

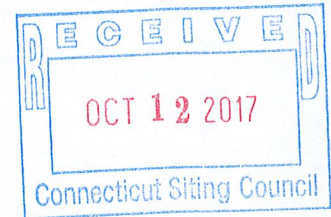


10 INDUSTRIAL AVENUE, SUITE 3
MAHWAH, NJ 07430

PHONE: 201.684.0055
FAX: 201.684.0066

October 11, 2017

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051



RE: EM-T-Mobile-020-160929
T-Mobile Site Id CTHA539A
719 George Washington Turnpike, Burlington, CT
Notice of Construction Complete

ORIGINAL

Dear Attorney Bachman,

This office represents T-Mobile Northeast LLC ("T-Mobile") and has been retained to notify the Connecticut Siting Council ("Council") that the exempt modification decision conditions have been met and constructed in accordance with the documentation provided at the time of filing.

The Council acknowledged the above referenced T-Mobile notice of exempt modification on October 17, 2016. T-Mobile hereby notifies the Council that construction of the acknowledged modifications were complete as of September 28, 2017.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jennifer Dupont', written in a cursive style.

Jennifer Dupont
Project Coordinator
Transcend Wireless LLC on behalf of T-Mobile
10 Industrial Ave, Suite 3
Mahwah, NJ 07430

Structural Analysis Report

180-ft Existing EEI Monopole

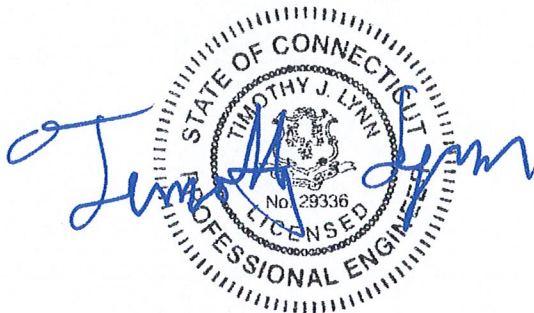
*Proposed T-Mobile
Antenna Upgrade*

T-Mobile Site Ref: CTHA539A

*719 George Washington Turnpike
Burlington, CT*

CEN TEK Project No. 17051.00

Date: April 17, 2017



Prepared for:
T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

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Introduction

The purpose of this report is to summarize the results of the non-linear, P- Δ structural analysis of the antenna upgrade proposed by T-Mobile & Verizon Wireless while maintaining a 10% reserve capacity for future upgrades by the Town of Burlington on the existing monopole (tower) located at the Burlington Fire Department on 719 George Washington Tpke. in Burlington, Connecticut.

The host tower is a 180-ft tall, four-section, eighteen sided, tapered monopole, originally designed and manufactured by Engineered Endeavors Incorporated (EEI); project no. 13628 dated September 15, 2005. The tower geometry, structure member sizes and foundation system information were obtained from a previous structural analysis report prepared by URS Corporation job no; 36922256.00000 (VZ5-098), dated November 7, 2011. The tower was previously reinforced per the structural analysis and reinforcement design prepared by Atlantis Group dated October 8, 2014. Note that all aforementioned structurals were prepared under Revision F of the TIA/EIA-222 Standard, which did not require special consideration for facilities used primarily for essential communications.

Antenna and appurtenance information were obtained from the previously issued structural reports, visual verification from grade conducted by Centek personnel on July 29, 2016, and the provided T-Mobile & Verizon Wireless RF data sheets.

The tower is made up of four (4) tapered vertical sections consisting of A572-65 pole sections. The tower sections are slip joint connected. The diameter of the pole (flat-flat) is 19.50-in at the top and 56.25-in at the base.

Refer to the Antenna and Appurtenance Summary below for a detailed description of the proposed antenna and appurtenance configuration.

Antenna and Appurtenance Summary

The existing, proposed and future loads considered in this analysis consist of the following:

- TOWN (EXISTING):
Antennas: Three (3) 20-ft Omni-directional whip antennas mounted to the T-Mobile low profile platform with an elevation of 191-ft above grade level.
Coax Cables: Three (3) 1-5/8" \varnothing coax cables running on the inside of the existing monopole.
- AT&T (EXISTING):
Antennas: Six (6) Ericsson RRUS-11 and one (1) Raycap DC6-48-60-18-8F surge arrester mounted to one (1) universal ring mount with a RAD center elevation of 170-ft above grade level.
Coax Cables: One (1) fiber cable and two (2) dc control cables running on the inside of the existing monopole.

- **AT&T (EXISTING):**
Antennas: Six (6) Powerwave 7770.00 panel antennas, three (3) Powerwave P65-17-XLH-RR panel antennas, six (6) LGP21401 TMA's and six (6) LGP13519 diplexers mounted on a low profile platform with a RAD center elevation of 170-ft above grade level.
Coax Cables: Twelve (12) 1-5/8" Ø coax cables running on the inside of the existing monopole
- **VERIZON (EXISTING/RESERVED):**
Antennas: Six (6) RFS APL866513 panel antennas, six (6) Andrew SBNHH-1D65B panel antennas, three (3) Alcatel-Lucent RRH2x60-700 remote radio heads, three (3) Alcatel-Lucent RRH2x60-PCS remote radio heads, three (3) Alcatel-Lucent RRH4x45/2x90-AWS remote radio heads, two (2) Raycap RC2DC-3315-PF-48 main distribution boxes and six (6) RFS FD9R6004/2C-3L Diplexers mounted on a low profile platform with a RAD center elevation of 160-ft above grade level.
Coax Cables: Twelve (12) 1-5/8" Ø coax cables and two (2) 1-5/8" Ø fiber cables running inside the monopole.
- **TOWN (EXISTING):**
Antennas: One (1) 20-ft dipole antenna mounted on a 3-ft standoff with an elevation of 138.5-ft above grade level.
Coax Cables: One (1) 1-5/8" Ø coax cable running on the inside of the existing monopole.
- **TOWN (EXISTING):**
Antennas: One (1) 8-ft Omni-directional whip antenna and one (1) 3-ft yagi mounted on a 3-ft standoff with an elevation of 132.5-ft above grade level.
Coax Cables: One (1) 1-5/8" Ø and one (1) 1/2" Ø coax cables running on the inside of the existing monopole.
- **TOWN (EXISTING):**
Antennas: One (1) 10-ft dipole antenna mounted on a 3-ft standoff with an elevation of 112.5-ft above grade level.
Coax Cables: One (1) 1-5/8" Ø coax cable running on the inside of the existing monopole.
- **T-MOBILE (EXISTING TO REMAIN):**
Antennas: Six (6) Ericsson AIR21 panel antennas mounted on a low profile platform with a RAD center elevation of 179-ft above grade level.
Coax Cables: Six (6) 1-5/8" Ø coax cables and one (1) 1-1/4" fiber cable running inside the monopole.
- **T-MOBILE (PROPOSED):**
Antennas: Three (3) Andrew LNX-6515DS panel antennas mounted on a low profile platform with a RAD center elevation of 179-ft above grade level.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents or reinforcement drawings.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All coax cables to be installed as indicated in this report.

Analysis

The existing tower was analyzed using a comprehensive computer program entitled tnxTower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower, and the model assumes that the tower members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed (3-second gust) with no ice and the applicable wind and ice combination to determine stresses in members as per guidelines of TIA-222-G-2005 entitled “Structural Standard for Antenna Support Structures and Antennas”, the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Load and Resistance Factor Design (LRFD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix N of the CSBC¹ and the wind speed data available in the TIA-222-G-2005 Standard.

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA-222-G-2005 as a Class III Structure used primarily for essential facilities, gravity loads of the tower structure and its components, and the application of 1.00” radial ice on the tower structure and its components.

| | | |
|-------------------|--|---|
| Basic Wind Speed: | Hartford; v = 90-105 mph (3-second gust) | [Annex B of TIA-222-G-2005] |
| | Burlington; v = 93 mph (3 second gust) | [Appendix N of the 2016 CT Building Code] |
| Load Cases: | <u>Load Case 1</u> ; 93 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation. | [Appendix N of the 2016 CT Building Code] |
| | <u>Load Case 2</u> ; 50 mph wind speed w/ 1.00” radial ice plus gravity load – used in calculation of tower stresses. | [Annex B of TIA-222-G-2005] |

¹ The 2012 International Building Code as amended by the 2016 Connecticut State Building Code (CSBC).

Tower Capacity

Tower stresses were calculated utilizing the structural analysis software trnTower. Allowable stresses were determined based on Table 4-8 of the TIA code.

- Calculated stresses were found to be within allowable limits. In Load Case 1, per trnTower "Section Capacity Table", this tower was found to be at **88.5%** of its total capacity.

| Tower Section | Elevation | Stress Ratio (percentage of capacity) | Result |
|-----------------|-----------------|--|-------------|
| Pole Shaft (L1) | 139.50'-179.00' | 88.5% | PASS |

(1) Wall thickness increased in tower section 2 to account for reinforcement design prepared by Atlantis Group for T-Mobile dated 10.8.14.

Foundation and Anchors

The existing foundation consists of a 7.5 \emptyset x 28.0-ft long reinforced concrete caisson. The sub-grade conditions used in the analysis of the existing foundation were obtained from the the aforementioned URS structural report dated November 7, 2011. The base of the tower is connected to the foundation by means of (18) 2.25" \emptyset , ASTM A615-75 anchor bolts embedded into the concrete foundation structure.

- The tower base reactions developed from the governing Load Case 1 were used in the verification of the foundation and its anchors:

| Location | Vector | Proposed Reactions |
|----------|-------------|--------------------|
| Base | Shear | 33 kips |
| | Compression | 51 kips |
| | Moment | 4157 kip-ft |

- The foundation was found to be within allowable limits.

| Foundation | Design Limit | Proposed Loading | Result |
|-----------------------------|--------------------|-------------------------|-------------|
| Reinforced Concrete Caisson | Moment Capacity | 62.5% | PASS |
| | Lateral Deflection | 0.78 in. ⁽¹⁾ | PASS |

(2) Lateral deflection limited to 0.75" under service load condition per section 9.5 of TIA-222-G.

- The anchor bolts and base plate were found to be within allowable limits.

| Tower Component | Design Limit | Stress Ratio (percentage of capacity) | Result |
|-----------------|--------------------------|---------------------------------------|--------|
| Anchor Bolts | Combined Axial and Shear | 68.1% | PASS |
| Base Plate | Bending | 71.2% | PASS |

Conclusion

This analysis shows that the subject tower **is adequate** to support the proposed modified antenna configuration.

The following table summarizes the maximum tower stresses as related to the proposed upgrades:

| Tower Configuration | Stress Ratio |
|-----------------------------|--------------|
| Existing Equipment | 75.60% |
| Town Reserve Capacity @ 10% | 85.60% |
| T-Mobile Proposed Upgrade | 91.90% |
| Verizon Proposed Upgrade | 98.50% |

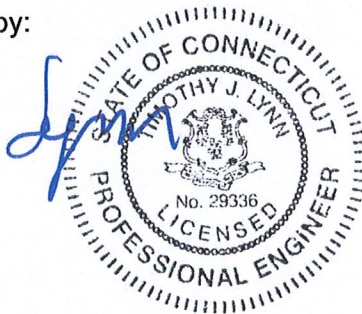
The analysis is based, in part, on the information provided to this office by T-Mobile. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE
 Structural Engineer



*Standard Conditions for Furnishing of
Professional Engineering Services on
Existing Structures*

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

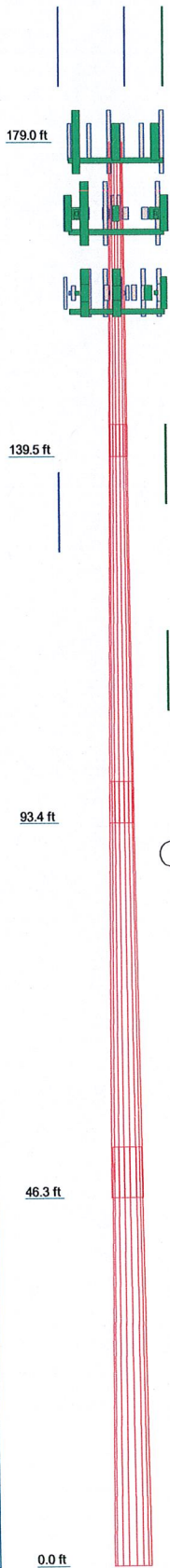
GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

tnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, tnxTower, formerly ERITower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

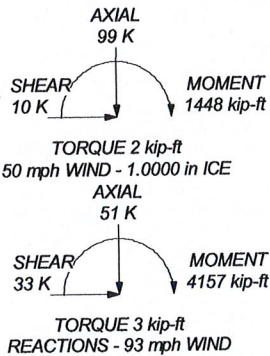
tnxTower Features:

- tnxTower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- tnxTower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.

| | | | | |
|--------------------|---------|---------|---------|---------|
| Section | 1 | 2 | 3 | 4 |
| Length (ft) | 39.50 | 50.10 | 52.29 | 52.70 |
| Number of Sides | 18 | 18 | 18 | 18 |
| Thickness (in) | 0.1875 | 0.3750 | 0.3750 | 0.3750 |
| Socket Length (ft) | 4.00 | 5.20 | 6.39 | 44.9739 |
| Top Dia (in) | 19.5000 | 26.8051 | 35.6737 | 56.2500 |
| Bot Dia (in) | 28.0455 | 37.5377 | 47.1230 | |
| Grade | | A572-65 | | |
| Weight (K) | 1.9 | 6.5 | 8.7 | 10.7 |



ALL REACTIONS
ARE FACTORED



DESIGNED APPURTENANCE LOADING

| TYPE | ELEVATION | TYPE | ELEVATION |
|--|-----------|---|-----------|
| 20' x 2" Dia Omni (Town Existing) | 191 | SBNHH-1D65B (Verizon Existing) | 160 |
| 20' x 2" Dia Omni (Town Existing) | 191 | SBNHH-1D65B (Verizon Existing) | 160 |
| 20' x 2" Dia Omni (Town Existing) | 191 | APL866513-42T0 (Verizon Existing) | 160 |
| AIR21 B2A/B4P (T-Mobile Existing) | 179 | APL866513-42T0 (Verizon Existing) | 160 |
| AIR21 B4A/B2P (T-Mobile Existing) | 179 | SBNHH-1D65B (Verizon Existing) | 160 |
| AIR21 B2A/B4P (T-Mobile Existing) | 179 | SBNHH-1D65B (Verizon Existing) | 160 |
| AIR21 B4A/B2P (T-Mobile Existing) | 179 | APL866513-42T0 (Verizon Existing) | 160 |
| AIR21 B2A/B4P (T-Mobile Existing) | 179 | APL866513-42T0 (Verizon Existing) | 160 |
| AIR21 B4A/B2P (T-Mobile Existing) | 179 | SBNHH-1D65B (Verizon Existing) | 160 |
| LNX-6515DS (T-Mobile Proposed) | 179 | SBNHH-1D65B (Verizon Existing) | 160 |
| LNX-6515DS (T-Mobile Proposed) | 179 | APL866513-42T0 (Verizon Existing) | 160 |
| LNX-6515DS (T-Mobile Proposed) | 179 | (2) FD9R6004/2C-3L Diplexer (Verizon Existing) | 160 |
| EEL 14-ft Low Profile Platform (T-Mobile Existing) | 177 | (2) FD9R6004/2C-3L Diplexer (Verizon Existing) | 160 |
| (2) RRRUS-11 (ATI Existing) | 170 | (2) FD9R6004/2C-3L Diplexer (Verizon Existing) | 160 |
| (2) RRRUS-11 (ATI Existing) | 170 | (2) FD9R6004/2C-3L Diplexer (Verizon Existing) | 160 |
| (2) RRRUS-11 (ATI Existing) | 170 | RRH4x45/2x90-AWS (Verizon Existing) | 160 |
| DC6-48-60-18-8F Surge Arrestor (ATI Existing) | 170 | RRH4x45/2x90-AWS (Verizon Existing) | 160 |
| Valmont Uni-Tri Bracket (ATI Existing) | 170 | RRH4x45/2x90-AWS (Verizon Existing) | 160 |
| 7770.00 (ATI Existing) | 170 | RRH4x30-B13 (Verizon Existing) | 160 |
| P65-17-XLH-RR (ATI Existing) | 170 | RRH4x30-B13 (Verizon Existing) | 160 |
| 7770.00 (ATI Existing) | 170 | RRH4x30-B13 (Verizon Existing) | 160 |
| 7770.00 (ATI Existing) | 170 | RRH2x90-PCS (Verizon Existing) | 160 |
| P65-17-XLH-RR (ATI Existing) | 170 | RRH2x90-PCS (Verizon Existing) | 160 |
| 7770.00 (ATI Existing) | 170 | RRH2x90-PCS (Verizon Existing) | 160 |
| 7770.00 (ATI Existing) | 170 | RC2DC-3315-PF-48 (Verizon Existing) | 160 |
| P65-17-XLH-RR (ATI Existing) | 170 | RC2DC-3315-PF-48 (Verizon Existing) | 160 |
| 7770.00 (ATI Existing) | 170 | EEL 14-ft Low Profile Platform (Verizon Existing) | 158 |
| (2) LGP21401 TMA (ATI Existing) | 170 | 20' 4-Bay Dipole (Town Existing) | 138.5 |
| (2) LGP21401 TMA (ATI Existing) | 170 | 3' Pipe Mount Side Arm (Town Existing) | 138.5 |
| (2) LPG13519 Diplexer (ATI Existing) | 170 | 3' Pipe Mount Side Arm (Town Existing) | 132.5 |
| (2) LPG13519 Diplexer (ATI Existing) | 170 | 8' x 2" Omni (Town Existing) | 132.5 |
| (2) LPG13519 Diplexer (ATI Existing) | 170 | 3' Yagi (Town Existing) | 132.5 |
| EEL 14-ft Low Profile Platform (ATI Existing) | 168 | 10' Dipole (Town Existing) | 112.5 |
| APL866513-42T0 (Verizon Existing) | 160 | 3' Pipe Mount Side Arm (Town Existing) | 112.5 |

MATERIAL STRENGTH

| GRADE | Fy | Fu | GRADE | Fy | Fu |
|---------|--------|--------|-------|----|----|
| A572-65 | 65 ksi | 80 ksi | | | |

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class III.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
8. Welds are fabricated with ER-70S-6 electrodes.
9. Wall thickness increased in tower section 2 to account for reinforcement design per Atlantis Group drawings dated 10.8.14
10. TOWER RATING: 88.5%

Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job: **17051.00 - CTHA539A**
Project: **180' EEI Monopole - 719 George Washington Tpk., Burlington, CT**
Client: T-Mobile
Code: TIA-222-G
Path: J:\2041705100\17051_Revise\Backup Documents\Revise\20417051 Monopole Burlington, CT.dwg
Drawn by: T.JL
Date: 04/13/17
Scale: NTS
Dwg No. E-1

| | | |
|--|---|----------------------------------|
| tnxTower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587 | Job 17051.00 - CTHA539A | Page 1 of 22 |
| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by TJL |

Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Basic wind speed of 93 mph.

Structure Class III.

Exposure Category C.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..

Welds are fabricated with ER-70S-6 electrodes..

Wall thickness increased in tower section 2 to account for reinforcement design per Atlantis Group drawings dated 10.8.14.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

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 | <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-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|--|--|

Tapered Pole Section Geometry

| Section | Elevation | Section Length | Splice Length | Number of Sides | Top Diameter in | Bottom Diameter in | Wall Thickness in | Bend Radius in | Pole Grade |
|---------|-----------|-------------------|------------------|-----------------------|-----------------------|--------------------------|-------------------------|----------------------|------------|
| | ft | ft | ft | | | | | | |

| | | |
|--|--|----------------------------------|
| tnxTower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587 | Job 17051.00 - CTHA539A | Page 2 of 22 |
| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by TJL |

| Section | Elevation ft | Section Length ft | Splice Length ft | Number of Sides | Top Diameter in | Bottom Diameter in | Wall Thickness in | Bend Radius in | Pole Grade |
|---------|-----------------|----------------------|---------------------|-----------------|--------------------|-----------------------|----------------------|-------------------|---------------------|
| L1 | 179.00-139.50 | 39.50 | 4.00 | 18 | 19.5000 | 28.0455 | 0.1875 | 0.7500 | A572-65 (65 ksi) |
| L2 | 139.50-93.40 | 50.10 | 5.20 | 18 | 26.8051 | 37.5377 | 0.3750 | 1.5000 | A572-65 (65 ksi) |
| L3 | 93.40-46.31 | 52.29 | 6.39 | 18 | 35.6737 | 47.1230 | 0.3750 | 1.5000 | A572-65 (65 ksi) |
| L4 | 46.31-0.00 | 52.70 | | 18 | 44.9739 | 56.2500 | 0.3750 | 1.5000 | A572-65 (65 ksi) |

Tapered Pole Properties

| Section | Tip Dia. in | Area in ² | I in ⁴ | r in | C in | I/C in ³ | J in ⁴ | I/Q in ² | w in | w/t |
|---------|----------------|-------------------------|----------------------|---------|---------|------------------------|----------------------|------------------------|---------|--------|
| L1 | 19.8008 | 11.4934 | 541.5782 | 6.8559 | 9.9060 | 54.6717 | 1083.8689 | 5.7478 | 3.1020 | 16.544 |
| | 28.4781 | 16.5790 | 1625.5317 | 9.8896 | 14.2471 | 114.0955 | 3253.2023 | 8.2911 | 4.6060 | 24.565 |
| L2 | 28.0888 | 31.4585 | 2776.3466 | 9.3827 | 13.6170 | 203.8882 | 5556.3464 | 15.7322 | 4.0577 | 10.821 |
| | 38.1168 | 44.2329 | 7717.8693 | 13.1928 | 19.0692 | 404.7306 | 15445.8939 | 22.1207 | 5.9466 | 15.858 |
| L3 | 37.3802 | 42.0143 | 6613.8339 | 12.5311 | 18.1223 | 364.9563 | 13236.3705 | 21.0112 | 5.6186 | 14.983 |
| | 47.8499 | 55.6418 | 15362.6008 | 16.5955 | 23.9385 | 641.7533 | 30745.4162 | 27.8262 | 7.6336 | 20.356 |
| L4 | 47.0560 | 53.0838 | 13339.7307 | 15.8326 | 22.8467 | 583.8794 | 26697.0141 | 26.5469 | 7.2554 | 19.348 |
| | 57.1177 | 66.5052 | 26231.8094 | 19.8356 | 28.5750 | 917.9986 | 52498.1354 | 33.2589 | 9.2400 | 24.64 |

| Tower Elevation ft | Gusset Area (per face) ft ² | Gusset Thickness in | Gusset Grade | Adjust. Factor A _f | Adjust. Factor A _r | Weight Mult. | Double Angle Stitch Bolt Spacing Diagonals in | Double Angle Stitch Bolt Spacing Horizontal in | Double Angle Stitch Bolt Spacing Redundants in |
|-----------------------|--|------------------------|--------------|----------------------------------|----------------------------------|--------------|---|--|--|
| L1 179.00-139.50 | | | | 1 | 1 | 1 | | | |
| L2 139.50-93.40 | | | | 1 | 1 | 1 | | | |
| L3 93.40-46.31 | | | | 1 | 1 | 1 | | | |
| L4 46.31-0.00 | | | | 1 | 1 | 1 | | | |

Feed Line/Linear Appurtenances - Entered As Area

| Description | Face or Leg | Allow Shield | Component Type | Placement ft | Total Number | C _A A _A ft ² /ft | Weight plf |
|--------------------------|-------------|--------------|----------------|-----------------|--------------|--|----------------------|
| 1 5/8 (Town Existing) | A | No | Inside Pole | 179.00 - 3.00 | 3 | No Ice 1/2" Ice 1" Ice | 0.00 0.00 0.00 |
| 1 5/8 (Town Existing) | A | No | Inside Pole | 138.50 - 3.00 | 1 | No Ice 1/2" Ice 1" Ice | 0.00 0.00 0.00 |
| 1 5/8 (Town Existing) | A | No | Inside Pole | 132.50 - 3.00 | 1 | No Ice 1/2" Ice 1" Ice | 0.00 0.00 0.00 |
| 1/2 (Town Existing) | A | No | Inside Pole | 128.50 - 3.00 | 1 | No Ice 1/2" Ice 1" Ice | 0.00 0.00 0.00 |
| 1 5/8 | A | No | Inside Pole | 113.00 - 3.00 | 1 | No Ice | 0.00 |

| | | |
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| tnxTower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587 | Job 17051.00 - CTHA539A | Page 3 of 22 |
| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by TJL |

| Description | Face or Leg | Allow Shield | Component Type | Placement ft | Total Number | C _{AA} | Weight |
|--------------------------------------|-------------|--------------|----------------|---------------|--------------|---------------------|--------|
| | | | | | | ft ² /ft | plf |
| (Town Existing) | | | | | | 1/2" Ice | 1.04 |
| | | | | | | 1" Ice | 1.04 |
| 1 5/8 (T-Mobile Existing) | B | No | Inside Pole | 179.00 - 3.00 | 6 | No Ice | 1.04 |
| | | | | | | 1/2" Ice | 1.04 |
| | | | | | | 1" Ice | 1.04 |
| HYBRIFLEX 1-1/4" (T-Mobile Existing) | B | No | Inside Pole | 179.00 - 3.00 | 1 | No Ice | 1.30 |
| | | | | | | 1/2" Ice | 1.30 |
| | | | | | | 1" Ice | 1.30 |
| 1 5/8 (AT&T Existing) | A | No | Inside Pole | 170.00 - 3.00 | 12 | No Ice | 1.04 |
| | | | | | | 1/2" Ice | 1.04 |
| | | | | | | 1" Ice | 1.04 |
| RG6-Fiber (AT&T Existing) | A | No | Inside Pole | 170.00 - 3.00 | 1 | No Ice | 0.00 |
| | | | | | | 1/2" Ice | 0.00 |
| | | | | | | 1" Ice | 0.00 |
| #8 AWG Copper Wire (AT&T Existing) | A | No | Inside Pole | 170.00 - 3.00 | 2 | No Ice | 0.00 |
| | | | | | | 1/2" Ice | 0.00 |
| | | | | | | 1" Ice | 0.00 |
| 1 5/8 (Verizon Existing) | C | No | Inside Pole | 160.00 - 3.00 | 12 | No Ice | 1.04 |
| | | | | | | 1/2" Ice | 1.04 |
| | | | | | | 1" Ice | 1.04 |
| HYBRIFLEX 1-5/8" (Verizon Existing) | C | No | Inside Pole | 160.00 - 3.00 | 2 | No Ice | 1.90 |
| | | | | | | 1/2" Ice | 1.90 |
| | | | | | | 1" Ice | 1.90 |

Feed Line/Linear Appurtenances Section Areas

| Tower Section | Tower Elevation ft | Face | A _R ft ² | A _F ft ² | C _{AA} In Face ft ² | C _{AA} Out Face ft ² | Weight K |
|---------------|--------------------|------|--------------------------------|--------------------------------|---|--|----------|
| L1 | 179.00-139.50 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.50 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.30 |
| | | C | 0.000 | 0.000 | 0.000 | 0.000 | 0.33 |
| L2 | 139.50-93.40 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.84 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.35 |
| | | C | 0.000 | 0.000 | 0.000 | 0.000 | 0.75 |
| L3 | 93.40-46.31 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.89 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.36 |
| | | C | 0.000 | 0.000 | 0.000 | 0.000 | 0.77 |
| L4 | 46.31-0.00 | A | 0.000 | 0.000 | 0.000 | 0.000 | 0.82 |
| | | B | 0.000 | 0.000 | 0.000 | 0.000 | 0.33 |
| | | C | 0.000 | 0.000 | 0.000 | 0.000 | 0.71 |

Feed Line/Linear Appurtenances Section Areas - With Ice

| Tower Section | Tower Elevation ft | Face or Leg | Ice Thickness in | A _R ft ² | A _F ft ² | C _{AA} In Face ft ² | C _{AA} Out Face ft ² | Weight K |
|---------------|--------------------|-------------|------------------|--------------------------------|--------------------------------|---|--|----------|
| L1 | 179.00-139.50 | A | 2.924 | 0.000 | 0.000 | 0.000 | 0.000 | 0.50 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.30 |
| | | C | | 0.000 | 0.000 | 0.000 | 0.000 | 0.33 |
| L2 | 139.50-93.40 | A | 2.834 | 0.000 | 0.000 | 0.000 | 0.000 | 0.84 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.35 |
| | | C | | 0.000 | 0.000 | 0.000 | 0.000 | 0.75 |
| L3 | 93.40-46.31 | A | 2.693 | 0.000 | 0.000 | 0.000 | 0.000 | 0.89 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.36 |

| | | |
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| tnxTower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587 | Job 17051.00 - CTHA539A | Page 4 of 22 |
| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by TJL |

| Tower Section | Tower Elevation ft | Face or Leg | Ice Thickness in | A _R ft ² | A _F ft ² | C _{AA} In Face ft ² | C _{AA} Out Face ft ² | Weight K |
|---------------|-----------------------|-------------|---------------------|-----------------------------------|-----------------------------------|---|--|-------------|
| L4 | 46.31-0.00 | C | 2.416 | 0.000 | 0.000 | 0.000 | 0.000 | 0.77 |
| | | A | | 0.000 | 0.000 | 0.000 | 0.000 | 0.82 |
| | | B | | 0.000 | 0.000 | 0.000 | 0.000 | 0.33 |
| | | C | | 0.000 | 0.000 | 0.000 | 0.000 | 0.71 |

