



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

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VIA ELECTRONIC MAIL

October 14, 2020

Kyle Richers
Transcend Wireless
10 Industrial Avenue, Suite 3
Mahwah, NJ 0743

RE: **EM-T-MOBILE-081-201001** – T-Mobile notice of intent to modify an existing telecommunications facility located at 1021 Straits Turnpike (a.k.a. 1 Service Road), Middlebury, Connecticut.

Dear Mr. Richers:

The Connecticut Siting Council (Council) is in receipt of your correspondence of October 12, 2020 submitted in response to the Council's October 8, 2020 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

s/Melanie A. Bachman

Melanie A. Bachman
Executive Director

MAB/IN/laf

From: Richers, Kyle <krichers@transcendwireless.com>

Sent: Monday, October 12, 2020 9:16 AM

To: Robidoux, Evan <Evan.Robidoux@ct.gov>

Cc: CSC-DL Siting Council <Siting.Council@ct.gov>

Subject: Re: Council Incomplete Letter for EM-T-MOBILE-081-201001 (1021 Straits Turnpike [a/k/a 1 Service Road], Middlebury)

Good Morning,

Please find the attached updated signed/stamped version of the structural analysis. Let me know if anything else is needed.

Thanks

Kyle

Date: **September 10, 2020**

David Rodriguez
Phoenix Tower International
999 Yamato Road, Suite 100
Boca Raton, FL 33431
(561) 257-0557



Tower Engineering Professionals, Inc.
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351
structures@tepgroup.net

Subject: Structural Analysis Report

Carrier Designation: *T-Mobile Reconfiguration*
Carrier Site Number & Name: CT11128E / Middlebury / I-84 X17
Carrier Project Number/Name: Anchor

Phoenix Tower Designation: **PTI Site Number:** US-CT-1003
PTI Site Name: Straits Turnpike

Engineering Firm Designation: **TEP Project Number:** 25628.442076

Site Data: **1021 Straits Turnpike, Middlebury, New Haven County, CT 06762**
Latitude 41° 32' 8.75", Longitude -73° 05' 21.16"
195 Foot - Self Supporting Tower

Dear David Rodriguez,

Tower Engineering Professionals, Inc. is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above-mentioned tower.

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

LC1: Existing + Proposed + Future Loading

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

Sufficient Capacity

| Structure Capacity | Foundation Capacity |
|--------------------|---------------------|
| 88.5% | 53.7% |

The analysis has been performed in accordance with the ANSI/TIA-222-H-2017 Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures and the 2018 Connecticut State Building Code.

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

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

Structural analysis prepared by: Debra Ortiz

Respectfully submitted by:

Aaron T. Rucker, P.E.



09/10/2020

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1) INTRODUCTION

This tower is a 195-ft self supporting tower designed by Fred A. Nudd Corporation in May of 1998. The tower was originally designed for a wind speed of 85 mph per ANSI/EIA/TIA-222-F. TEP visited the site in June of 2010 to gather existing steel and appurtenance information. This tower has been modified multiple times in the past to accommodate additional loading. All other information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

| | |
|---------------------------------|---------------|
| TIA-222 Revision: | TIA-222-H |
| Risk Category: | II |
| Wind Speed: | 120 mph |
| Exposure Category: | B |
| Topographic Category: | 1 (Kzt = 1.0) |
| Ice Thickness: | 1.5 in |
| Wind Speed with Ice: | 50 mph |
| Seismic Design Category: | B |
| Seismic Ss: | 0.191 |
| Seismic S1: | 0.064 |
| Service Wind Speed: | 60 mph |

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

| Existing/ Proposed | Elevation | Qty | Antenna Model | Mount Type | Qty Coax | Coax Size (in) | Coax ¹ Location | Owner/ Tenant |
|--------------------------|-----------|----------------|--|--|-------------|-------------------|-------------------------------|------------------|
| <i>Future</i> | 195.0 | - | <i>T-Mobile Future Loading²</i> | - | 2 | 1-5/8 | AB Face | T-Mobile |
| <i>Proposed</i> | 195.0 | 3 | <i>Ericsson AIR 6449 B41</i> | (3) 12.5' Sector Frames | 1 | Hybrid | AB Face | T-Mobile |
| | | 3 | <i>Ericsson Radio 4415 B25</i> | | | | | |
| | | 3 | <i>Commscope SDX1926Q-43</i> | | | | | |
| Existing | 195.0 | 3 | RFS APXVAAR24-43-U-NA20 | | | | | |
| | | 3 | Ericsson AIR 32 KRD901146-1_B66A_B2A | | | | | |
| | | 3 | Ericsson Radio 4449 B71/B12 | | | | | |
| | | 6 ⁴ | Ericsson KRY-112-71 ⁴ | | | | | |
| <i>To Be Removed</i> | 195.0 | 3 | RFS APX16DWV-16DWV-S-E-A20 | - | - | - | - | T-Mobile |
| <i>Reserved</i> | 185.0 | 2 | <i>CCI DMP65R-BU8DA</i> | (3) 15.0' T-Frames with Catwalk and MT195-14 Handrail Kit | 6 | 7/8"Ø DC | CA Face | AT&T |
| | | 4 | <i>CCI DMP65R-BU6DA</i> | | | | | |
| | | 3 | <i>Ericsson 4449 B5/B12</i> | | | | | |
| | | 3 | <i>Ericsson 4478 B14</i> | | | | | |
| | | 3 | <i>Ericsson 8843 B2/B66A</i> | | | | | |
| | | 1 | <i>Raycap DC6-48-60-0-8C-EV</i> | | | | | |
| Existing | 185.0 | 3 | Powerwave 7770 | | | | | |
| | | 3 | Andrew SBNHH-1D65A | | | | | |
| | | 6 | Powerwave LGP 13519 | | | | | |
| | | 3 | Ericsson RRUS-32 B30 | | | | | |
| | | 2 | Raycap DC6-48-60-18-8F | | | | | |

| Existing/ Proposed | Elevation | Qty | Antenna Model | Mount Type | Qty Coax | Coax Size (in) | Coax ¹ Location | Owner/ Tenant |
|-----------------------|-----------------|-----|--------------------------------------|--|-------------|----------------------|-------------------------------|------------------|
| To Be Removed | 185.0 | 2 | KMW AM-X-CD-16-65-00T-RET | - | 2 | 3/8"Ø Power | CA Face | AT&T |
| | | 1 | Powerwave P65-17-XLH-RR | | | | | |
| | | 3 | Ericsson RRUS-12 | | | | | |
| | | 3 | Ericsson RRUS-11 | | | | | |
| Existing | 169.0 | 2 | Antel BXA-70063-6CF | (3) 15.0' T-Frames with Catwalk | 12 1 | 1-5/8 Fiber | AB Face | Verizon |
| | | 4 | Decibel DB844G65ZAXY | | | | | |
| | | 1 | Antel BXA 70080/6CF | | | | | |
| | | 2 | Decibel DB846F65ZAXY | | | | | |
| | | 6 | RFSFD9R6004/2C-3L | | | | | |
| | | 3 | Alcatel Lucent RRH2x60-AWS | | | | | |
| | | 3 | Alcatel Lucent RRH2x60-PCS | | | | | |
| | | 1 | RFS DB-T1-6Z-8AB-0Z | | | | | |
| 6 | HBXX-6517DS-A2M | | | | | | | |
| Existing | 153.0 | 3 | Commscope DT465B-2XR | (3) 12.0' Sector Frames | 4 | 1-1/4" Hybridflex | BC Face | Sprint |
| | | 3 | ALU TD-RRH8x20-25 w/ Solar Shield | | | | | |
| | | 3 | ALU RRH2x50-08 | | | | | |
| | | 3 | RFS APXVSP18-C-A20 | | | | | |
| | | 3 | ALU RRH 1900 4x45 65MHz | | | | | |
| | | 3 | ALU 2x50W 800 MHz RRH | | | | | |
| Existing | 75.5 | 1 | GPS Antenna | 4.5' Standoff | 1 | 5/8"Ø | BC Face | Unknown |

Notes:

- 1) See "Appendix B – Coax Configuration" for feed line configuration.
- 2) T-Mobile Future Loading consists of 955.40 in² of wind area and (2) feed lines at the 195-ft level.
- 3) (12) 1-5/8 of the (18) 1-5/8 are considered reserved loading in this analysis.
- 4) (3) Ericsson KRY-112-71 are considered reserved loading in this analysis.

Table 2 - Detailed Future Loading Information

| Existing/ Proposed | Elevation (ft) | Wind Area (in ²) (includes Ca factors) | Weight (lb) | Qty Coax | Coax Size | % Capacity | Owner/ Tenant |
|-----------------------|-------------------|---|----------------|-------------|-----------------|---------------|------------------|
| Proposed | 195 | 3,452.03 | 520.47 | 1 | Hybrid | 86.6 | T-Mobile |
| Existing | 195 | 20,575.54 | 2,710.93 | 18 3 | 1-5/8 Hybrid | 86.6 | T-Mobile |
| To Be Removed | 195 | 2,982.97 | 187.80 | - | - | - | T-Mobile |
| Future | 195 | 955.40 | 138.18 | 2 | 1-5/8 | - | T-Mobile |
| Total | 195 | 22,000.00 | 3,181.78 | 20 4 | 1-5/8 Hybrid | 88.5 | T-Mobile |

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

| Document | Remarks | Source |
|----------------------------------|---|--------|
| Tower and Foundation Drawings | Fred A. Nudd Corporation, dated May 6, 1998 Project No. 5974 | PTI |
| Structural Modification Drawings | Fred A. Nudd Corporation, dated April 30, 1999 Drawing No. 99-6726-1 | PTI |
| Steel and Appurtenance Mapping | Tower Engineering Professionals, Inc., dated June 3, 2010 TEP No. 102056 | TEP |
| Post Modification Inspection | Tower Engineering Professionals, Inc., dated April 21, 2011 TEP No. 102056 | TEP |
| Geotechnical Report | Dr. Clarence Welti, P.E., P.C., dated April 17, 1998 Project No. 25628 | PTI |
| Structural Modification Drawings | Tower Engineering Professionals, Inc., dated August 29, 2011 TEP No. 102056 | TEP |
| Structural Modification Drawings | Tower Engineering Professionals, Inc., dated July 26, 2012 TEP No. 102056 | TEP |
| Structural Modification Drawings | Tower Engineering Professionals, Inc., dated August 1, 2013 TEP No. 25628.4865 | TEP |
| Structural Modification Drawings | Tower Engineering Professionals, Inc., dated August 24, 2016 TEP No. 25628.93911 | TEP |
| Structural Modification Drawings | Tower Engineering Professionals, Inc., dated April 19, 2016 TEP No. 25628.47301 | TEP |
| Post Modification Inspection | Tower Engineering Professionals, Inc., dated October 26, 2016 TEP No. 25628.58752 | TEP |
| Previous Structural Analysis | Tower Engineering Professionals, Inc., dated February 11, 2020 TEP No. 25628.378831 | TEP |
| Correspondence | Correspondence with Phoenix Tower International regarding the existing, proposed, and future loading. | PTI |

3.1) Analysis Method

tnxTower (version 8.0.7.5), 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) 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 4 - Section Capacity (Summary)

| Section No. | Elevation (ft) | Component Type | Size | Critical Element | P (lb) | ØP_allow (lb) | % Capacity | Pass / Fail |
|-------------|-------------------|----------------|----------------------------------|------------------|------------|---------------|------------------|-------------|
| T1 | 195 - 180 | Leg | PIPE 2.5 STD (SCH 40) | 1 | -35505.80 | 74059.12 | 47.9 | Pass |
| T2 | 180 - 175 | Leg | PIPE 2.5 STD (SCH 40) | 43 | -39558.20 | 80957.20 | 48.9 | Pass |
| T3 | 175 - 170 | Leg | PIPE 2.5 STD (SCH 40) | 55 | -50338.60 | 81066.08 | 62.1 | Pass |
| T4 | 170 - 160 | Leg | 2-1/2SCH40 w/ 3SCH80 Half Sleeve | 67 | Note 1 | Note 1 | 75.6 | Pass |
| T5 | 160 - 150 | Leg | Pipe 3.5 Std (SCH40) | 88 | -95053.60 | 133278.59 | 71.3 | Pass |
| T6 | 150 - 140 | Leg | 3.5SCH40 w/ 4SCH40 Half Sleeve | 109 | Note 1 | Note 1 | 69.4 | Pass |
| T7 | 140 - 133.333 | Leg | 5 STD w/ 6 XH Half Sleeve | 130 | Note 1 | Note 1 | 50.3 | Pass |
| T8 | 133.333 - 126.667 | Leg | 5 STD w/ 6 XH Half Sleeve | 139 | Note 1 | Note 1 | 50.3 | Pass |
| T9 | 126.667 - 120 | Leg | 5 STD w/ 6 XH Half Sleeve | 148 | Note 1 | Note 1 | 50.3 | Pass |
| T10 | 120 - 113.333 | Leg | Pipe 6 STD | 157 | -169825.00 | 282257.84 | 60.2 | Pass |
| T11 | 113.333 - 106.667 | Leg | Pipe 6 STD | 169 | -182505.00 | 282290.39 | 64.7 | Pass |
| T12 | 106.667 - 100 | Leg | Pipe 6 STD | 181 | -194371.00 | 282318.74 | 68.8 | Pass |
| T13 | 100 - 80 | Leg | 6 STD w/ 7 XH Half Sleeve | 193 | Note 1 | Note 1 | 53.8 | Pass |
| T14 | 80 - 60 | Leg | Pipe 8 STD | 223 | -266353.00 | 411193.63 | 64.8 | Pass |
| T15 | 60 - 50 | Leg | Pipe 8 STD | 244 | -278579.00 | 421200.13 | 66.1 | Pass |
| T16 | 50 - 40 | Leg | Pipe 8 STD | 256 | -295688.00 | 421253.68 | 70.2 | Pass |
| T17 | 40 - 20 | Leg | Pipe 8 EH | 268 | -329381.00 | 576516.12 | 57.1 | Pass |
| T18 | 20 - 0 | Leg | Pipe 8 EH | 283 | -360201.00 | 577189.17 | 62.4 62.8 (b) | Pass |
| T1 | 195 - 180 | Diagonal | 5/8 | 15 | 9238.10 | 10437.21 | 88.5 | Pass |
| T2 | 180 - 175 | Diagonal | L1 1/2x1 1/2x3/16 | 51 | -4224.48 | 10303.15 | 41.0 71.3 (b) | Pass |

| Section No. | Elevation (ft) | Component Type | Size | Critical Element | P (lb) | ØP_allow (lb) | % Capacity | Pass / Fail |
|-------------|-------------------|----------------------|------------------------|------------------|-----------|---------------|------------------|-------------|
| T3 | 175 - 170 | Diagonal | L2x2x3/16 | 63 | -3381.05 | 18093.28 | 18.7 46.7 (b) | Pass |
| T4 | 170 - 160 | Diagonal | 2L1 1/2x1 1/2x3/16x1/4 | 83 | -5241.47 | 29692.00 | 17.7 55.3 (b) | Pass |
| T5 | 160 - 150 | Diagonal | 2L2x2x3/16x1/4 | 96 | -5922.45 | 42662.23 | 13.9 65.1 (b) | Pass |
| T6 | 150 - 140 | Diagonal | 2L2x2x3/16x1/4 | 114 | -5542.56 | 40665.03 | 13.6 61.7 (b) | Pass |
| T7 | 140 - 133.333 | Diagonal | L2 1/2x2 1/2x1/4 | 133 | -5557.62 | 24503.64 | 22.7 40.9 (b) | Pass |
| T8 | 133.333 - 126.667 | Diagonal | L2 1/2x2 1/2x1/4 | 142 | -5710.79 | 22278.16 | 25.6 41.6 (b) | Pass |
| T9 | 126.667 - 120 | Diagonal | L2 1/2x2 1/2x3/16 | 151 | -5535.49 | 15425.97 | 35.9 66.4 (b) | Pass |
| T10 | 120 - 113.333 | Diagonal | L3x3x1/4 | 160 | -7113.28 | 30888.79 | 23.0 47.5 (b) | Pass |
| T11 | 113.333 - 106.667 | Diagonal | L3x3x1/4 | 172 | -6998.17 | 28895.68 | 24.2 47.5 (b) | Pass |
| T12 | 106.667 - 100 | Diagonal | L2 1/2x2 1/2x1/4 | 184 | -7341.78 | 15373.78 | 47.8 50.1 (b) | Pass |
| T13 | 100 - 80 | Diagonal | L3 1/2x3 1/2x1/4 | 205 | -7480.95 | 36323.59 | 20.6 27.8 (b) | Pass |
| T14 | 80 - 60 | Diagonal | L3 1/2x3 1/2x1/4 | 226 | -7141.59 | 28986.72 | 24.6 29.4 (b) | Pass |
| T15 | 60 - 50 | Diagonal | L3x3x5/16 | 247 | -9853.11 | 18196.81 | 54.1 | Pass |
| T16 | 50 - 40 | Diagonal | L3x3x5/16 | 259 | -9559.33 | 16846.72 | 56.7 | Pass |
| T17 | 40 - 20 | Diagonal | L4x4x3/8 | 271 | -9006.08 | 38479.45 | 23.4 31.1 (b) | Pass |
| T18 | 20 - 0 | Diagonal | L5x5x5/16 | 286 | -10127.00 | 51837.13 | 19.5 34.9 (b) | Pass |
| T1 | 195 - 180 | Horizontal | L1 1/2x1 1/2x3/16 | 18 | -5090.96 | 9640.76 | 52.8 | Pass |
| T2 | 180 - 175 | Secondary Horizontal | L2x2x3/16 | 52 | 686.02 | 19675.95 | 3.5 9.6 (b) | Pass |
| T3 | 175 - 170 | Secondary Horizontal | L2x2x3/16 | 64 | 874.15 | 19675.95 | 4.4 12.2 (b) | Pass |
| T4 | 170 - 160 | Secondary Horizontal | L2x2x3/16 | 76 | -1273.88 | 19156.30 | 6.6 17.8 (b) | Pass |
| T5 | 160 - 150 | Secondary Horizontal | L2x2x3/16 | 97 | -1651.00 | 17984.61 | 9.2 23.0 (b) | Pass |
| T6 | 150 - 140 | Secondary Horizontal | L2x2x3/16 | 118 | -2061.48 | 16658.04 | 12.4 28.7 (b) | Pass |
| T10 | 120 - 113.333 | Secondary Horizontal | L3x3x3/16 | 166 | -2947.17 | 26358.46 | 11.2 35.8 (b) | Pass |
| T11 | 113.333 - 106.667 | Secondary Horizontal | L3x3x3/16 | 178 | -3168.08 | 25488.01 | 12.4 38.5 (b) | Pass |
| T12 | 106.667 - 100 | Secondary Horizontal | L3x3x3/16 | 190 | -3373.44 | 24590.26 | 13.7 41.0 (b) | Pass |
| T13 | 100 - 80 | Secondary Horizontal | L3x3x1/4 | 202 | -4010.32 | 27498.45 | 14.6 27.5 (b) | Pass |
| T15 | 60 - 50 | Secondary Horizontal | L4x4x3/8 | 253 | -4831.88 | 61409.77 | 7.9 33.3 (b) | Pass |
| T16 | 50 - 40 | Secondary Horizontal | L4x4x1/4 | 267 | -5128.82 | 39562.21 | 13.0 34.0 (b) | Pass |
| T1 | 195 - 180 | Top Girt | L1 1/2x1 1/2x3/16 | 6 | -1544.87 | 9640.76 | 16.0 | Pass |
| T1 | 195 - 180 | Bottom Girt | L1 1/2x1 1/2x3/16 | 9 | -3089.00 | 9640.76 | 32.0 | Pass |
| | | | | | | | Summary | |
| | | | | | | Leg (T4) | 75.6 | Pass |

| Section No. | Elevation (ft) | Component Type | Size | Critical Element | P (lb) | ØP_allow (lb) | % Capacity | Pass / Fail |
|-------------|----------------|----------------|------|------------------|--------|----------------------------|-------------|-------------|
| | | | | | | Diagonal (T1) | 88.5 | Pass |
| | | | | | | Horizontal (T1) | 52.8 | Pass |
| | | | | | | Secondary Horizontal (T12) | 41.0 | Pass |
| | | | | | | Top Girt (T1) | 16.0 | Pass |
| | | | | | | Bottom Girt (T1) | 32.0 | Pass |
| | | | | | | Bolt Checks | 71.3 | Pass |
| | | | | | | RATING = | 88.5 | Pass |

Table 5 - Component Stresses vs. Capacity

| Notes | Component | Elevation (ft) | % Capacity | Pass / Fail |
|-------|------------------------------------|----------------|------------|-------------|
| 1,2 | Anchor Rods | - | 79.5 | Pass |
| 1,2 | Base Foundation - Soil Interaction | - | 22.4 | Pass |
| 1,2 | Base Foundation - Structural | - | 53.7 | Pass |

Notes:

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

| | |
|---|--------------|
| Structure Rating (max from all components) = | 88.5% |
|---|--------------|

