

February 10, 2022

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Subject: Structural Analysis Report

Carrier Designation: **Harris Reconfiguration**
Carrier Site Number: 871112
Carrier Site Name: 4-D023F Ft. White

Client Designation: **Site Number:** N/A
Site Name: Fort White

Engineering Firm Designation: **TEP Project Number:** 308004.636376

Site Data: **X6HX+9W Fort White, Fort White, Columbia County, FL 32038**
Latitude 29° 58' 42.60", Longitude -82° 45' 00.54"
400± Foot - Guyed Tower

Dear Kenneth W. Steere,

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 stress level for the tower and foundation structure, under the following load case, to be:

LC1: Existing + Proposed + Reserved Loading

Note: See Table 1 for the existing, proposed, and reserved loading

Sufficient Capacity

Structure Capacity	Foundation Capacity
86.6%	-

The analysis has been performed in accordance with the ANSI/TIA-222-H Structural Standard for Antenna Supporting Structures, Antennas, and Small Wind Turbine Support Structures and the 2020 Florida Building Code, 7th Edition.

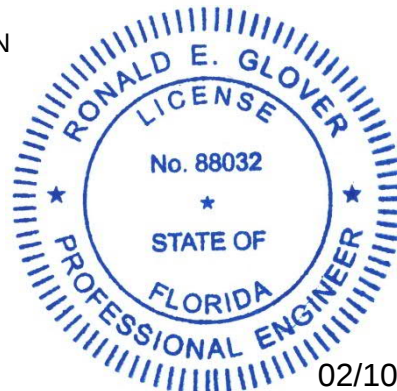
All modifications and equipment proposed in this report shall be installed in accordance with the appurtenances listed in Table 1 for the determined available structural capacity to be effective.

We at *Tower Engineering Professionals* appreciate the opportunity of providing our continuing professional services to you and *Williams Communications*. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Cameron A. Tokay / RHN

Respectfully submitted by:

Ronald E. Glover, P.E., S.E.



This item has been electronically signed and sealed by Ronald E. Glover, PE, SE on 2/10/2022 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.

02/10/2022

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Existing, Proposed, and Reserved Antenna and Cable Information

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 3 - Section Capacity (Summary)

Table 4 - Tower Component Stresses vs. Capacity

Table 5 - Dish Twist/Sway Results for 60 mph Service Wind Speed

4.1) Recommendations

5) APPENDIX A

tnxTower Output

1) INTRODUCTION

The tower is a 400± Foot Guyed Tower mapped by Tower Engineering Professionals, Inc. in January of 2022. The original design standard and wind speed were unavailable for review. All information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

TIA-222 Revision:	ANSI/TIA-222-H
Type of Analysis:	Feasibility
Risk Category:	III
Wind Speed:	131 mph (Ultimate)
Exposure Category:	C
Topographic Category:	1 (Kzt = 1.0)
Ice Thickness:	0.25 in
Wind Speed with Ice:	30 mph
Seismic Design Category:	B
Seismic Ss:	0.080
Seismic S1:	0.048
Service Wind Speed:	60 mph

Table 1 - Existing, Proposed, and Reserved Antenna and Cable Information

Existing/ Proposed/ Reserved	Mount Level (ft)	Ant CL (ft)	Qty	Antenna Model	Mount Type	Qty Coax	Coax Size	Coax Location	Owner/ Tenant
Proposed	398.5	406	1	AO8410M-24TO	Sidearm	1	1 5/8	CA Face	Harris
Existing	398.5	406	2	AO8410M-24TO	(2) Sidearms	1	1 5/8	CA Face	Harris
			1	dbSpectra ATS8TMA10-R		1 1	5/8 7/8		
Existing	264.0	264.0	1	RFS PAD6-65	Dish Mount	1	EW63	AB Face	Harris
Existing	234.0	234.0	1	RFS PAD6-65	Dish Mount	1	EW63	AB Face	Harris
Existing	220.0	220.0	1	RFS PAD8-59	Dish Mount	1	EW52	AB Face	Harris
Existing	192.0	192.0	1	RFS PAD8-59	Dish Mount	1	EW52	AB Face	Harris
Existing	168.0	168.0	1	RFS PAD8-59	Dish Mount	1	EW52	AB Face	Harris
Existing	130.0	130.0	1	RFS PAD6-59	Dish Mount	1	EW52	AB Face	Harris

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Source
Tower Mapping Report	Tower Engineering Professionals, Inc., dated January 27, 2022 TEP No. 308004.636375	TEP
Correspondence	Correspondence in reference to the existing, proposed, and reserved loading.	Williams Communications

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.

3.2) Analysis Assumptions

- 1) The tower and foundation were built and maintained in accordance with the manufacturer's specification.
- 2) The configuration of existing antennas, transmission cables, mounts and other appurtenances are as specified in the tower mapping report by TEP.
- 3) Unless specified by the client or tower mapping, the location of the existing and proposed coax is assumed by TEP and listed in Table 1.
- 4) All tower components are in sufficient condition to carry their full design capacity.
- 5) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
- 6) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not perform a site visit to verify the size, condition or capacity of the antenna mounts and did not analyze antennas supporting mounts as part of this structural analysis report.

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 3 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ϕP_{allow} (lb)	% Capacity	Pass / Fail
T1	400 - 380	Leg	1 3/4	1	-19564.100	64870.990	30.2	Pass
T2	380 - 370	Leg	1 3/4	43	-24231.699	66732.747	36.3	Pass
T3	370 - 360	Leg	1 3/4	67	-25349.900	66732.747	38.0	Pass
T4	360 - 350	Leg	2	91	-24610.199	98745.457	24.9	Pass
T5	350 - 340	Leg	2	112	-20557.600	98745.457	20.8	Pass
T6	340 - 320	Leg	2	137	-24769.400	95861.952	25.8	Pass
T7	320 - 300	Leg	2	179	-31112.699	95861.952	32.5	Pass
T8	300 - 280	Leg	1 3/4	220	-50518.000	64198.888	78.7	Pass
T9	280 - 260	Leg	2	262	-62560.602	95861.952	65.3	Pass
T10	260 - 240	Leg	2	304	-66862.602	95861.952	69.7	Pass
T11	240 - 220	Leg	2	346	-83063.102	95861.952	86.6	Pass
T12	220 - 200	Leg	2	390	-66167.102	95861.952	69.0	Pass
T13	200 - 180	Leg	2	430	-61592.301	95861.952	64.3	Pass
T14	180 - 160	Leg	2	472	-70334.297	95861.952	73.4	Pass
T15	160 - 140	Leg	2	514	-57958.000	95861.952	60.5	Pass
T16	140 - 120	Leg	2 1/4	556	-57977.801	132986.694	43.6	Pass
T17	120 - 100	Leg	2 1/2	598	-67946.000	175320.592	38.8	Pass
T18	100 - 80	Leg	2 1/4	640	-70644.203	132986.694	53.1	Pass
T19	80 - 60	Leg	2 1/4	682	-75610.898	132986.694	56.9	Pass
T20	60 - 40	Leg	2 1/4	724	-78084.102	132986.694	58.7	Pass
T21	40 - 20	Leg	2 1/4	766	-79539.703	132986.694	59.8	Pass
T22	20 - 6.80729	Leg	2 1/4	810	-73413.797	137795.694	53.3	Pass
T23	6.80729 - 0	Leg	2 1/4	838	-69424.703	178045.342	39.0	Pass
T1	400 - 380	Diagonal	1 1/8	30	-2924.100	14956.304	19.6	Pass
T2	380 - 370	Diagonal	1 1/8	66	-1869.890	15286.845	12.2	Pass
T3	370 - 360	Diagonal	1 1/8	78	-1163.670	15286.845	7.6	Pass
T4	360 - 350	Diagonal	1 1/8	99	-2071.760	15464.399	13.4	Pass
T5	350 - 340	Diagonal	1 1/8	123	-3231.780	15464.399	20.9	Pass
T6	340 - 320	Diagonal	1 3/8	159	-4153.960	29335.528	14.2	Pass
T7	320 - 300	Diagonal	1 1/8	189	-3295.120	15015.314	21.9	Pass
T8	300 - 280	Diagonal	1 1/4	231	-4666.910	21420.315	21.8	Pass
T9	280 - 260	Diagonal	1 1/4	303	-5207.610	21629.265	24.1	Pass
T10	260 - 240	Diagonal	1 1/4	315	-4717.070	21629.265	21.8	Pass
T11	240 - 220	Diagonal	1 3/8	357	-14961.900	29335.528	51.0	Pass
T12	220 - 200	Diagonal	1 3/8	429	-8000.000	29335.528	27.3	Pass
T13	200 - 180	Diagonal	1 1/4	440	-10888.700	21629.265	50.3	Pass
T14	180 - 160	Diagonal	1 1/2	501	-11905.400	38077.723	31.3	Pass
T15	160 - 140	Diagonal	1 1/4	555	-6247.500	21629.265	28.9	Pass
T16	140 - 120	Diagonal	1 3/8	567	-9152.870	29570.099	31.0	Pass
T17	120 - 100	Diagonal	1 3/8	639	-9918.340	29804.774	33.3	Pass
T18	100 - 80	Diagonal	1 1/4	680	-7278.990	21838.633	33.3	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ϕP_{allow} (lb)	% Capacity	Pass / Fail
T19	80 - 60	Diagonal	1 1/8	721	-5384.980	15194.970	35.4	Pass
T20	60 - 40	Diagonal	1 1/8	765	-5795.210	15194.970	38.1	Pass
T21	40 - 20	Diagonal	1 1/8	777	-6056.720	15194.970	39.9	Pass
T22	20 - 6.80729	Diagonal	1 1/8	819	-7658.790	15879.359	48.2	Pass
T1	400 - 380	Horizontal	7/8	27	-1284.830	10869.389	11.8	Pass
T2	380 - 370	Horizontal	7/8	57	-554.472	10869.389	5.1	Pass
T3	370 - 360	Horizontal	7/8	81	-562.664	10869.389	5.2	Pass
T4	360 - 350	Horizontal	7/8	102	1344.890	20456.940	6.6	Pass
T5	350 - 340	Horizontal	7/8	126	-1312.640	10969.770	12.0	Pass
T6	340 - 320	Horizontal	7/8	162	-2117.730	10969.770	19.3	Pass
T7	320 - 300	Horizontal	7/8	192	1889.770	20456.940	9.2	Pass
T8	300 - 280	Horizontal	7/8	232	-1814.640	10869.389	16.7	Pass
T9	280 - 260	Horizontal	7/8	298	-2194.750	10969.770	20.0	Pass
T10	260 - 240	Horizontal	1	318	2846.480	26719.244	10.7	Pass
T11	240 - 220	Horizontal	1 1/4	365	11366.400	41748.839	27.2	Pass
T12	220 - 200	Horizontal	7/8	426	4780.100	20456.940	23.4	Pass
T13	200 - 180	Horizontal	7/8	443	6649.420	20456.940	32.5	Pass
T14	180 - 160	Horizontal	1	503	9979.190	26719.244	37.3	Pass
T15	160 - 140	Horizontal	7/8	552	3754.550	20456.940	18.4	Pass
T16	140 - 120	Horizontal	1	570	5680.520	26719.244	21.3	Pass
T17	120 - 100	Horizontal	1	636	6209.970	26719.244	23.2	Pass
T18	100 - 80	Horizontal	7/8	677	4577.280	20456.940	22.4	Pass
T19	80 - 60	Horizontal	7/8	718	3318.450	20456.940	16.2	Pass
T20	60 - 40	Horizontal	7/8	762	3745.660	20456.940	18.3	Pass
T21	40 - 20	Horizontal	7/8	780	3714.690	20456.940	18.2	Pass
T22	20 - 6.80729	Horizontal	7/8	822	4424.390	20456.940	21.6	Pass
T23	6.80729 - 0	Horizontal	L4x4x3/8	846	-1230.860	94742.332	36.8	Pass
T1	400 - 380	Top Girt	7/8	6	-431.352	10869.389	4.0	Pass
T2	380 - 370	Top Girt	7/8	48	-554.472	10869.389	5.1	Pass
T3	370 - 360	Top Girt	7/8	72	-562.664	10869.389	5.2	Pass
T4	360 - 350	Top Girt	7/8	96	-509.551	10969.770	4.6	Pass
T5	350 - 340	Top Girt	7/8	117	-900.004	10969.770	8.2	Pass
T6	340 - 320	Top Girt	7/8	139	-981.845	10969.770	9.0	Pass
T7	320 - 300	Top Girt	7/8	183	-680.610	10969.770	6.2	Pass
T8	300 - 280	Top Girt	7/8	225	-1222.050	10869.389	11.2	Pass
T9	280 - 260	Top Girt	7/8	265	-1459.870	10969.770	13.3	Pass
T10	260 - 240	Top Girt	1	309	-1405.130	16581.179	8.5	Pass
T11	240 - 220	Top Girt	1 1/4	351	-1715.780	28463.819	6.0	Pass
T12	220 - 200	Top Girt	7/8	393	3011.780	20456.940	14.7	Pass
T13	200 - 180	Top Girt	7/8	435	-1286.150	10969.770	11.7	Pass
T14	180 - 160	Top Girt	1	477	4134.390	26719.244	15.5	Pass
T15	160 - 140	Top Girt	7/8	519	2332.790	20456.940	11.4	Pass
T16	140 - 120	Top Girt	1	560	2205.530	26719.244	8.3	Pass
T17	120 - 100	Top Girt	1	603	3596.070	26719.244	13.5	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ϕP_{allow} (lb)	% Capacity	Pass / Fail
T18	100 - 80	Top Girt	7/8	645	2649.750	20456.940	13.0	Pass
T19	80 - 60	Top Girt	7/8	687	-1464.770	11070.464	13.2	Pass
T20	60 - 40	Top Girt	7/8	729	-1553.240	11070.464	14.0	Pass
T21	40 - 20	Top Girt	7/8	771	-1553.340	11070.464	14.0	Pass
T22	20 - 6.80729	Top Girt	7/8	813	-1421.580	11070.464	12.8	Pass
T23	6.80729 - 0	Top Girt	L4x4x3/8	842	6561.730	97297.196	6.7	Pass
T1	400 - 380	Bottom Girt	7/8	9	-474.545	10869.389	4.4	Pass
T2	380 - 370	Bottom Girt	7/8	51	-554.472	10869.389	5.1	Pass
T3	370 - 360	Bottom Girt	7/8	75	-562.664	10869.389	5.2	Pass
T5	350 - 340	Bottom Girt	7/8	120	-856.253	10969.770	7.8	Pass
T6	340 - 320	Bottom Girt	7/8	144	-515.319	10969.770	4.7	Pass
T7	320 - 300	Bottom Girt	7/8	186	1284.840	20456.940	6.3	Pass
T8	300 - 280	Bottom Girt	7/8	228	-1222.050	10869.389	11.2	Pass
T9	280 - 260	Bottom Girt	7/8	270	-1292.270	10969.770	11.8	Pass
T10	260 - 240	Bottom Girt	1	312	-1405.130	16581.179	8.5	Pass
T11	240 - 220	Bottom Girt	1 1/4	353	4956.860	41748.839	11.9	Pass
T12	220 - 200	Bottom Girt	7/8	395	-1462.280	10969.770	13.3	Pass
T13	200 - 180	Bottom Girt	7/8	437	3899.100	20456.940	19.1	Pass
T14	180 - 160	Bottom Girt	1	480	-1452.850	16581.179	8.8	Pass
T15	160 - 140	Bottom Girt	7/8	522	-1205.300	10969.770	11.0	Pass
T16	140 - 120	Bottom Girt	1	564	3079.520	26719.244	11.5	Pass
T17	120 - 100	Bottom Girt	1	605	3012.170	26719.244	11.3	Pass
T18	100 - 80	Bottom Girt	7/8	648	-1422.150	11070.464	12.8	Pass
T19	80 - 60	Bottom Girt	7/8	690	-1464.770	11070.464	13.2	Pass
T20	60 - 40	Bottom Girt	7/8	732	-1553.240	11070.464	14.0	Pass
T21	40 - 20	Bottom Girt	7/8	774	-1553.340	11070.464	14.0	Pass
T22	20 - 6.80729	Bottom Girt	L4x4x3/8	816	6507.170	97297.196	6.7	Pass
T1	400 - 380	Guy A@393.193	9/16	861	16179.400	22049.999	73.4	Pass
T6	340 - 320	Guy A@326.778	9/16	867	13900.100	22049.999	63.0	Pass
T9	280 - 260	Guy A@273.222	3/4	873	18007.400	36728.998	49.0	Pass
T11	240 - 220	Guy A@226.778	3/4	887	15133.600	36728.998	41.2	Pass
T14	180 - 160	Guy A@173.222	5/8	905	10500.800	26711.999	39.3	Pass
T17	120 - 100	Guy A@113.222	3/4	915	15021.200	36728.998	40.9	Pass
T20	60 - 40	Guy A@53.2222	7/16	921	5354.190	13103.999	40.9	Pass
T1	400 - 380	Guy B@393.193	9/16	860	16267.200	22049.999	73.8	Pass
T6	340 - 320	Guy B@326.778	9/16	866	13786.400	22049.999	62.5	Pass
T9	280 - 260	Guy B@273.222	3/4	872	17642.900	36728.998	48.0	Pass
T11	240 - 220	Guy B@226.778	3/4	881	15851.300	36728.998	43.2	Pass
T14	180 - 160	Guy B@173.222	5/8	899	10382.800	26711.999	38.9	Pass
T17	120 - 100	Guy B@113.222	3/4	914	14861.000	36728.998	40.5	Pass
T20	60 - 40	Guy B@53.2222	7/16	920	5297.430	13103.999	40.4	Pass
T1	400 - 380	Guy C@393.193	9/16	856	16648.600	22049.999	75.5	Pass
T6	340 - 320	Guy C@326.778	9/16	862	14379.500	22049.999	65.2	Pass
T9	280 - 260	Guy C@273.222	3/4	868	18251.900	36728.998	49.7	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ϕP_{allow} (lb)	% Capacity	Pass / Fail
T11	240 - 220	Guy C@226.778	3/4	874	15323.700	36728.998	41.7	Pass
T14	180 - 160	Guy C@173.222	5/8	892	11504.200	26711.999	43.1	Pass
T17	120 - 100	Guy C@113.222	3/4	910	16729.199	36728.998	45.5	Pass
T20	60 - 40	Guy C@53.2222	7/16	916	5802.150	13103.999	44.3	Pass
T1	400 - 380	Top Guy Pull-Off@393.193	2x3/8	858	2711.090	25514.999	10.6	Pass
T6	340 - 320	Top Guy Pull-Off@326.778	2x3/8	863	2824.990	25514.999	11.1	Pass
T9	280 - 260	Top Guy Pull-Off@273.222	2x3/8	870	3736.130	25514.999	14.6	Pass
T17	120 - 100	Top Guy Pull-Off@113.222	2x3/8	912	4352.010	25514.999	17.1	Pass
T20	60 - 40	Top Guy Pull-Off@53.2222	2x3/8	917	2793.490	25514.999	10.9	Pass
T11	240 - 220	Torque Arm Top@226.778	L3 1/2x3 1/2x3/8	889	17033.900	72109.378	23.6	Pass
T14	180 - 160	Torque Arm Top@173.222	L3 1/2x3 1/2x3/8	907	12233.200	72109.378	17.0	Pass
T11	240 - 220	Torque Arm Bottom@226.778	L3 1/2x3 1/2x3/8	890	-17180.199	65526.088	26.2	Pass
T14	180 - 160	Torque Arm Bottom@173.222	L3 1/2x3 1/2x3/8	897	-13756.000	65526.088	21.0	Pass
							Summary	
						Leg (T11)	86.6	Pass
						Diagonal (T11)	51.0	Pass
						Horizontal (T14)	37.3	Pass
						Top Girt (T14)	15.5	Pass
						Bottom Girt (T13)	19.1	Pass
						Guy A (T1)	73.4	Pass
						Guy B (T1)	73.8	Pass
						Guy C (T1)	75.5	Pass
						Top Guy Pull-Off (T17)	17.1	Pass
						Torque Arm Top (T11)	23.6	Pass
						Torque Arm Bottom (T11)	26.2	Pass
						Bolt Checks	40.4	Pass
						RATING =	86.6	Pass