Feed Line Center of Pressure

| Section | Elevation ft | CP _X in | CP _Z in | CP _X Ice in | CP _Z Ice in |
|---------|-----------------|-----------------------|-----------------------|------------------------------|------------------------------|
| L1 | 179.00-139.50 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| L2 | 139.50-93.40 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| L3 | 93.40-46.31 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| L4 | 46.31-0.00 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

Shielding Factor Ka

| Tower Section | Feed Line Record No. | Description | Feed Line Segment Elev. | K _a No Ice | K _a Ice |
|---------------|----------------------|-------------|-------------------------|--------------------------|-----------------------|
| | | | | | |

Discrete Tower Loads

| Description | Face or Leg | Offset Type | Offsets: Horz Lateral Vert ft ft ft | Azimuth Adjustment ° | Placement ft | C _{AA} Front ft ² | C _{AA} Side ft ² | Weight K |
|---|-------------|-------------|---|-------------------------|-----------------|---|--|-------------|
| 20' x 2" Dia Omni (Town Existing) | A | From Face | 4.00 | 0.0000 | 191.00 | No Ice | 4.00 | 0.02 |
| | | | -6.00 | | | 1/2" Ice | 6.03 | 0.05 |
| | | | 0.00 | | | 1" Ice | 8.07 | 0.09 |
| 20' x 2" Dia Omni (Town Existing) | B | From Face | 4.00 | 0.0000 | 191.00 | No Ice | 4.00 | 0.02 |
| | | | -6.00 | | | 1/2" Ice | 6.03 | 0.05 |
| | | | 0.00 | | | 1" Ice | 8.07 | 0.09 |
| 20' x 2" Dia Omni (Town Existing) | C | From Face | 4.00 | 0.0000 | 191.00 | No Ice | 4.00 | 0.02 |
| | | | -6.00 | | | 1/2" Ice | 6.03 | 0.05 |
| | | | 0.00 | | | 1" Ice | 8.07 | 0.09 |
| 20' 4-Bay Dipole (Town Existing) | C | From Face | 4.00 | 0.0000 | 138.50 | No Ice | 4.00 | 0.06 |
| | | | -6.00 | | | 1/2" Ice | 6.00 | 0.10 |
| | | | 0.00 | | | 1" Ice | 8.00 | 0.14 |
| 3' Pipe Mount Side Arm (Town Existing) | C | From Face | 4.00 | 0.0000 | 138.50 | No Ice | 0.30 | 0.01 |
| | | | -6.00 | | | 1/2" Ice | 0.61 | 0.05 |
| | | | 0.00 | | | 1" Ice | 0.81 | 0.09 |
| 8' x 2" Omni (Town Existing) | A | From Face | 4.00 | 0.0000 | 132.50 | No Ice | 1.60 | 0.02 |
| | | | -6.00 | | | 1/2" Ice | 2.42 | 0.03 |
| | | | 0.00 | | | 1" Ice | 3.24 | 0.05 |
| 3' Yagi (Town Existing) | A | From Face | 4.00 | 0.0000 | 132.50 | No Ice | 2.08 | 0.03 |
| | | | -6.00 | | | 1/2" Ice | 3.79 | 0.05 |

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| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by TJL |

| Description | Face or Leg | Offset Type | Offsets: | | Azimuth Adjustment | Placement | C _A A _A | | Weight | |
|--|-------------|-------------|----------|------|--------------------|-----------|-------------------------------|-----------------|--------|------|
| | | | Horz | Vert | | | Front | Side | | |
| | | | ft | ft | ° | ft | ft ² | ft ² | K | |
| 3' Pipe Mount Side Arm (Town Existing) | A | From Face | 0.00 | | 0.0000 | 132.50 | 1" Ice | 5.52 | 5.52 | 0.09 |
| | | | 4.00 | | | | No Ice | 0.30 | 0.30 | 0.01 |
| | | | -6.00 | | | | 1/2" Ice | 0.61 | 0.61 | 0.05 |
| | | | 0.00 | | | | 1" Ice | 0.81 | 0.81 | 0.09 |
| 10' Dipole (Town Existing) | C | From Face | 4.00 | | 0.0000 | 112.50 | No Ice | 4.00 | 4.00 | 0.05 |
| | | | -6.00 | | | | 1/2" Ice | 6.00 | 6.00 | 0.07 |
| | | | 0.00 | | | | 1" Ice | 8.00 | 8.00 | 0.10 |
| | | | 4.00 | | | | No Ice | 0.30 | 0.30 | 0.01 |
| 3' Pipe Mount Side Arm (Town Existing) | C | From Face | -6.00 | | 0.0000 | 112.50 | 1/2" Ice | 0.61 | 0.61 | 0.05 |
| | | | 0.00 | | | | 1" Ice | 0.81 | 0.81 | 0.09 |
| | | | 4.00 | | | | No Ice | 0.30 | 0.30 | 0.01 |
| | | | -6.00 | | | | 1/2" Ice | 0.61 | 0.61 | 0.05 |
| AIR21 B2A/B4P (T-Mobile Existing) | A | From Face | 3.00 | | 0.0000 | 179.00 | No Ice | 6.05 | 4.36 | 0.08 |
| | | | -5.00 | | | | 1/2" Ice | 6.42 | 4.70 | 0.12 |
| | | | 0.00 | | | | 1" Ice | 6.80 | 5.06 | 0.17 |
| | | | 3.00 | | | | No Ice | 6.05 | 4.36 | 0.08 |
| AIR21 B4A/B2P (T-Mobile Existing) | A | From Face | 0.00 | | 0.0000 | 179.00 | 1/2" Ice | 6.42 | 4.70 | 0.12 |
| | | | 0.00 | | | | 1" Ice | 6.80 | 5.06 | 0.17 |
| | | | 3.00 | | | | No Ice | 6.05 | 4.36 | 0.08 |
| | | | -5.00 | | | | 1/2" Ice | 6.42 | 4.70 | 0.12 |
| AIR21 B2A/B4P (T-Mobile Existing) | B | From Face | 3.00 | | 0.0000 | 179.00 | No Ice | 6.05 | 4.36 | 0.08 |
| | | | -5.00 | | | | 1/2" Ice | 6.42 | 4.70 | 0.12 |
| | | | 0.00 | | | | 1" Ice | 6.80 | 5.06 | 0.17 |
| | | | 3.00 | | | | No Ice | 6.05 | 4.36 | 0.08 |
| AIR21 B4A/B2P (T-Mobile Existing) | B | From Face | 0.00 | | 0.0000 | 179.00 | 1/2" Ice | 6.42 | 4.70 | 0.12 |
| | | | 0.00 | | | | 1" Ice | 6.80 | 5.06 | 0.17 |
| | | | 3.00 | | | | No Ice | 6.05 | 4.36 | 0.08 |
| | | | -5.00 | | | | 1/2" Ice | 6.42 | 4.70 | 0.12 |
| AIR21 B2A/B4P (T-Mobile Existing) | C | From Face | 3.00 | | 0.0000 | 179.00 | No Ice | 6.05 | 4.36 | 0.08 |
| | | | -5.00 | | | | 1/2" Ice | 6.42 | 4.70 | 0.12 |
| | | | 0.00 | | | | 1" Ice | 6.80 | 5.06 | 0.17 |
| | | | 3.00 | | | | No Ice | 6.05 | 4.36 | 0.08 |
| AIR21 B4A/B2P (T-Mobile Existing) | C | From Face | 0.00 | | 0.0000 | 179.00 | 1/2" Ice | 6.42 | 4.70 | 0.12 |
| | | | 0.00 | | | | 1" Ice | 6.80 | 5.06 | 0.17 |
| | | | 3.00 | | | | No Ice | 6.05 | 4.36 | 0.08 |
| | | | -5.00 | | | | 1/2" Ice | 6.42 | 4.70 | 0.12 |
| LNX-6515DS (T-Mobile Proposed) | A | From Face | 3.00 | | 0.0000 | 179.00 | No Ice | 11.45 | 7.70 | 0.06 |
| | | | 5.00 | | | | 1/2" Ice | 12.06 | 8.29 | 0.12 |
| | | | 0.00 | | | | 1" Ice | 12.69 | 8.89 | 0.19 |
| | | | 3.00 | | | | No Ice | 11.45 | 7.70 | 0.06 |
| LNX-6515DS (T-Mobile Proposed) | B | From Face | 5.00 | | 0.0000 | 179.00 | 1/2" Ice | 12.06 | 8.29 | 0.12 |
| | | | 0.00 | | | | 1" Ice | 12.69 | 8.89 | 0.19 |
| | | | 3.00 | | | | No Ice | 11.45 | 7.70 | 0.06 |
| | | | 5.00 | | | | 1/2" Ice | 12.06 | 8.29 | 0.12 |
| LNX-6515DS (T-Mobile Proposed) | C | From Face | 0.00 | | 0.0000 | 179.00 | 1" Ice | 12.69 | 8.89 | 0.19 |
| | | | 3.00 | | | | No Ice | 11.45 | 7.70 | 0.06 |
| | | | 5.00 | | | | 1/2" Ice | 12.06 | 8.29 | 0.12 |
| | | | 0.00 | | | | 1" Ice | 12.69 | 8.89 | 0.19 |
| EEI 14-ft Low Profile Platform (T-Mobile Existing) | C | None | | | 0.0000 | 177.00 | No Ice | 16.50 | 16.50 | 1.55 |
| | | | | | | | 1/2" Ice | 20.00 | 20.00 | 1.80 |
| | | | | | | | 1" Ice | 23.50 | 23.50 | 2.05 |
| | | | | | | | No Ice | 2.57 | 1.07 | 0.05 |
| (2) RRUS-11 (AT&T Existing) | A | From Face | 0.50 | | 0.0000 | 170.00 | 1/2" Ice | 2.76 | 1.21 | 0.07 |
| | | | 0.00 | | | | 1" Ice | 2.97 | 1.36 | 0.09 |
| | | | 0.50 | | | | No Ice | 2.57 | 1.07 | 0.05 |
| | | | 0.00 | | | | 1/2" Ice | 2.76 | 1.21 | 0.07 |
| (2) RRUS-11 (AT&T Existing) | B | From Face | 0.00 | | 0.0000 | 170.00 | 1" Ice | 2.97 | 1.36 | 0.09 |
| | | | 0.50 | | | | No Ice | 2.57 | 1.07 | 0.05 |
| | | | 0.00 | | | | 1/2" Ice | 2.76 | 1.21 | 0.07 |
| | | | 0.50 | | | | No Ice | 2.57 | 1.07 | 0.05 |
| (2) RRUS-11 (AT&T Existing) | C | From Face | 0.00 | | 0.0000 | 170.00 | 1/2" Ice | 2.76 | 1.21 | 0.07 |
| | | | 0.00 | | | | 1" Ice | 2.97 | 1.36 | 0.09 |
| | | | 0.50 | | | | No Ice | 2.57 | 1.07 | 0.05 |
| | | | 0.00 | | | | 1/2" Ice | 2.76 | 1.21 | 0.07 |
| DC6-48-60-18-8F Surge Arrestor (AT&T Existing) | C | From Face | 0.50 | | 0.0000 | 170.00 | 1" Ice | 2.97 | 1.36 | 0.09 |
| | | | 0.00 | | | | No Ice | 1.91 | 1.91 | 0.02 |
| | | | 0.00 | | | | 1/2" Ice | 2.10 | 2.10 | 0.04 |
| | | | 0.50 | | | | 1" Ice | 2.29 | 2.29 | 0.06 |
| Valmont Uni-Tri Bracket (AT&T Existing) | C | None | | | 0.0000 | 170.00 | No Ice | 1.75 | 1.75 | 0.29 |
| | | | | | | | 1/2" Ice | 1.94 | 1.94 | 0.31 |
| | | | | | | | 1" Ice | 2.13 | 2.13 | 0.32 |
| | | | | | | | No Ice | 5.51 | 2.93 | 0.04 |
| 7770.00 (AT&T Existing) | A | From Face | 3.00 | | 0.0000 | 170.00 | 1/2" Ice | 5.87 | 3.27 | 0.07 |
| | | | 6.00 | | | | No Ice | 5.51 | 2.93 | 0.04 |

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| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by T.J.L |

| Description | Face or Leg | Offset Type | Offsets: | | Azimuth Adjustment | Placement | C _{AA} Front | C _{AA} Side | Weight | |
|--|-------------|-------------|----------|---------|--------------------|-----------|-----------------------|----------------------|--------|------|
| | | | Horz | Lateral | | | | | | Vert |
| P65-17-XLH-RR (AT&T Existing) | A | From Face | 0.00 | | 0.0000 | 170.00 | 1" Ice | 6.23 | 3.63 | 0.11 |
| | | | 3.00 | | | | No Ice | 11.47 | 6.80 | 0.06 |
| | | | 4.00 | | | | 1/2" Ice | 12.08 | 7.38 | 0.12 |
| | | | 0.00 | | | | 1" Ice | 12.71 | 7.98 | 0.19 |
| 7770.00 (AT&T Existing) | A | From Face | 3.00 | | 0.0000 | 170.00 | No Ice | 5.51 | 2.93 | 0.04 |
| | | | -6.00 | | | | 1/2" Ice | 5.87 | 3.27 | 0.07 |
| | | | 0.00 | | | | 1" Ice | 6.23 | 3.63 | 0.11 |
| | | | 3.00 | | | | No Ice | 5.51 | 2.93 | 0.04 |
| 7770.00 (AT&T Existing) | B | From Face | 6.00 | | 0.0000 | 170.00 | 1/2" Ice | 5.87 | 3.27 | 0.07 |
| | | | 0.00 | | | | 1" Ice | 6.23 | 3.63 | 0.11 |
| | | | 3.00 | | | | No Ice | 5.51 | 2.93 | 0.04 |
| | | | 6.00 | | | | 1/2" Ice | 5.87 | 3.27 | 0.07 |
| P65-17-XLH-RR (AT&T Existing) | B | From Face | 0.00 | | 0.0000 | 170.00 | 1" Ice | 6.23 | 3.63 | 0.11 |
| | | | 3.00 | | | | No Ice | 11.47 | 6.80 | 0.06 |
| | | | 4.00 | | | | 1/2" Ice | 12.08 | 7.38 | 0.12 |
| | | | 0.00 | | | | 1" Ice | 12.71 | 7.98 | 0.19 |
| 7770.00 (AT&T Existing) | B | From Face | 3.00 | | 0.0000 | 170.00 | No Ice | 5.51 | 2.93 | 0.04 |
| | | | -6.00 | | | | 1/2" Ice | 5.87 | 3.27 | 0.07 |
| | | | 0.00 | | | | 1" Ice | 6.23 | 3.63 | 0.11 |
| | | | 3.00 | | | | No Ice | 5.51 | 2.93 | 0.04 |
| 7770.00 (AT&T Existing) | C | From Face | 6.00 | | 0.0000 | 170.00 | 1/2" Ice | 5.87 | 3.27 | 0.07 |
| | | | 0.00 | | | | 1" Ice | 6.23 | 3.63 | 0.11 |
| | | | 3.00 | | | | No Ice | 11.47 | 6.80 | 0.06 |
| | | | 4.00 | | | | 1/2" Ice | 12.08 | 7.38 | 0.12 |
| P65-17-XLH-RR (AT&T Existing) | C | From Face | 0.00 | | 0.0000 | 170.00 | 1" Ice | 12.71 | 7.98 | 0.19 |
| | | | 3.00 | | | | No Ice | 5.51 | 2.93 | 0.04 |
| | | | 4.00 | | | | 1/2" Ice | 5.87 | 3.27 | 0.07 |
| | | | 0.00 | | | | 1" Ice | 6.23 | 3.63 | 0.11 |
| 7770.00 (AT&T Existing) | C | From Face | 3.00 | | 0.0000 | 170.00 | No Ice | 5.51 | 2.93 | 0.04 |
| | | | -6.00 | | | | 1/2" Ice | 5.87 | 3.27 | 0.07 |
| | | | 0.00 | | | | 1" Ice | 6.23 | 3.63 | 0.11 |
| | | | 3.00 | | | | No Ice | 0.82 | 0.35 | 0.02 |
| (2) LGP21401 TMA (AT&T Existing) | A | From Face | 0.00 | | 0.0000 | 170.00 | 1/2" Ice | 0.94 | 0.44 | 0.02 |
| | | | 0.00 | | | | 1" Ice | 1.06 | 0.54 | 0.03 |
| | | | 3.00 | | | | No Ice | 0.82 | 0.35 | 0.02 |
| | | | 0.00 | | | | 1/2" Ice | 0.94 | 0.44 | 0.02 |
| (2) LGP21401 TMA (AT&T Existing) | B | From Face | 0.00 | | 0.0000 | 170.00 | 1" Ice | 1.06 | 0.54 | 0.03 |
| | | | 3.00 | | | | No Ice | 0.82 | 0.35 | 0.02 |
| | | | 0.00 | | | | 1/2" Ice | 0.94 | 0.44 | 0.02 |
| | | | 0.00 | | | | 1" Ice | 1.06 | 0.54 | 0.03 |
| (2) LGP21401 TMA (AT&T Existing) | C | From Face | 3.00 | | 0.0000 | 170.00 | No Ice | 0.23 | 0.16 | 0.01 |
| | | | 0.00 | | | | 1/2" Ice | 0.29 | 0.21 | 0.01 |
| | | | 0.00 | | | | 1" Ice | 0.36 | 0.28 | 0.01 |
| | | | 3.00 | | | | No Ice | 0.23 | 0.16 | 0.01 |
| (2) LPG13519 Diplexer (AT&T Existing) | A | From Face | 0.00 | | 0.0000 | 170.00 | 1/2" Ice | 0.29 | 0.21 | 0.01 |
| | | | 0.00 | | | | 1" Ice | 0.36 | 0.28 | 0.01 |
| | | | 3.00 | | | | No Ice | 0.23 | 0.16 | 0.01 |
| | | | 0.00 | | | | 1/2" Ice | 0.29 | 0.21 | 0.01 |
| (2) LPG13519 Diplexer (AT&T Existing) | B | From Face | 0.00 | | 0.0000 | 170.00 | 1" Ice | 0.36 | 0.28 | 0.01 |
| | | | 3.00 | | | | No Ice | 0.23 | 0.16 | 0.01 |
| | | | 0.00 | | | | 1/2" Ice | 0.29 | 0.21 | 0.01 |
| | | | 0.00 | | | | 1" Ice | 0.36 | 0.28 | 0.01 |
| (2) LPG13519 Diplexer (AT&T Existing) | C | From Face | 3.00 | | 0.0000 | 170.00 | No Ice | 0.23 | 0.16 | 0.01 |
| | | | 0.00 | | | | 1/2" Ice | 0.29 | 0.21 | 0.01 |
| | | | 0.00 | | | | 1" Ice | 0.36 | 0.28 | 0.01 |
| | | | 0.00 | | | | No Ice | 16.50 | 16.50 | 1.55 |
| EEI 14-ft Low Profile Platform (AT&T Existing) | C | None | | | 0.0000 | 168.00 | 1/2" Ice | 20.00 | 20.00 | 1.80 |
| | | | | | | | 1" Ice | 23.50 | 23.50 | 2.05 |
| | | | | | | | No Ice | 4.05 | 3.61 | 0.02 |
| | | | | | | | 1/2" Ice | 4.36 | 3.92 | 0.05 |
| APL866513-42T0 (Verizon Existing) | A | From Face | 3.00 | | 0.0000 | 160.00 | 1" Ice | 4.68 | 4.23 | 0.08 |
| | | | -6.00 | | | | No Ice | 8.08 | 5.34 | 0.04 |
| | | | 0.00 | | | | 1/2" Ice | 8.53 | 5.79 | 0.09 |
| | | | 0.00 | | | | 1" Ice | 9.00 | 6.26 | 0.15 |
| SBNHH-1D65B (Verizon Existing) | A | From Face | 3.00 | | 0.0000 | 160.00 | No Ice | 8.08 | 5.34 | 0.04 |
| | | | 0.00 | | | | 1/2" Ice | 8.53 | 5.79 | 0.09 |
| | | | 0.00 | | | | 1" Ice | 9.00 | 6.26 | 0.15 |
| | | | 3.00 | | | | No Ice | 8.08 | 5.34 | 0.04 |
| SBNHH-1D65B (Verizon Existing) | A | From Face | 4.00 | | 0.0000 | 160.00 | 1/2" Ice | 8.53 | 5.79 | 0.09 |
| | | | 0.00 | | | | 1" Ice | 9.00 | 6.26 | 0.15 |
| | | | 3.00 | | | | No Ice | 4.05 | 3.61 | 0.02 |
| | | | -6.00 | | | | 1/2" Ice | 4.36 | 3.92 | 0.05 |
| APL866513-42T0 (Verizon Existing) | A | From Face | 3.00 | | 0.0000 | 160.00 | No Ice | 4.05 | 3.61 | 0.02 |
| | | | 0.00 | | | | 1" Ice | 9.00 | 6.26 | 0.15 |
| | | | 3.00 | | | | No Ice | 4.05 | 3.61 | 0.02 |
| | | | -6.00 | | | | 1/2" Ice | 4.36 | 3.92 | 0.05 |

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| tnxTower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587 | Job 17051.00 - CTHA539A | Page 7 of 22 |
| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by TJL |

| Description | Face or Leg | Offset Type | Offsets: | | Azimuth Adjustment | Placement | C _{AA} Front | C _{AA} Side | Weight | |
|--|-------------|-------------|----------|---------|--------------------|-----------|-----------------------|----------------------|--------|------|
| | | | Horz | Lateral | | | | | | Vert |
| | | | ft | ft | ° | ft | ft ² | ft ² | K | |
| APL866513-42T0 (Verizon Existing) | B | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 4.68 | 4.23 | 0.08 |
| | | | 3.00 | | | | No Ice | 4.05 | 3.61 | 0.02 |
| | | | -6.00 | | | | 1/2" Ice | 4.36 | 3.92 | 0.05 |
| SBNHH-1D65B (Verizon Existing) | B | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 4.68 | 4.23 | 0.08 |
| | | | 3.00 | | | | No Ice | 8.08 | 5.34 | 0.04 |
| | | | 0.00 | | | | 1/2" Ice | 8.53 | 5.79 | 0.09 |
| SBNHH-1D65B (Verizon Existing) | B | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 9.00 | 6.26 | 0.15 |
| | | | 3.00 | | | | No Ice | 8.08 | 5.34 | 0.04 |
| | | | 4.00 | | | | 1/2" Ice | 8.53 | 5.79 | 0.09 |
| APL866513-42T0 (Verizon Existing) | B | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 9.00 | 6.26 | 0.15 |
| | | | 3.00 | | | | No Ice | 4.05 | 3.61 | 0.02 |
| | | | -6.00 | | | | 1/2" Ice | 4.36 | 3.92 | 0.05 |
| APL866513-42T0 (Verizon Existing) | C | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 4.68 | 4.23 | 0.08 |
| | | | 3.00 | | | | No Ice | 4.05 | 3.61 | 0.02 |
| | | | -6.00 | | | | 1/2" Ice | 4.36 | 3.92 | 0.05 |
| SBNHH-1D65B (Verizon Existing) | C | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 9.00 | 6.26 | 0.15 |
| | | | 3.00 | | | | No Ice | 8.08 | 5.34 | 0.04 |
| | | | 0.00 | | | | 1/2" Ice | 8.53 | 5.79 | 0.09 |
| SBNHH-1D65B (Verizon Existing) | C | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 9.00 | 6.26 | 0.15 |
| | | | 3.00 | | | | No Ice | 8.08 | 5.34 | 0.04 |
| | | | 4.00 | | | | 1/2" Ice | 8.53 | 5.79 | 0.09 |
| APL866513-42T0 (Verizon Existing) | C | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 9.00 | 6.26 | 0.15 |
| | | | 3.00 | | | | No Ice | 4.05 | 3.61 | 0.02 |
| | | | -6.00 | | | | 1/2" Ice | 4.36 | 3.92 | 0.05 |
| (2) FD9R6004/2C-3L Diplexer (Verizon Existing) | A | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 4.68 | 4.23 | 0.08 |
| | | | 3.00 | | | | No Ice | 0.31 | 0.08 | 0.00 |
| | | | 0.00 | | | | 1/2" Ice | 0.39 | 0.12 | 0.01 |
| (2) FD9R6004/2C-3L Diplexer (Verizon Existing) | B | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 0.47 | 0.17 | 0.01 |
| | | | 3.00 | | | | No Ice | 0.31 | 0.08 | 0.00 |
| | | | 0.00 | | | | 1/2" Ice | 0.39 | 0.12 | 0.01 |
| (2) FD9R6004/2C-3L Diplexer (Verizon Existing) | C | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 0.47 | 0.17 | 0.01 |
| | | | 3.00 | | | | No Ice | 0.31 | 0.08 | 0.00 |
| | | | 0.00 | | | | 1/2" Ice | 0.39 | 0.12 | 0.01 |
| RRH4x45/2x90-AWS (Verizon Existing) | A | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 0.47 | 0.17 | 0.01 |
| | | | 3.00 | | | | No Ice | 2.58 | 1.69 | 0.08 |
| | | | 4.00 | | | | 1/2" Ice | 2.79 | 1.87 | 0.10 |
| RRH4x45/2x90-AWS (Verizon Existing) | B | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 3.01 | 2.06 | 0.12 |
| | | | 3.00 | | | | No Ice | 2.58 | 1.69 | 0.08 |
| | | | 4.00 | | | | 1/2" Ice | 2.79 | 1.87 | 0.10 |
| RRH4x45/2x90-AWS (Verizon Existing) | C | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 3.01 | 2.06 | 0.12 |
| | | | 3.00 | | | | No Ice | 2.58 | 1.69 | 0.08 |
| | | | 4.00 | | | | 1/2" Ice | 2.79 | 1.87 | 0.10 |
| RRH4x30-B13 (Verizon Existing) | A | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 3.01 | 2.06 | 0.12 |
| | | | 3.00 | | | | No Ice | 2.16 | 1.62 | 0.06 |
| | | | 0.00 | | | | 1/2" Ice | 2.35 | 1.79 | 0.08 |
| RRH4x30-B13 (Verizon Existing) | B | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 2.55 | 1.97 | 0.10 |
| | | | 3.00 | | | | No Ice | 2.16 | 1.62 | 0.06 |
| | | | 0.00 | | | | 1/2" Ice | 2.35 | 1.79 | 0.08 |
| RRH4x30-B13 (Verizon Existing) | C | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 2.55 | 1.97 | 0.10 |
| | | | 3.00 | | | | No Ice | 2.16 | 1.62 | 0.06 |
| | | | 0.00 | | | | 1/2" Ice | 2.35 | 1.79 | 0.08 |
| RRH2x90-PCS (Verizon Existing) | A | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 2.55 | 1.97 | 0.10 |
| | | | 3.00 | | | | No Ice | 2.15 | 1.35 | 0.06 |
| | | | -4.00 | | | | 1/2" Ice | 2.34 | 1.50 | 0.07 |
| RRH2x90-PCS (Verizon Existing) | B | From Face | 0.00 | | 0.0000 | 160.00 | 1" Ice | 2.54 | 1.67 | 0.09 |
| | | | 3.00 | | | | No Ice | 2.15 | 1.35 | 0.06 |
| | | | -4.00 | | | | 1/2" Ice | 2.34 | 1.50 | 0.07 |

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| tnxTower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587 | Job 17051.00 - CTHA539A | Page 8 of 22 |
| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by TJL |

| Description | Face or Leg | Offset Type | Offsets: | | | Azimuth Adjustment | Placement | C _A A _A Front | C _A A _A Side | Weight |
|--|-------------|-------------|----------|---------|------|--------------------|-----------|-------------------------------------|------------------------------------|--------|
| | | | Horz | Lateral | Vert | | | | | |
| RRH2x90-PCS (Verizon Existing) | C | From Face | | 0.00 | | 0.0000 | 160.00 | 1" Ice | 1.67 | 0.09 |
| | | | | 3.00 | | | | No Ice | 1.35 | 0.06 |
| | | | | -4.00 | | | | 1/2" Ice | 1.50 | 0.07 |
| | | | | 0.00 | | | | 1" Ice | 1.67 | 0.09 |
| RC2DC-3315-PF-48 (Verizon Existing) | A | From Face | | 1.00 | | 0.0000 | 160.00 | No Ice | 1.96 | 0.03 |
| | | | | 1.00 | | | | 1/2" Ice | 2.15 | 0.05 |
| | | | | 0.00 | | | | 1" Ice | 2.35 | 0.08 |
| | | | | 1.00 | | | | No Ice | 1.96 | 0.03 |
| RC2DC-3315-PF-48 (Verizon Existing) | B | From Face | | 1.00 | | 0.0000 | 160.00 | No Ice | 1.96 | 0.03 |
| | | | | 1.00 | | | | 1/2" Ice | 2.15 | 0.05 |
| | | | | 0.00 | | | | 1" Ice | 2.35 | 0.08 |
| | | | | 1.00 | | | | No Ice | 1.96 | 0.03 |
| EEI 14-ft Low Profile Platform (Verizon Existing) | C | None | | | | 0.0000 | 158.00 | No Ice | 16.50 | 1.55 |
| | | | | | | | | 1/2" Ice | 20.00 | 1.80 |
| | | | | | | | | 1" Ice | 23.50 | 2.05 |