Table 6 - Dish Twist/Sway Results for 60 mph Service Wind Speed

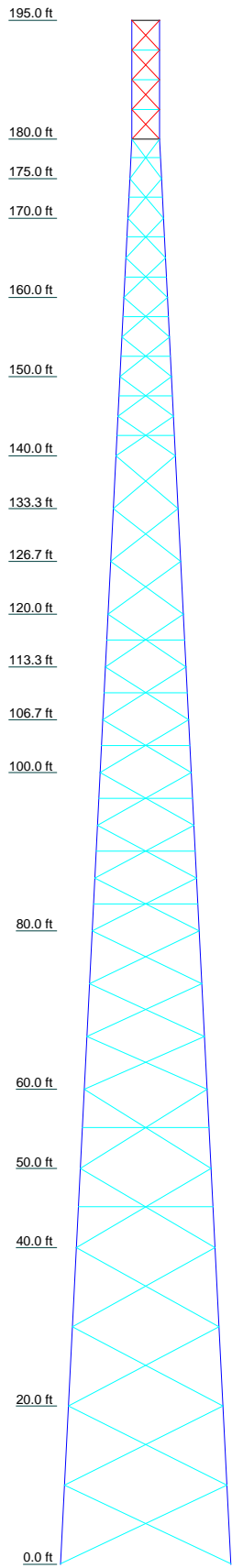
| Elevation (ft) | Dish Model | Beam Deflection | | |
|----------------|------------|-----------------|------------|-------------|
| | | Deflection (in) | Tilt (deg) | Twist (deg) |
| - | - | - | - | - |

4.1) Recommendations

- 1) If the load differs from that described in Table 1 of this report, "Appendix B – Coax Configuration" or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
- 2) The tower and its foundation have sufficient capacity to carry the existing, proposed, and future loads. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

| | | | | | | | | | | | | | | | | | | | |
|------------------|-------------|------------|------------|------------|------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-----------------------|-------|
| Section | T18 | T17 | T16 | T15 | T14 | T13 | T12 | T11 | T10 | T9 | T8 | T7 | T6 | T5 | T4 | T3 | T2 | T1 | |
| Legs | Pipe 8 EH | Pipe 8 STD | Pipe 8 STD | Pipe 8 STD | Pipe 8 STD | Pipe 6 STD | Pipe 6 STD | Pipe 6 STD | Pipe 6 STD | Pipe 6 STD | Pipe 6 STD | Pipe 6 STD | Pipe 6 STD | Pipe 6 STD | Pipe 6 STD | Pipe 6 STD | Pipe 6 STD | Pipe 2.5 STD (SCH 40) | |
| Leg Grade | A572-55 | A572-55 | A572-55 | A53-B-42 | A53-B-42 | A572-55 | A572-55 | A572-55 | A572-55 | A572-55 | A572-55 | A572-55 | A572-55 | A572-55 | A572-55 | A572-55 | A572-55 | A572-55 | |
| Diagonals | L5x5x5/16 | L4x4x3/8 | L3x3x5/16 | L3x3x1/4 | L3 1/2x3 1/2x1/4 | L3x3x1/4 | L3x3x1/4 | L3x3x1/4 | L3x3x1/4 | L3x3x1/4 | L3x3x1/4 | L3x3x1/4 | L3x3x1/4 | L3x3x1/4 | L3x3x1/4 | L3x3x1/4 | L3x3x1/4 | L3x3x1/4 | |
| Diagonal Grade | A36 | A36 | A36 | A36 | A36 | A36 | A36 | A36 | A36 | A36 | A36 | A36 | A36 | A36 | A36 | A36 | A36 | A36 | |
| Top Girts | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | |
| Bottom Girts | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | |
| Horizontal | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | |
| Sec. Horizontals | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | |
| Face Width (ft) | 21.5 | 19.5 | 17.5 | 16.5 | 15.5 | 13.5 | 11.5 | 10.8333 | 10.1667 | 9.5 | 8.8333 | 8.1667 | 7.5 | 6.5 | 5.5 | 4.5 | 4 | 3.5 | |
| # Panels @ (ft) | 2 @ 9.95833 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | |
| Weight (lb) | 30525.2 | 5429.7 | 5066.4 | 1912.1 | 2011.3 | 3370.0 | 4004.0 | 820.6 | 862.9 | 839.1 | 788.4 | 842.1 | 829.5 | 1040.7 | 817.6 | 710.7 | 214.0 | 181.8 | 484.2 |



SYMBOL LIST

| MARK | SIZE | MARK | SIZE |
|------|----------------------------------|------|------------------------|
| A | 2-1/2SCH40 w/ 3SCH80 Half Sleeve | F | L1 1/2x1 1/2x3/16 |
| B | Pipe 3.5 Std (SCH40) | G | L2x2x3/16 |
| C | 3.5SCH40 w/ 4SCH40 Half Sleeve | H | 2L1 1/2x1 1/2x3/16x1/4 |
| D | 5 STD w/ 6 XH Half Sleeve | I | L2 1/2x2 1/2x3/16 |
| E | 6 STD w/ 7 XH Half Sleeve | J | L2 1/2x2 1/2x1/4 |

MATERIAL STRENGTH

| GRADE | Fy | Fu | GRADE | Fy | Fu |
|----------|--------|--------|----------|--------|--------|
| A572-55 | 55 ksi | 70 ksi | A500-50 | 50 ksi | 62 ksi |
| A36 | 36 ksi | 58 ksi | A500-46 | 46 ksi | 62 ksi |
| A53-B-35 | 35 ksi | 60 ksi | A53-B-42 | 42 ksi | 63 ksi |

TOWER DESIGN NOTES

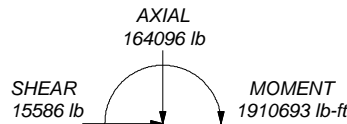
1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft

ALL REACTIONS ARE FACTORED

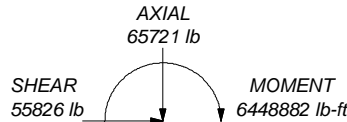
MAX. CORNER REACTIONS AT BASE:

DOWN: 368256 lb
SHEAR: 35953 lb


UPLIFT: -321119 lb
SHEAR: 31599 lb



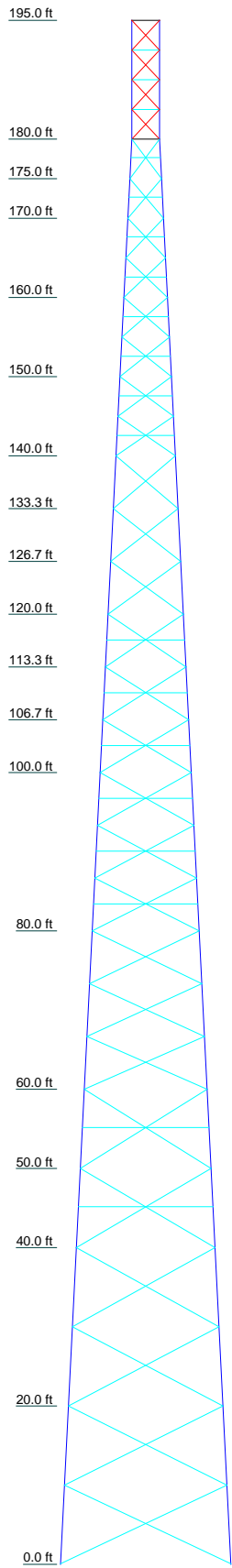
TORQUE 10912 lb-ft
50 mph WIND - 1.5000 in ICE



TORQUE 37441 lb-ft
REACTIONS - 120 mph WIND

| | | | |
|--|--|-----------------------|-------------------|
|  <p>Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350</p> | Job: US-CT-1003 - Straits Turnpike | | |
| | Project: TEP No. 25628.442076 | | |
| | Client: Phoenix Tower International | Drawn by: DDO | App'd: |
| | Code: TIA-222-H | Date: 09/10/20 | Scale: NTS |
| | Path: | Dwg No. E-1 | |

| Section | T18 | T17 | T16 | T15 | T14 | T13 | T12 | T11 | T10 | T9 | T8 | T7 | T6 | T5 | T4 | T3 | T2 | T1 |
|-----------------|-------------|----------|-----------|-----------|------------------|----------|------------|----------|----------|------------------|----------------|---------|----------|--------|-----------------------|--------|--------|--------|
| Legs | Pipe 6 & EH | A572-55 | L3x3x5/16 | L3x3x5/16 | L3 1/2x3 1/2x1/4 | A53-B-42 | Pipe 6 STD | A572-55 | L3x3x1/4 | A500-46 | A500-50 | A572-55 | A53-B-35 | A | PIPE 2.5 STD (SCH 40) | | | |
| Diagonals | L5x5x5/16 | L4x4x3/8 | L3x3x5/16 | L3x3x5/16 | L3 1/2x3 1/2x1/4 | A53-B-42 | A572-55 | L3x3x1/4 | L3x3x1/4 | L2 1/2x2 1/2x1/4 | 2L2x2x3/16x1/4 | A572-55 | A53-B-35 | H | | | | |
| Diagonal Grade | | | | | | | | | | | | | | | | | | |
| Top Girts | | | | | | | | | | | | | | | | | | |
| Bottom Girts | | | | | | | | | | | | | | | | | | |
| Horizontal | | | | | | | | | | | | | | | | | | |
| Sec. Horizontal | | | | | | | | | | | | | | | | | | |
| Face Width (ft) | 21.5 | 19.5 | 17.5 | 15.5 | 13.5 | 11.5 | 10.8333 | 10.1667 | 9.5 | 8.8333 | 8.16667 | 7.5 | 6.5 | 5.5 | 4.5 | 4 | | |
| # Panels @ (ft) | 2 @ 9.95833 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 | 4 @ 10 |
| Weight (lb) | 30525.2 | 5429.7 | 5066.4 | 1912.1 | 2011.3 | 4304.0 | 820.6 | 862.9 | 839.1 | 788.4 | 842.1 | 829.5 | 1040.7 | 817.6 | 710.7 | 214.0 | 181.8 | 484.2 |



DESIGNED APPURTENANCE LOADING

| TYPE | ELEVATION | TYPE | ELEVATION |
|---------------------------------|-----------|-----------------------------------|-----------|
| Sector Mount [SM 802-3] | 195 | RRUS 4449 B5/B12 | 185 |
| HSS Top Mount | 195 | RRUS 4478 B14 | 185 |
| KRY 112 71 | 195 | RRUS 4478 B14 | 185 |
| KRY 112 71 | 195 | RRUS 4478 B14 | 185 |
| KRY 112 71 | 195 | RRUS 8843 B2/B66A | 185 |
| KRY 112 71 | 195 | RRUS 8843 B2/B66A | 185 |
| APXVAARR24_43-U-NA20 w/ MP | 195 | RRUS 8843 B2/B66A | 185 |
| APXVAARR24_43-U-NA20 w/ MP | 195 | RRUS 8843 B2/B66A | 185 |
| APXVAARR24_43-U-NA20 w/ MP | 195 | (2) HBXX-6517DS-A2M w/ Mount Pipe | 169 |
| AIR -32 B2A/B66AA w/ Mount Pipe | 195 | RRH2x60-AWS | 169 |
| AIR -32 B2A/B66AA w/ Mount Pipe | 195 | RRH2x60-AWS | 169 |
| AIR -32 B2A/B66AA w/ Mount Pipe | 195 | RRH2x60-AWS | 169 |
| RADIO 4449 B12/B71 | 195 | RRH2x60-PCS | 169 |
| RADIO 4449 B12/B71 | 195 | RRH2x60-PCS | 169 |
| RADIO 4449 B12/B71 | 195 | RRH2x60-PCS | 169 |
| KRY 112 71 | 195 | BXA-70080/6CF w/ Mount Pipe | 169 |
| KRY 112 71 | 195 | DB846F65ZAXY w/Mount Pipe | 169 |
| KRY 112 71 | 195 | DB846F65ZAXY w/Mount Pipe | 169 |
| AIR6449 B41 w/ Mount Pipe | 195 | (2) FD9R6004 | 169 |
| AIR6449 B41 w/ Mount Pipe | 195 | (2) FD9R6004 | 169 |
| AIR6449 B41 w/ Mount Pipe | 195 | (2) FD9R6004 | 169 |
| RADIO 4415 | 195 | (2) HBXX-6517DS-A2M w/ Mount Pipe | 169 |
| RADIO 4415 | 195 | (3) Sector Mounts 169-ft | 169 |
| RADIO 4415 | 195 | (2) BXA-70063/6CF w/ Mount Pipe | 169 |
| E14 F05P85 / SDX1926Q-43 | 195 | (2) DB844G65ZAXY w/Mount Pipe | 169 |
| E14 F05P85 / SDX1926Q-43 | 195 | (2) DB844G65ZAXY w/Mount Pipe | 169 |
| E14 F05P85 / SDX1926Q-43 | 195 | DB-B1/T1 w/ Mount Pipe | 169 |
| TMO Future Loading | 195 | (2) HBXX-6517DS-A2M w/ Mount Pipe | 169 |
| (3) Sector Mounts 185-ft | 185 | DT465B-2XR w/ Mount Pipe | 153 |
| Miscellaneous [NA 510-1] | 185 | DT465B-2XR w/ Mount Pipe | 153 |
| 7770.00 w/ Mount Pipe | 185 | DT465B-2XR w/ Mount Pipe | 153 |
| 7770.00 w/ Mount Pipe | 185 | RRH2x50-08 | 153 |
| 7770.00 w/ Mount Pipe | 185 | RRH2x50-08 | 153 |
| (2) LGP13519 | 185 | RRH2x50-08 | 153 |
| (2) LGP13519 | 185 | 800MHZ 2X50W RRH | 153 |
| (2) LGP13519 | 185 | 800MHZ 2X50W RRH | 153 |
| RRUS-32 B30 | 185 | 800MHZ 2X50W RRH | 153 |
| RRUS-32 B30 | 185 | PCS 1900MHz 4x45W-65MHz | 153 |
| RRUS-32 B30 | 185 | PCS 1900MHz 4x45W-65MHz | 153 |
| DC6-48-60-18-8F | 185 | PCS 1900MHz 4x45W-65MHz | 153 |
| DC6-48-60-18-8F | 185 | TD-RRH8x20-25 | 153 |
| DC6-48-60-0-8C-EV | 185 | TD-RRH8x20-25 | 153 |
| SBNHH-1D65A w/ Mount Pipe | 185 | TD-RRH8x20-25 | 153 |
| SBNHH-1D65A w/ Mount Pipe | 185 | Sector Mount [SM 502-3] | 153 |
| SBNHH-1D65A w/ Mount Pipe | 185 | APXVSP18-C-A20 w/ Mount Pipe | 153 |
| (2) DMP65R-BU6D w/ Mount Pipe | 185 | APXVSP18-C-A20 w/ Mount Pipe | 153 |
| (2) DMP65R-BU6D w/ Mount Pipe | 185 | APXVSP18-C-A20 w/ Mount Pipe | 153 |
| (2) DMP65R-BU8D w/ Mount Pipe | 185 | 1.75" Dia x 5-ft Pipe | 75.5 |
| RRUS 4449 B5/B12 | 185 | GPS0015 | 75.5 |
| RRUS 4449 B5/B12 | 185 | | |

ALL REACTION ARE FACTORED
MAX. CORNER DOWN SHEAR

UPLIFT SHEAR

AXIAL MOMENT

SHEAR 15586 lb

TORQUE 16409

AXIAL MOMENT

SHEAR 55826 lb

TORQUE 65721

REACTIONS - 120

SYMBOL LIST


| MARK | SIZE | MARK | SIZE |
|------|----------------------------------|------|------------------------|
| A | 2-1/2SCH40 w/ 3SCH80 Half Sleeve | F | L1 1/2x1 1/2x3/16 |
| B | Pipe 3.5 Std (SCH40) | G | L2x2x3/16 |
| C | 3.5SCH40 w/ 4SCH40 Half Sleeve | H | 2L1 1/2x1 1/2x3/16x1/4 |
| D | 5 STD w/ 6 XH Half Sleeve | I | L2 1/2x2 1/2x3/16 |
| E | 6 STD w/ 7 XH Half Sleeve | J | L2 1/2x2 1/2x1/4 |

MATERIAL STRENGTH

| GRADE | Fy | Fu | GRADE | Fy | Fu |
|----------|--------|--------|----------|--------|--------|
| A572-55 | 55 ksi | 70 ksi | A500-50 | 50 ksi | 62 ksi |
| A36 | 36 ksi | 58 ksi | A500-46 | 46 ksi | 62 ksi |
| A53-B-35 | 35 ksi | 60 ksi | A53-B-42 | 42 ksi | 63 ksi |

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft



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

Job: **US-CT-1003 - Straits Turnpike**

Project: **TEP No. 25628.442076**

Client: **Phoenix Tower International** | Drawn by: **DDO** | App'd: _____

Code: **TIA-222-H** | Date: **09/10/20** | Scale: **NTS**

Path: _____ | Dwg No. **E-1**

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 1 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 2 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

Tower Input Data

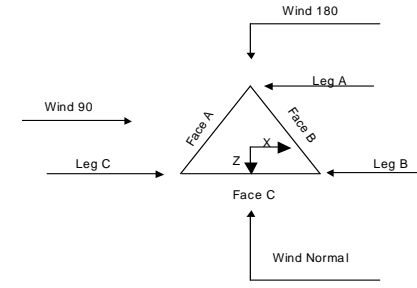
The main tower is a 3x free standing tower with an overall height of 195.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.50 ft at the top and 21.50 ft at the base.
This tower is designed using the TIA-222-H standard.

The following design criteria apply:

1. Tower is located in New Haven County, Connecticut.
2. Tower base elevation above sea level: 432.77 ft.
3. Basic wind speed of 120 mph.
4. Risk Category II.
5. Exposure Category B.
6. Simplified Topographic Factor Procedure for wind speed-up calculations is used.
7. Topographic Category: 1.
8. Crest Height: 0.00 ft.
9. Nominal ice thickness of 1.5000 in.
10. Ice thickness is considered to increase with height.
11. Ice density of 56 pcf.
12. A wind speed of 50 mph is used in combination with ice.
13. Temperature drop of 50 °F.
14. Deflections calculated using a wind speed of 60 mph.
15. A non-linear (P-delta) analysis was used.
16. Pressures are calculated at each section.
17. Tower analysis based on target reliabilities in accordance with Annex S.
18. Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
19. Stress ratio used in tower member design is 1.05.
20. Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile √ Include Bolts In Member Capacity Leg Bolts Are At Top Of Section √ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) √ SR Members Have Cut Ends SR Members Are Concentric | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC 6D+W Combination √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/r For 60 Deg. Angle Legs | <ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA √ SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable √ Offset Girt At Foundation √ Consider Feed Line Torque √ Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <li style="background-color: #e0e0e0;">Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known |
|--|---|--|



Triangular Tower

Tower Section Geometry

| Tower Section | Tower Elevation | Assembly Database | Description | Section Width | Number of Sections | Section Length |
|---------------|-----------------|-------------------|-------------|---------------|--------------------|----------------|
| | <i>ft</i> | | | <i>ft</i> | | <i>ft</i> |
| T1 | 195.00-180.00 | | | 3.50 | 1 | 15.00 |
| T2 | 180.00-175.00 | | | 3.50 | 1 | 5.00 |
| T3 | 175.00-170.00 | | | 4.00 | 1 | 5.00 |
| T4 | 170.00-160.00 | | | 4.50 | 1 | 10.00 |
| T5 | 160.00-150.00 | | | 5.50 | 1 | 10.00 |
| T6 | 150.00-140.00 | | | 6.50 | 1 | 10.00 |
| T7 | 140.00-133.33 | | | 7.50 | 1 | 6.67 |
| T8 | 133.33-126.67 | | | 8.17 | 1 | 6.67 |
| T9 | 126.67-120.00 | | | 8.83 | 1 | 6.67 |
| T10 | 120.00-113.33 | | | 9.50 | 1 | 6.67 |
| T11 | 113.33-106.67 | | | 10.17 | 1 | 6.67 |
| T12 | 106.67-100.00 | | | 10.83 | 1 | 6.67 |
| T13 | 100.00-80.00 | | | 11.50 | 1 | 20.00 |
| T14 | 80.00-60.00 | | | 13.50 | 1 | 20.00 |
| T15 | 60.00-50.00 | | | 15.50 | 1 | 10.00 |
| T16 | 50.00-40.00 | | | 16.50 | 1 | 10.00 |
| T17 | 40.00-20.00 | | | 17.50 | 1 | 20.00 |
| T18 | 20.00-0.00 | | | 19.50 | 1 | 20.00 |

Tower Section Geometry (cont'd)

| Tower Section | Tower Elevation | Diagonal Spacing | Bracing Type | Has K Brace End Panels | Has Horizontals | Top Girt Offset | Bottom Girt Offset |
|---------------|-----------------|------------------|--------------|------------------------|-----------------|-----------------|--------------------|
| | <i>ft</i> | <i>ft</i> | | | | <i>in</i> | <i>in</i> |
| T1 | 195.00-180.00 | 3.75 | TX Brace | No | Yes | 0.0000 | 0.0000 |
| T2 | 180.00-175.00 | 5.00 | X Brace | No | Yes | 0.0000 | 0.0000 |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 3 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 4 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| Tower Section | Tower Elevation | Diagonal Spacing | Bracing Type | Has K Brace | Has Horizontals | Top Girt Offset | Bottom Girt Offset |
|---------------|-----------------|------------------|--------------|-------------|-----------------|-----------------|--------------------|
| | ft | ft | | End Panels | | in | in |
| T3 | 175.00-170.00 | 5.00 | X Brace | No | Yes | 0.0000 | 0.0000 |
| T4 | 170.00-160.00 | 5.00 | X Brace | No | Yes | 0.0000 | 0.0000 |
| T5 | 160.00-150.00 | 5.00 | X Brace | No | Yes | 0.0000 | 0.0000 |
| T6 | 150.00-140.00 | 5.00 | X Brace | No | Yes | 0.0000 | 0.0000 |
| T7 | 140.00-133.33 | 6.67 | X Brace | No | No | 0.0000 | 0.0000 |
| T8 | 133.33-126.67 | 6.67 | X Brace | No | No | 0.0000 | 0.0000 |
| T9 | 126.67-120.00 | 6.67 | X Brace | No | No | 0.0000 | 0.0000 |
| T10 | 120.00-113.33 | 6.67 | X Brace | No | Yes | 0.0000 | 0.0000 |
| T11 | 113.33-106.67 | 6.67 | X Brace | No | Yes | 0.0000 | 0.0000 |
| T12 | 106.67-100.00 | 6.67 | X Brace | No | Yes | 0.0000 | 0.0000 |
| T13 | 100.00-80.00 | 6.67 | X Brace | No | Yes | 0.0000 | 0.0000 |
| T14 | 80.00-60.00 | 6.67 | X Brace | No | No | 0.0000 | 0.0000 |
| T15 | 60.00-50.00 | 10.00 | X Brace | No | Yes | 0.0000 | 0.0000 |
| T16 | 50.00-40.00 | 10.00 | X Brace | No | Yes | 0.0000 | 0.0000 |
| T17 | 40.00-20.00 | 10.00 | X Brace | No | No | 0.0000 | 0.0000 |
| T18 | 20.00-0.00 | 9.96 | X Brace | No | No | 0.0000 | 1.0000 |

| Tower Elevation | Leg Type | Leg Size | Leg Grade | Diagonal Type | Diagonal Size | Diagonal Grade |
|-----------------|----------|-----------|------------------|---------------|---------------|----------------|
| ft | | | | | | |
| T18 20.00-0.00 | Pipe | Pipe 8 EH | A572-55 (55 ksi) | Equal Angle | L5x5x5/16 | A36 (36 ksi) |

