COHEN and WOLF P.C.
ATTORNEYS AT LAW

JULIE D. KOHLER

PLEASE REPLY TO: Bridgeport
WRITER'S DIRECT DIAL: (203) 337-4157
E-Mail Address: jkohler@cohenandwolf.com

April 25, 2014

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

Re: Notice of Exempt Modification
Connecticut State Police/T-Mobile co-location
Site ID CT11040D
46 Fenwood Lane, Wilton

Dear Attorney Bachman:

This office represents T-Mobile Northeast LLC ("T-Mobile") and has been retained to file exempt modification filings with the Connecticut Siting Council on its behalf.

In this case, the Connecticut State Police ("State Police") owns the 180 foot self supported lattice tower and related facility at 46 Fenwood Lane, Wilton, Connecticut (latitude 41.172511 / longitude -73.433914). T-Mobile intends to replace six antennas and related equipment at this existing telecommunications facility in Wilton ("Wilton Facility"). Please accept this letter as notification, pursuant to R.C.S.A. § 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the First Selectman William F. Brennan, and the property owner, the State of Connecticut.

The existing Wilton Facility consists of a 180 foot self supported lattice tower.[1] The Facility currently supports the equipment of T-Mobile at a centerline of 122 feet.

T-Mobile plans to replace three antennas and six TMAs (tower mounted amplifiers) and replace them with six antennas, six TMAs and 3 new antenna mounts at an elevation of 122 feet. (See the plans revised to April 21, 2014 attached hereto as Exhibit A). T-Mobile will also install an equipment cabinet, install fiber and coax cable and reuse existing coax cable. The existing Facility is structurally capable of supporting T-Mobile's proposed modifications, as

[1] The online Connecticut Siting Council database indicates that this Facility was approved in Docket 128. The Decision and Order dated April 30, 1990 provides that the tower, including appurtenances shall be no taller than 193 feet. T-Mobile's equipment is located at a height of 122 feet and is therefore in compliance.

indicated in the structural analysis dated April, 2014 and attached hereto as Exhibit B.[2]

The planned modifications to the Wilton Facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modification will not increase the height of the tower. T-Mobile's replacement antennas will be installed at the 122 foot level. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

2. The installation of the T-Mobile equipment in the existing compound, as reflected on the attached site plan, will not require an extension of the site boundaries. T-Mobile's proposed equipment will be located entirely within the existing compound and concrete pad as shown on Sheet A-1 of Exhibit A.

3. The proposed modification to the Facility will not increase the noise levels at the existing facility by six decibels or more.

4. The operation of the replacement antennas will not increase the total radio frequency (RF) power density, measured at the base of the tower, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated April 24, 2014 T-Mobile's operations would add 0.775% of the FCC Standard. Therefore, the calculated "worst case" power density for the planned combined operation at the site including all of the proposed antennas would be 86.185% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit C.

For the foregoing reasons, T-Mobile respectfully submits that the proposed replacement antennas and equipment at the Wilton Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

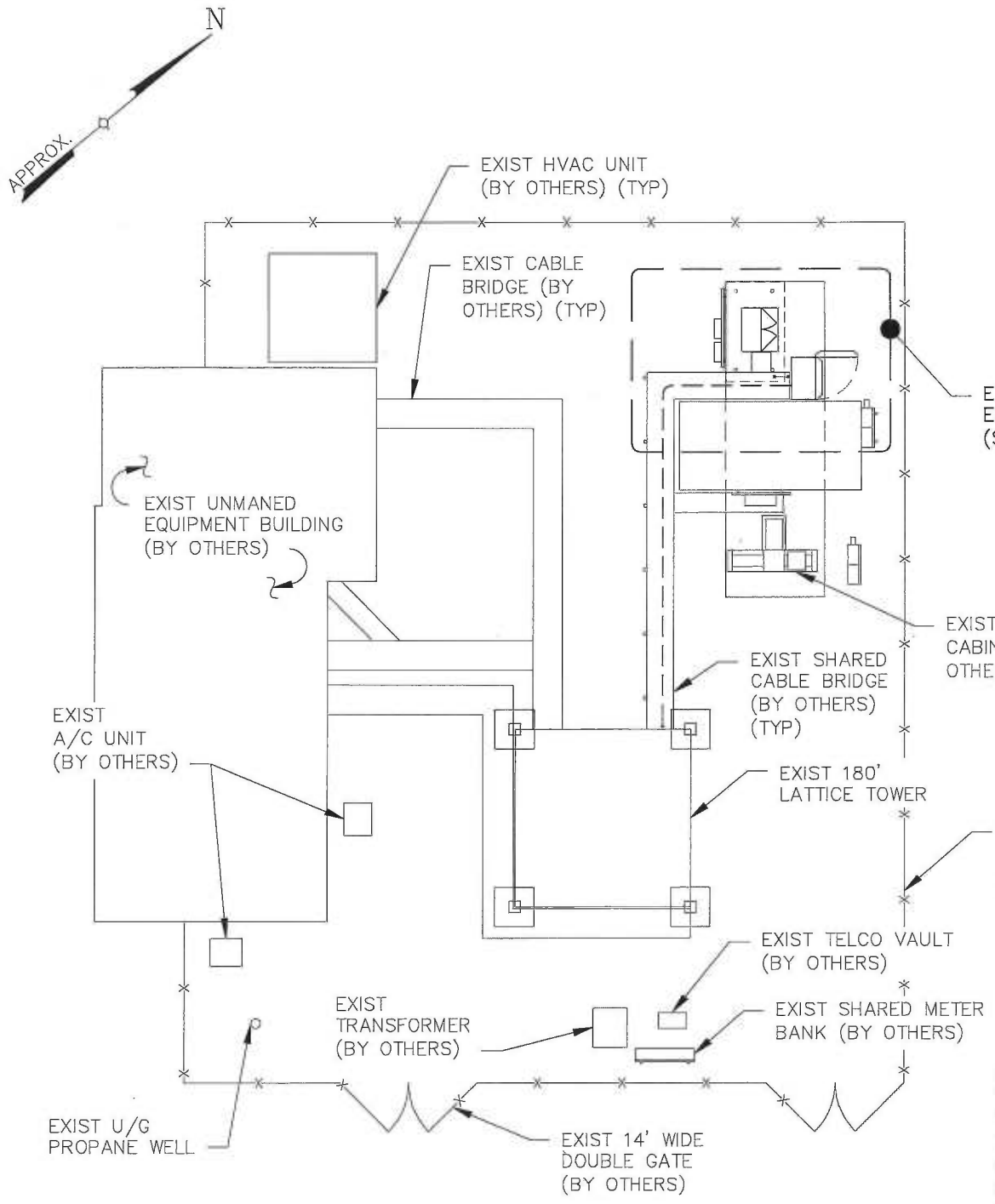
Sincerely,

Julie D. Kohler, Esq.

cc: Town of Wilton, First Selectman William F. Brennan
Connecticut State Police
State of Connecticut
Halene Fujimoto, HPC

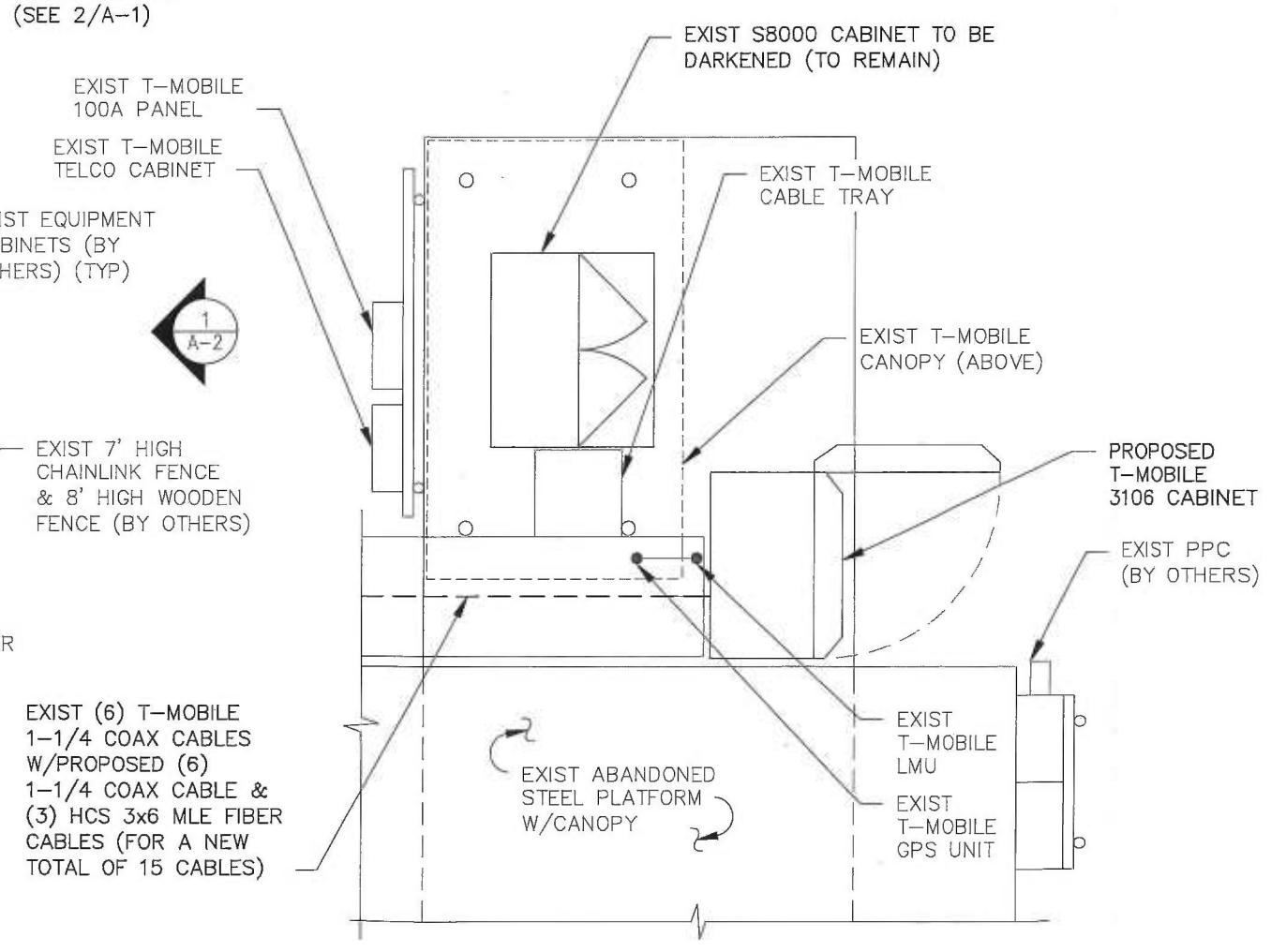
[2] Modifications to the structure are necessary for the Facility to support T-Mobile's proposed equipment modifications. Those structural modifications will be implemented as set forth in SK-1 and SK-2 of the Structural Analysis, prior to the installation of new equipment.

EXHIBIT A



1 / A-1 SITE PLAN

SCALE: 1/16" = 1'-0"



2 / A-1 EQUIPMENT PLAN

SCALE: 1/4" = 1'-0"

HCS LENGTH			
FROM EQUIPMENT CABINET TO ANTENNAS			
SECTOR	ALPHA	BETA	GAMMA
LENGTH	190'	190'	190'
SIZE	1"	1"	1"
3x6 MLE (FIBER)			

NOTES:
1. CONTRACTOR SHALL FIELD VERIFY THE ADEQUACY TO ROUTE THE HCS 3x6 MLE (FIBER) CABLES ALONG THE EXISTING COAX ROUTE PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO MATCH ANTENNA AZIMUTHS AND DOWNTILTS TO EXISTING CONDITION AND NOTIFY RF ENGINEER FOR ANY DISCREPANCY.
3. CONTRACTOR TO RE-VERIFY CABLE LENGTHS PRIOR TO CONSTRUCTION.
4. CONTRACTOR SHALL FIELD VERIFY EXISTING ANTENNA MOUNT CONDITIONS, AND TIGHTEN ALL LOOSE ASSOCIATED HARDWARE IF REQUIRED.
5. LOCK & TAG BREAKERS FOR ALL EQUIPMENT BEING TURNED OFF (WHEN APPLICABLE).

CONFIGURATION

2C

REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • ENGINEERING • SURVEYING • CONSTRUCTION MANAGEMENT
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
Fax: (845) 567-8703

T-Mobile
NORTHEAST LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

APPROVALS
T-MOBILE
LANDLORD
RF
CONSTRUCTION

PROJECT NUMBER	DESIGNED BY
6644.CT11040D	JQ

REV	DATE	REVISION	DRAWN BY
0	04/21/14	FOR COMMENT	AS

ISSUED BY | DATE

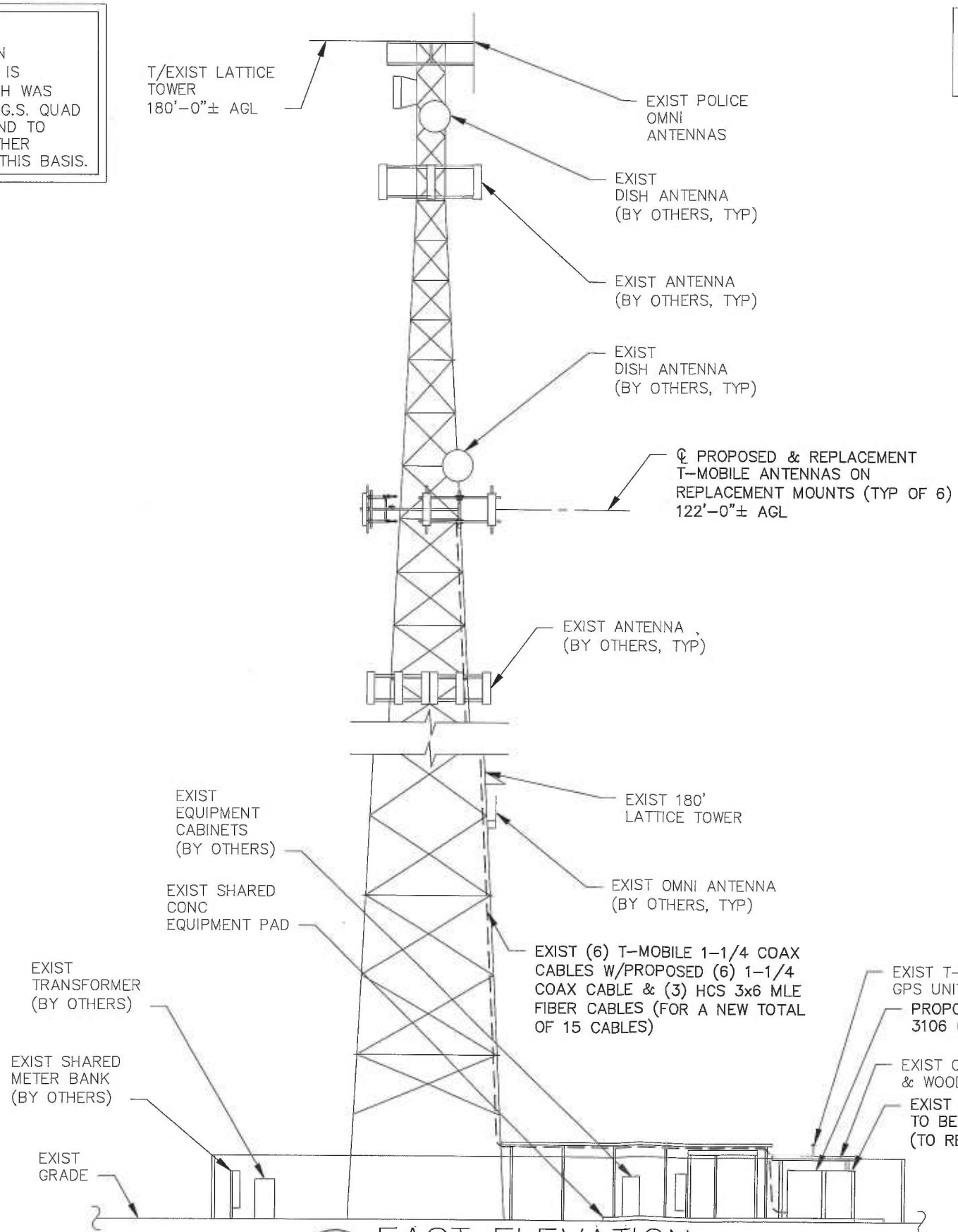
SITE INFORMATION
CT11040D
WILTON/ STATE POLICE
46 FENWOOD LANE
WILTON CT 06897

SHEET TITLE
SITE PLAN & EQUIPMENT PLAN

SHEET NUMBER
A-1

ELEVATION NOTE:

ELEVATION OF EXIST LATTICE TOWER HAS BEEN ARBITRARILY ASSIGNED AS EL 523'-0"±. THIS IS APPROXIMATELY 180'-0"± ABOVE GRADE WHICH WAS ESTIMATED AS EL 343'-0"± TAKEN FROM U.S.G.S. QUAD MAP, AND DOES NOT NECESSARILY CORRESPOND TO ACTUAL ELEVATION ABOVE SEA LEVEL. ALL OTHER ELEVATIONS INDICATED WERE DETERMINED ON THIS BASIS.



1 / A-2 EAST ELEVATION

SCALE: 1/16" = 1'-0"

NOTE:

REFER TO STRUCTURAL ANALYSIS AND MODIFICATION DESIGN BY URS CORPORATION DATED 04/11/14.

CONFIGURATION

2C

REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC

- PLANNING
- ENGINEERING
- SURVEYING
- CONSTRUCTION MANAGEMENT

TECTONIC Engineering & Surveying Consultants P.C.

1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
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T-Mobile

NORTHEAST LLC.