Tower Pressures - No Ice

$G_H = 1.100$

| Section Elevation | z | K _Z | q _z | A _G | F a c e | A _F | A _R | A _{leg} | Leg % | C _A A _A In Face | C _A A _A Out Face |
|---------------------|--------|----------------|----------------|-----------------|---------|-----------------|-----------------|------------------|--------|---------------------------------------|--|
| ft | ft | | psf | ft ² | | ft ² | ft ² | ft ² | | ft ² | ft ² |
| L1 179.00-139.50 | 158.19 | 1.394 | 34 | 79.459 | A | 0.000 | 79.459 | 79.459 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 79.459 | 100.00 | 0.000 | 0.000 | |
| | | | | | C | 0.000 | 79.459 | 100.00 | 0.000 | 0.000 | |
| L2 139.50-93.40 | 115.53 | 1.305 | 32 | 127.170 | A | 0.000 | 127.170 | 127.170 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 127.170 | 100.00 | 0.000 | 0.000 | |
| | | | | | C | 0.000 | 127.170 | 100.00 | 0.000 | 0.000 | |
| L3 93.40-46.31 | 69.31 | 1.172 | 28 | 167.229 | A | 0.000 | 167.229 | 167.229 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 167.229 | 100.00 | 0.000 | 0.000 | |
| | | | | | C | 0.000 | 167.229 | 100.00 | 0.000 | 0.000 | |
| L4 46.31-0.00 | 23.42 | 0.932 | 22 | 201.012 | A | 0.000 | 201.012 | 201.012 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 201.012 | 100.00 | 0.000 | 0.000 | |
| | | | | | C | 0.000 | 201.012 | 100.00 | 0.000 | 0.000 | |

Tower Pressure - With Ice

$G_H = 1.100$

| Section Elevation | z | K _Z | q _z | t _z | A _G | F a c e | A _F | A _R | A _{leg} | Leg % | C _A A _A In Face | C _A A _A Out Face |
|---------------------|--------|----------------|----------------|----------------|-----------------|---------|-----------------|-----------------|------------------|--------|---------------------------------------|--|
| ft | ft | | psf | in | ft ² | | ft ² | ft ² | ft ² | | ft ² | ft ² |
| L1 179.00-139.50 | 158.19 | 1.394 | 8 | 2.9242 | 98.710 | A | 0.000 | 98.710 | 98.710 | 100.00 | 0.000 | 0.000 |
| | | | | | | B | 0.000 | 98.710 | 100.00 | 0.000 | 0.000 | |
| | | | | | | C | 0.000 | 98.710 | 100.00 | 0.000 | 0.000 | |
| L2 139.50-93.40 | 115.53 | 1.305 | 8 | 2.8337 | 149.637 | A | 0.000 | 149.637 | 149.637 | 100.00 | 0.000 | 0.000 |

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| tnxTower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587 | Job 17051.00 - CTHA539A | Page 9 of 22 |
| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by TJL |

| Section Elevation ft | z ft | K _Z | q _z psf | t _z in | A _G ft ² | F a c e | A _F ft ² | A _R ft ² | A _{leg} ft ² | Leg % | C _A A _A In Face ft ² | C _A A _A Out Face ft ² |
|-------------------------|---------|----------------|-----------------------|----------------------|-----------------------------------|---------|-----------------------------------|-----------------------------------|-------------------------------------|--------|---|--|
| L3 93.40-46.31 | 69.31 | 1.172 | 7 | 2.6926 | 189.469 | B | 0.000 | 149.637 | 189.469 | 100.00 | 0.000 | 0.000 |
| | | | | | | C | 0.000 | 149.637 | | 100.00 | 0.000 | 0.000 |
| | | | | | | A | 0.000 | 189.469 | | 100.00 | 0.000 | 0.000 |
| L4 46.31-0.00 | 23.42 | 0.932 | 6 | 2.4157 | 221.794 | B | 0.000 | 189.469 | 221.794 | 100.00 | 0.000 | 0.000 |
| | | | | | | C | 0.000 | 189.469 | | 100.00 | 0.000 | 0.000 |
| | | | | | | A | 0.000 | 221.794 | | 100.00 | 0.000 | 0.000 |
| | | | | | | B | 0.000 | 221.794 | | 100.00 | 0.000 | 0.000 |
| | | | | | | C | 0.000 | 221.794 | | 100.00 | 0.000 | 0.000 |

Tower Pressure - Service

$G_H = 1.100$

| Section Elevation ft | z ft | K _Z | q _z psf | A _G ft ² | F a c e | A _F ft ² | A _R ft ² | A _{leg} ft ² | Leg % | C _A A _A In Face ft ² | C _A A _A Out Face ft ² |
|-------------------------|---------|----------------|-----------------------|-----------------------------------|---------|-----------------------------------|-----------------------------------|-------------------------------------|--------|---|--|
| L1 179.00-139.50 | 158.19 | 1.394 | 11 | 79.459 | A | 0.000 | 79.459 | 79.459 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 79.459 | | 100.00 | 0.000 | 0.000 |
| | | | | | C | 0.000 | 79.459 | | 100.00 | 0.000 | 0.000 |
| L2 139.50-93.40 | 115.53 | 1.305 | 10 | 127.170 | A | 0.000 | 127.170 | 127.170 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 127.170 | | 100.00 | 0.000 | 0.000 |
| | | | | | C | 0.000 | 127.170 | | 100.00 | 0.000 | 0.000 |
| L3 93.40-46.31 | 69.31 | 1.172 | 9 | 167.229 | A | 0.000 | 167.229 | 167.229 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 167.229 | | 100.00 | 0.000 | 0.000 |
| | | | | | C | 0.000 | 167.229 | | 100.00 | 0.000 | 0.000 |
| L4 46.31-0.00 | 23.42 | 0.932 | 7 | 201.012 | A | 0.000 | 201.012 | 201.012 | 100.00 | 0.000 | 0.000 |
| | | | | | B | 0.000 | 201.012 | | 100.00 | 0.000 | 0.000 |
| | | | | | C | 0.000 | 201.012 | | 100.00 | 0.000 | 0.000 |

Tower Forces - No Ice - Wind Normal To Face

| Section Elevation ft | Add Weight K | Self Weight K | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F K | w plf | Ctrl. Face |
|-------------------------|-----------------|------------------|---------|---|----------------|-----------------------|----------------|----------------|-----------------------------------|--------|----------|------------|
| L1 179.00-139.50 | 1.14 | 1.89 | A | 1 | 0.65 | 34 | 1 | 1 | 79.459 | 1.91 | 48.47 | C |
| | | | B | 1 | 0.65 | | | | | | | |
| | | | C | 1 | 0.65 | | | | | | | |
| L2 139.50-93.40 | 1.93 | 6.45 | A | 1 | 0.65 | 32 | 1 | 1 | 127.170 | 2.87 | 62.17 | C |
| | | | B | 1 | 0.65 | | | | | | | |
| | | | C | 1 | 0.65 | | | | | | | |
| L3 93.40-46.31 | 2.02 | 8.69 | A | 1 | 0.65 | 28 | 1 | 1 | 167.229 | 3.38 | 71.70 | C |
| | | | B | 1 | 0.65 | | | | | | | |
| | | | C | 1 | 0.65 | | | | | | | |
| L4 46.31-0.00 | 1.85 | 10.72 | A | 1 | 0.65 | 22 | 1 | 1 | 201.012 | 3.22 | 69.59 | C |
| | | | B | 1 | 0.65 | | | | | | | |
| | | | C | 1 | 0.65 | | | | | | | |
| Sum Weight: | 6.94 | 27.75 | | | | | | OTM | 943.47 kip-ft | 11.38 | | |

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| tnxTower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587 | Job 17051.00 - CTHA539A | Page 10 of 22 |
| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by TJL |

Tower Forces - No Ice - Wind 60 To Face

| Section Elevation ft | Add Weight K | Self Weight K | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F K | w plf | Ctrl. Face |
|-------------------------|-----------------|------------------|---------|---|----------------|-----------------------|----------------|----------------|-----------------------------------|--------|----------|------------|
| L1 179.00-139.50 | 1.14 | 1.89 | A | 1 | 0.65 | 34 | 1 | 1 | 79.459 | 1.91 | 48.47 | C |
| | | | B | 1 | 0.65 | | | | | | | |
| | | | C | 1 | 0.65 | | | | | | | |
| L2 139.50-93.40 | 1.93 | 6.45 | A | 1 | 0.65 | 32 | 1 | 1 | 127.170 | 2.87 | 62.17 | C |
| | | | B | 1 | 0.65 | | | | | | | |
| | | | C | 1 | 0.65 | | | | | | | |
| L3 93.40-46.31 | 2.02 | 8.69 | A | 1 | 0.65 | 28 | 1 | 1 | 167.229 | 3.38 | 71.70 | C |
| | | | B | 1 | 0.65 | | | | | | | |
| | | | C | 1 | 0.65 | | | | | | | |
| L4 46.31-0.00 | 1.85 | 10.72 | A | 1 | 0.65 | 22 | 1 | 1 | 201.012 | 3.22 | 69.59 | C |
| | | | B | 1 | 0.65 | | | | | | | |
| | | | C | 1 | 0.65 | | | | | | | |
| Sum Weight: | 6.94 | 27.75 | | | | | | OTM | 943.47 kip-ft | 11.38 | | |

Tower Forces - No Ice - Wind 90 To Face

| Section Elevation ft | Add Weight K | Self Weight K | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F K | w plf | Ctrl. Face |
|-------------------------|-----------------|------------------|---------|---|----------------|-----------------------|----------------|----------------|-----------------------------------|--------|----------|------------|
| L1 179.00-139.50 | 1.14 | 1.89 | A | 1 | 0.65 | 34 | 1 | 1 | 79.459 | 1.91 | 48.47 | C |
| | | | B | 1 | 0.65 | | | | | | | |
| | | | C | 1 | 0.65 | | | | | | | |
| L2 139.50-93.40 | 1.93 | 6.45 | A | 1 | 0.65 | 32 | 1 | 1 | 127.170 | 2.87 | 62.17 | C |
| | | | B | 1 | 0.65 | | | | | | | |
| | | | C | 1 | 0.65 | | | | | | | |
| L3 93.40-46.31 | 2.02 | 8.69 | A | 1 | 0.65 | 28 | 1 | 1 | 167.229 | 3.38 | 71.70 | C |
| | | | B | 1 | 0.65 | | | | | | | |
| | | | C | 1 | 0.65 | | | | | | | |
| L4 46.31-0.00 | 1.85 | 10.72 | A | 1 | 0.65 | 22 | 1 | 1 | 201.012 | 3.22 | 69.59 | C |
| | | | B | 1 | 0.65 | | | | | | | |
| | | | C | 1 | 0.65 | | | | | | | |
| Sum Weight: | 6.94 | 27.75 | | | | | | OTM | 943.47 kip-ft | 11.38 | | |

Tower Forces - With Ice - Wind Normal To Face

| Section Elevation ft | Add Weight K | Self Weight K | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F K | w plf | Ctrl. Face |
|-------------------------|-----------------|------------------|---------|---|----------------|-----------------------|----------------|----------------|-----------------------------------|--------|----------|------------|
| L1 | 1.14 | 5.69 | A | 1 | 1.2 | 8 | 1 | 1 | 98.710 | 1.10 | 27.94 | C |

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| tnxTower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587 | Job 17051.00 - CTHA539A | Page 11 of 22 |
| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by TJL |

| Section Elevation | Add Weight | Self Weight | F a c e | e | C _F | q _z | D _F | D _R | A _E | F | w | Ctrl. Face |
|-------------------|------------|-------------|---------|---|----------------|----------------|----------------|----------------|-----------------|------|-------|------------|
| ft | K | K | e | | | psf | | | ft ² | K | plf | |
| 179.00-139.50 | | | B | 1 | 1.2 | | 1 | 1 | 98.710 | | | |
| | | | C | 1 | 1.2 | | 1 | 1 | 98.710 | | | |
| L2 | 1.93 | 12.17 | A | 1 | 1.2 | 8 | 1 | 1 | 149.637 | 1.56 | 33.94 | C |
| 139.50-93.40 | | | B | 1 | 1.2 | | 1 | 1 | 149.637 | | | |
| | | | C | 1 | 1.2 | | 1 | 1 | 149.637 | | | |
| L3 | 2.02 | 15.68 | A | 1 | 1.2 | 7 | 1 | 1 | 189.469 | 1.77 | 37.69 | C |
| 93.40-46.31 | | | B | 1 | 1.2 | | 1 | 1 | 189.469 | | | |
| | | | C | 1 | 1.2 | | 1 | 1 | 189.469 | | | |
| L4 | 1.85 | 18.14 | A | 1 | 1.2 | 6 | 1 | 1 | 221.794 | 1.65 | 35.63 | C |
| 46.31-0.00 | | | B | 1 | 1.2 | | 1 | 1 | 221.794 | | | |
| | | | C | 1 | 1.2 | | 1 | 1 | 221.794 | | | |
| Sum Weight: | 6.94 | 51.68 | | | | | | OTM | 517.05 | 6.09 | | |
| | | | | | | | | | kip-ft | | | |

Tower Forces - With Ice - Wind 60 To Face

| Section Elevation | Add Weight | Self Weight | F a c e | e | C _F | q _z | D _F | D _R | A _E | F | w | Ctrl. Face |
|-------------------|------------|-------------|---------|---|----------------|----------------|----------------|----------------|-----------------|------|-------|------------|
| ft | K | K | e | | | psf | | | ft ² | K | plf | |
| L1 | 1.14 | 5.69 | A | 1 | 1.2 | 8 | 1 | 1 | 98.710 | 1.10 | 27.94 | C |
| 179.00-139.50 | | | B | 1 | 1.2 | | 1 | 1 | 98.710 | | | |
| | | | C | 1 | 1.2 | | 1 | 1 | 98.710 | | | |
| L2 | 1.93 | 12.17 | A | 1 | 1.2 | 8 | 1 | 1 | 149.637 | 1.56 | 33.94 | C |
| 139.50-93.40 | | | B | 1 | 1.2 | | 1 | 1 | 149.637 | | | |
| | | | C | 1 | 1.2 | | 1 | 1 | 149.637 | | | |
| L3 | 2.02 | 15.68 | A | 1 | 1.2 | 7 | 1 | 1 | 189.469 | 1.77 | 37.69 | C |
| 93.40-46.31 | | | B | 1 | 1.2 | | 1 | 1 | 189.469 | | | |
| | | | C | 1 | 1.2 | | 1 | 1 | 189.469 | | | |
| L4 | 1.85 | 18.14 | A | 1 | 1.2 | 6 | 1 | 1 | 221.794 | 1.65 | 35.63 | C |
| 46.31-0.00 | | | B | 1 | 1.2 | | 1 | 1 | 221.794 | | | |
| | | | C | 1 | 1.2 | | 1 | 1 | 221.794 | | | |
| Sum Weight: | 6.94 | 51.68 | | | | | | OTM | 517.05 | 6.09 | | |
| | | | | | | | | | kip-ft | | | |

Tower Forces - With Ice - Wind 90 To Face

| Section Elevation | Add Weight | Self Weight | F a c e | e | C _F | q _z | D _F | D _R | A _E | F | w | Ctrl. Face |
|-------------------|------------|-------------|---------|---|----------------|----------------|----------------|----------------|-----------------|------|-------|------------|
| ft | K | K | e | | | psf | | | ft ² | K | plf | |
| L1 | 1.14 | 5.69 | A | 1 | 1.2 | 8 | 1 | 1 | 98.710 | 1.10 | 27.94 | C |
| 179.00-139.50 | | | B | 1 | 1.2 | | 1 | 1 | 98.710 | | | |
| | | | C | 1 | 1.2 | | 1 | 1 | 98.710 | | | |
| L2 | 1.93 | 12.17 | A | 1 | 1.2 | 8 | 1 | 1 | 149.637 | 1.56 | 33.94 | C |
| 139.50-93.40 | | | B | 1 | 1.2 | | 1 | 1 | 149.637 | | | |
| | | | C | 1 | 1.2 | | 1 | 1 | 149.637 | | | |
| L3 | 2.02 | 15.68 | A | 1 | 1.2 | 7 | 1 | 1 | 189.469 | 1.77 | 37.69 | C |
| 93.40-46.31 | | | B | 1 | 1.2 | | 1 | 1 | 189.469 | | | |

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| | Client T-Mobile | Designed by TJJ |

| Section Elevation ft | Add Weight K | Self Weight K | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F K | w plf | Ctrl. Face |
|-------------------------|-----------------|------------------|---------|---|----------------|-----------------------|----------------|----------------|-----------------------------------|--------|----------|------------|
| L4 46.31-0.00 | 1.85 | 18.14 | C | 1 | 1.2 | 6 | 1 | 1 | 189.469 | 1.65 | 35.63 | C |
| | | | A | 1 | 1.2 | | 1 | 1 | 221.794 | | | |
| | | | B | 1 | 1.2 | | 1 | 1 | 221.794 | | | |
| | | | C | 1 | 1.2 | | 1 | 1 | 221.794 | | | |
| Sum Weight: | 6.94 | 51.68 | | | | | | OTM | 517.05 kip-ft | 6.09 | | |

Tower Forces - Service - Wind Normal To Face

| Section Elevation ft | Add Weight K | Self Weight K | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F K | w plf | Ctrl. Face |
|-------------------------|-----------------|------------------|---------|---|----------------|-----------------------|----------------|----------------|-----------------------------------|--------|----------|------------|
| L1 179.00-139.50 | 1.14 | 1.89 | A | 1 | 0.65 | 11 | 1 | 1 | 79.459 | 0.62 | 15.70 | C |
| | | | B | 1 | 0.65 | | 1 | 1 | 79.459 | | | |
| | | | C | 1 | 0.65 | | 1 | 1 | 79.459 | | | |
| L2 139.50-93.40 | 1.93 | 6.45 | A | 1 | 0.65 | 10 | 1 | 1 | 127.170 | 0.93 | 20.13 | C |
| | | | B | 1 | 0.65 | | 1 | 1 | 127.170 | | | |
| | | | C | 1 | 0.65 | | 1 | 1 | 127.170 | | | |
| L3 93.40-46.31 | 2.02 | 8.69 | A | 1 | 0.65 | 9 | 1 | 1 | 167.229 | 1.09 | 23.22 | C |
| | | | B | 1 | 0.65 | | 1 | 1 | 167.229 | | | |
| | | | C | 1 | 0.65 | | 1 | 1 | 167.229 | | | |
| L4 46.31-0.00 | 1.85 | 10.72 | A | 1 | 0.65 | 7 | 1 | 1 | 201.012 | 1.04 | 22.54 | C |
| | | | B | 1 | 0.65 | | 1 | 1 | 201.012 | | | |
| | | | C | 1 | 0.65 | | 1 | 1 | 201.012 | | | |
| Sum Weight: | 6.94 | 27.75 | | | | | | | OTM | | | |

Tower Forces - Service - Wind 60 To Face

| Section Elevation ft | Add Weight K | Self Weight K | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F K | w plf | Ctrl. Face |
|-------------------------|-----------------|------------------|---------|---|----------------|-----------------------|----------------|----------------|-----------------------------------|--------|----------|------------|
| L1 179.00-139.50 | 1.14 | 1.89 | A | 1 | 0.65 | 11 | 1 | 1 | 79.459 | 0.62 | 15.70 | C |
| | | | B | 1 | 0.65 | | 1 | 1 | 79.459 | | | |
| | | | C | 1 | 0.65 | | 1 | 1 | 79.459 | | | |
| L2 139.50-93.40 | 1.93 | 6.45 | A | 1 | 0.65 | 10 | 1 | 1 | 127.170 | 0.93 | 20.13 | C |
| | | | B | 1 | 0.65 | | 1 | 1 | 127.170 | | | |
| | | | C | 1 | 0.65 | | 1 | 1 | 127.170 | | | |
| L3 93.40-46.31 | 2.02 | 8.69 | A | 1 | 0.65 | 9 | 1 | 1 | 167.229 | 1.09 | 23.22 | C |
| | | | B | 1 | 0.65 | | 1 | 1 | 167.229 | | | |
| | | | C | 1 | 0.65 | | 1 | 1 | 167.229 | | | |
| L4 46.31-0.00 | 1.85 | 10.72 | A | 1 | 0.65 | 7 | 1 | 1 | 201.012 | 1.04 | 22.54 | C |
| | | | B | 1 | 0.65 | | 1 | 1 | 201.012 | | | |
| | | | C | 1 | 0.65 | | 1 | 1 | 201.012 | | | |
| Sum Weight: | 6.94 | 27.75 | | | | | | | OTM | | | |

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| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by TJL |

Tower Forces - Service - Wind 90 To Face

| Section Elevation ft | Add Weight K | Self Weight K | F a c e | e | C _F | q _z psf | D _F | D _R | A _E ft ² | F K | w plf | Ctrl. Face |
|-------------------------|-----------------|------------------|---------|---|----------------|-----------------------|----------------|----------------|-----------------------------------|--------|----------|------------|
| L1 179.00-139.50 | 1.14 | 1.89 | A | 1 | 0.65 | 11 | 1 | 1 | 79.459 | 0.62 | 15.70 | C |
| | | | B | 1 | 0.65 | | 1 | 1 | 79.459 | | | |
| | | | C | 1 | 0.65 | | 1 | 1 | 79.459 | | | |
| L2 139.50-93.40 | 1.93 | 6.45 | A | 1 | 0.65 | 10 | 1 | 1 | 127.170 | 0.93 | 20.13 | C |
| | | | B | 1 | 0.65 | | 1 | 1 | 127.170 | | | |
| | | | C | 1 | 0.65 | | 1 | 1 | 127.170 | | | |
| L3 93.40-46.31 | 2.02 | 8.69 | A | 1 | 0.65 | 9 | 1 | 1 | 167.229 | 1.09 | 23.22 | C |
| | | | B | 1 | 0.65 | | 1 | 1 | 167.229 | | | |
| | | | C | 1 | 0.65 | | 1 | 1 | 167.229 | | | |
| L4 46.31-0.00 | 1.85 | 10.72 | A | 1 | 0.65 | 7 | 1 | 1 | 201.012 | 1.04 | 22.54 | C |
| | | | B | 1 | 0.65 | | 1 | 1 | 201.012 | | | |
| | | | C | 1 | 0.65 | | 1 | 1 | 201.012 | | | |
| Sum Weight: | 6.94 | 27.75 | | | | | | OTM | 305.54 kip-ft | 3.69 | | |

Force Totals

| Load Case | Vertical Forces K | Sum of Forces X K | Sum of Forces Z K | Sum of Overturning Moments, M _x kip-ft | Sum of Overturning Moments, M _z kip-ft | Sum of Torques kip-ft |
|--------------------------|----------------------|----------------------|----------------------|--|--|--------------------------|
| Leg Weight | 27.75 | | | | | |
| Bracing Weight | 0.00 | | | | | |
| Total Member Self-Weight | 27.75 | | | | | |
| Total Weight | 42.46 | | | | | |
| Wind 0 deg - No Ice | | 0.00 | -20.35 | -2445.80 | -0.33 | 0.84 |
| Wind 30 deg - No Ice | | 10.19 | -17.62 | -2118.02 | -1226.12 | 1.70 |
| Wind 60 deg - No Ice | | 17.65 | -10.17 | -1222.51 | -2123.46 | 2.11 |
| Wind 90 deg - No Ice | | 20.38 | 0.00 | 0.78 | -2451.91 | 1.95 |
| Wind 120 deg - No Ice | | 17.65 | 10.17 | 1224.07 | -2123.46 | 1.27 |
| Wind 150 deg - No Ice | | 10.19 | 17.62 | 2119.58 | -1226.12 | 0.25 |
| Wind 180 deg - No Ice | | 0.00 | 20.35 | 2447.36 | -0.33 | -0.84 |
| Wind 210 deg - No Ice | | -10.19 | 17.62 | 2119.58 | 1225.46 | -1.70 |
| Wind 240 deg - No Ice | | -17.65 | 10.17 | 1224.07 | 2122.80 | -2.11 |
| Wind 270 deg - No Ice | | -20.38 | 0.00 | 0.78 | 2451.25 | -1.95 |
| Wind 300 deg - No Ice | | -17.65 | -10.17 | -1222.51 | 2122.80 | -1.27 |
| Wind 330 deg - No Ice | | -10.19 | -17.62 | -2118.02 | 1225.46 | -0.25 |
| Member Ice | 23.93 | | | | | |
| Total Weight Ice | 88.52 | | | 8.19 | -1.26 | |
| Wind 0 deg - Ice | | 0.00 | -10.30 | -1211.51 | -1.26 | 0.36 |
| Wind 30 deg - Ice | | 5.16 | -8.92 | -1048.10 | -611.84 | 1.22 |
| Wind 60 deg - Ice | | 8.93 | -5.15 | -601.66 | -1058.82 | 1.75 |
| Wind 90 deg - Ice | | 10.31 | 0.00 | 8.19 | -1222.43 | 1.82 |
| Wind 120 deg - Ice | | 8.93 | 5.15 | 618.05 | -1058.82 | 1.39 |
| Wind 150 deg - Ice | | 5.16 | 8.92 | 1064.49 | -611.84 | 0.59 |
| Wind 180 deg - Ice | | 0.00 | 10.30 | 1227.90 | -1.26 | -0.36 |
| Wind 210 deg - Ice | | -5.16 | 8.92 | 1064.49 | 609.33 | -1.22 |
| Wind 240 deg - Ice | | -8.93 | 5.15 | 618.05 | 1056.31 | -1.75 |

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| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by TJL |

| Load Case | Vertical Forces K | Sum of Forces X K | Sum of Forces Z K | Sum of Overturning Moments, M_x kip-ft | Sum of Overturning Moments, M_z kip-ft | Sum of Torques kip-ft |
|------------------------|----------------------|-------------------------|-------------------------|---|---|--------------------------|
| Wind 270 deg - Ice | | -10.31 | 0.00 | 8.19 | 1219.92 | -1.82 |
| Wind 300 deg - Ice | | -8.93 | -5.15 | -601.66 | 1056.31 | -1.39 |
| Wind 330 deg - Ice | | -5.16 | -8.92 | -1048.10 | 609.33 | -0.59 |
| Total Weight | 42.46 | | | 0.78 | -0.33 | |
| Wind 0 deg - Service | | 0.00 | -6.59 | -791.52 | -0.33 | 0.27 |
| Wind 30 deg - Service | | 3.30 | -5.71 | -685.37 | -397.29 | 0.55 |
| Wind 60 deg - Service | | 5.72 | -3.29 | -395.37 | -687.89 | 0.68 |
| Wind 90 deg - Service | | 6.60 | 0.00 | 0.78 | -794.25 | 0.63 |
| Wind 120 deg - Service | | 5.72 | 3.29 | 396.94 | -687.89 | 0.41 |
| Wind 150 deg - Service | | 3.30 | 5.71 | 686.94 | -397.29 | 0.08 |
| Wind 180 deg - Service | | 0.00 | 6.59 | 793.09 | -0.33 | -0.27 |
| Wind 210 deg - Service | | -3.30 | 5.71 | 686.94 | 396.63 | -0.55 |
| Wind 240 deg - Service | | -5.72 | 3.29 | 396.94 | 687.23 | -0.68 |
| Wind 270 deg - Service | | -6.60 | 0.00 | 0.78 | 793.60 | -0.63 |
| Wind 300 deg - Service | | -5.72 | -3.29 | -395.37 | 687.23 | -0.41 |
| Wind 330 deg - Service | | -3.30 | -5.71 | -685.37 | 396.63 | -0.08 |

Load Combinations

| Comb. No. | Description |
|-----------|--|
| 1 | Dead Only |
| 2 | 1.2 Dead+1.6 Wind 0 deg - No Ice |
| 3 | 0.9 Dead+1.6 Wind 0 deg - No Ice |
| 4 | 1.2 Dead+1.6 Wind 30 deg - No Ice |
| 5 | 0.9 Dead+1.6 Wind 30 deg - No Ice |
| 6 | 1.2 Dead+1.6 Wind 60 deg - No Ice |
| 7 | 0.9 Dead+1.6 Wind 60 deg - No Ice |
| 8 | 1.2 Dead+1.6 Wind 90 deg - No Ice |
| 9 | 0.9 Dead+1.6 Wind 90 deg - No Ice |
| 10 | 1.2 Dead+1.6 Wind 120 deg - No Ice |
| 11 | 0.9 Dead+1.6 Wind 120 deg - No Ice |
| 12 | 1.2 Dead+1.6 Wind 150 deg - No Ice |
| 13 | 0.9 Dead+1.6 Wind 150 deg - No Ice |
| 14 | 1.2 Dead+1.6 Wind 180 deg - No Ice |
| 15 | 0.9 Dead+1.6 Wind 180 deg - No Ice |
| 16 | 1.2 Dead+1.6 Wind 210 deg - No Ice |
| 17 | 0.9 Dead+1.6 Wind 210 deg - No Ice |
| 18 | 1.2 Dead+1.6 Wind 240 deg - No Ice |
| 19 | 0.9 Dead+1.6 Wind 240 deg - No Ice |
| 20 | 1.2 Dead+1.6 Wind 270 deg - No Ice |
| 21 | 0.9 Dead+1.6 Wind 270 deg - No Ice |
| 22 | 1.2 Dead+1.6 Wind 300 deg - No Ice |
| 23 | 0.9 Dead+1.6 Wind 300 deg - No Ice |
| 24 | 1.2 Dead+1.6 Wind 330 deg - No Ice |
| 25 | 0.9 Dead+1.6 Wind 330 deg - No Ice |
| 26 | 1.2 Dead+1.0 Ice+1.0 Temp |
| 27 | 1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp |
| 28 | 1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp |
| 29 | 1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp |
| 30 | 1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp |
| 31 | 1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp |
| 32 | 1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp |
| 33 | 1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp |
| 34 | 1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp |
| 35 | 1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp |

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| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by T.J.L. |