Tower Section Geometry (cont'd)

| Tower Elevation | Top Girt Type | Top Girt Size | Top Girt Grade | Bottom Girt Type | Bottom Girt Size | Bottom Girt Grade |
|------------------|---------------|-------------------|----------------|------------------|-------------------|-------------------|
| ft | | | | | | |
| T1 195.00-180.00 | Equal Angle | L1 1/2x1 1/2x3/16 | A36 (36 ksi) | Equal Angle | L1 1/2x1 1/2x3/16 | A36 (36 ksi) |

Tower Section Geometry (cont'd)

| Tower Elevation | No. of Mid Girts | Mid Girt Type | Mid Girt Size | Mid Girt Grade | Horizontal Type | Horizontal Size | Horizontal Grade |
|------------------|------------------|---------------|---------------|----------------|-----------------|-------------------|------------------|
| ft | | | | | | | |
| T1 195.00-180.00 | None | Flat Bar | | A36 (36 ksi) | Equal Angle | L1 1/2x1 1/2x3/16 | A36 (36 ksi) |

Tower Section Geometry (cont'd)

| Tower Elevation | Leg Type | Leg Size | Leg Grade | Diagonal Type | Diagonal Size | Diagonal Grade |
|-------------------|-----------------|----------------------------------|-------------------|--------------------|------------------------|----------------|
| ft | | | | | | |
| T1 195.00-180.00 | Pipe | PIPE 2.5 STD (SCH 40) | A572-55 (55 ksi) | Solid Round | 5/8 | A36 (36 ksi) |
| T2 180.00-175.00 | Pipe | PIPE 2.5 STD (SCH 40) | A572-55 (55 ksi) | Equal Angle | L1 1/2x1 1/2x3/16 | A36 (36 ksi) |
| T3 175.00-170.00 | Pipe | PIPE 2.5 STD (SCH 40) | A572-55 (55 ksi) | Equal Angle | L2x2x3/16 | A36 (36 ksi) |
| T4 170.00-160.00 | Arbitrary Shape | 2-1/2SCH40 w/ 3SCH80 Half Sleeve | A53-B-35 (35 ksi) | Double Equal Angle | 2L1 1/2x1 1/2x3/16x1/4 | A36 (36 ksi) |
| T5 160.00-150.00 | Pipe | Pipe 3.5 Std (SCH40) | A572-55 (55 ksi) | Double Angle | 2L2x2x3/16x1/4 | A36 (36 ksi) |
| T6 150.00-140.00 | Arbitrary Shape | 3.5SCH40 w/ 4SCH40 Half Sleeve | A500-50 (50 ksi) | Double Angle | 2L2x2x3/16x1/4 | A36 (36 ksi) |
| T7 140.00-133.33 | Arbitrary Shape | 5 STD w/ 6 XH Half Sleeve | A500-46 (46 ksi) | Equal Angle | L2 1/2x2 1/2x1/4 | A36 (36 ksi) |
| T8 133.33-126.67 | Arbitrary Shape | 5 STD w/ 6 XH Half Sleeve | A500-46 (46 ksi) | Equal Angle | L2 1/2x2 1/2x1/4 | A36 (36 ksi) |
| T9 126.67-120.00 | Arbitrary Shape | 5 STD w/ 6 XH Half Sleeve | A500-46 (46 ksi) | Equal Angle | L2 1/2x2 1/2x3/16 | A36 (36 ksi) |
| T10 120.00-113.33 | Pipe | Pipe 6 STD | A572-55 (55 ksi) | Equal Angle | L3x3x1/4 | A36 (36 ksi) |
| T11 113.33-106.67 | Pipe | Pipe 6 STD | A572-55 (55 ksi) | Equal Angle | L3x3x1/4 | A36 (36 ksi) |
| T12 106.67-100.00 | Pipe | Pipe 6 STD | A572-55 (55 ksi) | Equal Angle | L2 1/2x2 1/2x1/4 | A36 (36 ksi) |
| T13 100.00-80.00 | Arbitrary Shape | 6 STD w/ 7 XH Half Sleeve | A53-B-42 (42 ksi) | Equal Angle | L3 1/2x3 1/2x1/4 | A36 (36 ksi) |
| T14 80.00-60.00 | Pipe | Pipe 8 STD | A572-55 (55 ksi) | Equal Angle | L3 1/2x3 1/2x1/4 | A36 (36 ksi) |
| T15 60.00-50.00 | Pipe | Pipe 8 STD | A572-55 (55 ksi) | Equal Angle | L3x3x5/16 | A36 (36 ksi) |
| T16 50.00-40.00 | Pipe | Pipe 8 STD | A572-55 (55 ksi) | Equal Angle | L3x3x5/16 | A36 (36 ksi) |
| T17 40.00-20.00 | Pipe | Pipe 8 EH | A572-55 (55 ksi) | Equal Angle | L4x4x3/8 | A36 (36 ksi) |

Tower Section Geometry (cont'd)

| Tower Elevation | Secondary Horizontal Type | Secondary Horizontal Size | Secondary Horizontal Grade | Inner Bracing Type | Inner Bracing Size | Inner Bracing Grade |
|-------------------|---------------------------|---------------------------|----------------------------|--------------------|--------------------|---------------------|
| ft | | | | | | |
| T2 180.00-175.00 | Equal Angle | L2x2x3/16 | A36 (36 ksi) | Solid Round | | A36 (36 ksi) |
| T3 175.00-170.00 | Equal Angle | L2x2x3/16 | A36 (36 ksi) | Solid Round | | A36 (36 ksi) |
| T4 170.00-160.00 | Equal Angle | L2x2x3/16 | A36 (36 ksi) | Solid Round | | A36 (36 ksi) |
| T5 160.00-150.00 | Equal Angle | L2x2x3/16 | A36 (36 ksi) | Solid Round | | A36 (36 ksi) |
| T6 150.00-140.00 | Equal Angle | L2x2x3/16 | A36 (36 ksi) | Solid Round | | A36 (36 ksi) |
| T10 120.00-113.33 | Equal Angle | L3x3x3/16 | A36 (36 ksi) | Solid Round | | A36 (36 ksi) |
| T11 113.33-106.67 | Equal Angle | L3x3x3/16 | A36 (36 ksi) | Solid Round | | A36 (36 ksi) |
| T12 106.67-100.00 | Equal Angle | L3x3x3/16 | A36 (36 ksi) | Solid Round | | A36 (36 ksi) |
| T13 100.00-80.00 | Equal Angle | L3x3x1/4 | A36 (36 ksi) | Solid Round | | A36 (36 ksi) |
| T15 60.00-50.00 | Equal Angle | L4x4x3/8 | A36 (36 ksi) | Solid Round | | A36 (36 ksi) |
| T16 50.00-40.00 | Equal Angle | L4x4x1/4 | A36 (36 ksi) | Solid Round | | A36 (36 ksi) |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 11 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 12 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

Feed Line Center of Pressure

| Section | Elevation | CP _x | CP _z | CP _x | | CP _z | |
|---------|---------------|-----------------|-----------------|-----------------|----------|-----------------|----|
| | | | | Ice | in | Ice | in |
| | ft | in | in | in | in | in | in |
| T1 | 195.00-180.00 | 4.9146 | -6.6215 | 3.2072 | -5.8286 | | |
| T2 | 180.00-175.00 | 2.7248 | -8.9238 | 2.0042 | -8.8737 | | |
| T3 | 175.00-170.00 | 2.8251 | -9.4987 | 2.1752 | -9.7215 | | |
| T4 | 170.00-160.00 | 6.4497 | -6.0191 | 5.9462 | -6.6769 | | |
| T5 | 160.00-150.00 | 6.4425 | -5.2411 | 5.8969 | -5.5138 | | |
| T6 | 150.00-140.00 | 6.8760 | -5.6463 | 6.3774 | -5.8406 | | |
| T7 | 140.00-133.33 | 7.8271 | -6.3338 | 7.3504 | -6.6599 | | |
| T8 | 133.33-126.67 | 8.3629 | -6.7784 | 7.8889 | -7.1416 | | |
| T9 | 126.67-120.00 | 8.8789 | -7.2112 | 8.4107 | -7.6106 | | |
| T10 | 120.00-113.33 | 8.1668 | -6.9064 | 8.1788 | -7.5304 | | |
| T11 | 113.33-106.67 | 8.5190 | -7.2335 | 8.5857 | -7.9128 | | |
| T12 | 106.67-100.00 | 9.2059 | -7.7704 | 9.1439 | -8.3994 | | |
| T13 | 100.00-80.00 | 9.0926 | -7.8810 | 9.4449 | -8.7765 | | |
| T14 | 80.00-60.00 | 11.0067 | -9.2455 | 11.1220 | -9.7657 | | |
| T15 | 60.00-50.00 | 11.7440 | -9.6609 | 11.6224 | -8.9652 | | |
| T16 | 50.00-40.00 | 12.1490 | -10.0425 | 12.1070 | -9.3647 | | |
| T17 | 40.00-20.00 | 13.5141 | -11.0864 | 13.5218 | -10.4184 | | |
| T18 | 20.00-0.00 | 9.1177 | -8.5782 | 9.7751 | -9.2089 | | |

Shielding Factor Ka

| Tower Section | Feed Line Record No. | Description | Feed Line Segment Elev. | K _a No Ice | K _a Ice |
|---------------|----------------------|--------------------------------------|-------------------------|-----------------------|--------------------|
| T1 | 6 | 1 5/8" Hybrid | 180.00 - 195.00 | 0.6000 | 0.4557 |
| T1 | 9 | WG Rail 1.5x1.5x3/16 | 180.00 - 195.00 | 0.6000 | 0.4557 |
| T1 | 11 | LDF7-50A (1-5/8 FOAM) | 180.00 - 195.00 | 0.6000 | 0.4557 |
| T1 | 21 | LDF7-50A (1-5/8 FOAM) | 180.00 - 185.00 | 0.6000 | 0.4557 |
| T1 | 22 | 7/16" Fiber Cable (24 fibers Max) | 180.00 - 185.00 | 0.6000 | 0.4557 |
| T1 | 24 | LDF5-50A (7/8 FOAM) | 180.00 - 185.00 | 0.6000 | 0.4557 |
| T1 | 25 | WG Rail 1.5x1.5x1/8 | 180.00 - 185.00 | 0.6000 | 0.4557 |
| T1 | 32 | Safety Line 3/8 | 180.00 - 195.00 | 0.6000 | 0.4557 |
| T1 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 180.00 - 195.00 | 0.6000 | 0.4557 |
| T1 | 44 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 180.00 - 181.00 | 0.6000 | 0.4557 |
| T2 | 6 | 1 5/8" Hybrid | 175.00 - 180.00 | 0.6000 | 0.4913 |
| T2 | 9 | WG Rail 1.5x1.5x3/16 | 175.00 - 180.00 | 0.6000 | 0.4913 |
| T2 | 11 | LDF7-50A (1-5/8 FOAM) | 175.00 - 180.00 | 0.6000 | 0.4913 |
| T2 | 21 | LDF7-50A (1-5/8 FOAM) | 175.00 - 180.00 | 0.6000 | 0.4913 |
| T2 | 22 | 7/16" Fiber Cable (24 fibers Max) | 175.00 - 180.00 | 0.6000 | 0.4913 |
| T2 | 24 | LDF5-50A (7/8 FOAM) | 175.00 - 180.00 | 0.6000 | 0.4913 |

| Tower Section | Feed Line Record No. | Description | Feed Line Segment Elev. | K _a No Ice | K _a Ice |
|---------------|----------------------|--------------------------------------|-------------------------|-----------------------|--------------------|
| T2 | 25 | WG Rail 1.5x1.5x1/8 | 175.00 - 180.00 | 0.6000 | 0.4913 |
| T2 | 32 | Safety Line 3/8 | 175.00 - 180.00 | 0.6000 | 0.4913 |
| T2 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 175.00 - 180.00 | 0.6000 | 0.4913 |
| T2 | 44 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 175.00 - 180.00 | 0.6000 | 0.4913 |
| T2 | 47 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 175.00 - 180.00 | 0.6000 | 0.4913 |
| T3 | 6 | 1 5/8" Hybrid | 170.00 - 175.00 | 0.6000 | 0.5042 |
| T3 | 9 | WG Rail 1.5x1.5x3/16 | 170.00 - 175.00 | 0.6000 | 0.5042 |
| T3 | 11 | LDF7-50A (1-5/8 FOAM) | 170.00 - 175.00 | 0.6000 | 0.5042 |
| T3 | 21 | LDF7-50A (1-5/8 FOAM) | 170.00 - 175.00 | 0.6000 | 0.5042 |
| T3 | 22 | 7/16" Fiber Cable (24 fibers Max) | 170.00 - 175.00 | 0.6000 | 0.5042 |
| T3 | 24 | LDF5-50A (7/8 FOAM) | 170.00 - 175.00 | 0.6000 | 0.5042 |
| T3 | 25 | WG Rail 1.5x1.5x1/8 | 170.00 - 175.00 | 0.6000 | 0.5042 |
| T3 | 32 | Safety Line 3/8 | 170.00 - 175.00 | 0.6000 | 0.5042 |
| T3 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 170.00 - 175.00 | 0.6000 | 0.5042 |
| T3 | 44 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 170.00 - 175.00 | 0.6000 | 0.5042 |
| T3 | 47 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 170.00 - 175.00 | 0.6000 | 0.5042 |
| T4 | 1 | LDF7-50A (1-5/8 FOAM) | 160.00 - 169.00 | 0.6000 | 0.5443 |
| T4 | 2 | HB158-1-08U8-S8J18(1-5/8) | 160.00 - 169.00 | 0.6000 | 0.5443 |
| T4 | 3 | WG Rail 1.5x1.5x1/4 | 160.00 - 170.00 | 0.6000 | 0.5443 |
| T4 | 6 | 1 5/8" Hybrid | 160.00 - 170.00 | 0.6000 | 0.5443 |
| T4 | 9 | WG Rail 1.5x1.5x3/16 | 160.00 - 170.00 | 0.6000 | 0.5443 |
| T4 | 11 | LDF7-50A (1-5/8 FOAM) | 160.00 - 170.00 | 0.6000 | 0.5443 |
| T4 | 21 | LDF7-50A (1-5/8 FOAM) | 160.00 - 170.00 | 0.6000 | 0.5443 |
| T4 | 22 | 7/16" Fiber Cable (24 fibers Max) | 160.00 - 170.00 | 0.6000 | 0.5443 |
| T4 | 24 | LDF5-50A (7/8 FOAM) | 160.00 - 170.00 | 0.6000 | 0.5443 |
| T4 | 25 | WG Rail 1.5x1.5x1/8 | 160.00 - 170.00 | 0.6000 | 0.5443 |
| T4 | 32 | Safety Line 3/8 | 160.00 - 170.00 | 0.6000 | 0.5443 |
| T4 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 160.00 - 170.00 | 0.6000 | 0.5443 |
| T4 | 42 | Rung L1.5x1.5x1/8 (36.25"w, 34"s) | 160.00 - 170.00 | 0.6000 | 0.5443 |
| T4 | 44 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 160.00 - 170.00 | 0.6000 | 0.5443 |
| T4 | 47 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 160.00 - 170.00 | 0.6000 | 0.5443 |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 13 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 14 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| Tower Section | Feed Line Record No. | Description | Feed Line Segment Elev. | K _a No Ice | K _a Ice |
|---------------|----------------------|--------------------------------------|-------------------------|-----------------------|--------------------|
| T5 | 1 | LDF7-50A (1-5/8 FOAM) | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T5 | 2 | HB158-1-08U8-S8J18(1-5/8) | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T5 | 3 | WG Rail 1.5x1.5x1/4 | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T5 | 6 | 1 5/8" Hybrid | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T5 | 9 | WG Rail 1.5x1.5x3/16 | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T5 | 11 | LDF7-50A (1-5/8 FOAM) | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T5 | 14 | 1 1/4 Hybriflex Cable | 150.00 - 153.00 | 0.6000 | 0.5658 |
| T5 | 15 | WG Rail 1.5x1.5x3/16 | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T5 | 21 | LDF7-50A (1-5/8 FOAM) | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T5 | 22 | 7/16" Fiber Cable (24 fibers Max) | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T5 | 24 | LDF5-50A (7/8 FOAM) | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T5 | 25 | WG Rail 1.5x1.5x1/8 | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T5 | 32 | Safety Line 3/8 | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T5 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T5 | 42 | Rung L1.5x1.5x1/8 (36.25"w, 34"s) | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T5 | 44 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T5 | 45 | Rung L2x1.5x1/8 (35"w, 48"s) | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T5 | 47 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 150.00 - 160.00 | 0.6000 | 0.5658 |
| T6 | 1 | LDF7-50A (1-5/8 FOAM) | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T6 | 2 | HB158-1-08U8-S8J18(1-5/8) | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T6 | 3 | WG Rail 1.5x1.5x1/4 | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T6 | 6 | 1 5/8" Hybrid | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T6 | 9 | WG Rail 1.5x1.5x3/16 | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T6 | 11 | LDF7-50A (1-5/8 FOAM) | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T6 | 14 | 1 1/4 Hybriflex Cable | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T6 | 15 | WG Rail 1.5x1.5x3/16 | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T6 | 21 | LDF7-50A (1-5/8 FOAM) | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T6 | 22 | 7/16" Fiber Cable (24 fibers Max) | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T6 | 24 | LDF5-50A (7/8 FOAM) | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T6 | 25 | WG Rail 1.5x1.5x1/8 | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T6 | 32 | Safety Line 3/8 | 140.00 - 150.00 | 0.6000 | 0.5872 |

| Tower Section | Feed Line Record No. | Description | Feed Line Segment Elev. | K _a No Ice | K _a Ice |
|---------------|----------------------|--------------------------------------|-------------------------|-----------------------|--------------------|
| T6 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T6 | 42 | Rung L1.5x1.5x1/8 (36.25"w, 34"s) | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T6 | 44 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T6 | 45 | Rung L2x1.5x1/8 (35"w, 48"s) | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T6 | 47 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 140.00 - 150.00 | 0.6000 | 0.5872 |
| T7 | 1 | LDF7-50A (1-5/8 FOAM) | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 2 | HB158-1-08U8-S8J18(1-5/8) | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 3 | WG Rail 1.5x1.5x1/4 | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 6 | 1 5/8" Hybrid | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 9 | WG Rail 1.5x1.5x3/16 | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 11 | LDF7-50A (1-5/8 FOAM) | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 14 | 1 1/4 Hybriflex Cable | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 15 | WG Rail 1.5x1.5x3/16 | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 21 | LDF7-50A (1-5/8 FOAM) | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 22 | 7/16" Fiber Cable (24 fibers Max) | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 24 | LDF5-50A (7/8 FOAM) | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 25 | WG Rail 1.5x1.5x1/8 | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 32 | Safety Line 3/8 | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 42 | Rung L1.5x1.5x1/8 (36.25"w, 34"s) | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 44 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 45 | Rung L2x1.5x1/8 (35"w, 48"s) | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T7 | 47 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 133.33 - 140.00 | 0.6000 | 0.6000 |
| T8 | 1 | LDF7-50A (1-5/8 FOAM) | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T8 | 2 | HB158-1-08U8-S8J18(1-5/8) | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T8 | 3 | WG Rail 1.5x1.5x1/4 | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T8 | 6 | 1 5/8" Hybrid | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T8 | 9 | WG Rail 1.5x1.5x3/16 | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T8 | 11 | LDF7-50A (1-5/8 FOAM) | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T8 | 14 | 1 1/4 Hybriflex Cable | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T8 | 15 | WG Rail 1.5x1.5x3/16 | 126.67 - 133.33 | 0.6000 | 0.6000 |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 15 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 16 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| Tower Section | Feed Line Record No. | Description | Feed Line Segment Elev. | K _a No Ice | K _a Ice |
|---------------|----------------------|--------------------------------------|-------------------------|-----------------------|--------------------|
| T8 | 21 | LDF7-50A (1-5/8 FOAM) | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T8 | 22 | 7/16" Fiber Cable (24 fibers Max) | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T8 | 24 | LDF5-50A (7/8 FOAM) | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T8 | 25 | WG Rail 1.5x1.5x1/8 | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T8 | 32 | Safety Line 3/8 | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T8 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T8 | 42 | Rung L1.5x1.5x1/8 (36.25"w, 34"s) | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T8 | 44 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T8 | 45 | Rung L2x1.5x1/8 (35"w, 48"s) | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T8 | 47 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 126.67 - 133.33 | 0.6000 | 0.6000 |
| T9 | 1 | LDF7-50A (1-5/8 FOAM) | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 2 | HB158-1-08U8-S8J18(1-5/8) | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 3 | WG Rail 1.5x1.5x1/4 | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 6 | 1 5/8" Hybrid | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 9 | WG Rail 1.5x1.5x3/16 | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 11 | LDF7-50A (1-5/8 FOAM) | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 14 | 1 1/4 Hybriflex Cable | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 15 | WG Rail 1.5x1.5x3/16 | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 21 | LDF7-50A (1-5/8 FOAM) | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 22 | 7/16" Fiber Cable (24 fibers Max) | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 24 | LDF5-50A (7/8 FOAM) | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 25 | WG Rail 1.5x1.5x1/8 | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 32 | Safety Line 3/8 | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 42 | Rung L1.5x1.5x1/8 (36.25"w, 34"s) | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 44 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 45 | Rung L2x1.5x1/8 (35"w, 48"s) | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T9 | 47 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 120.00 - 126.67 | 0.6000 | 0.6000 |
| T10 | 1 | LDF7-50A (1-5/8 FOAM) | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T10 | 2 | HB158-1-08U8-S8J18(1-5/8) | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T10 | 3 | WG Rail 1.5x1.5x1/4 | 113.33 - 120.00 | 0.6000 | 0.6000 |

