS	7.97	79.70	18.86	50.21	0.952	2.535
	(B) (946)							
	295'10-3/32"	7/8 EHS	7.97	79.70	18.76	50.21	0.952	2.549
	(C) (943)							
	295'10-3/32"	7/8 EHS	7.97	79.70	18.88	50.21	0.952	2.533
	(C) (944)							
	235'10-3/32"	1 EHS	10.45	104.50	26.51	65.83	0.952	2.365
	(A) (941)							
	235'10-3/32"	1 EHS	10.45	104.50	27.54	65.83	0.952	2.276
T11	(A) (942)							
	235'10-3/32"	1 EHS	10.45	104.50	27.30	65.83	0.952	2.297
	(B) (939)							
	235'10-3/32"	1 EHS	10.45	104.50	27.06	65.83	0.952	2.317
	(B) (940)							
	235'10-3/32"	1 EHS	10.45	104.50	27.36	65.83	0.952	2.292
	(C) (937)							
	235'10-3/32"	1 EHS	10.45	104.50	26.51	65.83	0.952	2.365
	(C) (938)							
	175'10-3/32"	7/8 EHS	7.97	79.70	19.71	50.21	0.952	2.426
T14	(A) (935)							
	175'10-3/32"	7/8 EHS	7.97	79.70	20.95	50.21	0.952	2.282
	(A) (936)							
	175'10-3/32"	7/8 EHS	7.97	79.70	20.38	50.21	0.952	2.347
	(B) (933)							
	175'10-3/32"	7/8 EHS	7.97	79.70	20.32	50.21	0.952	2.353
	(B) (934)							
	175'10-3/32"	7/8 EHS	7.97	79.70	20.77	50.21	0.952	2.302
	(C) (931)							
	175'10-3/32"	7/8 EHS	7.97	79.70	19.62	50.21	0.952	2.438
T17	(C) (932)							
	115'10-3/32"	3/4 EHS	5.83	58.30	12.99	36.73	0.952	2.694
	(A) (929)							
	115'10-3/32"	3/4 EHS	5.83	58.30	14.04	36.73	0.952	2.491
	(A) (930)							
	115'10-3/32"	3/4 EHS	5.83	58.30	13.65	36.73	0.952	2.563
	(B) (927)							
	115'10-3/32"	3/4 EHS	5.83	58.30	13.36	36.73	0.952	2.618
	(B) (928)							
	115'10-3/32"	3/4 EHS	5.83	58.30	14.03	36.73	0.952	2.493
	(C) (925)							
	115'10-3/32"	3/4 EHS	5.83	58.30	13.12	36.73	0.952	2.666
	(C) (926)							
	55'10-3/32" (A)	9/16 EHS	3.50	35.00	6.83	22.05	0.952	3.074
	(923)							
	55'10-3/32" (A)	9/16 EHS	3.50	35.00	7.37	22.05	0.952	2.847
	(924)							
	55'10-3/32" (B)	9/16 EHS	3.50	35.00	7.18	22.05	0.952	2.923
	(921)							
	55'10-3/32" (B)	9/16 EHS	3.50	35.00	7.00	22.05	0.952	2.998
	(922)							

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	29 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearing

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T _u K	Allowable φT _n K	Required S.F.	Actual S.F.
	55'10-3/32" (C) (919)	9/16 EHS	3.50	35.00	7.40	22.05	0.952	2.837
	55'10-3/32" (C) (920)	9/16 EHS	3.50	35.00	6.96	22.05	0.952	3.018

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	350 - 341.945	2 1/4	8'19/32"	3'10-11/16"	83.0 K=1.00	3.9761	-3.40	108.12	0.031 ¹
T2	341.945 - 340	2 1/4	1'11-13/32"	1'8-1/32"	35.7 K=1.00	3.9761	-5.30	163.03	0.033 ¹
T3	340 - 320	2 1/4	20'	3'10-11/16"	83.0 K=1.00	3.9761	-26.80	108.12	0.248 ¹
T4	320 - 300	2 1/4	20'	3'10-11/16"	83.0 K=1.00	3.9761	-35.40	108.12	0.327 ¹
T5	300 - 280	3	20'	3'10-11/16"	62.3 K=1.00	7.0686	-60.90	239.60	0.254 ¹
T6	280 - 260	3	20'	3'10-11/16"	62.3 K=1.00	7.0686	-74.18	239.60	0.310 ¹
T7	260 - 240	3	20'	3'10-11/16"	62.3 K=1.00	7.0686	-74.59	239.60	0.311 ¹
T8	240 - 220	3	20'	3'10-11/16"	62.3 K=1.00	7.0686	-109.46	239.60	0.457 ¹
T9	220 - 200	3	20'	3'10-11/16"	62.3 K=1.00	7.0686	-111.65	239.60	0.466 ¹
T10	200 - 180	3 1/2	20'	3'10-11/16"	53.4 K=1.00	9.6211	-105.98	351.59	0.301 ¹
T11	180 - 160	3 1/2	20'	3'10-11/16"	53.4 K=1.00	9.6211	-125.23	351.59	0.356 ¹
T12	160 - 140	3 1/2	20'	3'10-11/16"	53.4 K=1.00	9.6211	-107.34	351.59	0.305 ¹
T13	140 - 120	3 1/2	20'	3'10-11/16"	53.4 K=1.00	9.6211	-126.89	351.59	0.361 ¹
T14	120 - 100	3 1/2	20'	3'10-11/16"	53.4 K=1.00	9.6211	-139.60	351.59	0.397 ¹
T15	100 - 80	3 1/2	20'	3'10-11/16"	53.4 K=1.00	9.6211	-122.06	351.59	0.347 ¹
T16	80 - 60	3 1/2	20'	3'10-11/16"	53.4 K=1.00	9.6211	-122.98	351.59	0.350 ¹
T17	60 - 40	3 1/2	20'	3'10-11/16"	53.4 K=1.00	9.6211	-132.80	351.59	0.378 ¹
T18	40 - 20	3 1/2	20'	3'10-11/16"	53.4 K=1.00	9.6211	-137.33	351.59	0.391 ¹
T19	20 - 8.05469	3 1/2	11'11-13/32"	3'10-11/16"	53.4 K=1.00	9.6211	-135.78	351.59	0.386 ¹
T20	8.05469 - 6	3 1/2	2'19/32"	1'9-3/8"	24.4 K=1.00	9.6211	-127.74	414.47	0.308 ¹
T21	6 - 2.66927	3 1/2	3'6-27/3	3'5-3/4"	47.7	9.6211	-134.93	366.56	0.368 ¹

inxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	30 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearing

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T22	2.66927 - 0	3 1/2	2" 2'10-5/16"	2'23/32"	K=1.00 28.2 K=1.00	9.6211	-135.30	408.48	0.331 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 $\frac{P_u}{\phi P_n}$
T1	350 - 341.945	L2x2x3/16	4'	3'9-23/32"	118.1 K=1.02	0.7150	-1.01	14.46	0.070 ¹
T3	340 - 320	L2x2x3/16	4'	3'9-23/32"	118.1 K=1.02	0.7150	-1.60	14.46	0.111 ¹
T4	320 - 300	L2x2x3/16	4'	3'9-23/32"	118.1 K=1.02	0.7150	-2.44	14.46	0.169 ¹
T5	300 - 280	L2x2x1/4	4'	3'9"	117.5 K=1.02	0.9380	-4.32	19.10	0.226 ¹
T6	280 - 260	L2x2x1/4	4'	3'9"	117.5 K=1.02	0.9380	-3.58	19.10	0.188 ¹
T7	260 - 240	L2 1/2x2 1/2x1/4	4'	3'9"	105.8 K=1.15	1.1900	-6.48	27.75	0.233 ¹
T8	240 - 220	L2 1/2x2 1/2x1/4	4'	3'9"	105.8 K=1.15	1.1900	-6.89	27.75	0.248 ¹
T9	220 - 200	L2x2x1/4	4'	3'9"	117.5 K=1.02	0.9380	-1.93	19.10	0.101 ¹
T10	200 - 180	L2x2x1/4	4'	3'8-17/32"	116.9 K=1.03	0.9380	-6.75	19.26	0.350 ¹
T11	180 - 160	L2x2x1/4	4'	3'8-17/32"	116.9 K=1.03	0.9380	-5.63	19.26	0.292 ¹
T12	160 - 140	L2x2x1/4	4'	3'8-17/32"	116.9 K=1.03	0.9380	-1.86	19.26	0.097 ¹
T13	140 - 120	L2x2x1/4	4'	3'8-17/32"	116.9 K=1.03	0.9380	-4.80	19.26	0.249 ¹
T14	120 - 100	L2x2x1/4	4'	3'8-17/32"	116.9 K=1.03	0.9380	-4.52	19.26	0.235 ¹
T15	100 - 80	L2x2x3/16	4'	3'8-17/32"	116.5 K=1.03	0.7150	-2.82	14.76	0.191 ¹
T16	80 - 60	L2x2x3/16	4'	3'8-17/32"	116.5 K=1.03	0.7150	-2.19	14.76	0.148 ¹
T17	60 - 40	L2x2x3/16	4'	3'8-17/32"	116.5 K=1.03	0.7150	-2.69	14.76	0.183 ¹
T18	40 - 20	L2x2x3/16	4'	3'8-17/32"	116.5 K=1.03	0.7150	-2.38	14.76	0.161 ¹
T19	20 - 8.05469	L2x2x3/16	4'	3'8-17/32"	116.5 K=1.03	0.7150	-2.35	14.76	0.159 ¹