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

Maximum Member Forces

| Section No. | Elevation ft | Component Type | Condition | Gov. Load Comb. | Axial K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|-------------|--------------|----------------|------------------|-----------------|---------|--------------------------|--------------------------|
| L1 | 179 - 139.5 | Pole | Max Tension | 1 | 0.00 | 0.00 | 0.00 |
| | | | Max. Compression | 26 | -36.06 | -0.31 | -0.35 |
| | | | Max. Mx | 8 | -10.17 | -438.58 | -0.08 |
| | | | Max. My | 2 | -10.19 | -0.06 | 437.68 |
| | | | Max. Vy | 8 | 17.81 | -438.58 | -0.08 |
| | | | Max. Vx | 14 | 17.76 | -0.06 | -437.63 |
| | | | Max. Torque | 21 | | | 0.16 |
| L2 | 139.5 - 93.4 | Pole | Max Tension | 1 | 0.00 | 0.00 | 0.00 |
| | | | Max. Compression | 26 | -53.33 | -1.50 | -9.96 |
| | | | Max. Mx | 8 | -19.92 | -1364.64 | -0.88 |
| | | | Max. My | 14 | -19.93 | -0.37 | -1361.94 |
| | | | Max. Vy | 8 | 23.26 | -1364.64 | -0.88 |
| | | | Max. Vx | 14 | 23.21 | -0.37 | -1361.94 |
| | | | Max. Torque | 19 | | | 3.33 |
| L3 | 93.4 - 46.31 | Pole | Max Tension | 1 | 0.00 | 0.00 | 0.00 |
| | | | Max. Compression | 26 | -73.06 | -1.60 | -10.66 |
| | | | Max. Mx | 8 | -32.91 | -2546.06 | -0.97 |
| | | | Max. My | 14 | -32.91 | -0.40 | -2540.92 |
| | | | Max. Vy | 8 | 28.13 | -2546.06 | -0.97 |
| | | | Max. Vx | 14 | 28.08 | -0.40 | -2540.92 |
| | | | Max. Torque | 19 | | | 3.32 |
| L4 | 46.31 - 0 | Pole | Max Tension | 1 | 0.00 | 0.00 | 0.00 |
| | | | Max. Compression | 26 | -99.30 | -1.62 | -10.78 |
| | | | Max. Mx | 8 | -50.92 | -4156.91 | -0.98 |
| | | | Max. My | 14 | -50.92 | -0.41 | -4149.05 |
| | | | Max. Vy | 8 | 32.65 | -4156.91 | -0.98 |
| | | | Max. Vx | 14 | 32.60 | -0.41 | -4149.05 |
| | | | Max. Torque | 19 | | | 3.31 |

Maximum Reactions

| Location | Condition | Gov. Load Comb. | Vertical K | Horizontal, X K | Horizontal, Z K |
|----------|-----------|-----------------|------------|-----------------|-----------------|
|----------|-----------|-----------------|------------|-----------------|-----------------|

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| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by TJJ |

| Location | Condition | Gov. Load Comb. | Vertical K | Horizontal, X K | Horizontal, Z K |
|----------|---------------------|-----------------|------------|-----------------|-----------------|
| Pole | Max. Vert | 33 | 99.30 | -0.00 | -10.30 |
| | Max. H _x | 20 | 50.95 | 32.61 | -0.00 |
| | Max. H _z | 2 | 50.95 | -0.00 | 32.56 |
| | Max. M _x | 2 | 4147.01 | -0.00 | 32.56 |
| | Max. M _z | 8 | 4156.91 | -32.61 | -0.00 |
| | Max. Torsion | 19 | 3.30 | 28.24 | -16.28 |
| | Min. Vert | 13 | 38.22 | -16.30 | -28.19 |
| | Min. H _x | 8 | 50.95 | -32.61 | -0.00 |
| | Min. H _z | 14 | 50.95 | -0.00 | -32.56 |
| | Min. M _x | 14 | -4149.05 | -0.00 | -32.56 |
| | Min. M _z | 20 | -4156.06 | 32.61 | -0.00 |
| | Min. Torsion | 7 | -3.30 | -28.24 | 16.28 |

Tower Mast Reaction Summary

| Load Combination | Vertical K | Shear _x K | Shear _z K | Overturning Moment, M _x kip-ft | Overturning Moment, M _z kip-ft | Torque kip-ft |
|------------------------------------|------------|----------------------|----------------------|---|---|---------------|
| Dead Only | 42.46 | 0.00 | 0.00 | 0.78 | -0.33 | 0.00 |
| 1.2 Dead+1.6 Wind 0 deg - No Ice | 50.95 | 0.00 | -32.56 | -4147.01 | -0.41 | 1.28 |
| 0.9 Dead+1.6 Wind 0 deg - No Ice | 38.22 | 0.00 | -32.56 | -4082.95 | -0.30 | 1.29 |
| 1.2 Dead+1.6 Wind 30 deg - No Ice | 50.95 | 16.30 | -28.19 | -3591.29 | -2078.66 | 2.64 |
| 0.9 Dead+1.6 Wind 30 deg - No Ice | 38.22 | 16.30 | -28.19 | -3535.84 | -2046.32 | 2.65 |
| 1.2 Dead+1.6 Wind 60 deg - No Ice | 50.95 | 28.24 | -16.28 | -2073.01 | -3600.04 | 3.29 |
| 0.9 Dead+1.6 Wind 60 deg - No Ice | 38.22 | 28.24 | -16.28 | -2041.11 | -3544.10 | 3.30 |
| 1.2 Dead+1.6 Wind 90 deg - No Ice | 50.95 | 32.61 | 0.00 | 0.98 | -4156.91 | 3.07 |
| 0.9 Dead+1.6 Wind 90 deg - No Ice | 38.22 | 32.61 | 0.00 | 0.72 | -4092.33 | 3.07 |
| 1.2 Dead+1.6 Wind 120 deg - No Ice | 50.95 | 28.24 | 16.28 | 2074.99 | -3600.08 | 2.02 |
| 0.9 Dead+1.6 Wind 120 deg - No Ice | 38.22 | 28.24 | 16.28 | 2042.56 | -3544.13 | 2.01 |
| 1.2 Dead+1.6 Wind 150 deg - No Ice | 50.95 | 16.30 | 28.19 | 3593.31 | -2078.70 | 0.43 |
| 0.9 Dead+1.6 Wind 150 deg - No Ice | 38.22 | 16.30 | 28.19 | 3537.32 | -2046.35 | 0.42 |
| 1.2 Dead+1.6 Wind 180 deg - No Ice | 50.95 | 0.00 | 32.56 | 4149.05 | -0.41 | -1.28 |
| 0.9 Dead+1.6 Wind 180 deg - No Ice | 38.22 | 0.00 | 32.56 | 4084.45 | -0.30 | -1.29 |
| 1.2 Dead+1.6 Wind 210 deg - No Ice | 50.95 | -16.30 | 28.19 | 3593.29 | 2077.87 | -2.64 |
| 0.9 Dead+1.6 Wind 210 deg - No Ice | 38.22 | -16.30 | 28.19 | 3537.31 | 2045.74 | -2.65 |
| 1.2 Dead+1.6 Wind 240 deg - No Ice | 50.95 | -28.24 | 16.28 | 2074.98 | 3599.24 | -3.29 |
| 0.9 Dead+1.6 Wind 240 deg - No Ice | 38.22 | -28.24 | 16.28 | 2042.55 | 3543.51 | -3.30 |
| 1.2 Dead+1.6 Wind 270 deg - No Ice | 50.95 | -32.61 | 0.00 | 0.98 | 4156.06 | -3.07 |

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| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by TJJ |

| Load Combination | Vertical K | Shear _x K | Shear _z K | Overturning Moment, M _x kip-ft | Overturning Moment, M _z kip-ft | Torque kip-ft |
|--|---------------|-------------------------|-------------------------|--|--|------------------|
| 0.9 Dead+1.6 Wind 270 deg - No Ice | 38.22 | -32.61 | 0.00 | 0.72 | 4091.71 | -3.07 |
| 1.2 Dead+1.6 Wind 300 deg - No Ice | 50.95 | -28.24 | -16.28 | -2073.00 | 3599.20 | -2.02 |
| 0.9 Dead+1.6 Wind 300 deg - No Ice | 38.22 | -28.24 | -16.28 | -2041.10 | 3543.48 | -2.01 |
| 1.2 Dead+1.6 Wind 330 deg - No Ice | 50.95 | -16.30 | -28.19 | -3591.27 | 2077.84 | -0.43 |
| 0.9 Dead+1.6 Wind 330 deg - No Ice | 38.22 | -16.30 | -28.19 | -3535.83 | 2045.72 | -0.42 |
| 1.2 Dead+1.0 Ice+1.0 Temp | 99.30 | 0.00 | 0.00 | 10.78 | -1.62 | 0.00 |
| 1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp | 99.30 | 0.00 | -10.30 | -1425.79 | -1.64 | 0.19 |
| 1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp | 99.30 | 5.16 | -8.92 | -1233.30 | -720.88 | 1.08 |
| 1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp | 99.30 | 8.93 | -5.15 | -707.43 | -1247.40 | 1.68 |
| 1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp | 99.30 | 10.31 | 0.00 | 10.93 | -1440.13 | 1.83 |
| 1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp | 99.30 | 8.93 | 5.15 | 729.33 | -1247.47 | 1.49 |
| 1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp | 99.30 | 5.16 | 8.92 | 1255.19 | -720.90 | 0.76 |
| 1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp | 99.30 | 0.00 | 10.30 | 1447.68 | -1.64 | -0.18 |
| 1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp | 99.30 | -5.16 | 8.92 | 1255.19 | 717.61 | -1.07 |
| 1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp | 99.30 | -8.93 | 5.15 | 729.33 | 1244.19 | -1.67 |
| 1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp | 99.30 | -10.31 | 0.00 | 10.93 | 1436.85 | -1.83 |
| 1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp | 99.30 | -8.93 | -5.15 | -707.43 | 1244.12 | -1.49 |
| 1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp | 99.30 | -5.16 | -8.92 | -1233.30 | 717.60 | -0.75 |
| Dead+Wind 0 deg - Service | 42.46 | 0.00 | -6.59 | -832.33 | -0.36 | 0.26 |
| Dead+Wind 30 deg - Service | 42.46 | 3.30 | -5.71 | -720.71 | -417.80 | 0.54 |
| Dead+Wind 60 deg - Service | 42.46 | 5.72 | -3.29 | -415.74 | -723.39 | 0.68 |
| Dead+Wind 90 deg - Service | 42.46 | 6.60 | 0.00 | 0.85 | -835.25 | 0.63 |
| Dead+Wind 120 deg - Service | 42.46 | 5.72 | 3.29 | 417.44 | -723.40 | 0.42 |
| Dead+Wind 150 deg - Service | 42.46 | 3.30 | 5.71 | 722.41 | -417.80 | 0.09 |
| Dead+Wind 180 deg - Service | 42.46 | 0.00 | 6.59 | 834.03 | -0.36 | -0.26 |
| Dead+Wind 210 deg - Service | 42.46 | -3.30 | 5.71 | 722.41 | 417.09 | -0.55 |
| Dead+Wind 240 deg - Service | 42.46 | -5.72 | 3.29 | 417.45 | 722.69 | -0.68 |
| Dead+Wind 270 deg - Service | 42.46 | -6.60 | 0.00 | 0.85 | 834.54 | -0.63 |
| Dead+Wind 300 deg - Service | 42.46 | -5.72 | -3.29 | -415.74 | 722.68 | -0.41 |
| Dead+Wind 330 deg - Service | 42.46 | -3.30 | -5.71 | -720.71 | 417.09 | -0.09 |

Solution Summary

| Load Comb. | Sum of Applied Forces | | | Sum of Reactions | | | % Error |
|------------|-----------------------|---------|---------|------------------|---------|---------|---------|
| | PX K | PY K | PZ K | PX K | PY K | PZ K | |
| 1 | 0.00 | -42.46 | 0.00 | 0.00 | 42.46 | 0.00 | 0.000% |
| 2 | 0.00 | -50.95 | -32.56 | -0.00 | 50.95 | 32.56 | 0.000% |
| 3 | 0.00 | -38.22 | -32.56 | -0.00 | 38.22 | 32.56 | 0.000% |
| 4 | 16.30 | -50.95 | -28.19 | -16.30 | 50.95 | 28.19 | 0.000% |
| 5 | 16.30 | -38.22 | -28.19 | -16.30 | 38.22 | 28.19 | 0.000% |

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| | Client T-Mobile | Designed by TJL |

| Load Comb. | Sum of Applied Forces | | | Sum of Reactions | | | % Error |
|------------|-----------------------|--------|--------|------------------|-------|--------|---------|
| | PX K | PY K | PZ K | PX K | PY K | PZ K | |
| 6 | 28.24 | -50.95 | -16.28 | -28.24 | 50.95 | 16.28 | 0.000% |
| 7 | 28.24 | -38.22 | -16.28 | -28.24 | 38.22 | 16.28 | 0.000% |
| 8 | 32.61 | -50.95 | 0.00 | -32.61 | 50.95 | -0.00 | 0.000% |
| 9 | 32.61 | -38.22 | 0.00 | -32.61 | 38.22 | -0.00 | 0.000% |
| 10 | 28.24 | -50.95 | 16.28 | -28.24 | 50.95 | -16.28 | 0.000% |
| 11 | 28.24 | -38.22 | 16.28 | -28.24 | 38.22 | -16.28 | 0.000% |
| 12 | 16.30 | -50.95 | 28.19 | -16.30 | 50.95 | -28.19 | 0.000% |
| 13 | 16.30 | -38.22 | 28.19 | -16.30 | 38.22 | -28.19 | 0.000% |
| 14 | 0.00 | -50.95 | 32.56 | -0.00 | 50.95 | -32.56 | 0.000% |
| 15 | 0.00 | -38.22 | 32.56 | -0.00 | 38.22 | -32.56 | 0.000% |
| 16 | -16.30 | -50.95 | 28.19 | 16.30 | 50.95 | -28.19 | 0.000% |
| 17 | -16.30 | -38.22 | 28.19 | 16.30 | 38.22 | -28.19 | 0.000% |
| 18 | -28.24 | -50.95 | 16.28 | 28.24 | 50.95 | -16.28 | 0.000% |
| 19 | -28.24 | -38.22 | 16.28 | 28.24 | 38.22 | -16.28 | 0.000% |
| 20 | -32.61 | -50.95 | 0.00 | 32.61 | 50.95 | -0.00 | 0.000% |
| 21 | -32.61 | -38.22 | 0.00 | 32.61 | 38.22 | -0.00 | 0.000% |
| 22 | -28.24 | -50.95 | -16.28 | 28.24 | 50.95 | 16.28 | 0.000% |
| 23 | -28.24 | -38.22 | -16.28 | 28.24 | 38.22 | 16.28 | 0.000% |
| 24 | -16.30 | -50.95 | -28.19 | 16.30 | 50.95 | 28.19 | 0.000% |
| 25 | -16.30 | -38.22 | -28.19 | 16.30 | 38.22 | 28.19 | 0.000% |
| 26 | 0.00 | -99.30 | 0.00 | -0.00 | 99.30 | -0.00 | 0.000% |
| 27 | 0.00 | -99.30 | -10.30 | -0.00 | 99.30 | 10.30 | 0.000% |
| 28 | 5.16 | -99.30 | -8.92 | -5.16 | 99.30 | 8.92 | 0.000% |
| 29 | 8.93 | -99.30 | -5.15 | -8.93 | 99.30 | 5.15 | 0.000% |
| 30 | 10.31 | -99.30 | 0.00 | -10.31 | 99.30 | -0.00 | 0.000% |
| 31 | 8.93 | -99.30 | 5.15 | -8.93 | 99.30 | -5.15 | 0.000% |
| 32 | 5.16 | -99.30 | 8.92 | -5.16 | 99.30 | -8.92 | 0.000% |
| 33 | 0.00 | -99.30 | 10.30 | -0.00 | 99.30 | -10.30 | 0.000% |
| 34 | -5.16 | -99.30 | 8.92 | 5.16 | 99.30 | -8.92 | 0.000% |
| 35 | -8.93 | -99.30 | 5.15 | 8.93 | 99.30 | -5.15 | 0.000% |
| 36 | -10.31 | -99.30 | 0.00 | 10.31 | 99.30 | -0.00 | 0.000% |
| 37 | -8.93 | -99.30 | -5.15 | 8.93 | 99.30 | 5.15 | 0.000% |
| 38 | -5.16 | -99.30 | -8.92 | 5.16 | 99.30 | 8.92 | 0.000% |
| 39 | 0.00 | -42.46 | -6.59 | -0.00 | 42.46 | 6.59 | 0.000% |
| 40 | 3.30 | -42.46 | -5.71 | -3.30 | 42.46 | 5.71 | 0.000% |
| 41 | 5.72 | -42.46 | -3.29 | -5.72 | 42.46 | 3.29 | 0.000% |
| 42 | 6.60 | -42.46 | 0.00 | -6.60 | 42.46 | -0.00 | 0.000% |
| 43 | 5.72 | -42.46 | 3.29 | -5.72 | 42.46 | -3.29 | 0.000% |
| 44 | 3.30 | -42.46 | 5.71 | -3.30 | 42.46 | -5.71 | 0.000% |
| 45 | 0.00 | -42.46 | 6.59 | -0.00 | 42.46 | -6.59 | 0.000% |
| 46 | -3.30 | -42.46 | 5.71 | 3.30 | 42.46 | -5.71 | 0.000% |
| 47 | -5.72 | -42.46 | 3.29 | 5.72 | 42.46 | -3.29 | 0.000% |
| 48 | -6.60 | -42.46 | 0.00 | 6.60 | 42.46 | -0.00 | 0.000% |
| 49 | -5.72 | -42.46 | -3.29 | 5.72 | 42.46 | 3.29 | 0.000% |
| 50 | -3.30 | -42.46 | -5.71 | 3.30 | 42.46 | 5.71 | 0.000% |

Non-Linear Convergence Results

| Load Combination | Converged? | Number of Cycles | Displacement Tolerance | Force Tolerance |
|------------------|------------|------------------|------------------------|-----------------|
| 1 | Yes | 4 | 0.0000001 | 0.0000001 |
| 2 | Yes | 5 | 0.0000001 | 0.00009427 |
| 3 | Yes | 5 | 0.0000001 | 0.00004318 |
| 4 | Yes | 6 | 0.0000001 | 0.00034078 |
| 5 | Yes | 6 | 0.0000001 | 0.00010170 |
| 6 | Yes | 6 | 0.0000001 | 0.00032288 |

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| | Client T-Mobile | Designed by TJL |

| | | | | |
|----|-----|---|------------|------------|
| 7 | Yes | 6 | 0.00000001 | 0.00009526 |
| 8 | Yes | 5 | 0.00000001 | 0.00023873 |
| 9 | Yes | 5 | 0.00000001 | 0.00010856 |
| 10 | Yes | 6 | 0.00000001 | 0.00033965 |
| 11 | Yes | 6 | 0.00000001 | 0.00010118 |
| 12 | Yes | 6 | 0.00000001 | 0.00033132 |
| 13 | Yes | 6 | 0.00000001 | 0.00009824 |
| 14 | Yes | 5 | 0.00000001 | 0.00009429 |
| 15 | Yes | 5 | 0.00000001 | 0.00004318 |
| 16 | Yes | 6 | 0.00000001 | 0.00032510 |
| 17 | Yes | 6 | 0.00000001 | 0.00009602 |
| 18 | Yes | 6 | 0.00000001 | 0.00034353 |
| 19 | Yes | 6 | 0.00000001 | 0.00010260 |
| 20 | Yes | 5 | 0.00000001 | 0.00023876 |
| 21 | Yes | 5 | 0.00000001 | 0.00010858 |
| 22 | Yes | 6 | 0.00000001 | 0.00032629 |
| 23 | Yes | 6 | 0.00000001 | 0.00009651 |
| 24 | Yes | 6 | 0.00000001 | 0.00033408 |
| 25 | Yes | 6 | 0.00000001 | 0.00009930 |
| 26 | Yes | 4 | 0.00000001 | 0.00013820 |
| 27 | Yes | 6 | 0.00005962 | 0.00043119 |
| 28 | Yes | 6 | 0.00005896 | 0.00098244 |
| 29 | Yes | 6 | 0.00005897 | 0.00092906 |
| 30 | Yes | 6 | 0.00005959 | 0.00045704 |
| 31 | Yes | 7 | 0.00000001 | 0.00021427 |
| 32 | Yes | 6 | 0.00005894 | 0.00098365 |
| 33 | Yes | 6 | 0.00005961 | 0.00044207 |
| 34 | Yes | 6 | 0.00005897 | 0.00097526 |
| 35 | Yes | 7 | 0.00000001 | 0.00021392 |
| 36 | Yes | 6 | 0.00005963 | 0.00045575 |
| 37 | Yes | 6 | 0.00005901 | 0.00092708 |
| 38 | Yes | 6 | 0.00005899 | 0.00097329 |
| 39 | Yes | 4 | 0.00000001 | 0.00013093 |
| 40 | Yes | 4 | 0.00000001 | 0.00098498 |
| 41 | Yes | 4 | 0.00000001 | 0.00083551 |
| 42 | Yes | 4 | 0.00000001 | 0.00021152 |
| 43 | Yes | 4 | 0.00000001 | 0.00097723 |
| 44 | Yes | 4 | 0.00000001 | 0.00090113 |
| 45 | Yes | 4 | 0.00000001 | 0.00013161 |
| 46 | Yes | 4 | 0.00000001 | 0.00085190 |
| 47 | Yes | 5 | 0.00000001 | 0.00006489 |
| 48 | Yes | 4 | 0.00000001 | 0.00021118 |
| 49 | Yes | 4 | 0.00000001 | 0.00085553 |
| 50 | Yes | 4 | 0.00000001 | 0.00091852 |

Maximum Tower Deflections - Service Wind

| Section No. | Elevation ft | Horz. Deflection in | Gov. Load Comb. | Tilt ° | Twist ° |
|-------------|-----------------|------------------------|-----------------|-----------|------------|
| L1 | 179 - 139.5 | 33.508 | 43 | 1.7525 | 0.0033 |
| L2 | 143.5 - 93.4 | 21.290 | 43 | 1.4327 | 0.0031 |
| L3 | 98.6 - 46.31 | 9.877 | 43 | 0.9693 | 0.0017 |
| L4 | 52.7 - 0 | 2.785 | 42 | 0.4895 | 0.0006 |

Critical Deflections and Radius of Curvature - Service Wind

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| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by TJL |

| Elevation | Appurtenance | Gov. Load Comb. | Deflection | Tilt | Twist | Radius of Curvature |
|-----------|--------------------------------|-----------------|------------|--------|--------|---------------------|
| ft | | | in | ° | ° | ft |
| 191.00 | 20' x 2" Dia Omni | 43 | 33.508 | 1.7525 | 0.0033 | 30246 |
| 179.00 | AIR21 B2A/B4P | 43 | 33.508 | 1.7525 | 0.0033 | 30246 |
| 177.00 | EEI 14-ft Low Profile Platform | 43 | 32.786 | 1.7350 | 0.0033 | 30246 |
| 170.00 | (2) RRUS-11 | 43 | 30.270 | 1.6738 | 0.0033 | 16803 |
| 168.00 | EEI 14-ft Low Profile Platform | 43 | 29.556 | 1.6562 | 0.0033 | 13748 |
| 160.00 | APL866513-42T0 | 43 | 26.742 | 1.5852 | 0.0032 | 7959 |
| 158.00 | EEI 14-ft Low Profile Platform | 43 | 26.052 | 1.5672 | 0.0032 | 7200 |
| 138.50 | 20' 4-Bay Dipole | 43 | 19.771 | 1.3842 | 0.0030 | 4414 |
| 132.50 | 8' x 2" Omni | 43 | 18.037 | 1.3246 | 0.0028 | 4617 |
| 112.50 | 10' Dipole | 43 | 12.911 | 1.1175 | 0.0022 | 5450 |

Maximum Tower Deflections - Design Wind

| Section No. | Elevation | Horz. Deflection | Gov. Load Comb. | Tilt | Twist |
|-------------|--------------|------------------|-----------------|--------|--------|
| | ft | in | | ° | ° |
| L1 | 179 - 139.5 | 166.542 | 8 | 8.7220 | 0.0159 |
| L2 | 143.5 - 93.4 | 105.916 | 8 | 7.1335 | 0.0149 |
| L3 | 98.6 - 46.31 | 49.179 | 8 | 4.8288 | 0.0085 |
| L4 | 52.7 - 0 | 13.867 | 8 | 2.4388 | 0.0032 |

Critical Deflections and Radius of Curvature - Design Wind

| Elevation | Appurtenance | Gov. Load Comb. | Deflection | Tilt | Twist | Radius of Curvature |
|-----------|--------------------------------|-----------------|------------|--------|--------|---------------------|
| ft | | | in | ° | ° | ft |
| 191.00 | 20' x 2" Dia Omni | 8 | 166.542 | 8.7220 | 0.0159 | 6333 |
| 179.00 | AIR21 B2A/B4P | 8 | 166.542 | 8.7220 | 0.0159 | 6333 |
| 177.00 | EEI 14-ft Low Profile Platform | 8 | 162.962 | 8.6354 | 0.0159 | 6333 |
| 170.00 | (2) RRUS-11 | 8 | 150.479 | 8.3314 | 0.0159 | 3517 |
| 168.00 | EEI 14-ft Low Profile Platform | 8 | 146.939 | 8.2441 | 0.0159 | 2877 |
| 160.00 | APL866513-42T0 | 8 | 132.979 | 7.8913 | 0.0157 | 1663 |
| 158.00 | EEI 14-ft Low Profile Platform | 8 | 129.556 | 7.8020 | 0.0157 | 1503 |
| 138.50 | 20' 4-Bay Dipole | 8 | 98.371 | 6.8925 | 0.0145 | 915 |
| 132.50 | 8' x 2" Omni | 8 | 89.760 | 6.5961 | 0.0138 | 954 |
| 112.50 | 10' Dipole | 8 | 64.275 | 5.5663 | 0.0108 | 1116 |

Compression Checks

Pole Design Data

| Section No. | Elevation | Size | L | L _u | Kl/r | A | P _u | φP _n | Ratio |
|-------------|-----------------|-----------------------|-------|----------------|-------|-----------------|----------------|-----------------|------------------------|
| | ft | | ft | ft | | in ² | K | K | $\frac{P_u}{\phi P_n}$ |
| L1 | 179 - 139.5 (1) | TP28.0455x19.5x0.1875 | 39.50 | 179.00 | 224.2 | 16.0640 | -10.17 | 72.22 | 0.141 |

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| | Client T-Mobile | Designed by TJL |

| Section No. | Elevation ft | Size | L ft | L _u ft | Kl/r | A in ² | P _u K | φP _n K | Ratio P _u φP _n |
|-------------|------------------|-------------------------|---------|----------------------|-------|----------------------|---------------------|----------------------|--|
| L2 | 139.5 - 93.4 (2) | TP37.5377x26.8051x0.375 | 50.10 | 179.00 | 167.8 | 42.9070 | -19.92 | 344.06 | 0.058 |
| L3 | 93.4 - 46.31 (3) | TP47.123x35.6737x0.375 | 52.29 | 179.00 | 133.4 | 53.9765 | -32.91 | 684.96 | 0.048 |
| L4 | 46.31 - 0 (4) | TP56.25x44.9739x0.375 | 52.70 | 179.00 | 108.3 | 66.5052 | -50.92 | 1281.21 | 0.040 |

Pole Bending Design Data

| Section No. | Elevation ft | Size | M _{ux} kip-ft | φM _{ux} kip-ft | Ratio M _{ux} φM _{ux} | M _{uy} kip-ft | φM _{uy} kip-ft | Ratio M _{uy} φM _{uy} |
|-------------|------------------|-------------------------|---------------------------|----------------------------|--|---------------------------|----------------------------|--|
| L1 | 179 - 139.5 (1) | TP28.0455x19.5x0.1875 | 438.58 | 590.06 | 0.743 | 0.00 | 590.06 | 0.000 |
| L2 | 139.5 - 93.4 (2) | TP37.5377x26.8051x0.375 | 1364.64 | 2357.09 | 0.579 | 0.00 | 2357.09 | 0.000 |
| L3 | 93.4 - 46.31 (3) | TP47.123x35.6737x0.375 | 2546.06 | 3542.45 | 0.719 | 0.00 | 3542.45 | 0.000 |
| L4 | 46.31 - 0 (4) | TP56.25x44.9739x0.375 | 4156.91 | 4986.09 | 0.834 | 0.00 | 4986.09 | 0.000 |

Pole Shear Design Data

| Section No. | Elevation ft | Size | Actual V _u K | φV _n K | Ratio V _u φV _n | Actual T _u kip-ft | φT _n kip-ft | Ratio T _u φT _n |
|-------------|------------------|-------------------------|-------------------------------|----------------------|--|------------------------------------|---------------------------|--|
| L1 | 179 - 139.5 (1) | TP28.0455x19.5x0.1875 | 17.81 | 531.05 | 0.034 | 0.03 | 1181.56 | 0.000 |
| L2 | 139.5 - 93.4 (2) | TP37.5377x26.8051x0.375 | 23.26 | 1593.89 | 0.015 | 3.09 | 4719.94 | 0.001 |
| L3 | 93.4 - 46.31 (3) | TP47.123x35.6737x0.375 | 28.13 | 1900.17 | 0.015 | 3.07 | 7093.57 | 0.000 |
| L4 | 46.31 - 0 (4) | TP56.25x44.9739x0.375 | 32.65 | 2167.33 | 0.015 | 3.07 | 9984.42 | 0.000 |