| Tower Section | Feed Line Record No. | Description | Feed Line Segment Elev. | K _a No Ice | K _a Ice |
|---------------|----------------------|--------------------------------------|-------------------------|-----------------------|--------------------|
| T10 | 6 | 1 5/8" Hybrid | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T10 | 9 | WG Rail 1.5x1.5x3/16 | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T10 | 11 | LDF7-50A (1-5/8 FOAM) | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T10 | 14 | 1 1/4 Hybriflex Cable | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T10 | 15 | WG Rail 1.5x1.5x3/16 | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T10 | 21 | LDF7-50A (1-5/8 FOAM) | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T10 | 22 | 7/16" Fiber Cable (24 fibers Max) | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T10 | 24 | LDF5-50A (7/8 FOAM) | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T10 | 25 | WG Rail 1.5x1.5x1/8 | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T10 | 32 | Safety Line 3/8 | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T10 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T10 | 42 | Rung L1.5x1.5x1/8 (36.25"w, 34"s) | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T10 | 44 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T10 | 45 | Rung L2x1.5x1/8 (35"w, 48"s) | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T10 | 47 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 113.33 - 120.00 | 0.6000 | 0.6000 |
| T11 | 1 | LDF7-50A (1-5/8 FOAM) | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T11 | 2 | HB158-1-08U8-S8J18(1-5/8) | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T11 | 3 | WG Rail 1.5x1.5x1/4 | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T11 | 6 | 1 5/8" Hybrid | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T11 | 9 | WG Rail 1.5x1.5x3/16 | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T11 | 11 | LDF7-50A (1-5/8 FOAM) | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T11 | 14 | 1 1/4 Hybriflex Cable | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T11 | 15 | WG Rail 1.5x1.5x3/16 | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T11 | 21 | LDF7-50A (1-5/8 FOAM) | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T11 | 22 | 7/16" Fiber Cable (24 fibers Max) | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T11 | 24 | LDF5-50A (7/8 FOAM) | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T11 | 25 | WG Rail 1.5x1.5x1/8 | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T11 | 32 | Safety Line 3/8 | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T11 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T11 | 42 | Rung L1.5x1.5x1/8 (36.25"w, 34"s) | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T11 | 44 | Rung L1.5x1.5x1/8 (36"w, 34"s) | 106.67 - 113.33 | 0.6000 | 0.6000 |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 17 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 18 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| Tower Section | Feed Line Record No. | Description | Feed Line Segment Elev. | K _a No Ice | K _a Ice |
|---------------|----------------------|--------------------------------------|-------------------------|-----------------------|--------------------|
| T11 | 45 | Rung L2x1.5x1/8 (35°w, 48°s) | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T11 | 47 | Rung L1.5x1.5x1/8 (36°w, 34°s) | 106.67 - 113.33 | 0.6000 | 0.6000 |
| T12 | 1 | LDF7-50A (1-5/8 FOAM) | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 2 | HB158-1-08U8-S8J18(1-5/8) | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 3 | WG Rail 1.5x1.5x1/4 | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 6 | 1 5/8" Hybrid | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 9 | WG Rail 1.5x1.5x3/16 | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 11 | LDF7-50A (1-5/8 FOAM) | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 14 | 1 1/4 Hybriflex Cable | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 15 | WG Rail 1.5x1.5x3/16 | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 21 | LDF7-50A (1-5/8 FOAM) | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 22 | 7/16" Fiber Cable (24 fibers Max) | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 24 | LDF5-50A (7/8 FOAM) | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 25 | WG Rail 1.5x1.5x1/8 | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 32 | Safety Line 3/8 | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 42 | Rung L1.5x1.5x1/8 (36.25°w, 34°s) | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 44 | Rung L1.5x1.5x1/8 (36°w, 34°s) | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 45 | Rung L2x1.5x1/8 (35°w, 48°s) | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T12 | 47 | Rung L1.5x1.5x1/8 (36°w, 34°s) | 100.00 - 106.67 | 0.6000 | 0.6000 |
| T13 | 1 | LDF7-50A (1-5/8 FOAM) | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T13 | 2 | HB158-1-08U8-S8J18(1-5/8) | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T13 | 3 | WG Rail 1.5x1.5x1/4 | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T13 | 6 | 1 5/8" Hybrid | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T13 | 9 | WG Rail 1.5x1.5x3/16 | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T13 | 11 | LDF7-50A (1-5/8 FOAM) | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T13 | 14 | 1 1/4 Hybriflex Cable | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T13 | 15 | WG Rail 1.5x1.5x3/16 | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T13 | 21 | LDF7-50A (1-5/8 FOAM) | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T13 | 22 | 7/16" Fiber Cable (24 fibers Max) | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T13 | 24 | LDF5-50A (7/8 FOAM) | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T13 | 25 | WG Rail 1.5x1.5x1/8 | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T13 | 32 | Safety Line 3/8 | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T13 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T13 | 42 | Rung L1.5x1.5x1/8 (36.25°w, 34°s) | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T13 | 44 | Rung L1.5x1.5x1/8 (36°w, 34°s) | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T13 | 45 | Rung L2x1.5x1/8 (35°w, 48°s) | 80.00 - 100.00 | 0.6000 | 0.6000 |

| Tower Section | Feed Line Record No. | Description | Feed Line Segment Elev. | K _a No Ice | K _a Ice |
|---------------|----------------------|--------------------------------------|-------------------------|-----------------------|--------------------|
| T13 | 47 | Rung L1.5x1.5x1/8 (36°w, 34°s) | 80.00 - 100.00 | 0.6000 | 0.6000 |
| T14 | 1 | LDF7-50A (1-5/8 FOAM) | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 2 | HB158-1-08U8-S8J18(1-5/8) | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 3 | WG Rail 1.5x1.5x1/4 | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 6 | 1 5/8" Hybrid | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 9 | WG Rail 1.5x1.5x3/16 | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 11 | LDF7-50A (1-5/8 FOAM) | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 13 | 5/8" dia. coax | 60.00 - 75.50 | 0.6000 | 0.6000 |
| T14 | 14 | 1 1/4 Hybriflex Cable | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 15 | WG Rail 1.5x1.5x3/16 | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 21 | LDF7-50A (1-5/8 FOAM) | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 22 | 7/16" Fiber Cable (24 fibers Max) | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 24 | LDF5-50A (7/8 FOAM) | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 25 | WG Rail 1.5x1.5x1/8 | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 32 | Safety Line 3/8 | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 42 | Rung L1.5x1.5x1/8 (36.25°w, 34°s) | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 44 | Rung L1.5x1.5x1/8 (36°w, 34°s) | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 45 | Rung L2x1.5x1/8 (35°w, 48°s) | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T14 | 47 | Rung L1.5x1.5x1/8 (36°w, 34°s) | 60.00 - 80.00 | 0.6000 | 0.6000 |
| T15 | 1 | LDF7-50A (1-5/8 FOAM) | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 2 | HB158-1-08U8-S8J18(1-5/8) | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 3 | WG Rail 1.5x1.5x1/4 | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 6 | 1 5/8" Hybrid | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 9 | WG Rail 1.5x1.5x3/16 | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 11 | LDF7-50A (1-5/8 FOAM) | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 13 | 5/8" dia. coax | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 14 | 1 1/4 Hybriflex Cable | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 15 | WG Rail 1.5x1.5x3/16 | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 21 | LDF7-50A (1-5/8 FOAM) | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 22 | 7/16" Fiber Cable (24 fibers Max) | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 24 | LDF5-50A (7/8 FOAM) | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 25 | WG Rail 1.5x1.5x1/8 | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 32 | Safety Line 3/8 | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 34 | Step Pegs (5/8" SR) 7-in. w/30" step | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 35 | Step Pegs (5/8" SR) 7-in. w/30" step | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 42 | Rung L1.5x1.5x1/8 (36.25°w, 34°s) | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 44 | Rung L1.5x1.5x1/8 (36°w, 34°s) | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 45 | Rung L2x1.5x1/8 (35°w, 48°s) | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T15 | 47 | Rung L1.5x1.5x1/8 (36°w, 34°s) | 50.00 - 60.00 | 0.6000 | 0.6000 |
| T16 | 1 | LDF7-50A (1-5/8 FOAM) | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 2 | HB158-1-08U8-S8J18(1-5/8) | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 3 | WG Rail 1.5x1.5x1/4 | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 6 | 1 5/8" Hybrid | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 9 | WG Rail 1.5x1.5x3/16 | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 11 | LDF7-50A (1-5/8 FOAM) | 40.00 - 50.00 | 0.6000 | 0.6000 |

| | | | | |
|--|---------|-------------------------------|-------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 19 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| | | | | |
|--|---------|-------------------------------|-------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 20 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| Tower Section | Feed Line Record No. | Description | Feed Line Segment Elev. | K _w No Ice | K _w Ice |
|---------------|----------------------|--------------------------------------|-------------------------|--------------------------|-----------------------|
| T16 | 13 | 5/8" dia. coax | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 14 | 1 1/4 Hybriflex Cable | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 15 | WG Rail 1.5x1.5x3/16 | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 21 | LDF7-50A (1-5/8 FOAM) | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 22 | 7/16" Fiber Cable (24 fibers Max) | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 24 | LDF5-50A (7/8 FOAM) | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 25 | WG Rail 1.5x1.5x1/8 | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 32 | Safety Line 3/8 | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 34 | Step Pegs (5/8" SR) 7-in. w/30" step | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 35 | Step Pegs (5/8" SR) 7-in. w/30" step | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 42 | Rung L1.5x1.5x1/8 (36.25" w. 34"s) | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 44 | Rung L1.5x1.5x1/8 (36" w. 34"s) | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 45 | Rung L2x1.5x1/8 (35" w. 48"s) | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T16 | 47 | Rung L1.5x1.5x1/8 (36" w. 34"s) | 40.00 - 50.00 | 0.6000 | 0.6000 |
| T17 | 1 | LDF7-50A (1-5/8 FOAM) | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 2 | HB158-1-08U8-SR18 (1-5/8) | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 3 | WG Rail 1.5x1.5x1/4 | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 6 | 1 5/8" Hybrid | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 9 | WG Rail 1.5x1.5x3/16 | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 11 | LDF7-50A (1-5/8 FOAM) | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 13 | 5/8" dia. coax | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 14 | 1 1/4 Hybriflex Cable | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 15 | WG Rail 1.5x1.5x3/16 | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 21 | LDF7-50A (1-5/8 FOAM) | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 22 | 7/16" Fiber Cable (24 fibers Max) | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 24 | LDF5-50A (7/8 FOAM) | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 25 | WG Rail 1.5x1.5x1/8 | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 32 | Safety Line 3/8 | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 34 | Step Pegs (5/8" SR) 7-in. w/30" step | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 35 | Step Pegs (5/8" SR) 7-in. w/30" step | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 42 | Rung L1.5x1.5x1/8 (36.25" w. 34"s) | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 44 | Rung L1.5x1.5x1/8 (36" w. 34"s) | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 45 | Rung L2x1.5x1/8 (35" w. 48"s) | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T17 | 47 | Rung L1.5x1.5x1/8 (36" w. 34"s) | 20.00 - 40.00 | 0.6000 | 0.6000 |
| T18 | 1 | LDF7-50A (1-5/8 FOAM) | 8.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 2 | HB158-1-08U8-SR18 (1-5/8) | 8.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 3 | WG Rail 1.5x1.5x1/4 | 8.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 6 | 1 5/8" Hybrid | 8.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 9 | WG Rail 1.5x1.5x3/16 | 0.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 11 | LDF7-50A (1-5/8 FOAM) | 8.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 13 | 5/8" dia. coax | 10.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 14 | 1 1/4 Hybriflex Cable | 10.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 15 | WG Rail 1.5x1.5x3/16 | 0.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 21 | LDF7-50A (1-5/8 FOAM) | 8.00 - 20.00 | 0.6000 | 0.6000 |

| Tower Section | Feed Line Record No. | Description | Feed Line Segment Elev. | K _w No Ice | K _w Ice |
|---------------|----------------------|--------------------------------------|-------------------------|--------------------------|-----------------------|
| T18 | 22 | 7/16" Fiber Cable (24 fibers Max) | 8.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 24 | LDF5-50A (7/8 FOAM) | 8.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 25 | WG Rail 1.5x1.5x1/8 | 2.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 32 | Safety Line 3/8 | 0.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 33 | Step Pegs (5/8" SR) 7-in. w/30" step | 0.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 34 | Step Pegs (5/8" SR) 7-in. w/30" step | 0.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 35 | Step Pegs (5/8" SR) 7-in. w/30" step | 0.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 42 | Rung L1.5x1.5x1/8 (36.25" w. 34"s) | 8.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 44 | Rung L1.5x1.5x1/8 (36" w. 34"s) | 0.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 45 | Rung L2x1.5x1/8 (35" w. 48"s) | 0.00 - 20.00 | 0.6000 | 0.6000 |
| T18 | 47 | Rung L1.5x1.5x1/8 (36" w. 34"s) | 2.00 - 20.00 | 0.6000 | 0.6000 |

Discrete Tower Loads

| Description | Face or Leg | Offset Type | Offsets: Horiz Lateral Vert | Azimuth Adjustment | Placement | C _A A _{Front} | C _A A _{Side} | Weight |
|------------------------------|-------------|-------------|-----------------------------|--------------------|-----------|-----------------------------------|----------------------------------|---------|
| | | | ft ft ft | ° | ft | ft ² | ft ² | lb |
| 1.75" Dia x 5-ft Pipe | C | From Leg | 2.25 | 0.0000 | 75.50 | No Ice | 0.88 | 12.00 |
| | | | 0.00 | | | 1/2" Ice | 1.32 | 19.06 |
| | | | 0.00 | | | 1" Ice | 1.63 | 29.51 |
| GPS0015 | C | From Leg | 4.50 | 0.0000 | 75.50 | No Ice | 0.08 | 61.18 |
| | | | 0.00 | | | 1/2" Ice | 0.13 | 2.29 |
| | | | 0.75 | | | 1" Ice | 0.19 | 4.89 |
| | | | | | | 0.33 | 0.33 | 13.15 |
| Sector Mount [SM 502-3] | C | None | | 0.0000 | 153.00 | No Ice | 33.02 | 1673.10 |
| | | | | | | 1/2" Ice | 47.36 | 2223.90 |
| | | | | | | 1" Ice | 61.70 | 2774.70 |
| APXVSP18-C-A20 w/ Mount Pipe | A | From Leg | 5.00 | 0.0000 | 153.00 | No Ice | 6.71 | 78.90 |
| | | | 0.00 | | | 1/2" Ice | 7.66 | 144.31 |
| | | | 0.00 | | | 1" Ice | 8.49 | 217.47 |
| APXVSP18-C-A20 w/ Mount Pipe | B | From Leg | 5.00 | 0.0000 | 153.00 | No Ice | 6.71 | 78.90 |
| | | | 0.00 | | | 1/2" Ice | 7.66 | 144.31 |
| | | | 0.00 | | | 1" Ice | 8.49 | 217.47 |
| APXVSP18-C-A20 w/ Mount Pipe | C | From Leg | 5.00 | 0.0000 | 153.00 | No Ice | 6.71 | 78.90 |
| | | | 0.00 | | | 1/2" Ice | 7.66 | 144.31 |
| | | | 0.00 | | | 1" Ice | 8.49 | 217.47 |
| DT465B-2XR w/ Mount Pipe | A | From Leg | 5.00 | 0.0000 | 153.00 | No Ice | 7.63 | 83.52 |
| | | | 0.00 | | | 1/2" Ice | 8.82 | 160.00 |
| | | | 0.00 | | | 1" Ice | 10.44 | 244.63 |
| | | | | | | 11.54 | 442.00 | |

| | | | | |
|---|---------|-------------------------------|-------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 21 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| | | | | |
|---|---------|-------------------------------|-------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 22 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral Vert ft ft ft | Azimuth Adjustment ° | Placement ft | C _A _A Front ft ² | C _A _A Side ft ² | Weight lb |
|--------------------------|-------------|-------------|---|-------------------------|-----------------|--|--|-------------------------------------|
| DT465B-2XR w/ Mount Pipe | B | From Leg | 5.00 0.00 0.00 | 0.0000 | 153.00 | No Ice 9.34 1/2" Ice 9.91 1" Ice 10.44 2" Ice 11.53 | 7.63 8.82 9.72 11.54 | 83.52 160.00 244.63 442.00 |
| DT465B-2XR w/ Mount Pipe | C | From Leg | 5.00 0.00 0.00 | 0.0000 | 153.00 | No Ice 9.34 1/2" Ice 9.91 1" Ice 10.44 2" Ice 11.53 | 7.63 8.82 9.72 11.54 | 83.52 160.00 244.63 442.00 |
| RRH2x50-08 | A | From Leg | 5.00 0.00 0.00 | 0.0000 | 153.00 | No Ice 1.70 1/2" Ice 1.86 1" Ice 2.03 2" Ice 2.40 | 1.28 1.43 1.58 1.91 | 52.90 69.91 89.61 137.85 |
| RRH2x50-08 | B | From Leg | 5.00 0.00 0.00 | 0.0000 | 153.00 | No Ice 1.70 1/2" Ice 1.86 1" Ice 2.03 2" Ice 2.40 | 1.28 1.43 1.58 1.91 | 52.90 69.91 89.61 137.85 |
| RRH2x50-08 | C | From Leg | 5.00 0.00 0.00 | 0.0000 | 153.00 | No Ice 1.70 1/2" Ice 1.86 1" Ice 2.03 2" Ice 2.40 | 1.28 1.43 1.58 1.91 | 52.90 69.91 89.61 137.85 |
| 800MHZ 2X50W RRH | A | From Leg | 5.00 0.00 0.00 | 0.0000 | 153.00 | No Ice 2.13 1/2" Ice 2.32 1" Ice 2.51 2" Ice 2.92 | 1.77 1.95 2.13 2.51 | 53.00 74.19 98.39 156.61 |
| 800MHZ 2X50W RRH | B | From Leg | 5.00 0.00 0.00 | 0.0000 | 153.00 | No Ice 2.13 1/2" Ice 2.32 1" Ice 2.51 2" Ice 2.92 | 1.77 1.95 2.13 2.51 | 53.00 74.19 98.39 156.61 |
| 800MHZ 2X50W RRH | C | From Leg | 5.00 0.00 0.00 | 0.0000 | 153.00 | No Ice 2.13 1/2" Ice 2.32 1" Ice 2.51 2" Ice 2.92 | 1.77 1.95 2.13 2.51 | 53.00 74.19 98.39 156.61 |
| PCS 1900MHz 4x45W-65MHz | A | From Leg | 5.00 0.00 0.00 | 0.0000 | 153.00 | No Ice 2.32 1/2" Ice 2.53 1" Ice 2.74 2" Ice 3.19 | 2.24 2.44 2.65 3.09 | 60.00 83.13 109.50 172.72 |
| PCS 1900MHz 4x45W-65MHz | B | From Leg | 5.00 0.00 0.00 | 0.0000 | 153.00 | No Ice 2.32 1/2" Ice 2.53 1" Ice 2.74 2" Ice 3.19 | 2.24 2.44 2.65 3.09 | 60.00 83.13 109.50 172.72 |
| PCS 1900MHz 4x45W-65MHz | C | From Leg | 5.00 0.00 0.00 | 0.0000 | 153.00 | No Ice 2.32 1/2" Ice 2.53 1" Ice 2.74 2" Ice 3.19 | 2.24 2.44 2.65 3.09 | 60.00 83.13 109.50 172.72 |
| TD-RRH8x20-25 | A | From Leg | 5.00 0.00 0.00 | 0.0000 | 153.00 | No Ice 3.70 1/2" Ice 3.95 1" Ice 4.20 2" Ice 4.72 | 1.29 1.46 1.64 2.02 | 66.00 89.94 117.22 182.59 |
| TD-RRH8x20-25 | B | From Leg | 5.00 0.00 0.00 | 0.0000 | 153.00 | No Ice 3.70 1/2" Ice 3.95 1" Ice 4.20 2" Ice 4.72 | 1.29 1.46 1.64 2.02 | 66.00 89.94 117.22 182.59 |
| TD-RRH8x20-25 | C | From Leg | 5.00 0.00 0.00 | 0.0000 | 153.00 | No Ice 3.70 1/2" Ice 3.95 1" Ice 4.20 2" Ice 4.72 | 1.29 1.46 1.64 2.02 | 66.00 89.94 117.22 182.59 |
| **** | | | | | | | | |