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

APPROVALS

T-MOBILE _____
LANDLORD _____
RF _____
CONSTRUCTION _____

PROJECT NUMBER	DESIGNED BY
6644.CT11040D	JQ

REV	DATE	REVISION	DRAWN BY
0	04/21/14	FOR COMMENT	AS

ISSUED BY | DATE

SITE INFORMATION

CT11040D
WILTON/ STATE POLICE
46 FENWOOD LANE
WILTON CT 06897

SHEET TITLE

ELEVATION

SHEET NUMBER

A-2

EXHIBIT B

DETAILED STRUCTURAL ANALYSIS AND REINFORCEMENT OF AN EXISTING 180' SELF-SUPPORTING LATTICE TOWER FOR NEW ANTENNA ARRANGEMENT

T-Mobile Site #: CT11040D
Site Name: Connecticut State Police Tower #31
Address: 46 Fenwood Lane
Wilton, Connecticut

prepared for

T-Mobile

HPC Wireless Services
22 Shelter Rock Lane
Building C
Danbury, CT 06810

prepared by

URS

URS CORPORATION
500 ENTERPRISE DRIVE, SUITE 3B
ROCKY HILL, CT 06067
TEL. 860-529-8882

36928678.00000
HPC-070 Rev. 1

April 11, 2014

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis and evaluation of the 180' self-supporting lattice tower located at 46 Fenwood Lane in Wilton, Connecticut. The analysis was conducted in accordance with the 2005 Connecticut State Building Code, the TIA/EIA-222-F standard and additional requirements of the Connecticut State Police for wind velocity of 90 mph concurrent with ½" ice design wind load. The antenna loading considered in the analysis consists of all existing and proposed antennas, transmission lines, and ancillary items as outlined in the Introduction Section of this report. The proposed T-Mobile installation is as follows:

Antenna and Mount	Carrier	Antenna Center Elevation
Remove: (3) EMS RR65-18-04DP Antennas (6) (GSM) TMA Units (3) Existing Mounts **Install:** (3) Ericsson AIR21 B2A|B4P Panel Antennas (3) Ericsson AIR21 B4A/B2P Panel Antennas (3) (UMTS) TMA Units (3) (LTE) TMA Units (6) 1 1/4" Coaxial Cables (2) Fiber Optic Cables (3) Antenna Mounts	**T-Mobile (Proposed)**	**@ 122'**

The results of an initial analysis indicated the tower foundation did not have sufficient capacity to support the proposed loadings without modification. The required modifications are shown in SK-1 and SK-2. **Once the modifications are performed, the tower, anchor bolts, and foundation are considered structurally adequate with the wind loading classification specified above and all the existing and proposed antenna loading. No installation of new antennas or equipment shall occur until the modifications have been completed.**

The tower deflection (sway) is 0.707 degrees, and the tower rotation (twist) is 0.04 degrees with a wind velocity of 90 mph concurrent with 0.5" ice. **The tower deflection and rotation are within the Connecticut State Police specification of 0.75 degrees for combined deflection (sway) and rotation (twist).**

1. EXECUTIVE SUMMARY - *continued*

This analysis is based on:

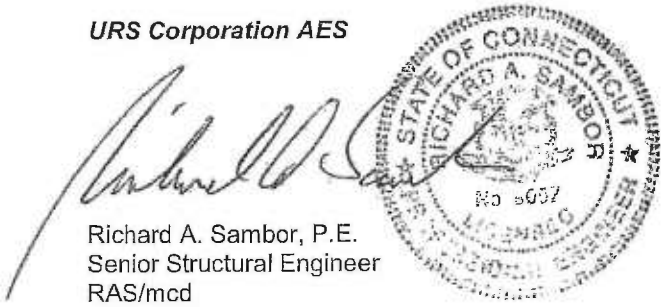
1) The tower structure's theoretical capacity not including any assessment of the condition of the tower.
2) Tower geometry and structural member sizes utilized in the preparation of this report obtained from the manufacturers original design documents prepared by Bayar and Associates dated July 1990.
3) Previous structural analysis and reinforcement design performed by URS Corporation, project number CTK-006 (Rev 1), signed and sealed August 7, 2012.
4) Previous structural analysis performed by URS Corporation, project number HPC-050, signed and sealed September 13, 2012.
5) T-Mobile Radio Frequency Data Sheet dated January 13, 2014.
6) Antenna inventory provided by the Connecticut State Police via email on February 8, 2014.
7) Antenna and mount configuration as specified on the following page of this report.

This report is only valid as per the assumptions and data utilized in this report for antenna inventory, mounts and associated cables. The user of this report shall field verify the assumption of the antenna and mount configuration. Notify the engineer in writing immediately if any of the information in this report is found to be other than specified.

If you should have any questions, please call.

Sincerely,

URS Corporation AES



Richard A. Sambor, P.E.
Senior Structural Engineer
RAS/mcd

2. INTRODUCTION

The subject tower is located at 46 Fenwood Lane in Wilton, Connecticut. The structure is a 180' four sided self-supporting lattice tower designed by Bayar and Associates.

The inventory is summarized in the table below:

Antenna Type	*Carrier*	*Mount*	*Mount Elevation*	*Cable*
(3) 6' Dishes (Wind Load)	CSP 69 to 71 (reserved)	Leg Mounted	180'	N/A
(2) Scala OGT9-806 (2) TX/RX 101-83B-09 (1) 7' Omni	CSP 1 to 4,6 (existing)	(3) 4' Stand-Off	180'	(4) 1-5/8" (1) 7/8"
(1) 10' Dipole (1) TX/RX TMA	CSP 7 & 67 (existing)	Pipe Mounted	180'	(1) 7/8" (1) 1/2"
(1) 6' Dishes	CSP – 59 (existing)	(1) Pipe Mounts	180'	(1) WEP65
(2) 6' Dishes	CSP 5 & 36 (existing)	(2) Pipe Mounts	176'	(2) WEP65
(1) 8-Bay Dipole	FCP – 12 (existing)	6' Standoff	170'	(1) 7/8"
(1) 5' Omni	CSP – 10 (existing)	6' Standoff	170'	(1) 7/8"
(1) 3' Omni	CAP – 25 (existing)	Leg Mounted	169'	(1) 7/8"
(6) Powerwave 7770 (6) LGP21401 TMAs	AT&T (existing)	(3) T-Frames	163'	(12) 1-5/8"
(3) Powerwave P-65-16-XLH-RR (6) Ericsson RRU (12) LGP21901 Diplexers (3) Powerwave TT19-08BP111-001 TMAs (1) RAYCAP Surge Protector	AT&T (existing)	Shared with Above	163'	(1) 3" Flex Conduit with Fiber & DC Cables
(3) TX/RX 101-83B-08-T5 (1) TX/RX TMA	CSP 63 to 66 (existing)	Leg Mounted	160'	(3) 1-5/8" (1) 1/2"
(1) DB636	NEU – 57 (existing)	4' Standoff	150'	(1) 7/8"
(1) 3' Yagi	WTR – 28 (existing)	6' Standoff	145'	(1) 7/8"
(1) 6' Dish	CSP – 35 (existing)	Pipe Mounted	130'	(1) WEP65
(3) Ericsson AIR21 B2A|B4P Panel Antennas (3) Ericsson AIR21 B4A/B2P Panel Antennas (3) (UMTS) TMA Units (3) (LTE) TMA Units	**T-Mobile (Proposed)**	**(3) Antenna Mounts**	**122'**	(6) 1 1/4" **(6) 1-1/4" (2) Fiber Optic Cables**
(2) DB586-Y (one inverted and one upright)	NEU 30 & 31 (existing)	6' Standoff	120'	(2) 7/8"

Antenna Type	Carrier	Mount	Mount Elevation	Cable
(1) Celwave PD-128 (1) 17' Omni	WPD 33 & 55 (existing)	6' Standoff	120'	(2) 7/8"
(1) Celwave PD-128	CSP – 8 (existing)	Leg Mounted	120'	(1) 7/8"
(1) ASP-711	WTR – 29 (existing)	Leg Mounted	116'	(1) 7/8"
(1) Decibel DB-222	DHS – 9 (existing)	Leg Mounted	112'	(1) 7/8"
(3) APXVSPP18-C (6) ALU RRH	Sprint (existing)	(3) 10' Frame (existing)	106'	(3) RFS Hybriflex Cables
(1) BCD806-09NE	CSP – 62 (existing)	Leg Mounted	101'	(1) 1-5/8"
(1) 4' Grid Dish	CSP – 11 (existing)	Pipe Mounted	100'	(1) 7/8"
(1) 15' Omni	DEA – 32 (existing)	4' Standoff	100'	(1) 7/8"
(1) 20' 4-Bay Dipole	USS – 26 (existing)	3' Standoff	85'	(1) 7/8"
(1) Ice Shield for 6' Grid Dish Below	CSP (existing)	4' Standoff	80'	N/A
(1) 6' Grid Dish	CSP – 13 (existing)	Pipe Mounted	75'	(1) 1/2"
(1) GPS	Sprint (existing)	3' Standoff	56'	(1) 1/2"
(1) DB-803 Omni	CSP – 68 (existing)	3' Stand-Off	47'	(1) 1/2"

This structural analysis of the communications tower was performed by URS Corporation, AES (URS) for T-Mobile. The purpose of this analysis was to analyze the existing tower for its existing and proposed antenna loads. This analysis was conducted to evaluate rotation (twist), deflection (sway) and stress on the tower, and the effect of forces to the foundation of the tower resulting from existing and proposed antenna arrangements.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS

The structural analysis was done in accordance with the 2005 Connecticut State Building Code, TIA/EIA-222-F - Structural Standard for Steel Antenna Towers and Antenna Supporting Structures, and the American Institute of Steel Construction (AISC) Manual of Steel Construction - Allowable Stress Design (ASD).

The analysis was conducted using TNX Tower 6.0.0.8. Two load conditions were evaluated as shown below which were compared to allowable stresses according to AISC and TIA/EIA.

Load Condition 1 = 90 mph (fastest mile) Wind Load + Tower Dead Load
Load Condition 2 = 90 mph (fastest mile) Wind Load (with ice) + Ice Load + Tower Dead Load

The TIA/EIA standard permits a one-third increase in allowable stresses for towers and monopoles less than 700 feet tall. For the purposes of this analysis, in computing the load capacity the allowable stresses of the tower members were increased by one-third.

4. FINDINGS AND EVALUATION

The combined axial and bending stresses on the tower structure were evaluated to compare with the allowable stress in accordance with AISC. The results of an initial analysis indicated that the tower foundation required modification. The required modifications are shown in SK-1 and SK-2 located in Section 6 of this report. This analysis indicated that once these modifications are performed, the tower, anchor bolts and foundation are considered structurally adequate with the wind load classification specified above and the proposed antenna loading. The table below summarizes the critical members for each tower component.

The tower deflection and rotation are within the Connecticut State Police specification of 0.75 degrees for deflection (sway) and rotation (twist).

Tower Base Reactions:

Description	Current
Pier Compression (kips)	449
Pier Uplift (kips)	400
Overall Overturning (kip-ft)	10658
Overall Shear (kips)	98
Shear per Leg (kips)	42

Controlling Tower Component Stress vs. Capacity Summary:

Component / (Section No.)	Critical Component Size	Controlling Elevation	Stress (% capacity)	Pass/Fail
Leg (T19)	L8x8x1 1/8"	0' – 10'	98.2	Pass
Diagonal (T12)	L3 1/2X3X1/4	80'-90'	83.4	Pass
Horizontal (T19)	2L2 1/2x2 1/2x1/4	0'-10'	53.0	Pass
Secondary Horizontal (T18)	L3 1/2x3 1/2x1/4	10'-20'	86.0	Pass
Top Girt (T3)	L2x2x3/16	159.049'-163.573'	12.9	Pass
Redund Horz 1 Bracing (T19)	L2 1/2x2 1/2x3/16	0'-10'	43.9	Pass
Redund Diag 1 Bracing (T19)	L2 1/2x2 1/2x3/16	0'-10'	72.4	Pass
Redund Hip 1 Bracing (T19)	L2 1/2x2 1/2x3/16	0'-10'	0.3	Pass
Redund Sub Horz Bracing (T19)	L3x3x5/16	0'-10'	67.6	Pass
Inner Bracing (T19)	2L2x2 1/2x3/16	0'-10'	3.5	Pass
Anchor Bolts	(4) 2-1/2" dia. A36 bolts	N/A	87	Pass

Foundation Summary:

Component	Required / Allowable	Computed	% Capacity	Pass/Fail
Overturning Moment Factor of Safety	2.0 min	2.32	86.2	Pass
Foundation Bearing Pressure	3.4 ksf max	2.4441 ksf	71.9	Pass

Tower Twist & Sway at Top:

Description	Current	Total Allowable
Tower Twist (degrees)	0.0361	---
Tower Sway (degrees)	0.7073	
Total Deflection (degrees)	0.7434	0.75

5. CONCLUSIONS

The results of an initial analysis indicated the tower foundation did not have sufficient capacity to support the proposed loadings without modification. The required modifications are shown in SK-1 and SK-2. **Once the modifications are performed, the tower, anchor bolts, and foundation are considered structurally adequate with the wind loading classification specified above and all the existing and proposed antenna loading. No installation of new antennas or equipment shall occur until the modifications have been completed.**

The tower deflection (sway) is 0.707 degrees, and the tower rotation (twist) is 0.04 degrees with a wind velocity of 90 mph concurrent with 0.5" ice. **The tower deflection and rotation are within the Connecticut State Police specification of 0.75 degrees for combined deflection (sway) and rotation (twist).**

Limitations/Assumptions:

This report is based on the following:

1. Tower inventory as listed in this report.
2. Tower is properly installed and maintained.
3. All members are as specified in the original design documents and are in good condition.
4. All required members are in place and all previous modifications have been performed.
5. All bolts are in place and are properly tightened.
6. Tower is in plumb condition.
7. All member protective coatings are in good condition.
8. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
9. Foundations were properly constructed to support original design loads as specified in the original design documents.

URS is not responsible for any modifications completed prior to or hereafter in which URS is not or was not directly involved. Modifications include but are not limited to:

A. Adding antennas
B. Removing/replacing antennas
C. Adding coaxial cables

URS hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon information contained and set forth herein. If you are aware of any information which conflicts with that which is contained herein, or you are aware of any defects arising from original design, material, fabrication, or erection deficiencies, you should disregard this report and immediately contact URS. URS disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

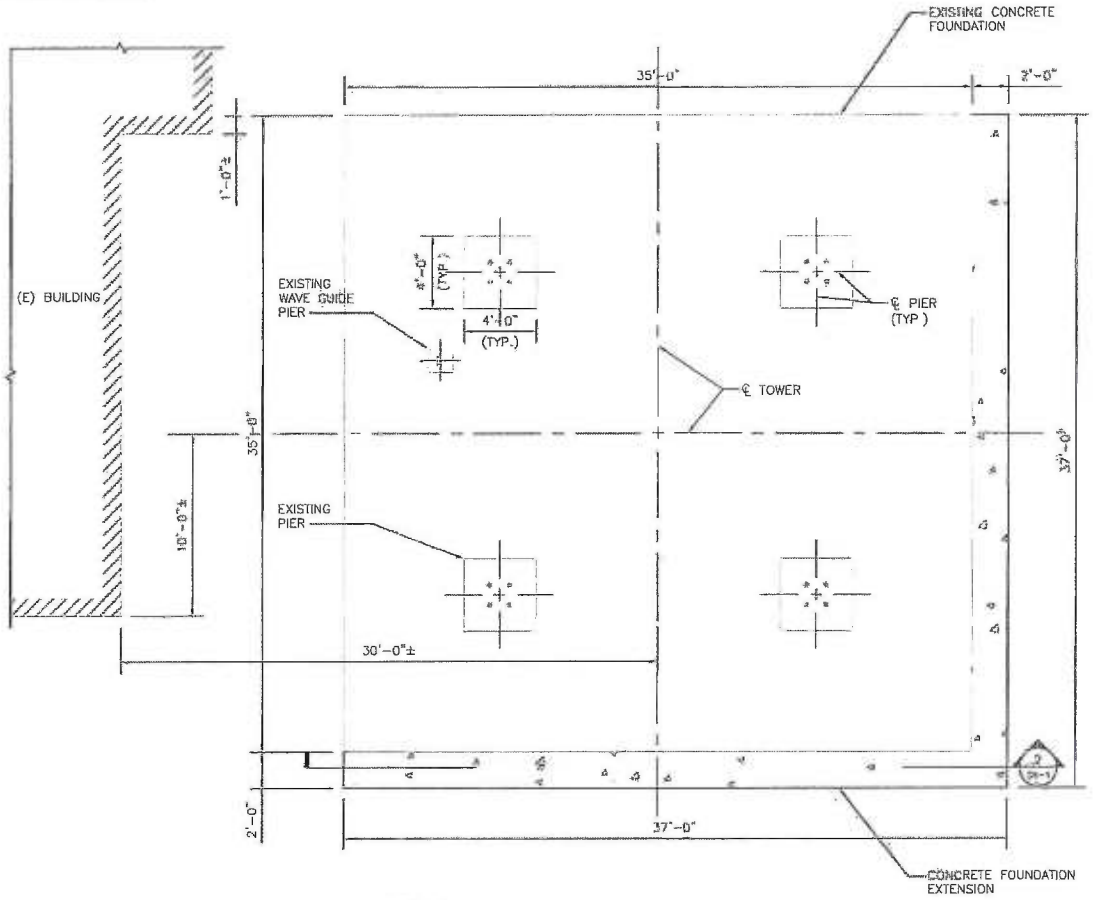
After the Contractor has successfully completed the installation and the work has been accepted, the owner will be responsible for the ongoing and periodic inspection and maintenance of the tower.

The owner shall refer to TIA/EIA-222-F for recommendations for maintenance and inspection. The frequency of the inspection and maintenance intervals is to be determined by the owner based upon actual site and environmental conditions. It is recommended that a complete and thorough inspection of the entire tower structural system be performed at least yearly and more frequently as conditions warrant. According to TIA/EIA-222-F section 14.1, Note 1: It is recommended that the structure be inspected after severe wind and/or ice storms or other extreme loading condition.

6.) DRAWINGS AND DATA

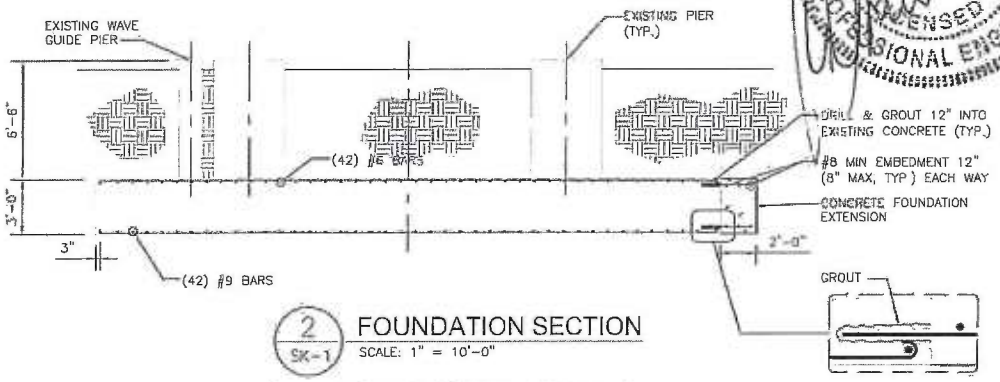
TOWER REINFORCEMENT DRAWINTS (SK-1 & SK-2)

NOTE:
SEE SHEET SK-2 FOR STRUCTURAL AND FOUNDATION NOTES.