Pole Interaction Design Data

| Section No. | Elevation ft | Ratio P _u φP _n | Ratio M _{ux} φM _{ux} | Ratio M _{uy} φM _{uy} | Ratio V _u φV _n | Ratio T _u φT _n | Comb. Stress Ratio | Allow. Stress Ratio | Criteria |
|-------------|------------------|--|--|--|--|--|--------------------------|---------------------------|----------|
| L1 | 179 - 139.5 (1) | 0.141 | 0.743 | 0.000 | 0.034 | 0.000 | 0.885 | 1.000 | 4.8.2 ✓ |
| L2 | 139.5 - 93.4 (2) | 0.058 | 0.579 | 0.000 | 0.015 | 0.001 | 0.637 | 1.000 | 4.8.2 ✓ |
| L3 | 93.4 - 46.31 (3) | 0.048 | 0.719 | 0.000 | 0.015 | 0.000 | 0.767 | 1.000 | 4.8.2 ✓ |
| L4 | 46.31 - 0 (4) | 0.040 | 0.834 | 0.000 | 0.015 | 0.000 | 0.874 | 1.000 | 4.8.2 ✓ |

Section Capacity Table

| | | |
|--|---|----------------------------------|
| tnxTower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587 | Job 17051.00 - CTHA539A | Page 22 of 22 |
| | Project 180' EEI Monopole - 719 George Washington Tpk., Burlington, CT | Date 11:28:07 04/13/17 |
| | Client T-Mobile | Designed by TJL |

| Section No. | Elevation ft | Component Type | Size | Critical Element | P K | θP_{allow} K | % Capacity | Pass Fail |
|-----------------|--------------|----------------|-------------------------|------------------|--------|----------------------|-------------|-------------|
| L1 | 179 - 139.5 | Pole | TP28.0455x19.5x0.1875 | 1 | -10.17 | 72.22 | 88.5 | Pass |
| L2 | 139.5 - 93.4 | Pole | TP37.5377x26.8051x0.375 | 2 | -19.92 | 344.06 | 63.7 | Pass |
| L3 | 93.4 - 46.31 | Pole | TP47.123x35.6737x0.375 | 3 | -32.91 | 684.96 | 76.7 | Pass |
| L4 | 46.31 - 0 | Pole | TP56.25x44.9739x0.375 | 4 | -50.92 | 1281.21 | 87.4 | Pass |
| Summary | | | | | | | | |
| Pole (L1) | | | | | | | 88.5 | Pass |
| RATING = | | | | | | | 88.5 | Pass |

Subject:

Anchor Bolt and Baseplate Analysis

Location:

180-FT EEI Monopole
Burlington, CT

Rev. 0: 4/13/17

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 17051.00**Anchor Bolt and Base Plate Analysis:****Input Data:**Tower Reactions:

Overturning Moment = OM := 4157-ft-kips (Input From trnTower)

Shear Force = Shear := 33-kips (Input From trnTower)

Axial Force = Axial := 51-kips (Input From trnTower)

Anchor Bolt Data:

ASTMA615 Grade 75

Number of Anchor Bolts = N := 18 (User Input)

Diameter of Bolt Circle = D_{bc} := 65-in (User Input)

Bolt "Column" Distance = l := 3.0-in (User Input)

Bolt Ultimate Strength = F_u := 100-ksi (User Input)Bolt Yield Strength = F_y := 75-ksi (User Input)

Bolt Modulus = E := 29000-ksi (User Input)

Diameter of Anchor Bolts = D := 2.25-in (User Input)

Threads per Inch = n := 4.5 (User Input)

Top of Concrete to Bot Leveling Nut = l_{ar} := 2-in (User Input)Base Plate Data:

Use ASTM A572 Grade 60

Plate Yield Strength = F_{ybp} := 60-ksi (User Input)Base Plate Thickness = t_{bp} := 2-in (User Input)Base Plate Diameter = D_{bp} := 71-in (User Input)Outer Pole Diameter = D_{pole} := 56.25-in (User Input) η := 0.5 For Ungrouted Base Plate
per TIA-222-G Section 4.9.9

Geometric Layout Data:

Distance from Bolts to Centroid of Pole:

Radius of Bolt Circle =: $R_{bc} := \frac{D_{bc}}{2} = 32.5 \text{ in}$

Distance to Bolts = $i := 1..N$

$$d_i := \begin{cases} \theta \leftarrow 2 \cdot \pi \cdot \left(\frac{i}{N}\right) & d_1 = 11.12 \text{ in} \\ d \leftarrow R_{bc} \cdot \sin(\theta) & d_2 = 20.89 \text{ in} \\ & d_3 = 28.15 \text{ in} \\ & d_4 = 32.01 \text{ in} \\ & d_5 = 32.01 \text{ in} \\ & d_6 = 28.15 \text{ in} \\ & d_7 = 20.89 \text{ in} \\ & d_8 = 11.12 \text{ in} \end{cases}$$

Critical Distances For Bending in Plate:

Outer Pole Radius = $R_{pole} := \frac{D_{pole}}{2} = 28.1 \text{ in}$

Moment Arms of Bolts about Neutral Axis = $MA_i := \text{if}(d_i \geq R_{pole}, d_i - R_{pole}, 0 \text{ in})$

- $MA_1 = 0.00 \text{ in}$
- $MA_2 = 0.00 \text{ in}$
- $MA_3 = 0.02 \text{ in}$
- $MA_4 = 3.88 \text{ in}$
- $MA_5 = 3.88 \text{ in}$
- $MA_6 = 0.02 \text{ in}$
- $MA_7 = 0.00 \text{ in}$
- $MA_8 = 0.00 \text{ in}$

Effective Width of Baseplate for Bending = $B_{eff} := .8 \cdot 2 \cdot \sqrt{\left(\frac{D_{bp}}{2}\right)^2 - \left(\frac{D_{pole}}{2}\right)^2} = 34.7 \text{ in}$

Anchor Bolt Analysis:

Calculated Anchor Bolt Properties:

Polar Moment of Inertia = $I_p := \sum_i (d_i)^2 = 9.506 \times 10^3 \cdot \text{in}^2$

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 3.976 \cdot \text{in}^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot \text{in}}{n} \right)^2 = 3.248 \cdot \text{in}^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 2.033 \cdot \text{in}$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.508 \cdot \text{in}$

Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^3}{32} = 0.826 \cdot \text{in}^3$

Tensile Root Diameter = $d_{rt} := D - \frac{0.9743 \cdot \text{in}}{n} = 2.033 \cdot \text{in}$

Plastic Section Modulus = $Z := \frac{d_{rt}^3}{6} = 1.401 \cdot \text{in}^3$

Check Anchor Bolt Tension Force:

Maximum Tensile Force = $T_{Max} := OM \cdot \frac{R_{bc}}{I_p} - \frac{Axial}{N} = 167.7 \cdot \text{kips}$

Maximum Compressive Force = $P_u := OM \cdot \frac{R_{bc}}{I_p} + \frac{Axial}{N} = 173.4 \cdot \text{kips}$

Maximum Shear Force = $V_u := \frac{Shear}{N} = 1.8 \cdot \text{kips}$

Design Tensile Strength = $\Phi R_{nt} := 0.8 \cdot F_u \cdot A_n = 259.815 \cdot \text{k}$

Bolt % of Capacity = $\frac{\left(P_u + \frac{V_u}{\eta} \right)}{\Phi R_{nt}} \cdot 100 = 68.1$

Condition1 = $\text{Condition1} := \text{if} \left[\frac{\left(P_u + \frac{V_u}{\eta} \right)}{\Phi R_{nt}} \leq 1.00, \text{"OK"}, \text{"Overstressed"} \right]$

Condition1 = "OK"

Design Shear Strength =

$$\phi R_{nv} := 0.75 \cdot 0.45 \cdot F_u \cdot A_g = 134.193 \cdot k$$

Design Flexural Strength =

$$\phi R_{nm} := 0.9 \cdot F_y \cdot Z = 94.597 \cdot \text{in} \cdot k$$

$$M_u := \begin{cases} 0 & \text{if } l_{ar} < D \\ 0.65 \cdot l_{ar} \cdot V_u & \text{otherwise} \end{cases} = 0 \cdot \text{in} \cdot k$$

Bolt % of Capacity =

$$\left[\left(\frac{V_u}{\phi R_{nv}} \right)^2 + \left(\frac{P_u}{\phi R_{nt}} + \frac{M_u}{\phi R_{nm}} \right)^2 \right] \cdot 100 = 44.5$$

Condition2 =

$$\text{Condition2} := \text{if} \left[\left(\frac{V_u}{\phi R_{nv}} \right)^2 + \left(\frac{P_u}{\phi R_{nt}} + \frac{M_u}{\phi R_{nm}} \right)^2 \leq 1.00, \text{"OK"}, \text{"Overstressed"} \right]$$

Condition2 = "OK"

Subject:

Anchor Bolt and Baseplate Analysis

Location:

180-FT EEI Monopole
 Burlington, CT

Rev. 0: 4/13/17

Prepared by: T.J.L. Checked by: C.F.C.
 Job No. 17051.00

Base Plate Analysis:

Force from Bolts = $C_i := \frac{OM \cdot d_i}{I_p} + \frac{Axial}{N}$

$C_1 = 61.2 \cdot \text{kips}$
 $C_2 = 112.5 \cdot \text{kips}$
 $C_3 = 150.5 \cdot \text{kips}$
 $C_4 = 170.8 \cdot \text{kips}$
 $C_5 = 170.8 \cdot \text{kips}$
 $C_6 = 150.5 \cdot \text{kips}$
 $C_7 = 112.5 \cdot \text{kips}$
 $C_8 = 61.2 \cdot \text{kips}$

Maximum Bending Stress in Plate = $f_{bp} := \sum_i \frac{4 \cdot C_i \cdot MA_i}{(B_{eff} t_{bp})^2} = 38.4 \cdot \text{ksi}$

Allowable Bending Stress in Plate = $F_{bp} := 0.9 \cdot F_y = 54 \cdot \text{ksi}$

Plate Bending Stress % of Capacity = $\frac{f_{bp}}{F_{bp}} = 71.2\%$

Condition2 = $\text{Condition2} := \text{if} \left(\frac{f_{bp}}{F_{bp}} < 1.00, \text{"Ok"}, \text{"Overstressed"} \right)$

Condition2 = "Ok"

Subject:

CAISSON FOUNDATION

Location:

180-ft EEI Monopole
Burlington, CT

Rev. 0: 4/13/17

Prepared by: T.J.L Checked by: C.F.C.
Job No. 17051.00

Caisson Foundation:

Input Data:

| | | |
|--------------------------------------|--|---------------------------------|
| Shear Force = | S := 33k | USER INPUT-FROM <i>tnxTower</i> |
| Overturing Moment = | M := 4157ft-k | USER INPUT-FROM <i>tnxTower</i> |
| Applied Axial Load = | A1 := 51k | USER INPUT-FROM <i>tnxTower</i> |
| Bending Moment = | Mu := 4266ft-k | USER INPUT-FROM <i>LPILE</i> |
| Moment Capacity = | Mn := 7495ft-k | USER INPUT-FROM <i>LPILE</i> |
| Foundation Diameter = | d := 7.5ft | USER INPUT |
| Overall Length of Caisson = | L _c := 28.0ft | USER INPUT |
| Depth From Top of Caisson to Grade = | L _{pag} := 1.0ft | USER INPUT |
| Number of Rebar = | n := 24 | USER INPUT |
| Area of Rebar = | A _r := 1.560in ² | USER INPUT |
| Rebar Yield Strength = | f _y := 60ksi | USER INPUT |
| Concrete Comp Strength = | f _c := 4ksi | USER INPUT |

Check Moment Capacity:

| | |
|-----------------------------|---|
| Factor of Safety = | FS := $\frac{0.9 \cdot Mn}{Mu} = 1.6$ |
| Factor of Safety Required = | FS _{reqd} := 1.0 |
| | FOSCheck := if(FS ≥ FS _{reqd} , "OK", "NO GOOD") |
| | FOSCheck = "OK" |

Caisson Analysis.lpo

LPILE Plus for Windows, Version 5.0 (5.0.47)

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

(c) 1985-2010 by Ensoft, Inc.
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This program is licensed to:

TJL
Centek Engineering

Files Used for Analysis

Path to file locations: J:\Jobs\1705100.WI\04_Structural\Backup
Documentation\Calcs\Foundation\
Name of input data file: Caisson Analysis.lpd
Name of output file: Caisson Analysis.lpo
Name of plot output file: Caisson Analysis.lpp
Name of runtime file: Caisson Analysis.lpr

Time and Date of Analysis

Date: April 13, 2017 Time: 10:38:38

Problem Title

16001.09 - Burlington

Program Options

Units Used in Computations - US Customary Units: Inches, Pounds

Caisson Analysis.lpo

Basic Program Options:

Analysis Type 3:

- Computation of Nonlinear Bending Stiffness and Ultimate Bending Moment Capacity with Pile Response Computed Using Nonlinear EI

Computation Options:

- Only internally-generated p-y curves used in analysis
- Analysis does not use p-y multipliers (individual pile or shaft action only)
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- Analysis includes computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- No additional p-y curves to be computed at user-specified depths

Solution Control Parameters:

- Number of pile increments = 100
- Maximum number of iterations allowed = 100
- Deflection tolerance for convergence = 1.0000E-04 in
- Maximum allowable deflection = 1.0000E+02 in

Printing Options:

- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (spacing of output points) = 8

 Pile Structural Properties and Geometry

- Pile Length = 336.00 in
- Depth of ground surface below top of pile = 12.00 in
- Slope angle of ground surface = 0.00 deg.

Structural properties of pile defined using 2 points

| Point No. | Point Depth in | Pile Diameter in | Moment of Inertia in**4 | Pile Area Sq.in | Modulus of Elasticity lbs/Sq.in |
|-----------|----------------|------------------|-------------------------|-----------------|---------------------------------|
| 1 | 0.0000 | 90.00000000 | 3220623. | 6361.7000 | 3600000. |
| 2 | 336.0000 | 90.00000000 | 3220623. | 6361.7000 | 3600000. |

Please note that because this analysis makes computations of ultimate moment capacity and pile response using nonlinear bending stiffness

Caisson Analysis.lpo

that the above values of moment of inertia and modulus of are not used for any computations other than total stress due to combined axial loading and bending.

Soil and Rock Layering Information

The soil profile is modelled using 1 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer = 12.000 in
Distance from top of pile to bottom of layer = 336.000 in
p-y subgrade modulus k for top of soil layer = 90.000 lbs/in**3
p-y subgrade modulus k for bottom of layer = 90.000 lbs/in**3

(Depth of lowest layer extends 0.00 in below pile tip)

Effective Unit Weight of Soil vs. Depth

Effective unit weight of soil with depth defined using 2 points

| Point No. | Depth X in | Eff. Unit Weight lbs/in**3 |
|-----------|------------|----------------------------|
| 1 | 12.00 | 0.07500 |
| 2 | 336.00 | 0.07500 |

Shear Strength of Soils

Shear strength parameters with depth defined using 2 points

| Point No. | Depth X in | Cohesion c lbs/in**2 | Angle of Friction Deg. | E50 or k_rm | RQD % |
|-----------|------------|----------------------|------------------------|-------------|-------|
| 1 | 12.000 | 0.00000 | 34.00 | ----- | ----- |
| 2 | 336.000 | 0.00000 | 34.00 | ----- | ----- |

Notes:

Caisson Analysis.lpo

- (1) Cohesion = uniaxial compressive strength for rock materials.
- (2) Values of E50 are reported for clay strata.
- (3) Default values will be generated for E50 when input values are 0.
- (4) RQD and k_{rm} are reported only for weak rock strata.

Loading Type

Static loading criteria was used for computation of p-y curves.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 2

Load Case Number 1

Pile-head boundary conditions are Shear and Moment (BC Type 1)

Shear force at pile head = 33000.000 lbs
Bending moment at pile head = 49896000.000 in-lbs
Axial load at pile head = 51000.000 lbs

Non-zero moment at pile head for this load case indicates the pile-head may rotate under the applied pile-head loading, but is not a free-head (zero moment) condition.

Load Case Number 2

Pile-head boundary conditions are Shear and Moment (BC Type 1)

Shear force at pile head = 14000.000 lbs
Bending moment at pile head = 20820000.000 in-lbs
Axial load at pile head = 51000.000 lbs

Non-zero moment at pile head for this load case indicates the pile-head may rotate under the applied pile-head loading, but is not a free-head (zero moment) condition.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Caisson Analysis.lpo

Number of sections = 1

Pile Section No. 1

The sectional shape is a circular drilled shaft (bored pile).

Outside Diameter = 90.0000 in

Material Properties:

Compressive Strength of Concrete = 4.000 kip/in**2
 Yield Stress of Reinforcement = 60. kip/in**2
 Modulus of Elasticity of Reinforcement = 29000. kip/in**2
 Number of Reinforcing Bars = 24
 Area of Single Bar = 1.56000 in**2
 Number of Rows of Reinforcing Bars = 13
 Area of Steel = 37.440 in**2
 Area of Shaft = 6361.725 in**2
 Percentage of Steel Reinforcement = 0.589 percent
 Cover Thickness (edge to bar center) = 4.000 in

Unfactored Axial Squash Load Capacity = 23748.97 kip

Distribution and Area of Steel Reinforcement

| Row Number | Area of Reinforcement in**2 | Distance to Centroidal Axis in |
|------------|-----------------------------|--------------------------------|
| 1 | 1.560 | 41.000 |
| 2 | 3.120 | 39.603 |
| 3 | 3.120 | 35.507 |
| 4 | 3.120 | 28.991 |
| 5 | 3.120 | 20.500 |
| 6 | 3.120 | 10.612 |
| 7 | 3.120 | 0.000 |
| 8 | 3.120 | -10.612 |
| 9 | 3.120 | -20.500 |
| 10 | 3.120 | -28.991 |
| 11 | 3.120 | -35.507 |
| 12 | 3.120 | -39.603 |
| 13 | 1.560 | -41.000 |

Axial Thrust Force = 52000.00 lbs

| Bending Max. Steel Moment Stress in-lbs psi | Caisson Analysis.lpo | | | | |
|--|----------------------|--------------|------------|--------------|---------------|
| | Bending | Bending | Maximum | Neutral Axis | Max. Concrete |
| | Stiffness | Curvature | Strain | Position | Stress |
| | lb-in2 | rad/in | in/in | inches | psi |
| 7871340. 808.87375 | 1.259414E+13 | 6.250000E-07 | 0.00003039 | 48.62751737 | 107.94947 |
| 15667973. 1555.12152 | 1.253438E+13 | 0.00000125 | 0.00005862 | 46.89990386 | 206.55097 |
| 23390765. 2302.51246 | 1.247507E+13 | 0.00000188 | 0.00008690 | 46.34505674 | 303.79011 |
| 31037498. 3048.75531 | 1.241500E+13 | 0.00000250 | 0.00011513 | 46.05179742 | 399.39057 |
| 31037498. 5729.65063 | 9.931999E+12 | 0.00000313 | 0.00007118 | 22.77626887 | 245.70889 |
| 31037498. 6924.35195 | 8.276666E+12 | 0.00000375 | 0.00008373 | 22.32779816 | 287.89641 |
| 31037498. 8126.42972 | 7.094285E+12 | 0.00000438 | 0.00009603 | 21.94932237 | 328.92084 |
| 31037498. 9328.12888 | 6.207500E+12 | 0.00000500 | 0.00010834 | 21.66807666 | 369.71789 |
| 31037498. 10529.44710 | 5.517777E+12 | 0.00000563 | 0.00012067 | 21.45166531 | 410.28695 |
| 31037498. 11730.38212 | 4.966000E+12 | 0.00000625 | 0.00013300 | 21.28065035 | 450.62736 |
| 31037498. 12930.93188 | 4.514545E+12 | 0.00000688 | 0.00014536 | 21.14266142 | 490.73845 |
| 31037498. 14131.09446 | 4.138333E+12 | 0.00000750 | 0.00015772 | 21.02945074 | 530.61952 |
| 31037498. 15316.34419 | 3.820000E+12 | 0.00000813 | 0.00017060 | 20.99694774 | 571.93117 |
| 31037498. 16516.38368 | 3.547143E+12 | 0.00000875 | 0.00018297 | 20.91080323 | 611.26384 |
| 31037498. 17715.99531 | 3.310666E+12 | 0.00000938 | 0.00019535 | 20.83771840 | 650.36932 |
| 31037498. 18915.17835 | 3.103750E+12 | 0.00001000 | 0.00020775 | 20.77524707 | 689.24668 |
| 31037498. 20113.92760 | 2.921176E+12 | 0.00001063 | 0.00022017 | 20.72153315 | 727.89545 |
| 31037498. 21312.24203 | 2.758889E+12 | 0.00001125 | 0.00023260 | 20.67512020 | 766.31471 |
| 31037498. 22510.11815 | 2.613684E+12 | 0.00001188 | 0.00024504 | 20.63486561 | 804.50380 |
| 31037498. 23707.55363 | 2.483000E+12 | 0.00001250 | 0.00025750 | 20.59985206 | 842.46191 |
| 31037498. | 2.364762E+12 | 0.00001313 | 0.00026997 | 20.56934193 | 880.18844 |

Caisson Analysis.lpo

| | | | | | |
|-------------|--------------|------------|------------|-------------|------------|
| 24904.54423 | | | | | |
| 31037498. | 2.257273E+12 | 0.00001375 | 0.00028246 | 20.54272637 | 917.68254 |
| 26101.08786 | | | | | |
| 31037498. | 2.159130E+12 | 0.00001438 | 0.00029497 | 20.51950380 | 954.94340 |
| 27297.18185 | | | | | |
| 31037498. | 2.069167E+12 | 0.00001500 | 0.00030749 | 20.49925849 | 991.97033 |
| 28492.82256 | | | | | |
| 32181783. | 2.059634E+12 | 0.00001563 | 0.00032003 | 20.48163906 | 1028.76251 |
| 29688.00730 | | | | | |
| 33399656. | 2.055363E+12 | 0.00001625 | 0.00033258 | 20.46634778 | 1065.31909 |
| 30882.73361 | | | | | |
| 34616360. | 2.051340E+12 | 0.00001688 | 0.00034515 | 20.45313522 | 1101.63942 |
| 32076.99695 | | | | | |
| 35831888. | 2.047536E+12 | 0.00001750 | 0.00035773 | 20.44178411 | 1137.72265 |
| 33270.79456 | | | | | |
| 37046230. | 2.043930E+12 | 0.00001813 | 0.00037033 | 20.43210670 | 1173.56791 |
| 34464.12391 | | | | | |
| 38259382. | 2.040500E+12 | 0.00001875 | 0.00038295 | 20.42394206 | 1209.17440 |
| 35656.98151 | | | | | |
| 39471338. | 2.037230E+12 | 0.00001938 | 0.00039558 | 20.41715071 | 1244.54137 |
| 36849.36345 | | | | | |
| 40682085. | 2.034104E+12 | 0.00002000 | 0.00040823 | 20.41160658 | 1279.66779 |
| 38041.26818 | | | | | |
| 41891630. | 2.031109E+12 | 0.00002063 | 0.00042090 | 20.40720776 | 1314.55319 |
| 39232.68886 | | | | | |
| 43099952. | 2.028233E+12 | 0.00002125 | 0.00043358 | 20.40385231 | 1349.19630 |
| 40423.62601 | | | | | |
| 44307051. | 2.025465E+12 | 0.00002188 | 0.00044628 | 20.40145978 | 1383.59651 |
| 41614.07395 | | | | | |
| 45512921. | 2.022796E+12 | 0.00002250 | 0.00045900 | 20.39995506 | 1417.75292 |
| 42804.02932 | | | | | |
| 46717553. | 2.020219E+12 | 0.00002313 | 0.00047173 | 20.39927110 | 1451.66463 |
| 43993.48882 | | | | | |
| 47920943. | 2.017724E+12 | 0.00002375 | 0.00048448 | 20.39934888 | 1485.33079 |
| 45182.44846 | | | | | |
| 49123081. | 2.015306E+12 | 0.00002438 | 0.00049725 | 20.40013477 | 1518.75051 |
| 46370.90473 | | | | | |
| 51523569. | 2.010676E+12 | 0.00002563 | 0.00052284 | 20.40364042 | 1584.84673 |
| 48746.29471 | | | | | |
| 53918957. | 2.006287E+12 | 0.00002688 | 0.00054850 | 20.40945813 | 1649.94597 |
| 51119.62857 | | | | | |
| 56309193. | 2.002105E+12 | 0.00002813 | 0.00057424 | 20.41731969 | 1714.04088 |
| 53490.87363 | | | | | |
| 58694209. | 1.998101E+12 | 0.00002938 | 0.00060004 | 20.42699978 | 1777.12366 |
| 55859.99956 | | | | | |
| 61073945. | 1.994251E+12 | 0.00003063 | 0.00062592 | 20.43831334 | 1839.18656 |
| 58226.97297 | | | | | |
| 63386900. | 1.988609E+12 | 0.00003188 | 0.00065165 | 20.44407204 | 1899.68011 |
| 60000.00000 | | | | | |

Caisson Analysis.lpo

| | | | | | |
|-------------|--------------|------------|------------|-------------|------------|
| 65169216. | 1.967373E+12 | 0.00003313 | 0.00067551 | 20.39261654 | 1954.52175 |
| 60000.00000 | | | | | |
| 66803933. | 1.943387E+12 | 0.00003438 | 0.00069887 | 20.33085063 | 2007.21820 |
| 60000.00000 | | | | | |
| 67991564. | 1.908535E+12 | 0.00003563 | 0.00072051 | 20.22476926 | 2054.97485 |
| 60000.00000 | | | | | |
| 69174215. | 1.875911E+12 | 0.00003688 | 0.00074218 | 20.12678012 | 2101.97300 |
| 60000.00000 | | | | | |
| 70354213. | 1.845356E+12 | 0.00003813 | 0.00076389 | 20.03634408 | 2148.23023 |
| 60000.00000 | | | | | |
| 71219963. | 1.808761E+12 | 0.00003938 | 0.00078422 | 19.91680607 | 2190.67443 |
| 60000.00000 | | | | | |
| 72020489. | 1.772812E+12 | 0.00004063 | 0.00080431 | 19.79841605 | 2231.84902 |
| 60000.00000 | | | | | |
| 72819046. | 1.738962E+12 | 0.00004188 | 0.00082443 | 19.68791708 | 2272.38266 |
| 60000.00000 | | | | | |
| 73615610. | 1.707029E+12 | 0.00004313 | 0.00084459 | 19.58462790 | 2312.27190 |
| 60000.00000 | | | | | |
| 74123403. | 1.670387E+12 | 0.00004438 | 0.00086531 | 19.49999884 | 2352.59332 |
| 60000.00000 | | | | | |
| 75098986. | 1.646005E+12 | 0.00004563 | 0.00088766 | 19.45559219 | 2395.36525 |
| 60000.00000 | | | | | |
| 75595279. | 1.612699E+12 | 0.00004688 | 0.00090581 | 19.32388768 | 2429.09472 |
| 60000.00000 | | | | | |
| 76090209. | 1.581095E+12 | 0.00004813 | 0.00092398 | 19.19960484 | 2462.30156 |
| 60000.00000 | | | | | |
| 76583778. | 1.551064E+12 | 0.00004938 | 0.00094218 | 19.08218578 | 2494.98350 |
| 60000.00000 | | | | | |
| 77075976. | 1.522488E+12 | 0.00005063 | 0.00096041 | 18.97112623 | 2527.13810 |
| 60000.00000 | | | | | |
| 77566792. | 1.495263E+12 | 0.00005188 | 0.00097867 | 18.86597022 | 2558.76283 |
| 60000.00000 | | | | | |
| 78056202. | 1.469293E+12 | 0.00005313 | 0.00099696 | 18.76630202 | 2589.85491 |
| 60000.00000 | | | | | |
| 78544235. | 1.444492E+12 | 0.00005438 | 0.00101528 | 18.67175415 | 2620.41246 |
| 60000.00000 | | | | | |
| 79030838. | 1.420779E+12 | 0.00005563 | 0.00103362 | 18.58197793 | 2650.43220 |
| 60000.00000 | | | | | |
| 79353965. | 1.395235E+12 | 0.00005688 | 0.00105076 | 18.47485587 | 2677.83435 |
| 60000.00000 | | | | | |
| 79640512. | 1.370159E+12 | 0.00005813 | 0.00106764 | 18.36808249 | 2704.31911 |
| 60000.00000 | | | | | |
| 79926004. | 1.346122E+12 | 0.00005938 | 0.00108456 | 18.26620415 | 2730.34738 |
| 60000.00000 | | | | | |
| 80210467. | 1.323059E+12 | 0.00006063 | 0.00110149 | 18.16892579 | 2755.91767 |
| 60000.00000 | | | | | |
| 80493865. | 1.300911E+12 | 0.00006188 | 0.00111845 | 18.07596579 | 2781.02747 |
| 60000.00000 | | | | | |
| 80855231. | 1.280875E+12 | 0.00006313 | 0.00113625 | 18.00000027 | 2806.91513 |