¹ P_u / φP_n controls

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	31 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearing

Top Girt Design Data (Compression)

Section No.	Elevation	Size	L	L _u	Kl/r	A	P _u	φP _n	Ratio
	ft		ft	ft		in ²	K	K	$\frac{P_u}{\phi P_n}$
T1	350 - 341.945	L2x2x3/16	4'	3'9-23/3 2"	118.1 K=1.02	0.7150	-0.08	14.46	0.005 ¹
T2	341.945 - 340	L2x2x3/16	4'	3'9-23/3 2"	118.1 K=1.02	0.7150	-2.34	14.46	0.162 ¹
T3	340 - 320	L2x2x3/16	4'	3'9-23/3 2"	118.1 K=1.02	0.7150	-1.33	14.46	0.092 ¹
T4	320 - 300	L2x2x3/16	4'	3'9-23/3 2"	118.1 K=1.02	0.7150	-0.93	14.46	0.064 ¹
T5	300 - 280	L2x2x1/4	4'	3'9"	117.5 K=1.02	0.9380	-1.54	19.10	0.081 ¹
T6	280 - 260	L2x2x1/4	4'	3'9"	117.5 K=1.02	0.9380	-2.12	19.10	0.111 ¹
T7	260 - 240	L2 1/2x2 1/2x1/4	4'	3'9"	105.8 K=1.15	1.1900	-1.29	27.75	0.047 ¹
T8	240 - 220	L2 1/2x2 1/2x1/4	4'	3'9"	105.8 K=1.15	1.1900	-3.67	27.75	0.132 ¹
T9	220 - 200	L2x2x1/4	4'	3'9"	117.5 K=1.02	0.9380	-1.93	19.10	0.101 ¹
T10	200 - 180	L2x2x1/4	4'	3'8-17/3 2"	116.9 K=1.03	0.9380	-2.29	19.26	0.119 ¹
T11	180 - 160	L2x2x1/4	4'	3'8-17/3 2"	116.9 K=1.03	0.9380	-3.45	19.26	0.179 ¹
T12	160 - 140	L2x2x1/4	4'	3'8-17/3 2"	116.9 K=1.03	0.9380	-1.86	19.26	0.097 ¹
T13	140 - 120	L2x2x1/4	4'	3'8-17/3 2"	116.9 K=1.03	0.9380	-2.20	19.26	0.114 ¹
T14	120 - 100	L2x2x1/4	4'	3'8-17/3 2"	116.9 K=1.03	0.9380	-2.45	19.26	0.127 ¹
T15	100 - 80	L2x2x3/16	4'	3'8-17/3 2"	116.5 K=1.03	0.7150	-2.12	14.76	0.143 ¹
T16	80 - 60	L2x2x3/16	4'	3'8-17/3 2"	116.5 K=1.03	0.7150	-2.13	14.76	0.144 ¹
T17	60 - 40	L2x2x3/16	4'	3'8-17/3 2"	116.5 K=1.03	0.7150	-2.30	14.76	0.156 ¹
T18	40 - 20	L2x2x3/16	4'	3'8-17/3 2"	116.5 K=1.03	0.7150	-2.38	14.76	0.161 ¹
T19	20 - 8.05469	L2x2x3/16	4'	3'8-17/3 2"	116.5 K=1.03	0.7150	-2.35	14.76	0.159 ¹
T20	8.05469 - 6	L2x2x3/16	4'	3'8-17/3 2"	116.5 K=1.03	0.7150	-2.65	14.76	0.180 ¹
T21	6 - 2.66927	L3x3x3/8	3'11-9/3 2"	3'7-13/1 6"	97.3 K=1.30	2.1100	-2.46	53.33	0.046 ¹

¹ P_u / φP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation	Size	L	L _u	Kl/r	A	P _u	φP _n	Ratio
	ft		ft	ft		in ²	K	K	$\frac{P_u}{\phi P_n}$
T2	341.945 - 340	L2x2x3/16	4'	3'9-23/3 2"	118.1 K=1.02	0.7150	-1.59	14.46	0.110 ¹
T3	340 - 320	L2x2x3/16	4'	3'9-23/3	118.1	0.7150	-0.73	14.46	0.050 ¹

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	32 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearing

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T4	320 - 300	L2x2x3/16	4'	2" 3'9-23/3	K=1.02 118.1	0.7150	-1.34	14.46	0.092 ¹
T5	300 - 280	L2x2x1/4	4'	2" 3'9"	K=1.02 117.5	0.9380	-2.11	19.10	0.110 ¹
T6	280 - 260	L2x2x1/4	4'	3'9"	K=1.02 117.5	0.9380	-1.28	19.10	0.067 ¹
T7	260 - 240	L2 1/2x2 1/2x1/4	4'	3'9"	K=1.02 105.8	1.1900	-3.66	27.75	0.132 ¹
T8	240 - 220	L2 1/2x2 1/2x1/4	4'	3'9"	K=1.15 105.8	1.1900	-2.09	27.75	0.075 ¹
T9	220 - 200	L2x2x1/4	4'	3'9"	K=1.15 117.5	0.9380	-1.93	19.10	0.101 ¹
T10	200 - 180	L2x2x1/4	4'	3'8-17/3 2"	K=1.02 116.9	0.9380	-3.86	19.26	0.200 ¹
T11	180 - 160	L2x2x1/4	4'	3'8-17/3 2"	K=1.03 116.9	0.9380	-2.17	19.26	0.113 ¹
T12	160 - 140	L2x2x1/4	4'	3'8-17/3 2"	K=1.03 116.9	0.9380	-1.86	19.26	0.097 ¹
T13	140 - 120	L2x2x1/4	4'	3'8-17/3 2"	K=1.03 116.9	0.9380	-2.90	19.26	0.150 ¹
T14	120 - 100	L2x2x1/4	4'	3'8-17/3 2"	K=1.03 116.9	0.9380	-2.42	19.26	0.126 ¹
T15	100 - 80	L2x2x3/16	4'	3'8-17/3 2"	K=1.03 116.5	0.7150	-2.12	14.76	0.143 ¹
T16	80 - 60	L2x2x3/16	4'	3'8-17/3 2"	K=1.03 116.5	0.7150	-2.13	14.76	0.144 ¹
T17	60 - 40	L2x2x3/16	4'	3'8-17/3 2"	K=1.03 116.5	0.7150	-2.30	14.76	0.156 ¹
T18	40 - 20	L2x2x3/16	4'	3'8-17/3 2"	K=1.03 116.5	0.7150	-2.38	14.76	0.161 ¹
T20	8.05469 - 6	L2x2x3/16	4'	3'8-17/3 2"	K=1.03 116.5	0.7150	-2.21	14.76	0.150 ¹
T21	6 - 2.66927	L2x2x1/4	1'9-3/8"	1'5-7/8"	K=1.03 82.9	0.9380	-2.47	26.48	0.093 ¹
T22	2.66927 - 0	18x3/8	6"	2-17/32"	K=1.81 23.1 K=1.00	6.7500	-3.12	212.62	0.015 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	350 - 341.945	2 1/4	8'19/32"	3'10-11/16"	83.0	3.9761	0.05	178.92	0.000 ¹
T2	341.945 - 340	2 1/4	1'11-13/32"	3-1/4"	5.8	3.9761	3.74	178.92	0.021 ¹
T3	340 - 320	2 1/4	20'	3-1/4"	5.8	3.9761	3.74	178.92	0.021 ¹