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral Vert ft ft ft | Azimuth Adjustment ° | Placement ft | C _A _A Front ft ² | C _A _A Side ft ² | Weight lb |
|-----------------------------------|-------------|-------------|---|-------------------------|-----------------|--|--|--|
| (3) Sector Mounts 169-ft | C | None | | 0.0000 | 169.00 | No Ice 21.56 1/2" Ice 29.77 1" Ice 37.98 2" Ice 54.40 | 21.56 29.77 37.98 54.40 | 1395.40 2140.10 2884.80 4374.20 |
| (2) BXA-70063/6CF w/ Mount Pipe | A | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 | No Ice 7.59 1/2" Ice 8.04 1" Ice 8.50 2" Ice 9.44 | 5.18 6.11 6.92 8.59 | 38.90 95.39 159.37 313.07 |
| (2) DB844G6SZAXY w/Mount Pipe | B | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 | No Ice 5.05 1/2" Ice 5.68 1" Ice 6.19 2" Ice 7.23 | 5.28 6.31 7.06 8.58 | 41.55 92.81 150.42 288.32 |
| (2) DB844G6SZAXY w/Mount Pipe | C | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 | No Ice 5.05 1/2" Ice 5.68 1" Ice 6.19 2" Ice 7.23 | 5.28 6.31 7.06 8.58 | 41.55 92.81 150.42 288.32 |
| DB-B1/T1 w/ Mount Pipe | C | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 | No Ice 4.88 1/2" Ice 5.61 1" Ice 6.16 2" Ice 7.27 | 4.18 5.12 5.77 7.12 | 57.55 107.53 163.14 294.91 |
| (2) HBXX-6517DS-A2M w/ Mount Pipe | A | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 | No Ice 8.77 1/2" Ice 9.34 1" Ice 9.89 2" Ice 10.99 | 6.96 8.18 9.14 11.02 | 67.23 136.85 214.64 398.47 |
| (2) HBXX-6517DS-A2M w/ Mount Pipe | B | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 | No Ice 8.77 1/2" Ice 9.34 1" Ice 9.89 2" Ice 10.99 | 6.96 8.18 9.14 11.02 | 67.23 136.85 214.64 398.47 |
| (2) HBXX-6517DS-A2M w/ Mount Pipe | C | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 | No Ice 8.77 1/2" Ice 9.34 1" Ice 9.89 2" Ice 10.99 | 6.96 8.18 9.14 11.02 | 67.23 136.85 214.64 398.47 |
| RRH2x60-AWS | A | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 | No Ice 3.50 1/2" Ice 3.76 1" Ice 4.03 2" Ice 4.58 | 1.82 2.05 2.29 2.79 | 60.00 82.72 109.06 173.43 |
| RRH2x60-AWS | B | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 | No Ice 3.50 1/2" Ice 3.76 1" Ice 4.03 2" Ice 4.58 | 1.82 2.05 2.29 2.79 | 60.00 82.72 109.06 173.43 |
| RRH2x60-AWS | C | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 | No Ice 3.50 1/2" Ice 3.76 1" Ice 4.03 2" Ice 4.58 | 1.82 2.05 2.29 2.79 | 60.00 82.72 109.06 173.43 |
| RRH2X60-PCS | A | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 | No Ice 2.20 1/2" Ice 2.39 1" Ice 2.59 2" Ice 3.01 | 1.72 1.90 2.09 2.48 | 55.00 75.35 98.71 155.23 |
| RRH2X60-PCS | B | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 | No Ice 2.20 1/2" Ice 2.39 1" Ice 2.59 2" Ice 3.01 | 1.72 1.90 2.09 2.48 | 55.00 75.35 98.71 155.23 |
| RRH2X60-PCS | C | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 | No Ice 2.20 1/2" Ice 2.39 1" Ice 2.59 2" Ice 3.01 | 1.72 1.90 2.09 2.48 | 55.00 75.35 98.71 155.23 |
| BXA-70080/6CF w/ Mount | A | From Leg | 5.00 | 0.0000 | 169.00 | No Ice 7.59 | 5.54 | 42.90 |

| | | | | | | | | |
|---|----------------|--|-------------------------------|--|--------------------|--|-------------------|--|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | | US-CT-1003 - Straits Turnpike | | Page | | 23 of 37 | |
| | Project | | TEP No. 25628.442076 | | Date | | 11:57:13 09/10/20 | |
| | Client | | Phoenix Tower International | | Designed by | | DDO | |

| | | | | | | | | |
|---|----------------|--|-------------------------------|--|--------------------|--|-------------------|--|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | | US-CT-1003 - Straits Turnpike | | Page | | 24 of 37 | |
| | Project | | TEP No. 25628.442076 | | Date | | 11:57:13 09/10/20 | |
| | Client | | Phoenix Tower International | | Designed by | | DDO | |

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral | Azimuth Adjustment | Placement | C _{AA} Front | C _{AA} Side | Weight |
|---------------------------|-------------|-------------|-----------------------|--------------------|--|----------------------------------|----------------------------------|--|
| | | | ft | ° | ft | ft ² | ft ² | lb |
| Pipe | | | 0.00 0.00 | | 1/2" Ice 1" Ice 2" Ice | 8.04 8.50 9.44 | 6.48 7.30 8.99 | 100.79 166.25 323.17 |
| DB846F65ZAXY w/Mount Pipe | B | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 No Ice 1/2" Ice 1" Ice 2" Ice | 7.27 7.83 8.35 9.40 | 7.82 9.01 9.91 11.73 | 46.55 113.93 189.25 367.34 |
| DB846F65ZAXY w/Mount Pipe | C | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 No Ice 1/2" Ice 1" Ice 2" Ice | 7.27 7.83 8.35 9.40 | 7.82 9.01 9.91 11.73 | 46.55 113.93 189.25 367.34 |
| (2) FD9R6004 | A | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 No Ice 1/2" Ice 1" Ice 2" Ice | 0.37 0.45 0.54 0.75 | 0.08 0.14 0.20 0.34 | 3.10 5.40 8.79 19.61 |
| (2) FD9R6004 | B | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 No Ice 1/2" Ice 1" Ice 2" Ice | 0.37 0.45 0.54 0.75 | 0.08 0.14 0.20 0.34 | 3.10 5.40 8.79 19.61 |
| (2) FD9R6004 | C | From Leg | 5.00 0.00 0.00 | 0.0000 | 169.00 No Ice 1/2" Ice 1" Ice 2" Ice | 0.37 0.45 0.54 0.75 | 0.08 0.14 0.20 0.34 | 3.10 5.40 8.79 19.61 |
| **** | | | | | | | | |
| (3) Sector Mounts 185-ft | C | None | | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 21.56 29.77 37.98 54.40 | 21.56 29.77 37.98 54.40 | 1395.40 2140.10 2884.80 4374.20 |
| Miscellaneous [NA 510-1] | C | None | | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 6.00 8.50 11.00 16.00 | 6.00 8.50 11.00 16.00 | 255.70 339.50 409.12 562.54 |
| 7770.00 w/ Mount Pipe | A | From Leg | 5.00 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 5.84 6.32 6.77 7.71 | 4.35 5.20 5.92 7.41 | 56.90 105.42 160.42 293.10 |
| 7770.00 w/ Mount Pipe | B | From Leg | 5.00 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 5.84 6.32 6.77 7.71 | 4.35 5.20 5.92 7.41 | 56.90 105.42 160.42 293.10 |
| 7770.00 w/ Mount Pipe | C | From Leg | 5.00 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 5.84 6.32 6.77 7.71 | 4.35 5.20 5.92 7.41 | 56.90 105.42 160.42 293.10 |
| (2) LGP13519 | A | From Leg | 5.00 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 0.30 0.38 0.47 0.67 | 0.29 0.41 0.54 0.88 | 8.04 12.97 19.68 39.83 |
| (2) LGP13519 | B | From Leg | 5.00 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 0.30 0.38 0.47 0.67 | 0.29 0.41 0.54 0.88 | 8.04 12.97 19.68 39.83 |
| (2) LGP13519 | C | From Leg | 5.00 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 0.30 0.38 0.47 0.67 | 0.29 0.41 0.54 0.88 | 8.04 12.97 19.68 39.83 |
| RRUS-32 B30 | A | From Leg | 5.00 | 0.0000 | 185.00 No Ice | 3.31 | 2.42 | 77.00 |

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral | Azimuth Adjustment | Placement | C _{AA} Front | C _{AA} Side | Weight |
|-------------------------------|-------------|-------------|-----------------------|--------------------|--|----------------------------------|----------------------------------|--------------------------------------|
| | | | ft | ° | ft | ft ² | ft ² | lb |
| | | | 0.00 3.00 | | 1/2" Ice 1" Ice 2" Ice | 3.56 3.81 4.33 | 2.64 2.86 3.32 | 104.93 136.47 211.15 |
| RRUS-32 B30 | B | From Leg | 5.00 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 3.31 3.56 3.81 4.33 | 2.42 2.64 2.86 3.32 | 77.00 104.93 136.47 211.15 |
| RRUS-32 B30 | C | From Leg | 5.00 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 3.31 3.56 3.81 4.33 | 2.42 2.64 2.86 3.32 | 77.00 104.93 136.47 211.15 |
| DC6-48-60-18-8F | A | From Leg | 0.50 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 1.21 1.89 2.11 2.57 | 1.21 1.89 2.11 2.57 | 32.80 54.76 79.58 138.43 |
| DC6-48-60-18-8F | B | From Leg | 0.50 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 1.21 1.89 2.11 2.57 | 1.21 1.89 2.11 2.57 | 32.80 54.76 79.58 138.43 |
| DC6-48-60-0-8C-EV | C | From Leg | 0.50 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 2.74 2.96 3.20 3.68 | 4.78 5.06 5.35 5.95 | 26.20 63.26 104.40 199.70 |
| SBNHH-1D65A w/ Mount Pipe | A | From Leg | 5.00 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 6.29 6.74 7.20 8.14 | 5.59 6.31 7.03 8.51 | 68.24 126.00 191.24 342.55 |
| SBNHH-1D65A w/ Mount Pipe | B | From Leg | 5.00 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 6.29 6.74 7.20 8.14 | 5.59 6.31 7.03 8.51 | 68.24 126.00 191.24 342.55 |
| SBNHH-1D65A w/ Mount Pipe | C | From Leg | 5.00 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 6.29 6.74 7.20 8.14 | 5.59 6.31 7.03 8.51 | 68.24 126.00 191.24 342.55 |
| (2) DMP65R-BU6D w/ Mount Pipe | A | From Leg | 5.00 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 12.95 13.55 14.11 15.26 | 7.26 8.43 9.31 11.13 | 104.71 196.98 297.77 528.51 |
| (2) DMP65R-BU6D w/ Mount Pipe | B | From Leg | 5.00 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 12.95 13.55 14.11 15.26 | 7.26 8.43 9.31 11.13 | 104.71 196.98 297.77 528.51 |
| (2) DMP65R-BU8D w/ Mount Pipe | C | From Leg | 5.00 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 18.11 18.84 19.59 21.01 | 10.26 11.78 13.33 15.67 | 128.55 249.84 381.67 681.31 |
| RRUS 4449 B5/B12 | A | From Leg | 5.00 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 1.97 2.14 2.33 2.72 | 1.41 1.56 1.73 2.07 | 71.00 89.51 110.84 162.74 |
| RRUS 4449 B5/B12 | B | From Leg | 5.00 0.00 3.00 | 0.0000 | 185.00 No Ice 1/2" Ice 1" Ice 2" Ice | 1.97 2.14 2.33 2.72 | 1.41 1.56 1.73 2.07 | 71.00 89.51 110.84 162.74 |
| RRUS 4449 B5/B12 | C | From Leg | 5.00 0.00 | 0.0000 | 185.00 No Ice 1/2" Ice | 1.97 2.14 | 1.41 1.56 | 71.00 89.51 |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 27 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 28 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| Description | Face or Leg | Offset Type | Offsets: Horiz Lateral | Azimuth Adjustment | Placement | C _A A Front | C _A A Side | Weight |
|----------------------------|-------------|-------------|------------------------|--------------------|-----------|---|--------------------------------------|---|
| | | | ft ft ft | ° | ft | ft ² | ft ² | lb |
| RADIO 4415 | C | From Leg | 3.00 0.00 0.00 | 0.0000 | 195.00 | 2" Ice 2.58 No Ice 1.86 1/2" Ice 2.03 1" Ice 2.20 2" Ice 2.58 | 1.44 0.87 1.00 1.14 1.44 | 123.89 49.60 64.16 81.26 123.89 |
| E14 F05P85 / SDX1926Q-43 | A | From Leg | 3.00 0.00 0.00 | 0.0000 | 195.00 | No Ice 0.24 1/2" Ice 0.31 1" Ice 0.38 2" Ice 0.55 | 0.10 0.14 0.19 0.32 | 6.17 8.64 12.22 23.45 |
| E14 F05P85 / SDX1926Q-43 | B | From Leg | 3.00 0.00 0.00 | 0.0000 | 195.00 | No Ice 0.24 1/2" Ice 0.31 1" Ice 0.38 2" Ice 0.55 | 0.10 0.14 0.19 0.32 | 6.17 8.64 12.22 23.45 |
| E14 F05P85 / SDX1926Q-43 | C | From Leg | 3.00 0.00 0.00 | 0.0000 | 195.00 | No Ice 0.24 1/2" Ice 0.31 1" Ice 0.38 2" Ice 0.55 | 0.10 0.14 0.19 0.32 | 6.17 8.64 12.22 23.45 |
| **** TMO Future Loading | C | None | | 0.0000 | 195.00 | No Ice 6.63 1/2" Ice 7.31 1" Ice 7.99 2" Ice 9.35 | 6.63 7.31 7.99 9.35 | 138.18 201.85 265.51 392.85 |
| ***** | | | | | | | | |

| Comb. No. | Description |
|-----------|--|
| 27 | 1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp |
| 28 | 1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp |
| 29 | 1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp |
| 30 | 1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp |
| 31 | 1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp |
| 32 | 1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp |
| 33 | 1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp |
| 34 | 1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp |
| 35 | 1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp |
| 36 | 1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp |
| 37 | 1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp |
| 38 | 1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp |
| 39 | Dead+Wind 0 deg - Service |
| 40 | Dead+Wind 30 deg - Service |
| 41 | Dead+Wind 60 deg - Service |
| 42 | Dead+Wind 90 deg - Service |
| 43 | Dead+Wind 120 deg - Service |
| 44 | Dead+Wind 150 deg - Service |
| 45 | Dead+Wind 180 deg - Service |
| 46 | Dead+Wind 210 deg - Service |
| 47 | Dead+Wind 240 deg - Service |
| 48 | Dead+Wind 270 deg - Service |
| 49 | Dead+Wind 300 deg - Service |
| 50 | Dead+Wind 330 deg - Service |

Load Combinations

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

Maximum Tower Deflections - Service Wind

| Section No. | Elevation | Horz. Deflection | Gov. Load Comb. | Tilt | Twist |
|-------------|-------------------|------------------|-----------------|--------|--------|
| | ft | in | | ° | ° |
| T1 | 195 - 180 | 7.070 | 42 | 0.4208 | 0.0436 |
| T2 | 180 - 175 | 5.692 | 42 | 0.3920 | 0.0252 |
| T3 | 175 - 170 | 5.284 | 42 | 0.3662 | 0.0248 |
| T4 | 170 - 160 | 4.914 | 42 | 0.3380 | 0.0240 |
| T5 | 160 - 150 | 4.231 | 42 | 0.3045 | 0.0232 |
| T6 | 150 - 140 | 3.634 | 42 | 0.2582 | 0.0221 |
| T7 | 140 - 133.333 | 3.118 | 42 | 0.2266 | 0.0207 |
| T8 | 133.333 - 126.667 | 2.803 | 42 | 0.2158 | 0.0195 |
| T9 | 126.667 - 120 | 2.502 | 42 | 0.2047 | 0.0182 |
| T10 | 120 - 113.333 | 2.214 | 42 | 0.1935 | 0.0165 |
| T11 | 113.333 - 106.667 | 1.949 | 42 | 0.1761 | 0.0153 |
| T12 | 106.667 - 100 | 1.709 | 42 | 0.1586 | 0.0142 |
| T13 | 100 - 80 | 1.492 | 42 | 0.1411 | 0.0128 |
| T14 | 80 - 60 | 0.935 | 42 | 0.1150 | 0.0097 |
| T15 | 60 - 50 | 0.502 | 42 | 0.0800 | 0.0063 |
| T16 | 50 - 40 | 0.341 | 47 | 0.0626 | 0.0049 |
| T17 | 40 - 20 | 0.218 | 47 | 0.0452 | 0.0035 |
| T18 | 20 - 0 | 0.062 | 47 | 0.0225 | 0.0017 |

Critical Deflections and Radius of Curvature - Service Wind

| Elevation | Appurtenance | Gov. Load Comb. | Deflection | Tilt | Twist | Radius of Curvature |
|-----------|-------------------------|-----------------|------------|--------|--------|---------------------|
| ft | | | in | ° | ° | ft |
| 195.00 | Sector Mount [SM 802-3] | 42 | 7.070 | 0.4208 | 0.0436 | 26368 |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 29 of 37 |
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| | Client | Phoenix Tower International | Designed by | DDO |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 30 of 37 |
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| Elevation | Appurtenance | Gov. Load Comb. | Deflection | Tilt | Twist | Radius of Curvature |
|-----------|--------------------------|-----------------|------------|--------|--------|---------------------|
| ft | | | in | ° | ° | ft |
| 185.00 | (3) Sector Mounts 185-ft | 42 | 6.133 | 0.4076 | 0.0278 | 13184 |
| 169.00 | (3) Sector Mounts 169-ft | 42 | 4.842 | 0.3335 | 0.0238 | 16626 |
| 153.00 | Sector Mount [SM 502-3] | 42 | 3.804 | 0.2724 | 0.0225 | 13558 |
| 75.50 | 1.75" Dia x 5-ft Pipe | 42 | 0.827 | 0.1085 | 0.0089 | 39427 |

Maximum Tower Deflections - Design Wind

| Section No. | Elevation | Horz. Deflection | Gov. Load Comb. | Tilt | Twist |
|-------------|-------------------|------------------|-----------------|--------|--------|
| | ft | in | | ° | ° |
| T1 | 195 - 180 | 26.896 | 18 | 1.6094 | 0.1398 |
| T2 | 180 - 175 | 21.649 | 18 | 1.4893 | 0.0960 |
| T3 | 175 - 170 | 20.096 | 18 | 1.3922 | 0.0946 |
| T4 | 170 - 160 | 18.689 | 18 | 1.2844 | 0.0912 |
| T5 | 160 - 150 | 16.094 | 18 | 1.1562 | 0.0882 |
| T6 | 150 - 140 | 13.830 | 18 | 0.9797 | 0.0841 |
| T7 | 140 - 133.333 | 11.870 | 18 | 0.8598 | 0.0789 |
| T8 | 133.333 - 126.667 | 10.672 | 18 | 0.8187 | 0.0742 |
| T9 | 126.667 - 120 | 9.529 | 18 | 0.7768 | 0.0691 |
| T10 | 120 - 113.333 | 8.436 | 18 | 0.7346 | 0.0627 |
| T11 | 113.333 - 106.667 | 7.431 | 18 | 0.6686 | 0.0583 |
| T12 | 106.667 - 100 | 6.517 | 18 | 0.6022 | 0.0539 |
| T13 | 100 - 80 | 5.693 | 18 | 0.5360 | 0.0487 |
| T14 | 80 - 60 | 3.575 | 18 | 0.4370 | 0.0368 |
| T15 | 60 - 50 | 1.924 | 18 | 0.3042 | 0.0241 |
| T16 | 50 - 40 | 1.308 | 18 | 0.2380 | 0.0186 |
| T17 | 40 - 20 | 0.837 | 18 | 0.1722 | 0.0132 |
| T18 | 20 - 0 | 0.238 | 18 | 0.0856 | 0.0063 |

Critical Deflections and Radius of Curvature - Design Wind

| Elevation | Appurtenance | Gov. Load Comb. | Deflection | Tilt | Twist | Radius of Curvature |
|-----------|--------------------------|-----------------|------------|--------|--------|---------------------|
| ft | | | in | ° | ° | ft |
| 195.00 | Sector Mount [SM 802-3] | 18 | 26.896 | 1.6094 | 0.1398 | 7151 |
| 185.00 | (3) Sector Mounts 185-ft | 18 | 23.328 | 1.5517 | 0.1005 | 3575 |
| 169.00 | (3) Sector Mounts 169-ft | 18 | 18.417 | 1.2673 | 0.0906 | 4404 |
| 153.00 | Sector Mount [SM 502-3] | 18 | 14.473 | 1.0337 | 0.0855 | 3578 |
| 75.50 | 1.75" Dia x 5-ft Pipe | 18 | 3.160 | 0.4123 | 0.0340 | 10441 |