Caisson Analysis.lpo

| | | | | | | |
|-------------|--------------|------------|------------|-------------|------------|--|
| 60000.00000 | | | | | | |
| 81133786. | 1.260331E+12 | 0.00006438 | 0.00115851 | 17.99626395 | 2838.85806 | |
| 60000.00000 | | | | | | |
| 81405403. | 1.240463E+12 | 0.00006563 | 0.00117491 | 17.90334150 | 2861.46578 | |
| 60000.00000 | | | | | | |
| 81676066. | 1.221324E+12 | 0.00006688 | 0.00119133 | 17.81424657 | 2883.64219 | |
| 60000.00000 | | | | | | |
| 81945781. | 1.202874E+12 | 0.00006813 | 0.00120777 | 17.72877261 | 2905.38555 | |
| 60000.00000 | | | | | | |
| 82214527. | 1.185074E+12 | 0.00006938 | 0.00122424 | 17.64672384 | 2926.69370 | |
| 60000.00000 | | | | | | |
| 82482315. | 1.167891E+12 | 0.00007063 | 0.00124073 | 17.56792322 | 2947.56492 | |
| 60000.00000 | | | | | | |
| 82749110. | 1.151292E+12 | 0.00007188 | 0.00125725 | 17.49219909 | 2967.99679 | |
| 60000.00000 | | | | | | |
| 83014940. | 1.135247E+12 | 0.00007313 | 0.00127379 | 17.41940126 | 2987.98783 | |
| 60000.00000 | | | | | | |
| 83279784. | 1.119728E+12 | 0.00007438 | 0.00129036 | 17.34938219 | 3007.53580 | |
| 60000.00000 | | | | | | |
| 83604707. | 1.087541E+12 | 0.00007688 | 0.00132114 | 17.18555823 | 3042.43615 | |
| 60000.00000 | | | | | | |
| 83889082. | 1.056870E+12 | 0.00007938 | 0.00135155 | 17.02739373 | 3075.29607 | |
| 60000.00000 | | | | | | |
| 84170530. | 1.028037E+12 | 0.00008188 | 0.00138204 | 16.87988296 | 3106.65945 | |
| 60000.00000 | | | | | | |
| 84449045. | 1.000878E+12 | 0.00008438 | 0.00141261 | 16.74209252 | 3136.51386 | |
| 60000.00000 | | | | | | |
| 84724561. | 9.752467E+11 | 0.00008688 | 0.00144327 | 16.61318824 | 3164.84589 | |
| 60000.00000 | | | | | | |
| 84724561. | 9.479671E+11 | 0.00008938 | 0.00147469 | 16.49999902 | 3192.25060 | |
| 60000.00000 | | | | | | |
| 85360394. | 9.290927E+11 | 0.00009188 | 0.00151508 | 16.49061665 | 3225.42893 | |
| 60000.00000 | | | | | | |
| 85612067. | 9.071477E+11 | 0.00009438 | 0.00154455 | 16.36607632 | 3247.42998 | |
| 60000.00000 | | | | | | |
| 85861043. | 8.863075E+11 | 0.00009688 | 0.00157410 | 16.24881282 | 3268.00867 | |
| 60000.00000 | | | | | | |
| 86107289. | 8.664884E+11 | 0.00009938 | 0.00160374 | 16.13828704 | 3287.15237 | |
| 60000.00000 | | | | | | |
| 86350774. | 8.476150E+11 | 0.00010188 | 0.00163347 | 16.03401348 | 3304.84825 | |
| 60000.00000 | | | | | | |
| 86591492. | 8.296191E+11 | 0.00010438 | 0.00166327 | 15.93555763 | 3321.08347 | |
| 60000.00000 | | | | | | |
| 86829358. | 8.124384E+11 | 0.00010688 | 0.00169317 | 15.84251449 | 3335.84421 | |
| 60000.00000 | | | | | | |
| 87064384. | 7.960172E+11 | 0.00010938 | 0.00172315 | 15.75452998 | 3349.11720 | |
| 60000.00000 | | | | | | |
| 87243054. | 7.798262E+11 | 0.00011188 | 0.00175204 | 15.66065803 | 3360.42379 | |
| 60000.00000 | | | | | | |

| Caisson Analysis.lpo | | | | | |
|----------------------|--------------|------------|------------|-------------|------------|
| 87353391. | 7.637455E+11 | 0.00011438 | 0.00177953 | 15.55875555 | 3369.83810 |
| 60000.00000 | | | | | |
| 87461586. | 7.483344E+11 | 0.00011688 | 0.00180710 | 15.46184465 | 3377.99729 |
| 60000.00000 | | | | | |
| 87567611. | 7.335507E+11 | 0.00011938 | 0.00183475 | 15.36961690 | 3384.89046 |
| 60000.00000 | | | | | |
| 87671444. | 7.193554E+11 | 0.00012188 | 0.00186247 | 15.28179064 | 3390.50655 |
| 60000.00000 | | | | | |
| 87773053. | 7.057130E+11 | 0.00012438 | 0.00189026 | 15.19810572 | 3394.83429 |
| 60000.00000 | | | | | |
| 87872391. | 6.925903E+11 | 0.00012688 | 0.00191814 | 15.11832073 | 3397.86224 |
| 60000.00000 | | | | | |
| 87969474. | 6.799573E+11 | 0.00012938 | 0.00194609 | 15.04222110 | 3399.57888 |
| 60000.00000 | | | | | |
| 88312438. | 6.696678E+11 | 0.00013188 | 0.00197813 | 15.00000045 | 3397.52958 |
| 60000.00000 | | | | | |
| 88976509. | 6.621508E+11 | 0.00013438 | 0.00201563 | 15.00000045 | 3388.11636 |
| 60000.00000 | | | | | |
| 88976509. | 6.500567E+11 | 0.00013688 | 0.00204926 | 14.97174338 | 3383.92316 |
| 60000.00000 | | | | | |
| 88976509. | 6.383965E+11 | 0.00013938 | 0.00207591 | 14.89445016 | 3388.75238 |
| 60000.00000 | | | | | |
| 88976509. | 6.271472E+11 | 0.00014188 | 0.00210265 | 14.82043460 | 3392.73456 |
| 60000.00000 | | | | | |
| 88976509. | 6.162875E+11 | 0.00014438 | 0.00212946 | 14.74953577 | 3395.86017 |
| 60000.00000 | | | | | |
| 88976509. | 6.057975E+11 | 0.00014688 | 0.00215636 | 14.68160078 | 3398.11943 |
| 60000.00000 | | | | | |
| 88976509. | 5.956586E+11 | 0.00014938 | 0.00218334 | 14.61648747 | 3399.50234 |
| 60000.00000 | | | | | |
| 88976509. | 5.858536E+11 | 0.00015188 | 0.00221040 | 14.55406442 | 3399.99872 |
| 60000.00000 | | | | | |
| 88976509. | 5.763661E+11 | 0.00015438 | 0.00223769 | 14.49516848 | 3394.58894 |
| 60000.00000 | | | | | |
| 88976509. | 5.671809E+11 | 0.00015688 | 0.00226505 | 14.43859264 | 3388.84520 |
| 60000.00000 | | | | | |
| 88976509. | 5.582840E+11 | 0.00015938 | 0.00229248 | 14.38417867 | 3383.08516 |
| 60000.00000 | | | | | |
| 89035664. | 5.500273E+11 | 0.00016188 | 0.00231996 | 14.33182731 | 3377.30880 |
| 60000.00000 | | | | | |
| 89101776. | 5.420640E+11 | 0.00016438 | 0.00234751 | 14.28145006 | 3381.27627 |
| 60000.00000 | | | | | |
| 89167388. | 5.343364E+11 | 0.00016688 | 0.00237513 | 14.23296377 | 3385.87459 |
| 60000.00000 | | | | | |
| 89232480. | 5.268338E+11 | 0.00016938 | 0.00240280 | 14.18628797 | 3389.83882 |
| 60000.00000 | | | | | |
| 89297059. | 5.195465E+11 | 0.00017188 | 0.00243054 | 14.14135024 | 3393.16228 |
| 60000.00000 | | | | | |
| 89361118. | 5.124652E+11 | 0.00017438 | 0.00245835 | 14.09808084 | 3395.83808 |

Caisson Analysis.lpo

| | | | | | | |
|-------------|--------------|------------|------------|-------------|------------|--|
| 60000.00000 | | | | | | |
| 89487593. | 4.988855E+11 | 0.00017938 | 0.00251417 | 14.01628152 | 3399.21830 | |
| 60000.00000 | | | | | | |
| 89610937. | 4.860254E+11 | 0.00018438 | 0.00257036 | 13.94091949 | 3397.60040 | |
| 60000.00000 | | | | | | |
| 89729627. | 4.738198E+11 | 0.00018938 | 0.00262706 | 13.87224421 | 3387.57305 | |
| 60000.00000 | | | | | | |
| 89835462. | 4.621760E+11 | 0.00019438 | 0.00268325 | 13.80452111 | 3377.67826 | |
| 60000.00000 | | | | | | |
| 89870008. | 4.507587E+11 | 0.00019938 | 0.00273546 | 13.72017637 | 3368.83806 | |
| 60000.00000 | | | | | | |
| 89903896. | 4.398967E+11 | 0.00020438 | 0.00278781 | 13.64067033 | 3376.62991 | |
| 60000.00000 | | | | | | |
| 89937150. | 4.295506E+11 | 0.00020938 | 0.00284031 | 13.56567040 | 3383.87432 | |
| 60000.00000 | | | | | | |
| 89937150. | 4.195319E+11 | 0.00021438 | 0.00289406 | 13.49999920 | 3390.02628 | |
| 60000.00000 | | | | | | |
| 89937150. | 4.099699E+11 | 0.00021938 | 0.00296156 | 13.49999920 | 3396.49644 | |
| 60000.00000 | | | | | | |
| 89937150. | 4.008341E+11 | 0.00022438 | 0.00302906 | 13.49999920 | 3399.65731 | |
| 60000.00000 | | | | | | |
| 89937150. | 3.920966E+11 | 0.00022938 | 0.00309656 | 13.49999920 | 3394.06162 | |
| 60000.00000 | | | | | | |
| 90141407. | 3.846033E+11 | 0.00023438 | 0.00316057 | 13.48510489 | 3384.08449 | |
| 60000.00000 | | | | | | |
| 90150458. | 3.766077E+11 | 0.00023938 | 0.00321249 | 13.42033222 | 3377.30154 | |
| 60000.00000 | | | | | | |
| 90159278. | 3.689382E+11 | 0.00024438 | 0.00326450 | 13.35857704 | 3370.49489 | |
| 60000.00000 | | | | | | |
| 90167872. | 3.615754E+11 | 0.00024938 | 0.00331660 | 13.29966500 | 3363.66408 | |
| 60000.00000 | | | | | | |
| 90176224. | 3.545011E+11 | 0.00025438 | 0.00336880 | 13.24343249 | 3356.80883 | |
| 60000.00000 | | | | | | |
| 90184340. | 3.476987E+11 | 0.00025938 | 0.00342109 | 13.18973199 | 3361.27279 | |
| 60000.00000 | | | | | | |
| 90192204. | 3.411525E+11 | 0.00026438 | 0.00347347 | 13.13842401 | 3368.16743 | |
| 60000.00000 | | | | | | |
| 90198036. | 3.348419E+11 | 0.00026938 | 0.00352640 | 13.09103206 | 3374.55748 | |
| 60000.00000 | | | | | | |
| 90198036. | 3.287400E+11 | 0.00027438 | 0.00358261 | 13.05734351 | 3381.13304 | |
| 60000.00000 | | | | | | |
| 90198036. | 3.228565E+11 | 0.00027938 | 0.00363900 | 13.02549765 | 3386.76775 | |
| 60000.00000 | | | | | | |
| 90198036. | 3.171799E+11 | 0.00028438 | 0.00369557 | 12.99542472 | 3391.43953 | |
| 60000.00000 | | | | | | |
| 90198036. | 3.116995E+11 | 0.00028938 | 0.00375234 | 12.96704695 | 3395.12421 | |
| 60000.00000 | | | | | | |
| 90198036. | 3.064052E+11 | 0.00029438 | 0.00380930 | 12.94030532 | 3397.79705 | |
| 60000.00000 | | | | | | |

Caisson Analysis.lpo

Unfactored (Nominal) Moment Capacity at Concrete Strain of 0.003 = 89937.15017
in-kip

Axial Thrust Force = 52000.00 lbs

| Bending Max. Steel Moment Stress in-lbs psi | Bending Stiffness lb-in2 | Bending Curvature rad/in | Maximum Strain in/in | Neutral Axis Max. Concrete Position inches | Max. Concrete Stress psi |
|--|--------------------------------|--------------------------------|----------------------------|--|--------------------------------|
| 7871340. | 1.259414E+13 | 6.250000E-07 | 0.00003039 | 48.62751737 | 107.94947 |
| 808.87375 | | | | | |
| 15667973. | 1.253438E+13 | 0.00000125 | 0.00005862 | 46.89990386 | 206.55097 |
| 1555.12152 | | | | | |
| 23390765. | 1.247507E+13 | 0.00000188 | 0.00008690 | 46.34505674 | 303.79011 |
| 2302.51246 | | | | | |
| 31037498. | 1.241500E+13 | 0.00000250 | 0.00011513 | 46.05179742 | 399.39057 |
| 3048.75531 | | | | | |
| 31037498. | 9.931999E+12 | 0.00000313 | 0.00007118 | 22.77626887 | 245.70889 |
| 5729.65063 | | | | | |
| 31037498. | 8.276666E+12 | 0.00000375 | 0.00008373 | 22.32779816 | 287.89641 |
| 6924.35195 | | | | | |
| 31037498. | 7.094285E+12 | 0.00000438 | 0.00009603 | 21.94932237 | 328.92084 |
| 8126.42972 | | | | | |
| 31037498. | 6.207500E+12 | 0.00000500 | 0.00010834 | 21.66807666 | 369.71789 |
| 9328.12888 | | | | | |
| 31037498. | 5.517777E+12 | 0.00000563 | 0.00012067 | 21.45166531 | 410.28695 |
| 10529.44710 | | | | | |
| 31037498. | 4.966000E+12 | 0.00000625 | 0.00013300 | 21.28065035 | 450.62736 |
| 11730.38212 | | | | | |
| 31037498. | 4.514545E+12 | 0.00000688 | 0.00014536 | 21.14266142 | 490.73845 |
| 12930.93188 | | | | | |
| 31037498. | 4.138333E+12 | 0.00000750 | 0.00015772 | 21.02945074 | 530.61952 |
| 14131.09446 | | | | | |
| 31037498. | 3.820000E+12 | 0.00000813 | 0.00017060 | 20.99694774 | 571.93117 |
| 15316.34419 | | | | | |
| 31037498. | 3.547143E+12 | 0.00000875 | 0.00018297 | 20.91080323 | 611.26384 |
| 16516.38368 | | | | | |
| 31037498. | 3.310666E+12 | 0.00000938 | 0.00019535 | 20.83771840 | 650.36932 |
| 17715.99531 | | | | | |
| 31037498. | 3.103750E+12 | 0.00001000 | 0.00020775 | 20.77524707 | 689.24668 |
| 18915.17835 | | | | | |

Caisson Analysis.lpo

| | | | | | |
|-------------|--------------|------------|------------|-------------|------------|
| 31037498. | 2.921176E+12 | 0.00001063 | 0.00022017 | 20.72153315 | 727.89545 |
| 20113.92760 | | | | | |
| 31037498. | 2.758889E+12 | 0.00001125 | 0.00023260 | 20.67512020 | 766.31471 |
| 21312.24203 | | | | | |
| 31037498. | 2.613684E+12 | 0.00001188 | 0.00024504 | 20.63486561 | 804.50380 |
| 22510.11815 | | | | | |
| 31037498. | 2.483000E+12 | 0.00001250 | 0.00025750 | 20.59985206 | 842.46191 |
| 23707.55363 | | | | | |
| 31037498. | 2.364762E+12 | 0.00001313 | 0.00026997 | 20.56934193 | 880.18844 |
| 24904.54423 | | | | | |
| 31037498. | 2.257273E+12 | 0.00001375 | 0.00028246 | 20.54272637 | 917.68254 |
| 26101.08786 | | | | | |
| 31037498. | 2.159130E+12 | 0.00001438 | 0.00029497 | 20.51950380 | 954.94340 |
| 27297.18185 | | | | | |
| 31037498. | 2.069167E+12 | 0.00001500 | 0.00030749 | 20.49925849 | 991.97033 |
| 28492.82256 | | | | | |
| 32181783. | 2.059634E+12 | 0.00001563 | 0.00032003 | 20.48163906 | 1028.76251 |
| 29688.00730 | | | | | |
| 33399656. | 2.055363E+12 | 0.00001625 | 0.00033258 | 20.46634778 | 1065.31909 |
| 30882.73361 | | | | | |
| 34616360. | 2.051340E+12 | 0.00001688 | 0.00034515 | 20.45313522 | 1101.63942 |
| 32076.99695 | | | | | |
| 35831888. | 2.047536E+12 | 0.00001750 | 0.00035773 | 20.44178411 | 1137.72265 |
| 33270.79456 | | | | | |
| 37046230. | 2.043930E+12 | 0.00001813 | 0.00037033 | 20.43210670 | 1173.56791 |
| 34464.12391 | | | | | |
| 38259382. | 2.040500E+12 | 0.00001875 | 0.00038295 | 20.42394206 | 1209.17440 |
| 35656.98151 | | | | | |
| 39471338. | 2.037230E+12 | 0.00001938 | 0.00039558 | 20.41715071 | 1244.54137 |
| 36849.36345 | | | | | |
| 40682085. | 2.034104E+12 | 0.00002000 | 0.00040823 | 20.41160658 | 1279.66779 |
| 38041.26818 | | | | | |
| 41891630. | 2.031109E+12 | 0.00002063 | 0.00042090 | 20.40720776 | 1314.55319 |
| 39232.68886 | | | | | |
| 43099952. | 2.028233E+12 | 0.00002125 | 0.00043358 | 20.40385231 | 1349.19630 |
| 40423.62601 | | | | | |
| 44307051. | 2.025465E+12 | 0.00002188 | 0.00044628 | 20.40145978 | 1383.59651 |
| 41614.07395 | | | | | |
| 45512921. | 2.022796E+12 | 0.00002250 | 0.00045900 | 20.39995506 | 1417.75292 |
| 42804.02932 | | | | | |
| 46717553. | 2.020219E+12 | 0.00002313 | 0.00047173 | 20.39927110 | 1451.66463 |
| 43993.48882 | | | | | |
| 47920943. | 2.017724E+12 | 0.00002375 | 0.00048448 | 20.39934888 | 1485.33079 |
| 45182.44846 | | | | | |
| 49123081. | 2.015306E+12 | 0.00002438 | 0.00049725 | 20.40013477 | 1518.75051 |
| 46370.90473 | | | | | |
| 51523569. | 2.010676E+12 | 0.00002563 | 0.00052284 | 20.40364042 | 1584.84673 |
| 48746.29471 | | | | | |
| 53918957. | 2.006287E+12 | 0.00002688 | 0.00054850 | 20.40945813 | 1649.94597 |

Caisson Analysis.lpo

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|-------------|--------------|------------|------------|-------------|------------|--|
| 51119.62857 | | | | | | |
| 56309193. | 2.002105E+12 | 0.00002813 | 0.00057424 | 20.41731969 | 1714.04088 | |
| 53490.87363 | | | | | | |
| 58694209. | 1.998101E+12 | 0.00002938 | 0.00060004 | 20.42699978 | 1777.12366 | |
| 55859.99956 | | | | | | |
| 61073945. | 1.994251E+12 | 0.00003063 | 0.00062592 | 20.43831334 | 1839.18656 | |
| 58226.97297 | | | | | | |
| 63386900. | 1.988609E+12 | 0.00003188 | 0.00065165 | 20.44407204 | 1899.68011 | |
| 60000.00000 | | | | | | |
| 65169216. | 1.967373E+12 | 0.00003313 | 0.00067551 | 20.39261654 | 1954.52175 | |
| 60000.00000 | | | | | | |
| 66803933. | 1.943387E+12 | 0.00003438 | 0.00069887 | 20.33085063 | 2007.21820 | |
| 60000.00000 | | | | | | |
| 67991564. | 1.908535E+12 | 0.00003563 | 0.00072051 | 20.22476926 | 2054.97485 | |
| 60000.00000 | | | | | | |
| 69174215. | 1.875911E+12 | 0.00003688 | 0.00074218 | 20.12678012 | 2101.97300 | |
| 60000.00000 | | | | | | |
| 70354213. | 1.845356E+12 | 0.00003813 | 0.00076389 | 20.03634408 | 2148.23023 | |
| 60000.00000 | | | | | | |
| 71219963. | 1.808761E+12 | 0.00003938 | 0.00078422 | 19.91680607 | 2190.67443 | |
| 60000.00000 | | | | | | |
| 72020489. | 1.772812E+12 | 0.00004063 | 0.00080431 | 19.79841605 | 2231.84902 | |
| 60000.00000 | | | | | | |
| 72819046. | 1.738962E+12 | 0.00004188 | 0.00082443 | 19.68791708 | 2272.38266 | |
| 60000.00000 | | | | | | |
| 73615610. | 1.707029E+12 | 0.00004313 | 0.00084459 | 19.58462790 | 2312.27190 | |
| 60000.00000 | | | | | | |
| 74123403. | 1.670387E+12 | 0.00004438 | 0.00086531 | 19.49999884 | 2352.59332 | |
| 60000.00000 | | | | | | |
| 75098986. | 1.646005E+12 | 0.00004563 | 0.00088766 | 19.45559219 | 2395.36525 | |
| 60000.00000 | | | | | | |
| 75595279. | 1.612699E+12 | 0.00004688 | 0.00090581 | 19.32388768 | 2429.09472 | |
| 60000.00000 | | | | | | |
| 76090209. | 1.581095E+12 | 0.00004813 | 0.00092398 | 19.19960484 | 2462.30156 | |
| 60000.00000 | | | | | | |
| 76583778. | 1.551064E+12 | 0.00004938 | 0.00094218 | 19.08218578 | 2494.98350 | |
| 60000.00000 | | | | | | |
| 77075976. | 1.522488E+12 | 0.00005063 | 0.00096041 | 18.97112623 | 2527.13810 | |
| 60000.00000 | | | | | | |
| 77566792. | 1.495263E+12 | 0.00005188 | 0.00097867 | 18.86597022 | 2558.76283 | |
| 60000.00000 | | | | | | |
| 78056202. | 1.469293E+12 | 0.00005313 | 0.00099696 | 18.76630202 | 2589.85491 | |
| 60000.00000 | | | | | | |
| 78544235. | 1.444492E+12 | 0.00005438 | 0.00101528 | 18.67175415 | 2620.41246 | |
| 60000.00000 | | | | | | |
| 79030838. | 1.420779E+12 | 0.00005563 | 0.00103362 | 18.58197793 | 2650.43220 | |
| 60000.00000 | | | | | | |
| 79353965. | 1.395235E+12 | 0.00005688 | 0.00105076 | 18.47485587 | 2677.83435 | |
| 60000.00000 | | | | | | |

Caisson Analysis.lpo

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|-------------|--------------|------------|------------|-------------|------------|
| 79640512. | 1.370159E+12 | 0.00005813 | 0.00106764 | 18.36808249 | 2704.31911 |
| 60000.00000 | | | | | |
| 79926004. | 1.346122E+12 | 0.00005938 | 0.00108456 | 18.26620415 | 2730.34738 |
| 60000.00000 | | | | | |
| 80210467. | 1.323059E+12 | 0.00006063 | 0.00110149 | 18.16892579 | 2755.91767 |
| 60000.00000 | | | | | |
| 80493865. | 1.300911E+12 | 0.00006188 | 0.00111845 | 18.07596579 | 2781.02747 |
| 60000.00000 | | | | | |
| 80855231. | 1.280875E+12 | 0.00006313 | 0.00113625 | 18.00000027 | 2806.91513 |
| 60000.00000 | | | | | |
| 81133786. | 1.260331E+12 | 0.00006438 | 0.00115851 | 17.99626395 | 2838.85806 |
| 60000.00000 | | | | | |
| 81405403. | 1.240463E+12 | 0.00006563 | 0.00117491 | 17.90334150 | 2861.46578 |
| 60000.00000 | | | | | |
| 81676066. | 1.221324E+12 | 0.00006688 | 0.00119133 | 17.81424657 | 2883.64219 |
| 60000.00000 | | | | | |
| 81945781. | 1.202874E+12 | 0.00006813 | 0.00120777 | 17.72877261 | 2905.38555 |
| 60000.00000 | | | | | |
| 82214527. | 1.185074E+12 | 0.00006938 | 0.00122424 | 17.64672384 | 2926.69370 |
| 60000.00000 | | | | | |
| 82482315. | 1.167891E+12 | 0.00007063 | 0.00124073 | 17.56792322 | 2947.56492 |
| 60000.00000 | | | | | |
| 82749110. | 1.151292E+12 | 0.00007188 | 0.00125725 | 17.49219909 | 2967.99679 |
| 60000.00000 | | | | | |
| 83014940. | 1.135247E+12 | 0.00007313 | 0.00127379 | 17.41940126 | 2987.98783 |
| 60000.00000 | | | | | |
| 83279784. | 1.119728E+12 | 0.00007438 | 0.00129036 | 17.34938219 | 3007.53580 |
| 60000.00000 | | | | | |
| 83604707. | 1.087541E+12 | 0.00007688 | 0.00132114 | 17.18555823 | 3042.43615 |
| 60000.00000 | | | | | |
| 83889082. | 1.056870E+12 | 0.00007938 | 0.00135155 | 17.02739373 | 3075.29607 |
| 60000.00000 | | | | | |
| 84170530. | 1.028037E+12 | 0.00008188 | 0.00138204 | 16.87988296 | 3106.65945 |
| 60000.00000 | | | | | |
| 84449045. | 1.000878E+12 | 0.00008438 | 0.00141261 | 16.74209252 | 3136.51386 |
| 60000.00000 | | | | | |
| 84724561. | 9.752467E+11 | 0.00008688 | 0.00144327 | 16.61318824 | 3164.84589 |
| 60000.00000 | | | | | |
| 84724561. | 9.479671E+11 | 0.00008938 | 0.00147469 | 16.49999902 | 3192.25060 |
| 60000.00000 | | | | | |
| 85360394. | 9.290927E+11 | 0.00009188 | 0.00151508 | 16.49061665 | 3225.42893 |
| 60000.00000 | | | | | |
| 85612067. | 9.071477E+11 | 0.00009438 | 0.00154455 | 16.36607632 | 3247.42998 |
| 60000.00000 | | | | | |
| 85861043. | 8.863075E+11 | 0.00009688 | 0.00157410 | 16.24881282 | 3268.00867 |
| 60000.00000 | | | | | |
| 86107289. | 8.664884E+11 | 0.00009938 | 0.00160374 | 16.13828704 | 3287.15237 |
| 60000.00000 | | | | | |
| 86350774. | 8.476150E+11 | 0.00010188 | 0.00163347 | 16.03401348 | 3304.84825 |

Caisson Analysis.lpo

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|-------------|--------------|------------|------------|-------------|------------|--|
| 60000.00000 | | | | | | |
| 86591492. | 8.296191E+11 | 0.00010438 | 0.00166327 | 15.93555763 | 3321.08347 | |
| 60000.00000 | | | | | | |
| 86829358. | 8.124384E+11 | 0.00010688 | 0.00169317 | 15.84251449 | 3335.84421 | |
| 60000.00000 | | | | | | |
| 87064384. | 7.960172E+11 | 0.00010938 | 0.00172315 | 15.75452998 | 3349.11720 | |
| 60000.00000 | | | | | | |
| 87243054. | 7.798262E+11 | 0.00011188 | 0.00175204 | 15.66065803 | 3360.42379 | |
| 60000.00000 | | | | | | |
| 87353391. | 7.637455E+11 | 0.00011438 | 0.00177953 | 15.55875555 | 3369.83810 | |
| 60000.00000 | | | | | | |
| 87461586. | 7.483344E+11 | 0.00011688 | 0.00180710 | 15.46184465 | 3377.99729 | |
| 60000.00000 | | | | | | |
| 87567611. | 7.335507E+11 | 0.00011938 | 0.00183475 | 15.36961690 | 3384.89046 | |
| 60000.00000 | | | | | | |
| 87671444. | 7.193554E+11 | 0.00012188 | 0.00186247 | 15.28179064 | 3390.50655 | |
| 60000.00000 | | | | | | |
| 87773053. | 7.057130E+11 | 0.00012438 | 0.00189026 | 15.19810572 | 3394.83429 | |
| 60000.00000 | | | | | | |
| 87872391. | 6.925903E+11 | 0.00012688 | 0.00191814 | 15.11832073 | 3397.86224 | |
| 60000.00000 | | | | | | |
| 87969474. | 6.799573E+11 | 0.00012938 | 0.00194609 | 15.04222110 | 3399.57888 | |
| 60000.00000 | | | | | | |
| 88312438. | 6.696678E+11 | 0.00013188 | 0.00197813 | 15.00000045 | 3397.52958 | |
| 60000.00000 | | | | | | |
| 88976509. | 6.621508E+11 | 0.00013438 | 0.00201563 | 15.00000045 | 3388.11636 | |
| 60000.00000 | | | | | | |
| 88976509. | 6.500567E+11 | 0.00013688 | 0.00204926 | 14.97174338 | 3383.92316 | |
| 60000.00000 | | | | | | |
| 88976509. | 6.383965E+11 | 0.00013938 | 0.00207591 | 14.89445016 | 3388.75238 | |
| 60000.00000 | | | | | | |
| 88976509. | 6.271472E+11 | 0.00014188 | 0.00210265 | 14.82043460 | 3392.73456 | |
| 60000.00000 | | | | | | |
| 88976509. | 6.162875E+11 | 0.00014438 | 0.00212946 | 14.74953577 | 3395.86017 | |
| 60000.00000 | | | | | | |
| 88976509. | 6.057975E+11 | 0.00014688 | 0.00215636 | 14.68160078 | 3398.11943 | |
| 60000.00000 | | | | | | |
| 88976509. | 5.956586E+11 | 0.00014938 | 0.00218334 | 14.61648747 | 3399.50234 | |
| 60000.00000 | | | | | | |
| 88976509. | 5.858536E+11 | 0.00015188 | 0.00221040 | 14.55406442 | 3399.99872 | |
| 60000.00000 | | | | | | |
| 88976509. | 5.763661E+11 | 0.00015438 | 0.00223769 | 14.49516848 | 3394.58894 | |
| 60000.00000 | | | | | | |
| 88976509. | 5.671809E+11 | 0.00015688 | 0.00226505 | 14.43859264 | 3388.84520 | |
| 60000.00000 | | | | | | |
| 88976509. | 5.582840E+11 | 0.00015938 | 0.00229248 | 14.38417867 | 3383.08516 | |
| 60000.00000 | | | | | | |
| 89035664. | 5.500273E+11 | 0.00016188 | 0.00231996 | 14.33182731 | 3377.30880 | |
| 60000.00000 | | | | | | |