¹ P_u / φP_n controls

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Lake City (SR 47 & US 41) (BU 870081)	Page 33 of 38
	Project TEP No. 145283.722965	Date 16:23:19 07/26/22
	Client Crown Castle	Designed by anearing

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	350 - 341.945	3/4	5'6-31/3 2"	5'3-27/3 2"	340.4	0.4418	2.42	14.31	0.169 ¹
T2	341.945 - 340	3/4	4'4-3/32' 1	4'1-9/16' 1	264.5	0.4418	3.26	14.31	0.227 ¹
T3	340 - 320	3/4	5'6-31/3 2"	5'3-27/3 2"	340.4	0.4418	3.58	14.31	0.250 ¹
T4	320 - 300	3/4	5'6-31/3 2"	5'3-27/3 2"	340.4	0.4418	3.68	14.31	0.257 ¹
T5	300 - 280	7/8	5'6-31/3 2"	5'2-3/4" 1	287.0	0.6013	6.11	19.48	0.314 ¹
T6	280 - 260	7/8	5'6-31/3 2"	5'2-3/4" 1	287.0	0.6013	5.39	19.48	0.277 ¹
T7	260 - 240	2x1/2	5'6-31/3 2"	5'2-3/4" 1	434.9	1.0000	9.67	32.40	0.298 ¹
T8	240 - 220	2x1/2	5'6-31/3 2"	5'2-3/4" 1	434.9	1.0000	10.08	32.40	0.311 ¹
T9	220 - 200	7/8	5'6-31/3 2"	5'2-3/4" 1	287.0	0.6013	3.47	19.48	0.178 ¹
T10	200 - 180	7/8	5'6-31/3 2"	5'2-1/32' 1	283.8	0.6013	10.57	19.48	0.543 ¹
T11	180 - 160	7/8	5'6-31/3 2"	5'2-1/32' 1	283.8	0.6013	9.66	19.48	0.496 ¹
T12	160 - 140	7/8	5'6-31/3 2"	5'2-1/32' 1	283.8	0.6013	3.83	19.48	0.197 ¹
T13	140 - 120	7/8	5'6-31/3 2"	5'2-1/32' 1	283.8	0.6013	7.66	19.48	0.393 ¹
T14	120 - 100	7/8	5'6-31/3 2"	5'2-1/32' 1	283.8	0.6013	6.91	19.48	0.355 ¹
T15	100 - 80	3/4	5'6-31/3 2"	5'2-1/32' 1	331.1	0.4418	4.53	14.31	0.316 ¹
T16	80 - 60	3/4	5'6-31/3 2"	5'2-1/32' 1	331.1	0.4418	3.51	14.31	0.245 ¹
T17	60 - 40	3/4	5'6-31/3 2"	5'2-1/32' 1	331.1	0.4418	3.97	14.31	0.278 ¹
T18	40 - 20	3/4	5'6-31/3 2"	5'2-1/32' 1	331.1	0.4418	2.06	14.31	0.144 ¹
T19	20 - 8.05469	3/4	5'6-31/3 2"	5'2-1/32' 1	331.1	0.4418	3.08	14.31	0.215 ¹
T20	8.05469 - 6	3/4	4'4-9/16' 1	4'23/32" 1	259.8	0.4418	3.66	14.31	0.255 ¹
T21	6 - 2.66927	2x1/2	4'4-7/16' 1	3'11-9/3 2"	327.4	1.0000	0.01	32.40	0.000 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 $\frac{P_u}{\phi P_n}$
T1	350 - 341.945	L2x2x3/16	4'	3'9-23/3 2"	74.1	0.7150	0.29	23.17	0.012 ¹
T3	340 - 320	L2x2x3/16	4'	3'9-23/3	74.1	0.7150	5.38	23.17	0.232 ¹

inxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Lake City (SR 47 & US 41) (BU 870081)	Page 34 of 38
	Project TEP No. 145283.722965	Date 16:23:19 07/26/22
	Client Crown Castle	Designed by anearing

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T4	320 - 300	L2x2x3/16	4'	2" 3'9-23/3	74.1	0.7150	0.61	23.17	0.026 ¹
T5	300 - 280	L2x2x1/4	4'	2" 3'9"	73.9	0.9380	6.44	30.39	0.212 ¹
T6	280 - 260	L2x2x1/4	4'	3'9"	73.9	0.9380	1.28	30.39	0.042 ¹
T7	260 - 240	L2 1/2x2 1/2x1/4	4'	3'9"	58.5	1.1900	1.29	38.56	0.034 ¹
T8	240 - 220	L2 1/2x2 1/2x1/4	4'	3'9"	58.5	1.1900	12.10	38.56	0.314 ¹
T9	220 - 200	L2x2x1/4	4'	3'9"	73.9	0.9380	1.93	30.39	0.064 ¹
T10	200 - 180	L2x2x1/4	4'	2" 3'8-17/3	73.1	0.9380	1.84	30.39	0.060 ¹
T11	180 - 160	L2x2x1/4	4'	2" 3'8-17/3	73.1	0.9380	10.89	30.39	0.358 ¹
T12	160 - 140	L2x2x1/4	4'	2" 3'8-17/3	73.1	0.9380	1.86	30.39	0.061 ¹
T13	140 - 120	L2x2x1/4	4'	2" 3'8-17/3	73.1	0.9380	2.20	30.39	0.072 ¹
T14	120 - 100	L2x2x1/4	4'	2" 3'8-17/3	73.1	0.9380	8.73	30.39	0.287 ¹
T15	100 - 80	L2x2x3/16	4'	2" 3'8-17/3	72.1	0.7150	2.12	23.17	0.091 ¹
T16	80 - 60	L2x2x3/16	4'	2" 3'8-17/3	72.1	0.7150	2.13	23.17	0.092 ¹
T17	60 - 40	L2x2x3/16	4'	2" 3'8-17/3	72.1	0.7150	4.86	23.17	0.210 ¹
T18	40 - 20	L2x2x3/16	4'	2" 3'8-17/3	72.1	0.7150	2.38	23.17	0.103 ¹
T19	20 - 8.05469	L2x2x3/16	4'	2" 3'8-17/3	72.1	0.7150	2.35	23.17	0.102 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T1	350 - 341.945	L2x2x3/16	4'	2" 3'9-23/3	74.1	0.7150	0.02	23.17	0.001 ¹
T2	341.945 - 340	L2x2x3/16	4'	2" 3'9-23/3	74.1	0.7150	0.09	23.17	0.004 ¹
T3	340 - 320	L2x2x3/16	4'	2" 3'9-23/3	74.1	0.7150	0.46	23.17	0.020 ¹
T4	320 - 300	L2x2x3/16	4'	2" 3'9-23/3	74.1	0.7150	0.61	23.17	0.026 ¹
T5	300 - 280	L2x2x1/4	4'	2" 3'9"	73.9	0.9380	1.06	30.39	0.035 ¹
T6	280 - 260	L2x2x1/4	4'	3'9"	73.9	0.9380	1.28	30.39	0.042 ¹
T7	260 - 240	L2 1/2x2 1/2x1/4	4'	3'9"	58.5	1.1900	1.29	38.56	0.034 ¹
T8	240 - 220	L2 1/2x2 1/2x1/4	4'	3'9"	58.5	1.1900	1.90	38.56	0.049 ¹
T9	220 - 200	L2x2x1/4	4'	3'9"	73.9	0.9380	1.93	30.39	0.064 ¹
T10	200 - 180	L2x2x1/4	4'	2" 3'8-17/3	73.1	0.9380	1.84	30.39	0.060 ¹
T11	180 - 160	L2x2x1/4	4'	2" 3'8-17/3	73.1	0.9380	2.17	30.39	0.071 ¹
T12	160 - 140	L2x2x1/4	4'	2" 3'8-17/3	73.1	0.9380	1.86	30.39	0.061 ¹
T13	140 - 120	L2x2x1/4	4'	2" 3'8-17/3	73.1	0.9380	2.20	30.39	0.072 ¹