Table 4 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
-	-	-	-	-
Structure Rating (max from all components) =				86.6%

Notes:

- 1) Rating per TIA-222-H, Section 15.5

Table 5 - Dish Twist/Sway Results for 60 mph Service Wind Speed

Elevation (ft)	Dish Model	Beam Deflection		
		Deflection (in)	Tilt (deg)	Twist (deg)
264.0	RFS PAD6-65	1.139	0.073	0.870
234.0	RFS PAD6-65	0.805	0.030	0.533
220.0	RFS PAD8-59	0.760	0.013	0.437
192.0	RFS PAD8-59	0.784	0.010	0.323
168.0	RFS PAD8-59	0.812	0.017	0.158
130.0	RFS PAD6-59	0.825	0.009	0.504

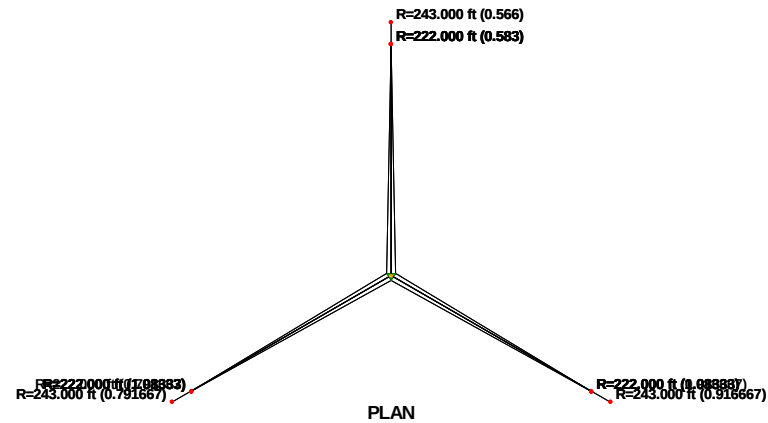
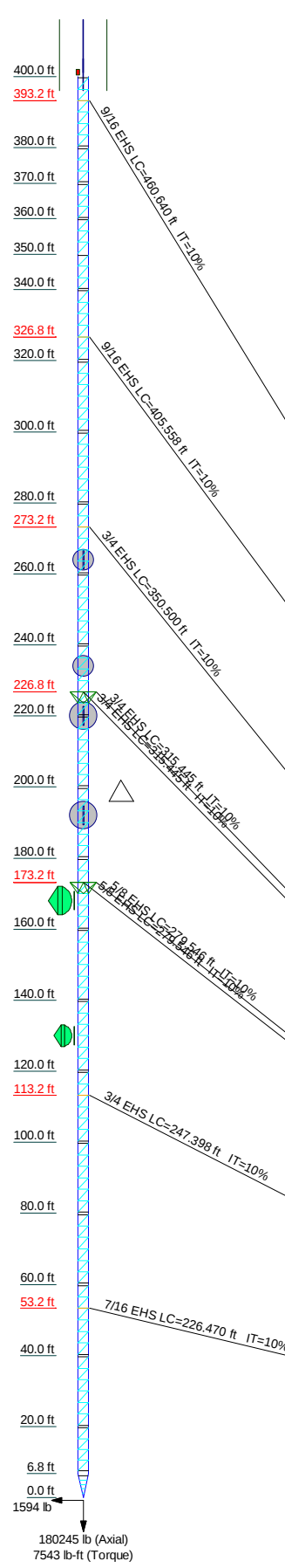
4.1) Recommendations

- 1) If the load differs from that described in Table 1 of this report or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
- 2) The tower has sufficient capacity to carry the existing, proposed, and reserved loading. No modifications are required at this time.
- 3) TEP did not have sufficient information to perform a foundation analysis. Provide TEP with foundation drawings and/or a geotechnical report for this site in order to determine the substructure capacity. If this information is not available, TEP recommends a foundation mapping and/or geotechnical investigation.
- 4) Prior to acceptance of changed configuration a rigorous structural analysis shall be performed in order to determine the overall stability and the adequacy of the structural members, foundations and connections.

APPENDIX A

TNX TOWER OUTPUT

Section	T23	T22	T21	T20	T19	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1																			
Legs	SR 2 1/4				SR 2 1/2				SR 2 1/4				SR 2				SR 1 3/4				SR 2				SR 1 3/4																	
Leg Grade	A572-50																																									
Diagonals	A		SR 1 1/8		SR 1 1/4		SR 1 3/8		SR 1 1/4		SR 1 1/2		SR 1 1/4		SR 1 3/8		SR 1 1/4		SR 1 1/8		SR 1 1/8		SR 1 1/8																			
Diagonal Grade	A		A36																																							
Top Girts	B		SR 7/8				SR 1		SR 7/8		SR 1 1/4		SR 1 1/4		SR 1		SR 7/8				SR 7/8		SR 7/8																			
Bottom Girts	A		B		SR 7/8		SR 1		SR 7/8		SR 1		SR 7/8		SR 1 1/4		SR 1 1/4		N.A.		SR 7/8		SR 7/8																			
Horizontals	B		SR 7/8		SR 1		SR 7/8		SR 1		SR 7/8		SR 1 1/4		SR 1		SR 7/8				SR 7/8		SR 7/8																			
Top Guy Pull-Offs	N.A.		2x3/8		N.A.		2x3/8		SR 1		N.A.		SR 1 1/4		SR 1		2x3/8		N.A.		2x3/8		2x3/8																			
Face Width (ft)	3																																									
# Panels @ (ft)	D		C		96 @ 3.22222																																					
Weight (lb)	24430.4		870.4		1208.7		1231.7		1208.7		1271.6		1594.0		1386.6		1101.2		1728.7		1101.2		1747.3		1140.7		1183.7		960.9		1124.2		525.9		507.5		450.8		450.8		909.7	



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
1" x 6' Lightning Rod	400	PAD6-65	234
12" x 24" Beacon	400	L 3x3x1/4	220
1.9" x 9-ft stabilizer	400	(2) 2.4" Dia. x 7-ft	220
1.9" x 9-ft stabilizer	400	4.5" dia. x 63" Pipe	220
1.9" x 9-ft stabilizer	400	PAD8-59	220
Side Arm Mount [SO 308-3]	398.5	(2) 2.4" Dia. x 7-ft	192
AO8410M-24T0	398.5	4.5" dia. x 63" Pipe	192
AO8410M-24T0	398.5	L 3x3x1/4	192
AO8410M-24T0	398.5	PAD8-59	192
ATS8TMA10	398.5	(2) 2.4" Dia. x 7-ft	168
(2) 2.4" Dia. x 7-ft	264	4.5" dia. x 63" Pipe	168
4.5" dia. x 63" Pipe	264	L 3x3x1/4	168
L 3x3x1/4	264	PAD8-59	168
PAD6-65	264	4.5" dia. x 63" Pipe	130
4.5" dia. x 63" Pipe	234	(2) 2.4" Dia. x 7-ft	130
L 3x3x1/4	234	L 3x3x1/4	130
(2) 2.4" Dia. x 7-ft	234	PAD6-59	130

SYMBOL LIST

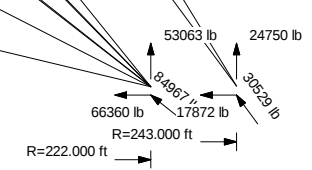
MARK	SIZE	MARK	SIZE
A	N.A.	C	4 @ 3.05208
B	L4x4x3/8	D	6 @ 1.23125

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Columbia County, Florida.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 131 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 30 mph basic wind with 0.25 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category III.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TOWER RATING: 86.6%



ALL REACTIONS ARE FACTORED



Tower Engineering Professionals, Inc.
326 Tryon Road
Raleigh, NC 27603
Phone: (919) 661-6351
FAX: (919) 661-6350

Job: Fort White

Project: TEP No. 308004.636376	Drawn by: Cameron Tokay	App'd:
Client: Williams Communications	Date: 02/10/22	Scale: NTS
Code: TIA-222-H	Path:	Dwg No. E-1

C:\Users\dw\OneDrive\Documents\308004\308004.dwg - 1477704308004.dwg - 308004 - L 436376 - Structural Analysis\T180Fort White.dwg

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Fort White	Page 1 of 48
	Project TEP No. 308004.636376	Date 09:12:47 02/10/22
	Client Williams Communications	Designed by Cameron Tokay

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Fort White	Page 2 of 48
	Project TEP No. 308004.636376	Date 09:12:47 02/10/22
	Client Williams Communications	Designed by Cameron Tokay

Tower Input Data

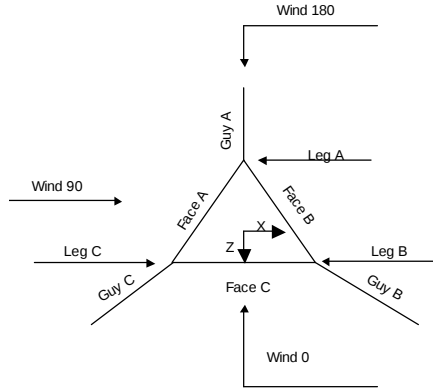
The main tower is a 3x guyed tower with an overall height of 400.000 ft above the ground line.
The base of the tower is set at an elevation of 0.000 ft above the ground line.
The face width of the tower is 3.000 ft at the top and tapered at the base.
This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower is located in Columbia County, Florida.
Tower base elevation above sea level: 55.820 ft.
Basic wind speed of 131 mph.
Risk Category III.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.000 ft.
Nominal ice thickness of 0.250 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 30 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.05.
Safety factor used in guy design is 0.952381.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{ws}(F_w) = 1.0$, $K_{at}(t_i) = 1.0$.
Maximum demand-capacity ratio is: 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

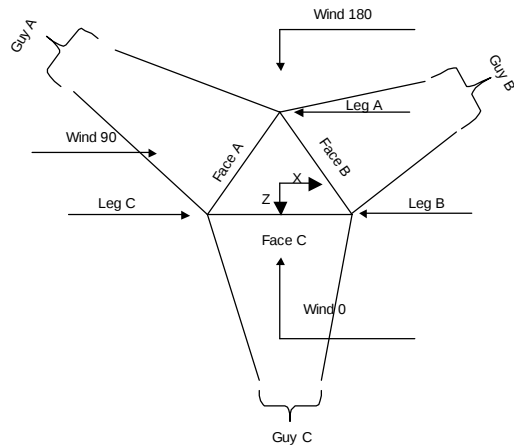
Options

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



Corner & Starmount Guyed Tower

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	3 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay



Face Guyed

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	400.000-380.000			3.000	1	20.000
T2	380.000-370.000			3.000	1	10.000
T3	370.000-360.000			3.000	1	10.000
T4	360.000-350.000			3.000	1	10.000
T5	350.000-340.000			3.000	1	10.000
T6	340.000-320.000			3.000	1	20.000
T7	320.000-300.000			3.000	1	20.000
T8	300.000-280.000			3.000	1	20.000
T9	280.000-260.000			3.000	1	20.000
T10	260.000-240.000			3.000	1	20.000
T11	240.000-220.000			3.000	1	20.000
T12	220.000-200.000			3.000	1	20.000
T13	200.000-180.000			3.000	1	20.000
T14	180.000-160.000			3.000	1	20.000
T15	160.000-140.000			3.000	1	20.000
T16	140.000-120.000			3.000	1	20.000

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	4 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T17	120.000-100.000			3.000	1	20.000
T18	100.000-80.000			3.000	1	20.000
T19	80.000-60.000			3.000	1	20.000
T20	60.000-40.000			3.000	1	20.000
T21	40.000-20.000			3.000	1	20.000
T22	20.000-6.807			3.000	1	13.193
T23	6.807-0.000			3.000	1	6.807

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
	ft	ft				in	in
T1	400.000-380.000	3.193	Diag Up	No	Yes	5.063	5.063
T2	380.000-370.000	3.111	Diag Up	No	Yes	4.000	4.000
T3	370.000-360.000	3.111	Diag Up	No	Yes	4.000	4.000
T4	360.000-350.000	3.111	Diag Up	No	Yes	4.000	4.000
T5	350.000-340.000	3.111	Diag Up	No	Yes	4.000	4.000
T6	340.000-320.000	3.222	Diag Up	No	Yes	4.000	4.000
T7	320.000-300.000	3.222	Diag Up	No	Yes	4.000	4.000
T8	300.000-280.000	3.222	Diag Up	No	Yes	4.000	4.000
T9	280.000-260.000	3.222	Diag Up	No	Yes	4.000	4.000
T10	260.000-240.000	3.222	Diag Up	No	Yes	4.000	4.000
T11	240.000-220.000	3.222	Diag Up	No	Yes	4.000	4.000
T12	220.000-200.000	3.222	Diag Up	No	Yes	4.000	4.000
T13	200.000-180.000	3.222	Diag Up	No	Yes	4.000	4.000
T14	180.000-160.000	3.222	Diag Up	No	Yes	4.000	4.000
T15	160.000-140.000	3.222	Diag Up	No	Yes	4.000	4.000
T16	140.000-120.000	3.222	Diag Up	No	Yes	4.000	4.000
T17	120.000-100.000	3.222	Diag Up	No	Yes	4.000	4.000
T18	100.000-80.000	3.222	Diag Up	No	Yes	4.000	4.000
T19	80.000-60.000	3.222	Diag Up	No	Yes	4.000	4.000
T20	60.000-40.000	3.222	Diag Up	No	Yes	4.000	4.000
T21	40.000-20.000	3.222	Diag Up	No	Yes	4.000	4.000
T22	20.000-6.807	3.052	Diag Up	No	Yes	4.000	7.813
T23	6.807-0.000	1.231	Diag Up	No	Yes	7.813	0.000

Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
ft						
T1	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T2	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T3	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T4	Solid Round	2	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)
T5	Solid Round	2	A572-50 (50 ksi)	Solid Round	1 1/8	A36 (36 ksi)

<i>tnxTower</i> <i>Tower Engineering Professionals, Inc.</i> <i>326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350</i>	Job Fort White	Page 5 of 48
	Project TEP No. 308004.636376	Date 09:12:47 02/10/22
	Client Williams Communications	Designed by Cameron Tokay

<i>Tower Elevation</i> <i>ft</i>	<i>Leg Type</i>	<i>Leg Size</i>	<i>Leg Grade</i>	<i>Diagonal Type</i>	<i>Diagonal Size</i>	<i>Diagonal Grade</i>
350.000-340.000			(50 ksi)			(36 ksi)
T6	Solid Round	2	A572-50	Solid Round	1 3/8	A36
340.000-320.000			(50 ksi)			(36 ksi)
T7	Solid Round	2	A572-50	Solid Round	1 1/8	A36
320.000-300.000			(50 ksi)			(36 ksi)
T8	Solid Round	1 3/4	A572-50	Solid Round	1 1/4	A36
300.000-280.000			(50 ksi)			(36 ksi)
T9	Solid Round	2	A572-50	Solid Round	1 1/4	A36
280.000-260.000			(50 ksi)			(36 ksi)
T10	Solid Round	2	A572-50	Solid Round	1 1/4	A36
260.000-240.000			(50 ksi)			(36 ksi)
T11	Solid Round	2	A572-50	Solid Round	1 3/8	A36
240.000-220.000			(50 ksi)			(36 ksi)
T12	Solid Round	2	A572-50	Solid Round	1 3/8	A36
220.000-200.000			(50 ksi)			(36 ksi)
T13	Solid Round	2	A572-50	Solid Round	1 1/4	A36
200.000-180.000			(50 ksi)			(36 ksi)
T14	Solid Round	2	A572-50	Solid Round	1 1/2	A36
180.000-160.000			(50 ksi)			(36 ksi)
T15	Solid Round	2	A572-50	Solid Round	1 1/4	A36
160.000-140.000			(50 ksi)			(36 ksi)
T16	Solid Round	2 1/4	A572-50	Solid Round	1 3/8	A36
140.000-120.000			(50 ksi)			(36 ksi)
T17	Solid Round	2 1/2	A572-50	Solid Round	1 3/8	A36
120.000-100.000			(50 ksi)			(36 ksi)
T18	Solid Round	2 1/4	A572-50	Solid Round	1 1/4	A36
100.000-80.000			(50 ksi)			(36 ksi)
T19	Solid Round	2 1/4	A572-50	Solid Round	1 1/8	A36
80.000-60.000			(50 ksi)			(36 ksi)
T20	Solid Round	2 1/4	A572-50	Solid Round	1 1/8	A36
60.000-40.000			(50 ksi)			(36 ksi)
T21	Solid Round	2 1/4	A572-50	Solid Round	1 1/8	A36
40.000-20.000			(50 ksi)			(36 ksi)
T22 20.000-6.807	Solid Round	2 1/4	A572-50	Solid Round	1 1/8	A36
T23 6.807-0.000	Solid Round	2 1/4	A572-50	Solid Round		A36
			(50 ksi)			(36 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation</i> <i>ft</i>	<i>Top Girt Type</i>	<i>Top Girt Size</i>	<i>Top Girt Grade</i>	<i>Bottom Girt Type</i>	<i>Bottom Girt Size</i>	<i>Bottom Girt Grade</i>
T1	Solid Round	7/8	A36	Solid Round	7/8	A36
400.000-380.000			(36 ksi)			(36 ksi)
T2	Solid Round	7/8	A36	Solid Round	7/8	A36
380.000-370.000			(36 ksi)			(36 ksi)
T3	Solid Round	7/8	A36	Solid Round	7/8	A36
370.000-360.000			(36 ksi)			(36 ksi)
T4	Solid Round	7/8	A36	Solid Round		A36
360.000-350.000			(36 ksi)			(36 ksi)
T5	Solid Round	7/8	A36	Solid Round	7/8	A36
350.000-340.000			(36 ksi)			(36 ksi)
T6	Solid Round	7/8	A36	Solid Round	7/8	A36
340.000-320.000			(36 ksi)			(36 ksi)
T7	Solid Round	7/8	A36	Solid Round	7/8	A36

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	Project TEP No. 308004.636376	Date 09:12:47 02/10/22
	Client Williams Communications	Designed by Cameron Tokay