1 SK-1 FOUNDATION PLAN
SCALE: 1" = 10'-0"

0 5 10 20



2 SK-1 FOUNDATION SECTION
SCALE: 1" = 10'-0"

0 5 10 20

STATE OF CONNECTICUT
RICHARD A. SAMBOR
No. 19537
LICENSED PROFESSIONAL ENGINEER

SITE ID NO: 36928685
Designed by: MD
Drawn by: PD
Checked by: ICA
Approved by:

URS CORPORATION AES
500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT
860-529-6882

T-Mobile

SITE ADDRESS:
180' State Police Tower #31
CT11040D 46 Fenwood Lane
WILTON, CONNECTICUT 06897

REV.	DATE:	DESCRIPTION

Scale: AS NOTED | Date: 04/11/14
Job No.HPC 072 | File No. SK-1 | Dwg. 1 of 2

Dwg. No. SK-1

GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL COMPLY WITH THE CONNECTICUT STATE BUILDING AND LIFE SAFETY CODES, SUPPLEMENTS AND AMENDMENTS.
2. CONTRACTOR IS TO REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUB-CONTRACTORS AND ALL RELATED PARTIES. THE SUB-CONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON DRAWINGS OR WRITTEN IN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. SUB-CONTRACTORS SHALL PAY FOR THEIR PERMITS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND ENSURE THE DISTRIBUTION OF NEW DRAWINGS TO SUB-CONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. CONTRACTOR SHALL FURNISH 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. INSTALLATION OF THIS WIRELESS COMMUNICATIONS EQUIPMENT SITE REQUIRES WORK IN THE IMMEDIATE VICINITY OF EXISTING TELECOMMUNICATION SYSTEMS, THE CONTRACTOR SHALL PROVIDE AND COORDINATE THE METHODS OF PROTECTION WITH THE VARIOUS TELECOMMUNICATION CARRIERS.
8. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER MFR'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR ARCHITECT.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
10. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ARCHITECT FOR REVIEW. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTAL TO THE ARCHITECT FOR REVIEW.
11. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA. SUBMIT TO THE ARCHITECT ANY DISCREPANCIES FROM THE DRAWINGS.
12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING BUILDING AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
13. COORDINATE ALL CIVIL AND ELECTRICAL DRAWINGS FOR THE LOCATION OF ALL OPENINGS, RECESSES, BUILT-IN WORK, ETC.
14. CONTRACTOR TO CONTACT "CALL BEFORE YOU DIG" AT 1-800-922-4455 TO VERIFY AND IDENTIFY THE EXACT LOCATIONS OF ALL UNDERGROUND UTILITIES AND OBSTRUCTIONS IDENTIFIED PRIOR TO COMMENCING WORK IN THE CONTRACT AREA.
15. CONTRACTOR SHALL COMPLY WITH OWNER ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
16. EXISTING DIMENSIONS OF STRUCTURE SHOWN ON THESE DOCUMENTS ARE NOT GUARANTEED, CONTRACTOR SHALL TAKE FIELD DIMENSIONS AS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FILED MEASUREMENTS ARE SUBMITTED FOR REVIEW, DIMENSIONS ARE PROVIDED FOR THE ENGINEER'S REVERENCE ONLY.
17. CONTRACTOR TO VERIFY REQUIRED CLEARANCES INCLUDING BUT NOT LIMITED TO EXISTING BUILDINGS, EQUIPMENT PADS AND SHELTERS PRIOR TO COMMENCING WORK.
18. THE OMISSION OF ANY MATERIAL THAT WAS SHOWN ON THE CONTRACT DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF PROVIDING THE SAME.
19. STRUCTURE IS DESIGNED TO BE LEVEL AND PLUMB, SELF-SUPPORTING AND STABLE AFTER WORK IS COMPLETED.
20. COMMENCEMENT OF FOUNDATION WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
21. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE AWARE OF WEATHER AND WIND CONDITIONS AND NOT PERFORM FOUNDATION REINFORCEMENT IN A WIND.

STRUCTURAL NOTES

1. SOIL BEARING CAPACITY OF 3,400 PSF USED FOR FOUNDATION DESIGN. GENERAL CONTRACTOR RESPONSIBLE FOR VERIFYING BEARING CAPACITIES.
2. ALL SURFACES MUST BE FREE OF STANDING WATER PRIOR TO PLACING.
3. COMPACTED GRAVEL FILL PER CONNECTICUT DOT STANDARD SPEC. SECTION M.02.01 AND ASTM D1557.
4. CONTACT THE ENGINEER IF GROUND WATER IS IN ENCOUNTERED AND DEWATERING IS REQUIRED.
5. EXCAVATED SOIL SHALL BE PLACED IN 8" LOOSE DEPTH LAYERS AND COMPACTED TO AT LEAST 95% OF THE MAXIMUM DENSITY OBTAINED IN THE STANDARD COMPACTION TEST. BACKFILL MATERIAL SHALL BE FREE OF ORGANIC MATERIAL.

CONCRETE

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318 AND THE SPECIFICATION CAST-IN-PLACE CONCRETE.
2. CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI IN 28 DAYS AND SHALL CONTAIN 5%-7% AIR ENTRAINMENT.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

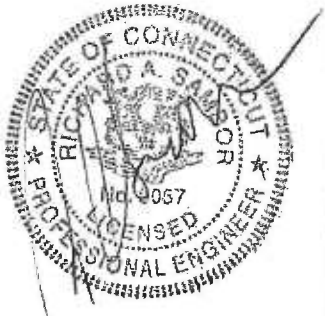
   CONCRETE CAST AGAINST EARTH.....3 IN.

   CONCRETE EXPOSED TO EARTH OR WEATHER:

   #6 AND LARGER.....2 IN.
   #5 AND SMALLER & WWF.....1 1/2 IN.

   CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:

   SLAB AND WALL.....3/4 IN.
   BEAMS AND COLUMNS.....1 1/2 IN
5. A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
6. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS, NO REBAR SHALL BE CUT WITHOUT PRIOR ENGINEERING APPROVAL WHEN DRILLING
7. COLD WEATHER CONCRETE PLACING SHALL BE IN ACCORDANCE WITH ACI-306.
8. NO FOOTING SHALL BE PLACED ON FROZEN GROUND, UNCURED CONCRETE SHALL BE PROTECTED AGAINST FROST.
9. APPLY NON-SLIP BROOM FINISH IMMEDIATELY AFTER TROWEL FINISHING.
10. CONCRETE FOR FOUNDATION EXTENSION SHALL BE PORTLAND CEMENT TYPE I OR TYPE II; 28 DAY COMPRESSIVE STRENGTH F'c = 3,000 PSI. PLAIN CONCRETE. PLACE IN ACCORDANCE WITH ACI MANUAL OF CONCRETE PRACTICE.
11. GROUT SHALL CONFORM TO THE REQUIREMENTS OF ASTM C1107, GRADE B



SITE ID NO: 36928685
Designed by: MD
Drawn by: PB
Checked by: ICA
Approved by:

URS CORPORATION AES
500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT
860-529-8882

T-Mobile

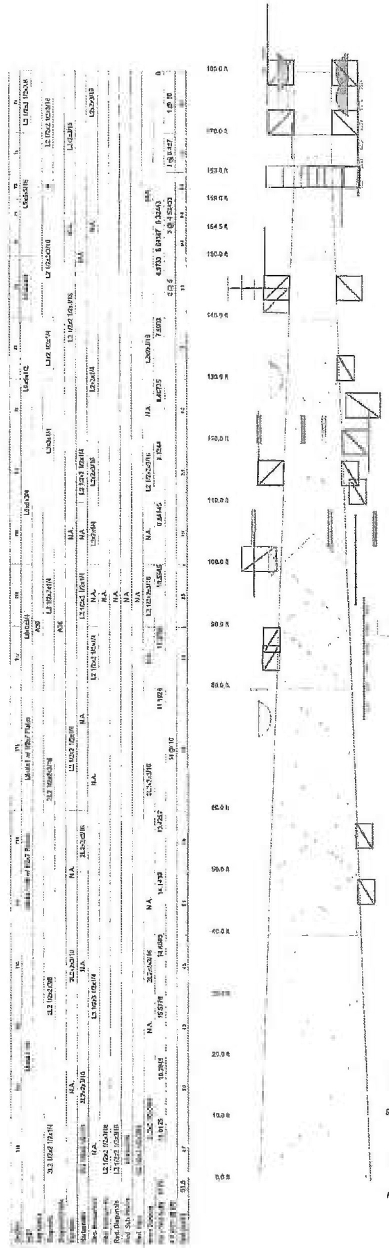
SITE ADDRESS: 180' State Police Tower #31
CT11040D 46 Fenwood Lane
WILTON, CONNECTICUT 06897

REV.	DATE:	DESCRIPTION

Scale: AS NOTED | Date: 04/11/14
Job No.HPC 072 | File No. SK-2 | Dwg. 2 of 2

Dwg. No. SK-2

TNX TOWER INPUT / OUTPUT SUMMARY



MAX. CORNER REACTIONS AT BASE:
DOWN: 449 K
UPLIFT: -400 K
SHEAR: 42 K

AXIAL 99 K
SHEAR 99 K
MOMENT 10858 kip-ft
TORQUE 73 kip-ft
90 mph WIND - 0.5000 in ICE

AXIAL 69 K
SHEAR 79 K
MOMENT 9779 kip-ft
TORQUE 45 kip-ft
REACTIONS - 90 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
5' Standoff (CSP)	180	3' Dia x 15' Omni (CSP - 62)	150
OGT9-806 (CSP - 1)	180	TMA (CSP - 66)	150
3' Dia x 15' Omni (CSP - 2)	180	2' Dia 10' Omni (CSP)	150
5' Standoff (CSP)	180	DB636-A (NEU - 57)	150
OGT9-806 (CSP - 6)	180	6' Standoff (CSP)	145
3' Dia x 1[illegible]	180	5' Yagi (WTR - 20)	145
5' [illegible]	180	5' Standoff (CSP)	145
7' W[illegible]	180	5' Standoff (CSP)	145
106"x4" Pi[illegible]	180	6' Standoff (CSP)	143
10' [illegible] (CSP - [illegible])	160	106"x4" Pipe Mount (CSP)	133
TMA (CSP - 67)	160	3' Stand-off (CSP)	133
PAR-65AC (CSP - [illegible])	160	PAR-65AC (CSP - 35)	130
PAR-65AC (CSP - [illegible])	160	LeBlanc 10' Standoff (1) (CSP)	125
PAR-65AC (CSP - [illegible])	159	EUSP16-U (T-Mobile)	123
PAR-65AC (CSP - [illegible])	159	EUSP16-U (T-Mobile)	123
106"x4" Pipe [illegible]	176	EUSP16-U (T-Mobile)	123
106"x4" Pipe [illegible]	175	(2) AIR B2A/B4P (T-Mobile)	122
106"x4" Pipe Mount [illegible]	175	(2) AIR B2A/B4P (T-Mobile)	122
PAR-65AC (CSP - 5)	175	(2) AIR B2A/B4P (T-Mobile)	121
PAR-65AC (CSP - 30)	174	(2) TMA (T-Mobile)	122
106"x4" Pipe Mount (CSP)	174	(2) TMA (T-Mobile)	122
6' Standoff (CSP)	172	(2) TMA (T-Mobile)	122
5' Standoff (CSP)	172	Rohn 6' Side-Arm(1) (NU - 3031)	120
20' 8-Bay Di-Pole (FCP - 12)	170	3' Dia x 15' Omni (WPD - 55)	120
4' Omni (CSP - 10)	170	PD120-1 (CSP - 0)	120
4' Omni (CAP - 25)	163	PD120-1 (WPD - 23)	120
7770 (ATT)	163	(2) DB5E5-Y (NU - 3031)	120
(2) LGP 21[illegible] (ATT)	163	ASP711 (WTR - 20)	116
TT19-08BP111-001 TMA (ATT)	163	3' Stand-off (CSP)	115
FE5-19-XUH-PH (ATT)	163	5' Standoff (CSP)	115
(3) RRU (ATT)	163	5' Stand-off (CSP)	112
Raycap DC6-48-60-18-8F DC Power Surge Protection (ATT)	163	106"x4" Pipe Mount (C[illegible])	112
		DB222 (DHS - 9)	112
7770 (ATT)	163	12' Wireless Frame ([illegible])	106
(2) LGP 219nn (ATT)	163	12' Wireless Frame ([illegible])	106
(2) LP[illegible]	163	[illegible] Wireless Frame ([illegible])	104
77[illegible] (ATT)	163	[illegible]PP15-C ([illegible])	106
(2) LGP 21[illegible]	163	APXVSPP15-C ([illegible])	106
[illegible] TMA (ATT)	163	APXVSPP15-C ([illegible])	106
[illegible] (ATT)	163	(2) ALU RRH (Sprint)	105
[illegible]	163	(2) ALU RRH (Sprint)	105
[illegible]	163	(2) ALU RRH (Sprint)	105
(2) [illegible] (ATT)	163	LeBlanc 10' Standoff (1) (CSP)	101
[illegible] TMA (ATT)	163	BC470-HF1UDF (CSP - 52)	101
[illegible]	163	3' Dia x 15' Omni (DEA - 32)	100
[illegible] (ATT)	163	4' Grid Dish (CSP - 11)	100
[illegible] TMA (ATT)	163	3' Stand-off (CSP)	[illegible]
[illegible]	163	3' Stand-off (CSP)	95
[illegible]	163	20' 4-Bay Dipole ([illegible])	95
[illegible]	163	5' Ice Shield (CSP)	[illegible]
T-Frame (ATT)	163	106"x4" Pipe Mount ([illegible])	[illegible]
7770 (ATT)	163	5' Grid Dish (CSP - [illegible])	[illegible]
(2) LGP 219nn (ATT)	163	GPS (Sprint)	[illegible]
(2) LPS21401 TMA (ATT)	163	3' Stand-off (Sprint)	56
T-Frame (ATT)	163	3' Stand-off (CSP)	47
3' Dia x 15' Omni (CSP - 53)	160	DB[illegible]-Y (CSP - 50)	47
3' Dia x 15' Omni (CSP - 54)	160		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L2x2x1/8		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

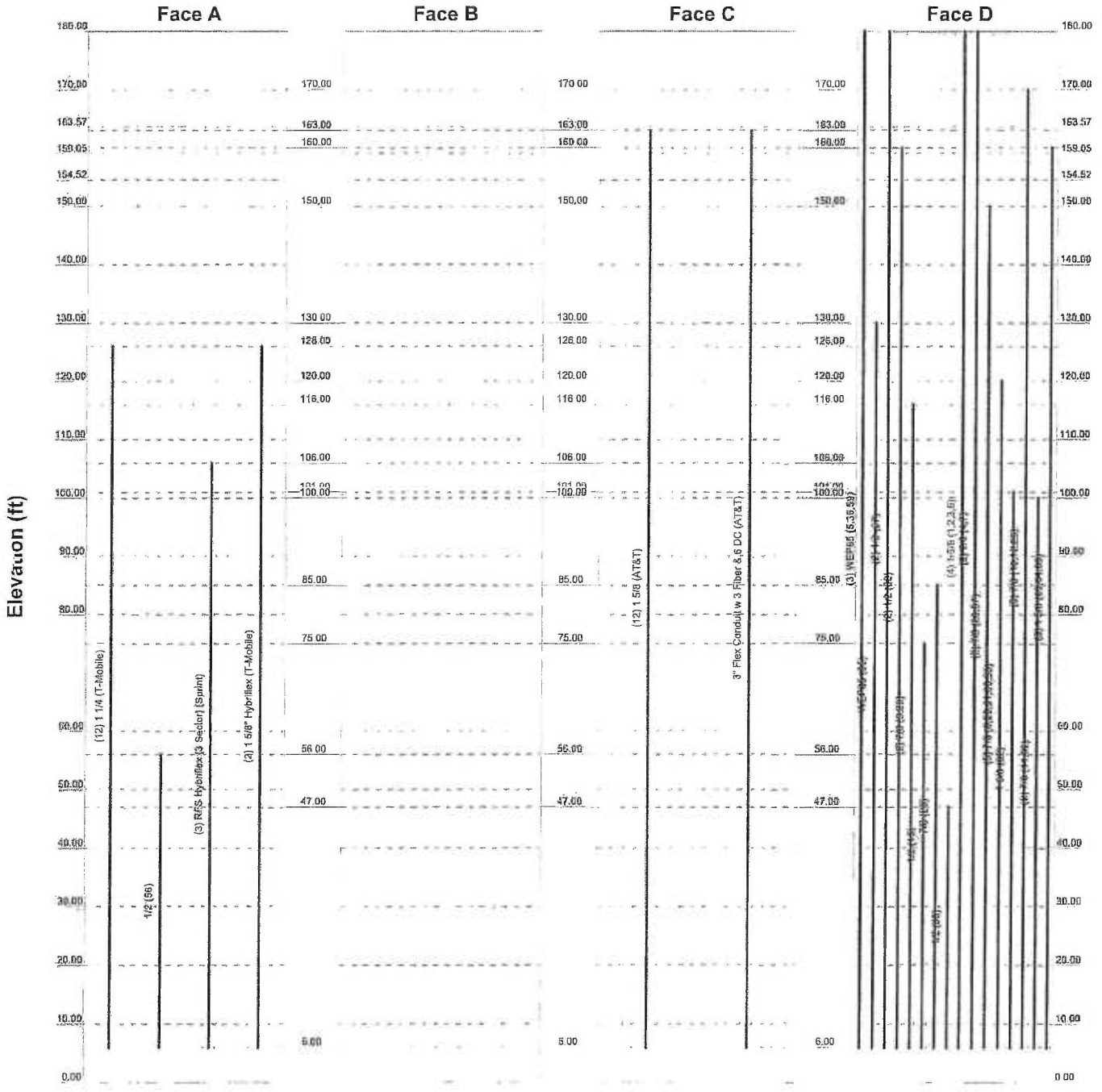
1. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 90 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 90 mph wind.
4. TOWER RATING: 68.2%