Bolt Design Data

| Section No. | Elevation | Component Type | Bolt Grade | Bolt Size | Number Of Bolts | Maximum Load per Bolt | Allowable Load per Bolt | Ratio Load Allowable | Allowable Ratio | Criteria |
|-------------|-----------|----------------------|------------|-----------|-----------------|-----------------------|-------------------------|----------------------|-----------------|--------------------|
| | ft | | | in | | lb | lb | | | |
| T1 | 195 | Leg | A325N | 0.7500 | 4 | 4624.80 | 30101.40 | 0.154 | 1.05 | Bolt Tension |
| T2 | 180 | Diagonal | A325N | 0.5000 | 1 | 3511.25 | 4689.84 | 0.749 | 1.05 | Member Block Shear |
| | | Secondary Horizontal | A325N | 0.6250 | 1 | 686.02 | 6830.86 | 0.100 | 1.05 | Member Block Shear |

| Section No. | Elevation | Component Type | Bolt Grade | Bolt Size | Number Of Bolts | Maximum Load per Bolt | Allowable Load per Bolt | Ratio Load Allowable | Allowable Ratio | Criteria |
|-------------|-----------|----------------------|------------|-----------|-----------------|-----------------------|-------------------------|----------------------|-----------------|--------------------|
| | ft | | | in | | lb | lb | | | |
| T3 | 175 | Diagonal | A325X | 0.5000 | 1 | 3553.77 | 7245.70 | 0.490 | 1.05 | Member Block Shear |
| | | Secondary Horizontal | A325N | 0.6250 | 1 | 874.15 | 6830.86 | 0.128 | 1.05 | Member Block Shear |
| T4 | 170 | Leg | A325N | 0.7500 | 6 | 10739.30 | 30101.40 | 0.357 | 1.05 | Bolt Tension |
| | | Diagonal | A325N | 0.5000 | 1 | 4796.60 | 8265.00 | 0.580 | 1.05 | Gusset Bearing |
| | | Secondary Horizontal | A325N | 0.6250 | 1 | 1273.88 | 6830.86 | 0.186 | 1.05 | Member Block Shear |
| T5 | 160 | Diagonal | A325X | 0.5000 | 1 | 5650.78 | 8265.00 | 0.684 | 1.05 | Gusset Bearing |
| | | Secondary Horizontal | A325N | 0.6250 | 1 | 1651.00 | 6830.86 | 0.242 | 1.05 | Member Block Shear |
| T6 | 150 | Leg | A325N | 1.0000 | 6 | 17598.60 | 54517.00 | 0.323 | 1.05 | Bolt Tension |
| | | Diagonal | A325N | 0.5000 | 1 | 5357.72 | 8265.00 | 0.648 | 1.05 | Gusset Bearing |
| | | Secondary Horizontal | A325N | 0.6250 | 1 | 2061.48 | 6830.86 | 0.302 | 1.05 | Member Block Shear |
| T7 | 140 | Diagonal | A325X | 0.6250 | 1 | 5458.45 | 12712.50 | 0.429 | 1.05 | Member Block Shear |
| T8 | 133.333 | Diagonal | A325X | 0.6250 | 1 | 5554.49 | 12712.50 | 0.437 | 1.05 | Member Block Shear |
| T9 | 126.667 | Leg | A325N | 1.0000 | 8 | 17815.40 | 54517.00 | 0.327 | 1.05 | Bolt Tension |
| | | Diagonal | A325N | 0.6250 | 1 | 5462.79 | 7830.00 | 0.698 | 1.05 | Member Bearing |
| T10 | 120 | Diagonal | A325X | 0.6250 | 1 | 6508.59 | 13050.00 | 0.499 | 1.05 | Member Bearing |
| | | Secondary Horizontal | A325N | 0.6250 | 1 | 2947.17 | 7830.00 | 0.376 | 1.05 | Member Bearing |
| T11 | 113.333 | Diagonal | A325X | 0.6250 | 1 | 6510.85 | 13050.00 | 0.499 | 1.05 | Member Bearing |
| | | Secondary Horizontal | A325N | 0.6250 | 1 | 3168.08 | 7830.00 | 0.405 | 1.05 | Member Bearing |
| T12 | 106.667 | Leg | A325N | 1.0000 | 8 | 21839.40 | 54517.00 | 0.401 | 1.05 | Bolt Tension |
| | | Diagonal | A325X | 0.6250 | 1 | 6682.77 | 12712.50 | 0.526 | 1.05 | Member Block Shear |
| | | Secondary Horizontal | A325N | 0.6250 | 1 | 3373.44 | 7830.00 | 0.431 | 1.05 | Member Bearing |
| T13 | 100 | Leg | A325N | 1.2500 | 8 | 25812.20 | 87219.80 | 0.296 | 1.05 | Bolt Tension |
| | | Diagonal | A325N | 0.6250 | 2 | 3397.52 | 11622.70 | 0.292 | 1.05 | Member Block Shear |
| | | Secondary Horizontal | A325N | 0.7500 | 1 | 4010.32 | 13898.40 | 0.289 | 1.05 | Member Block Shear |
| T14 | 80 | Leg | A325N | 1.2500 | 8 | 29625.00 | 87219.80 | 0.340 | 1.05 | Bolt Tension |
| | | Diagonal | A325N | 0.6250 | 2 | 3585.50 | 11622.70 | 0.308 | 1.05 | Member Block Shear |
| T15 | 60 | Diagonal | A325N | 0.6250 | 2 | 4926.55 | 13805.80 | 0.357 | 1.05 | Bolt Shear |
| | | Secondary Horizontal | A325N | 0.6250 | 1 | 4831.88 | 13805.80 | 0.350 | 1.05 | Bolt Shear |
| T16 | 50 | Leg | A325N | 1.2500 | 8 | 32734.00 | 87219.80 | 0.375 | 1.05 | Bolt Tension |
| | | Diagonal | A325N | 0.6250 | 2 | 4779.67 | 13805.80 | 0.346 | 1.05 | Bolt Shear |
| | | Secondary Horizontal | A325X | 0.7500 | 1 | 5128.82 | 14355.00 | 0.357 | 1.05 | Member Bearing |
| T17 | 40 | Leg | A325N | 1.2500 | 8 | 36243.40 | 87219.80 | 0.416 | 1.05 | Bolt Tension |
| | | Diagonal | A325N | 0.6250 | 2 | 4503.04 | 13805.80 | 0.326 | 1.05 | Bolt Shear |
| T18 | 20 | Leg | A36 | 1.5000 | 8 | 40302.30 | 61128.30 | 0.659 | 1.05 | Bolt Tension |
| | | Diagonal | A325N | 0.6250 | 2 | 5063.48 | 13805.80 | 0.367 | 1.05 | Bolt Shear |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 31 of 37 |
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| | Client | Phoenix Tower International | Designed by | DDO |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 32 of 37 |
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Compression Checks

Leg Design Data (Compression)

| Section No. | Elevation | Size | L | L _n | KI/r | A | P _n | φP _n | Ratio P _n / φP _n |
|-------------|-------------------|----------------------------------|-------|----------------|----------------|-----------------|----------------|-----------------|--|
| | ft | | ft | ft | | in ² | lb | lb | |
| T1 | 195 - 180 | PIPE 2.5 STD (SCH 40) | 15.00 | 3.75 | 47.4 K=1.00 | 1.7072 | -35505.80 | 70532.50 | 0.503 ¹ |
| T2 | 180 - 175 | PIPE 2.5 STD (SCH 40) | 5.01 | 2.67 | 33.8 K=1.00 | 1.7072 | -39558.20 | 77102.10 | 0.513 ¹ |
| T3 | 175 - 170 | PIPE 2.5 STD (SCH 40) | 5.01 | 2.65 | 33.5 K=1.00 | 1.7072 | -50338.60 | 77205.80 | 0.652 ¹ |
| T4 | 170 - 160 | 2-1/2SCH40 w/ 3SCH80 Half Sleeve | 10.02 | 2.62 | 34.2 K=1.00 | 3.2590 | -73389.70 | 96687.00 | 0.759 ¹ |
| T5 | 160 - 150 | Pipe 3.5 Std (SCH40) | 10.02 | 2.60 | 23.4 K=1.00 | 2.6795 | -95053.60 | 126932.00 | 0.749 ¹ |
| T6 | 150 - 140 | 3.5SCH40 w/ 4SCH40 Half Sleeve | 10.02 | 2.59 | 23.8 K=1.00 | 4.2666 | -118794.00 | 184209.00 | 0.645 ¹ |
| T7 | 140 - 133.333 | 5 STD w/ 6 XH Half Sleeve | 6.68 | 6.68 | 45.4 K=1.00 | 8.5023 | -132026.00 | 306442.00 | 0.431 ¹ |
| T8 | 133.333 - 126.667 | 5 STD w/ 6 XH Half Sleeve | 6.68 | 6.68 | 45.4 K=1.00 | 8.5023 | -145555.00 | 306442.00 | 0.475 ¹ |
| T9 | 126.667 - 120 | 5 STD w/ 6 XH Half Sleeve | 6.68 | 6.68 | 45.4 K=1.00 | 8.5023 | -158942.00 | 306442.00 | 0.519 ¹ |
| T10 | 120 - 113.333 | Pipe 6 STD | 6.68 | 3.45 | 18.4 K=1.00 | 5.5813 | -169825.00 | 268817.00 | 0.632 ¹ |
| T11 | 113.333 - 106.667 | Pipe 6 STD | 6.68 | 3.44 | 18.4 K=1.00 | 5.5813 | -182505.00 | 268848.00 | 0.679 ¹ |
| T12 | 106.667 - 100 | Pipe 6 STD | 6.68 | 3.44 | 18.4 K=1.00 | 5.5813 | -194371.00 | 268875.00 | 0.723 ¹ |
| T13 | 100 - 80 | 6 STD w/ 7 XH Half Sleeve | 20.03 | 3.42 | 19.5 K=1.00 | 11.1800 | -231247.00 | 412800.00 | 0.560 ¹ |
| T14 | 80 - 60 | Pipe 8 STD | 20.03 | 6.68 | 27.3 K=1.00 | 8.3993 | -266353.00 | 391613.00 | 0.680 ¹ |
| T15 | 60 - 50 | Pipe 8 STD | 10.02 | 5.16 | 21.1 K=1.00 | 8.3993 | -278579.00 | 401143.00 | 0.694 ¹ |
| T16 | 50 - 40 | Pipe 8 STD | 10.02 | 5.16 | 21.1 K=1.00 | 8.3993 | -295688.00 | 401194.00 | 0.737 ¹ |
| T17 | 40 - 20 | Pipe 8 EH | 20.03 | 10.02 | 41.8 K=1.00 | 12.7627 | -329381.00 | 549063.00 | 0.600 ¹ |
| T18 | 20 - 0 | Pipe 8 EH | 20.03 | 9.97 | 41.6 K=1.00 | 12.7627 | -360201.00 | 549704.00 | 0.655 ¹ |

¹ P_n / φP_n controls

Diagonal Design Data (Compression)

| Section No. | Elevation | Size | L | L _n | KI/r | A | P _n | φP _n | Ratio P _n / φP _n |
|-------------|-----------|------------------------|------|----------------|-----------------|-----------------|----------------|-----------------|--|
| | ft | | ft | ft | | in ² | lb | lb | |
| T2 | 180 - 175 | L1 1/2x1 1/2x3/16 | 6.25 | 3.03 | 124.0 K=1.00 | 0.5273 | -4224.48 | 9812.52 | 0.431 ¹ |
| T3 | 175 - 170 | L2x2x3/16 | 6.56 | 3.18 | 102.5 K=1.06 | 0.7150 | -3381.05 | 17231.70 | 0.196 ¹ |
| T4 | 170 - 160 | 2L1 1/2x1 1/2x3/16x1/4 | 6.90 | 3.36 | 88.3 K=1.00 | 1.0547 | -5241.47 | 28278.10 | 0.185 ¹ |

| Section No. | Elevation | Size | L | L _n | KI/r | A | P _n | φP _n | Ratio P _n / φP _n |
|-------------|-------------------|---|-------|----------------|-----------------|-----------------|----------------|-----------------|--|
| | ft | | ft | ft | | in ² | lb | lb | |
| T5 | 160 - 150 | 2L 'a' > 19.4307 in - 83 2L2x2x3/16x1/4 | 8.01 | 3.83 | 76.6 K=1.00 | 1.4297 | -5922.45 | 40630.70 | 0.146 ¹ |
| T6 | 150 - 140 | 2L 'a' > 22.0154 in - 96 2L2x2x3/16x1/4 | 8.81 | 4.22 | 84.4 K=1.00 | 1.4297 | -5542.56 | 38728.60 | 0.143 ¹ |
| T7 | 140 - 133.333 | 2L 'a' > 24.2504 in - 114 L2 1/2x2 1/2x1/4 | 10.29 | 4.92 | 120.3 K=1.00 | 1.1900 | -5557.62 | 23336.80 | 0.238 ¹ |
| T8 | 133.333 - 126.667 | L2 1/2x2 1/2x1/4 | 10.80 | 5.18 | 126.7 K=1.00 | 1.1900 | -5710.79 | 21217.30 | 0.269 ¹ |
| T9 | 126.667 - 120 | L2 1/2x2 1/2x3/16 | 11.34 | 5.47 | 132.6 K=1.00 | 0.9023 | -5535.49 | 14691.40 | 0.377 ¹ |
| T10 | 120 - 113.333 | L3x3x1/4 | 11.88 | 5.67 | 117.3 K=1.01 | 1.4400 | -7113.28 | 29417.90 | 0.242 ¹ |
| T11 | 113.333 - 106.667 | L3x3x1/4 | 12.44 | 5.95 | 122.1 K=1.00 | 1.4400 | -6998.17 | 27519.70 | 0.254 ¹ |
| T12 | 106.667 - 100 | L2 1/2x2 1/2x1/4 | 13.01 | 6.24 | 152.5 K=1.00 | 1.1900 | -7341.78 | 14641.70 | 0.501 ¹ |
| T13 | 100 - 80 | L3 1/2x3 1/2x1/4 | 14.17 | 6.72 | 117.1 K=1.01 | 1.6900 | -7480.95 | 34593.90 | 0.216 ¹ |
| T14 | 80 - 60 | L3 1/2x3 1/2x1/4 | 16.57 | 7.88 | 132.4 K=0.97 | 1.6900 | -7141.59 | 27606.40 | 0.259 ¹ |
| T15 | 60 - 50 | L3x3x5/16 | 18.87 | 9.11 | 171.5 K=0.91 | 1.7800 | -9853.11 | 17330.30 | 0.569 ¹ |
| T16 | 50 - 40 | L3x3x5/16 | 19.73 | 9.54 | 178.2 K=0.91 | 1.7800 | -9559.33 | 16044.50 | 0.596 ¹ |
| T17 | 40 - 20 | L4x4x3/8 | 21.47 | 10.41 | 149.5 K=0.94 | 2.8600 | -9006.08 | 36647.10 | 0.246 ¹ |
| T18 | 20 - 0 | L5x5x5/16 | 23.24 | 11.30 | 132.5 K=0.97 | 3.0300 | -10127.00 | 49368.70 | 0.205 ¹ |

¹ P_n / φP_n controls

Horizontal Design Data (Compression)

| Section No. | Elevation | Size | L | L _n | KI/r | A | P _n | φP _n | Ratio P _n / φP _n |
|-------------|-----------|-------------------|------|----------------|-----------------|-----------------|----------------|-----------------|--|
| | ft | | ft | ft | | in ² | lb | lb | |
| T1 | 195 - 180 | L1 1/2x1 1/2x3/16 | 3.50 | 3.26 | 128.2 K=0.96 | 0.5273 | -5090.96 | 9181.68 | 0.554 ¹ |

¹ P_n / φP_n controls

Secondary Horizontal Design Data (Compression)

| Section No. | Elevation | Size | L | L _n | KI/r | A | P _n | φP _n | Ratio P _n / φP _n |
|-------------|-----------|-----------|------|----------------|----------------|-----------------|----------------|-----------------|--|
| | ft | | ft | ft | | in ² | lb | lb | |
| T2 | 180 - 175 | L2x2x3/16 | 3.73 | 1.63 | 84.8 K=1.71 | 0.7150 | -686.02 | 19923.20 | 0.034 ¹ |
| T3 | 175 - 170 | L2x2x3/16 | 4.24 | 1.88 | 88.6 K=1.55 | 0.7150 | -874.15 | 19386.80 | 0.045 ¹ |
| T4 | 170 - 160 | L2x2x3/16 | 5.24 | 2.38 | 96.2 | 0.7150 | -1273.88 | 18244.10 | 0.070 ¹ |

| | | | | |
|---|----------------|-------------------------------|--------------------|-------------------|
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| Section No. | Elevation ft | Size | L ft | L _u ft | Kl/r | A in ² | P _u lb | φP _u lb | Ratio |
|-------------|-------------------|-----------|---------|----------------------|-----------------|----------------------|----------------------|-----------------------|------------------------|
| | | | | | | | | | $\frac{P_u}{\phi P_n}$ |
| T5 | 160 - 150 | L2x2x3/16 | 6.24 | 2.83 | K=1.33 103.2 | 0.7150 | -1651.00 | 17128.20 | 0.096 ¹ |
| T6 | 150 - 140 | L2x2x3/16 | 7.24 | 3.31 | K=1.20 110.5 | 0.7150 | -2061.48 | 15864.80 | 0.130 ¹ |
| T10 | 120 - 113.333 | L3x3x3/16 | 9.82 | 4.52 | K=1.09 105.5 | 1.0900 | -2947.17 | 25103.30 | 0.117 ¹ |
| T11 | 113.333 - 106.667 | L3x3x3/16 | 10.49 | 4.85 | K=1.16 108.8 | 1.0900 | -3168.08 | 24274.30 | 0.131 ¹ |
| T12 | 106.667 - 100 | L3x3x3/16 | 11.16 | 5.18 | K=1.11 112.2 | 1.0900 | -3373.44 | 23419.30 | 0.144 ¹ |
| T13 | 100 - 80 | L3x3x1/4 | 13.16 | 6.12 | K=1.08 125.4 | 1.4400 | -4010.32 | 26189.00 | 0.153 ¹ |
| T15 | 60 - 50 | L4x4x3/8 | 15.98 | 7.51 | K=1.00 117.2 | 2.8600 | -4831.88 | 58485.50 | 0.083 ¹ |
| T16 | 50 - 40 | L4x4x1/4 | 16.99 | 7.99 | K=1.02 120.6 | 1.9400 | -5128.82 | 37678.30 | 0.136 ¹ |
| | | | | | K=1.00 | | | | |

¹ P_u / φP_n controls

Top Girt Design Data (Compression)

| Section No. | Elevation ft | Size | L ft | L _u ft | Kl/r | A in ² | P _u lb | φP _u lb | Ratio |
|-------------|-----------------|-------------------|---------|----------------------|--------|----------------------|----------------------|-----------------------|------------------------|
| | | | | | | | | | $\frac{P_u}{\phi P_n}$ |
| T1 | 195 - 180 | L1 1/2x1 1/2x3/16 | 3.50 | 3.26 | 128.2 | 0.5273 | -1544.87 | 9181.68 | 0.168 ¹ |
| | | | | | K=0.96 | | | | |

¹ P_u / φP_n controls

Bottom Girt Design Data (Compression)

| Section No. | Elevation ft | Size | L ft | L _u ft | Kl/r | A in ² | P _u lb | φP _u lb | Ratio |
|-------------|-----------------|-------------------|---------|----------------------|--------|----------------------|----------------------|-----------------------|------------------------|
| | | | | | | | | | $\frac{P_u}{\phi P_n}$ |
| T1 | 195 - 180 | L1 1/2x1 1/2x3/16 | 3.50 | 3.26 | 128.2 | 0.5273 | -3089.00 | 9181.68 | 0.336 ¹ |
| | | | | | K=0.96 | | | | |

¹ P_u / φP_n controls

Tension Checks

Leg Design Data (Tension)

| Section No. | Elevation ft | Size | L ft | L _u ft | Kl/r | A in ² | P _u lb | φP _u lb | Ratio |
|-------------|-----------------|-----------------------|---------|----------------------|------|----------------------|----------------------|-----------------------|------------------------|
| | | | | | | | | | $\frac{P_u}{\phi P_n}$ |
| T1 | 195 - 180 | PIPE 2.5 STD (SCH 40) | 15.00 | 3.75 | 47.4 | 1.7072 | 18499.20 | 84508.30 | 0.219 ¹ |

| | | | | |
|---|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 34 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| Section No. | Elevation ft | Size | L ft | L _u ft | Kl/r | A in ² | P _u lb | φP _u lb | Ratio |
|-------------|-------------------|-------------------------------------|---------|----------------------|------|----------------------|----------------------|-----------------------|------------------------|
| | | | | | | | | | $\frac{P_u}{\phi P_n}$ |
| T2 | 180 - 175 | PIPE 2.5 STD (SCH 40) | 5.01 | 2.34 | 29.5 | 1.7072 | 34995.80 | 84508.30 | 0.414 ¹ |
| T3 | 175 - 170 | PIPE 2.5 STD (SCH 40) | 5.01 | 2.36 | 29.8 | 1.7072 | 44074.40 | 84508.30 | 0.522 ¹ |
| T4 | 170 - 160 | 2-1/2SCH40 w/ 3SCH80 Half Sleeve | 10.02 | 2.38 | 31.1 | 3.2590 | 64480.80 | 102659.00 | 0.628 ¹ |
| T5 | 160 - 150 | Pipe 3.5 Std (SCH40) | 10.02 | 2.40 | 21.6 | 2.6795 | 84218.80 | 132637.00 | 0.635 ¹ |
| T6 | 150 - 140 | 3.5SCH40 w/ 4SCH40 Half Sleeve | 10.02 | 2.42 | 22.2 | 4.2666 | 105683.00 | 191997.00 | 0.550 ¹ |
| T7 | 140 - 133.333 | 5 STD w/ 6 XH Half Sleeve | 6.68 | 6.68 | 45.4 | 8.5023 | 117842.00 | 351995.00 | 0.335 ¹ |
| T8 | 133.333 - 126.667 | 5 STD w/ 6 XH Half Sleeve | 6.68 | 6.68 | 45.4 | 8.5023 | 130322.00 | 351995.00 | 0.370 ¹ |
| T9 | 126.667 - 120 | 5 STD w/ 6 XH Half Sleeve | 6.68 | 6.68 | 45.4 | 8.5023 | 142523.00 | 351995.00 | 0.405 ¹ |
| T10 | 120 - 113.333 | Pipe 6 STD | 6.68 | 3.23 | 17.2 | 5.5813 | 152774.00 | 276277.00 | 0.553 ¹ |
| T11 | 113.333 - 106.667 | Pipe 6 STD | 6.68 | 3.23 | 17.3 | 5.5813 | 164162.00 | 276277.00 | 0.594 ¹ |
| T12 | 106.667 - 100 | Pipe 6 STD | 6.68 | 3.24 | 17.3 | 5.5813 | 174926.00 | 276277.00 | 0.633 ¹ |
| T13 | 100 - 80 | 6 STD w/ 7 XH Half Sleeve | 20.03 | 3.25 | 18.6 | 11.1800 | 206696.00 | 422604.00 | 0.489 ¹ |
| T14 | 80 - 60 | Pipe 8 STD | 20.03 | 6.68 | 27.3 | 8.3993 | 237000.00 | 415763.00 | 0.570 ¹ |
| T15 | 60 - 50 | Pipe 8 STD | 10.02 | 4.85 | 19.8 | 8.3993 | 247658.00 | 415763.00 | 0.596 ¹ |
| T16 | 50 - 40 | Pipe 8 STD | 10.02 | 4.86 | 19.9 | 8.3993 | 262175.00 | 415763.00 | 0.631 ¹ |
| T17 | 40 - 20 | Pipe 8 EH | 20.03 | 10.02 | 41.8 | 12.7627 | 289947.00 | 631755.00 | 0.459 ¹ |
| T18 | 20 - 0 | Pipe 8 EH | 20.03 | 0.08 | 0.3 | 12.7627 | 322418.00 | 631755.00 | 0.510 ¹ |