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	35 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearing

Section No.	Elevation	Size	L	L _n	Kl/r	A	P _u	φP _n	Ratio
	ft		ft	ft		in ²	K	K	$\frac{P_u}{\phi P_n}$
T14	120 - 100	L2x2x1/4	4'	3'8-17/32"	73.1	0.9380	2.42	30.39	0.080 ¹
T15	100 - 80	L2x2x3/16	4'	3'8-17/32"	72.1	0.7150	2.12	23.17	0.091 ¹
T16	80 - 60	L2x2x3/16	4'	3'8-17/32"	72.1	0.7150	2.13	23.17	0.092 ¹
T17	60 - 40	L2x2x3/16	4'	3'8-17/32"	72.1	0.7150	2.30	23.17	0.099 ¹
T18	40 - 20	L2x2x3/16	4'	3'8-17/32"	72.1	0.7150	2.38	23.17	0.103 ¹
T19	20 - 8.05469	L2x2x3/16	4'	3'8-17/32"	72.1	0.7150	2.35	23.17	0.102 ¹
T20	8.05469 - 6	L2x2x3/16	4'	3'8-17/32"	72.1	0.7150	2.21	23.17	0.096 ¹
T21	6 - 2.66927	L3x3x3/8	3'11-9/32"	3'7-13/16"	48.0	2.1100	20.41	68.36	0.299 ¹

¹ P_u / φP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation	Size	L	L _n	Kl/r	A	P _u	φP _n	Ratio
	ft		ft	ft		in ²	K	K	$\frac{P_u}{\phi P_n}$
T2	341.945 - 340	L2x2x3/16	4'	3'9-23/32"	74.1	0.7150	0.18	23.17	0.008 ¹
T3	340 - 320	L2x2x3/16	4'	3'9-23/32"	74.1	0.7150	0.46	23.17	0.020 ¹
T4	320 - 300	L2x2x3/16	4'	3'9-23/32"	74.1	0.7150	0.61	23.17	0.026 ¹
T5	300 - 280	L2x2x1/4	4'	3'9"	73.9	0.9380	1.06	30.39	0.035 ¹
T6	280 - 260	L2x2x1/4	4'	3'9"	73.9	0.9380	1.28	30.39	0.042 ¹
T7	260 - 240	L2 1/2x2 1/2x1/4	4'	3'9"	58.5	1.1900	1.29	38.56	0.034 ¹
T8	240 - 220	L2 1/2x2 1/2x1/4	4'	3'9"	58.5	1.1900	1.90	38.56	0.049 ¹
T9	220 - 200	L2x2x1/4	4'	3'9"	73.9	0.9380	1.93	30.39	0.064 ¹
T10	200 - 180	L2x2x1/4	4'	3'8-17/32"	73.1	0.9380	1.84	30.39	0.060 ¹
T11	180 - 160	L2x2x1/4	4'	3'8-17/32"	73.1	0.9380	2.17	30.39	0.071 ¹
T12	160 - 140	L2x2x1/4	4'	3'8-17/32"	73.1	0.9380	1.86	30.39	0.061 ¹
T13	140 - 120	L2x2x1/4	4'	3'8-17/32"	73.1	0.9380	2.20	30.39	0.072 ¹
T14	120 - 100	L2x2x1/4	4'	3'8-17/32"	73.1	0.9380	2.42	30.39	0.080 ¹
T15	100 - 80	L2x2x3/16	4'	3'8-17/32"	72.1	0.7150	2.12	23.17	0.091 ¹
T16	80 - 60	L2x2x3/16	4'	3'8-17/32"	72.1	0.7150	2.13	23.17	0.092 ¹
T17	60 - 40	L2x2x3/16	4'	3'8-17/32"	72.1	0.7150	2.30	23.17	0.099 ¹
T18	40 - 20	L2x2x3/16	4'	3'8-17/32"	72.1	0.7150	2.38	23.17	0.103 ¹
T20	8.05469 - 6	L2x2x3/16	4'	3'8-17/32"	72.1	0.7150	6.01	23.17	0.259 ¹
T21	6 - 2.66927	L2x2x1/4	1'9-3/8"	1'5-7/8"	29.4	0.9380	2.47	30.39	0.081 ¹

¹ P_u / φP_n controls

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Lake City (SR 47 & US 41) (BU 870081)	Page 36 of 38
	Project TEP No. 145283.722965	Date 16:23:19 07/26/22
	Client Crown Castle	Designed by anearing

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	350 - 341.945	Leg	2 1/4	2	-3.40	113.53	3.0	Pass
T2	341.945 - 340	Leg	2 1/4	23	-5.30	171.18	3.1	Pass
T3	340 - 320	Leg	2 1/4	37	-26.80	113.53	23.6	Pass
T4	320 - 300	Leg	2 1/4	89	-35.40	113.53	31.2	Pass
T5	300 - 280	Leg	3	141	-60.90	251.58	24.2	Pass
T6	280 - 260	Leg	3	190	-74.18	251.58	29.5	Pass
T7	260 - 240	Leg	3	241	-74.59	251.58	29.6	Pass
T8	240 - 220	Leg	3	293	-109.46	251.58	43.5	Pass
T9	220 - 200	Leg	3	344	-111.65	251.58	44.4	Pass
T10	200 - 180	Leg	3 1/2	394	-105.98	369.17	28.7	Pass
T11	180 - 160	Leg	3 1/2	445	-125.23	369.17	33.9	Pass
T12	160 - 140	Leg	3 1/2	496	-107.34	369.17	29.1	Pass
T13	140 - 120	Leg	3 1/2	547	-126.89	369.17	34.4	Pass
T14	120 - 100	Leg	3 1/2	598	-139.60	369.17	37.8	Pass
T15	100 - 80	Leg	3 1/2	651	-122.06	369.17	33.1	Pass
T16	80 - 60	Leg	3 1/2	702	-122.98	369.17	33.3	Pass
T17	60 - 40	Leg	3 1/2	753	-132.80	369.17	36.0	Pass
T18	40 - 20	Leg	3 1/2	804	-137.33	369.17	37.2	Pass
T19	20 - 8.05469	Leg	3 1/2	855	-135.78	369.17	36.8	Pass
T20	8.05469 - 6	Leg	3 1/2	884	-127.74	435.19	29.4	Pass
T21	6 - 2.66927	Leg	3 1/2	899	-134.93	384.88	35.1	Pass
T22	2.66927 - 0	Leg	3 1/2	914	-135.30	428.91	31.5	Pass
T1	350 - 341.945	Diagonal	3/4	9	2.42	15.03	16.1	Pass
T2	341.945 - 340	Diagonal	3/4	34	3.26	15.03	21.7	Pass
T3	340 - 320	Diagonal	3/4	84	3.58	15.03	23.8	Pass
T4	320 - 300	Diagonal	3/4	99	3.68	15.03	24.5	Pass
T5	300 - 280	Diagonal	7/8	166	6.11	20.46	29.9	Pass
T6	280 - 260	Diagonal	7/8	235	5.39	20.46	26.3	Pass
T7	260 - 240	Diagonal	2x1/2	250	9.67	34.02	28.4	Pass
T8	240 - 220	Diagonal	2x1/2	333	10.08	34.02	29.6	Pass
T9	220 - 200	Diagonal	7/8	352	3.47	20.46	17.0	Pass
T10	200 - 180	Diagonal	7/8	408	10.57	20.46	51.7	Pass
T11	180 - 160	Diagonal	7/8	495	9.66	20.46	47.2	Pass
T12	160 - 140	Diagonal	7/8	544	3.83	20.46	18.7	Pass
T13	140 - 120	Diagonal	7/8	556	7.66	20.46	37.4	Pass
T14	120 - 100	Diagonal	7/8	643	6.91	20.46	33.8	Pass
T15	100 - 80	Diagonal	3/4	694	4.53	15.03	30.1	Pass
T16	80 - 60	Diagonal	3/4	714	3.51	15.03	23.3	Pass
T17	60 - 40	Diagonal	3/4	779	3.97	15.03	26.4	Pass
T18	40 - 20	Diagonal	3/4	850	2.06	15.03	13.7	Pass
T19	20 - 8.05469	Diagonal	3/4	859	3.08	15.03	20.5	Pass
T20	8.05469 - 6	Diagonal	3/4	892	3.66	15.03	24.3	Pass
T21	6 - 2.66927	Diagonal	2x1/2	911	0.01	34.02	0.0	Pass
T1	350 - 341.945	Horizontal	L2x2x3/16	14	-1.01	15.18	6.7	Pass
T3	340 - 320	Horizontal	L2x2x3/16	80	5.38	24.32	22.1	Pass
T4	320 - 300	Horizontal	L2x2x3/16	104	-2.44	15.18	16.1	Pass
T5	300 - 280	Horizontal	L2x2x1/4	172	-4.32	20.05	21.6	Pass
T6	280 - 260	Horizontal	L2x2x1/4	232	-3.58	20.05	17.9	Pass
T7	260 - 240	Horizontal	L2 1/2x2 1/2x1/4	256	-6.48	29.14	22.2	Pass
T8	240 - 220	Horizontal	L2 1/2x2 1/2x1/4	336	12.10	40.48	29.9	Pass
T9	220 - 200	Horizontal	L2x2x1/4	367	-1.93	20.05	9.6	Pass
T10	200 - 180	Horizontal	L2x2x1/4	411	-6.75	20.22	33.4	Pass
T11	180 - 160	Horizontal	L2x2x1/4	488	10.89	31.91	34.1	Pass
T12	160 - 140	Horizontal	L2x2x1/4	522	-1.86	20.22	9.2	Pass
T13	140 - 120	Horizontal	L2x2x1/4	562	-4.80	20.22	23.7	Pass
T14	120 - 100	Horizontal	L2x2x1/4	641	8.73	31.91	27.4	Pass
T15	100 - 80	Horizontal	L2x2x3/16	691	-2.82	15.50	18.2	Pass
T16	80 - 60	Horizontal	L2x2x3/16	717	-2.19	15.50	14.1	Pass