URS Corporation	Job: 180' Lattice Tower - CSP		
500 Enterprise Drive, Suite 3B	Project: Wilton, Connecticut (HPC-070)		
Rocky Hill, CT 06067	Client: T-Mobile	Drawn by: MCD	App'd:
Phone: 860-529-8882	Code: TIA/EIA-222-F	Date: 02/18/14	Scale: NTS
FAX: 860-529-3991	Path:		Dwg No. E-1

TNX TOWER FEEDLINE DISTRIBUTION

Feedline Distribution Chart
0' - 180'

Round Flat App In Face App Out Face Truss Leg

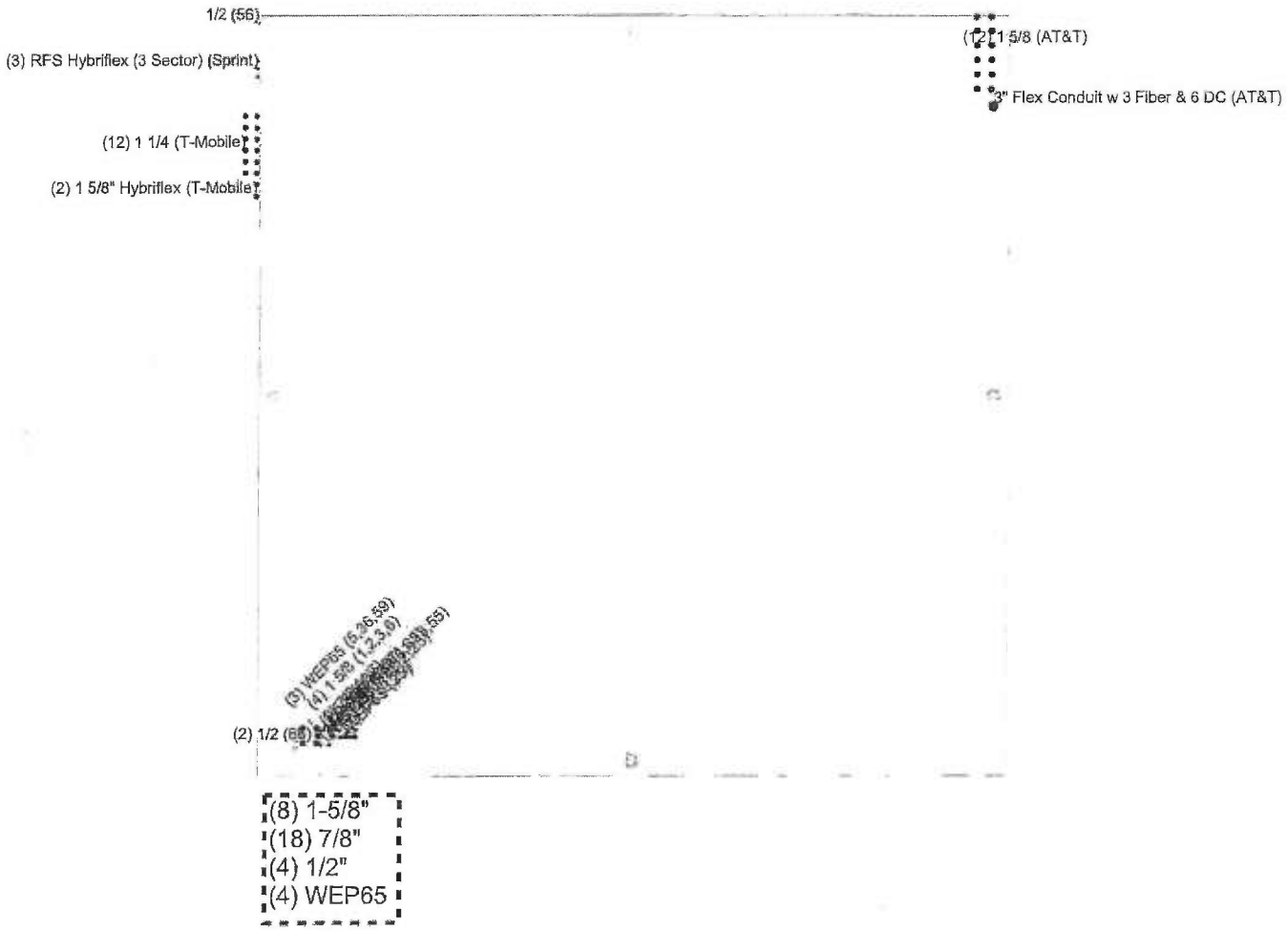


URS Corporation	Job: 180' Lattice Tower - CSP		
500 Enterprise Drive, Suite 3B	Project: Wilton, Connecticut (HPC-070)		
Rocky Hill, CT 06067	Client: T-Mobile	Drawn by: MCD	App'd:
Phone: 860-529-8882	Code: TIA/EIA-222-F	Date: 02/18/14	Scale: NTS
FAX: 860-529-3991	Path:		Dwg No. E-7

TNX TOWER FEEDLINE PLAN

Feedline Plan

Round _____ Flat _____ App In Face App Out Face



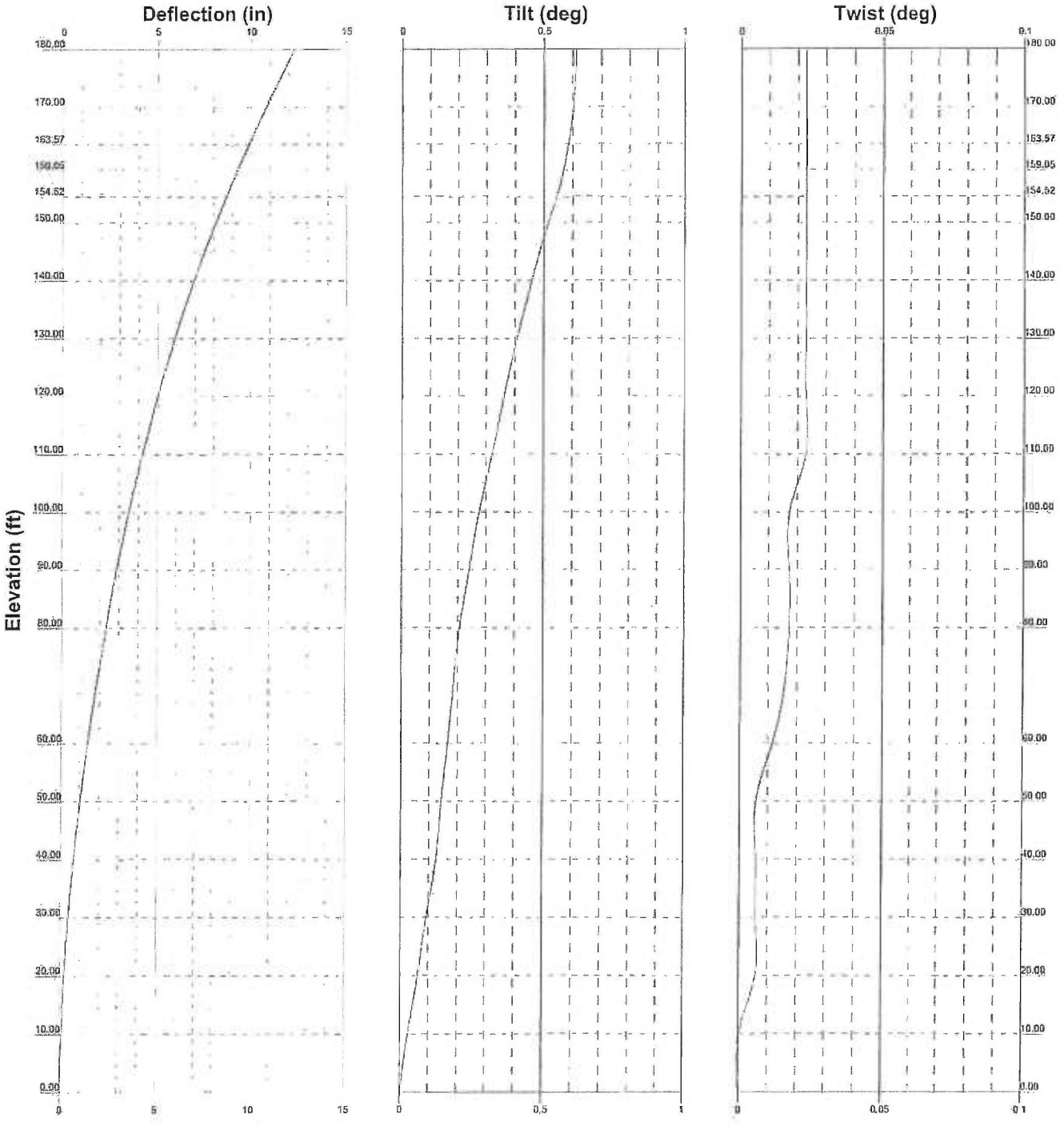
URS Corporation
500 Enterprise Drive, Suite 3B
Rocky Hill, CT 06067
Phone: 860-529-8882
FAX: 860-529-3991

Job:	***180' Lattice Tower - CSP***		
Project:	***Wilton, Connecticut (HPC-070)***		
Client: T-Mobile	Drawn by: MCD	App'd:	
Code: TIA/EIA-222-F	Date: 02/18/14	Scale: NTS	
Path:		Dwg No. E-7	

TNX TOWER DEFLECTION, TILT AND TWIST

TIA/EIA-222-F - Service - 90 mph

Maximum Values



URS Corporation
500 Enterprise Drive, Suite 3B
Rocky Hill, CT 06067
Phone: 860-529-8882
FAX: 860-529-3991

Job: *180' Lattice Tower - CSP*			
Project: *Wilton, Connecticut (HPC-070)*			
Client: T-Mobile	Drawn by: MCD		App'd:
Code: TIA/EIA-222-F	Date: 02/18/14		Scale: NTS
Path:			Dwg No E-5

DETAILED OUTPUT

tnxTower	Job	Page
	180' Lattice Tower - CSP	1 of 63
URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Project Wilton, Connecticut (HPC-070)	Date 12:41:05 02/18/14
	Client T-Mobile	Designed by MCD

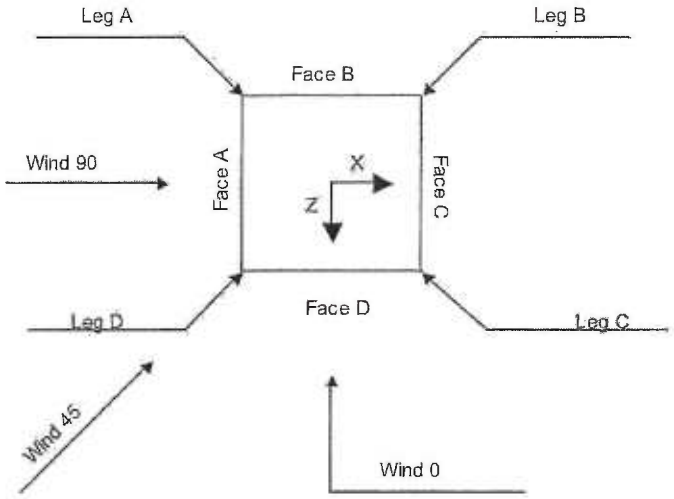
Tower Input Data

The main tower is a 4x free standing tower with an overall height of 180.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 6.00 ft at the top and 17.73 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Basic wind speed of 90 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 90 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 90 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	√ Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	√ All Leg Panels Have Same Allowable
Escalate Ice	Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	Include Angle Block Shear Check
√ Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Poles
√ Leg Bolts Are At Top Of Section	SR Members Have Cut Ends	Include Shear-Torsion Interaction
√ Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	Always Use Sub-Critical Flow
√ Use Diamond Inner Bracing (4 Sided)	√ Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination		



Square Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180.00-170.00			6.00	1	10.00
T2	170.00-163.57			6.00	1	6.43
T3	163.57-159.05			6.00	1	4.52
T4	159.05-154.52			6.32	1	4.52
T5	154.52-150.00			6.65	1	4.52
T6	150.00-140.00			6.97	1	10.00
T7	140.00-130.00			7.69	1	10.00
T8	130.00-120.00			8.41	1	10.00
T9	120.00-110.00			9.12	1	10.00
T10	110.00-100.00			9.84	1	10.00
T11	100.00-90.00			10.56	1	10.00
T12	90.00-80.00			11.28	1	10.00
T13	80.00-60.00			11.99	1	20.00
T14	60.00-50.00			13.43	1	10.00
T15	50.00-40.00			14.14	1	10.00
T16	40.00-30.00			14.86	1	10.00
T17	30.00-20.00			15.58	1	10.00
T18	20.00-10.00			16.29	1	10.00
T19	10.00-0.00			17.01	1	10.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	180.00-170.00	10.00	X Brace	No	Yes	0.0000	0.0000
T2	170.00-163.57	6.43	X Brace	No	No	0.0000	0.0000
T3	163.57-159.05	4.52	X Brace	No	No	0.0000	0.0000
T4	159.05-154.52	4.52	X Brace	No	No	0.0000	0.0000
T5	154.52-150.00	4.52	X Brace	No	No	0.0000	0.0000
T6	150.00-140.00	5.00	X Brace	No	No	0.0000	0.0000
T7	140.00-130.00	10.00	X Brace	No	Yes	0.0000	0.0000
T8	130.00-120.00	10.00	X Brace	No	Yes	0.0000	0.0000
T9	120.00-110.00	10.00	X Brace	No	Yes	0.0000	0.0000
T10	110.00-100.00	10.00	X Brace	No	Yes	0.0000	0.0000
T11	100.00-90.00	10.00	X Brace	No	Yes	0.0000	0.0000
T12	90.00-80.00	10.00	X Brace	No	Yes	0.0000	0.0000
T13	80.00-60.00	10.00	X Brace	No	Yes	0.0000	0.0000
T14	60.00-50.00	10.00	X Brace	No	Yes	0.0000	0.0000
T15	50.00-40.00	10.00	X Brace	No	Yes	0.0000	0.0000
T16	40.00-30.00	10.00	X Brace	No	Yes	0.0000	0.0000
T17	30.00-20.00	10.00	X Brace	No	Yes	0.0000	0.0000
T18	20.00-10.00	10.00	X Brace	No	Yes	0.0000	0.0000
T19	10.00-0.00	10.00	K1 Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.00-170.00	Single Angle	L3 1/2x3 1/2x3/8	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T2 170.00-163.57	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T3 163.57-159.05	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T4 159.05-154.52	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T5 154.52-150.00	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T6 150.00-140.00	Single Angle	L5x5x3/8	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T7 140.00-130.00	Single Angle	L6x6x1/2	A36 (36 ksi)	Single Angle	L3x2 1/2x1/4	A36 (36 ksi)
T8 130.00-120.00	Single Angle	L6x6x1/2	A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T9 120.00-110.00	Single Angle	L6x6x3/4	A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T10 110.00-100.00	Single Angle	L6x6x3/4	A36 (36 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T11 100.00-90.00	Single Angle	L8x8x3/4	A36 (36 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T12 90.00-80.00	Single Angle	L8x8x3/4	A36 (36 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T13 80.00-60.00	Arbitrary Shape	L8x8x1 w/ 1/2x7 Plates	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T14 60.00-50.00	Arbitrary Shape	L8x8x1-1/8 w/ 1/2x7 Plates	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T15 50.00-40.00	Arbitrary Shape	L8x8x1-1/8 w/ 1/2x7 Plates	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T16 40.00-30.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T17 30.00-20.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T18 20.00-10.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T19 10.00-0.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 180.00-170.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T2 170.00-163.57	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T3 163.57-159.05	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T6 150.00-140.00	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T7 140.00-130.00	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 80.00-60.00	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 40.00-30.00	Double Angle	2L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 180.00-170.00	1	Single Angle	L2x2x3/16	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T9 120.00-110.00	1	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T11 100.00-90.00	None	Single Angle		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T14 60.00-50.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T18 20.00-10.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T19 10.00-0.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
ft						
T1 180.00-170.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T7 140.00-130.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T8 130.00-120.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T9 120.00-110.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T10 110.00-100.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T11 100.00-90.00	Single Angle		A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T12 90.00-80.00	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 80.00-60.00	Equal Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T14 60.00-50.00	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T15 50.00-40.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 40.00-30.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T17 30.00-20.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T18 20.00-10.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Double Angle	2L2x2 1/2x3/16	A36 (36 ksi)
T19 10.00-0.00	Single Angle		A36 (36 ksi)	Double Angle	2L2x2 1/2x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
ft					
T19 10.00-0.00	A36 (36 ksi)	Horizontal (1)	Single Angle	L2 1/2x2 1/2x3/16	1
		Diagonal (1)	Single Angle	L2 1/2x2 1/2x3/16	1
		Sub-Horizontal	Single Angle	L3x3x5/16	1
		Hip (1)	Single Angle	L2 1/2x2 1/2x3/16	1

Tower Section Geometry *(cont'd)*

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft^2	in					in	in
T1 180.00-170.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T2 170.00-163.57	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T3 163.57-159.05	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T4 159.05-154.52	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T5 154.52-150.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T6 150.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T7 140.00-130.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T8 130.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T9 120.00-110.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T10 110.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T11 100.00-90.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T12 90.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T13 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T14 60.00-50.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T15 50.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T16 40.00-30.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T17 30.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T18 20.00-10.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000
T19 10.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 180.00-170.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 170.00-163.57	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 163.57-159.05	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 159.05-154.52	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 154.52-150.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 150.00-140.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T7	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
140.00-130.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T8	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
130.00-120.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T9	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
120.00-110.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T10	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
110.00-100.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T11	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
100.00-90.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T12	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
90.00-80.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T13	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T14	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
60.00-50.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T15	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
50.00-40.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T16	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
40.00-30.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T17	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
30.00-20.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T18	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20.00-10.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1
T19	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10.00-0.00				1	1	1	1	1	1	1	1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
180.00-170.00														
T2	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
170.00-163.57														
T3	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
163.57-159.05														
T4	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
159.05-154.52														
T5	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
154.52-150.00														
T6	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
150.00-140.00														
T7	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
140.00-130.00														
T8	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
130.00-120.00														