Caisson Analysis.lpo

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|-------------|--------------|------------|------------|-------------|------------|
| 89101776. | 5.420640E+11 | 0.00016438 | 0.00234751 | 14.28145006 | 3381.27627 |
| 60000.00000 | | | | | |
| 89167388. | 5.343364E+11 | 0.00016688 | 0.00237513 | 14.23296377 | 3385.87459 |
| 60000.00000 | | | | | |
| 89232480. | 5.268338E+11 | 0.00016938 | 0.00240280 | 14.18628797 | 3389.83882 |
| 60000.00000 | | | | | |
| 89297059. | 5.195465E+11 | 0.00017188 | 0.00243054 | 14.14135024 | 3393.16228 |
| 60000.00000 | | | | | |
| 89361118. | 5.124652E+11 | 0.00017438 | 0.00245835 | 14.09808084 | 3395.83808 |
| 60000.00000 | | | | | |
| 89487593. | 4.988855E+11 | 0.00017938 | 0.00251417 | 14.01628152 | 3399.21830 |
| 60000.00000 | | | | | |
| 89610937. | 4.860254E+11 | 0.00018438 | 0.00257036 | 13.94091949 | 3397.60040 |
| 60000.00000 | | | | | |
| 89729627. | 4.738198E+11 | 0.00018938 | 0.00262706 | 13.87224421 | 3387.57305 |
| 60000.00000 | | | | | |
| 89835462. | 4.621760E+11 | 0.00019438 | 0.00268325 | 13.80452111 | 3377.67826 |
| 60000.00000 | | | | | |
| 89870008. | 4.507587E+11 | 0.00019938 | 0.00273546 | 13.72017637 | 3368.83806 |
| 60000.00000 | | | | | |
| 89903896. | 4.398967E+11 | 0.00020438 | 0.00278781 | 13.64067033 | 3376.62991 |
| 60000.00000 | | | | | |
| 89937150. | 4.295506E+11 | 0.00020938 | 0.00284031 | 13.56567040 | 3383.87432 |
| 60000.00000 | | | | | |
| 89937150. | 4.195319E+11 | 0.00021438 | 0.00289406 | 13.49999920 | 3390.02628 |
| 60000.00000 | | | | | |
| 89937150. | 4.099699E+11 | 0.00021938 | 0.00296156 | 13.49999920 | 3396.49644 |
| 60000.00000 | | | | | |
| 89937150. | 4.008341E+11 | 0.00022438 | 0.00302906 | 13.49999920 | 3399.65731 |
| 60000.00000 | | | | | |
| 89937150. | 3.920966E+11 | 0.00022938 | 0.00309656 | 13.49999920 | 3394.06162 |
| 60000.00000 | | | | | |
| 90141407. | 3.846033E+11 | 0.00023438 | 0.00316057 | 13.48510489 | 3384.08449 |
| 60000.00000 | | | | | |
| 90150458. | 3.766077E+11 | 0.00023938 | 0.00321249 | 13.42033222 | 3377.30154 |
| 60000.00000 | | | | | |
| 90159278. | 3.689382E+11 | 0.00024438 | 0.00326450 | 13.35857704 | 3370.49489 |
| 60000.00000 | | | | | |
| 90167872. | 3.615754E+11 | 0.00024938 | 0.00331660 | 13.29966500 | 3363.66408 |
| 60000.00000 | | | | | |
| 90176224. | 3.545011E+11 | 0.00025438 | 0.00336880 | 13.24343249 | 3356.80883 |
| 60000.00000 | | | | | |
| 90184340. | 3.476987E+11 | 0.00025938 | 0.00342109 | 13.18973199 | 3361.27279 |
| 60000.00000 | | | | | |
| 90192204. | 3.411525E+11 | 0.00026438 | 0.00347347 | 13.13842401 | 3368.16743 |
| 60000.00000 | | | | | |
| 90198036. | 3.348419E+11 | 0.00026938 | 0.00352640 | 13.09103206 | 3374.55748 |
| 60000.00000 | | | | | |
| 90198036. | 3.287400E+11 | 0.00027438 | 0.00358261 | 13.05734351 | 3381.13304 |

Caisson Analysis.lpo

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|-------------|-----------|--------------|------------|------------|-------------|------------|
| 60000.00000 | 90198036. | 3.228565E+11 | 0.00027938 | 0.00363900 | 13.02549765 | 3386.76775 |
| 60000.00000 | 90198036. | 3.171799E+11 | 0.00028438 | 0.00369557 | 12.99542472 | 3391.43953 |
| 60000.00000 | 90198036. | 3.116995E+11 | 0.00028938 | 0.00375234 | 12.96704695 | 3395.12421 |
| 60000.00000 | 90198036. | 3.064052E+11 | 0.00029438 | 0.00380930 | 12.94030532 | 3397.79705 |

Unfactored (Nominal) Moment Capacity at Concrete Strain of 0.003 = 89937.15017 in-kip

 Computed Values of Load Distribution and Deflection
 for Lateral Loading for Load Case Number 1

Pile-head boundary conditions are Shear and Moment (Pile-head Condition Type 1)
 Specified shear force at pile head = 33000.000 lbs
 Specified moment at pile head = 49896000.000 in-lbs
 Specified axial load at pile head = 51000.000 lbs

| Depth Es*h X F/L in | Deflect. y in | Moment M lbs-in | Shear V lbs | Slope S Rad. | Total Stress lbs/in**2 | Flx. Rig. EI lbs-in**2 | Soil Res. p lbs/in |
|---------------------------------|---------------------|-----------------------|-------------------|--------------------|------------------------------|------------------------------|--------------------------|
| 0.000 | 0.784982 | 4.99E+07 | 33000. | -0.006138 | 705.186 | 2.01E+12 | 0.000 |
| 0.000 | 26.880 | 5.08E+07 | 28519. | -0.005466 | 717.391 | 2.01E+12 | -601.752 |
| 3214.517 | 53.760 | 5.12E+07 | -2783.715 | -0.004784 | 723.296 | 2.01E+12 | -1721.516 |
| 11776. | 80.640 | 5.04E+07 | -59038. | -0.004104 | 712.239 | 2.01E+12 | -2296.711 |
| 20757. | 107.520 | 4.80E+07 | -1.22E+05 | -0.003446 | 678.348 | 2.02E+12 | -2324.535 |
| 28885. | 134.400 | 4.39E+07 | -1.81E+05 | -0.002833 | 621.226 | 2.03E+12 | -2050.515 |
| 37014. | 161.280 | 3.83E+07 | -2.30E+05 | -0.002288 | 543.555 | 2.04E+12 | -1578.469 |
| 45142. | 188.160 | 3.16E+07 | -2.65E+05 | -0.001844 | 450.035 | 4.97E+12 | -988.914 |
| 53271. | | | | | | | |

Caisson Analysis.lpo

| | | | | | | | |
|---------|-----------|----------|-----------|-----------|---------|----------|----------|
| 215.040 | 0.013844 | 2.42E+07 | -2.82E+05 | -0.001777 | 346.649 | 1.25E+13 | -252.980 |
| 61399. | | | | | | | |
| 241.920 | -0.033282 | 1.67E+07 | -2.77E+05 | -0.001733 | 240.877 | 1.25E+13 | 688.707 |
| 69528. | | | | | | | |
| 268.800 | -0.079445 | 9.61E+06 | -2.43E+05 | -0.001705 | 142.229 | 1.26E+13 | 1836.122 |
| 77656. | | | | | | | |
| 295.680 | -0.125048 | 3.88E+06 | -1.76E+05 | -0.001691 | 62.289 | 1.26E+13 | 3192.627 |
| 85785. | | | | | | | |
| 322.560 | -0.170418 | 4.82E+05 | -69787. | -0.001686 | 14.758 | 1.26E+13 | 4763.248 |
| 93913. | | | | | | | |

Please note that because this analysis makes computations of ultimate moment capacity and pile response using nonlinear bending stiffness that the above values of total stress due to combined axial stress and bending may not be representative of actual conditions.

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

| | | |
|----------------------------------|---|-------------------|
| Pile-head deflection | = | 0.78498224 in |
| Computed slope at pile head | = | -0.00613850 |
| Maximum bending moment | = | 51192130. lbs-in |
| Maximum shear force | = | -283216.71958 lbs |
| Depth of maximum bending moment | = | 53.76000000 in |
| Depth of maximum shear force | = | 221.76000 in |
| Number of iterations | = | 37 |
| Number of zero deflection points | = | 1 |

 Computed Values of Load Distribution and Deflection
 for Lateral Loading for Load Case Number 2

Pile-head boundary conditions are Shear and Moment (Pile-head Condition Type 1)
 Specified shear force at pile head = 14000.000 lbs
 Specified moment at pile head = 20820000.000 in-lbs
 Specified axial load at pile head = 51000.000 lbs

| | | | | | | | |
|-------|----------|--------|-------|-------|--------|-----------|-----------|
| Depth | Deflect. | Moment | Shear | Slope | Total | Flx. Rig. | Soil Res. |
| Es*h | | | | | | | |
| X | y | M | V | S | Stress | EI | p |

Caisson Analysis.lpo

| F/L | in | in | lbs-in | lbs | Rad. | lbs/in**2 | lbs-in**2 | lbs/in |
|----------|----------|-----------|----------|-----------|-----------|-----------|-----------|----------|
| 0.000 | 0.224770 | 2.08E+07 | 14000. | -0.001167 | 298.923 | 1.25E+13 | 0.000 | |
| 0.000 | 26.880 | 0.194014 | 2.12E+07 | 11988. | -0.001122 | 304.065 | 1.25E+13 | -259.824 |
| 4499.712 | 53.760 | 0.164484 | 2.14E+07 | -120.945 | -0.001076 | 306.625 | 1.25E+13 | -618.195 |
| 12628. | 80.640 | 0.136187 | 2.11E+07 | -20025. | -0.001030 | 303.056 | 1.25E+13 | -841.312 |
| 20757. | 107.520 | 0.109110 | 2.03E+07 | -44208. | -0.000985 | 291.096 | 1.25E+13 | -937.998 |
| 28885. | 134.400 | 0.083201 | 1.87E+07 | -69385. | -0.000943 | 269.764 | 1.25E+13 | -916.545 |
| 37014. | 161.280 | 0.058372 | 1.66E+07 | -92481. | -0.000905 | 239.270 | 1.25E+13 | -784.234 |
| 45142. | 188.160 | 0.034494 | 1.38E+07 | -1.11E+05 | -0.000872 | 200.945 | 1.25E+13 | -546.882 |
| 53271. | 215.040 | 0.011410 | 1.07E+07 | -1.21E+05 | -0.000846 | 157.182 | 1.26E+13 | -208.503 |
| 61399. | 241.920 | -0.011061 | 7.40E+06 | -1.21E+05 | -0.000827 | 111.395 | 1.26E+13 | 228.874 |
| 69528. | 268.800 | -0.033106 | 4.29E+06 | -1.08E+05 | -0.000814 | 68.001 | 1.26E+13 | 765.140 |
| 77656. | 295.680 | -0.054902 | 1.75E+06 | -78874. | -0.000808 | 32.414 | 1.26E+13 | 1401.715 |
| 85785. | 322.560 | -0.076593 | 2.18E+05 | -31491. | -0.000806 | 11.063 | 1.26E+13 | 2140.815 |
| 93913. | | | | | | | | |

Please note that because this analysis makes computations of ultimate moment capacity and pile response using nonlinear bending stiffness that the above values of total stress due to combined axial stress and bending may not be representative of actual conditions.

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 2:

Pile-head deflection = 0.22477006 in
 Computed slope at pile head = -0.00116673
 Maximum bending moment = 21371241. lbs-in
 Maximum shear force = -122411.31246 lbs
 Depth of maximum bending moment = 53.76000000 in

Caisson Analysis.lpo

Depth of maximum shear force = 228.48000 in
 Number of iterations = 5
 Number of zero deflection points = 1

 Summary of Pile Response(s)

Definition of Symbols for Pile-Head Loading Conditions:

Type 1 = Shear and Moment, y = pile-head displacement in
 Type 2 = Shear and Slope, M = Pile-head Moment lbs-in
 Type 3 = Shear and Rot. Stiffness, V = Pile-head Shear Force lbs
 Type 4 = Deflection and Moment, S = Pile-head Slope, radians
 Type 5 = Deflection and Slope, R = Rot. Stiffness of Pile-head in-lbs/rad

| Load Type | Pile-Head Condition 1 | Pile-Head Condition 2 | Axial Load lbs | Pile-Head Deflection in | Maximum Moment in-lbs | Maximum Shear lbs |
|-----------|-----------------------|-----------------------|----------------|-------------------------|-----------------------|-------------------|
| 1 | V= 33000. | M= 4.99E+07 | 51000.0000 | 0.7849822 | 5.1192E+07 | -283217. |
| 1 | V= 14000. | M= 2.08E+07 | 51000.0000 | 0.2247701 | 2.1371E+07 | -122411. |

 Computed Pile-head Stiffness Matrix Members
 K22, K23, K32, K33 for Superstructure

| Top y in | Shear React. lbs | Mom. React. in-lbs | K22 lbs/in | K32 in-lbs/in |
|------------|------------------|--------------------|------------|---------------|
| 0.00151350 | 3300.00005 | 618299.77298 | 2180372. | 4.085223E+08 |
| 0.00455610 | 9933.98986 | 1861268. | 2180372. | 4.085223E+08 |
| 0.00722124 | 15745.00141 | 2950040. | 2180372. | 4.085223E+08 |
| 0.00911220 | 19867.97971 | 3722536. | 2180372. | 4.085223E+08 |
| 0.01057893 | 23066.01014 | 4321730. | 2180372. | 4.085223E+08 |
| 0.01177734 | 25678.99126 | 4811307. | 2180372. | 4.085223E+08 |
| 0.01279058 | 27888.23532 | 5225239. | 2180372. | 4.085223E+08 |
| 0.01366829 | 29801.96957 | 5583803. | 2180372. | 4.085223E+08 |
| 0.01444249 | 31490.00281 | 5900079. | 2180372. | 4.085223E+08 |
| 0.01513503 | 33000.00000 | 6182998. | 2180372. | 4.085223E+08 |

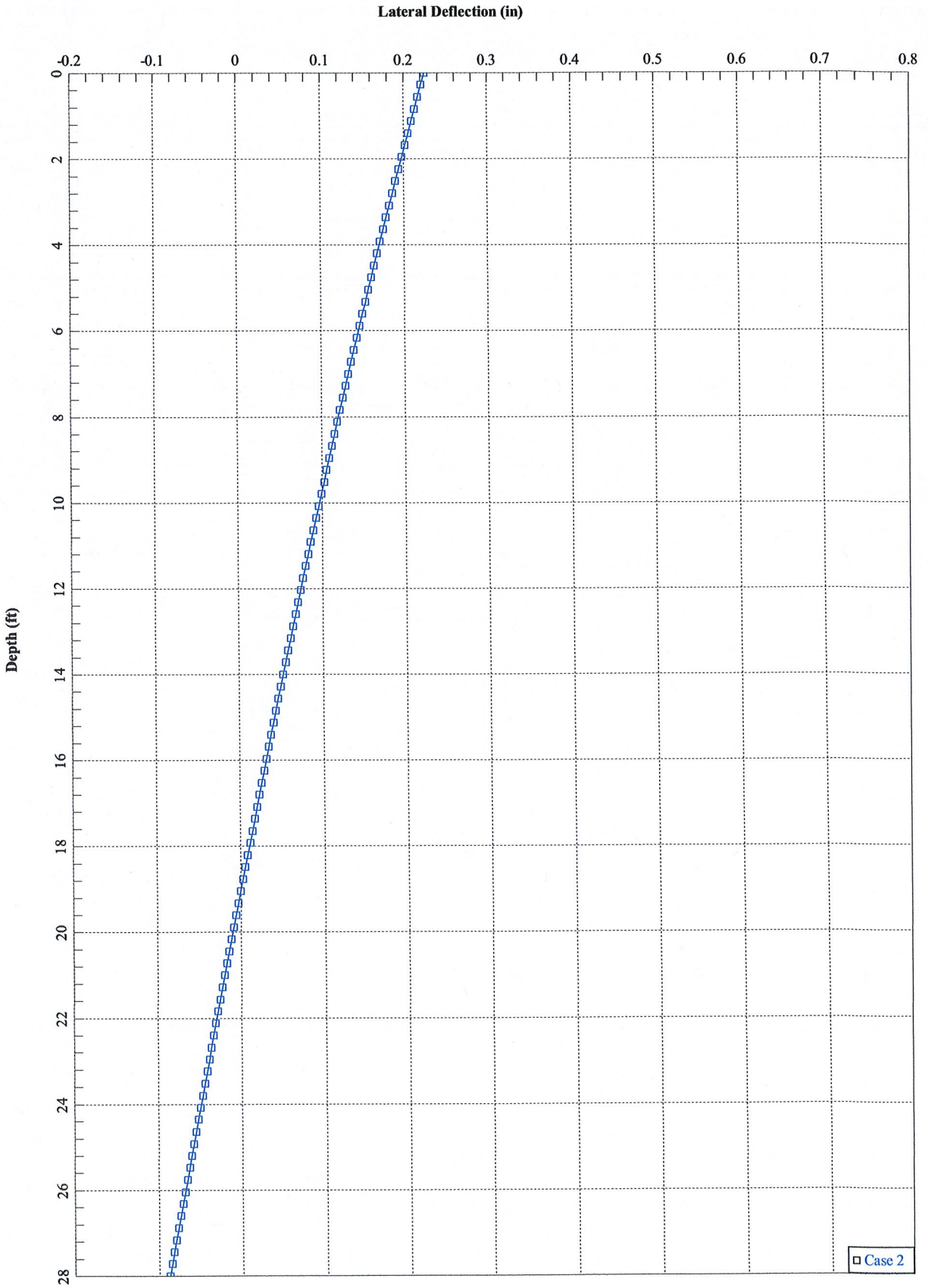
| Top Rota. rad | Shear React. lbs | Mom. React. in-lbs | K23 lbs/rad | K33 in-lbs/rad |
|---------------|------------------|--------------------|-------------|----------------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
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| | | | | |

Caisson Analysis.lpo

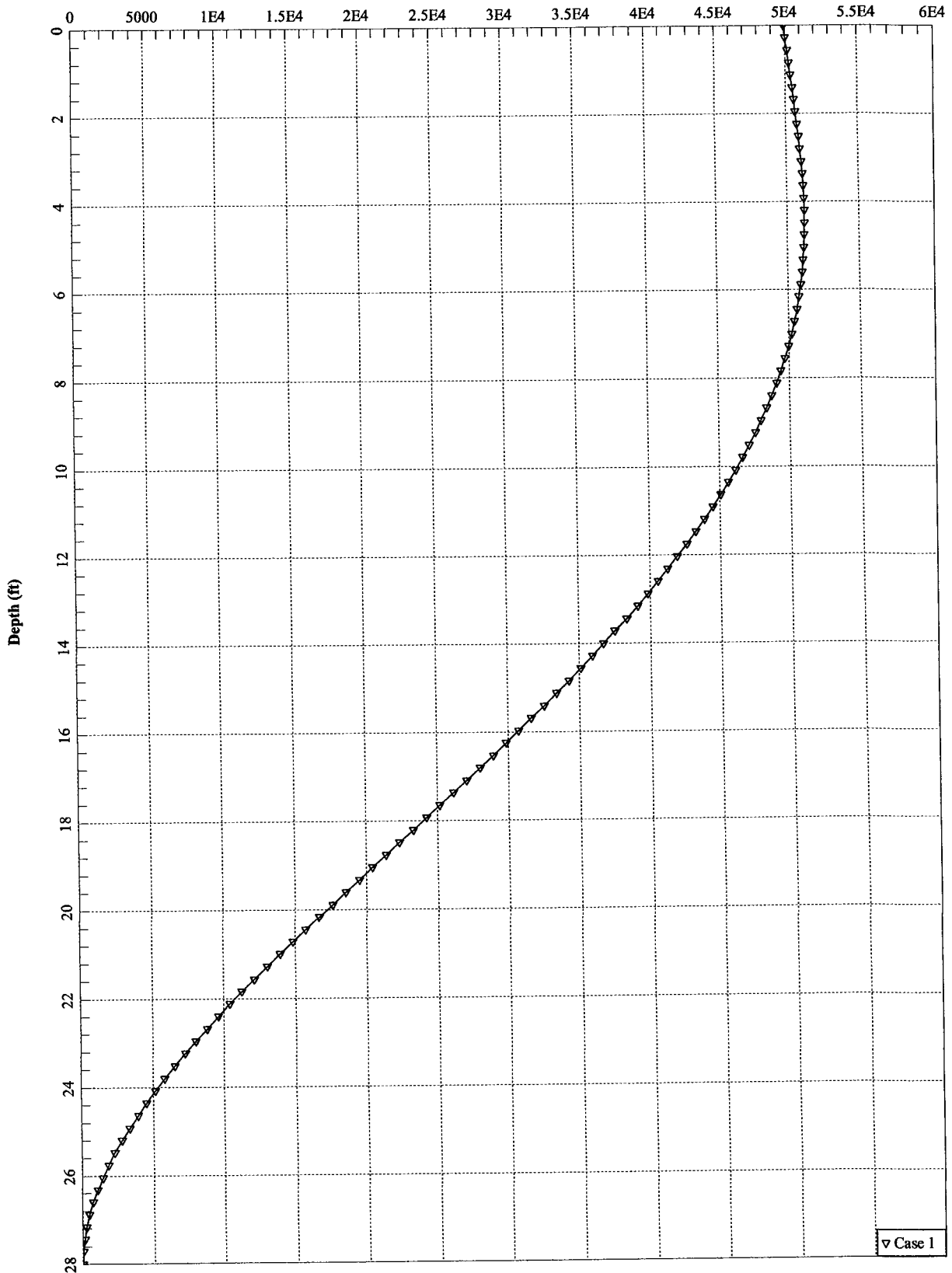
| ----- | ----- | ----- | ----- | ----- |
|------------|--------------|-----------|--------------|--------------|
| 0.00005161 | 21085.33375 | 4989600. | 4.085223E+08 | 9.667208E+10 |
| 0.00015563 | 63478.16805 | 15020193. | 4.078740E+08 | 9.651106E+10 |
| 0.00024724 | 100626.53623 | 23806442. | 4.069980E+08 | 9.628847E+10 |
| 0.00031253 | 126992.22391 | 30040385. | 4.063322E+08 | 9.611909E+10 |
| 0.00038064 | 147511.38606 | 34875807. | 3.875312E+08 | 9.162318E+10 |
| 0.00092210 | 168950.24067 | 38826635. | 1.832228E+08 | 4.210662E+10 |
| 0.00117232 | 187796.31753 | 42167012. | 1.601914E+08 | 3.596871E+10 |
| 0.00135527 | 204134.97476 | 45060578. | 1.506233E+08 | 3.324845E+10 |
| 0.00150171 | 218457.93803 | 47612884. | 1.454726E+08 | 3.170573E+10 |
| 0.00163367 | 231593.55683 | 49896000. | 1.417630E+08 | 3.054234E+10 |

K22 = abs(Shear Reaction/Top y)
 K23 = abs(Shear Reaction/Top Rotation)
 K32 = abs(Moment Reaction/Top y)
 K33 = abs(Moment Reaction/Top Rotation)

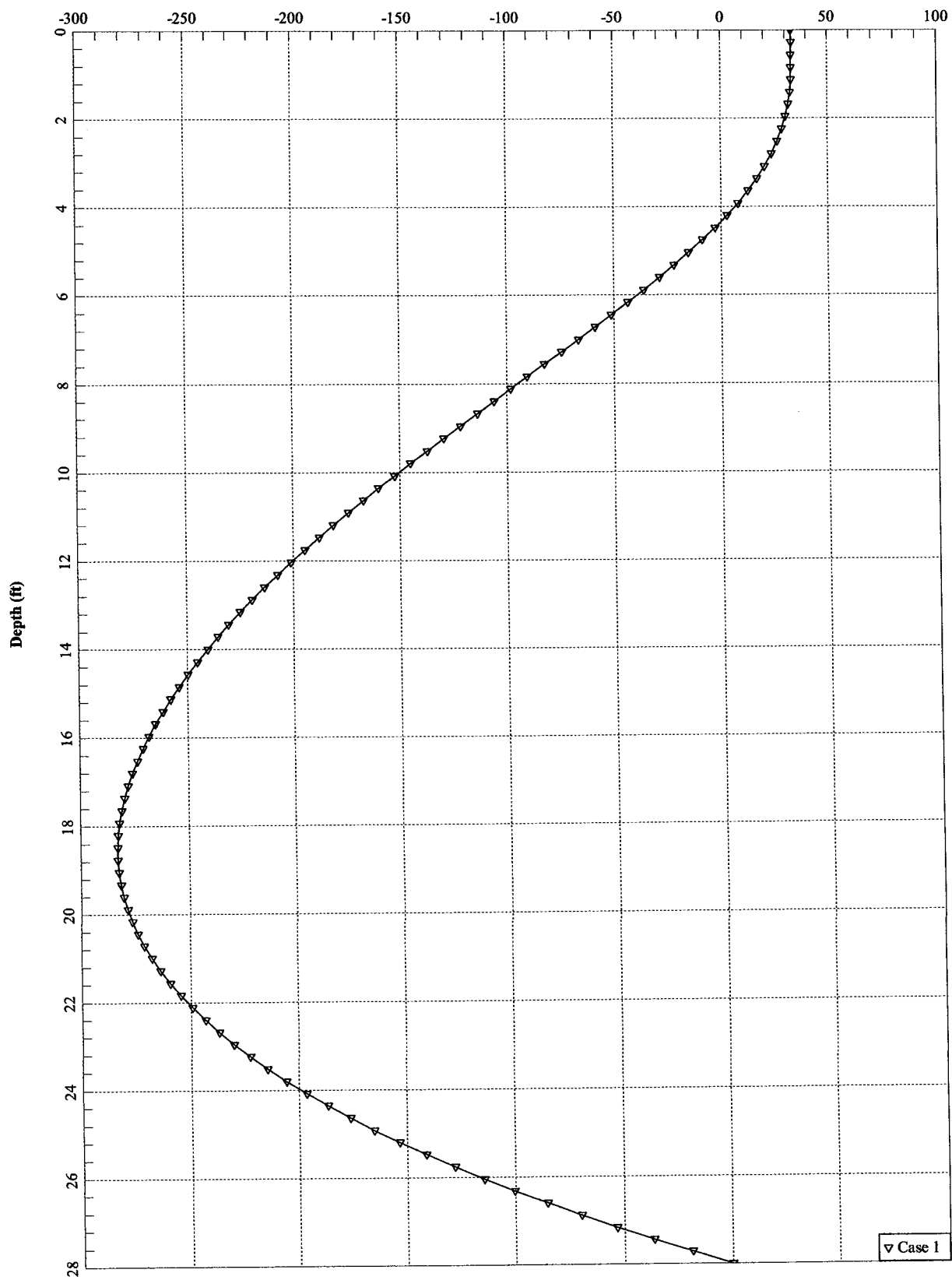
The analysis ended normally.