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	37 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearring

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T17	60 - 40	Horizontal	L2x2x3/16	794	4.86	24.32	20.0	Pass
T18	40 - 20	Horizontal	L2x2x3/16	818	-2.38	15.50	15.3	Pass
T19	20 - 8.05469	Horizontal	L2x2x3/16	866	-2.35	15.50	15.2	Pass
T1	350 - 341.945	Top Girt	L2x2x3/16	6	-0.08	15.18	0.5	Pass
T2	341.945 - 340	Top Girt	L2x2x3/16	26	-2.34	15.18	15.4	Pass
T3	340 - 320	Top Girt	L2x2x3/16	41	-1.33	15.18	8.8	Pass
T4	320 - 300	Top Girt	L2x2x3/16	92	-0.93	15.18	6.1	Pass
T5	300 - 280	Top Girt	L2x2x1/4	143	-1.54	20.05	7.7	Pass
T6	280 - 260	Top Girt	L2x2x1/4	193	-2.12	20.05	10.6	Pass
T7	260 - 240	Top Girt	L2 1/2x2 1/2x1/4	246	-1.29	29.14	4.4	Pass
T8	240 - 220	Top Girt	L2 1/2x2 1/2x1/4	295	-3.67	29.14	12.6	Pass
T9	220 - 200	Top Girt	L2x2x1/4	346	-1.93	20.05	9.6	Pass
T10	200 - 180	Top Girt	L2x2x1/4	397	-2.29	20.22	11.3	Pass
T11	180 - 160	Top Girt	L2x2x1/4	450	-3.45	20.22	17.1	Pass
T12	160 - 140	Top Girt	L2x2x1/4	501	-1.86	20.22	9.2	Pass
T13	140 - 120	Top Girt	L2x2x1/4	552	-2.20	20.22	10.9	Pass
T14	120 - 100	Top Girt	L2x2x1/4	601	-2.45	20.22	12.1	Pass
T15	100 - 80	Top Girt	L2x2x3/16	653	-2.12	15.50	13.6	Pass
T16	80 - 60	Top Girt	L2x2x3/16	704	-2.13	15.50	13.7	Pass
T17	60 - 40	Top Girt	L2x2x3/16	755	-2.30	15.50	14.8	Pass
T18	40 - 20	Top Girt	L2x2x3/16	806	-2.38	15.50	15.3	Pass
T19	20 - 8.05469	Top Girt	L2x2x3/16	857	-2.35	15.50	15.2	Pass
T20	8.05469 - 6	Top Girt	L2x2x3/16	886	-2.65	15.50	17.1	Pass
T21	6 - 2.66927	Top Girt	L3x3x3/8	901	20.41	71.78	28.4	Pass
T2	341.945 - 340	Bottom Girt	L2x2x3/16	29	-1.59	15.18	10.5	Pass
T3	340 - 320	Bottom Girt	L2x2x3/16	44	-0.73	15.18	4.8	Pass
T4	320 - 300	Bottom Girt	L2x2x3/16	95	-1.34	15.18	8.8	Pass
T5	300 - 280	Bottom Girt	L2x2x1/4	145	-2.11	20.05	10.5	Pass
T6	280 - 260	Bottom Girt	L2x2x1/4	198	-1.28	20.05	6.4	Pass
T7	260 - 240	Bottom Girt	L2 1/2x2 1/2x1/4	247	-3.66	29.14	12.6	Pass
T8	240 - 220	Bottom Girt	L2 1/2x2 1/2x1/4	300	-2.09	29.14	7.2	Pass
T9	220 - 200	Bottom Girt	L2x2x1/4	349	-1.93	20.05	9.6	Pass
T10	200 - 180	Bottom Girt	L2x2x1/4	402	-3.86	20.22	19.1	Pass
T11	180 - 160	Bottom Girt	L2x2x1/4	453	-2.17	20.22	10.7	Pass
T12	160 - 140	Bottom Girt	L2x2x1/4	504	-1.86	20.22	9.2	Pass
T13	140 - 120	Bottom Girt	L2x2x1/4	553	-2.90	20.22	14.3	Pass
T14	120 - 100	Bottom Girt	L2x2x1/4	606	-2.42	20.22	12.0	Pass
T15	100 - 80	Bottom Girt	L2x2x3/16	656	-2.12	15.50	13.6	Pass
T16	80 - 60	Bottom Girt	L2x2x3/16	707	-2.13	15.50	13.7	Pass
T17	60 - 40	Bottom Girt	L2x2x3/16	758	-2.30	15.50	14.8	Pass
T18	40 - 20	Bottom Girt	L2x2x3/16	809	-2.38	15.50	15.3	Pass
T20	8.05469 - 6	Bottom Girt	L2x2x3/16	889	6.01	24.32	24.7	Pass
T21	6 - 2.66927	Bottom Girt	L2x2x1/4	904	-2.47	27.80	8.9	Pass
T22	2.66927 - 0	Bottom Girt	18x3/8	916	-3.12	223.25	4.5	Pass
T3	340 - 320	Guy A@335.836	7/8	953	18.14	50.21	36.1	Pass
T5	300 - 280	Guy A@295.836	7/8	948	18.99	50.21	37.8	Pass
T8	240 - 220	Guy A@235.836	1	942	27.54	65.83	41.8	Pass
T11	180 - 160	Guy A@175.836	7/8	936	20.95	50.21	41.7	Pass
T14	120 - 100	Guy A@115.836	3/4	930	14.04	36.73	38.2	Pass
T17	60 - 40	Guy A@55.8359	9/16	924	7.37	22.05	33.4	Pass
T3	340 - 320	Guy B@335.836	7/8	951	18.41	50.21	36.7	Pass
T5	300 - 280	Guy B@295.836	7/8	945	19.20	50.21	38.2	Pass
T8	240 - 220	Guy B@235.836	1	939	27.30	65.83	41.5	Pass
T11	180 - 160	Guy B@175.836	7/8	933	20.38	50.21	40.6	Pass
T14	120 - 100	Guy B@115.836	3/4	927	13.65	36.73	37.2	Pass
T17	60 - 40	Guy B@55.8359	9/16	921	7.18	22.05	32.6	Pass
T3	340 - 320	Guy C@335.836	7/8	950	18.34	50.21	36.5	Pass
T5	300 - 280	Guy C@295.836	7/8	944	18.88	50.21	37.6	Pass
T8	240 - 220	Guy C@235.836	1	937	27.36	65.83	41.6	Pass
T11	180 - 160	Guy C@175.836	7/8	931	20.77	50.21	41.4	Pass
T14	120 - 100	Guy C@115.836	3/4	925	14.03	36.73	38.2	Pass

tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 270603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Lake City (SR 47 & US 41) (BU 870081)	Page	38 of 38
	Project	TEP No. 145283.722965	Date	16:23:19 07/26/22
	Client	Crown Castle	Designed by	anearing

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	θP_{allow} K	% Capacity	Pass Fail
T17	60 - 40	Guy C@55.8359	9/16	919	7.40	22.05	33.6	Pass
							Summary	
							Leg (T9)	44.4
							Diagonal (T10)	51.7
							Horizontal (T11)	34.1
							Top Girt (T21)	28.4
							Bottom Girt (T20)	24.7
							Guy A (T8)	41.8
							Guy B (T8)	41.5
							Guy C (T8)	41.6
							Bolt Checks	47.7
							RATING =	51.7
								Pass

APPENDIX B
BASE LEVEL DRAWING

(PROPOSED EQUIPMENT CONFIGURATION)
(7) 1-5/8" TO 250 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 222 FT LEVEL
(3) 1-3/16" TO 222 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 164 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 3/64" TO 11 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(2) 3/8" TO TOWER LIGHTING

(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO 164 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(3) 5/16" TO 201 FT LEVEL
(3) 3/8" TO 201 FT LEVEL
(6) 3/4" TO 201 FT LEVEL
(12) 1-5/8" TO 201 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(8) 1-5/8" TO 229 FT LEVEL
(1) 7/8" TO 215 FT LEVEL
(3) 7/8" TO 156 FT LEVEL

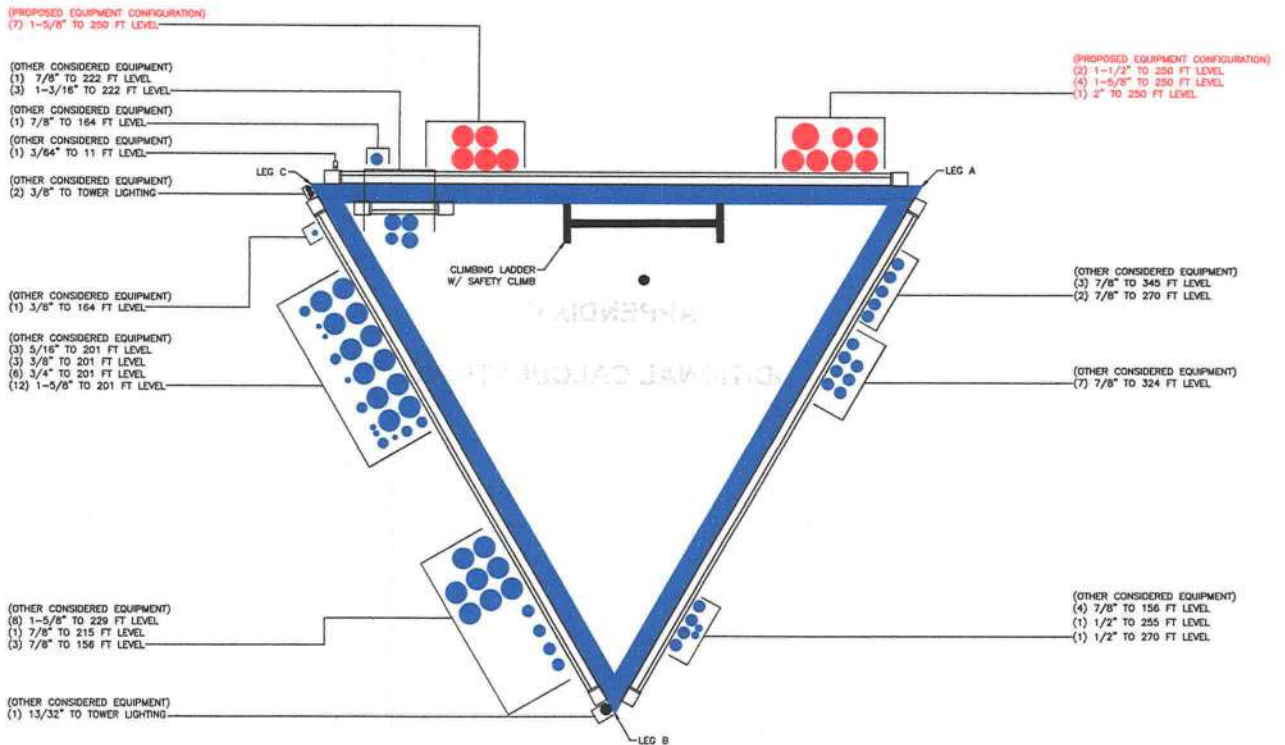
(OTHER CONSIDERED EQUIPMENT)
(1) 13/32" TO TOWER LIGHTING

(PROPOSED EQUIPMENT CONFIGURATION)
(2) 1-1/2" TO 250 FT LEVEL
(4) 1-5/8" TO 250 FT LEVEL
(1) 2" TO 250 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(3) 7/8" TO 345 FT LEVEL
(2) 7/8" TO 270 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(7) 7/8" TO 324 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(4) 7/8" TO 156 FT LEVEL
(1) 1/2" TO 255 FT LEVEL
(1) 1/2" TO 270 FT LEVEL



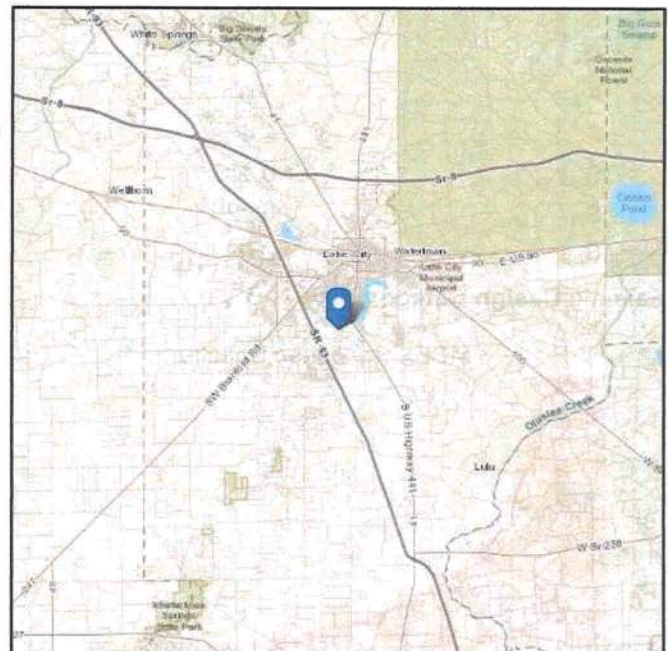
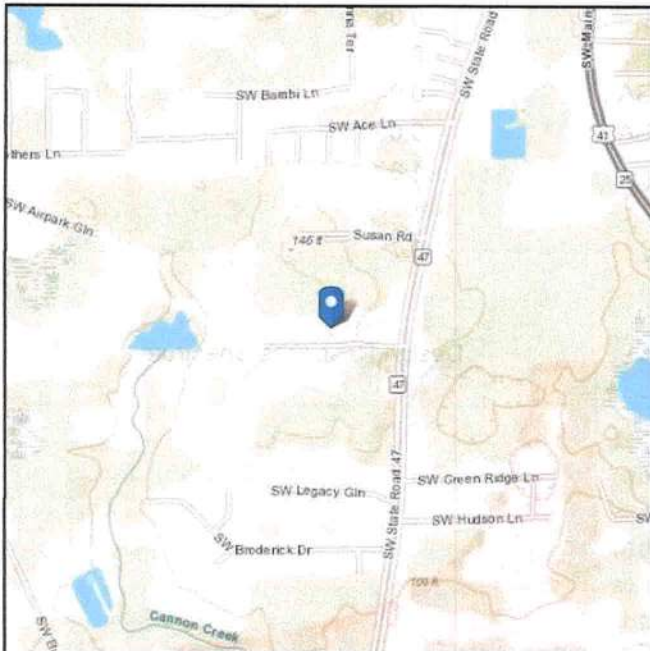
APPENDIX C
ADDITIONAL CALCULATIONS