<i>Tower Elevation</i> <i>ft</i>	<i>Top Girt Type</i>	<i>Top Girt Size</i>	<i>Top Girt Grade</i>	<i>Bottom Girt Type</i>	<i>Bottom Girt Size</i>	<i>Bottom Girt Grade</i>
320.000-300.000			(36 ksi)			(36 ksi)
T8	Solid Round	7/8	A36	Solid Round	7/8	A36
300.000-280.000			(36 ksi)			(36 ksi)
T9	Solid Round	7/8	A36	Solid Round	7/8	A36
280.000-260.000			(36 ksi)			(36 ksi)
T10	Solid Round	1	A36	Solid Round	1	A36
260.000-240.000			(36 ksi)			(36 ksi)
T11	Solid Round	1 1/4	A36	Solid Round	1 1/4	A36
240.000-220.000			(36 ksi)			(36 ksi)
T12	Solid Round	7/8	A36	Solid Round	7/8	A36
220.000-200.000			(36 ksi)			(36 ksi)
T13	Solid Round	7/8	A36	Solid Round	7/8	A36
200.000-180.000			(36 ksi)			(36 ksi)
T14	Solid Round	1	A36	Solid Round	1	A36
180.000-160.000			(36 ksi)			(36 ksi)
T15	Solid Round	7/8	A36	Solid Round	7/8	A36
160.000-140.000			(36 ksi)			(36 ksi)
T16	Solid Round	1	A36	Solid Round	1	A36
140.000-120.000			(36 ksi)			(36 ksi)
T17	Solid Round	1	A36	Solid Round	1	A36
120.000-100.000			(36 ksi)			(36 ksi)
T18	Solid Round	7/8	A36	Solid Round	7/8	A36
100.000-80.000			(36 ksi)			(36 ksi)
T19	Solid Round	7/8	A36	Solid Round	7/8	A36
80.000-60.000			(36 ksi)			(36 ksi)
T20	Solid Round	7/8	A36	Solid Round	7/8	A36
60.000-40.000			(36 ksi)			(36 ksi)
T21	Solid Round	7/8	A36	Solid Round	7/8	A36
40.000-20.000			(36 ksi)			(36 ksi)
T22 20.000-6.807	Solid Round	7/8	A36	Equal Angle	L4x4x3/8	A36
T23 6.807-0.000	Equal Angle	L4x4x3/8	A36	Equal Angle	L4x4x3/8	A36
			(36 ksi)			(36 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation</i> <i>ft</i>	<i>No. of Mid Girts</i>	<i>Mid Girt Type</i>	<i>Mid Girt Size</i>	<i>Mid Girt Grade</i>	<i>Horizontal Type</i>	<i>Horizontal Size</i>	<i>Horizontal Grade</i>
T1	None	Solid Round		A36	Solid Round	7/8	A36
400.000-380.000				(36 ksi)			(36 ksi)
T2	None	Solid Round		A36	Solid Round	7/8	A36
380.000-370.000				(36 ksi)			(36 ksi)
T3	None	Solid Round		A36	Solid Round	7/8	A36
370.000-360.000				(36 ksi)			(36 ksi)
T4	None	Solid Round		A36	Solid Round	7/8	A36
360.000-350.000				(36 ksi)			(36 ksi)
T5	None	Solid Round		A36	Solid Round	7/8	A36
350.000-340.000				(36 ksi)			(36 ksi)
T6	None	Solid Round		A36	Solid Round	7/8	A36
340.000-320.000				(36 ksi)			(36 ksi)
T7	None	Solid Round		A36	Solid Round	7/8	A36
320.000-300.000				(36 ksi)			(36 ksi)
T8	None	Solid Round		A36	Solid Round	7/8	A36
300.000-280.000				(36 ksi)			(36 ksi)

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	7 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Tower Elevation	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
ft							
T9	None	Solid Round		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
280.000-260.000							
T10	None	Solid Round		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
260.000-240.000							
T11	None	Solid Round		A36 (36 ksi)	Solid Round	1 1/4	A36 (36 ksi)
240.000-220.000							
T12	None	Solid Round		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
220.000-200.000							
T13	None	Solid Round		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
200.000-180.000							
T14	None	Solid Round		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
180.000-160.000							
T15	None	Solid Round		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
160.000-140.000							
T16	None	Solid Round		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
140.000-120.000							
T17	None	Solid Round		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
120.000-100.000							
T18	None	Solid Round		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
100.000-80.000							
T19	None	Solid Round		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
80.000-60.000							
T20	None	Solid Round		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
60.000-40.000							
T21	None	Solid Round		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
40.000-20.000							
T22 20.000-6.807	None	Solid Round		A36 (36 ksi)	Solid Round	7/8	A36 (36 ksi)
T23 6.807-0.000	None	Solid Round		A36 (36 ksi)	Equal Angle	L4x4x3/8	A36 (36 ksi)

Tower Section Geometry (cont'd)

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							
T1	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
400.000-380.000									
T2	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
380.000-370.000									
T3	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
370.000-360.000									
T4	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
360.000-350.000									
T5	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
350.000-340.000									
T6	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
340.000-320.0									

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	8 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

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							
T7	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
320.000-300.000									
T8	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
300.000-280.000									
T9	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
280.000-260.000									
T10	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
260.000-240.000									
T11	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
240.000-220.000									
T12	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
220.000-200.000									
T13	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
200.000-180.000									
T14	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
180.000-160.000									
T15	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
160.000-140.000									
T16	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
140.000-120.000									
T17	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
120.000-100.000									
T18	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
100.000-80.000									
T19	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
80.000-60.000									
T20	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
60.000-40.000									
T21	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
40.000-20.000									
T22	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
20.000-6.807									
T23 6.807-0.000	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000

Tower Section Geometry (cont'd)

K Factors ¹

 Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Page
	Fort White	9 of 48
	Project	Date
	TEP No. 308004.636376	09:12:47 02/10/22
	Client	Designed by
	Williams Communications	Cameron Tokay

<i>Tower Elevation</i>	<i>Calc K Single Angles</i>	<i>Calc K Solid Rounds</i>	<i>Legs</i>	<i>X Brace Diags X Y</i>	<i>K Brace Diags X Y</i>	<i>Single Diags</i>	<i>Girts</i>	<i>Horiz.</i>	<i>Sec. Horiz.</i>	<i>Inner Brace</i>
<i>ft</i>						<i>X Y</i>	<i>X Y</i>	<i>X Y</i>	<i>X Y</i>	<i>X Y</i>
T1 400,000-380.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 380,000-370.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 370,000-360.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 360,000-350.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 350,000-340.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 340,000-320.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 320,000-300.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 300,000-280.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 280,000-260.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T10 260,000-240.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T11 240,000-220.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T12 220,000-200.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T13 200,000-180.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T14 180,000-160.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T15 160,000-140.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T16 140,000-120.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T17 120,000-100.0 00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T18 100,000-80.0 0	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T19 80,000-60.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T20 60,000-40.000	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T21	Yes	Yes	1	1	1	1	1	1	1	1

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Page	
		Fort White	10 of 48
	Project	TEP No. 308004.636376	Date
	Client	Williams Communications	Designed by
			Cameron Tokay

Tower Elevation	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
ft				X Y	X Y	X Y	X Y	X Y	X Y	
40.000-20.000				1	1	1	1	1	1	1
T22	Yes	Yes	1	1	1	1	1	1	1	1
20.000-6.807				1	1	1	1	1	1	1
T23	Yes	Yes	1	1	1	1	1	1	1	1
6.807-0.000				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 400.000-380.00	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T2 380.000-370.00	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T3 370.000-360.00	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T4 360.000-350.00	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T5 350.000-340.00	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T6 340.000-320.00	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T7 320.000-300.00	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T8 300.000-280.00	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T9 280.000-260.00	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T10 260.000-240.00	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T11 240.000-220.00	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T12 220.000-200.00	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Fort White	Page 11 of 48
	Project TEP No. 308004.636376	Date 09:12:47 02/10/22
	Client Williams Communications	Designed by Cameron Tokay

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
T13 200.000-180.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T14 180.000-160.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T15 160.000-140.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T16 140.000-120.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T17 120.000-100.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T18 100.000-80.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T19 80.000-60.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T20 60.000-40.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T21 40.000-20.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T22 20.000-6.807	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75
T23 6.807-0.000	0.000	1	0.000	1	0.000	1	0.000	1	0.000	0.75	0.000	1	0.000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 400.000-380.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 380.000-370.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T3 370.000-360.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T4 360.000-350.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T5 350.000-340.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T6 340.000-320.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Fort White	Page 12 of 48
	Project TEP No. 308004.636376	Date 09:12:47 02/10/22
	Client Williams Communications	Designed by Cameron Tokay

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
T7 320.000-300.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T8 300.000-280.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T9 280.000-260.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 260.000-240.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T11 240.000-220.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T12 220.000-200.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T13 200.000-180.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T14 180.000-160.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T15 160.000-140.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T16 140.000-120.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T17 120.000-100.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T18 100.000-80.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T19 80.000-60.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T20 60.000-40.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T21 40.000-20.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T22 20.000-6.807	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T23 6.807-0.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Section Geometry (cont'd)

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	13 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

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	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
400.000-380.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2	Flange	0.750	4	0.625	0	0.625	0	0.000	0	0.625	0	0.625	0	0.625	0
380.000-370.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
370.000-360.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T4	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
360.000-350.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T5	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
350.000-340.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T6	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
340.000-320.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T7	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
320.000-300.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T8	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
300.000-280.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T9	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
280.000-260.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T10	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
260.000-240.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T11	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
240.000-220.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T12	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
220.000-200.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T13	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
200.000-180.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T14	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
180.000-160.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T15	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
160.000-140.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T16	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
140.000-120.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T17	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
120.000-100.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T18	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
100.000-80.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T19	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
80.000-60.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T20	Flange	0.750	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
60.000-40.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	14 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

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.
T21	Flange	1.250	4	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
40.000-20.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T22	Flange	0.750	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
20.000-6.807		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T23	Flange	0.750	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0	0.625	0
6.807-0.000		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

Guy Data

Guy Elevation	Guy Grade	Guy Size	Initial Tension	%	Guy Modulus	Guy Weight	L _w	Anchor Radius	Anchor Azimuth Adj.	Anchor Elevation	End Fitting Efficiency
ft			lb		ksi	plf	ft	ft	°	ft	%
393.193	EHS	A 9/16	3500.000	10%	23000	0.671	460.496	243.000	0.000	0.566	100%
		B 9/16	3500.000	10%	23000	0.671	460.197	243.000	0.000	0.917	100%
		C 9/16	3500.000	10%	23000	0.671	460.304	243.000	0.000	0.792	100%
326.778	EHS	A 9/16	3500.000	10%	23000	0.671	405.446	243.000	0.000	0.566	100%
		B 9/16	3500.000	10%	23000	0.671	405.164	243.000	0.000	0.917	100%
		C 9/16	3500.000	10%	23000	0.671	405.265	243.000	0.000	0.792	100%
273.222	EHS	A 3/4	5830.000	10%	24000	1.155	350.266	222.000	0.000	0.583	100%
		B 3/4	5830.000	10%	24000	1.155	350.007	222.000	0.000	0.917	100%
		C 3/4	5830.000	10%	24000	1.155	350.104	222.000	0.000	0.792	100%
226.778	EHS	A 3/4	5830.000	10%	24000	1.155	315.235	222.000	0.000	0.583	100%
		B 3/4	5830.000	10%	24000	1.155	314.877	222.000	0.000	1.083	100%
		C 3/4	5830.000	10%	24000	1.155	314.877	222.000	0.000	1.083	100%
173.222	EHS	A 5/8	4240.000	10%	23000	0.813	279.343	222.000	0.000	0.583	100%
		B 5/8	4240.000	10%	23000	0.813	279.035	222.000	0.000	1.083	100%
		C 5/8	4240.000	10%	23000	0.813	279.035	222.000	0.000	1.083	100%
113.222	EHS	A 3/4	5830.000	10%	24000	1.155	247.236	222.000	0.000	0.583	100%
		B 3/4	5830.000	10%	24000	1.155	247.009	222.000	0.000	1.083	100%
		C 3/4	5830.000	10%	24000	1.155	247.009	222.000	0.000	1.083	100%
53.2222	EHS	A 7/16	2080.000	10%	23000	0.399	226.309	222.000	0.000	0.583	100%
		B 7/16	2080.000	10%	23000	0.399	226.193	222.000	0.000	1.083	100%
		C 7/16	2080.000	10%	23000	0.399	226.193	222.000	0.000	1.083	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
393.193	Corner						
326.778	Corner						
273.222	Corner						
226.778	Torque Arm	7.500	30.000	Bat Ear	A36 (36 ksi)	Equal Angle	L3 1/2x3 1/2x3/8
173.222	Torque Arm	7.500	30.000	Bat Ear	A36 (36 ksi)	Equal Angle	L3 1/2x3 1/2x3/8
113.222	Corner						
53.2222	Corner						

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Fort White	Page 15 of 48
	Project TEP No. 308004.636376	Date 09:12:47 02/10/22
	Client Williams Communications	Designed by Cameron Tokay

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Fort White	Page 16 of 48
	Project TEP No. 308004.636376	Date 09:12:47 02/10/22
	Client Williams Communications	Designed by Cameron Tokay

Guy Data (cont'd)

<i>Guy Elevation</i> <i>ft</i>	<i>Diagonal Grade</i>	<i>Diagonal Type</i>	<i>Upper Diagonal Size</i>	<i>Lower Diagonal Size</i>	<i>Is Strap.</i>	<i>Pull-Off Grade</i>	<i>Pull-Off Type</i>	<i>Pull-Off Size</i>
393.193	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	2x3/8
326.778	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	2x3/8
273.222	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	2x3/8
226.778	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Solid Round	
173.222	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Solid Round	
113.222	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	2x3/8
53.222	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Flat Bar	2x3/8

Guy Data (cont'd)

<i>Guy Elevation</i> <i>ft</i>	<i>Cable Weight A</i> <i>lb</i>	<i>Cable Weight B</i> <i>lb</i>	<i>Cable Weight C</i> <i>lb</i>	<i>Cable Weight D</i> <i>lb</i>	<i>Tower Intercept A</i> <i>ft</i>	<i>Tower Intercept B</i> <i>ft</i>	<i>Tower Intercept C</i> <i>ft</i>	<i>Tower Intercept D</i> <i>ft</i>
393.193	308.993	308.792	308.864		19.610	19.585	19.594	
					7.6 sec/pulse	7.6 sec/pulse	7.6 sec/pulse	
326.778	272.054	271.865	271.933		15.295	15.274	15.282	
					6.8 sec/pulse	6.7 sec/pulse	6.7 sec/pulse	
273.222	404.557	404.258	404.370		11.844	11.827	11.833	
					5.9 sec/pulse	5.9 sec/pulse	5.9 sec/pulse	
226.778	364.097	363.683	363.683		9.637	9.615	9.615	
					5.4 sec/pulse	5.4 sec/pulse	5.4 sec/pulse	
173.222	227.106	226.855	226.855		7.366	7.351	7.351	
					4.7 sec/pulse	4.7 sec/pulse	4.7 sec/pulse	
113.222	285.558	285.295	285.295		5.993	5.983	5.983	
					4.2 sec/pulse	4.2 sec/pulse	4.2 sec/pulse	
53.2222	90.297	90.251	90.251		4.892	4.887	4.887	
					3.8 sec/pulse	3.8 sec/pulse	3.8 sec/pulse	

Guy Data (cont'd)

<i>Guy Elevation</i> <i>ft</i>	<i>Calc K Single Angles</i>	<i>Calc K Solid Rounds</i>	<i>Torque Arm</i>		<i>Pull Off</i>		<i>Diagonal</i>	
			<i>K_x</i>	<i>K_y</i>	<i>K_x</i>	<i>K_y</i>	<i>K_x</i>	<i>K_y</i>
393.193	Yes	No			1	1	1	1
326.778	Yes	No			1	1	1	1
273.222	Yes	No			1	1	1	1

<i>Guy Elevation</i> <i>ft</i>	<i>Calc K Single Angles</i>	<i>Calc K Solid Rounds</i>	<i>Torque Arm</i>		<i>Pull Off</i>		<i>Diagonal</i>	
			<i>K_x</i>	<i>K_y</i>	<i>K_x</i>	<i>K_y</i>	<i>K_x</i>	<i>K_y</i>
226.778	Yes	Yes	1	1	1	1	1	1
173.222	Yes	Yes	1	1	1	1	1	1
113.222	No	No			1	1	1	1
53.2222	No	No			1	1	1	1

Guy Data (cont'd)

<i>Guy Elevation</i> <i>ft</i>	<i>Torque-Arm</i>				<i>Pull Off</i>				<i>Diagonal</i>			
	<i>Bolt Size in</i>	<i>Number</i>	<i>Net Width Deduct in</i>	<i>U</i>	<i>Bolt Size in</i>	<i>Number</i>	<i>Net Width Deduct in</i>	<i>U</i>	<i>Bolt Size in</i>	<i>Number</i>	<i>Net Width Deduct in</i>	<i>U</i>
393.193	0.875	2	0.000	0.75	0.625	0	0.000	1	0.625	0	0.000	0.75
	A325N				A325N				A325N			
326.778	0.875	2	0.000	0.75	0.625	0	0.000	1	0.625	0	0.000	0.75
	A325N				A325N				A325N			
273.222	0.875	2	0.000	0.75	0.625	0	0.000	1	0.625	0	0.000	0.75
	A325N				A325N				A325N			
226.778	0.875	2	0.000	0.75	0.625	0	0.000	1	0.625	0	0.000	0.75
	A325N				A325N				A325N			
173.222	0.875	2	0.000	0.75	0.625	0	0.000	1	0.625	0	0.000	0.75
	A325N				A325N				A325N			
113.222	0.625	0	0.000	0.75	0.625	0	0.000	1	0.625	0	0.000	0.75
	A325N				A325N				A325N			
53.2222	0.625	0	0.000	0.75	0.625	0	0.000	1	0.625	0	0.000	0.75
	A325N				A325N				A325N			

Guy Pressures

<i>Guy Elevation</i> <i>ft</i>	<i>Guy Location</i>	<i>z</i> <i>ft</i>	<i>q_s</i> <i>psf</i>	<i>q_i</i> <i>psf</i>	<i>Ice Thickness</i> <i>in</i>
393.193	A	196.879	54	3	0.344
	B	197.055	54	3	0.344
	C	196.992	54	3	0.344
326.778	A	163.672	52	3	0.337
	B	163.847	52	3	0.337
	C	163.785	52	3	0.337
273.222	A	136.903	50	3	0.331
	B	137.069	50	3	0.331
	C	137.007	50	3	0.331
226.778	A	113.680	48	3	0.325
	B	113.931	48	3	0.325
	C	113.931	48	3	0.325
173.222	A	86.903	46	2	0.317
	B	87.153	46	2	0.317
	C	87.153	46	2	0.317
113.222	A	56.903	42	2	0.304
	B	57.153	42	2	0.304
	C	57.153	42	2	0.304
53.2222	A	26.903	36	2	0.282
	B	27.153	36	2	0.282

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	17 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	18 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Guy Elevation ft	Guy Location C	z ft	q _s psf	q _s Ice psf	Ice Thickness in
		27.153	36	2	0.282