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T9 120.00-110.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T10 110.00-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T11 100.00-90.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T12 90.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T13 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T14 60.00-50.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T15 50.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T16 40.00-30.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T17 30.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T18 20.00-10.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T19 10.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1 180.00-170.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T2 170.00-163.57	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T3 163.57-159.05	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T4 159.05-154.52	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T5 154.52-150.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T6 150.00-140.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T7 140.00-130.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T8 130.00-120.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T9 120.00-110.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T10 110.00-100.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T11 100.00-90.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T12 90.00-80.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T13 80.00-60.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T14 60.00-50.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T15 50.00-40.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T16 40.00-30.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T17 30.00-20.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T18 20.00-10.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T19 10.00-0.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 180.00-170.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325X	2
T2 170.00-163.57	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T3 163.57-159.05	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T4 159.05-154.52	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T5 154.52-150.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T6 150.00-140.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T7 140.00-130.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T8 130.00-120.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T9 120.00-110.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	2
T10 110.00-100.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T11 100.00-90.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	0
T12 90.00-80.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T13 80.00-60.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T14	Flange	0.7500	0	0.6250	2	0.6250	0	0.6250	0	0.6250	2	0.6250	2	0.6250	0
60.00-50.00		A325X		A325X		A325X		A325N		A325X		A325X		A325X	
T15	Flange	0.7500	0	0.6250	2	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	2
50.00-40.00		A325X		A325X		A325X		A325N		A325X		A325X		A325X	
T16	Flange	0.7500	0	0.6250	2	0.6250	2	0.0000	0	0.6250	0	0.6250	0	0.6250	2
40.00-30.00		A325X		A325X		A325X		A325N		A325X		A325X		A325X	
T17	Flange	0.7500	0	0.6250	2	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	2
30.00-20.00		A325X		A325X		A325X		A325N		A325X		A325X		A325X	
T18	Flange	0.7500	0	0.6250	2	0.6250	0	0.6250	0	0.6250	2	0.6250	2	0.6250	2
20.00-10.00		A325X		A325X		A325X		A325N		A325X		A325X		A325X	
T19 10.00-0.00	Flange	0.7500	0	0.6250	2	0.6250	0	0.6250	0	0.6250	2	0.6250	2	0.6250	0
		A325X		A325X		A325X		A325N		A325X		A325X		A325X	

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 1/4 (T-Mobile)	A	Yes	Ar (CfAe)	126.00 - 6.00	0.0000	0.33	12	6	1.5500	1.5500		0.66
WEP65 (5,36,59)	D	Yes	Af (CfAe)	180.00 - 6.00	-12.0000	0.45	3	1	1.5836	1.5836	5.1284	0.53
WEP65 (35)	D	Yes	Ar (CfAe)	130.00 - 6.00	-10.0000	0.37	1	1	1.5836	1.5836		0.53
1/2 (67)	D	No	Ar (Leg)	180.00 - 6.00	0.0000	0.1	2	1	0.5800	0.5800		0.25
1/2 (66)	D	No	Ar (Leg)	160.00 - 6.00	0.0000	0.1	2	1	0.5800	0.5800		0.25
7/8 (9,29)	D	Yes	Ar (CfAe)	116.00 - 6.00	-10.0000	0.38	2	2	1.1100	1.1100		0.54
1/2 (13)	D	Yes	Ar (CfAe)	75.00 - 6.00	-10.0000	0.39	1	1	0.5800	0.5800		0.25
7/8 (26)	D	Yes	Ar (CfAe)	85.00 - 6.00	-10.0000	0.39	1	1	1.1100	1.1100		0.54
1/2 (68)	D	Yes	Ar (CfAe)	47.00 - 6.00	-10.0000	0.4	1	1	0.5800	0.5800		0.25
1/2 (56)	A	Yes	Ar (CfAe)	56.00 - 6.00	0.0000	0.49	1	1	0.5800	0.5800		0.25
1 5/8 (1,2,3,6)	D	Yes	Ar (CfAe)	180.00 - 6.00	-12.0000	0.43	4	2	1.9800	1.9800		1.04
7/8 (4,7)	D	Yes	Ar (CfAe)	180.00 - 6.00	-12.0000	0.41	2	2	1.1100	1.1100		0.54
7/8 (28,57)	D	Yes	Ar (CfAe)	150.00 - 6.00	-12.0000	0.4	2	2	1.1100	1.1100		0.54
7/8 (8,30,31,33,55)	D	Yes	Ar (CfAe)	120.00 - 6.00	-12.0000	0.39	5	5	1.1100	1.1100		0.54
1 5/8 (62)	D	Yes	Ar (CfAe)	101.00 - 6.00	-12.0000	0.4	1	1	1.9800	1.9800		1.04
7/8 (10,12,25)	D	Yes	Ar (CfAe)	170.00 - 6.00	-12.0000	0.38	3	3	1.1100	1.1100		0.54
7/8 (11,32)	D	Yes	Ar (CfAe)	100.00 - 6.00	-8.0000	0.41	2	2	1.1100	1.1100		0.54
1 5/8	D	Yes	Ar (CfAe)	160.00 - 6.00	-10.0000	0.4	3	3	1.9800	1.9800		1.04

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
(63,64,65) 1 5/8 (AT&T)	C	Yes	Ar (CfAe)	163.00 - 6.00	-8.0000	-0.45	12	6	1.9800	1.9800		1.04
3" Flex Conduit w 3 Fiber & 6 DC (AT&T)	C	Yes	Ar (CfAe)	163.00 - 6.00	-3.0000	-0.38	1	1	3.0000	3.0000		3.00
RFS Hybriflex (3 Sector) (Sprint)	A	Yes	Ar (CfAe)	106.00 - 6.00	0.0000	0.43	3	3	1.0900	1.0900		0.37
1 5/8" Hybriflex (T-Mobile)	A	Yes	Ar (CfAe)	126.00 - 6.00	0.0000	0.27	2	2	1.6250	1.6250		0.21

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.00-170.00	A	0.483	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	5.633	1.320	0.000	0.000	0.07
T2	170.00-163.57	A	0.311	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	5.404	0.848	0.000	0.000	0.06
T3	163.57-159.05	A	0.265	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	4.900	0.000	0.000	0.000	0.06
		D	4.321	0.597	0.000	0.000	0.04
T4	159.05-154.52	A	0.437	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	5.610	0.000	0.000	0.000	0.07
		D	6.262	0.597	0.000	0.000	0.06
T5	154.52-150.00	A	0.437	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	5.610	0.000	0.000	0.000	0.07
		D	6.262	0.597	0.000	0.000	0.06
T6	150.00-140.00	A	0.967	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	15.692	1.320	0.000	0.000	0.14
T7	140.00-130.00	A	0.967	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	15.692	1.320	0.000	0.000	0.14
T8	130.00-120.00	A	7.242	0.000	0.000	0.000	0.05
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	17.011	1.320	0.000	0.000	0.14
T9	120.00-110.00	A	11.425	0.000	0.000	0.000	0.08
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	22.746	1.320	0.000	0.000	0.18
T10	110.00-100.00	A	13.060	0.000	0.000	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	12.400	0.000	0.000	0.000	0.15
		D	23.651	1.320	0.000	0.000	0.18
T11	100.00-90.00	A	14.150	0.000	0.000	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	26.986	1.320	0.000	0.000	0.20
T12	90.00-80.00	A	14.150	0.000	0.000	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	27.449	1.320	0.000	0.000	0.20
T13	80.00-60.00	A	28.300	0.000	0.000	0.000	0.19
		B	0.000	0.000	0.000	0.000	0.00
		C	24.800	0.000	0.000	0.000	0.31
		D	56.548	2.639	0.000	0.000	0.42
T14	60.00-50.00	A	14.440	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	28.395	1.320	0.000	0.000	0.21
T15	50.00-40.00	A	14.633	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	28.733	1.320	0.000	0.000	0.21
T16	40.00-30.00	A	14.633	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	28.878	1.320	0.000	0.000	0.21
T17	30.00-20.00	A	14.633	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	28.878	1.320	0.000	0.000	0.21
T18	20.00-10.00	A	14.633	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	12.400	0.000	0.000	0.000	0.15
		D	28.878	1.320	0.000	0.000	0.21
T19	10.00-0.00	A	5.853	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.000	0.000	0.00
		C	4.960	0.000	0.000	0.000	0.06
		D	11.551	0.528	0.000	0.000	0.08

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.00-170.00	A	0.500	1.317	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		9.800	1.875	0.000	0.000	0.21
T2	170.00-163.57	A	0.500	0.846	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		9.689	1.205	0.000	0.000	0.16
T3	163.57-159.05	A	0.500	0.721	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		7.205	0.000	0.000	0.000	0.14
		D		7.654	0.848	0.000	0.000	0.12
T4	159.05-154.52	A	0.500	1.191	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		8.249	0.000	0.000	0.000	0.16
		D		10.787	0.848	0.000	0.000	0.16
T5	154.52-150.00	A	0.500	1.191	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		8.249	0.000	0.000	0.000	0.16
		D		10.787	0.848	0.000	0.000	0.16
T6	150.00-140.00	A	0.500	2.633	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		27.358	1.875	0.000	0.000	0.38
T7	140.00-130.00	A	0.500	2.633	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		27.358	1.875	0.000	0.000	0.38
T8	130.00-120.00	A	0.500	12.908	0.000	0.000	0.000	0.16
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		29.511	1.875	0.000	0.000	0.40
T9	120.00-110.00	A	0.500	19.758	0.000	0.000	0.000	0.26
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		40.413	1.875	0.000	0.000	0.49
T10	110.00-100.00	A	0.500	22.893	0.000	0.000	0.000	0.28
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		42.068	1.875	0.000	0.000	0.51
T11	100.00-90.00	A	0.500	24.983	0.000	0.000	0.000	0.30
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		47.820	1.875	0.000	0.000	0.56
T12	90.00-80.00	A	0.500	24.983	0.000	0.000	0.000	0.30
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		48.699	1.875	0.000	0.000	0.57
T13	80.00-60.00	A	0.500	49.967	0.000	0.000	0.000	0.60
		B		0.000	0.000	0.000	0.000	0.00
		C		36.467	0.000	0.000	0.000	0.72
		D		101.131	3.750	0.000	0.000	1.16
T14	60.00-50.00	A	0.500	25.773	0.000	0.000	0.000	0.31
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		50.895	1.875	0.000	0.000	0.58
T15	50.00-40.00	A	0.500	26.300	0.000	0.000	0.000	0.31
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		51.816	1.875	0.000	0.000	0.59
T16	40.00-30.00	A	0.500	26.300	0.000	0.000	0.000	0.31
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		52.211	1.875	0.000	0.000	0.59
T17	30.00-20.00	A	0.500	26.300	0.000	0.000	0.000	0.31
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		52.211	1.875	0.000	0.000	0.59
T18	20.00-10.00	A	0.500	26.300	0.000	0.000	0.000	0.31
		B		0.000	0.000	0.000	0.000	0.00
		C		18.233	0.000	0.000	0.000	0.36
		D		52.211	1.875	0.000	0.000	0.59
T19	10.00-0.00	A	0.500	10.520	0.000	0.000	0.000	0.12
		B		0.000	0.000	0.000	0.000	0.00
		C		7.293	0.000	0.000	0.000	0.14

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		D		20.885	0.750	0.000	0.000	0.24

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	180.00-170.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000
		D	0.000	0.522	0.740	1.216
T2	170.00-163.57	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000
		D	0.000	0.521	0.719	1.237
T3	163.57-159.05	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.462	0.628	0.924
		D	0.000	0.507	0.597	1.014
T4	159.05-154.52	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.370	0.630	0.926
		D	0.000	0.475	0.721	1.187
T5	154.52-150.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.365	0.620	0.912
		D	0.000	0.467	0.710	1.168
T6	150.00-140.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.888	1.509	2.219
		D	0.000	1.309	1.953	3.271
T7	140.00-130.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.788	1.453	2.137
		D	0.000	1.162	1.880	3.150
T8	130.00-120.00	A	0.000	0.345	0.580	0.950
		B	0.000	0.000	0.000	0.000
		C	0.000	0.613	1.147	1.686
		D	0.000	0.976	1.606	2.685
T9	120.00-110.00	A	0.000	0.700	1.152	1.886
		B	0.000	0.000	0.000	0.000
		C	0.000	0.745	1.366	2.008
		D	0.000	1.632	2.544	4.398
T10	110.00-100.00	A	0.000	0.642	1.189	1.992
		B	0.000	0.000	0.000	0.000
		C	0.000	0.577	1.219	1.793
		D	0.000	1.317	2.360	4.089
T11	100.00-90.00	A	0.000	0.691	1.317	2.233
		B	0.000	0.000	0.000	0.000
		C	0.000	0.564	1.239	1.822
		D	0.000	1.464	2.732	4.730
T12	90.00-80.00	A	0.000	0.677	1.289	2.184
		B	0.000	0.000	0.000	0.000
		C	0.000	0.553	1.212	1.782
		D	0.000	1.461	2.717	4.713
T13	80.00-60.00	A	0.000	1.134	1.673	2.836
		B	0.000	0.000	0.000	0.000

Section	Elevation	Face	A_R	A_R Ice	A_F	A_F Ice
	ft		ft^2	ft^2	ft^2	ft^2
		C	0.000	0.925	1.573	2.314
		D	0.000	2.542	3.633	6.356
T14	60.00-50.00	A	0.000	0.669	0.918	1.577
		B	0.000	0.000	0.000	0.000
		C	0.000	0.527	0.845	1.242
		D	0.000	1.458	1.959	3.435
T15	50.00-40.00	A	0.000	0.676	1.090	1.888
		B	0.000	0.000	0.000	0.000
		C	0.000	0.521	0.989	1.455
		D	0.000	1.467	2.320	4.095
T16	40.00-30.00	A	0.000	0.866	1.308	2.265
		B	0.000	0.000	0.000	0.000
		C	0.000	0.667	1.186	1.745
		D	0.000	1.894	2.797	4.950
T17	30.00-20.00	A	0.000	0.663	1.071	1.854
		B	0.000	0.000	0.000	0.000
		C	0.000	0.511	0.972	1.429
		D	0.000	1.449	2.290	4.053
T18	20.00-10.00	A	0.000	0.855	1.291	2.235
		B	0.000	0.000	0.000	0.000
		C	0.000	0.658	1.171	1.722
		D	0.000	1.868	2.760	4.885
T19	10.00-0.00	A	0.000	0.401	0.580	1.004
		B	0.000	0.000	0.000	0.000
		C	0.000	0.309	0.526	0.773
		D	0.000	0.878	1.240	2.194

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	180.00-170.00	-3.3826	2.7685	-3.8531	3.1934
T2	170.00-163.57	-3.6578	3.0306	-4.4392	3.7152
T3	163.57-159.05	-0.0465	-0.7044	-0.6833	-0.1357
T4	159.05-154.52	-0.8855	0.0638	-1.7348	0.8176
T5	154.52-150.00	-0.8792	0.1478	-1.7609	0.9417
T6	150.00-140.00	-1.4265	0.8104	-2.4720	1.7730
T7	140.00-130.00	-1.3634	0.9668	-2.4818	2.0106
T8	130.00-120.00	-4.8223	-0.1497	-6.5454	0.7812
T9	120.00-110.00	-7.9466	0.7952	-10.1685	2.0977
T10	110.00-100.00	-9.5226	0.6886	-12.3523	2.0092
T11	100.00-90.00	-10.2370	1.5174	-13.5188	2.9332
T12	90.00-80.00	-10.8644	1.8893	-14.3556	3.4628
T13	80.00-60.00	-13.1875	2.7910	-17.2882	4.8489
T14	60.00-50.00	-13.8651	2.9837	-18.1516	5.0328
T15	50.00-40.00	-13.8323	3.0977	-18.4455	5.2426
T16	40.00-30.00	-13.6655	3.2166	-17.9772	5.3361
T17	30.00-20.00	-15.1710	3.6639	-20.1656	6.0913
T18	20.00-10.00	-14.4942	3.5950	-19.0894	5.8906
T19	10.00-0.00	-7.0275	1.7732	-9.6028	3.0049