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: 140.45 ft (NAVD 88)
Latitude: 30.145472
Longitude: -82.653028



Wind

Results:

Wind Speed	118 Vmph
10-year MRI	75 Vmph
25-year MRI	84 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: Mon Jul 18 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).

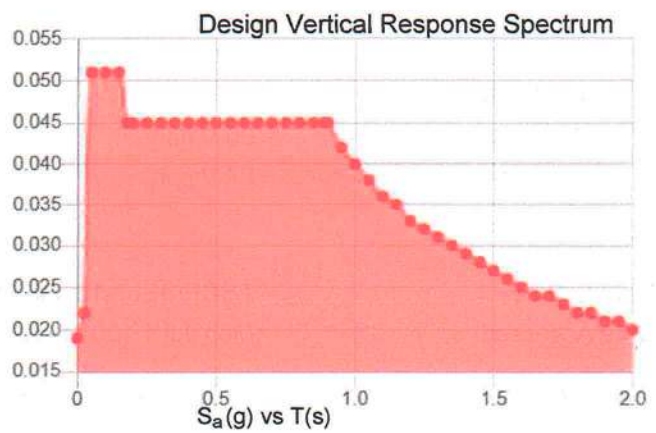
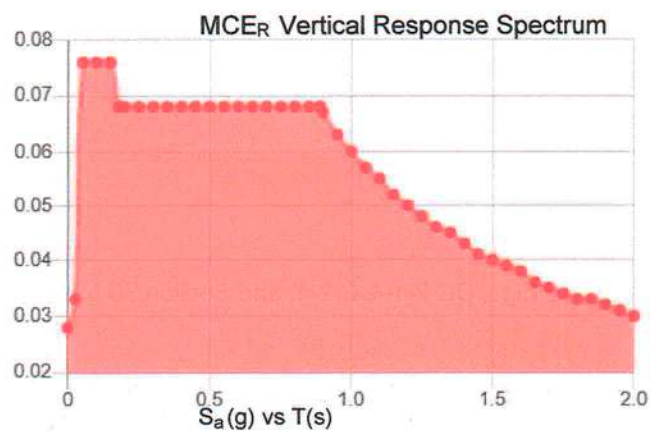
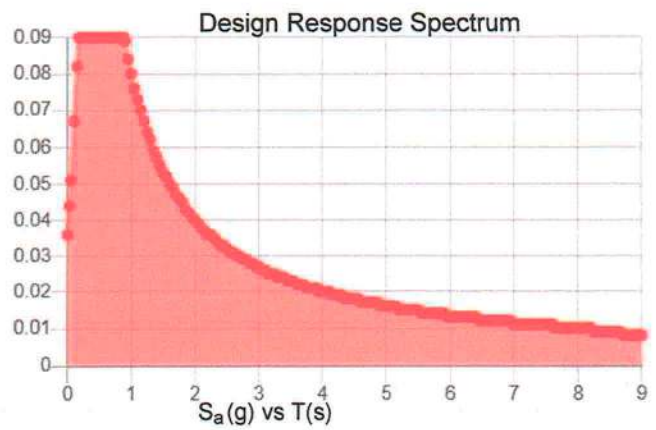
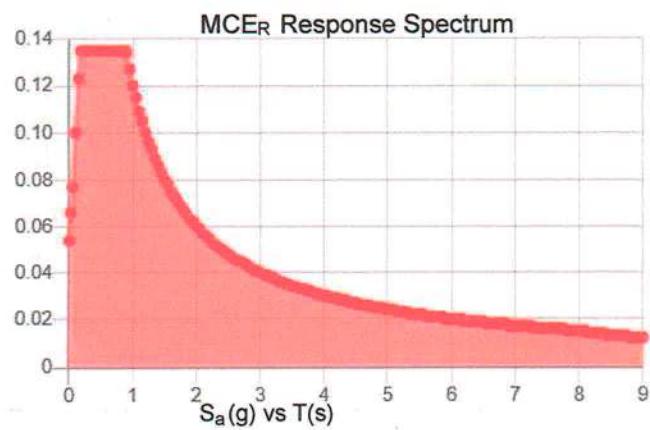
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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

Results:

S_S :	0.085	S_{D1} :	0.08
S_1 :	0.05	T_L :	8
F_a :	1.6	PGA :	0.04
F_v :	2.4	PGA _M :	0.064
S_{MS} :	0.135	F_{PGA} :	1.6
S_{M1} :	0.12	I_e :	1
S_{DS} :	0.09	C_v :	0.7

Seismic Design Category B



Data Accessed: Mon Jul 18 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: 0.25 in.
Concurrent Temperature: 25 F
Gust Speed 30 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Mon Jul 18 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.

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Drilled Pier Foundation

BU #:	870081
Site Name:	Lake City (SR 47 & US 41)
Order Number:	623632 Rev. 0
TIA-222 Revision:	H
Tower Type:	Guyed (Base)
Location:	Base

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)		
Axial Force (kips)	360.53	
Shear Force (kips)	2.82	

Material Properties	
Concrete Strength, f _c :	4 ksi
Rebar Strength, F _y :	60 ksi
Tie Yield Strength, F _y :	40 ksi

Pier Design Data	
Depth	55.5 ft
Ext. Above Grade	0.5 ft
Pier Section 1	
From 0.5' above grade to 55.5' below grade	
Pier Diameter	6 ft
Rebar Quantity	18
Rebar Size	10
Clear Cover to Ties	4 in
Tie Size	5
Tie Spacing	16 in

Rebar & Pier Options

Embedded Pole Inputs

Refrid Pier Inputs

Analysis Results		
Soil Lateral Check		
	Compression	Uplift
D _{req} (ft from TOC)	26.12	-
Soil Safety Factor	994.10	-
Max Moment (kip-ft)	45.55	-
Rating*	0.2%	-
Soil Vertical Check		
	Compression	Uplift
Skin Friction (kips)	898.51	-
End Bearing (kips)	488.58	-
Weight of Concrete (kips)	173.85	-
Total Capacity (kips)	1387.09	-
Axial (kips)	534.38	-
Rating*	36.7%	-
Reinforced Concrete Flexure		
	Compression	Uplift
Critical Depth (ft from TOC)	26.94	-
Critical Moment (kip-ft)	45.50	-
Critical Moment Capacity	3663.81	-
Rating*	1.2%	-
Reinforced Concrete Shear		
	Compression	Uplift
Critical Depth (ft from TOC)	43.12	-
Critical Shear (kip)	3.19	-
Critical Shear Capacity	676.14	-
Rating*	0.4%	-

Structural Foundation Rating*	1.2%
Soil Interaction Rating*	36.7%

*Rating per TIA-222-H Section 15.5



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

[Go to Soil Calculations](#)