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
Ladder Rung - SR 3/4" (18" width, 38.5" step)	C	No	No	Ar (CaAa)	400.000 - 10.000	0.000	0.25	1	1	0.351	0.351		0.703
Safety Line 3/8 ***	C	No	No	Ar (CaAa)	400.000 - 10.000	0.000	-0.25	1	1	0.375	0.375		0.220
Rung PL 2.5"x1/8" (31"Wx39.25" S)	A	No	No	Af (CaAa)	400.000 - 11.500	0.000	0	1	1	1.938	1.938		0.824
Rung PL 2.5"x1/8" (31"Wx39.25" S) ***	B	No	No	Af (CaAa)	400.000 - 11.500	0.000	0	2	2	1.938	1.938		0.824
3/8" Cable (Lights)	B	No	No	Ar (CaAa)	300.000 - 3.000	0.000	0.49	1	1	0.375	0.375		0.220
5/8" Cable (Lights) ***	B	No	No	Ar (CaAa)	200.000 - 3.000	0.000	0.495	1	1	0.500	0.625		0.300
5/8" Cable (Lights)	C	No	No	Ar (CaAa)	200.000 - 3.000	0.000	-0.49	1	1	0.500	0.625		0.300
5/8" Cable (Lights) ***	C	No	No	Ar (CaAa)	400.000 - 3.000	0.000	-0.495	1	1	0.500	0.625		0.300
EW52(ELLIP TICAL)	B	No	No	Ar (CaAa)	130.000 - 9.250	0.000	-0.3	4	4	0.500	2.250		0.590
EW52(ELLIP TICAL)	B	No	No	Ar (CaAa)	168.000 - 130.000	0.000	-0.3	3	3	0.500	2.250		0.590
EW52(ELLIP TICAL)	B	No	No	Ar (CaAa)	192.000 - 168.000	0.000	-0.3	2	2	0.500	2.250		0.590
EW52(ELLIP TICAL)	B	No	No	Ar (CaAa)	220.000 - 192.000	0.000	-0.3	1	1	0.500	2.250		0.590
EW63(ELLIP TICAL)	B	No	No	Ar (CaAa)	234.000 - 9.250	0.000	-0.1	2	2	0.500	2.010		0.510
EW63(ELLIP TICAL) ***	B	No	No	Ar (CaAa)	264.000 - 234.000	0.000	-0.1	1	1	0.500	2.010		0.510
LDF4-75A(5/ 8")	A	No	No	Ar (CaAa)	400.000 - 9.250	0.000	-0.495	1	1	0.500	0.630		0.140
LDF5-50A(7/ 8")	A	No	No	Ar (CaAa)	400.000 - 9.250	0.000	-0.395	1	1	0.500	1.090		0.330
LDF7-50A(1- 5/8")	A	No	No	Ar (CaAa)	400.000 - 9.250	0.000	-0.295	1	1	0.500	1.980		0.820
LCF158-50A(1-5/8) ***	A	No	No	Ar (CaAa)	400.000 - 9.250	0.000	-0.195	1	1	0.500	1.980		0.800

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C _A A _A ft ² /ft	Weight plf

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 lb
T1	400.000-380.000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	12.920	0.000	32.960
		C	0.000	0.000	2.702	0.000	24.460
T2	380.000-370.000	A	0.000	0.000	8.910	0.000	29.140
		B	0.000	0.000	6.460	0.000	16.480
		C	0.000	0.000	1.351	0.000	12.230
T3	370.000-360.000	A	0.000	0.000	8.910	0.000	29.140
		B	0.000	0.000	6.460	0.000	16.480
		C	0.000	0.000	1.351	0.000	12.230
T4	360.000-350.000	A	0.000	0.000	8.910	0.000	29.140
		B	0.000	0.000	6.460	0.000	16.480
		C	0.000	0.000	1.351	0.000	12.230
T5	350.000-340.000	A	0.000	0.000	8.910	0.000	29.140
		B	0.000	0.000	6.460	0.000	16.480
		C	0.000	0.000	1.351	0.000	12.230
T6	340.000-320.000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	12.920	0.000	32.960
		C	0.000	0.000	2.702	0.000	24.460
T7	320.000-300.000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	12.920	0.000	32.960
		C	0.000	0.000	2.702	0.000	24.460
T8	300.000-280.000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	13.670	0.000	37.360
		C	0.000	0.000	2.702	0.000	24.460
T9	280.000-260.000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	14.474	0.000	39.400
		C	0.000	0.000	2.702	0.000	24.460
T10	260.000-240.000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	17.690	0.000	47.560
		C	0.000	0.000	2.702	0.000	24.460
T11	240.000-220.000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	20.504	0.000	54.700
		C	0.000	0.000	2.702	0.000	24.460
T12	220.000-200.000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	26.210	0.000	69.560
		C	0.000	0.000	2.702	0.000	24.460
T13	200.000-180.000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	30.160	0.000	82.640
		C	0.000	0.000	3.952	0.000	30.460
T14	180.000-160.000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	33.760	0.000	92.080
		C	0.000	0.000	3.952	0.000	30.460

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	19 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _R A ₁ In Face ft ²	C _F A ₁ Out Face ft ²	Weight lb
T15	160,000-140,000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	36.460	0.000	99.160
		C	0.000	0.000	3.952	0.000	30.460
T16	140,000-120,000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	38.710	0.000	105.060
		C	0.000	0.000	3.952	0.000	30.460
T17	120,000-100,000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	40.960	0.000	110.960
		C	0.000	0.000	3.952	0.000	30.460
T18	100,000-80,000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	40.960	0.000	110.960
		C	0.000	0.000	3.952	0.000	30.460
T19	80,000-60,000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	40.960	0.000	110.960
		C	0.000	0.000	3.952	0.000	30.460
T20	60,000-40,000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	40.960	0.000	110.960
		C	0.000	0.000	3.952	0.000	30.460
T21	40,000-20,000	A	0.000	0.000	17.820	0.000	58.280
		B	0.000	0.000	40.960	0.000	110.960
		C	0.000	0.000	3.952	0.000	30.460
T22	20,000-6,807	A	0.000	0.000	8.851	0.000	29.472
		B	0.000	0.000	20.807	0.000	57.203
		C	0.000	0.000	2.375	0.000	17.146
T23	6,807-0.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.381	0.000	1.980
		C	0.000	0.000	0.476	0.000	2.284

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _R A ₁ In Face ft ²	C _F A ₁ Out Face ft ²	Weight lb
T1	400,000-380,000	A	0.368	0.000	0.000	25.181	0.000	148.777
		B	0.000	0.000	0.000	15.864	0.000	85.316
		C	0.000	0.000	0.000	7.118	0.000	46.539
T2	380,000-370,000	A	0.367	0.000	0.000	12.576	0.000	74.178
		B	0.000	0.000	0.000	7.926	0.000	42.540
		C	0.000	0.000	0.000	3.551	0.000	23.207
T3	370,000-360,000	A	0.366	0.000	0.000	12.566	0.000	74.033
		B	0.000	0.000	0.000	7.922	0.000	42.459
		C	0.000	0.000	0.000	3.545	0.000	23.164
T4	360,000-350,000	A	0.365	0.000	0.000	12.556	0.000	73.885
		B	0.000	0.000	0.000	7.918	0.000	42.376
		C	0.000	0.000	0.000	3.539	0.000	23.120
T5	350,000-340,000	A	0.364	0.000	0.000	12.546	0.000	73.733
		B	0.000	0.000	0.000	7.914	0.000	42.291
		C	0.000	0.000	0.000	3.532	0.000	23.075
T6	340,000-320,000	A	0.362	0.000	0.000	25.059	0.000	146.997
		B	0.000	0.000	0.000	15.816	0.000	84.319
		C	0.000	0.000	0.000	7.045	0.000	46.011
T7	320,000-300,000	A	0.360	0.000	0.000	25.014	0.000	146.341
		B	0.000	0.000	0.000	15.797	0.000	83.951
		C	0.000	0.000	0.000	7.018	0.000	45.817
T8	300,000-280,000	A	0.357	0.000	0.000	24.966	0.000	145.647
		B	0.000	0.000	0.000	17.958	0.000	94.355
		C	0.000	0.000	0.000	6.990	0.000	45.613
T9	280,000-260,000	A	0.355	0.000	0.000	24.915	0.000	144.910

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	20 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _R A ₁ In Face ft ²	C _F A ₁ Out Face ft ²	Weight lb
T10	260,000-240,000	B	0.352	0.000	0.000	19.015	0.000	100.014
		C		0.000	0.000	6.959	0.000	45.396
		A		0.000	0.000	24.861	0.000	144.124
T11	240,000-220,000	B	0.349	0.000	0.000	23.322	0.000	123.879
		C		0.000	0.000	6.926	0.000	45.165
		A		0.000	0.000	24.802	0.000	143.281
T12	220,000-200,000	B	0.346	0.000	0.000	29.773	0.000	150.009
		C		0.000	0.000	6.891	0.000	44.918
		A		0.000	0.000	24.739	0.000	142.372
T13	200,000-180,000	B	0.343	0.000	0.000	38.382	0.000	194.344
		C		0.000	0.000	6.853	0.000	44.653
		A		0.000	0.000	24.670	0.000	141.385
T14	180,000-160,000	B	0.339	0.000	0.000	46.998	0.000	233.378
		C		0.000	0.000	9.432	0.000	58.462
		A		0.000	0.000	24.594	0.000	140.302
T15	160,000-140,000	B	0.334	0.000	0.000	53.470	0.000	266.576
		C		0.000	0.000	9.371	0.000	58.027
		A		0.000	0.000	24.510	0.000	139.103
T16	140,000-120,000	B	0.330	0.000	0.000	57.148	0.000	290.651
		C		0.000	0.000	9.304	0.000	57.547
		A		0.000	0.000	24.415	0.000	137.755
T17	120,000-100,000	B	0.324	0.000	0.000	60.302	0.000	309.934
		C		0.000	0.000	9.228	0.000	57.009
		A		0.000	0.000	24.306	0.000	136.213
T18	100,000-80,000	B	0.318	0.000	0.000	63.437	0.000	328.652
		C		0.000	0.000	9.141	0.000	56.396
		A		0.000	0.000	24.177	0.000	134.405
T19	80,000-60,000	B	0.310	0.000	0.000	63.251	0.000	325.320
		C		0.000	0.000	9.037	0.000	55.680
		A		0.000	0.000	24.019	0.000	132.204
T20	60,000-40,000	B	0.300	0.000	0.000	63.024	0.000	321.259
		C		0.000	0.000	8.911	0.000	54.815
		A		0.000	0.000	23.814	0.000	129.368
T21	40,000-20,000	B	0.285	0.000	0.000	62.729	0.000	316.009
		C		0.000	0.000	8.747	0.000	53.709
		A		0.000	0.000	23.515	0.000	125.287
T22	20,000-6,807	B	0.263	0.000	0.000	62.299	0.000	308.427
		C		0.000	0.000	8.508	0.000	52.136
		A		0.000	0.000	11.558	0.000	60.293
T23	6,807-0.000	B	0.229	0.000	0.000	31.955	0.000	154.565
		C		0.000	0.000	4.812	0.000	28.681
		A		0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.730	0.000	3.534
		C		0.000	0.000	0.825	0.000	4.104

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
T1	400,000-380,000	-2.355	-0.425	-2.466	0.388
T2	380,000-370,000	-2.427	-0.434	-2.511	0.392
T3	370,000-360,000	-2.427	-0.434	-2.511	0.390
T4	360,000-350,000	-2.387	-0.427	-2.508	0.388
T5	350,000-340,000	-2.348	-0.421	-2.461	0.379
T6	340,000-320,000	-2.238	-0.405	-2.387	0.368
T7	320,000-300,000	-2.363	-0.424	-2.478	0.376

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	21 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
T8	300.000-280.000	-2.127	-0.297	-1.940	0.630
T9	280.000-260.000	-1.848	-0.392	-1.725	0.484
T10	260.000-240.000	-1.352	-0.824	-1.258	0.037
T11	240.000-220.000	-1.048	-1.138	-1.024	-0.363
T12	220.000-200.000	-0.579	-2.156	-0.599	-1.379
T13	200.000-180.000	0.206	-2.218	0.468	-1.327
T14	180.000-160.000	0.311	-2.742	0.538	-1.882
T15	160.000-140.000	0.378	-3.193	0.584	-2.265
T16	140.000-120.000	0.412	-3.401	0.602	-2.507
T17	120.000-100.000	0.439	-3.569	0.612	-2.717
T18	100.000-80.000	0.464	-3.732	0.634	-2.827
T19	80.000-60.000	0.468	-3.754	0.634	-2.865
T20	60.000-40.000	0.456	-3.690	0.618	-2.860
T21	40.000-20.000	0.468	-3.754	0.624	-2.951
T22	20.000-6.807	0.561	-3.107	0.817	-2.454
T23	6.807-0.000	0.716	0.455	1.029	0.643

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	380.00 - 400.00	0.6000	0.6000
T1	2	Safety Line 3/8	380.00 - 400.00	0.6000	0.6000
T1	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	380.00 - 400.00	0.6000	0.6000
T1	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	380.00 - 400.00	0.6000	0.6000
T1	12	5/8" Cable (Lights)	380.00 - 400.00	0.6000	0.6000
T1	21	LDF4-75A(5/8")	380.00 - 400.00	0.6000	0.6000
T1	22	LDF5-50A(7/8")	380.00 - 400.00	0.6000	0.6000
T1	23	LDF7-50A(1-5/8")	380.00 - 400.00	0.6000	0.6000
T1	24	LCF158-50A(1-5/8)	380.00 - 400.00	0.6000	0.6000
T2	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	370.00 - 380.00	0.6000	0.6000
T2	2	Safety Line 3/8	370.00 - 380.00	0.6000	0.6000
T2	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	370.00 - 380.00	0.6000	0.6000
T2	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	370.00 - 380.00	0.6000	0.6000
T2	12	5/8" Cable (Lights)	370.00 - 380.00	0.6000	0.6000
T2	21	LDF4-75A(5/8")	370.00 - 380.00	0.6000	0.6000
T2	22	LDF5-50A(7/8")	370.00 - 380.00	0.6000	0.6000
T2	23	LDF7-50A(1-5/8")	370.00 - 380.00	0.6000	0.6000

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	22 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T2	24	LCF158-50A(1-5/8)	370.00 - 380.00	0.6000	0.6000
T3	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	360.00 - 370.00	0.6000	0.6000
T3	2	Safety Line 3/8	360.00 - 370.00	0.6000	0.6000
T3	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	360.00 - 370.00	0.6000	0.6000
T3	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	360.00 - 370.00	0.6000	0.6000
T3	12	5/8" Cable (Lights)	360.00 - 370.00	0.6000	0.6000
T3	21	LDF4-75A(5/8")	360.00 - 370.00	0.6000	0.6000
T3	22	LDF5-50A(7/8")	360.00 - 370.00	0.6000	0.6000
T3	23	LDF7-50A(1-5/8")	360.00 - 370.00	0.6000	0.6000
T3	24	LCF158-50A(1-5/8)	360.00 - 370.00	0.6000	0.6000
T4	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	350.00 - 360.00	0.6000	0.6000
T4	2	Safety Line 3/8	350.00 - 360.00	0.6000	0.6000
T4	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	350.00 - 360.00	0.6000	0.6000
T4	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	350.00 - 360.00	0.6000	0.6000
T4	12	5/8" Cable (Lights)	350.00 - 360.00	0.6000	0.6000
T4	21	LDF4-75A(5/8")	350.00 - 360.00	0.6000	0.6000
T4	22	LDF5-50A(7/8")	350.00 - 360.00	0.6000	0.6000
T4	23	LDF7-50A(1-5/8")	350.00 - 360.00	0.6000	0.6000
T4	24	LCF158-50A(1-5/8)	350.00 - 360.00	0.6000	0.6000
T5	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	340.00 - 350.00	0.6000	0.6000
T5	2	Safety Line 3/8	340.00 - 350.00	0.6000	0.6000
T5	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	340.00 - 350.00	0.6000	0.6000
T5	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	340.00 - 350.00	0.6000	0.6000
T5	12	5/8" Cable (Lights)	340.00 - 350.00	0.6000	0.6000
T5	21	LDF4-75A(5/8")	340.00 - 350.00	0.6000	0.6000
T5	22	LDF5-50A(7/8")	340.00 - 350.00	0.6000	0.6000
T5	23	LDF7-50A(1-5/8")	340.00 - 350.00	0.6000	0.6000
T5	24	LCF158-50A(1-5/8)	340.00 - 350.00	0.6000	0.6000
T6	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	320.00 - 340.00	0.6000	0.6000
T6	2	Safety Line 3/8	320.00 - 340.00	0.6000	0.6000
T6	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	320.00 - 340.00	0.6000	0.6000

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	23 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	24 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T6	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	320.00 - 340.00	0.6000	0.6000
T6	12	5/8" Cable (Lights)	320.00 - 340.00	0.6000	0.6000
T6	21	LDF4-75A(5/8")	320.00 - 340.00	0.6000	0.6000
T6	22	LDF5-50A(7/8")	320.00 - 340.00	0.6000	0.6000
T6	23	LDF7-50A(1-5/8")	320.00 - 340.00	0.6000	0.6000
T6	24	LCF158-50A(1-5/8)	320.00 - 340.00	0.6000	0.6000
T7	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	300.00 - 320.00	0.6000	0.6000
T7	2	Safety Line 3/8	300.00 - 320.00	0.6000	0.6000
T7	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	300.00 - 320.00	0.6000	0.6000
T7	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	300.00 - 320.00	0.6000	0.6000
T7	12	5/8" Cable (Lights)	300.00 - 320.00	0.6000	0.6000
T7	21	LDF4-75A(5/8")	300.00 - 320.00	0.6000	0.6000
T7	22	LDF5-50A(7/8")	300.00 - 320.00	0.6000	0.6000
T7	23	LDF7-50A(1-5/8")	300.00 - 320.00	0.6000	0.6000
T7	24	LCF158-50A(1-5/8)	300.00 - 320.00	0.6000	0.6000
T8	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	280.00 - 300.00	0.6000	0.6000
T8	2	Safety Line 3/8	280.00 - 300.00	0.6000	0.6000
T8	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	280.00 - 300.00	0.6000	0.6000
T8	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	280.00 - 300.00	0.6000	0.6000
T8	8	3/8" Cable (Lights)	280.00 - 300.00	0.6000	0.6000
T8	12	5/8" Cable (Lights)	280.00 - 300.00	0.6000	0.6000
T8	21	LDF4-75A(5/8")	280.00 - 300.00	0.6000	0.6000
T8	22	LDF5-50A(7/8")	280.00 - 300.00	0.6000	0.6000
T8	23	LDF7-50A(1-5/8")	280.00 - 300.00	0.6000	0.6000
T8	24	LCF158-50A(1-5/8)	280.00 - 300.00	0.6000	0.6000
T9	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	260.00 - 280.00	0.6000	0.6000
T9	2	Safety Line 3/8	260.00 - 280.00	0.6000	0.6000
T9	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	260.00 - 280.00	0.6000	0.6000
T9	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	260.00 - 280.00	0.6000	0.6000
T9	8	3/8" Cable (Lights)	260.00 - 280.00	0.6000	0.6000
T9	12	5/8" Cable (Lights)	260.00 - 280.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T9	19	EW63(ELLIPTICAL)	260.00 - 264.00	0.6000	0.6000
T9	21	LDF4-75A(5/8")	260.00 - 280.00	0.6000	0.6000
T9	22	LDF5-50A(7/8")	260.00 - 280.00	0.6000	0.6000
T9	23	LDF7-50A(1-5/8")	260.00 - 280.00	0.6000	0.6000
T9	24	LCF158-50A(1-5/8)	260.00 - 280.00	0.6000	0.6000
T10	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	240.00 - 260.00	0.6000	0.6000
T10	2	Safety Line 3/8	240.00 - 260.00	0.6000	0.6000
T10	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	240.00 - 260.00	0.6000	0.6000
T10	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	240.00 - 260.00	0.6000	0.6000
T10	8	3/8" Cable (Lights)	240.00 - 260.00	0.6000	0.6000
T10	12	5/8" Cable (Lights)	240.00 - 260.00	0.6000	0.6000
T10	19	EW63(ELLIPTICAL)	240.00 - 260.00	0.6000	0.6000
T10	21	LDF4-75A(5/8")	240.00 - 260.00	0.6000	0.6000
T10	22	LDF5-50A(7/8")	240.00 - 260.00	0.6000	0.6000
T10	23	LDF7-50A(1-5/8")	240.00 - 260.00	0.6000	0.6000
T10	24	LCF158-50A(1-5/8)	240.00 - 260.00	0.6000	0.6000
T11	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	220.00 - 240.00	0.6000	0.6000
T11	2	Safety Line 3/8	220.00 - 240.00	0.6000	0.6000
T11	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	220.00 - 240.00	0.6000	0.6000
T11	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	220.00 - 240.00	0.6000	0.6000
T11	8	3/8" Cable (Lights)	220.00 - 240.00	0.6000	0.6000
T11	12	5/8" Cable (Lights)	220.00 - 240.00	0.6000	0.6000
T11	18	EW63(ELLIPTICAL)	220.00 - 234.00	0.6000	0.6000
T11	19	EW63(ELLIPTICAL)	234.00 - 240.00	0.6000	0.6000
T11	21	LDF4-75A(5/8")	220.00 - 240.00	0.6000	0.6000
T11	22	LDF5-50A(7/8")	220.00 - 240.00	0.6000	0.6000
T11	23	LDF7-50A(1-5/8")	220.00 - 240.00	0.6000	0.6000
T11	24	LCF158-50A(1-5/8)	220.00 - 240.00	0.6000	0.6000
T12	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	200.00 - 220.00	0.6000	0.6000
T12	2	Safety Line 3/8	200.00 - 220.00	0.6000	0.6000
T12	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	200.00 - 220.00	0.6000	0.6000