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
6' Standoff (CSP)	B	From Leg	3.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice	4.97 6.12	4.97 6.12	0.07 0.13
OGT9-806 (CSP - 1)	B	From Leg	6.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice	2.15 3.25	2.15 3.25	0.02 0.03
3" Dia x 15' Omni (CSP - 2)	D	From Leg	6.00 0.00 6.00	0.0000	180.00	No Ice 1/2" Ice	4.50 6.00	4.50 6.00	0.04 0.07
6' Standoff (CSP)	D	From Leg	3.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice	4.97 6.12	4.97 6.12	0.07 0.13
OGT9-806 (CSP - 6)	B	From Leg	6.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice	2.15 3.25	2.15 3.25	0.02 0.03
3" Dia x 15' Omni (CSP - 3)	D	From Leg	6.00 0.00 6.00	0.0000	180.00	No Ice 1/2" Ice	4.50 6.00	4.50 6.00	0.04 0.07
6' Standoff (CSP)	C	From Leg	3.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice	4.97 6.12	4.97 6.12	0.07 0.13
7' Whip (CSP - 4)	C	From Leg	3.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice	1.74 2.60	1.74 2.60	0.04 0.05
10'6"x4" Pipe Mount (CSP)	A	From Leg	0.50 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice	4.72 5.62	4.72 5.62	0.11 0.15
10' Dipole (CSP - 7)	A	From Leg	6.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice	4.00 6.00	4.00 6.00	0.05 0.07
TMA (CSP - 67)	C	From Leg	2.00 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice	1.06 1.21	0.45 0.57	0.02 0.03
10'6"x4" Pipe Mount (CSP)	A	From Leg	0.50 0.00 0.00	0.0000	176.00	No Ice 1/2" Ice	4.72 5.62	4.72 5.62	0.11 0.15
10'6"x4" Pipe Mount (CSP)	B	From Leg	0.50 0.00 0.00	0.0000	176.00	No Ice 1/2" Ice	4.72 5.62	4.72 5.62	0.11 0.15
10'6"x4" Pipe Mount (CSP)	C	From Leg	0.50 0.00 0.00	0.0000	176.00	No Ice 1/2" Ice	4.72 5.62	4.72 5.62	0.11 0.15
10'6"x4" Pipe Mount (CSP)	D	From Leg	0.50 0.00 0.00	0.0000	176.00	No Ice 1/2" Ice	4.72 5.62	4.72 5.62	0.11 0.15
6' Standoff (CSP)	D	From Leg	3.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice	4.97 6.12	4.97 6.12	0.07 0.13
6' Standoff (CSP)	C	From Leg	3.00 0.00 0.00	0.0000	172.00	No Ice 1/2" Ice	4.97 6.12	4.97 6.12	0.07 0.13
20' 8 Bay Di-Pole (FCP - 12)	B	From Leg	6.00 0.00 0.00	0.0000	170.00	No Ice 1/2" Ice	4.00 6.00	4.00 6.00	0.06 0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
4' Omni	C	From Leg	6.00	0.0000	170.00	No Ice	0.53	0.53	0.03
(CSP - 10)			0.00			1/2" Ice	0.80	0.80	0.10
			0.00						
4' Omni	D	From Leg	0.50	0.0000	169.00	No Ice	0.53	0.53	0.03
(CAP - 25)			0.00			1/2" Ice	0.80	0.80	0.10
			0.00						
T-Frame	A	From Leg	0.50	0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00			1/2" Ice	16.20	16.20	0.60
			0.00						
T-Frame	B	From Leg	0.50	0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00			1/2" Ice	16.20	16.20	0.60
			0.00						
T-Frame	C	From Leg	0.50	0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00			1/2" Ice	16.20	16.20	0.60
			0.00						
7770	A	From Face	2.00	0.0000	163.00	No Ice	10.03	5.60	0.02
(AT&T)			4.00			1/2" Ice	10.61	6.15	0.07
			0.00						
(2) LGP 219nn	A	From Face	2.00	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			4.00			1/2" Ice	0.30	0.17	0.01
			0.00						
(2) LPG21401 TMA	A	From Face	2.00	0.0000	163.00	No Ice	0.95	0.37	0.02
(AT&T)			4.00			1/2" Ice	1.09	0.48	0.02
			0.00						
7770	A	From Face	0.50	0.0000	163.00	No Ice	10.03	5.60	0.02
(AT&T)			-4.00			1/2" Ice	10.61	6.15	0.07
			0.00						
(2) LGP 219nn	A	From Face	0.50	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			-4.00			1/2" Ice	0.30	0.17	0.01
			0.00						
TT19-08BP111-001 TMA	A	From Face	0.50	0.0000	163.00	No Ice	0.64	0.52	0.02
(AT&T)			-4.00			1/2" Ice	0.76	0.62	0.02
			0.00						
P65-16-XLH-RR	A	From Face	1.50	0.0000	163.00	No Ice	8.40	4.70	0.06
(AT&T)			0.00			1/2" Ice	8.95	5.15	0.11
			0.00						
(2) RRU	A	From Leg	1.50	0.0000	163.00	No Ice	3.79	1.02	0.06
(AT&T)			0.00			1/2" Ice	4.16	1.23	0.08
			0.00						
Raycap DC6-48-60-18-8F	A	From Leg	0.50	0.0000	163.00	No Ice	1.27	1.27	0.05
DC Power Surge Protection			0.00			1/2" Ice	1.46	1.46	0.07
(AT&T)			0.00						
7770	B	From Face	0.50	0.0000	163.00	No Ice	10.03	5.60	0.02
(AT&T)			4.00			1/2" Ice	10.61	6.15	0.07
			0.00						
(2) LGP 219nn	B	From Face	0.50	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			4.00			1/2" Ice	0.30	0.17	0.01
			0.00						
(2) LPG21401 TMA	B	From Face	0.50	0.0000	163.00	No Ice	0.95	0.37	0.02
(AT&T)			4.00			1/2" Ice	1.09	0.48	0.02
			0.00						
7770	B	From Face	0.50	0.0000	163.00	No Ice	10.03	5.60	0.02
(AT&T)			-4.00			1/2" Ice	10.61	6.15	0.07
			0.00						
(2) LGP 219nn	B	From Face	0.50	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			-4.00			1/2" Ice	0.30	0.17	0.01
			0.00						

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
TT19-08BP111-001 TMA	B	From Face	0.50	0.0000	163.00	No Ice	0.64	0.52	0.02
(AT&T)			-4.00			1/2" Ice	0.76	0.62	0.02
			0.00						
P65-16-XLH-RR	B	From Face	0.50	0.0000	163.00	No Ice	8.40	4.70	0.06
(AT&T)			0.00			1/2" Ice	8.95	5.15	0.11
			0.00						
(2) RRU	B	From Leg	0.50	0.0000	163.00	No Ice	3.79	1.02	0.06
(AT&T)			0.00			1/2" Ice	4.16	1.23	0.08
			0.00						
7770	C	From Face	0.50	0.0000	163.00	No Ice	10.03	5.60	0.02
(AT&T)			4.00			1/2" Ice	10.61	6.15	0.07
			0.00						
(2) LGP 219nn	C	From Face	0.50	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			4.00			1/2" Ice	0.30	0.17	0.01
			0.00						
(2) LPG21401 TMA	C	From Face	0.50	0.0000	163.00	No Ice	0.95	0.37	0.02
(AT&T)			4.00			1/2" Ice	1.09	0.48	0.02
			0.00						
7770	C	From Face	4.00	0.0000	163.00	No Ice	10.03	5.60	0.02
(AT&T)			-4.00			1/2" Ice	10.61	6.15	0.07
			0.00						
(2) LGP 219nn	C	From Face	4.00	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			-4.00			1/2" Ice	0.30	0.17	0.01
			0.00						
TT19-08BP111-001 TMA	C	From Face	4.00	0.0000	163.00	No Ice	0.64	0.52	0.02
(AT&T)			-4.00			1/2" Ice	0.76	0.62	0.02
			0.00						
P65-16-XLH-RR	C	From Face	2.00	0.0000	163.00	No Ice	8.40	4.70	0.06
(AT&T)			0.00			1/2" Ice	8.95	5.15	0.11
			0.00						
(2) RRU	C	From Leg	2.00	0.0000	163.00	No Ice	3.79	1.02	0.06
(AT&T)			0.00			1/2" Ice	4.16	1.23	0.08
			0.00						
3" Dia x 15' Omni	C	From Leg	2.00	0.0000	160.00	No Ice	4.50	4.50	0.04
(CSP - 63)			0.00			1/2" Ice	6.00	6.00	0.07
			0.00						
3" Dia x 15' Omni	C	From Leg	2.00	0.0000	160.00	No Ice	4.50	4.50	0.04
(CSP - 64)			0.00			1/2" Ice	6.00	6.00	0.07
			0.00						
3" Dia x 15' Omni	C	From Leg	2.00	0.0000	160.00	No Ice	4.50	4.50	0.04
(CSP - 65)			0.00			1/2" Ice	6.00	6.00	0.07
			0.00						
TMA	C	From Leg	2.00	0.0000	160.00	No Ice	1.06	0.45	0.02
(CSP - 66)			0.00			1/2" Ice	1.21	0.57	0.03
			0.00						
2" Dia 10' Omni	D	From Leg	6.00	0.0000	150.00	No Ice	2.00	2.00	0.03
(CSP)			0.00			1/2" Ice	3.02	3.02	0.04
			0.00						
DB636-A	D	From Leg	6.00	0.0000	150.00	No Ice	2.78	2.78	0.03
(NEU - 57)			0.00			1/2" Ice	3.96	3.96	0.05
			0.00						
6' Standoff	A	From Leg	3.00	0.0000	145.00	No Ice	4.97	4.97	0.07
(CSP)			0.00			1/2" Ice	6.12	6.12	0.13
			0.00						
3' Yagi	A	From Leg	6.00	0.0000	145.00	No Ice	2.08	2.08	0.03
(WTR - 28)			0.00			1/2" Ice	3.79	3.79	0.05
			0.00						

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
6' Standoff (CSP)	C	From Leg	3.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	4.97 6.12	4.97 6.12	0.07 0.13
6' Standoff (CSP)	D	From Leg	3.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	4.97 6.12	4.97 6.12	0.07 0.13
6' Standoff (CSP)	A	From Leg	3.00 0.00 0.00	0.0000	143.00	No Ice 1/2" Ice	4.97 6.12	4.97 6.12	0.07 0.13
10'6"x4" Pipe Mount (CSP)	A	From Leg	0.50 0.00 0.00	0.0000	133.00	No Ice 1/2" Ice	4.72 5.62	4.72 5.62	0.11 0.15
3' Stand-off (CSP)	C	From Leg	1.50 0.00 0.00	0.0000	132.00	No Ice 1/2" Ice	1.00 1.20	2.00 2.70	0.05 0.07
LeBlanc 10' Standoff (1) (CSP)	C	From Leg	5.00 0.00 0.00	0.0000	126.00	No Ice 1/2" Ice	17.00 22.00	17.00 22.00	0.55 0.75
3" Dia x 15' Omni (WPD - 55)	D	From Leg	6.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	4.50 6.00	4.50 6.00	0.04 0.07
PD128-1 (CSP - 8)	C	From Leg	2.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	1.00 1.80	1.00 1.80	0.01 0.02
PD128-1 (WPD - 33)	D	From Leg	2.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	1.00 1.80	1.00 1.80	0.01 0.02
(2) DB586-Y (NU - 30&31)	C	From Leg	6.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	1.01 1.28	1.01 1.28	0.01 0.02
Rohn 6' Side-Arm(1) (NU - 30&31)	C	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	10.60 15.40	10.60 15.40	0.14 0.21
ASP711 (WTR - 29)	A	From Leg	2.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice	2.34 3.64	2.34 3.64	0.01 0.02
6' Standoff (CSP)	D	From Leg	3.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	4.97 6.12	4.97 6.12	0.07 0.13
3' Stand-off (CSP)	C	From Leg	1.50 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	1.00 1.20	2.00 2.70	0.05 0.07
6' Stand-off (CSP)	B	From Leg	3.00 0.00 0.00	0.0000	112.00	No Ice 1/2" Ice	1.20 1.40	4.50 5.50	0.07 0.13
10'6"x4" Pipe Mount (CSP)	C	From Leg	0.50 0.00 0.00	0.0000	112.00	No Ice 1/2" Ice	4.72 5.62	4.72 5.62	0.11 0.15
DB222 (DHS - 9)	B	From Leg	2.00 0.00 0.00	0.0000	112.00	No Ice 1/2" Ice	1.60 2.88	1.60 2.88	0.02 0.02
12' Wireless Frame (Sprint)	A	From Leg	1.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice	11.07 15.53	11.07 15.53	0.24 0.35
12' Wireless Frame (Sprint)	B	From Leg	1.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice	11.07 15.53	11.07 15.53	0.24 0.35

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
12' Wireless Frame	C	From Leg	1.00	0.0000	106.00	No Ice	11.07	11.07	0.24
(Sprint)			0.00			1/2" Ice	15.53	15.53	0.35
			0.00						
APXVSPP18-C	A	From Leg	1.50	0.0000	106.00	No Ice	8.26	5.28	0.06
(Sprint)			-5.00			1/2" Ice	8.81	5.74	0.11
			0.00						
APXVSPP18-C	B	From Leg	1.50	0.0000	106.00	No Ice	8.26	5.28	0.06
(Sprint)			-5.00			1/2" Ice	8.81	5.74	0.11
			0.00						
APXVSPP18-C	C	From Leg	1.50	0.0000	106.00	No Ice	8.26	5.28	0.06
(Sprint)			-5.00			1/2" Ice	8.81	5.74	0.11
			0.00						
(2) ALU RRH	A	From Leg	1.50	0.0000	106.00	No Ice	2.25	1.23	0.05
(Sprint)			0.00			1/2" Ice	2.45	1.39	0.07
			0.00						
(2) ALU RRH	B	From Leg	1.50	0.0000	106.00	No Ice	2.25	1.23	0.05
(Sprint)			0.00			1/2" Ice	2.45	1.39	0.07
			0.00						
(2) ALU RRH	C	From Leg	1.50	0.0000	106.00	No Ice	2.25	1.23	0.05
(Sprint)			0.00			1/2" Ice	2.45	1.39	0.07
			0.00						
LeBlanc 10' Standoff (1)	A	From Leg	5.00	0.0000	101.00	No Ice	17.00	17.00	0.55
(CSP)			0.00			1/2" Ice	22.00	22.00	0.75
			0.00						
SC479-HF1LDF	C	From Leg	2.00	0.0000	101.00	No Ice	5.06	5.06	0.03
(CSP - 62)			0.00			1/2" Ice	6.54	6.54	0.07
			0.00						
3" Dia x 15' Omni	D	From Leg	6.00	0.0000	100.00	No Ice	4.50	4.50	0.04
(DEA - 32)			0.00			1/2" Ice	6.00	6.00	0.07
			0.00						
3' Stand-off	D	From Leg	1.50	0.0000	88.00	No Ice	1.00	2.00	0.05
(CSP)			0.00			1/2" Ice	1.20	2.70	0.07
			0.00						
3' Stand-off	D	From Leg	1.50	0.0000	85.00	No Ice	1.00	2.00	0.05
(CSP)			0.00			1/2" Ice	1.20	2.70	0.07
			0.00						
20' 4-Bay Dipole	C	From Leg	3.00	0.0000	85.00	No Ice	4.00	4.00	0.06
(USS - 26)			0.00			1/2" Ice	6.00	6.00	0.10
			0.00						
6' Ice Shield	A	From Leg	4.00	0.0000	80.00	No Ice	2.60	2.60	0.13
(CSP)			0.00			1/2" Ice	3.00	3.00	0.15
			0.00						
10'6"x4" Pipe Mount	A	From Leg	0.50	0.0000	76.00	No Ice	4.72	4.72	0.11
(CSP)			0.00			1/2" Ice	5.62	5.62	0.15
			0.00						
3' Stand-off	B	From Leg	1.50	0.0000	56.00	No Ice	1.00	2.00	0.05
(Sprint)			0.00			1/2" Ice	1.20	2.70	0.07
			0.00						
GPS	B	From Leg	3.00	0.0000	56.00	No Ice	1.00	1.00	0.01
(Sprint)			0.00			1/2" Ice	1.50	1.50	0.01
			0.00						
3' Stand-off	B	From Leg	1.50	0.0000	47.00	No Ice	1.00	2.00	0.05
(CSP)			0.00			1/2" Ice	1.20	2.70	0.07
			0.00						
DB803M-Y	B	From Leg	3.00	0.0000	47.00	No Ice	0.50	0.50	0.00
(CSP - 68)			0.00			1/2" Ice	0.68	0.68	0.01
			0.00						

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
EUSF10-U (T-Mobile)	A	From Leg	0.50 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice	8.91 12.66	3.67 5.24	0.41 0.51
EUSF10-U (T-Mobile)	D	From Leg	0.50 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice	8.91 12.66	3.67 5.24	0.41 0.51
EUSF10-U (T-Mobile)	B	From Leg	0.50 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice	8.91 12.66	3.67 5.24	0.41 0.51
(2) AIR B2A/B4P (T-Mobile)	A	From Leg	1.00 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice	6.42 6.86	4.22 4.64	0.08 0.12
(2) AIR B2A/B4P (T-Mobile)	B	From Leg	1.00 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice	6.42 6.86	4.22 4.64	0.08 0.12
(2) AIR B2A/B4P (T-Mobile)	D	From Leg	1.00 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice	6.42 6.86	4.22 4.64	0.08 0.12
(2) TMA (T-Mobile)	A	From Leg	1.00 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	0.01 0.02
(2) TMA (T-Mobile)	B	From Leg	1.00 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	0.01 0.02
(2) TMA (T-Mobile)	D	From Leg	1.00 0.00 0.00	0.0000	122.00	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	0.01 0.02

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
PA6-65AC (CSP - 69)	A	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		180.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24
PA6-65AC (CSP - 70)	B	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		180.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24
PA6-65AC (CSP - 71)	C	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		180.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24
4' Grid Dish (CSP - 11)	A	Grid	From Leg	1.00 0.00 0.00	Worst		100.00	4.00	No Ice 1/2" Ice	12.57 13.10	0.08 0.15
6' Grid Dish (CSP - 13)	A	Grid	From Leg	1.00 0.00 0.00	Worst		75.00	6.00	No Ice 1/2" Ice	28.27 29.07	0.13 0.28
PA6-65AC	A	Paraboloid w/o	From	1.00	Worst		176.00	6.00	No Ice	28.27	0.09

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight K
(CSP - 5)		Radome	Leg	0.00 0.00					1/2" Ice	29.05	0.24
PA6-65AC (CSP - 36)	C	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		176.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24
PA6-65AC (CSP - 59)	D	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		180.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24
PA6-65AC (CSP - 35)	A	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		130.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24