¹ P_u / φP_n controls

Diagonal Design Data (Tension)

| Section No. | Elevation ft | Size | L ft | L _u ft | Kl/r | A in ² | P _u lb | φP _u lb | Ratio |
|-------------|-------------------|--|---------|----------------------|-------|----------------------|----------------------|-----------------------|------------------------|
| | | | | | | | | | $\frac{P_u}{\phi P_n}$ |
| T1 | 195 - 180 | 5/8 | 5.13 | 4.78 | 366.9 | 0.3068 | 9238.10 | 9940.20 | 0.929 ¹ |
| T2 | 180 - 175 | L1 1/2x1 1/2x3/16 | 6.25 | 3.03 | 82.4 | 0.3076 | 3511.25 | 13381.30 | 0.262 ¹ |
| T3 | 175 - 170 | L2x2x3/16 | 6.56 | 3.18 | 64.0 | 0.4484 | 3553.77 | 19503.60 | 0.182 ¹ |
| T4 | 170 - 160 | 2L1 1/2x1 1/2x3/16x1/4 2L 's' > 19.4307 in - 83 | 6.90 | 3.36 | 91.1 | 0.6152 | 4796.60 | 26762.70 | 0.179 ¹ |
| T5 | 160 - 150 | 2L2x2x3/16x1/4 2L 's' > 22.0154 in - 96 | 8.01 | 3.83 | 76.8 | 0.8965 | 5650.78 | 38997.10 | 0.145 ¹ |
| T6 | 150 - 140 | 2L2x2x3/16x1/4 2L 's' > 23.1042 in - 122 | 8.40 | 4.02 | 80.3 | 0.8965 | 5357.72 | 38997.10 | 0.137 ¹ |
| T7 | 140 - 133.333 | L2 1/2x2 1/2x1/4 | 10.29 | 4.92 | 78.9 | 0.7519 | 5458.45 | 32706.60 | 0.167 ¹ |
| T8 | 133.333 - 126.667 | L2 1/2x2 1/2x1/4 | 10.80 | 5.18 | 83.0 | 0.7519 | 5554.49 | 32706.60 | 0.170 ¹ |
| T9 | 126.667 - 120 | L2 1/2x2 1/2x3/16 | 11.34 | 5.47 | 86.2 | 0.5713 | 5462.79 | 24851.10 | 0.220 ¹ |
| T10 | 120 - 113.333 | L3x3x1/4 | 11.88 | 5.67 | 75.3 | 0.9394 | 6508.59 | 40862.80 | 0.159 ¹ |
| T11 | 113.333 - 106.667 | L3x3x1/4 | 12.44 | 5.95 | 78.9 | 0.9394 | 6510.85 | 40862.80 | 0.159 ¹ |
| T12 | 106.667 - 100 | L2 1/2x2 1/2x1/4 | 13.01 | 6.24 | 99.5 | 0.7519 | 6682.77 | 32706.60 | 0.204 ¹ |
| T13 | 100 - 80 | L3 1/2x3 1/2x1/4 | 14.17 | 6.72 | 76.1 | 1.1269 | 6795.03 | 49019.10 | 0.139 ¹ |
| T14 | 80 - 60 | L3 1/2x3 1/2x1/4 | 16.57 | 7.88 | 88.9 | 1.1269 | 7171.00 | 49019.10 | 0.146 ¹ |
| T15 | 60 - 50 | L3x3x5/16 | 18.87 | 9.11 | 121.6 | 1.1592 | 8831.85 | 50426.00 | 0.175 ¹ |
| T16 | 50 - 40 | L3x3x5/16 | 19.73 | 9.54 | 127.3 | 1.1592 | 8541.87 | 50426.00 | 0.169 ¹ |
| T17 | 40 - 20 | L4x4x3/8 | 20.59 | 9.98 | 99.3 | 1.9341 | 8225.59 | 84131.70 | 0.098 ¹ |
| T18 | 20 - 0 | L5x5x5/16 | 23.24 | 11.30 | 87.9 | 2.0967 | 9047.09 | 91207.30 | 0.099 ¹ |

¹ P_u / φP_n controls

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 35 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 36 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

Horizontal Design Data (Tension)

| Section No. | Elevation ft | Size | L ft | L _u ft | Kl/r | A in ² | P _u lb | φP _u lb | Ratio P _u /φP _u |
|-------------|--------------|-------------------|------|-------------------|------|-------------------|-------------------|--------------------|---------------------------------------|
| T1 | 195 - 180 | L1 1/2x1 1/2x3/16 | 3.50 | 3.26 | 85.7 | 0.5273 | 614.98 | 17085.90 | 0.036 ¹ |

¹ P_u / φP_u controls

Secondary Horizontal Design Data (Tension)

| Section No. | Elevation ft | Size | L ft | L _u ft | Kl/r | A in ² | P _u lb | φP _u lb | Ratio P _u /φP _u |
|-------------|-------------------|-----------|-------|-------------------|-------|-------------------|-------------------|--------------------|---------------------------------------|
| T2 | 180 - 175 | L2x2x3/16 | 3.73 | 1.63 | 67.9 | 0.4308 | 686.02 | 18739.00 | 0.037 ¹ |
| T3 | 175 - 170 | L2x2x3/16 | 4.24 | 1.88 | 77.7 | 0.4308 | 874.15 | 18739.00 | 0.047 ¹ |
| T4 | 170 - 160 | L2x2x3/16 | 5.24 | 2.38 | 97.2 | 0.4308 | 1273.88 | 18739.00 | 0.068 ¹ |
| T5 | 160 - 150 | L2x2x3/16 | 6.24 | 2.83 | 114.9 | 0.4308 | 1651.00 | 18739.00 | 0.088 ¹ |
| T6 | 150 - 140 | L2x2x3/16 | 7.24 | 3.31 | 133.5 | 0.4308 | 2061.48 | 18739.00 | 0.110 ¹ |
| T10 | 120 - 113.333 | L3x3x3/16 | 9.82 | 4.52 | 118.5 | 0.7120 | 2947.17 | 30973.40 | 0.095 ¹ |
| T11 | 113.333 - 106.667 | L3x3x3/16 | 10.49 | 4.85 | 127.0 | 0.7120 | 3168.08 | 30973.40 | 0.102 ¹ |
| T12 | 106.667 - 100 | L3x3x3/16 | 11.16 | 5.18 | 135.5 | 0.7120 | 3373.44 | 30973.40 | 0.109 ¹ |
| T13 | 100 - 80 | L3x3x1/4 | 13.16 | 6.12 | 162.3 | 0.9159 | 4010.32 | 39843.30 | 0.101 ¹ |
| T15 | 60 - 50 | L4x4x3/8 | 15.98 | 7.51 | 148.9 | 1.9341 | 4831.88 | 84131.70 | 0.057 ¹ |
| T16 | 50 - 40 | L4x4x1/4 | 16.99 | 7.99 | 156.2 | 1.2909 | 5128.82 | 56155.80 | 0.091 ¹ |

¹ P_u / φP_u controls

Top Girt Design Data (Tension)

| Section No. | Elevation ft | Size | L ft | L _u ft | Kl/r | A in ² | P _u lb | φP _u lb | Ratio P _u /φP _u |
|-------------|--------------|-------------------|------|-------------------|------|-------------------|-------------------|--------------------|---------------------------------------|
| T1 | 195 - 180 | L1 1/2x1 1/2x3/16 | 3.50 | 3.26 | 85.7 | 0.5273 | 770.53 | 17085.90 | 0.045 ¹ |

¹ P_u / φP_u controls

Section Capacity Table

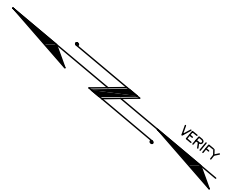
| Section No. | Elevation ft | Component Type | Size | Critical Element | P lb | φP _{allow} lb | % Capacity | Pass Fail |
|-------------|-------------------|----------------|----------------------------------|------------------|-----------|------------------------|------------|-----------|
| T1 | 195 - 180 | Leg | PIPE 2.5 STD (SCH 40) | 1 | -35505.80 | 74059.12 | 47.9 | Pass |
| T2 | 180 - 175 | Leg | PIPE 2.5 STD (SCH 40) | 43 | -39558.20 | 80957.20 | 48.9 | Pass |
| T3 | 175 - 170 | Leg | PIPE 2.5 STD (SCH 40) | 55 | -50338.60 | 81066.08 | 62.1 | Pass |
| T4 | 170 - 160 | Leg | 2-1/2SCH40 w/ 3SCH80 Half Sleeve | 67 | Note 1 | Note 1 | 75.6 | Pass |
| T5 | 160 - 150 | Leg | Pipe 3.5 Std (SCH40) | 88 | -95053.60 | 133278.59 | 71.3 | Pass |
| T6 | 150 - 140 | Leg | 3.5SCH40 w/ 4SCH40 Half Sleeve | 109 | Note 1 | Note 1 | 69.4 | Pass |
| T7 | 140 - 133.333 | Leg | 5 STD w/ 6 XH Half Sleeve | 130 | Note 1 | Note 1 | 50.3 | Pass |
| T8 | 133.333 - 126.667 | Leg | 5 STD w/ 6 XH Half Sleeve | 139 | Note 1 | Note 1 | 50.3 | Pass |

| Section No. | Elevation ft | Component Type | Size | Critical Element | P lb | φP _{allow} lb | % Capacity | Pass Fail |
|-------------|-------------------|----------------------|---------------------------|------------------|------------|------------------------|------------|-----------|
| T9 | 126.667 - 120 | Leg | 5 STD w/ 6 XH Half Sleeve | 148 | Note 1 | Note 1 | 50.3 | Pass |
| T10 | 120 - 113.333 | Leg | Pipe 6 STD | 157 | -169825.00 | 282257.84 | 60.2 | Pass |
| T11 | 113.333 - 106.667 | Leg | Pipe 6 STD | 169 | -182505.00 | 282290.39 | 64.7 | Pass |
| T12 | 106.667 - 100 | Leg | Pipe 6 STD | 181 | -194371.00 | 282318.74 | 68.8 | Pass |
| T13 | 100 - 80 | Leg | 6 STD w/ 7 XH Half Sleeve | 193 | Note 1 | Note 1 | 53.8 | Pass |
| T14 | 80 - 60 | Leg | Pipe 8 STD | 223 | -266353.00 | 411193.63 | 64.8 | Pass |
| T15 | 60 - 50 | Leg | Pipe 8 STD | 244 | -278579.00 | 421200.13 | 66.1 | Pass |
| T16 | 50 - 40 | Leg | Pipe 8 STD | 256 | -295688.00 | 421253.68 | 70.2 | Pass |
| T17 | 40 - 20 | Leg | Pipe 8 EH | 268 | -329381.00 | 576516.12 | 57.1 | Pass |
| T18 | 20 - 0 | Leg | Pipe 8 EH | 283 | -360201.00 | 577189.17 | 62.4 | Pass |
| | | | | | | | 62.8 (b) | |
| T1 | 195 - 180 | Diagonal | 5/8 | 15 | 9238.10 | 10437.21 | 88.5 | Pass |
| T2 | 180 - 175 | Diagonal | L1 1/2x1 1/2x3/16 | 51 | -4224.48 | 10303.15 | 41.0 | Pass |
| | | | | | | | 71.3 (b) | |
| T3 | 175 - 170 | Diagonal | L2x2x3/16 | 63 | -3381.05 | 18093.28 | 18.7 | Pass |
| | | | | | | | 46.7 (b) | |
| T4 | 170 - 160 | Diagonal | 2L1 1/2x1 1/2x3/16x1/4 | 83 | -5241.47 | 29692.00 | 17.7 | Pass |
| | | | | | | | 55.3 (b) | |
| T5 | 160 - 150 | Diagonal | 2L2x2x3/16x1/4 | 96 | -5922.45 | 42662.23 | 13.9 | Pass |
| | | | | | | | 65.1 (b) | |
| T6 | 150 - 140 | Diagonal | 2L2x2x3/16x1/4 | 114 | -5542.56 | 40665.03 | 13.6 | Pass |
| | | | | | | | 61.7 (b) | |
| T7 | 140 - 133.333 | Diagonal | L2 1/2x2 1/2x1/4 | 133 | -5557.62 | 24503.64 | 22.7 | Pass |
| | | | | | | | 40.9 (b) | |
| T8 | 133.333 - 126.667 | Diagonal | L2 1/2x2 1/2x1/4 | 142 | -5710.79 | 22278.16 | 25.6 | Pass |
| | | | | | | | 41.6 (b) | |
| T9 | 126.667 - 120 | Diagonal | L2 1/2x2 1/2x3/16 | 151 | -5535.49 | 15425.97 | 35.9 | Pass |
| | | | | | | | 66.4 (b) | |
| T10 | 120 - 113.333 | Diagonal | L3x3x1/4 | 160 | -7113.28 | 30888.79 | 23.0 | Pass |
| | | | | | | | 47.5 (b) | |
| T11 | 113.333 - 106.667 | Diagonal | L3x3x1/4 | 172 | -6998.17 | 28895.68 | 24.2 | Pass |
| | | | | | | | 47.5 (b) | |
| T12 | 106.667 - 100 | Diagonal | L2 1/2x2 1/2x1/4 | 184 | -7341.78 | 15373.78 | 47.8 | Pass |
| | | | | | | | 50.1 (b) | |
| T13 | 100 - 80 | Diagonal | L3 1/2x3 1/2x1/4 | 205 | -7480.95 | 36323.59 | 20.6 | Pass |
| | | | | | | | 27.8 (b) | |
| T14 | 80 - 60 | Diagonal | L3 1/2x3 1/2x1/4 | 226 | -7141.59 | 28986.72 | 24.6 | Pass |
| | | | | | | | 29.4 (b) | |
| T15 | 60 - 50 | Diagonal | L3x3x5/16 | 247 | -9853.11 | 18196.81 | 54.1 | Pass |
| T16 | 50 - 40 | Diagonal | L3x3x5/16 | 259 | -9559.33 | 16846.72 | 56.7 | Pass |
| T17 | 40 - 20 | Diagonal | L4x4x3/8 | 271 | -9006.08 | 38479.45 | 23.4 | Pass |
| | | | | | | | 31.1 (b) | |
| T18 | 20 - 0 | Diagonal | L5x5x5/16 | 286 | -10127.00 | 51837.13 | 19.5 | Pass |
| | | | | | | | 34.9 (b) | |
| T1 | 195 - 180 | Horizontal | L1 1/2x1 1/2x3/16 | 18 | -5090.96 | 9640.76 | 52.8 | Pass |
| T2 | 180 - 175 | Secondary Horizontal | L2x2x3/16 | 52 | 686.02 | 19675.95 | 3.5 | Pass |
| | | | | | | | 9.6 (b) | |
| T3 | 175 - 170 | Secondary Horizontal | L2x2x3/16 | 64 | 874.15 | 19675.95 | 4.4 | Pass |
| | | | | | | | 12.2 (b) | |
| T4 | 170 - 160 | Secondary Horizontal | L2x2x3/16 | 76 | -1273.88 | 19156.30 | 6.6 | Pass |
| | | | | | | | 17.8 (b) | |
| T5 | 160 - 150 | Secondary Horizontal | L2x2x3/16 | 97 | -1651.00 | 17984.61 | 9.2 | Pass |
| | | | | | | | 23.0 (b) | |
| T6 | 150 - 140 | Secondary Horizontal | L2x2x3/16 | 118 | -2061.48 | 16658.04 | 12.4 | Pass |
| | | | | | | | 28.7 (b) | |
| T10 | 120 - 113.333 | Secondary Horizontal | L3x3x3/16 | 166 | -2947.17 | 26358.46 | 11.2 | Pass |
| | | | | | | | 35.8 (b) | |
| T11 | 113.333 - 106.667 | Secondary Horizontal | L3x3x3/16 | 178 | -3168.08 | 25488.01 | 12.4 | Pass |
| | | | | | | | 38.5 (b) | |
| T12 | 106.667 - 100 | Secondary Horizontal | L3x3x3/16 | 190 | -3373.44 | 24590.26 | 13.7 | Pass |
| | | | | | | | 41.0 (b) | |

| | | | | |
|--|----------------|-------------------------------|--------------------|-------------------|
| tnxTower Tower Engineering Professionals 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350 | Job | US-CT-1003 - Straits Turnpike | Page | 37 of 37 |
| | Project | TEP No. 25628.442076 | Date | 11:57:13 09/10/20 |
| | Client | Phoenix Tower International | Designed by | DDO |

| Section No. | Elevation ft | Component Type | Size | Critical Element | P lb | ϕP_{allow} lb | % Capacity | Pass Fail | |
|-------------|--------------|----------------------|-------------------|------------------|----------|---------------------|----------------------------|-------------|-------------|
| T13 | 100 - 80 | Secondary Horizontal | L3x3x1/4 | 202 | -4010.32 | 27498.45 | 14.6 | Pass | |
| T15 | 60 - 50 | Secondary Horizontal | L4x4x3/8 | 253 | -4831.88 | 61409.77 | 27.5 (b) 7.9 | Pass | |
| T16 | 50 - 40 | Secondary Horizontal | L4x4x1/4 | 267 | -5128.82 | 39562.21 | 33.3 (b) 13.0 | Pass | |
| T1 | 195 - 180 | Top Girt | L1 1/2x1 1/2x3/16 | 6 | -1544.87 | 9640.76 | 34.0 (b) 16.0 | Pass | |
| T1 | 195 - 180 | Bottom Girt | L1 1/2x1 1/2x3/16 | 9 | -3089.00 | 9640.76 | 32.0 | Pass | |
| | | | | | | | Summary | | |
| | | | | | | | Leg (T4) | 75.6 | Pass |
| | | | | | | | Diagonal (T1) | 88.5 | Pass |
| | | | | | | | Horizontal (T1) | 52.8 | Pass |
| | | | | | | | Secondary Horizontal (T12) | 41.0 | Pass |
| | | | | | | | Top Girt (T1) | 16.0 | Pass |
| | | | | | | | Bottom Girt (T1) | 32.0 | Pass |
| | | | | | | | Bolt Checks | 71.3 | Pass |
| | | | | | | | RATING = | 88.5 | Pass |

APPENDIX B
COAX CONFIGUARTION



EXISTING - (AT&T)
 (12) 1 5/8" TO 188-FT
 (2) 3/8" Ø FIBER TO 188-FT
 PROPOSED - (AT&T)
 (6) 7/8" Ø DC TO 188-FT

EXISTING - (VERIZON)
 (12) 1 5/8" TO 169-FT
 (1) FIBER - TO 169-FT

EXISTING - (T-MOBILE)
 (6) 1 5/8" TO 195-FT
 (3) HYBRID TO 195-FT
 PROPOSED - (T-MOBILE)
 (1) HYBRID TO 195-FT
 RESERVED - (T-MOBILE)
 (12) 1 5/8" TO 195-FT
 FUTURE - (T-MOBILE)
 (2) 1 5/8" TO 195-FT

EXISTING - (UNKNOWN)
 (1) 5/8" Ø TO 75.5-FT

EXISTING - (SPRINT)
 (4) 1 1/4" Ø HYBRID TO 152-FT

COAX CONFIGURATION - N.T.S.