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	25 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	26 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_c Ice</i>
T12	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	200.00 - 220.00	0.6000	0.6000
T12	8	3/8" Cable (Lights)	200.00 - 220.00	0.6000	0.6000
T12	12	5/8" Cable (Lights)	200.00 - 220.00	0.6000	0.6000
T12	17	EW52(ELLIPTICAL)	200.00 - 220.00	0.6000	0.6000
T12	18	EW63(ELLIPTICAL)	200.00 - 220.00	0.6000	0.6000
T12	21	LDF4-75A(5/8")	200.00 - 220.00	0.6000	0.6000
T12	22	LDF5-50A(7/8")	200.00 - 220.00	0.6000	0.6000
T12	23	LDF7-50A(1-5/8")	200.00 - 220.00	0.6000	0.6000
T12	24	LCF158-50A(1-5/8)	200.00 - 220.00	0.6000	0.6000
T13	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	180.00 - 200.00	0.6000	0.6000
T13	2	Safety Line 3/8	180.00 - 200.00	0.6000	0.6000
T13	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	180.00 - 200.00	0.6000	0.6000
T13	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	180.00 - 200.00	0.6000	0.6000
T13	8	3/8" Cable (Lights)	180.00 - 200.00	0.6000	0.6000
T13	9	5/8" Cable (Lights)	180.00 - 200.00	0.6000	0.6000
T13	11	5/8" Cable (Lights)	180.00 - 200.00	0.6000	0.6000
T13	12	5/8" Cable (Lights)	180.00 - 200.00	0.6000	0.6000
T13	16	EW52(ELLIPTICAL)	180.00 - 192.00	0.6000	0.6000
T13	17	EW52(ELLIPTICAL)	192.00 - 200.00	0.6000	0.6000
T13	18	EW63(ELLIPTICAL)	180.00 - 200.00	0.6000	0.6000
T13	21	LDF4-75A(5/8")	180.00 - 200.00	0.6000	0.6000
T13	22	LDF5-50A(7/8")	180.00 - 200.00	0.6000	0.6000
T13	23	LDF7-50A(1-5/8")	180.00 - 200.00	0.6000	0.6000
T13	24	LCF158-50A(1-5/8)	180.00 - 200.00	0.6000	0.6000
T14	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	160.00 - 180.00	0.6000	0.6000
T14	2	Safety Line 3/8	160.00 - 180.00	0.6000	0.6000
T14	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	160.00 - 180.00	0.6000	0.6000
T14	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	160.00 - 180.00	0.6000	0.6000
T14	8	3/8" Cable (Lights)	160.00 - 180.00	0.6000	0.6000
T14	9	5/8" Cable (Lights)	160.00 - 180.00	0.6000	0.6000
T14	11	5/8" Cable (Lights)	160.00 - 180.00	0.6000	0.6000

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_c Ice</i>
T14	12	5/8" Cable (Lights)	160.00 - 180.00	0.6000	0.6000
T14	15	EW52(ELLIPTICAL)	160.00 - 168.00	0.6000	0.6000
T14	16	EW52(ELLIPTICAL)	168.00 - 180.00	0.6000	0.6000
T14	18	EW63(ELLIPTICAL)	160.00 - 180.00	0.6000	0.6000
T14	21	LDF4-75A(5/8")	160.00 - 180.00	0.6000	0.6000
T14	22	LDF5-50A(7/8")	160.00 - 180.00	0.6000	0.6000
T14	23	LDF7-50A(1-5/8")	160.00 - 180.00	0.6000	0.6000
T14	24	LCF158-50A(1-5/8)	160.00 - 180.00	0.6000	0.6000
T15	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	140.00 - 160.00	0.6000	0.6000
T15	2	Safety Line 3/8	140.00 - 160.00	0.6000	0.6000
T15	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	140.00 - 160.00	0.6000	0.6000
T15	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	140.00 - 160.00	0.6000	0.6000
T15	8	3/8" Cable (Lights)	140.00 - 160.00	0.6000	0.6000
T15	9	5/8" Cable (Lights)	140.00 - 160.00	0.6000	0.6000
T15	11	5/8" Cable (Lights)	140.00 - 160.00	0.6000	0.6000
T15	12	5/8" Cable (Lights)	140.00 - 160.00	0.6000	0.6000
T15	15	EW52(ELLIPTICAL)	140.00 - 160.00	0.6000	0.6000
T15	18	EW63(ELLIPTICAL)	140.00 - 160.00	0.6000	0.6000
T15	21	LDF4-75A(5/8")	140.00 - 160.00	0.6000	0.6000
T15	22	LDF5-50A(7/8")	140.00 - 160.00	0.6000	0.6000
T15	23	LDF7-50A(1-5/8")	140.00 - 160.00	0.6000	0.6000
T15	24	LCF158-50A(1-5/8)	140.00 - 160.00	0.6000	0.6000
T16	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	120.00 - 140.00	0.6000	0.6000
T16	2	Safety Line 3/8	120.00 - 140.00	0.6000	0.6000
T16	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	120.00 - 140.00	0.6000	0.6000
T16	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	120.00 - 140.00	0.6000	0.6000
T16	8	3/8" Cable (Lights)	120.00 - 140.00	0.6000	0.6000
T16	9	5/8" Cable (Lights)	120.00 - 140.00	0.6000	0.6000
T16	11	5/8" Cable (Lights)	120.00 - 140.00	0.6000	0.6000
T16	12	5/8" Cable (Lights)	120.00 - 140.00	0.6000	0.6000
T16	14	EW52(ELLIPTICAL)	120.00 - 130.00	0.6000	0.6000

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	27 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	28 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_c Ice</i>
T16	15	EW52(ELLIPTICAL)	130.00 - 140.00	0.6000	0.6000
T16	18	EW63(ELLIPTICAL)	120.00 - 140.00	0.6000	0.6000
T16	21	LDF4-75A(5/8")	120.00 - 140.00	0.6000	0.6000
T16	22	LDF5-50A(7/8")	120.00 - 140.00	0.6000	0.6000
T16	23	LDF7-50A(1-5/8")	120.00 - 140.00	0.6000	0.6000
T16	24	LCF158-50A(1-5/8)	120.00 - 140.00	0.6000	0.6000
T17	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	100.00 - 120.00	0.6000	0.6000
T17	2	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T17	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	100.00 - 120.00	0.6000	0.6000
T17	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	100.00 - 120.00	0.6000	0.6000
T17	8	3/8" Cable (Lights)	100.00 - 120.00	0.6000	0.6000
T17	9	5/8" Cable (Lights)	100.00 - 120.00	0.6000	0.6000
T17	11	5/8" Cable (Lights)	100.00 - 120.00	0.6000	0.6000
T17	12	5/8" Cable (Lights)	100.00 - 120.00	0.6000	0.6000
T17	14	EW52(ELLIPTICAL)	100.00 - 120.00	0.6000	0.6000
T17	18	EW63(ELLIPTICAL)	100.00 - 120.00	0.6000	0.6000
T17	21	LDF4-75A(5/8")	100.00 - 120.00	0.6000	0.6000
T17	22	LDF5-50A(7/8")	100.00 - 120.00	0.6000	0.6000
T17	23	LDF7-50A(1-5/8")	100.00 - 120.00	0.6000	0.6000
T17	24	LCF158-50A(1-5/8)	100.00 - 120.00	0.6000	0.6000
T18	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	80.00 - 100.00	0.6000	0.6000
T18	2	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T18	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	80.00 - 100.00	0.6000	0.6000
T18	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	80.00 - 100.00	0.6000	0.6000
T18	8	3/8" Cable (Lights)	80.00 - 100.00	0.6000	0.6000
T18	9	5/8" Cable (Lights)	80.00 - 100.00	0.6000	0.6000
T18	11	5/8" Cable (Lights)	80.00 - 100.00	0.6000	0.6000
T18	12	5/8" Cable (Lights)	80.00 - 100.00	0.6000	0.6000
T18	14	EW52(ELLIPTICAL)	80.00 - 100.00	0.6000	0.6000
T18	18	EW63(ELLIPTICAL)	80.00 - 100.00	0.6000	0.6000
T18	21	LDF4-75A(5/8")	80.00 - 100.00	0.6000	0.6000
T18	22	LDF5-50A(7/8")	80.00 - 100.00	0.6000	0.6000
T18	23	LDF7-50A(1-5/8")	80.00 - 100.00	0.6000	0.6000
T18	24	LCF158-50A(1-5/8)	80.00 - 100.00	0.6000	0.6000
T19	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	60.00 - 80.00	0.6000	0.6000
T19	2	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T19	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	60.00 - 80.00	0.6000	0.6000

<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_c Ice</i>
T19	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	60.00 - 80.00	0.6000	0.6000
T19	8	3/8" Cable (Lights)	60.00 - 80.00	0.6000	0.6000
T19	9	5/8" Cable (Lights)	60.00 - 80.00	0.6000	0.6000
T19	11	5/8" Cable (Lights)	60.00 - 80.00	0.6000	0.6000
T19	12	5/8" Cable (Lights)	60.00 - 80.00	0.6000	0.6000
T19	14	EW52(ELLIPTICAL)	60.00 - 80.00	0.6000	0.6000
T19	18	EW63(ELLIPTICAL)	60.00 - 80.00	0.6000	0.6000
T19	21	LDF4-75A(5/8")	60.00 - 80.00	0.6000	0.6000
T19	22	LDF5-50A(7/8")	60.00 - 80.00	0.6000	0.6000
T19	23	LDF7-50A(1-5/8")	60.00 - 80.00	0.6000	0.6000
T19	24	LCF158-50A(1-5/8)	60.00 - 80.00	0.6000	0.6000
T20	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	40.00 - 60.00	0.6000	0.6000
T20	2	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T20	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	40.00 - 60.00	0.6000	0.6000
T20	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	40.00 - 60.00	0.6000	0.6000
T20	8	3/8" Cable (Lights)	40.00 - 60.00	0.6000	0.6000
T20	9	5/8" Cable (Lights)	40.00 - 60.00	0.6000	0.6000
T20	11	5/8" Cable (Lights)	40.00 - 60.00	0.6000	0.6000
T20	12	5/8" Cable (Lights)	40.00 - 60.00	0.6000	0.6000
T20	14	EW52(ELLIPTICAL)	40.00 - 60.00	0.6000	0.6000
T20	18	EW63(ELLIPTICAL)	40.00 - 60.00	0.6000	0.6000
T20	21	LDF4-75A(5/8")	40.00 - 60.00	0.6000	0.6000
T20	22	LDF5-50A(7/8")	40.00 - 60.00	0.6000	0.6000
T20	23	LDF7-50A(1-5/8")	40.00 - 60.00	0.6000	0.6000
T20	24	LCF158-50A(1-5/8)	40.00 - 60.00	0.6000	0.6000
T21	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	20.00 - 40.00	0.6000	0.6000
T21	2	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T21	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	20.00 - 40.00	0.6000	0.6000
T21	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	20.00 - 40.00	0.6000	0.6000
T21	8	3/8" Cable (Lights)	20.00 - 40.00	0.6000	0.6000
T21	9	5/8" Cable (Lights)	20.00 - 40.00	0.6000	0.6000
T21	11	5/8" Cable (Lights)	20.00 - 40.00	0.6000	0.6000
T21	12	5/8" Cable (Lights)	20.00 - 40.00	0.6000	0.6000
T21	14	EW52(ELLIPTICAL)	20.00 - 40.00	0.6000	0.6000
T21	18	EW63(ELLIPTICAL)	20.00 - 40.00	0.6000	0.6000
T21	21	LDF4-75A(5/8")	20.00 - 40.00	0.6000	0.6000
T21	22	LDF5-50A(7/8")	20.00 - 40.00	0.6000	0.6000
T21	23	LDF7-50A(1-5/8")	20.00 - 40.00	0.6000	0.6000
T21	24	LCF158-50A(1-5/8)	20.00 - 40.00	0.6000	0.6000
T22	1	Ladder Rung - SR 3/4" (18" width, 38.5" step)	10.00 - 20.00	0.6000	0.6000
T22	2	Safety Line 3/8	10.00 - 20.00	0.6000	0.6000
T22	4	Rung PL 2.5"x1/8" (31"Wx39.25"S)	11.50 - 20.00	0.6000	0.6000
T22	5	Rung PL 2.5"x1/8" (31"Wx39.25"S)	11.50 - 20.00	0.6000	0.6000
T22	8	3/8" Cable (Lights)	6.81 - 20.00	0.6000	0.6000
T22	9	5/8" Cable (Lights)	6.81 - 20.00	0.6000	0.6000
T22	11	5/8" Cable (Lights)	6.81 - 20.00	0.6000	0.6000
T22	12	5/8" Cable (Lights)	6.81 - 20.00	0.6000	0.6000
T22	14	EW52(ELLIPTICAL)	9.25 - 20.00	0.6000	0.6000
T22	18	EW63(ELLIPTICAL)	9.25 - 20.00	0.6000	0.6000
T22	21	LDF4-75A(5/8")	9.25 - 20.00	0.6000	0.6000
T22	22	LDF5-50A(7/8")	9.25 - 20.00	0.6000	0.6000
T22	23	LDF7-50A(1-5/8")	9.25 - 20.00	0.6000	0.6000

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	29 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _α No Ice	K _α Ice
T22	24	LCF158-50A(1-5/8)	9.25 - 20.00	0.6000	0.6000
T23	8	3/8" Cable (Lights)	3.00 - 6.81	0.5629	0.5039
T23	9	5/8" Cable (Lights)	3.00 - 6.81	0.5629	0.5039
T23	11	5/8" Cable (Lights)	3.00 - 6.81	0.5629	0.5039
T23	12	5/8" Cable (Lights)	3.00 - 6.81	0.5629	0.5039

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _N A _A Front ft ²	C _N A _A Side ft ²	Weight lb
1" x 6" Lightning Rod	A	From Leg	0.000 0.000 3.000	0.000	400.000	No Ice 1/2" Ice 1.217	0.600 1.217	4.000 9.600
12" x 24" Beacon	C	From Leg	0.000 0.000 0.500	0.000	400.000	No Ice 1/2" Ice 1.580	1.000 1.580	30.000 49.573

1.9" x 9-ft stabilizer	A	From Face	6.000 0.000 0.000	0.000	400.000	No Ice 1/2" Ice 2.634	1.710 2.634	24.480 37.889
1.9" x 9-ft stabilizer	B	From Face	6.000 0.000 0.000	0.000	400.000	No Ice 1/2" Ice 2.634	1.710 2.634	24.480 37.889
1.9" x 9-ft stabilizer	C	From Face	6.000 0.000 0.000	0.000	400.000	No Ice 1/2" Ice 2.634	1.710 2.634	24.480 37.889
Side Arm Mount [SO 308-3]	A	None		0.000	398.500	No Ice 1/2" Ice 7.780	4.510 7.780	159.000 236.256
AO8410M-24T0	A	From Leg	6.000 0.000 7.500	0.000	398.500	No Ice 1/2" Ice 4.207	2.635 4.207	26.000 47.016
AO8410M-24T0	B	From Leg	6.000 0.000 7.500	0.000	398.500	No Ice 1/2" Ice 4.207	2.635 4.207	26.000 47.016
AO8410M-24T0	C	From Leg	6.000 0.000 7.500	0.000	398.500	No Ice 1/2" Ice 4.207	2.635 4.207	26.000 47.016
ATS8TMA10	A	From Leg	0.500 0.000 0.000	0.000	398.500	No Ice 1/2" Ice 1.766	2.346 2.542	25.000 45.629

(2) 2.4" Dia. x 7-ft	A	From Leg	0.000 0.000 0.000	0.000	264.000	No Ice 1/2" Ice 2.391	1.663 2.391	25.620 38.204
4.5" dia. x 63" Pipe	A	From Leg	1.125 0.000 0.000	0.000	264.000	No Ice 1/2" Ice 2.207	1.385 2.207	56.700 73.505
L 3x3x1/4	C	From Face	0.000 0.000 0.000	0.000	264.000	No Ice 1/2" Ice 4.923	4.000 4.923	39.200 61.496

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	30 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _N A _A Front ft ²	C _N A _A Side ft ²	Weight lb

(2) 2.4" Dia. x 7-ft	A	From Leg	0.000 0.000 0.000	0.000	234.000	No Ice 1/2" Ice 2.391	1.663 2.391	25.620 38.204
4.5" dia. x 63" Pipe	A	From Leg	1.125 0.000 0.000	0.000	234.000	No Ice 1/2" Ice 2.207	1.396 2.207	56.700 73.505
L 3x3x1/4	C	From Face	0.000 0.000 0.000	0.000	234.000	No Ice 1/2" Ice 4.923	4.000 4.923	39.200 61.496

(2) 2.4" Dia. x 7-ft	A	From Leg	0.000 0.000 0.000	0.000	220.000	No Ice 1/2" Ice 2.391	1.663 2.391	25.620 38.204
4.5" dia. x 63" Pipe	A	From Leg	1.125 0.000 0.000	0.000	220.000	No Ice 1/2" Ice 2.207	1.403 2.207	56.700 73.505
L 3x3x1/4	C	From Face	0.000 0.000 0.000	0.000	220.000	No Ice 1/2" Ice 4.923	4.000 4.923	39.200 61.496

(2) 2.4" Dia. x 7-ft	A	From Leg	0.000 0.000 0.000	0.000	192.000	No Ice 1/2" Ice 2.391	1.663 2.391	25.620 38.204
4.5" dia. x 63" Pipe	A	From Leg	1.125 0.000 0.000	0.000	192.000	No Ice 1/2" Ice 2.207	1.416 2.207	56.700 73.505
L 3x3x1/4	C	From Face	0.000 0.000 0.000	0.000	192.000	No Ice 1/2" Ice 4.923	4.000 4.923	39.200 61.496

(2) 2.4" Dia. x 7-ft	C	From Leg	0.000 0.000 0.000	0.000	168.000	No Ice 1/2" Ice 2.391	1.663 2.391	25.620 38.204
4.5" dia. x 63" Pipe	C	From Leg	1.125 0.000 0.000	0.000	168.000	No Ice 1/2" Ice 2.207	1.429 2.207	56.700 73.505
L 3x3x1/4	B	From Face	0.000 0.000 0.000	0.000	168.000	No Ice 1/2" Ice 4.923	4.000 4.923	39.200 61.496