Bending Moment (in-kips)



Shear Force (kips)



▽ Case 1

| | |
|---------------------------------|--|
| RAN Template: 705A-V2 | A&L Template: 1DP_2xAIR_705A |
|---------------------------------|--|

Section 1 - Site Information

| | | |
|---|---|--|
| Site ID: CTHA539A | Site Name: Burlington Fire Department Flagpole | Latitude: 41.76640000 |
| Status: Draft | Site Class: Monopole | Longitude: -72.96170000 |
| Version: 1.1 | Site Type: Structure Non Building | Address: 719 George Washington Tpke |
| Project Type: L700 | Solution Type: | City, State: Burlington, CT |
| Approved: Not Approved | Plan Year: | Region: NORTHEAST |
| Approved By: Not Approved | Market: CONNECTICUT | |
| Last Modified: 7/19/2016 11:39:29 AM | Vendor: Ericsson | |
| Last Modified By: GSM1900MLucey | Landlord: <undefined> | |

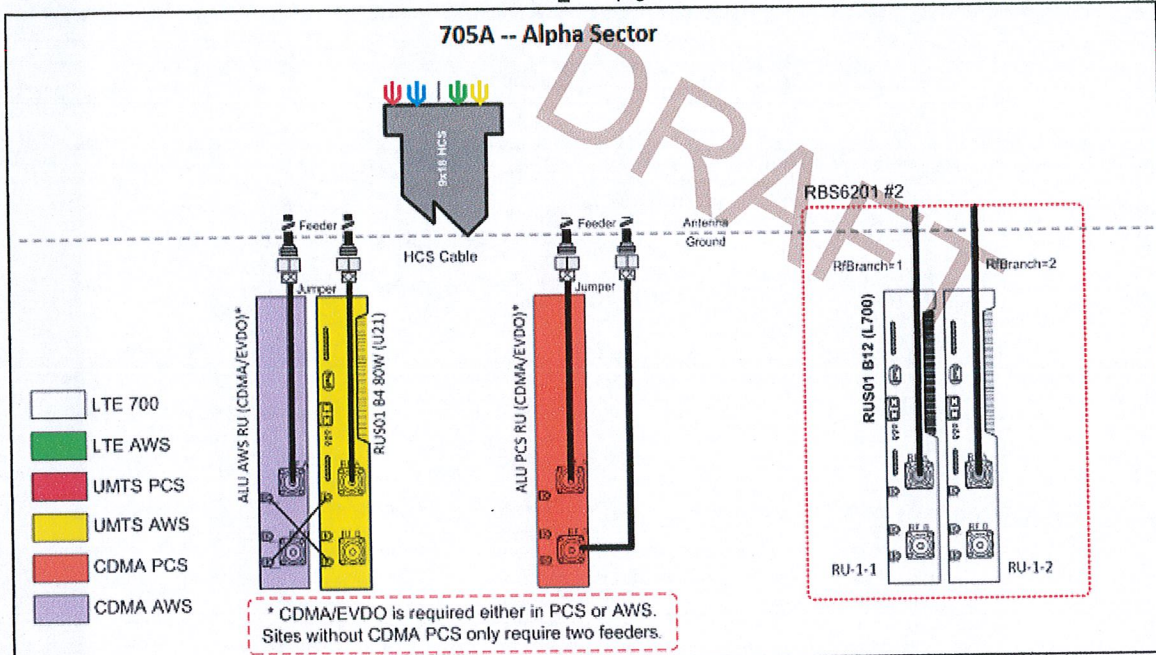
| | | | | |
|------------------------------|-------------------------|------------------------------------|---------------------|---------------------|
| RAN Template: 705A-V2 | | AL Template: 1DP_2xAIR_705A | | |
| Sector Count: 3 | Antenna Count: 9 | Coax Line Count: 6 | TMA Count: 0 | RRU Count: 0 |

Section 2 - Existing Template Images

----- This section is intentionally blank. -----

Section 3 - Proposed Template Images

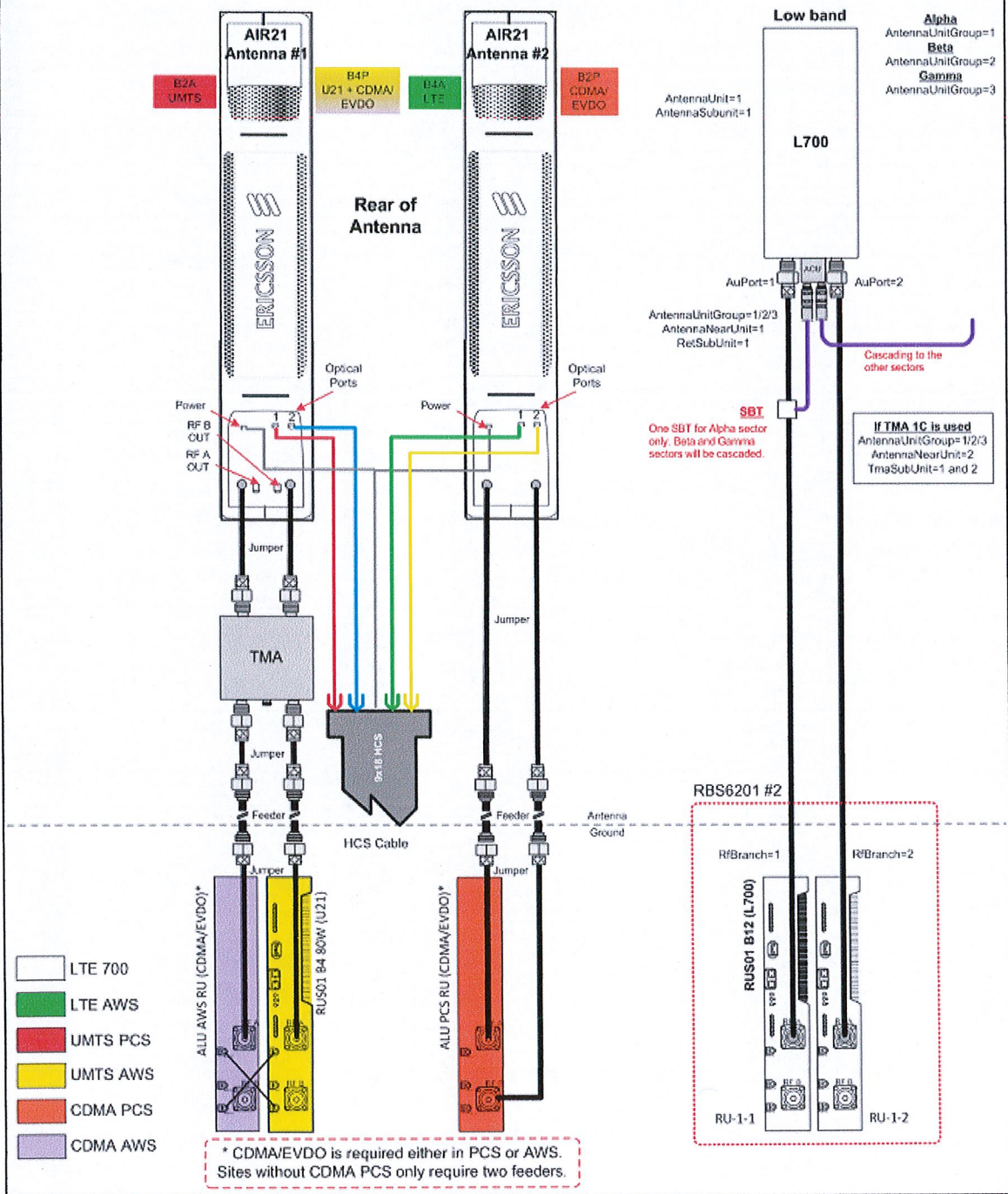
RAN_705A.png



Notes:

AL_705A.png

705A -- Alpha Sector



Notes:

Section 4 - Siteplan Images

----- This section is intentionally blank. -----

DRAFT

| | |
|---------------------------------|--|
| RAN Template: 705A-V2 | A&L Template: 1DP_2xAIR_705A |
|---------------------------------|--|

Section 5 - RAN Equipment

| Existing RAN Equipment | |
|-------------------------------|---------------|
| Template: 5A | |
| Enclosure | 1 |
| Enclosure Type | RBS 6201 ODE |
| Baseband | DUW30 DUS31 |
| Radio | RUS01 B4 (x3) |

| Proposed RAN Equipment | | |
|-------------------------------|------------------------------------|-----------------|
| Template: 705A-V2 | | |
| Enclosure | 1 | 2 |
| Enclosure Type | RBS 6201 ODE | Battery Cabinet |
| Baseband | DUW30 U1900 DUS41 L2100 L700 | |
| Multiplexer | XMU | |
| Radio | RUS01 B12 (x6) L700 | |

RAN Scope of Work:

| | |
|--------------------------|---------------------------------|
| RAN Template: 705A-V2 | A&L Template: 1DP_2xAIR_705A |
|--------------------------|---------------------------------|

Section 6 - A&L Equipment

Existing Template: 5A
Proposed Template: 1DP_2xAIR_705A

Sector 1 (Existing) view from behind

| | | | | |
|------------------------|-----------------------|----|-----------------------|----|
| Coverage Type | A - Outdoor Macro | | | |
| Antenna | 1 | | 2 | |
| Antenna Model | AIR21 B2A/B4P (Quad) | | AIR21 B4A/B2P (Quad) | |
| Azimuth | 60 | | 60 | |
| M. Tilt | 0 | | 0 | |
| Height | 175 | | 175 | |
| Ports | P1 | P2 | P3 | P4 |
| Active Tech. | U1900 | | L2100 | |
| Dark Tech. | | | | |
| Restricted Tech. | | | | |
| Decomm. Tech. | | | | |
| E. Tilt | 2 | | 2 | |
| Cables | Fiber Jumper - 15 ft. | | Fiber Jumper - 15 ft. | |
| TMA's | | | | |
| Diplexers / Combiners | | | | |
| Radio | | | | |
| Sector Equipment | | | | |
| Unconnected Equipment: | | | | |
| Scope of Work: | | | | |
| | | | | |

| | |
|---------------------------------|--|
| RAN Template: 705A-V2 | A&L Template: 1DP_2xAIR_705A |
|---------------------------------|--|

| Sector 1 (Proposed) view from behind | | | | | |
|---|----------------------|----|----------------------|----|-------------------------|
| Coverage Type | A - Outdoor Macro | | | | |
| Antenna | 1 | | 2 | | 3 |
| Antenna Model | AIR21 B2A/B4P (Quad) | | AIR21 B4A/B2P (Quad) | | LNx-6515DS-A1M (Dual) |
| Azimuth | 60 | | 60 | | 60 |
| M. Tilt | | | | | |
| Height | 175 | | 175 | | 175 |
| Ports | P1 | P2 | P3 | P4 | P5 |
| Active Tech. | U1900 | | L2100 | | L700 |
| Dark Tech. | | | | | |
| Restricted Tech. | | | | | |
| Decomm. Tech. | | | | | |
| E. Tilt | 2 | | 2 | | 2 |
| Cables | | | | | 1-5/8" Coax 1-5/8" Coax |
| TMA's | | | | | |
| Diplexers / Combiners | | | | | |
| Radio | | | | | |
| Sector Equipment | | | | | |
| Unconnected Equipment: | | | | | |
| Scope of Work: | | | | | |
| Add L7 antenna on new mount. Re-use existing coax if swept clean and not aluminum otherwise replace 2 per sector. | | | | | |

| | |
|---------------------------------|--|
| RAN Template: 705A-V2 | A&L Template: 1DP_2xAIR_705A |
|---------------------------------|--|

| Sector 2 (Existing) view from behind | | | | |
|--------------------------------------|-----------------------|----|-----------------------|----|
| Coverage Type | A - Outdoor Macro | | | |
| Antenna | 1 | | 2 | |
| Antenna Model | AIR21 B2A/B4P (Quad) | | AIR21 B4A/B2P (Quad) | |
| Azimuth | 180 | | 180 | |
| M. Tilt | 0 | | 0 | |
| Height | 175 | | 175 | |
| Ports | P1 | P2 | P3 | P4 |
| Active Tech. | U1900 | | L2100 | |
| Dark Tech. | | | | |
| Restricted Tech. | | | | |
| Decomm. Tech. | | | | |
| E. Tilt | 2 | | 2 | |
| Cables | Fiber Jumper - 15 ft. | | Fiber Jumper - 15 ft. | |
| TMA's | | | | |
| Diplexers / Combiners | | | | |
| Radio | | | | |
| Sector Equipment | | | | |
| Unconnected Equipment: | | | | |
| Scope of Work: | | | | |
| | | | | |

| | |
|---------------------------------|--|
| RAN Template: 705A-V2 | A&L Template: 1DP_2xAIR_705A |
|---------------------------------|--|

| Sector 2 (Proposed) view from behind | | | | | |
|---|----------------------|----|----------------------|----|-------------------------|
| Coverage Type | A - Outdoor Macro | | | | |
| Antenna | 1 | | 2 | | 3 |
| Antenna Model | AIR21 B2A/B4P (Quad) | | AIR21 B4A/B2P (Quad) | | LNx-6515DS-A1M (Dual) |
| Azimuth | 180 | | 180 | | 180 |
| M. Tilt | | | | | |
| Height | 175 | | 175 | | 175 |
| Ports | P1 | P2 | P3 | P4 | P5 |
| Active Tech. | U1900 | | L2100 | | L700 |
| Dark Tech. | | | | | |
| Restricted Tech. | | | | | |
| Decomm. Tech. | | | | | |
| E. Tilt | 2 | | 2 | | 2 |
| Cables | | | | | 1-5/8" Coax 1-5/8" Coax |
| TMA's | | | | | |
| Diplexers / Combiners | | | | | |
| Radio | | | | | |
| Sector Equipment | | | | | |
| Unconnected Equipment: | | | | | |
| Scope of Work: | | | | | |
| Add L7 antenna on new mount. Re-use existing coax if swept clean and not aluminum otherwise replace 2 per sector. | | | | | |

| | |
|---------------------------------|--|
| RAN Template: 705A-V2 | A&L Template: 1DP_2xAIR_705A |
|---------------------------------|--|

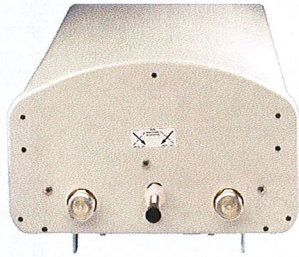
| Sector 3 (Existing) view from behind | | | | |
|--------------------------------------|-----------------------|----|-----------------------|----|
| Coverage Type | A - Outdoor Macro | | | |
| Antenna | 1 | | 2 | |
| Antenna Model | AIR21 B2A/B4P (Quad) | | AIR21 B4A/B2P (Quad) | |
| Azimuth | 300 | | 300 | |
| M. Tilt | 0 | | 0 | |
| Height | 175 | | 175 | |
| Ports | P1 | P2 | P3 | P4 |
| Active Tech. | U1900 | | L2100 | |
| Dark Tech. | | | | |
| Restricted Tech. | | | | |
| Decomm. Tech. | | | | |
| E. Tilt | 2 | | 2 | |
| Cables | Fiber Jumper - 15 ft. | | Fiber Jumper - 15 ft. | |
| TMA's | | | | |
| Diplexers / Combiners | | | | |
| Radio | | | | |
| Sector Equipment | | | | |
| Unconnected Equipment: | | | | |
| Scope of Work: | | | | |
| | | | | |

| | |
|---------------------------------|--|
| RAN Template: 705A-V2 | A&L Template: 1DP_2xAIR_705A |
|---------------------------------|--|

| Sector 3 (Proposed) view from behind | | | | | |
|---|----------------------|----|----------------------|----|-------------------------|
| Coverage Type | A - Outdoor Macro | | | | |
| Antenna | 1 | | 2 | | 3 |
| Antenna Model | AIR21 B2A/B4P (Quad) | | AIR21 B4A/B2P (Quad) | | LNK-6515DS-A1M (Dual) |
| Azimuth | 300 | | 300 | | 300 |
| M. Tilt | | | | | |
| Height | 175 | | 175 | | 175 |
| Ports | P1 | P2 | P3 | P4 | P5 |
| Active Tech. | U1900 | | L2100 | | L700 |
| Dark Tech. | | | | | |
| Restricted Tech. | | | | | |
| Decomm. Tech. | | | | | |
| E. Tilt | 2 | | 2 | | 2 |
| Cables | | | | | 1-5/8" Coax 1-5/8" Coax |
| TMA's | | | | | |
| Diplexers / Combiners | | | | | |
| Radio | | | | | |
| Sector Equipment | | | | | |
| Unconnected Equipment: | | | | | |
| Scope of Work: | | | | | |
| Add L7 antenna on new mount. Re-use existing coax if swept clean and not aluminum otherwise replace 2 per sector. | | | | | |

| | | | | | |
|--|----------------------------|-------------------|----------------------------|-------------------|----------------------------|
| SITE NAME | BURLINGTON CT | | ECP - CELL # | 8 | 85 |
| LATITUDE | 41-46-00.57 N | | LONGITUDE | 72-57-41.44 W | |
| RRH and RET antenna upgrde, 700 4 port RRH will use both low band ports on the 700 and PCS antenna. Electrical tilt must be set the same for both low band ports. Overall antenna count remains the same | | | SAVE BUTTON | | |
| | | | STRUCTURE TYPE | MONOPOLE | |
| 700 Mhz - LTE CURRENT CONFIG | ALPHA | | BETA | | GAMMA |
| EQUIPMENT TYPE | eNodeB | | eNodeB | | eNodeB |
| ANTENNA TYPE | BXA-70063-6CF_2 | | BXA-70063-6CF_2 | | BXA-70063-6CF_2 |
| QTY OF ANTENNAS PER FACE | 1 | | 1 | | 1 |
| ORIENTATION (DEG) | 45 | | 135 | | 320 |
| DOWN TILT (MECH/DEG) | 0 | | 0 | | 2 |
| RAD CTR (FT AGL) | 160 | | 160 | | 160 |
| TMA - QTY / MODEL | | | | | |
| DIPLEXER - QTY / MODEL | | | | | |
| 700 Mhz - LTE Future Config | ALPHA | | BETA | | GAMMA |
| EQUIPMENT TYPE | eNodeB | | eNodeB | | eNodeB |
| ANTENNA TYPE | SBNHH-1D65B | | SBNHH-1D65B | | SBNHH-1D65B |
| QTY OF ANTENNAS PER FACE | 1 | | 1 | | 1 |
| ORIENTATION (DEG) | 45 | | 135 | | 320 |
| DOWN TILT (MECH/DEG) | 5 electrical | | 2 electrical | | 2 electrical |
| RAD CTR (FT AGL) | 160 | | 160 | | 160 |
| TMA - QTY / MODEL | | | | | |
| DIPLEXER - QTY / MODEL | | | | | |
| RRH - QTY/MODEL | 1 | ALU RH_2X60-700 U | 1 | ALU RH_2X60-700 U | 1 ALU RH_2X60-700 U |
| SECTOR DISTRIBUTION BOX | | | | | |
| MAIN DISTRIBUTION BOX | 1 | | DB-T1-6Z-8AB-0Z | | |
| 850 Cellular - Current Config | ALPHA | | BETA | | GAMMA |
| EQUIPMENT TYPE | #N/A | | #N/A | | #N/A |
| ANTENNA TYPE | APL866513 | | APL866513 | | APL866513 |
| QTY OF ANTENNAS PER FACE | 2 | | 2 | | 2 |
| ORIENTATION (DEG) | 45 | | 135 | | 330 |
| DOWN TILT (MECH/DEG) | 0 | | 0 | | 0 |
| RAD CTR (FT AGL) | 160 | | 160 | | 160 |
| TMA - QTY / MODEL | | | | | |
| DIPLEXER - QTY / MODEL | 2 | FD9R6004/2C-3L | 2 | FD9R6004/2C-3L | 2 FD9R6004/2C-3L |
| 850 Cellular - Future Config | ALPHA | | BETA | | GAMMA |
| EQUIPMENT TYPE | #N/A | | #N/A | | #N/A |
| ANTENNA TYPE | APL866513 | | APL866513 | | APL866513 |
| QTY OF ANTENNAS PER FACE | 2 | | 2 | | 2 |
| ORIENTATION (DEG) | 45 | | 135 | | 330 |
| DOWN TILT (MECH/DEG) | 0 | | 0 | | 0 |
| RAD CTR (FT AGL) | 160 | | 160 | | 160 |
| TMA - QTY / MODEL | | | | | |
| DIPLEXER - QTY / MODEL | 2 | FD9R6004/2C-3L | 2 | FD9R6004/2C-3L | 2 FD9R6004/2C-3L |
| DIPLEX WITH LTE CABLE | | | | | |
| 1900 PCS - Current Config | ALPHA | | BETA | | GAMMA |
| EQUIPMENT TYPE | PCS Modcell | | PCS Modcell | | PCS Modcell |
| ANTENNA TYPE | BXA-171063-8BF_2 | | BXA-171063-8BF_2 | | BXA-171063-8BF_2 |
| QTY OF ANTENNAS PER FACE | 1 | | 1 | | 1 |
| ORIENTATION (DEG) | 45 | | 135 | | 330 |
| DOWN TILT (MECH/DEG) | 0 | | 0 | | 0 |
| RAD CTR (FT AGL) | 160 | | 160 | | 160 |
| TMA - QTY / MODEL | | | | | |
| DIPLEXER - QTY / MODEL | DIPLEX WITH CELLULAR CABLE | | DIPLEX WITH CELLULAR CABLE | | DIPLEX WITH CELLULAR CABLE |
| 1900 PCS - Future Config | ALPHA | | BETA | | GAMMA |
| EQUIPMENT TYPE | PCS Modcell | | PCS Modcell | | PCS Modcell |
| ANTENNA TYPE | SBNHH-1D65B | | SBNHH-1D65B | | SBNHH-1D65B |
| QTY OF ANTENNAS PER FACE | 1 | | 1 | | 1 |
| ORIENTATION (DEG) | 45 | | 135 | | 330 |
| DOWN TILT (MECH/DEG) | 2 electrical | | 2 electrical | | 2 electrical |
| RAD CTR (FT AGL) | 160 | | 160 | | 160 |
| TMA - QTY / MODEL | | | | | |
| DIPLEX WITH CELLULAR CABLE | DIPLEX WITH CELLULAR CABLE | | DIPLEX WITH CELLULAR CABLE | | DIPLEX WITH CELLULAR CABLE |
| RRH - QTY/MODEL | 1 | ALU RH_2X90-PCS | 1 | ALU RH_2X90-PCS | 1 ALU RH_2X90-PCS |
| SECTOR DISTRIBUTION BOX | | | | | |
| MAIN DISTRIBUTION BOX | 1 | | DB-T1-6Z-8AB-0Z | | |

| 2100 AWS - Future Config | | ALPHA | | BETA | | GAMMA | | | | | |
|---------------------------------|-------|--------------------------|-----------------|-------------------------------|-----------------|---------------------|------------------|-----------------|-------|-------------|--------------------|
| EQUIPMENT TYPE | | PCS Modcell | | PCS Modcell | | PCS Modcell | | | | | |
| ANTENNA TYPE | | SBNHH-1D65B | | SBNHH-1D65B | | SBNHH-1D65B | | | | | |
| QTY OF ANTENNAS PER FACE | | same as 700 antenna | | same as 700 antenna | | same as 700 antenna | | | | | |
| ORIENTATION (DEG) | | 45 | | 135 | | 330 | | | | | |
| DOWN TILT (MECH/DEG) | | 2 electrical | | 2 electrical | | 2 electrical | | | | | |
| RAD CTR (FT AGL) | | 160 | | 160 | | 160 | | | | | |
| TMA - QTY / MODEL | | | | | | | | | | | |
| DIPLEX WITH CELLULAR CABLE | | | | | | | | | | | |
| RRH - QTY/MODEL | | 1 | ALU RH_2X90-AWS | 1 | ALU RH_2X90-AWS | 1 | ALU RH_2X90-AWS | | | | |
| SECTOR DISTRIBUTION BOX | | | | | | | | | | | |
| MAIN DISTRIBUTION BOX | | | | | | | | | | | |
| NUMBER OF CABLE'S NEEDED | | | | ESTIMATED CABLE LENGTH | | | | | | | |
| MAINLINE SIZE | | 1 5/8" | | TOTAL # OF MAINLINES | | 12 | | | | | |
| JUMPER SIZE | | 1/2 " | | TOTAL # OF TOP JUMPERS | | 18 | | | | | |
| Equipment Cable Ordering | | MAIN CABLE | | 12 | | + | | | | | |
| | | 0 | | TOP JUMPER # | | 12 | | | | | |
| | | | | | | + | | | | | |
| | | | | | | 6 | | | | | |
| TX / RX FREQUENCIES | | | | TX POWER OUTPUT | | | | | | | |
| Cellular A-Band | | PCS F / AWS-Band | | 700 Mhz C - B | | Cellular (Watts) | | | | | |
| TX - 869-880,890-891.5 MHz | | TX - 1970-1975 / 2145-21 | | TX - 746-757 | | 20 | | | | | |
| RX - 824-835,845-846.5 MHz | | RX - 1890-1895 / 1745-17 | | RX - 776-787 | | 16 | | | | | |
| | | | | | | 40 | | | | | |
| ALPHA | | | | BETA | | | | GAMMA | | | |
| Ant. | Freq. | Func. | Color Code | Ant. | Freq. | Func. | Color Code | Ant. | Freq. | Func. | Color Code |
| A1 | 800 | Tx1/Rx0 | RED | A7 | 800 | Tx2/Rx0 | BLUE | A13 | 800 | Tx3/Rx0 | GREEN |
| A2 | 1900 | Tx1/Rx0 | RED/WHITE | A8 | 1900 | Tx2/Rx0 | BLUE/WHITE | A14 | 1900 | Tx3/Rx0 | GREEN/WHITE |
| A3 | 700 | Tx1/Rx0 | RED/ORANGE | A9 | 700 | Tx2/Rx0 | BLUE/ORANGE | A15 | 700 | Tx3/Rx0 | GREEN/ORANGE |
| A4 | 700 | Tx4/Rx1 | RED/RED/ORANGE | A10 | 700 | Tx5/Rx1 | BLUE/BLUE/ORANGE | A16 | 700 | Tx6/Rx1 | GREEN/GREEN/ORANGE |
| A5 | 1900 | Tx4/Rx1 | RED/RED/WHITE | A11 | 1900 | Tx5/Rx1 | BLUE/BLUE/WHITE | A17 | 1900 | Tx6/Rx1 | GREEN/GREEN/WHITE |
| A6 | 800 | Tx4/Rx1 | RED/RED | A12 | 800 | Tx5/Rx1 | BLUE/BLUE | A18 | 800 | Tx6/Rx1 | GREEN/GREEN |
| RF ENGINEER | | | | RF MANAGER | | | | INITIALS | | DATE | |
| Prepared By: Mark Brauer | | | | Alex Restrepo | | | | MB | | 10/8/2015 | |



LNX-6515DS-VTM | LNX-6515DS-A1M

Single Band Antenna, 698–896 MHz, 65° horizontal beamwidth, RET compatible

- Excellent choice to maximize both coverage and capacity in suburban and rural applications
- Fully compatible with Andrew remote electrical tilt system for greater OpEx savings
- Exceptional horizontal pattern roll-off and strong front-to-back ratio
- Extended bandwidth allows one antenna to serve multiple frequency allocations
- Great solution to maximize network coverage and capacity
- The RF connectors are designed for IP67 rating and the radome for IP56 rating

Electrical Specifications

| Frequency Band, MHz | 698–806 | 806–896 |
|--------------------------------------|------------|------------|
| Gain, dBi | 16.7 | 17.6 |
| Beamwidth, Horizontal, degrees | 65 | 64 |
| Beamwidth, Vertical, degrees | 9.7 | 8.6 |
| Beam Tilt, degrees | 0–8 | 0–8 |
| USLS (First Lobe), dB | 17 | 17 |
| Front-to-Back Ratio at 180°, dB | 32 | 27 |
| CPR at Boresight, dB | 24 | 27 |
| CPR at Sector, dB | 15 | 13 |
| Isolation, dB | 30 | 30 |
| VSWR Return Loss, dB | 1.4 15.6 | 1.4 15.6 |
| PIM, 3rd Order, 2 x 20 W, dBc | -153 | -153 |
| Input Power per Port, maximum, watts | 400 | 400 |
| Polarization | ±45° | ±45° |
| Impedance | 50 ohm | 50 ohm |

Electrical Specifications, BASTA*

| Frequency Band, MHz | 698–806 | 806–896 |
|---|-----------|-----------|
| Gain by all Beam Tilts, average, dBi | 16.6 | 16.9 |
| Gain by all Beam Tilts Tolerance, dB | ±0.4 | ±0.3 |
| Gain by Beam Tilt, average, dBi | 0° 16.6 | 0° 17.0 |
| | 4° 16.6 | 4° 17.0 |
| | 8° 16.4 | 8° 16.8 |
| Beamwidth, Horizontal Tolerance, degrees | ±1 | ±0.9 |
| Beamwidth, Vertical Tolerance, degrees | ±0.6 | ±0.4 |
| USLS, beampeak to 20° above beampeak, dB | 18 | 18 |
| Front-to-Back Total Power at 180° ± 30°, dB | 25 | 23 |
| CPR at Boresight, dB | 24 | 27 |
| CPR at Sector, dB | 15 | 13 |

* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, [download the whitepaper Time to Raise the Bar on BSAs.](#)

General Specifications

| | |
|--------------------------|---------------|
| Antenna Type | Sector |
| Band | Single band |
| Brand | DualPol® |
| Operating Frequency Band | 698 – 896 MHz |

INX-6515DS-VTM | INX-6515DS-A1M

Performance Note

Outdoor usage

Mechanical Specifications

| | |
|------------------------------|---|
| Color | Light gray |
| Lightning Protection | dc Ground |
| Radiator Material | Aluminum |
| Radome Material | Fiberglass, UV resistant |
| RF Connector Interface | 7-16 DIN Female |
| RF Connector Location | Bottom |
| RF Connector Quantity, total | 2 |
| Wind Loading, frontal | 878.0 N @ 150 km/h 197.4 lbf @ 150 km/h |
| Wind Loading, lateral | 273.0 N @ 150 km/h 61.4 lbf @ 150 km/h |
| Wind Loading, rear | 1033.0 N @ 150 km/h 232.2 lbf @ 150 km/h |
| Wind Speed, maximum | 241 km/h 150 mph |

Dimensions

| | |
|----------------------------------|---------------------|
| Depth | 180.5 mm 7.1 in |
| Length | 2453.0 mm 96.6 in |
| Width | 301.0 mm 11.9 in |
| Net Weight, without mounting kit | 19.8 kg 43.7 lb |

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 2.0 Actuator LNX-6515DS-A1M

Packed Dimensions

| | |
|-----------------|----------------------|
| Depth | 295.0 mm 11.6 in |
| Length | 2718.0 mm 107.0 in |
| Width | 392.0 mm 15.4 in |
| Shipping Weight | 36.9 kg 81.4 lb |

Regulatory Compliance/Certifications

Agency

RoHS 2011/65/EU
China RoHS SJ/T 11364-2006
ISO 9001:2008

Classification

Compliant by Exemption
Above Maximum Concentration Value (MCV)
Designed, manufactured and/or distributed under this quality management system



Included Products

DB380-3 — Pipe Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Used for wide panel antennas. Includes

Product Specifications

LNx-6515DS-VTM | LNx-6515DS-A1M

three clamp sets.

DB5083D — Downtilt Mounting Kit for 2.4"-4.5" (60-115 mm) OD round members. Consists of two DB5083 heavy-duty, galvanized steel downtilt mounting brackets. This kit is compatible with the DB380-3 pipe mount for panel antennas with three mounting points.

* Footnotes

Performance Note Severe environmental conditions may degrade optimum performance