Tower Pressures - No Ice

$G_H = 1.121$

Section Elevation ft	z ft	K_z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg % %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	175.00	1.611	33	61.674	A	12.491	0.483	5.833	44.96	0.000	0.000
180.00-170.00					B	12.491	0.000		46.70	0.000	0.000
					C	12.491	0.000		46.70	0.000	0.000
					D	13.071	5.633		31.19	0.000	0.000
T2	166.79	1.589	33	40.022	A	9.832	0.311	5.356	52.81	0.000	0.000
170.00-163.57					B	9.832	0.000		54.47	0.000	0.000
					C	9.832	0.000		54.47	0.000	0.000
					D	9.961	5.404		34.86	0.000	0.000
T3	161.31	1.574	33	28.908	A	7.122	0.265	3.775	51.11	0.000	0.000
163.57-159.05					B	7.122	0.000		53.00	0.000	0.000
					C	6.494	4.900		33.13	0.000	0.000
					D	7.123	4.321		32.99	0.000	0.000
T4	156.79	1.561	32	30.376	A	6.903	0.437	3.775	51.43	0.000	0.000
159.05-154.52					B	6.903	0.000		54.69	0.000	0.000
					C	6.273	5.610		31.77	0.000	0.000
					D	6.779	6.262		28.95	0.000	0.000
T5	152.26	1.548	32	31.844	A	7.011	0.437	3.775	50.68	0.000	0.000
154.52-150.00					B	7.011	0.000		53.84	0.000	0.000
					C	6.391	5.610		31.46	0.000	0.000
					D	6.898	6.262		28.68	0.000	0.000
T6	145.00	1.526	32	75.634	A	16.767	0.967	8.344	47.05	0.000	0.000
150.00-140.00					B	16.767	0.000		49.76	0.000	0.000
					C	15.258	12.400		30.17	0.000	0.000
					D	16.134	15.692		26.22	0.000	0.000
T7	135.00	1.496	31	83.296	A	19.051	0.967	10.013	50.02	0.000	0.000
140.00-130.00					B	19.051	0.000		52.56	0.000	0.000
					C	17.598	12.400		33.38	0.000	0.000
					D	18.490	15.692		29.29	0.000	0.000
T8	125.00	1.463	30	90.466	A	17.297	7.242	10.013	40.80	0.000	0.000
130.00-120.00					B	17.878	0.000		56.01	0.000	0.000
					C	16.731	12.400		34.37	0.000	0.000
					D	17.591	17.011		28.94	0.000	0.000
T9	115.00	1.429	30	97.774	A	18.876	11.425	10.013	33.04	0.000	0.000
120.00-110.00					B	20.028	0.000		49.99	0.000	0.000
					C	18.662	12.400		32.23	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					D	18.804	22.746		24.10	0.000	0.000
T10	105.00	1.392	29	104.945	A	18.568	13.060	10.013	31.66	0.000	0.000
110.00-100.00					B	19.757	0.000		50.68	0.000	0.000
					C	18.538	12.400		32.36	0.000	0.000
					D	18.716	23.651		23.63	0.000	0.000
T11	95.00	1.353	28	112.984	A	22.555	14.150	13.350	36.37	0.000	0.000
100.00-90.00					B	23.872	0.000		55.93	0.000	0.000
					C	22.633	12.400		38.11	0.000	0.000
					D	22.460	26.986		27.00	0.000	0.000
T12	85.00	1.31	27	120.155	A	23.077	14.150	13.350	35.86	0.000	0.000
90.00-80.00					B	24.365	0.000		54.79	0.000	0.000
					C	23.153	12.400		37.55	0.000	0.000
					D	22.968	27.449		26.48	0.000	0.000
T13	70.00	1.24	26	263.233	A	13.843	56.670	28.370	40.23	0.000	0.000
80.00-60.00					B	15.516	28.370		64.64	0.000	0.000
					C	13.943	53.170		42.27	0.000	0.000
					D	14.523	84.917		28.53	0.000	0.000
T14	55.00	1.157	24	142.444	A	8.132	28.625	14.185	38.59	0.000	0.000
60.00-50.00					B	9.050	14.185		61.05	0.000	0.000
					C	8.205	26.585		40.77	0.000	0.000
					D	8.411	42.580		27.82	0.000	0.000
T15	45.00	1.093	23	149.614	A	10.101	28.818	14.185	36.45	0.000	0.000
50.00-40.00					B	11.192	14.185		55.90	0.000	0.000
					C	10.202	26.585		38.56	0.000	0.000
					D	10.191	42.918		26.71	0.000	0.000
T16	35.00	1.017	21	156.196	A	26.060	14.633	13.350	32.81	0.000	0.000
40.00-30.00					B	27.367	0.000		48.78	0.000	0.000
					C	26.181	12.400		34.60	0.000	0.000
					D	25.890	28.878		24.38	0.000	0.000
T17	25.00	1	21	163.366	A	24.396	14.633	13.350	34.21	0.000	0.000
30.00-20.00					B	25.467	0.000		52.42	0.000	0.000
					C	24.495	12.400		36.18	0.000	0.000
					D	24.496	28.878		25.01	0.000	0.000
T18	15.00	1	21	170.539	A	27.243	14.633	13.350	31.88	0.000	0.000
20.00-10.00					B	28.533	0.000		46.79	0.000	0.000
					C	27.362	12.400		33.58	0.000	0.000
					D	27.093	28.878		23.85	0.000	0.000
T19 10.00-0.00	5.00	1	21	177.715	A	29.108	5.853	13.350	38.19	0.000	0.000
					B	29.688	0.000		44.97	0.000	0.000
					C	29.162	4.960		39.13	0.000	0.000
					D	28.976	11.551		32.94	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.121$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	175.00	1.611	33	0.5000	62.507	A	12.491	5.837	7.500	40.92	0.000	0.000
180.00-170.00						B	12.491	4.520		44.09	0.000	0.000
						C	12.491	4.520		44.09	0.000	0.000
						D	13.151	13.798		27.83	0.000	0.000
T2	166.79	1.589	33	0.5000	40.557	A	9.832	3.803	6.427	47.14	0.000	0.000
170.00-163.57						B	9.832	2.957		50.26	0.000	0.000

Section Elevation ft	z ft	K_z	q_z psf	t_z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	9.832	2.957		50.26	0.000	0.000
						D	9.800	12.124		29.31	0.000	0.000
T3 163.57-159.05	161.31	1.574	33	0.5000	29.285	A	7.122	3.150	4.530	44.10	0.000	0.000
						B	7.122	2.429		47.43	0.000	0.000
						C	6.198	9.171		29.47	0.000	0.000
						D	6.957	9.576		27.40	0.000	0.000
T4 159.05-154.52	156.79	1.561	32	0.5000	30.753	A	6.903	3.197	4.530	44.85	0.000	0.000
						B	6.903	2.006		50.85	0.000	0.000
						C	5.976	9.885		28.56	0.000	0.000
						D	6.564	12.318		23.99	0.000	0.000
T5 154.52-150.00	152.26	1.548	32	0.5000	32.221	A	7.011	3.241	4.530	44.19	0.000	0.000
						B	7.011	2.050		50.00	0.000	0.000
						C	6.099	9.934		28.25	0.000	0.000
						D	6.691	12.369		23.77	0.000	0.000
T6 150.00-140.00	145.00	1.526	32	0.5000	76.467	A	16.767	7.671	10.013	40.97	0.000	0.000
						B	16.767	5.038		45.92	0.000	0.000
						C	14.548	22.384		27.11	0.000	0.000
						D	15.371	31.088		21.55	0.000	0.000
T7 140.00-130.00	135.00	1.496	31	0.5000	84.129	A	19.051	7.625	11.682	43.79	0.000	0.000
						B	19.051	4.992		48.59	0.000	0.000
						C	16.914	22.437		29.69	0.000	0.000
						D	17.776	31.188		23.86	0.000	0.000
T8 130.00-120.00	125.00	1.463	30	0.5000	91.300	A	16.927	17.083	11.682	34.35	0.000	0.000
						B	17.878	4.520		52.16	0.000	0.000
						C	16.191	22.140		30.48	0.000	0.000
						D	17.068	33.055		23.31	0.000	0.000
T9 120.00-110.00	115.00	1.429	30	0.5000	98.608	A	18.142	24.434	11.682	27.44	0.000	0.000
						B	20.028	5.376		45.98	0.000	0.000
						C	18.020	22.864		28.57	0.000	0.000
						D	17.505	44.157		18.94	0.000	0.000
T10 110.00-100.00	105.00	1.392	29	0.5000	105.778	A	17.765	27.051	11.682	26.07	0.000	0.000
						B	19.757	4.799		47.57	0.000	0.000
						C	17.964	22.455		28.90	0.000	0.000
						D	17.543	45.550		18.52	0.000	0.000
T11 100.00-90.00	95.00	1.353	28	0.5000	113.818	A	21.639	29.206	15.019	29.54	0.000	0.000
						B	23.872	4.914		52.17	0.000	0.000
						C	22.050	22.584		33.65	0.000	0.000
						D	21.017	51.270		20.78	0.000	0.000
T12 90.00-80.00	85.00	1.31	27	0.5000	120.989	A	22.181	29.383	15.019	29.13	0.000	0.000
						B	24.365	5.077		51.01	0.000	0.000
						C	22.583	22.758		33.13	0.000	0.000
						D	21.528	52.314		20.34	0.000	0.000
T13 80.00-60.00	70.00	1.24	26	0.5000	264.901	A	12.680	86.746	31.707	31.89	0.000	0.000
						B	15.516	37.914		59.34	0.000	0.000
						C	13.202	73.455		36.59	0.000	0.000
						D	12.911	136.503		21.22	0.000	0.000
T14 60.00-50.00	55.00	1.157	24	0.5000	143.277	A	7.473	44.790	15.854	30.33	0.000	0.000
						B	9.050	19.686		55.17	0.000	0.000
						C	7.807	37.392		35.08	0.000	0.000
						D	7.490	69.122		20.69	0.000	0.000
T15 50.00-40.00	45.00	1.093	23	0.5000	150.448	A	9.304	45.494	15.854	28.93	0.000	0.000
						B	11.192	19.871		51.04	0.000	0.000
						C	9.737	37.583		33.50	0.000	0.000
						D	8.972	70.220		20.02	0.000	0.000
T16 40.00-30.00	35.00	1.017	21	0.5000	157.030	A	25.103	32.460	15.019	26.09	0.000	0.000
						B	27.367	7.027		43.67	0.000	0.000
						C	25.623	24.592		29.91	0.000	0.000
						D	24.293	57.344		18.40	0.000	0.000
T17 30.00-20.00	25.00	1	21	0.5000	164.200	A	23.612	31.644	15.019	27.18	0.000	0.000
						B	25.467	6.007		47.72	0.000	0.000

Section Elevation	z	K_Z	q_z	t_Z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	in	ft^2	e	ft^2	ft^2	ft^2		ft^2	ft^2
						C	24.038	23.729		31.44	0.000	0.000
						D	23.289	56.769		18.76	0.000	0.000
T18 20.00-10.00	15.00	1	21	0.5000	171.373	A	26.298	32.915	15.019	25.36	0.000	0.000
						B	28.533	7.470		41.72	0.000	0.000
						C	26.811	25.045		28.96	0.000	0.000
						D	25.523	57.813		18.02	0.000	0.000
T19 10.00-0.00	5.00	1	21	0.5000	178.549	A	28.684	18.175	15.019	32.05	0.000	0.000
						B	29.688	8.056		39.79	0.000	0.000
						C	28.915	15.040		34.17	0.000	0.000
						D	28.244	28.063		26.67	0.000	0.000

Tower Pressure - Service

$G_H = 1.121$

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2	e	ft^2	ft^2	ft^2		ft^2	ft^2
T1	175.00	1.611	33	61.674	A	12.491	0.483	5.833	44.96	0.000	0.000
180.00-170.00					B	12.491	0.000		46.70	0.000	0.000
					C	12.491	0.000		46.70	0.000	0.000
					D	13.071	5.633		31.19	0.000	0.000
T2	166.79	1.589	33	40.022	A	9.832	0.311	5.356	52.81	0.000	0.000
170.00-163.57					B	9.832	0.000		54.47	0.000	0.000
					C	9.832	0.000		54.47	0.000	0.000
					D	9.961	5.404		34.86	0.000	0.000
T3	161.31	1.574	33	28.908	A	7.122	0.265	3.775	51.11	0.000	0.000
163.57-159.05					B	7.122	0.000		53.00	0.000	0.000
					C	6.494	4.900		33.13	0.000	0.000
					D	7.123	4.321		32.99	0.000	0.000
T4	156.79	1.561	32	30.376	A	6.903	0.437	3.775	51.43	0.000	0.000
159.05-154.52					B	6.903	0.000		54.69	0.000	0.000
					C	6.273	5.610		31.77	0.000	0.000
					D	6.779	6.262		28.95	0.000	0.000
T5	152.26	1.548	32	31.844	A	7.011	0.437	3.775	50.68	0.000	0.000
154.52-150.00					B	7.011	0.000		53.84	0.000	0.000
					C	6.391	5.610		31.46	0.000	0.000
					D	6.898	6.262		28.68	0.000	0.000
T6	145.00	1.526	32	75.634	A	16.767	0.967	8.344	47.05	0.000	0.000
150.00-140.00					B	16.767	0.000		49.76	0.000	0.000
					C	15.258	12.400		30.17	0.000	0.000
					D	16.134	15.692		26.22	0.000	0.000
T7	135.00	1.496	31	83.296	A	19.051	0.967	10.013	50.02	0.000	0.000
140.00-130.00					B	19.051	0.000		52.56	0.000	0.000
					C	17.598	12.400		33.38	0.000	0.000
					D	18.490	15.692		29.29	0.000	0.000
T8	125.00	1.463	30	90.466	A	17.297	7.242	10.013	40.80	0.000	0.000
130.00-120.00					B	17.878	0.000		56.01	0.000	0.000
					C	16.731	12.400		34.37	0.000	0.000
					D	17.591	17.011		28.94	0.000	0.000
T9	115.00	1.429	30	97.774	A	18.876	11.425	10.013	33.04	0.000	0.000
120.00-110.00					B	20.028	0.000		49.99	0.000	0.000
					C	18.662	12.400		32.23	0.000	0.000
					D	18.804	22.746		24.10	0.000	0.000

Section Elevation ft	z ft	K_z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T10	105.00	1.392	29	104.945	A	18.568	13.060	10.013	31.66	0.000	0.000
110.00-100.00					B	19.757	0.000		50.68	0.000	0.000
					C	18.538	12.400		32.36	0.000	0.000
					D	18.716	23.651		23.63	0.000	0.000
T11	95.00	1.353	28	112.984	A	22.555	14.150	13.350	36.37	0.000	0.000
100.00-90.00					B	23.872	0.000		55.93	0.000	0.000
					C	22.633	12.400		38.11	0.000	0.000
					D	22.460	26.986		27.00	0.000	0.000
T12	85.00	1.31	27	120.155	A	23.077	14.150	13.350	35.86	0.000	0.000
90.00-80.00					B	24.365	0.000		54.79	0.000	0.000
					C	23.153	12.400		37.55	0.000	0.000
					D	22.968	27.449		26.48	0.000	0.000
T13	70.00	1.24	26	263.233	A	13.843	56.670	28.370	40.23	0.000	0.000
80.00-60.00					B	15.516	28.370		64.64	0.000	0.000
					C	13.943	53.170		42.27	0.000	0.000
					D	14.523	84.917		28.53	0.000	0.000
T14	55.00	1.157	24	142.444	A	8.132	28.625	14.185	38.59	0.000	0.000
60.00-50.00					B	9.050	14.185		61.05	0.000	0.000
					C	8.205	26.585		40.77	0.000	0.000
					D	8.411	42.580		27.82	0.000	0.000
T15	45.00	1.093	23	149.614	A	10.101	28.818	14.185	36.45	0.000	0.000
50.00-40.00					B	11.192	14.185		55.90	0.000	0.000
					C	10.202	26.585		38.56	0.000	0.000
					D	10.191	42.918		26.71	0.000	0.000
T16	35.00	1.017	21	156.196	A	26.060	14.633	13.350	32.81	0.000	0.000
40.00-30.00					B	27.367	0.000		48.78	0.000	0.000
					C	26.181	12.400		34.60	0.000	0.000
					D	25.890	28.878		24.38	0.000	0.000
T17	25.00	1	21	163.366	A	24.396	14.633	13.350	34.21	0.000	0.000
30.00-20.00					B	25.467	0.000		52.42	0.000	0.000
					C	24.495	12.400		36.18	0.000	0.000
					D	24.496	28.878		25.01	0.000	0.000
T18	15.00	1	21	170.539	A	27.243	14.633	13.350	31.88	0.000	0.000
20.00-10.00					B	28.533	0.000		46.79	0.000	0.000
					C	27.362	12.400		33.58	0.000	0.000
					D	27.093	28.878		23.85	0.000	0.000
T19 10.00-0.00	5.00	1	21	177.715	A	29.108	5.853	13.350	38.19	0.000	0.000
					B	29.688	0.000		44.97	0.000	0.000
					C	29.162	4.960		39.13	0.000	0.000
					D	28.976	11.551		32.94	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.07	0.75	A	0.21	2.936	0.593	1	1	12.778	1.60	159.73	D
180.00-170.00			B	0.203	2.969	0.591	1	1	12.491			
			C	0.203	2.969	0.591	1	1	12.491			
			D	0.303	2.579	0.617	1	1	16.547			
T2	0.06	0.54	A	0.253	2.762	0.603	1	1	10.019	1.15	179.59	D
170.00-163.57			B	0.246	2.792	0.601	1	1	9.832			
			C	0.246	2.792	0.601	1	1	9.832			
			D	0.384	2.324	0.645	1	1	13.448			
T3	0.11	0.39	A	0.256	2.754	0.603	1	1	7.282	0.83	183.94	D
163.57-159.05			B	0.246	2.789	0.601	1	1	7.122			