(2) 2.4" Dia. x 7-ft	C	From Leg	0.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 2.391	1.663 2.391	25.620 38.204
4.5" dia. x 63" Pipe	C	From Leg	1.125 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 2.207	1.455 2.207	56.700 73.505
L 3x3x1/4	B	From Face	0.000 0.000 0.000	0.000	130.000	No Ice 1/2" Ice 4.923	4.000 4.923	39.200 61.496

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tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Fort White	Page 31 of 48
	Project TEP No. 308004.636376	Date 09:12:47 02/10/22
	Client Williams Communications	Designed by Cameron Tokay

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Fort White	Page 32 of 48
	Project TEP No. 308004.636376	Date 09:12:47 02/10/22
	Client Williams Communications	Designed by Cameron Tokay

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				ft	°	°	ft	ft	ft ²	lb
PAD6-65	A	Paraboloid w/Radome	From Leg	2.000 0.000 0.000	15.000		264.000	6.000	No Ice 1/2" Ice	185.000 29.070 334.230
PAD6-65	A	Paraboloid w/Radome	From Leg	2.000 0.000 0.000	15.000		234.000	6.000	No Ice 1/2" Ice	185.000 29.070 334.230
PAD8-59	A	Paraboloid w/Radome	From Leg	2.000 0.000 0.000	90.000		220.000	8.000	No Ice 1/2" Ice	310.000 51.320 573.000
PAD8-59	A	Paraboloid w/Radome	From Leg	2.000 0.000 0.000	90.000		192.000	8.000	No Ice 1/2" Ice	310.000 51.320 573.000
PAD8-59	C	Paraboloid w/Radome	From Leg	2.000 0.000 0.000	-30.000		168.000	8.000	No Ice 1/2" Ice	310.000 51.320 573.000
PAD6-59	C	Paraboloid w/Radome	From Leg	2.000 0.000 0.000	-30.000		130.000	6.000	No Ice 1/2" Ice	160.000 28.270 309.000

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	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy

Comb. No.	Description
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Tower Deflections - Service Wind

Section No.	Elevation	Horz. Deflection in	Gov. Load Comb.	Tilt	Twist
	ft			°	°
T1	400 - 380	4.044	29	0.064	1.465
T2	380 - 370	3.783	29	0.072	1.430
T3	370 - 360	3.623	29	0.086	1.401
T4	360 - 350	3.425	29	0.103	1.368
T5	350 - 340	3.192	29	0.115	1.346
T6	340 - 320	2.935	29	0.123	1.318
T7	320 - 300	2.413	29	0.121	1.245
T8	300 - 280	1.903	29	0.120	1.144
T9	280 - 260	1.422	29	0.098	0.990
T10	260 - 240	1.080	29	0.067	0.832
T11	240 - 220	0.847	29	0.041	0.593
T12	220 - 200	0.760	29	0.013	0.437
T13	200 - 180	0.783	29	0.010	0.368
T14	180 - 160	0.786	29	0.011	0.215
T15	160 - 140	0.833	29	0.018	0.230
T16	140 - 120	0.847	29	0.009	0.422
T17	120 - 100	0.802	29	0.008	0.566
T18	100 - 80	0.808	29	0.011	0.659
T19	80 - 60	0.825	29	0.006	0.802
T20	60 - 40	0.752	29	0.028	0.908
T21	40 - 20	0.595	29	0.048	1.025
T22	20 - 6.80729	0.340	29	0.071	1.141
T23	6.80729 - 0	0.119	29	0.081	1.147

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
400.000	1" x 6' Lightning Rod	29	4.044	0.064	1.465	215267
398.500	Side Arm Mount [SO 308-3]	29	4.025	0.064	1.463	215267
393.193	Guy	29	3.959	0.065	1.455	158115
326.778	Guy	29	2.589	0.123	1.272	243889
273.222	Guy	29	1.291	0.087	0.941	31455
264.000	PAD6-65	29	1.139	0.073	0.870	49045
234.000	PAD6-65	29	0.805	0.030	0.533	30273
226.778	Guy	29	0.772	0.016	0.476	31344
220.000	PAD8-59	29	0.760	0.013	0.437	34613

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Fort White	Page 33 of 48
	Project TEP No. 308004.636376	Date 09:12:47 02/10/22
	Client Williams Communications	Designed by Cameron Tokay

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
ft						
192.000	PAD8-59	29	0.784	0.010	0.323	95689
173.222	Guy	29	0.798	0.014	0.136	85323
168.000	PAD8-59	29	0.812	0.017	0.158	147317
130.000	PAD6-59	29	0.825	0.009	0.504	343904
113.222	Guy	29	0.797	0.008	0.597	65489
53.222	Guy	29	0.708	0.036	0.964	58280

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	400 - 380	47.864	10	1.203	3.275
T2	380 - 370	42.834	10	1.244	3.241
T3	370 - 360	40.183	10	1.310	3.213
T4	360 - 350	37.362	10	1.382	3.175
T5	350 - 340	34.388	10	1.429	3.171
T6	340 - 320	31.327	10	1.453	3.140
T7	320 - 300	25.259	10	1.410	3.047
T8	300 - 280	19.455	10	1.337	2.957
T9	280 - 260	14.189	10	1.108	2.749
T10	260 - 240	10.100	10	0.847	2.553
T11	240 - 220	7.234	9	0.593	2.115
T12	220 - 200	5.920	4	0.268	1.858
T13	200 - 180	5.694	4	0.134	1.751
T14	180 - 160	5.451	4	0.111	1.168
T15	160 - 140	5.414	4	0.109	0.933
T16	140 - 120	5.249	4	0.091	1.289
T17	120 - 100	4.847	4	0.068	1.517
T18	100 - 80	5.164	10	0.096	1.648
T19	80 - 60	5.445	10	0.050	1.871
T20	60 - 40	5.054	10	0.177	1.999
T21	40 - 20	4.004	10	0.328	2.118
T22	20 - 6.80729	2.270	10	0.481	2.202
T23	6.80729 - 0	0.796	10	0.539	2.115

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
ft						
400.000	1" x 6" Lightning Rod	10	47.864	1.203	3.275	44441
398.500	Side Arm Mount [SO 308-3]	10	47.492	1.204	3.273	44441
393.193	Guy	10	46.173	1.208	3.265	32642
326.778	Guy	10	27.294	1.431	3.076	21013
273.222	Guy	10	12.671	1.017	2.694	3850
264.000	PAD6-65	10	10.832	0.896	2.609	5085
234.000	PAD6-65	9	6.691	0.492	2.003	3519
226.778	Guy	9	6.176	0.367	1.907	3731
220.000	PAD8-59	4	5.920	0.268	1.858	3997
192.000	PAD8-59	4	5.594	0.107	1.555	12352
173.222	Guy	4	5.420	0.096	0.981	7899

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job Fort White	Page 34 of 48
	Project TEP No. 308004.636376	Date 09:12:47 02/10/22
	Client Williams Communications	Designed by Cameron Tokay

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
ft						
168.000	PAD8-59	4	5.416	0.081	0.863	10910
130.000	PAD6-59	4	5.041	0.090	1.424	38230
113.222	Guy	10	4.878	0.084	1.560	11452
53.222	Guy	10	4.771	0.243	2.073	7554

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria
T1	400	Leg	A325N	0.750	4	1747.740	30101.400	0.058	1.05	Bolt Tension
T2	380	Leg	A325N	0.750	4	2081.730	30101.400	0.069	1.05	Bolt Tension
T3	370	Leg	A325N	0.750	4	2107.670	30101.400	0.070	1.05	Bolt Tension
T4	360	Leg	A325N	0.750	4	1828.160	30101.400	0.061	1.05	Bolt Tension
T5	350	Leg	A325N	0.750	4	1242.350	30101.400	0.041	1.05	Bolt Tension
T6	340	Leg	A325N	0.750	4	2078.940	30101.400	0.069	1.05	Bolt Tension
T7	320	Leg	A325N	0.750	4	2745.770	30101.400	0.091	1.05	Bolt Tension
T8	300	Leg	A325N	0.750	4	4470.000	30101.400	0.148	1.05	Bolt Tension
T9	280	Leg	A325N	0.750	4	4917.900	30101.400	0.163	1.05	Bolt Tension
T10	260	Leg	A325N	0.750	4	5668.680	30101.400	0.188	1.05	Bolt Tension
T11	240	Leg	A325N	0.750	4	5830.520	30101.400	0.194	1.05	Bolt Tension
		Torque Arm Top@226.778	A325N	0.875	2	8516.950	20084.801	0.424	1.05	Member Block Shear
		Torque Arm Bottom@226.778	A325N	0.875	2	8590.080	27059.400	0.317	1.05	Bolt Shear
T12	220	Leg	A325N	0.750	4	4578.200	30101.400	0.152	1.05	Bolt Tension
T13	200	Leg	A325N	0.750	4	5188.700	30101.400	0.172	1.05	Bolt Tension
T14	180	Leg	A325N	0.750	4	4750.150	30101.400	0.158	1.05	Bolt Tension
		Torque Arm Top@173.222	A325N	0.875	2	6116.610	20084.801	0.305	1.05	Member Block Shear
		Torque Arm Bottom@173.222	A325N	0.875	2	6878.000	27059.400	0.254	1.05	Bolt Shear
T15	160	Leg	A325N	0.750	4	4862.510	30101.400	0.162	1.05	Bolt Tension
T16	140	Leg	A325N	0.750	4	5190.940	30101.400	0.172	1.05	Bolt Tension
T17	120	Leg	A325N	0.750	4	5042.000	30101.400	0.168	1.05	Bolt Tension
T18	100	Leg	A325N	0.750	4	6236.630	30101.400	0.207	1.05	Bolt Tension
T19	80	Leg	A325N	0.750	4	6423.510	30101.400	0.213	1.05	Bolt Tension
T20	60	Leg	A325N	0.750	4	6811.500	30101.400	0.226	1.05	Bolt Tension
T21	40	Leg	A325N	1.250	4	6471.620	87219.797	0.074	1.05	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T _u lb	Allowable φT _u lb	Required S.F.	Actual S.F.
T1	393.193 (A)	9/16 EHS	3500.000	35000.035	16179.400	22049.998	0.952	1.298
	393.193 (B)	9/16 EHS	3500.000	35000.035	16267.200	22049.998	0.952	1.291

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	35 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Section No.	Elevation	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_u lb	Required S.F.	Actual S.F.
	ft							
T6	(860) 393.193 (C)	9/16 EHS	3500.000	35000.035	16648.600	22049.998	0.952	1.261
	(856) 326.778 (A)	9/16 EHS	3500.000	35000.035	13900.100	22049.998	0.952	1.511
	(867) 326.778 (B)	9/16 EHS	3500.000	35000.035	13786.400	22049.998	0.952	1.523
	(866) 326.778 (C)	9/16 EHS	3500.000	35000.035	14379.500	22049.998	0.952	1.460
T9	(862) 273.222 (A)	3/4 EHS	5830.000	58299.914	18007.400	36729.000	0.952	1.943
	(873) 273.222 (B)	3/4 EHS	5830.000	58299.914	17642.900	36729.000	0.952	1.983
	(872) 273.222 (C)	3/4 EHS	5830.000	58299.914	18251.900	36729.000	0.952	1.917
	(868) 226.778 (A)	3/4 EHS	5830.000	58299.914	13926.400	36729.000	0.952	2.512
T11	(886) 226.778 (A)	3/4 EHS	5830.000	58299.914	15133.600	36729.000	0.952	2.311
	(887) 226.778 (B)	3/4 EHS	5830.000	58299.914	13533.400	36729.000	0.952	2.585
	(880) 226.778 (B)	3/4 EHS	5830.000	58299.914	15851.300	36729.000	0.952	2.207
	(881) 226.778 (C)	3/4 EHS	5830.000	58299.914	15323.700	36729.000	0.952	2.283
T14	(874) 226.778 (C)	3/4 EHS	5830.000	58299.914	14191.400	36729.000	0.952	2.465
	(875) 173.222 (A)	5/8 EHS	4240.000	42399.988	9735.770	26711.998	0.952	2.613
	(904) 173.222 (A)	5/8 EHS	4240.000	42399.988	10500.800	26711.998	0.952	2.423
	(905) 173.222 (B)	5/8 EHS	4240.000	42399.988	10313.200	26711.998	0.952	2.467
T17	(898) 173.222 (B)	5/8 EHS	4240.000	42399.988	10382.800	26711.998	0.952	2.450
	(899) 173.222 (C)	5/8 EHS	4240.000	42399.988	11504.200	26711.998	0.952	2.211
	(892) 173.222 (C)	5/8 EHS	4240.000	42399.988	10192.200	26711.998	0.952	2.496
	(893) 113.222 (A)	3/4 EHS	5830.000	58299.914	15021.200	36729.000	0.952	2.329
T20	(915) 113.222 (B)	3/4 EHS	5830.000	58299.914	14861.000	36729.000	0.952	2.354
	(914) 113.222 (C)	3/4 EHS	5830.000	58299.914	16729.199	36729.000	0.952	2.091
	(910) 53.222 (A)	7/16 EHS	2080.000	20800.023	5354.190	13103.999	0.952	2.331
	(921) 53.222 (B)	7/16 EHS	2080.000	20800.023	5297.430	13103.999	0.952	2.356
	(920) 53.222 (C)	7/16 EHS	2080.000	20800.023	5802.150	13103.999	0.952	2.151
	(916)							

Compression Checks

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	36 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Leg Design Data (Compression)									
Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	
T1	400 - 380	1 3/4	20.000	3.193	87.6 K=1.00	2.405	-19564.100	61781.898	0.317 ¹
T2	380 - 370	1 3/4	10.000	3.111	85.3 K=1.00	2.405	-24231.699	63555.000	0.381 ¹
T3	370 - 360	1 3/4	10.000	3.111	85.3 K=1.00	2.405	-25349.900	63555.000	0.399 ¹
T4	360 - 350	2	10.000	3.111	74.7 K=1.00	3.142	-24610.199	94043.297	0.262 ¹
T5	350 - 340	2	10.000	3.111	74.7 K=1.00	3.142	-20557.600	94043.297	0.219 ¹
T6	340 - 320	2	20.000	3.222	77.3 K=1.00	3.142	-24769.400	91297.102	0.271 ¹
T7	320 - 300	2	20.000	3.222	77.3 K=1.00	3.142	-31112.699	91297.102	0.341 ¹
T8	300 - 280	1 3/4	20.000	3.222	88.4 K=1.00	2.405	-50518.000	61141.801	0.826 ¹
T9	280 - 260	2	20.000	3.222	77.3 K=1.00	3.142	-62560.602	91297.102	0.685 ¹
T10	260 - 240	2	20.000	3.222	77.3 K=1.00	3.142	-66862.602	91297.102	0.732 ¹
T11	240 - 220	2	20.000	3.222	77.3 K=1.00	3.142	-83063.102	91297.102	0.910 ¹
T12	220 - 200	2	20.000	3.222	77.3 K=1.00	3.142	-66167.102	91297.102	0.725 ¹
T13	200 - 180	2	20.000	3.222	77.3 K=1.00	3.142	-61592.301	91297.102	0.675 ¹
T14	180 - 160	2	20.000	3.222	77.3 K=1.00	3.142	-70334.297	91297.102	0.770 ¹
T15	160 - 140	2	20.000	3.222	77.3 K=1.00	3.142	-57958.000	91297.102	0.635 ¹
T16	140 - 120	2 1/4	20.000	3.222	68.7 K=1.00	3.976	-57977.801	126654.000	0.458 ¹
T17	120 - 100	2 1/2	20.000	3.222	61.9 K=1.00	4.909	-67946.000	166972.000	0.407 ¹
T18	100 - 80	2 1/4	20.000	3.222	68.7 K=1.00	3.976	-70644.203	126654.000	0.558 ¹
T19	80 - 60	2 1/4	20.000	3.222	68.7 K=1.00	3.976	-75610.898	126654.000	0.597 ¹
T20	60 - 40	2 1/4	20.000	3.222	68.7 K=1.00	3.976	-78084.102	126654.000	0.617 ¹
T21	40 - 20	2 1/4	20.000	3.222	68.7 K=1.00	3.976	-79539.703	126654.000	0.628 ¹
T22	20 - 6.80729	2 1/4	13.193	3.052	65.1 K=1.00	3.976	-73413.797	131234.000	0.559 ¹
T23	6.80729 - 0	2 1/4	7.024	1.270	27.1 K=1.00	3.976	-69424.703	169567.000	0.409 ¹

¹ $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	37 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Section No.	Elevation	Size	L	L _w	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	$\frac{P_u}{\phi P_n}$
T1	400 - 380	1 1/8	4.381	4.168	K=0.70 122.8	0.994	-2924.100	14244.100	0.205 ¹
T2	380 - 370	1 1/8	4.322	4.112	K=0.70 122.8	0.994	-1869.890	14558.900	0.128 ¹
T3	370 - 360	1 1/8	4.322	4.112	K=0.70 122.8	0.994	-1163.670	14558.900	0.080 ¹
T4	360 - 350	1 1/8	4.322	4.082	K=0.70 121.9	0.994	-2071.760	14728.000	0.141 ¹
T5	350 - 340	1 1/8	4.322	4.082	K=0.70 121.9	0.994	-3231.780	14728.000	0.219 ¹
T6	340 - 320	1 3/8	4.403	4.158	K=0.70 101.6	1.485	-4153.960	27938.600	0.149 ¹
T7	320 - 300	1 1/8	4.403	4.158	K=0.70 124.2	0.994	-3295.120	14300.300	0.230 ¹
T8	300 - 280	1 1/4	4.403	4.189	K=0.70 112.6	1.227	-4666.910	20400.301	0.229 ¹
T9	280 - 260	1 1/4	4.403	4.158	K=0.70 111.8	1.227	-5207.610	20599.301	0.253 ¹
T10	260 - 240	1 1/4	4.403	4.158	K=0.70 111.8	1.227	-4717.070	20599.301	0.229 ¹
T11	240 - 220	1 3/8	4.403	4.158	K=0.70 101.6	1.485	-14961.900	27938.600	0.536 ¹
T12	220 - 200	1 3/8	4.403	4.158	K=0.70 101.6	1.485	-8000.000	27938.600	0.286 ¹
T13	200 - 180	1 1/4	4.403	4.158	K=0.70 111.8	1.227	-10888.700	20599.301	0.529 ¹
T14	180 - 160	1 1/2	4.403	4.158	K=0.70 93.1	1.767	-11905.400	36264.500	0.328 ¹
T15	160 - 140	1 1/4	4.403	4.158	K=0.70 111.8	1.227	-6247.500	20599.301	0.303 ¹
T16	140 - 120	1 3/8	4.403	4.127	K=0.70 100.9	1.485	-9152.870	28162.000	0.325 ¹
T17	120 - 100	1 3/8	4.403	4.097	K=0.70 100.1	1.485	-9918.340	28385.500	0.349 ¹
T18	100 - 80	1 1/4	4.403	4.127	K=0.70 110.9	1.227	-7278.990	20798.699	0.350 ¹
T19	80 - 60	1 1/8	4.403	4.127	K=0.70 123.3	0.994	-5384.980	14471.400	0.372 ¹
T20	60 - 40	1 1/8	4.403	4.127	K=0.70 123.3	0.994	-5795.210	14471.400	0.400 ¹
T21	40 - 20	1 1/8	4.403	4.127	K=0.70 123.3	0.994	-6056.720	14471.400	0.419 ¹
T22	20 - 6.80729	1 1/8	4.280	4.012	K=0.70 119.8	0.994	-7658.790	15123.200	0.506 ¹