Soil Profile														
Groundwater Depth			3		# of Layers			6						
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	Y _{soil} (pcf)	Y _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3	3	100	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3	4	1	38	87.6	0	28	0.000	0.000	0.02	0.02			Cohesionless
3	4	6	2	48	87.6	0.4	28	0.000	0.000	0.27	0.27			Cohesionless
4	6	16	10	58	87.6	2	28	0.000	0.000	1.23	1.23			Cohesionless
5	16	32	16	63	87.6	3	0	1.650	1.650	1.65	1.65			Cohesive
6	32	55.5	23.5	58	87.6	2	28	0.000	0.000	1.71	1.71	28.8		Cohesionless

Drilled Pier Foundation

BU # :	870081
Site Name:	Lake City (SR 47 & US 41)
Order Number:	623632 Rev. 0
TIA-222 Revision:	H
Tower Type:	Guyed (Anchor)
Location:	Guy A @ 173 ft (Elev 0 ft)

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)		134.59
Axial Force (kips)		151.24
Shear Force (kips)		132.9

Material Properties	
Concrete Strength, f _c :	4 ksi
Rebar Strength, F _y :	80 ksi
Tie Yield Strength, F _y :	40 ksi

Pier Design Data	
Depth	34 ft
Ext. Above Grade	0.5 ft
Pier Section 1	
From 0.5' above grade to 34' below grade	
Pier Diameter	6 ft
Rebar Quantity	24
Rebar Size	10
Clear Cover to Ties	4 in
Tie Size	5
Tie Spacing	12 in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check		
	Compression	Uplift
D _{u0} (ft from TOC)	-	15.30
Soil Safety Factor	-	4.18
Max Moment (kip-ft)	-	3378.59
Rating*	-	30.3%
Soil Vertical Check		
	Compression	Uplift
Skin Friction (kips)	-	527.60
End Bearing (kips)	-	-
Weight of Concrete (kips)	-	82.44
Total Capacity (kips)	-	610.04
Axial (kips)	-	151.24
Rating*	-	23.6%
Reinforced Concrete Flexure		
	Compression	Uplift
Critical Depth (ft from TOC)	-	14.97
Critical Moment (kip-ft)	-	3376.81
Critical Moment Capacity	-	3881.14
Rating*	-	82.9%
Reinforced Concrete Shear		
	Compression	Uplift
Critical Depth (ft from TOC)	-	0.00
Critical Shear (kip)	-	132.90
Critical Shear Capacity	-	395.93
Rating*	-	32.0%

Structural Foundation Rating*	82.9%
Soil Interaction Rating*	30.3%

*Rating per TIA-222-H Section 15.5



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

[Go to Soil Calculations](#)

Soil Profile														
Groundwater Depth					# of Layers									
3					3									
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ _{soil} (pcf)	γ _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3	3	100	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3	30	27	59	87.6	1.8	28	0.000	0.000	1.20	1.20			Cohesionless
3	30	34	4	53	87.6	1.2	28	0.000	0.000	1.23	1.23			Cohesionless

Drilled Pier Foundation

BU # :	870081
Site Name:	Lake City (SR 47 & US 41)
Order Number:	623632 Rev. 0
TIA-222 Revision:	H
Tower Type:	Guyed (Anchor)
Location:	Guy B @ 173 ft (Elev 0 ft)

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)		134.59
Axial Force (kips)		152.3
Shear Force (kips)		133.52

Material Properties		
Concrete Strength, f _c :	4	ksi
Rebar Strength, F _y :	60	ksi
Tie Yield Strength, F _y :	40	ksi

Pier Design Data		
Depth	34	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 34' below grade		
Pier Diameter	6	ft
Rebar Quantity	24	
Rebar Size	10	
Clear Cover to Ties	4	in
Tie Size	5	
Tie Spacing	12	in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check		
	Compression	Uplift
D _{cr0} (ft from TOC)	-	16.56
Soil Safety Factor	-	8.72
Max Moment (kip-ft)	-	1494.00
Rating*	-	14.5%
Soil Vertical Check		
	Compression	Uplift
Skin Friction (kips)	-	513.18
End Bearing (kips)	-	-
Weight of Concrete (kips)	-	82.44
Total Capacity (kips)	-	595.62
Axial (kips)	-	152.30
Rating*	-	24.4%
Reinforced Concrete Flexure		
	Compression	Uplift
Critical Depth (ft from TOC)	-	16.27
Critical Moment (kip-ft)	-	1493.50
Critical Moment Capacity	-	3860.05
Rating*	-	36.8%
Reinforced Concrete Shear		
	Compression	Uplift
Critical Depth (ft from TOC)	-	26.36
Critical Shear (kip)	-	169.84
Critical Shear Capacity	-	420.53
Rating*	-	38.5%

Structural Foundation Rating*	38.5%
Soil Interaction Rating*	24.4%

*Rating per TIA-222-H Section 15.5



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

[Go to Soil Calculations](#)

Soil Profile														
Groundwater Depth					# of Layers									
3					5									
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	Y _{soil} (pcf)	Y _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3	3	100	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3	6	3	53	87.6	0.8	28	0.000	0.000	0.48	0.48			Cohesionless
3	6	10	4	58	87.6	2	28	0.000	0.000	1.20	1.20			Cohesionless
4	10	16	6	53	87.6	0.8	28	0.000	0.000	0.60	0.60			Cohesionless
5	16	34	18	58	87.6	1.8	28	0.000	0.000	1.47	1.47			Cohesionless

Drilled Pier Foundation

BU # : 870081

Site Name: Lake City (SR 47 & US 41)

Order Number: 623632 Rev. 0

TIA-222 Revision: H

Tower Type: Guyed (Anchor)

Location: Guy C @ 173 ft (Elev 0 ft)

Applied Loads	
Comp.	Uplift
Moment (kip-ft)	134.59
Axial Force (kips)	151.18
Shear Force (kips)	132.94

Material Properties	
Concrete Strength, f _c :	4 ksi
Rebar Strength, F _y :	60 ksi
Tie Yield Strength, F _y t:	40 ksi

Pier Design Data	
Depth	34 ft
Ext. Above Grade	0.5 ft
Pier Section 1	
From 0.5' above grade to 34' below grade	
Pier Diameter	6 ft
Rebar Quantity	24
Rebar Size	10
Clear Cover to Ties	4 in
Tie Size	5
Tie Spacing	12 in

Rebar & Pier Options
Embedded Pole Inputs
Belled Pier Inputs

Analysis Results		
Soil Lateral Check		
	Compression	Uplift
D _{avg} (ft from TOC)	-	14.82
Soil Safety Factor	-	9.78
Max Moment (kip-ft)	-	1451.13
Rating*	-	13.0%
Soil Vertical Check		
	Compression	Uplift
Skin Friction (kips)	-	559.41
End Bearing (kips)	-	-
Weight of Concrete (kips)	-	82.44
Total Capacity (kips)	-	641.85
Axial (kips)	-	151.18
Rating*	-	22.4%
Reinforced Concrete Flexure		
	Compression	Uplift
Critical Depth (ft from TOC)	-	14.51
Critical Moment (kip-ft)	-	1450.41
Critical Moment Capacity	-	3864.61
Rating*	-	35.7%
Reinforced Concrete Shear		
	Compression	Uplift
Critical Depth (ft from TOC)	-	24.03
Critical Shear (kip)	-	147.52
Critical Shear Capacity	-	418.82
Rating*	-	33.5%
Structural Foundation Rating*		35.7%
Soil Interaction Rating*		22.4%

*Rating per TIA-222-H Section 15.5



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

[Go to Soil Calculations](#)

Soil Profile														
Groundwater Depth					# of Layers									
3					5									
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	Y _{soil} (pcf)	Y _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3	3	100	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3	6	3	53	87.6	1	28	0.000	0.000	0.60	0.60			Cohesionless
3	6	23	17	63	87.6	2	28	0.000	0.000	1.29	1.29			Cohesionless
4	23	33	10	63	87.6	2.6	0	1.430	1.430	1.41	1.41			Cohesive
5	33	34	1	58	87.6	2	28	0.000	0.000	1.74	1.74			Cohesionless