PREPARED BY:

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

PREPARED FOR:

PHOENIX TOWER INTERNATIONAL
 999 YAMATO ROAD, SUITE 100
 BOCA RATON, FL 33431

PROJECT INFORMATION:

**STRAITS TURNPIKE
 SITE #: US-CT-1003**

1021 STRAITS TURNPIKE
 MIDDLEBURY, CT 06762
 (NEW HAVEN COUNTY)

REVISION: 0

TEP JOB #:25628.442076

SHEET NUMBER:

C-1

APPENDIX C
ADDITIONAL CALCULATIONS

Project Name: Straits Turnpike
 Project Number: TEP No. 25628.442076
 Client Site Number: US-CT-1003
 Elevation: 160 - 170ft

Engineer: DO
 Check: JHJ
 Date: 9/10/2020
 CODE: TIA-H

Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F

ϕ_{cL} = 0.90 - LRFD strength reduction factor (leg, compression)
 ϕ_{TL} = 0.90 - LRFD strength reduction factor (leg, tension)
 ϕ_{cS} = 0.90 - LRFD strength reduction factor (sleeve, compression)
 ϕ_{TS} = 0.90 - LRFD strength reduction factor (sleeve, tension)
 ϕ_w = 0.75 - LRFD strength reduction factor (weld shear)
 ϕ_v = 0.75 - LRFD strength reduction factor (shear)
 Mast St.: 1.00 - from trnTower

Input - Loads

$P_{initial}$: 4.23 kips - force from initial load (no wind)
 P_{wind} : 73.39 kips - force due to final loading including reinforcement
 T_u : 64.48 kips - maximum load on leg

Quick Check

Weld Size: OK
 Weld Connection: 23.0%
 Crushing Check: 46.2%
 Leg Comp. Check: 46.8%
 Sleeve Check: 67.1%
 Built-up Check: 75.6%
 Slenderness Check: OK
 Leg Tension Check: 60.7%

Input - Tower Leg 2.5 STD

K: 1.00 - effective length factor for leg
 L_u : 2.64 ft - unbraced length of tower leg
 $F_{y_{leg}}$: 55.00 ksi - minimum specified yield strength of tower leg
 $F_{u_{leg}}$: 70.00 ksi - minimum specified ultimate strength of tower leg
 r : 0.95 in - minimum radius of gyration of tower leg
 A_{leg} : 1.70 in² - area of tower leg
 D_i : 2.47 in - inside diameter of tower leg
 t_{leg} : 0.203 in - thickness of tower leg
 f'_c : 0.00 ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

*TIA-222-H Section 15.5 applied

Input - Sleeve R/F 3 X5 Gap Check: OK

$F_{y_{sleeve}}$: 35.00 ksi - minimum specified yield strength of sleeve r/f
 $F_{u_{sleeve}}$: 60.00 ksi - minimum specified ultimate strength of sleeve r/f
 $r_{x_{sleeve}}$: 0.50 in - minimum radius of gyration of sleeve r/f about the x-axis
 $r_{y_{sleeve}}$: 1.14 in - minimum radius of gyration of sleeve r/f about the y-axis
 A_{sleeve} : 1.51 in² - area of sleeve r/f
 t_{sleeve} : 0.300 in - thickness of sleeve r/f

Termination: Connected to Flange

Input - Sleeve Connection to Leg

a: 12.00 in - spacing of connectors connecting the sleeve to the leg
 D: 3.00 - weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)
 Length //: 12.00 in - length of weld on each side of the leg at the termination
 Length ⊥: 5.50 in - length of weld at the bottom/top of the leg sleeve at termination ($\pi D/2$)
 No: 2.00 - number of longitudinal welds per end of the leg (typically near side # far side, so 2)
 F_{EXX} : 70.00 ksi - weld electrode classification
 Width: 3.50 in - maximum width of the built-up leg
 Gap: 0.00 in - length of leg considered for crushing

Input - Built-up Leg Section 2.5 STD w/3 X5 Half Sleeve

$r_{x_{bu}}$: 0.92 in - minimum radius of gyration of the built-up section about the x-axis
 $r_{y_{bu}}$: 1.04 in - minimum radius of gyration of the built-up section about the y-axis

Input - Grouted Leg

E_c : 0 ksi - Modulus of Elasticity of Grout
 E_{leg} : 29,000 ksi - Modulus of Elasticity of Leg
 E_{sleeve} : 29,000 ksi - Modulus of Elasticity of Sleeve

Project Name: Straits Turnpike
 Project Number: TEP No. 25628.442076
 Client Site Number: US-CT-1003
 Elevation: 140 - 150ft

Engineer: DO
 Check: JHJ
 Date: 9/10/2020
 CODE: TIA-H

Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F

ϕ_{cL} = 0.90 - LRFD strength reduction factor (leg, compression)
 ϕ_{TL} = 0.90 - LRFD strength reduction factor (leg, tension)
 ϕ_{cS} = 0.90 - LRFD strength reduction factor (sleeve, compression)
 ϕ_{TS} = 0.90 - LRFD strength reduction factor (sleeve, tension)
 ϕ_w = 0.75 - LRFD strength reduction factor (weld shear)
 ϕ_v = 0.75 - LRFD strength reduction factor (shear)
 Mast St.: 1.00 - from trnTower

Input - Loads

$P_{initial}$: 6.22 kips - force from initial load (no wind)
 P_{wind} : 118.79 kips - force due to final loading including reinforcement
 T_u : 105.68 kips - maximum load on leg

Quick Check

Weld Size: OK
 Weld Connection: 27.6%
 Crushing Check: 55.2%
 Leg Comp. Check: 55.6%
 Sleeve Check: 57.2%
 Built-up Check: 69.4%
 Slenderness Check: Decrease Connector Spacing
 Leg Tension Check: 52.4%

Input - Tower Leg 3.5 STD

K: 1.00 - effective length factor for leg
 L_u : 2.60 ft - unbraced length of tower leg
 $F_{y_{leg}}$: 55.00 ksi - minimum specified yield strength of tower leg
 $F_{u_{leg}}$: 70.00 ksi - minimum specified ultimate strength of tower leg
 r : 1.34 in - minimum radius of gyration of tower leg
 A_{leg} : 2.68 in² - area of tower leg
 D_i : 3.55 in - inside diameter of tower leg
 t_{leg} : 0.226 in - thickness of tower leg
 f'_c : 0.00 ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

*TIA-222-H Section 15.5 applied

Input - Sleeve R/F 4 STD Gap Check: OK

$F_{y_{sleeve}}$: 50.00 ksi - minimum specified yield strength of sleeve r/f
 $F_{u_{sleeve}}$: 62.00 ksi - minimum specified ultimate strength of sleeve r/f
 $r_{x_{sleeve}}$: 0.66 in - minimum radius of gyration of sleeve r/f about the x-axis
 $r_{y_{sleeve}}$: 1.51 in - minimum radius of gyration of sleeve r/f about the y-axis
 A_{sleeve} : 1.59 in² - area of sleeve r/f
 t_{sleeve} : 0.237 in - thickness of sleeve r/f

Termination: Connected to Flange

Input - Sleeve Connection to Leg

a: 12.00 in - spacing of connectors connecting the sleeve to the leg
 D: 3.00 - weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)
 Length //: 12.00 in - length of weld on each side of the leg at the termination
 Length ⊥: 7.07 in - length of weld at the bottom/top of the leg sleeve at termination ($\pi D/2$)
 No: 2.00 - number of longitudinal welds per end of the leg (typically near side # far side, so 2)
 F_{EXX} : 70.00 ksi - weld electrode classification
 Width: 4.50 in - maximum width of the built-up leg
 Gap: 0.00 in - length of leg considered for crushing

Input - Built-up Leg Section 3.5 STD w/4 STD Half Sleeve

$r_{x_{bu}}$: 1.31 in - minimum radius of gyration of the built-up section about the x-axis
 $r_{y_{bu}}$: 1.40 in - minimum radius of gyration of the built-up section about the y-axis

Input - Grouted Leg

E_c : 0 ksi - Modulus of Elasticity of Grout
 E_{leg} : 29,000 ksi - Modulus of Elasticity of Leg
 E_{sleeve} : 29,000 ksi - Modulus of Elasticity of Sleeve

Project Name: Straits Turnpike
 Project Number: TEP No. 25628.442076
 Client Site Number: US-CT-1003
 Elevation: 120 - 140ft

Engineer: DO
 Check: JHJ
 Date: 9/10/2020
 CODE: TIA-H

Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F

ϕ_{cL} = 0.90 - LRFD strength reduction factor (leg, compression)
 ϕ_{TL} = 0.90 - LRFD strength reduction factor (leg, tension)
 ϕ_{cS} = 0.90 - LRFD strength reduction factor (sleeve, compression)
 ϕ_{TS} = 0.90 - LRFD strength reduction factor (sleeve, tension)
 ϕ_w = 0.75 - LRFD strength reduction factor (weld shear)
 ϕ_v = 0.75 - LRFD strength reduction factor (shear)
 Mast St.: 1.00 - from trnTower

Input - Loads

$P_{initial}$: 7.64 kips - force from initial load (no wind)
 P_{wind} : 158.94 kips - force due to final loading including reinforcement
 T_u : 142.52 kips - maximum load on leg

Quick Check

Weld Size: OK
 Weld Connection: 25.8%
 Crushing Check: 37.7%
 Leg Comp. Check: 37.9%
 Sleeve Check: 41.7%
 Built-up Check: 50.3%
 Slenderness Check: OK
 Leg Tension Check: 38.6%

Input - Tower Leg 5 STD

K: 1.00 - effective length factor for leg
 L_u : 6.68 ft - unbraced length of tower leg
 $F_{y_{leg}}$: 55.00 ksi - minimum specified yield strength of tower leg
 $F_{u_{leg}}$: 70.00 ksi - minimum specified ultimate strength of tower leg
 r : 1.88 in - minimum radius of gyration of tower leg
 A_{leg} : 4.30 in² - area of tower leg
 D_i : 5.05 in - inside diameter of tower leg
 t_{leg} : 0.258 in - thickness of tower leg
 f'_c : 0.00 ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

*TIA-222-H Section 15.5 applied

Input - Sleeve R/F 6 XH Gap Check: OK

$F_{y_{sleeve}}$: 46.00 ksi - minimum specified yield strength of sleeve r/f
 $F_{u_{sleeve}}$: 62.00 ksi - minimum specified ultimate strength of sleeve r/f
 $r_{x_{sleeve}}$: 0.96 in - minimum radius of gyration of sleeve r/f about the x-axis
 $r_{y_{sleeve}}$: 2.19 in - minimum radius of gyration of sleeve r/f about the y-axis
 A_{sleeve} : 4.20 in² - area of sleeve r/f
 t_{sleeve} : 0.432 in - thickness of sleeve r/f

Termination: Connected to Flange

Input - Sleeve Connection to Leg

a: 15.50 in - spacing of connectors connecting the sleeve to the leg
 D: 5.00 - weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)
 Length //: 12.00 in - length of weld on each side of the leg at the termination
 Length ⊥: 10.41 in - length of weld at the bottom/top of the leg sleeve at termination ($\pi D/2$)
 No: 2.00 - number of longitudinal welds per end of the leg (typically near side # far side, so 2)
 F_{EXX} : 70.00 ksi - weld electrode classification
 Width: 6.63 in - maximum width of the built-up leg
 Gap: 0.00 in - length of leg considered for crushing

Input - Built-up Leg Section 5 STD w/6 XH Half Sleeve

$r_{x_{bu}}$: 1.77 in - minimum radius of gyration of the built-up section about the x-axis
 $r_{y_{bu}}$: 2.04 in - minimum radius of gyration of the built-up section about the y-axis

Input - Grouted Leg

E_c : 0 ksi - Modulus of Elasticity of Grout
 E_{leg} : 29,000 ksi - Modulus of Elasticity of Leg
 E_{sleeve} : 29,000 ksi - Modulus of Elasticity of Sleeve

Project Name: Straits Turnpike
 Project Number: TEP No. 25628.442076
 Client Site Number: US-CT-1003
 Elevation: 80 - 100ft

Engineer: DO
 Check: JHJ
 Date: 9/10/2020
 CODE: TIA-H

Grouted/Un-Grouted Pipe Leg + Half Sleeve R/F

ϕ_{cL} = 0.90 - LRFD strength reduction factor (leg, compression)
 ϕ_{TL} = 0.90 - LRFD strength reduction factor (leg, tension)
 ϕ_{cS} = 0.90 - LRFD strength reduction factor (sleeve, compression)
 ϕ_{TS} = 0.90 - LRFD strength reduction factor (sleeve, tension)
 ϕ_w = 0.75 - LRFD strength reduction factor (weld shear)
 ϕ_v = 0.75 - LRFD strength reduction factor (shear)
 Mast St.: 1.00 - from trnTower

Input - Loads

$P_{initial}$: 10.90 kips - force from initial load (no wind)
 P_{wind} : 231.25 kips - force due to final loading including reinforcement
 T_u : 206.70 kips - maximum load on leg

Quick Check

Weld Size: OK
 Weld Connection: 36.0%
 Crushing Check: 41.7%
 Leg Comp. Check: 41.8%
 Sleeve Check: 50.0%
 Built-up Check: 53.8%
 Slenderness Check: OK
 Leg Tension Check: 46.6%

Input - Tower Leg 6 STD

K: 1.00 - effective length factor for leg
 L_u : 3.43 ft - unbraced length of tower leg
 $F_{y_{leg}}$: 55.00 ksi - minimum specified yield strength of tower leg
 $F_{u_{leg}}$: 70.00 ksi - minimum specified ultimate strength of tower leg
 r : 2.25 in - minimum radius of gyration of tower leg
 A_{leg} : 5.58 in² - area of tower leg
 D_i : 6.07 in - inside diameter of tower leg
 t_{leg} : 0.280 in - thickness of tower leg
 f'_c : 0.00 ksi - minimum specified compressive strength of grout (If ungrouted enter 0)

*TIA-222-H Section 15.5 applied

Input - Sleeve R/F 7 XH Gap Check: OK

$F_{y_{sleeve}}$: 42.00 ksi - minimum specified yield strength of sleeve r/f
 $F_{u_{sleeve}}$: 63.00 ksi - minimum specified ultimate strength of sleeve r/f
 $r_{x_{sleeve}}$: 1.10 in - minimum radius of gyration of sleeve r/f about the x-axis
 $r_{y_{sleeve}}$: 2.53 in - minimum radius of gyration of sleeve r/f about the y-axis
 A_{sleeve} : 5.60 in² - area of sleeve r/f
 t_{sleeve} : 0.500 in - thickness of sleeve r/f

Termination: Connected to Flange

Input - Sleeve Connection to Leg

a: 12.00 in - spacing of connectors connecting the sleeve to the leg
 D: 5.00 - weld size for the weld connecting the sleeve to the leg (unit = # of 16ths)
 Length //: 12.00 in - length of weld on each side of the leg at the termination
 Length ⊥: 11.98 in - length of weld at the bottom/top of the leg sleeve at termination ($\pi D/2$)
 No: 2.00 - number of longitudinal welds per end of the leg (typically near side # far side, so 2)
 F_{EXX} : 70.00 ksi - weld electrode classification
 Width: 7.63 in - maximum width of the built-up leg
 Gap: 0.00 in - length of leg considered for crushing

Input - Built-up Leg Section 6 STD w/7 XH Half Sleeve

$r_{x_{bu}}$: 2.10 in - minimum radius of gyration of the built-up section about the x-axis
 $r_{y_{bu}}$: 2.39 in - minimum radius of gyration of the built-up section about the y-axis

Input - Grouted Leg

E_c : 0 ksi - Modulus of Elasticity of Grout
 E_{leg} : 29,000 ksi - Modulus of Elasticity of Leg
 E_{sleeve} : 29,000 ksi - Modulus of Elasticity of Sleeve

Self Support Anchor Rod Capacity



| Site Info | |
|-----------|------------------|
| BU # | US-CT-1003 |
| Site Name | Straits Turnpike |
| Order # | 25628.442076 |

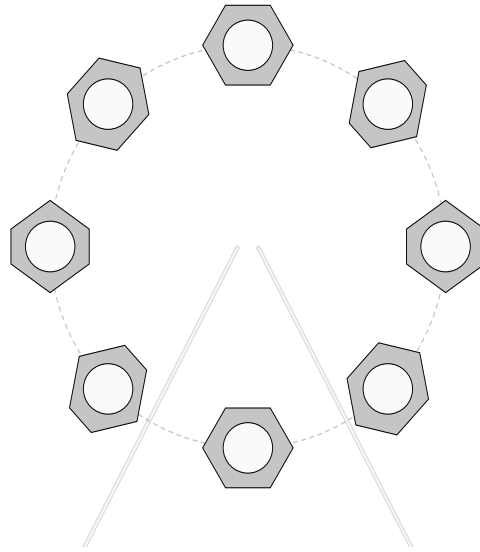
| Analysis Considerations | |
|-------------------------|----|
| TIA-222 Revision | H |
| Grout Considered: | No |

| Applied Loads | | |
|--------------------|--------|--------|
| | Comp. | Uplift |
| Axial Force (kips) | 368.26 | 321.12 |
| Shear Force (kips) | 35.95 | 31.60 |

*TIA-222-H Section 15.5 Applied

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

*Anchor Rod Eccentricity Applied



| Connection Properties | Analysis Results |
|-----------------------|------------------|
|-----------------------|------------------|

| Anchor Rod Data | |
|--|---|
| (8) 1-1/2" \emptyset bolts (A36 N; Fy=36 ksi, Fu=58 ksi) | |
| l_{ar} (in): | 0 |

| Anchor Rod Summary | | (units of kips, kip-in) |
|--------------------|---------------------|-------------------------|
| Pu_c = 46.03 | $\phi Pn_c = 57.26$ | Stress Rating |
| Vu = 4.49 | $\phi Vn = 25.76$ | 79.5% |
| Mu = n/a | $\phi Mn = n/a$ | Pass |

Pier and Pad Foundation



| | |
|--------------|------------------|
| BU # : | US-CT-1003 |
| Site Name: | Straits Turnpike |
| App. Number: | 25628.442076 |

| | |
|-------------------|--------------|
| TIA-222 Revision: | H |
| Tower Type: | Self Support |

| | |
|----------------------------------|--------------------------|
| Top & Bot. Pad Rein. Different?: | <input type="checkbox"/> |
| Block Foundation?: | <input type="checkbox"/> |

| Superstructure Analysis Reactions | | |
|------------------------------------|---------|------|
| Compression, P_{comp} : | 368.256 | kips |
| Compression Shear, V_{u_comp} : | 35.953 | kips |
| Uplift, P_{uplift} : | 321.119 | kips |
| Uplift Shear, V_{u_uplift} : | 31.599 | kips |
| Tower Height, H : | 195 | ft |
| Base Face Width, BW : | 21.5 | ft |
| BP Dist. Above Fdn, bp_{dist} : | 0 | in |

| Pier Properties | | |
|----------------------------------|--------|----|
| Pier Shape: | Square | |
| Pier Diameter, $dpier$: | 4 | ft |
| Ext. Above Grade, E : | 0.25 | ft |
| Pier Rebar Size, Sc : | 8 | |
| Pier Rebar Quantity, mc : | 11 | |
| Pier Tie/Spiral Size, St : | 4 | |
| Pier Tie/Spiral Quantity, mt : | 4 | |
| Pier Reinforcement Type: | Tie | |
| Pier Clear Cover, cc_{pier} : | 3 | in |

| Pad Properties | | |
|-------------------------------------|-------|----|
| Depth, D : | 9.416 | ft |
| Pad Width, W : | 33 | ft |
| Pad Thickness, T : | 4 | ft |
| Pad Rebar Size (Bottom), Sp : | 8 | |
| Pad Rebar Quantity (Bottom), mp : | 34 | |
| Pad Clear Cover, cc_{pad} : | 3 | in |

| Material Properties | | |
|--|-----|-----|
| Rebar Grade, Fy : | 60 | ksi |
| Concrete Compressive Strength, $F'c$: | 3 | ksi |
| Dry Concrete Density, δc : | 150 | pcf |

| Soil Properties | | |
|------------------------------------|--------|---------|
| Total Soil Unit Weight, γ : | 125 | pcf |
| Ultimate Net Bearing, Q_{net} : | 12.000 | ksf |
| Cohesion, C_u : | | ksf |
| Friction Angle, ϕ : | 30 | degrees |
| SPT Blow Count, N_{blows} : | | |
| Base Friction, μ : | | |
| Neglected Depth, N : | 3.33 | ft |
| Foundation Bearing on Rock? | No | |
| Groundwater Depth, gw : | 13 | ft |

| Foundation Analysis Checks | | | | |
|--|----------|---------|---------|-------|
| | Capacity | Demand | Rating* | Check |
| <i>Uplift (kips)</i> | 1365.49 | 321.12 | 22.4% | Pass |
| <i>Lateral (Sliding) (kips)</i> | 540.26 | 31.60 | 5.6% | Pass |
| <i>Bearing Pressure (ksf)</i> | 9.88 | 1.87 | 18.1% | Pass |
| <i>Pier Flexure (Comp.) (kip*ft)</i> | 1199.84 | 203.71 | 16.2% | Pass |
| <i>Pier Flexure (Tension) (kip*ft)</i> | 317.69 | 179.04 | 53.7% | Pass |
| <i>Pier Compression (kip)</i> | 7637.76 | 384.57 | 4.8% | Pass |
| <i>Pad Flexure (kip*ft)</i> | 5161.39 | 1183.69 | 21.8% | Pass |
| <i>Pad Shear - 1-way (kips)</i> | 1415.26 | 122.45 | 8.2% | Pass |
| <i>Pad Shear - 2-way (Comp) (ksi)</i> | 0.164 | 0.023 | 13.4% | Pass |
| <i>Flexural 2-way (Comp) (kip*ft)</i> | 4946.30 | 122.23 | 2.4% | Pass |
| <i>Pad Shear - 2-way (Uplift) (ksi)</i> | 0.164 | 0.024 | 14.1% | Pass |
| <i>Flexural 2-way (Tension) (kip*ft)</i> | 4946.30 | 107.42 | 2.1% | Pass |

*Rating per TIA-222-H Section 15.5

| | |
|---------------------|-------|
| Soil Rating*: | 22.4% |
| Structural Rating*: | 53.7% |

<--Toggle between Gross and Net