¹ P_u / φP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation	Size	L	L _w	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	$\frac{P_u}{\phi P_n}$
T1	400 - 380	7/8	3.000	2.854	K=0.70 109.6	0.601	-1284.830	10351.800	0.124 ¹
T2	380 - 370	7/8	3.000	2.854	K=0.70 109.6	0.601	-554.472	10351.800	0.054 ¹

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	38 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Section No.	Elevation	Size	L	L _w	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	$\frac{P_u}{\phi P_n}$
T3	370 - 360	7/8	3.000	2.854	K=0.70 108.8	0.601	-562.664	10351.800	0.054 ¹
T4	360 - 350	7/8	3.000	2.833	K=0.70 108.8	0.601	-684.130	10447.400	0.065 ¹
T5	350 - 340	7/8	3.000	2.833	K=0.70 108.8	0.601	-1312.640	10447.400	0.126 ¹
T6	340 - 320	7/8	3.000	2.833	K=0.70 108.8	0.601	-2117.730	10447.400	0.203 ¹
T7	320 - 300	7/8	3.000	2.833	K=0.70 108.8	0.601	-842.225	10447.400	0.081 ¹
T8	300 - 280	7/8	3.000	2.854	K=0.70 109.6	0.601	-1814.640	10351.800	0.175 ¹
T9	280 - 260	7/8	3.000	2.833	K=0.70 108.8	0.601	-2194.750	10447.400	0.210 ¹
T10	260 - 240	1	3.000	2.833	K=0.70 95.2	0.785	-1405.130	15791.600	0.089 ¹
T11	240 - 220	1 1/4	3.000	2.833	K=0.70 85.3	1.227	-6211.820	27108.400	0.229 ¹
T12	220 - 200	7/8	3.000	2.833	K=0.78 108.8	0.601	-1462.280	10447.400	0.140 ¹
T13	200 - 180	7/8	3.000	2.833	K=0.70 108.8	0.601	-2990.630	10447.400	0.286 ¹
T14	180 - 160	1	3.000	2.833	K=0.70 95.2	0.785	-3246.380	15791.600	0.206 ¹
T15	160 - 140	7/8	3.000	2.833	K=0.70 108.8	0.601	-1205.300	10447.400	0.115 ¹
T16	140 - 120	1	3.000	2.813	K=0.70 94.5	0.785	-1183.700	15902.300	0.074 ¹
T17	120 - 100	1	3.000	2.792	K=0.70 93.8	0.785	-1201.270	16013.100	0.075 ¹
T18	100 - 80	7/8	3.000	2.813	K=0.70 108.0	0.601	-1422.150	10543.300	0.135 ¹
T19	80 - 60	7/8	3.000	2.813	K=0.70 108.0	0.601	-1464.770	10543.300	0.139 ¹
T20	60 - 40	7/8	3.000	2.813	K=0.70 108.0	0.601	-1553.240	10543.300	0.147 ¹
T21	40 - 20	7/8	3.000	2.813	K=0.70 108.0	0.601	-1553.340	10543.300	0.147 ¹
T22	20 - 6.80729	7/8	3.000	2.813	K=0.70 108.0	0.601	-1421.580	10543.300	0.135 ¹
T23	6.80729 - 0	L4x4x3/8	2.170	1.983	K=0.70 75.1	2.860	-1230.860	84700.898	0.015 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation	Size	L	L _w	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	$\frac{P_u}{\phi P_n}$
T1	400 - 380	7/8	3.000	2.854	K=0.70 109.6	0.601	-431.352	10351.800	0.042 ¹
T2	380 - 370	7/8	3.000	2.854	K=0.70 109.6	0.601	-554.472	10351.800	0.054 ¹
T3	370 - 360	7/8	3.000	2.854	K=0.70 109.6	0.601	-562.664	10351.800	0.054 ¹

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Section No.	Elevation	Size	L	L _o	Kl/r	A	P _a	φP _a	Ratio $\frac{P_a}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	
T11	240 - 220 (878)	L3 1/2x3 1/2x3/8	4.963	4.333	97.8 K=1.29	2.480	-16018.000	62405.801	0.257 ¹
T11	240 - 220 (879)	L3 1/2x3 1/2x3/8	4.963	4.333	97.8 K=1.29	2.480	-17082.900	62405.801	0.274 ¹
T11	240 - 220 (884)	L3 1/2x3 1/2x3/8	4.963	4.333	97.8 K=1.29	2.480	-16212.500	62405.801	0.260 ¹
T11	240 - 220 (885)	L3 1/2x3 1/2x3/8	4.963	4.333	97.8 K=1.29	2.480	-15790.300	62405.801	0.253 ¹
T11	240 - 220 (890)	L3 1/2x3 1/2x3/8	4.963	4.333	97.8 K=1.29	2.480	-17180.199	62405.801	0.275 ¹
T11	240 - 220 (891)	L3 1/2x3 1/2x3/8	4.963	4.333	97.8 K=1.29	2.480	-16122.900	62405.801	0.258 ¹
T14	180 - 160 (896)	L3 1/2x3 1/2x3/8	4.963	4.333	97.8 K=1.29	2.480	-11199.400	62405.801	0.179 ¹

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	41 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Section No.	Elevation	Size	L	L _w	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	$\frac{\phi P_n}{\phi P_n}$
T14	180 - 160 (897)	L3 1/2x3 1/2x3/8	4.963	4.333	97.8	2.480	-13756.000	62405.801	0.220 ¹
					K=1.29				
T14	180 - 160 (902)	L3 1/2x3 1/2x3/8	4.963	4.333	97.8	2.480	-13210.900	62405.801	0.212 ¹
					K=1.29				
T14	180 - 160 (903)	L3 1/2x3 1/2x3/8	4.963	4.333	97.8	2.480	-10436.600	62405.801	0.167 ¹
					K=1.29				
T14	180 - 160 (908)	L3 1/2x3 1/2x3/8	4.963	4.333	97.8	2.480	-9134.890	62405.801	0.146 ¹
					K=1.29				
T14	180 - 160 (909)	L3 1/2x3 1/2x3/8	4.963	4.333	97.8	2.480	-11074.600	62405.801	0.177 ¹
					K=1.29				

¹ P_u / φP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation	Size	L	L _w	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	$\frac{\phi P_n}{\phi P_n}$
T1	400 - 380	1 3/4	20.000	3.193	87.6	2.405	3466.550	108238.000	0.032 ¹
T2	380 - 370	1 3/4	10.000	3.111	85.3	2.405	5949.380	108238.000	0.055 ¹
T3	370 - 360	1 3/4	10.000	3.111	85.3	2.405	6328.360	108238.000	0.058 ¹
T4	360 - 350	2	10.000	0.333	8.0	3.142	5052.860	141372.000	0.036 ¹
T5	350 - 340	2	10.000	0.333	8.0	3.142	584.477	141372.000	0.004 ¹
T8	300 - 280	1 3/4	20.000	0.333	9.1	2.405	9611.740	108238.000	0.089 ¹
T9	280 - 260	2	20.000	3.222	77.3	3.142	17054.100	141372.000	0.121 ¹
T10	260 - 240	2	20.000	3.222	77.3	3.142	2987.360	141372.000	0.021 ¹
T11	240 - 220	2	20.000	3.222	77.3	3.142	16137.200	141372.000	0.114 ¹

¹ P_u / φP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation	Size	L	L _w	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	$\frac{\phi P_n}{\phi P_n}$
T1	400 - 380	1 1/8	4.381	4.168	177.8	0.994	2039.070	32206.199	0.063 ¹
T2	380 - 370	1 1/8	4.322	4.112	175.4	0.994	912.787	32206.199	0.028 ¹
T3	370 - 360	1 1/8	4.322	4.112	175.4	0.994	189.750	32206.199	0.006 ¹
T4	360 - 350	1 1/8	4.322	4.082	174.2	0.994	1128.330	32206.199	0.035 ¹
T5	350 - 340	1 1/8	4.322	4.082	174.2	0.994	2241.680	32206.199	0.070 ¹
T6	340 - 320	1 3/8	4.403	4.158	145.2	1.485	3268.920	48110.500	0.068 ¹
T7	320 - 300	1 1/8	4.403	4.158	177.4	0.994	1429.970	32206.199	0.044 ¹
T8	300 - 280	1 1/4	4.403	4.189	160.8	1.227	2960.050	39760.801	0.074 ¹
T9	280 - 260	1 1/4	4.403	4.158	159.7	1.227	3384.040	39760.801	0.085 ¹
T10	260 - 240	1 1/4	4.403	4.158	159.7	1.227	1870.670	39760.801	0.047 ¹
T11	240 - 220	1 3/8	4.403	4.158	145.2	1.485	5707.460	48110.500	0.119 ¹
T13	200 - 180	1 1/4	4.403	4.158	159.7	1.227	4918.600	39760.801	0.124 ¹

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	42 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Section No.	Elevation	Size	L	L _w	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	$\frac{\phi P_n}{\phi P_n}$
T14	180 - 160	1 1/2	4.403	4.158	133.1	1.767	5233.990	57255.500	0.091 ¹
T16	140 - 120	1 3/8	4.403	4.127	144.1	1.485	1014.100	48110.500	0.021 ¹
T17	120 - 100	1 3/8	4.403	4.097	143.0	1.485	1458.720	48110.500	0.030 ¹
T22	20 - 6.80729	1 1/8	4.280	4.012	171.2	0.994	157.941	32206.199	0.005 ¹

¹ P_u / φP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L _w	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	$\frac{\phi P_n}{\phi P_n}$
T1	400 - 380	7/8	3.000	2.854	156.6	0.601	2173.650	19482.801	0.112 ¹
T2	380 - 370	7/8	3.000	2.854	156.6	0.601	1038.630	19482.801	0.053 ¹
T3	370 - 360	7/8	3.000	2.854	156.6	0.601	610.861	19482.801	0.031 ¹
T4	360 - 350	7/8	3.000	2.833	155.4	0.601	1344.890	19482.801	0.069 ¹
T5	350 - 340	7/8	3.000	2.833	155.4	0.601	1934.370	19482.801	0.099 ¹
T6	340 - 320	7/8	3.000	2.833	155.4	0.601	2730.820	19482.801	0.140 ¹
T7	320 - 300	7/8	3.000	2.833	155.4	0.601	1889.770	19482.801	0.097 ¹
T8	300 - 280	7/8	3.000	2.854	156.6	0.601	2863.430	19482.801	0.147 ¹
T9	280 - 260	7/8	3.000	2.833	155.4	0.601	3281.830	19482.801	0.168 ¹
T10	260 - 240	1	3.000	2.833	136.0	0.785	2846.480	25446.900	0.112 ¹
T11	240 - 220	1 1/4	3.000	2.833	108.8	1.227	11366.400	39760.801	0.286 ¹
T12	220 - 200	7/8	3.000	2.833	155.4	0.601	4780.100	19482.801	0.245 ¹
T13	200 - 180	7/8	3.000	2.833	155.4	0.601	6649.420	19482.801	0.341 ¹
T14	180 - 160	1	3.000	2.833	136.0	0.785	9979.190	25446.900	0.392 ¹
T15	160 - 140	7/8	3.000	2.833	155.4	0.601	3754.550	19482.801	0.193 ¹
T16	140 - 120	1	3.000	2.813	135.0	0.785	5680.520	25446.900	0.223 ¹
T17	120 - 100	1	3.000	2.792	134.0	0.785	6209.970	25446.900	0.244 ¹
T18	100 - 80	7/8	3.000	2.813	154.3	0.601	4577.280	19482.801	0.235 ¹
T19	80 - 60	7/8	3.000	2.813	154.3	0.601	3318.450	19482.801	0.170 ¹
T20	60 - 40	7/8	3.000	2.813	154.3	0.601	3745.660	19482.801	0.192 ¹
T21	40 - 20	7/8	3.000	2.813	154.3	0.601	3714.690	19482.801	0.191 ¹
T22	20 - 6.80729	7/8	3.000	2.813	154.3	0.601	4424.390	19482.801	0.227 ¹
T23	6.80729 - 0	1.4x4x3/8	2.170	1.983	19.3	2.860	1230.860	92664.000	0.013 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L _w	Kl/r	A	P _u	φP _n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	$\frac{\phi P_n}{\phi P_n}$
T1	400 - 380	7/8	3.000	2.854	156.6	0.601	449.274	19482.801	0.023 ¹
T2	380 - 370	7/8	3.000	2.854	156.6	0.601	730.792	19482.801	0.038 ¹
T3	370 - 360	7/8	3.000	2.854	156.6	0.601	562.664	19482.801	0.029 ¹
T4	360 - 350	7/8	3.000	2.833	155.4	0.601	525.443	19482.801	0.027 ¹
T5	350 - 340	7/8	3.000	2.833	155.4	0.601	1563.470	19482.801	0.080 ¹
T6	340 - 320	7/8	3.000	2.833	155.4	0.601	1248.110	19482.801	0.064 ¹
T7	320 - 300	7/8	3.000	2.833	155.4	0.601	680.610	19482.801	0.035 ¹
T8	300 - 280	7/8	3.000	2.854	156.6	0.601	1222.050	19482.801	0.063 ¹

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	43 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Section No.	Elevation	Size	L	L _w	KI/r	A	P _a	φP _n	Ratio $\frac{P_a}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	$\frac{P_a}{\phi P_n}$
T9	280 - 260	7/8	3.000	2.833	155.4	0.601	1844.290	19482.801	0.095 ¹
T10	260 - 240	1	3.000	2.833	136.0	0.785	1405.130	25446.900	0.055 ¹
T11	240 - 220	1 1/4	3.000	2.833	108.8	1.227	1715.780	39760.801	0.043 ¹
T12	220 - 200	7/8	3.000	2.833	155.4	0.601	3011.780	19482.801	0.155 ¹
T13	200 - 180	7/8	3.000	2.833	155.4	0.601	2103.150	19482.801	0.108 ¹
T14	180 - 160	1	3.000	2.833	136.0	0.785	4134.390	25446.900	0.162 ¹
T15	160 - 140	7/8	3.000	2.833	155.4	0.601	2332.790	19482.801	0.120 ¹
T16	140 - 120	1	3.000	2.813	135.0	0.785	2205.530	25446.900	0.087 ¹
T17	120 - 100	1	3.000	2.792	134.0	0.785	3596.070	25446.900	0.141 ¹
T18	100 - 80	7/8	3.000	2.813	154.3	0.601	2649.750	19482.801	0.136 ¹
T19	80 - 60	7/8	3.000	2.813	154.3	0.601	1763.870	19482.801	0.091 ¹
T20	60 - 40	7/8	3.000	2.813	154.3	0.601	2061.730	19482.801	0.106 ¹
T21	40 - 20	7/8	3.000	2.813	154.3	0.601	1582.950	19482.801	0.081 ¹
T22	20 - 6.80729	7/8	3.000	2.813	154.3	0.601	2382.530	19482.801	0.122 ¹
T23	6.80729 - 0	L4x4x3/8	2.713	2.526	24.6	2.860	6561.730	92664.000	0.071 ¹

¹ P_a / φP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation	Size	L	L _w	KI/r	A	P _a	φP _n	Ratio $\frac{P_a}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	$\frac{P_a}{\phi P_n}$
T1	400 - 380	7/8	3.000	2.854	156.6	0.601	829.230	19482.801	0.043 ¹
T2	380 - 370	7/8	3.000	2.854	156.6	0.601	554.472	19482.801	0.028 ¹
T3	370 - 360	7/8	3.000	2.854	156.6	0.601	562.664	19482.801	0.029 ¹
T5	350 - 340	7/8	3.000	2.833	155.4	0.601	1244.730	19482.801	0.064 ¹
T6	340 - 320	7/8	3.000	2.833	155.4	0.601	622.286	19482.801	0.032 ¹
T7	320 - 300	7/8	3.000	2.833	155.4	0.601	1284.840	19482.801	0.066 ¹
T8	300 - 280	7/8	3.000	2.854	156.6	0.601	1918.290	19482.801	0.098 ¹
T9	280 - 260	7/8	3.000	2.833	155.4	0.601	1292.270	19482.801	0.066 ¹
T10	260 - 240	1	3.000	2.833	136.0	0.785	1650.090	25446.900	0.065 ¹
T11	240 - 220	1 1/4	3.000	2.833	108.8	1.227	4956.860	39760.801	0.125 ¹
T12	220 - 200	7/8	3.000	2.833	155.4	0.601	1973.050	19482.801	0.101 ¹
T13	200 - 180	7/8	3.000	2.833	155.4	0.601	3899.100	19482.801	0.200 ¹
T14	180 - 160	7/8	3.000	2.833	136.0	0.785	2278.980	25446.900	0.090 ¹
T15	160 - 140	7/8	3.000	2.833	155.4	0.601	1826.730	19482.801	0.094 ¹
T16	140 - 120	1	3.000	2.813	135.0	0.785	3079.520	25446.900	0.121 ¹
T17	120 - 100	1	3.000	2.792	134.0	0.785	3012.170	25446.900	0.118 ¹
T18	100 - 80	7/8	3.000	2.813	154.3	0.601	2076.550	19482.801	0.107 ¹
T19	80 - 60	7/8	3.000	2.813	154.3	0.601	1821.180	19482.801	0.093 ¹
T20	60 - 40	7/8	3.000	2.813	154.3	0.601	1736.920	19482.801	0.089 ¹
T21	40 - 20	7/8	3.000	2.813	154.3	0.601	2084.900	19482.801	0.107 ¹
T22	20 - 6.80729	L4x4x3/8	3.000	2.813	27.4	2.860	6507.170	92664.000	0.070 ¹

¹ P_a / φP_n controls

Top Guy Pull-Off Design Data (Tension)

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	44 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Section No.	Elevation	Size	L	L _w	KI/r	A	P _a	φP _n	Ratio $\frac{P_a}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	$\frac{P_a}{\phi P_n}$
T1	400 - 380	2x3/8	3.000	2.854	316.4	0.750	2711.090	24300.000	0.112 ¹
T6	340 - 320	2x3/8	3.000	2.833	314.1	0.750	2824.990	24300.000	0.116 ¹
T9	280 - 260	2x3/8	3.000	2.833	314.1	0.750	3736.130	24300.000	0.154 ¹
T17	120 - 100	2x3/8	3.000	2.792	309.5	0.750	4352.010	24300.000	0.179 ¹
T20	60 - 40	2x3/8	3.000	2.813	311.8	0.750	2793.490	24300.000	0.115 ¹

¹ P_a / φP_n controls

Top Guy Pull-Off Bending Design Data

Section No.	Elevation	Size	M _{ax}	φM _{ax}	Ratio $\frac{M_{ax}}{\phi M_{ax}}$	M _{ay}	φM _{ay}	Ratio $\frac{M_{ay}}{\phi M_{ay}}$
	ft		lb-ft	lb-ft	$\frac{M_{ax}}{\phi M_{ax}}$	lb-ft	lb-ft	$\frac{M_{ay}}{\phi M_{ay}}$
T1	400 - 380	2x3/8	0.000	1012.500	0.000	0.000	189.844	0.000
T6	340 - 320	2x3/8	0.000	1012.500	0.000	0.000	189.844	0.000
T9	280 - 260	2x3/8	0.000	1012.500	0.000	0.000	189.844	0.000
T17	120 - 100	2x3/8	0.000	1012.500	0.000	0.000	189.844	0.000
T20	60 - 40	2x3/8	0.000	1012.500	0.000	0.000	189.844	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation	Size	Ratio $\frac{P_a}{\phi P_n}$	Ratio $\frac{M_{ax}}{\phi M_{ax}}$	Ratio $\frac{M_{ay}}{\phi M_{ay}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	ft		$\frac{P_a}{\phi P_n}$	$\frac{M_{ax}}{\phi M_{ax}}$	$\frac{M_{ay}}{\phi M_{ay}}$			
T1	400 - 380	2x3/8	0.112	0.000	0.000	0.112 ¹	1.050	4.8.1
T6	340 - 320	2x3/8	0.116	0.000	0.000	0.116 ¹	1.050	4.8.1
T9	280 - 260	2x3/8	0.154	0.000	0.000	0.154 ¹	1.050	4.8.1
T17	120 - 100	2x3/8	0.179	0.000	0.000	0.179 ¹	1.050	4.8.1
T20	60 - 40	2x3/8	0.115	0.000	0.000	0.115 ¹	1.050	4.8.1

¹ P_a / φP_n controls

Torque-Arm Top Design Data

Section No.	Elevation	Size	L	L _w	KI/r	A	P _a	φP _n	Ratio $\frac{P_a}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	$\frac{P_a}{\phi P_n}$
T11	240 - 220 (876)	L3 1/2x3 1/2x3/8	3.775	3.171	41.4	1.579	15685.800	68675.602	0.228 ¹
T11	240 - 220 (877)	L3 1/2x3 1/2x3/8	3.775	3.171	41.4	1.579	16003.300	68675.602	0.233 ¹
T11	240 - 220 (882)	L3 1/2x3 1/2x3/8	3.775	3.171	41.4	1.579	14626.100	68675.602	0.213 ¹
T11	240 - 220 (883)	L3 1/2x3 1/2x3/8	3.775	3.171	41.4	1.579	13452.500	68675.602	0.196 ¹
T11	240 - 220 (888)	L3 1/2x3 1/2x3/8	3.775	3.171	41.4	1.579	13973.400	68675.602	0.203 ¹
T11	240 - 220 (889)	L3 1/2x3 1/2x3/8	3.775	3.171	41.4	1.579	17033.900	68675.602	0.248 ¹
T14	180 - 160 (894)	L3 1/2x3 1/2x3/8	3.775	3.171	41.4	1.579	10350.500	68675.602	0.151 ¹
T14	180 - 160 (895)	L3 1/2x3 1/2x3/8	3.775	3.171	41.4	1.579	10465.900	68675.602	0.152 ¹
T14	180 - 160 (900)	L3 1/2x3 1/2x3/8	3.775	3.171	41.4	1.579	10620.400	68675.602	0.155 ¹
T14	180 - 160 (901)	L3 1/2x3 1/2x3/8	3.775	3.171	41.4	1.579	8576.700	68675.602	0.125 ¹

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	45 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page	46 of 48
	Project	TEP No. 308004.636376	Date	09:12:47 02/10/22
	Client	Williams Communications	Designed by	Cameron Tokay

Section No.	Elevation	Size	L	L _a	KI/r	A	P _a	φP _n	Ratio $\frac{P_a}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	$\frac{\phi P_n}{\phi P_n}$
T14	180 - 160 (906)	L3 1/2x3 1/2x3/8	3.775	3.171	41.4	1.579	9157.390	68675.602	0.133 ¹
T14	180 - 160 (907)	L3 1/2x3 1/2x3/8	3.775	3.171	41.4	1.579	12233.200	68675.602	0.178 ¹

¹ P_a / φP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation	Size	L	L _a	KI/r	A	P _a	φP _n	Ratio $\frac{P_a}{\phi P_n}$
	ft		ft	ft		in ²	lb	lb	$\frac{\phi P_n}{\phi P_n}$
T14	180 - 160 (896)	L3 1/2x3 1/2x3/8	4.963	4.333	54.4	1.579	1518.290	68675.602	0.022 ¹
T14	180 - 160 (903)	L3 1/2x3 1/2x3/8	4.963	4.333	54.4	1.579	1033.470	68675.602	0.015 ¹

¹ P_a / φP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	øP _{allow} lb	% Capacity	Pass Fail
T1	400 - 380	Leg	1 3/4	1	-19564.100	64870.990	30.2	Pass
T2	380 - 370	Leg	1 3/4	43	-24231.699	66732.747	36.3	Pass
T3	370 - 360	Leg	1 3/4	67	-25349.900	66732.747	38.0	Pass
T4	360 - 350	Leg	2	91	-24610.199	98745.457	24.9	Pass
T5	350 - 340	Leg	2	112	-20557.600	98745.457	20.8	Pass
T6	340 - 320	Leg	2	137	-24769.400	95861.952	25.8	Pass
T7	320 - 300	Leg	2	179	-31112.699	95861.952	32.5	Pass
T8	300 - 280	Leg	1 3/4	220	-50518.000	64198.888	78.7	Pass
T9	280 - 260	Leg	2	262	-62560.602	95861.952	65.3	Pass
T10	260 - 240	Leg	2	304	-66862.602	95861.952	69.7	Pass
T11	240 - 220	Leg	2	346	-83063.102	95861.952	86.6	Pass
T12	220 - 200	Leg	2	390	-66167.102	95861.952	69.0	Pass
T13	200 - 180	Leg	2	430	-61592.301	95861.952	64.3	Pass
T14	180 - 160	Leg	2	472	-70334.297	95861.952	73.4	Pass
T15	160 - 140	Leg	2	514	-57958.000	95861.952	60.5	Pass
T16	140 - 120	Leg	2 1/4	556	-57977.801	132986.694	43.6	Pass
T17	120 - 100	Leg	2 1/2	598	-67946.000	175320.592	38.8	Pass
T18	100 - 80	Leg	2 1/4	640	-70644.203	132986.694	53.1	Pass
T19	80 - 60	Leg	2 1/4	682	-75610.898	132986.694	56.9	Pass
T20	60 - 40	Leg	2 1/4	724	-78084.102	132986.694	58.7	Pass
T21	40 - 20	Leg	2 1/4	766	-79539.703	132986.694	59.8	Pass
T22	20 - 6.80729	Leg	2 1/4	810	-73413.797	137795.694	53.3	Pass
T23	6.80729 - 0	Leg	2 1/4	838	-69424.703	178045.342	39.0	Pass
T1	400 - 380	Diagonal	1 1/8	30	-2924.100	14956.304	19.6	Pass
T2	380 - 370	Diagonal	1 1/8	66	-1869.890	15286.845	12.2	Pass
T3	370 - 360	Diagonal	1 1/8	78	-1163.670	15286.845	7.6	Pass
T4	360 - 350	Diagonal	1 1/8	99	-2071.760	15464.399	13.4	Pass
T5	350 - 340	Diagonal	1 1/8	123	-3231.780	15464.399	20.9	Pass
T6	340 - 320	Diagonal	1 3/8	159	-4153.960	29335.528	14.2	Pass
T7	320 - 300	Diagonal	1 1/8	189	-3295.120	15015.314	21.9	Pass
T8	300 - 280	Diagonal	1 1/4	231	-4666.910	21420.315	21.8	Pass
T9	280 - 260	Diagonal	1 1/4	303	-5207.610	21629.265	24.1	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	øP _{allow} lb	% Capacity	Pass Fail
T10	260 - 240	Diagonal	1 1/4	315	-4717.070	21629.265	21.8	Pass
T11	240 - 220	Diagonal	1 3/8	357	-14961.900	29335.528	51.0	Pass
T12	220 - 200	Diagonal	1 3/8	429	-8000.000	29335.528	27.3	Pass
T13	200 - 180	Diagonal	1 1/4	440	-10888.700	21629.265	50.3	Pass
T14	180 - 160	Diagonal	1 1/2	501	-11905.400	38077.723	31.3	Pass
T15	160 - 140	Diagonal	1 1/4	555	-6247.500	21629.265	28.9	Pass
T16	140 - 120	Diagonal	1 3/8	567	-9152.870	29570.099	31.0	Pass
T17	120 - 100	Diagonal	1 3/8	639	-9918.340	29804.774	33.3	Pass
T18	100 - 80	Diagonal	1 1/4	680	-7278.990	21838.633	33.3	Pass
T19	80 - 60	Diagonal	1 1/8	721	-5384.980	15194.970	35.4	Pass
T20	60 - 40	Diagonal	1 1/8	765	-5795.210	15194.970	38.1	Pass
T21	40 - 20	Diagonal	1 1/8	777	-6056.720	15194.970	39.9	Pass
T22	20 - 6.80729	Diagonal	1 1/8	819	-7658.790	15879.359	48.2	Pass
T1	400 - 380	Horizontal	7/8	27	-1284.830	10869.389	11.8	Pass
T2	380 - 370	Horizontal	7/8	57	-554.472	10869.389	5.1	Pass
T3	370 - 360	Horizontal	7/8	81	-562.664	10869.389	5.2	Pass
T4	360 - 350	Horizontal	7/8	102	1344.890	20456.940	6.6	Pass
T5	350 - 340	Horizontal	7/8	126	-1312.640	10969.770	12.0	Pass
T6	340 - 320	Horizontal	7/8	162	-2117.730	10969.770	19.3	Pass
T7	320 - 300	Horizontal	7/8	192	1889.770	20456.940	9.2	Pass
T8	300 - 280	Horizontal	7/8	232	-1814.640	10869.389	16.7	Pass
T9	280 - 260	Horizontal	7/8	298	-2194.750	10969.770	20.0	Pass
T10	260 - 240	Horizontal	1	318	2846.480	26719.244	10.7	Pass
T11	240 - 220	Horizontal	1 1/4	365	11366.400	41748.839	27.2	Pass
T12	220 - 200	Horizontal	7/8	426	4780.100	20456.940	23.4	Pass
T13	200 - 180	Horizontal	7/8	443	6649.420	20456.940	32.5	Pass
T14	180 - 160	Horizontal	1	503	9979.190	26719.244	37.3	Pass
T15	160 - 140	Horizontal	7/8	552	3754.550	20456.940	18.4	Pass
T16	140 - 120	Horizontal	1	570	5680.520	26719.244	21.3	Pass
T17	120 - 100	Horizontal	1	636	6209.970	26719.244	23.2	Pass
T18	100 - 80	Horizontal	7/8	677	4577.280	20456.940	22.4	Pass
T19	80 - 60	Horizontal	7/8	718	3318.450	20456.940	16.2	Pass
T20	60 - 40	Horizontal	7/8	762	3745.660	20456.940	18.3	Pass
T21	40 - 20	Horizontal	7/8	780	3714.690	20456.940	18.2	Pass
T22	20 - 6.80729	Horizontal	7/8	822	4424.390	20456.940	21.6	Pass
T23	6.80729 - 0	Horizontal	L4x4x3/8	846	-1230.860	94742.332	36.8	Pass
T1	400 - 380	Top Girt	7/8	6	-431.352	10869.389	4.0	Pass
T2	380 - 370	Top Girt	7/8	48	-554.472	10869.389	5.1	Pass
T3	370 - 360	Top Girt	7/8	72	-562.664	10869.389	5.2	Pass
T4	360 - 350	Top Girt	7/8	96	-509.551	10969.770	4.6	Pass
T5	350 - 340	Top Girt	7/8	117	-900.004	10969.770	8.2	Pass
T6	340 - 320	Top Girt	7/8	139	-981.845	10969.770	9.0	Pass
T7	320 - 300	Top Girt	7/8	183	-680.610	10969.770	6.2	Pass
T8	300 - 280	Top Girt	7/8	225	-1222.050	10869.389	11.2	Pass
T9	280 - 260	Top Girt	7/8	265	-1459.870	10969.770	13.3	Pass
T10	260 - 240	Top Girt	1	309	-1405.130	16581.179	8.5	Pass
T11	240 - 220	Top Girt	1 1/4	351	-1715.780	28463.819	6.0	Pass
T12	220 - 200	Top Girt	7/8	393	3011.780	20456.940	14.7	Pass
T13	200 - 180	Top Girt	7/8	435	-1286.150	10969.770	11.7	Pass
T14	180 - 160	Top Girt	1	477	4134.390	26719.244	15.5	Pass
T15	160 - 140	Top Girt	7/8	519	2332.790	20456.940	11.4	Pass
T16	140 - 120	Top Girt	1	560	2205.530	26719.244	8.3	Pass
T17	120 - 100	Top Girt	1	603	3596.070	26719.244	13.5	Pass
T18	100 - 80	Top Girt	7/8	645	2649.750	20456.940	13.0	Pass
T19	80 - 60	Top Girt	7/8	687	-1464.770	11070.464	13.2	Pass
T20	60 - 40	Top Girt	7/8	729	-1553.240	11070.464	14.0	Pass
T21	40 - 20	Top Girt	7/8	771	-1553.340	11070.464	14.0	Pass
T22	20 - 6.80729	Top Girt	7/8	813	-1421.580	11070.464	12.8	Pass
T23	6.80729 - 0	Top Girt	L4x4x3/8	842	6561.730	97297.196	6.7	Pass
T1	400 - 380	Bottom Girt	7/8	9	-474.545	10869.389	4.4	Pass
T2	380 - 370	Bottom Girt	7/8	51	-554.472	10869.389	5.1	Pass

 Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Page
	Fort White	47 of 48
	Project	Date
	TEP No. 308004.636376	09:12:47 02/10/22
Client	Williams Communications	Designed by
		Cameron Tokay

 Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	Fort White	Page 48 of 48
	Project	TEP No. 308004.636376	Date 09:12:47 02/10/22
	Client	Williams Communications	Designed by Cameron Tokay

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	σP _{allow} lb	% Capacity	Pass Fail
T3	370 - 360	Bottom Girt	7/8	75	-562.664	10869.389	5.2	Pass
T5	350 - 340	Bottom Girt	7/8	120	-856.253	10969.770	7.8	Pass
T6	340 - 320	Bottom Girt	7/8	144	-515.319	10969.770	4.7	Pass
T7	320 - 300	Bottom Girt	7/8	186	1284.840	20456.940	6.3	Pass
T8	300 - 280	Bottom Girt	7/8	228	-1222.050	10869.389	11.2	Pass
T9	280 - 260	Bottom Girt	7/8	270	-1292.270	10969.770	11.8	Pass
T10	260 - 240	Bottom Girt	1	312	-1405.130	16581.179	8.5	Pass
T11	240 - 220	Bottom Girt	1 1/4	353	4956.860	41748.839	11.9	Pass
T12	220 - 200	Bottom Girt	7/8	395	-1462.280	10969.770	13.3	Pass
T13	200 - 180	Bottom Girt	7/8	437	3899.100	20456.940	19.1	Pass
T14	180 - 160	Bottom Girt	1	480	-1452.850	16581.179	8.8	Pass
T15	160 - 140	Bottom Girt	7/8	522	-1205.300	10969.770	11.0	Pass
T16	140 - 120	Bottom Girt	1	564	3079.520	26719.244	11.5	Pass
T17	120 - 100	Bottom Girt	1	605	3012.170	26719.244	11.3	Pass
T18	100 - 80	Bottom Girt	7/8	648	-1422.150	11070.464	12.8	Pass
T19	80 - 60	Bottom Girt	7/8	690	-1464.770	11070.464	13.2	Pass
T20	60 - 40	Bottom Girt	7/8	732	-1553.240	11070.464	14.0	Pass
T21	40 - 20	Bottom Girt	7/8	774	-1553.340	11070.464	14.0	Pass
T22	20 - 6.80729	Bottom Girt	L4x4x3/8	816	6507.170	97297.196	6.7	Pass
T1	400 - 380	Guy A@393.193	9/16	861	16179.400	22049.999	73.4	Pass
T6	340 - 320	Guy A@326.778	9/16	867	13900.100	22049.999	63.0	Pass
T9	280 - 260	Guy A@273.222	3/4	873	18007.400	36728.998	49.0	Pass
T11	240 - 220	Guy A@226.778	3/4	887	15133.600	36728.998	41.2	Pass
T14	180 - 160	Guy A@173.222	5/8	905	10500.800	26711.999	39.3	Pass
T17	120 - 100	Guy A@113.222	3/4	915	15021.200	36728.998	40.9	Pass
T20	60 - 40	Guy A@53.2222	7/16	921	5354.190	13103.999	40.9	Pass
T1	400 - 380	Guy B@393.193	9/16	860	16267.200	22049.999	73.8	Pass
T6	340 - 320	Guy B@326.778	9/16	866	13786.400	22049.999	62.5	Pass
T9	280 - 260	Guy B@273.222	3/4	872	17642.900	36728.998	48.0	Pass
T11	240 - 220	Guy B@226.778	3/4	881	15851.300	36728.998	43.2	Pass
T14	180 - 160	Guy B@173.222	5/8	899	10382.800	26711.999	38.9	Pass
T17	120 - 100	Guy B@113.222	3/4	914	14861.000	36728.998	40.5	Pass
T20	60 - 40	Guy B@53.2222	7/16	920	5297.430	13103.999	40.4	Pass
T1	400 - 380	Guy C@393.193	9/16	856	16648.600	22049.999	75.5	Pass
T6	340 - 320	Guy C@326.778	9/16	862	14379.500	22049.999	65.2	Pass
T9	280 - 260	Guy C@273.222	3/4	868	18251.900	36728.998	49.7	Pass
T11	240 - 220	Guy C@226.778	3/4	874	15323.700	36728.998	41.7	Pass
T14	180 - 160	Guy C@173.222	5/8	892	11504.200	26711.999	43.1	Pass
T17	120 - 100	Guy C@113.222	3/4	910	16729.199	36728.998	45.5	Pass
T20	60 - 40	Guy C@53.2222	7/16	916	5802.150	13103.999	44.3	Pass
T1	400 - 380	Top Guy	2x3/8	858	2711.090	25514.999	10.6	Pass
		Pull-Off@393.193						
T6	340 - 320	Top Guy	2x3/8	863	2824.990	25514.999	11.1	Pass
		Pull-Off@326.778						
T9	280 - 260	Top Guy	2x3/8	870	3736.130	25514.999	14.6	Pass
		Pull-Off@273.222						
T17	120 - 100	Top Guy	2x3/8	912	4352.010	25514.999	17.1	Pass
		Pull-Off@113.222						
T20	60 - 40	Top Guy	2x3/8	917	2793.490	25514.999	10.9	Pass
		Pull-Off@53.2222						
T11	240 - 220	Torque Arm Top@226.778	L3 1/2x3 1/2x3/8	889	17033.900	72109.378	23.6	Pass
T14	180 - 160	Torque Arm Top@173.222	L3 1/2x3 1/2x3/8	907	12233.200	72109.378	17.0	Pass
T11	240 - 220	Torque Arm Bottom@226.778	L3 1/2x3 1/2x3/8	890	-17180.199	65526.088	26.2	Pass
T14	180 - 160	Torque Arm Bottom@173.222	L3 1/2x3 1/2x3/8	897	-13756.000	65526.088	21.0	Pass
						Summary		
						Leg (T11) Diagonal	86.6 51.0	Pass Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	σP_{Allow} lb	% Capacity	Pass Fail
						(T11)		
						Horizontal (T14)	37.3	Pass
						Top Girt (T14)	15.5	Pass
						Bottom Girt (T13)	19.1	Pass
						Guy A (T1)	73.4	Pass
						Guy B (T1)	73.8	Pass
						Guy C (T1)	75.5	Pass
						Top Guy Pull-Off (T17)	17.1	Pass
						Torque Arm Top (T11)	23.6	Pass
						Torque Arm Bottom (T11)	26.2	Pass
						Bolt Checks	40.4	Pass
						RATING =	86.6	Pass

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