Section Elevation	Add Weight	Self Weight	F a c e	e	C_F	R_R	D_F	D_R	A_E	F	w	Ctrl. Face
ft	K	K							ft^2	K	plf	
			C	0.394	2.296	0.649	1	1	9.675			
			D	0.396	2.291	0.65	1	1	9.931			
T4	0.13	0.36	A	0.242	2.808	0.6	1	1	7.165	0.87	193.31	D
159.05-154.52			B	0.227	2.866	0.596	1	1	6.903			
			C	0.391	2.304	0.648	1	1	9.908			
			D	0.429	2.204	0.664	1	1	10.937			
T5	0.13	0.37	A	0.234	2.839	0.598	1	1	7.273	0.89	196.59	D
154.52-150.00			B	0.22	2.895	0.595	1	1	7.011			
			C	0.377	2.345	0.642	1	1	9.995			
			D	0.413	2.245	0.657	1	1	11.014			
T6	0.29	0.97	A	0.234	2.837	0.598	1	1	17.345	2.09	209.20	D
150.00-140.00			B	0.222	2.889	0.595	1	1	16.767			
			C	0.366	2.377	0.638	1	1	23.172			
			D	0.421	2.226	0.66	1	1	26.495			
T7	0.29	1.53	A	0.24	2.813	0.599	1	1	19.630	2.25	225.35	D
140.00-130.00			B	0.229	2.86	0.597	1	1	19.051			
			C	0.36	2.394	0.636	1	1	25.486			
			D	0.41	2.252	0.656	1	1	28.782			
T8	0.35	1.43	A	0.271	2.694	0.608	1	1	21.697	2.26	226.11	D
130.00-120.00			B	0.198	2.99	0.59	1	1	17.878			
			C	0.322	2.515	0.623	1	1	24.454			
			D	0.382	2.328	0.645	1	1	28.557			
T9	0.41	2.05	A	0.31	2.556	0.619	1	1	25.948	2.49	249.07	D
120.00-110.00			B	0.205	2.959	0.591	1	1	20.028			
			C	0.318	2.529	0.621	1	1	26.369			
			D	0.425	2.215	0.662	1	1	33.864			
T10	0.43	1.91	A	0.301	2.585	0.616	1	1	26.617	2.51	250.90	D
110.00-100.00			B	0.188	3.031	0.588	1	1	19.757			
			C	0.295	2.608	0.614	1	1	26.155			
			D	0.404	2.27	0.653	1	1	34.163			
T11	0.45	2.50	A	0.325	2.505	0.624	1	1	31.382	2.78	277.95	D
100.00-90.00			B	0.211	2.932	0.593	1	1	23.872			
			C	0.31	2.555	0.619	1	1	30.309			
			D	0.438	2.184	0.668	1	1	40.478			
T12	0.45	2.43	A	0.31	2.556	0.619	1	1	31.835	2.79	278.82	D
90.00-80.00			B	0.203	2.968	0.591	1	1	24.365			
			C	0.296	2.604	0.615	1	1	30.775			
			D	0.42	2.229	0.66	1	1	41.078			
T13	0.91	7.96	A	0.268	2.707	0.607	1	1	48.219	4.66	233.17	D
80.00-60.00			B	0.167	3.128	0.584	1	1	32.089			
			C	0.255	2.756	0.603	1	1	46.012			
			D	0.378	2.342	0.643	1	1	69.106			
T14	0.46	4.57	A	0.258	2.744	0.604	1	1	25.420	2.29	228.96	D
60.00-50.00			B	0.163	3.144	0.584	1	1	17.328			
			C	0.244	2.798	0.6	1	1	24.167			
			D	0.358	2.401	0.635	1	1	35.464			
T15	0.46	5.12	A	0.26	2.736	0.605	1	1	27.522	2.29	228.95	D
50.00-40.00			B	0.17	3.114	0.585	1	1	19.485			
			C	0.246	2.791	0.601	1	1	26.175			
			D	0.355	2.41	0.634	1	1	37.412			
T16	0.46	4.78	A	0.261	2.734	0.605	1	1	34.907	2.53	252.92	D
40.00-30.00			B	0.175	3.089	0.586	1	1	27.367			
			C	0.247	2.787	0.601	1	1	33.635			
			D	0.351	2.423	0.633	1	1	44.161			
T17	0.46	4.27	A	0.239	2.819	0.599	1	1	33.163	2.47	247.05	D
30.00-20.00			B	0.156	3.177	0.582	1	1	25.467			
			C	0.226	2.872	0.596	1	1	31.886			
			D	0.327	2.499	0.624	1	1	42.529			
T18	0.46	5.02	A	0.246	2.792	0.601	1	1	36.034	2.62	261.71	D
20.00-10.00			B	0.167	3.125	0.584	1	1	28.533			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			C	0.233	2.842	0.598	1	1	34.774			
			D	0.328	2.494	0.625	1	1	45.139			
T19	0.19	4.70	A	0.197	2.994	0.59	1	1	32.560	2.39	238.63	D
10.00-0.00			B	0.167	3.126	0.584	1	1	29.688			
			C	0.192	3.015	0.589	1	1	32.083			
			D	0.228	2.863	0.597	1	1	35.867			
Sum Weight:	6.57	51.64						OTM	3576.82 kip-ft	41.77		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.07	0.75	A	0.21	2.936	0.593	1.158	1.158	14.794	1.92	191.67	D
180.00-170.00			B	0.203	2.969	0.591	1.152	1.152	14.389			
			C	0.203	2.969	0.591	1.152	1.152	14.389			
			D	0.303	2.579	0.617	1.2	1.2	19.856			
T2	0.06	0.54	A	0.253	2.762	0.603	1.19	1.19	11.923	1.39	215.51	D
170.00-163.57			B	0.246	2.792	0.601	1.184	1.184	11.643			
			C	0.246	2.792	0.601	1.184	1.184	11.643			
			D	0.384	2.324	0.645	1.2	1.2	16.138			
T3	0.11	0.39	A	0.256	2.754	0.603	1.192	1.192	8.677	1.00	220.73	D
163.57-159.05			B	0.246	2.789	0.601	1.185	1.185	8.438			
			C	0.394	2.296	0.649	1.2	1.2	11.610			
			D	0.396	2.291	0.65	1.2	1.2	11.917			
T4	0.13	0.36	A	0.242	2.808	0.6	1.181	1.181	8.463	1.05	231.97	D
159.05-154.52			B	0.227	2.866	0.596	1.17	1.17	8.079			
			C	0.391	2.304	0.648	1.2	1.2	11.890			
			D	0.429	2.204	0.664	1.2	1.2	13.124			
T5	0.13	0.37	A	0.234	2.839	0.598	1.175	1.175	8.549	1.07	235.91	D
154.52-150.00			B	0.22	2.895	0.595	1.165	1.165	8.169			
			C	0.377	2.345	0.642	1.2	1.2	11.994			
			D	0.413	2.245	0.657	1.2	1.2	13.216			
T6	0.29	0.97	A	0.234	2.837	0.598	1.176	1.176	20.395	2.51	251.04	D
150.00-140.00			B	0.222	2.889	0.595	1.166	1.166	19.555			
			C	0.366	2.377	0.638	1.2	1.2	27.806			
			D	0.421	2.226	0.66	1.2	1.2	31.794			
T7	0.29	1.53	A	0.24	2.813	0.599	1.18	1.18	23.169	2.70	270.42	D
140.00-130.00			B	0.229	2.86	0.597	1.172	1.172	22.319			
			C	0.36	2.394	0.636	1.2	1.2	30.583			
			D	0.41	2.252	0.656	1.2	1.2	34.539			
T8	0.35	1.43	A	0.271	2.694	0.608	1.2	1.2	26.036	2.71	271.33	D
130.00-120.00			B	0.198	2.99	0.59	1.148	1.148	20.527			
			C	0.322	2.515	0.623	1.2	1.2	29.345			
			D	0.382	2.328	0.645	1.2	1.2	34.268			
T9	0.41	2.05	A	0.31	2.556	0.619	1.2	1.2	31.138	2.99	298.88	D
120.00-110.00			B	0.205	2.959	0.591	1.154	1.154	23.105			
			C	0.318	2.529	0.621	1.2	1.2	31.642			
			D	0.425	2.215	0.662	1.2	1.2	40.637			
T10	0.43	1.91	A	0.301	2.585	0.616	1.2	1.2	31.940	3.01	301.07	D
110.00-100.00			B	0.188	3.031	0.588	1.141	1.141	22.546			
			C	0.295	2.608	0.614	1.2	1.2	31.386			
			D	0.404	2.27	0.653	1.2	1.2	40.996			
T11	0.45	2.50	A	0.325	2.505	0.624	1.2	1.2	37.658	3.34	333.54	D

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
100.00-90.00			B	0.211	2.932	0.593	1.158	1.158	27.655			
			C	0.31	2.555	0.619	1.2	1.2	36.371			
			D	0.438	2.184	0.668	1.2	1.2	48.574			
T12	0.45	2.43	A	0.31	2.556	0.619	1.2	1.2	38.202	3.35	334.59	D
90.00-80.00			B	0.203	2.968	0.591	1.152	1.152	28.071			
			C	0.296	2.604	0.615	1.2	1.2	36.930			
			D	0.42	2.229	0.66	1.2	1.2	49.294			
T13	0.91	7.96	A	0.268	2.707	0.607	1.2	1.2	57.863	5.60	279.80	D
80.00-60.00			B	0.167	3.128	0.584	1.125	1.125	36.101			
			C	0.255	2.756	0.603	1.191	1.191	54.810			
			D	0.378	2.342	0.643	1.2	1.2	82.927			
T14	0.46	4.57	A	0.258	2.744	0.604	1.194	1.194	30.340	2.75	274.75	D
60.00-50.00			B	0.163	3.144	0.584	1.122	1.122	19.447			
			C	0.244	2.798	0.6	1.183	1.183	28.594			
			D	0.358	2.401	0.635	1.2	1.2	42.556			
T15	0.46	5.12	A	0.26	2.736	0.605	1.195	1.195	32.892	2.75	274.74	D
50.00-40.00			B	0.17	3.114	0.585	1.127	1.127	21.964			
			C	0.246	2.791	0.601	1.184	1.184	31.002			
			D	0.355	2.41	0.634	1.2	1.2	44.895			
T16	0.46	4.78	A	0.261	2.734	0.605	1.195	1.195	41.728	3.04	303.50	D
40.00-30.00			B	0.175	3.089	0.586	1.131	1.131	30.964			
			C	0.247	2.787	0.601	1.185	1.185	39.866			
			D	0.351	2.423	0.633	1.2	1.2	52.993			
T17	0.46	4.27	A	0.239	2.819	0.599	1.179	1.179	39.105	2.96	296.46	D
30.00-20.00			B	0.156	3.177	0.582	1.117	1.117	28.444			
			C	0.226	2.872	0.596	1.169	1.169	37.287			
			D	0.327	2.499	0.624	1.2	1.2	51.034			
T18	0.46	5.02	A	0.246	2.792	0.601	1.184	1.184	42.670	3.14	314.05	D
20.00-10.00			B	0.167	3.125	0.584	1.125	1.125	32.114			
			C	0.233	2.842	0.598	1.175	1.175	40.855			
			D	0.328	2.494	0.625	1.2	1.2	54.167			
T19	0.19	4.70	A	0.197	2.994	0.59	1.148	1.148	37.364	2.79	279.44	D
10.00-0.00			B	0.167	3.126	0.584	1.125	1.125	33.408			
			C	0.192	3.015	0.589	1.144	1.144	36.702			
			D	0.228	2.863	0.597	1.171	1.171	42.001			
Sum Weight:	6.57	51.64						OTM	4291.84 kip-ft	50.05		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.21	1.18	A	0.293	2.614	0.614	1	1	16.074	1.84	183.84	D
180.00-170.00			B	0.272	2.691	0.608	1	1	15.239			
			C	0.272	2.691	0.608	1	1	15.239			
			D	0.431	2.2	0.665	1	1	22.324			
T2	0.16	0.86	A	0.336	2.469	0.628	1	1	12.219	1.35	210.60	D
170.00-163.57			B	0.315	2.537	0.621	1	1	11.667			
			C	0.315	2.537	0.621	1	1	11.667			
			D	0.541	1.979	0.719	1	1	18.518			
T3	0.27	0.63	A	0.351	2.423	0.633	1	1	9.115	0.99	219.57	D
163.57-159.05			B	0.326	2.501	0.624	1	1	8.638			
			C	0.525	2.005	0.71	1	1	12.714			
			D	0.565	1.944	0.733	1	1	13.971			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T4	0.32	0.56	A	0.328	2.494	0.625	1	1	8.901	1.09	241.19	D
159.05-154.52			B	0.29	2.627	0.613	1	1	8.132			
			C	0.516	2.021	0.706	1	1	12.952			
			D	0.614	1.885	0.762	1	1	15.954			
T5	0.32	0.57	A	0.318	2.528	0.622	1	1	9.026	1.10	242.18	D
154.52-150.00			B	0.281	2.657	0.61	1	1	8.262			
			C	0.498	2.055	0.696	1	1	13.016			
			D	0.592	1.91	0.748	1	1	15.949			
T6	0.74	1.49	A	0.32	2.523	0.622	1	1	21.539	2.61	261.39	D
150.00-140.00			B	0.285	2.643	0.611	1	1	19.848			
			C	0.483	2.084	0.689	1	1	29.969			
			D	0.608	1.892	0.758	1	1	38.943			
T7	0.74	2.18	A	0.317	2.531	0.621	1	1	23.788	2.73	273.40	D
140.00-130.00			B	0.286	2.641	0.612	1	1	22.104			
			C	0.468	2.115	0.682	1	1	32.207			
			D	0.582	1.921	0.743	1	1	40.941			
T8	0.91	1.98	A	0.373	2.357	0.641	1	1	27.873	2.74	274.10	D
130.00-120.00			B	0.245	2.793	0.601	1	1	20.592			
			C	0.42	2.228	0.66	1	1	30.801			
			D	0.549	1.967	0.724	1	1	40.990			
T9	1.11	2.78	A	0.432	2.198	0.665	1	1	34.393	3.20	320.45	D
120.00-110.00			B	0.258	2.745	0.604	1	1	23.274			
			C	0.415	2.241	0.658	1	1	33.057			
			D	0.625	1.875	0.769	1	1	51.480			
T10	1.15	2.52	A	0.424	2.218	0.662	1	1	35.660	3.19	318.89	D
110.00-100.00			B	0.232	2.846	0.597	1	1	22.624			
			C	0.382	2.33	0.644	1	1	32.435			
			D	0.596	1.904	0.751	1	1	51.771			
T11	1.22	3.28	A	0.447	2.163	0.672	1	1	41.259	3.57	356.68	D
100.00-90.00			B	0.253	2.764	0.603	1	1	26.833			
			C	0.392	2.301	0.648	1	1	36.694			
			D	0.635	1.866	0.776	1	1	60.788			
T12	1.22	3.15	A	0.426	2.212	0.663	1	1	41.651	3.53	352.60	D
90.00-80.00			B	0.243	2.801	0.6	1	1	27.413			
			C	0.375	2.351	0.642	1	1	37.185			
			D	0.61	1.889	0.76	1	1	61.285			
T13	2.48	9.49	A	0.375	2.349	0.642	1	1	68.358	6.32	316.21	D
80.00-60.00			B	0.202	2.973	0.591	1	1	37.914			
			C	0.327	2.498	0.625	1	1	59.081			
			D	0.564	1.945	0.732	1	1	112.865			
T14	1.25	5.52	A	0.365	2.38	0.638	1	1	36.043	3.05	304.72	D
60.00-50.00			B	0.201	2.978	0.591	1	1	20.674			
			C	0.315	2.537	0.621	1	1	31.018			
			D	0.535	1.989	0.716	1	1	56.969			
T15	1.26	5.97	A	0.364	2.382	0.638	1	1	38.314	3.00	299.66	D
50.00-40.00			B	0.206	2.952	0.592	1	1	22.950			
			C	0.315	2.54	0.62	1	1	33.056			
			D	0.526	2.003	0.711	1	1	58.919			
T16	1.26	5.99	A	0.367	2.375	0.639	1	1	45.830	3.09	308.84	D
40.00-30.00			B	0.219	2.9	0.594	1	1	31.544			
			C	0.32	2.522	0.622	1	1	40.923			
			D	0.52	2.014	0.708	1	1	64.883			
T17	1.26	5.18	A	0.337	2.468	0.628	1	1	43.477	3.01	301.46	D
30.00-20.00			B	0.192	3.016	0.589	1	1	29.003			
			C	0.291	2.622	0.613	1	1	38.588			
			D	0.488	2.074	0.691	1	1	62.529			
T18	1.26	6.32	A	0.346	2.439	0.631	1	1	47.064	3.16	315.92	D
20.00-10.00			B	0.21	2.937	0.593	1	1	32.959			
			C	0.303	2.581	0.617	1	1	42.256			
			D	0.486	2.077	0.691	1	1	65.449			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T19	0.50	6.11	A	0.262	2.727	0.605	1	1	39.682	2.69	269.28	D
10.00-0.00			B	0.211	2.932	0.593	1	1	34.463			
			C	0.246	2.79	0.601	1	1	37.952			
			D	0.315	2.537	0.621	1	1	45.663			
Sum Weight:	17.62	65.76						OTM	4467.74 kip-ft	52.27		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.21	1.18	A	0.293	2.614	0.614	1.2	1.2	19.289	2.21	220.61	D
180.00-170.00			B	0.272	2.691	0.608	1.2	1.2	18.286			
			C	0.272	2.691	0.608	1.2	1.2	18.286			
			D	0.431	2.2	0.665	1.2	1.2	26.789			
T2	0.16	0.86	A	0.336	2.469	0.628	1.2	1.2	14.662	1.62	252.72	D
170.00-163.57			B	0.315	2.537	0.621	1.2	1.2	14.001			
			C	0.315	2.537	0.621	1.2	1.2	14.001			
			D	0.541	1.979	0.719	1.2	1.2	22.222			
T3	0.27	0.63	A	0.351	2.423	0.633	1.2	1.2	10.938	1.19	263.48	D
163.57-159.05			B	0.326	2.501	0.624	1.2	1.2	10.366			
			C	0.525	2.005	0.71	1.2	1.2	15.257			
			D	0.565	1.944	0.733	1.2	1.2	16.766			
T4	0.32	0.56	A	0.328	2.494	0.625	1.2	1.2	10.681	1.31	289.43	D
159.05-154.52			B	0.29	2.627	0.613	1.2	1.2	9.758			
			C	0.516	2.021	0.706	1.2	1.2	15.542			
			D	0.614	1.885	0.762	1.2	1.2	19.145			
T5	0.32	0.57	A	0.318	2.528	0.622	1.2	1.2	10.831	1.31	290.61	D
154.52-150.00			B	0.281	2.657	0.61	1.2	1.2	9.915			
			C	0.498	2.055	0.696	1.2	1.2	15.620			
			D	0.592	1.91	0.748	1.2	1.2	19.139			
T6	0.74	1.49	A	0.32	2.523	0.622	1.2	1.2	25.847	3.14	313.67	D
150.00-140.00			B	0.285	2.643	0.611	1.2	1.2	23.817			
			C	0.483	2.084	0.689	1.2	1.2	35.963			
			D	0.608	1.892	0.758	1.2	1.2	46.732			
T7	0.74	2.18	A	0.317	2.531	0.621	1.2	1.2	28.546	3.28	328.08	D
140.00-130.00			B	0.286	2.641	0.612	1.2	1.2	26.525			
			C	0.468	2.115	0.682	1.2	1.2	38.648			
			D	0.582	1.921	0.743	1.2	1.2	49.130			
T8	0.91	1.98	A	0.373	2.357	0.641	1.2	1.2	33.448	3.29	328.92	D
130.00-120.00			B	0.245	2.793	0.601	1.184	1.184	24.381			
			C	0.42	2.228	0.66	1.2	1.2	36.962			
			D	0.549	1.967	0.724	1.2	1.2	49.188			
T9	1.11	2.78	A	0.432	2.198	0.665	1.2	1.2	41.271	3.85	384.54	D
120.00-110.00			B	0.258	2.745	0.604	1.193	1.193	27.771			
			C	0.415	2.241	0.658	1.2	1.2	39.668			
			D	0.625	1.875	0.769	1.2	1.2	61.776			
T10	1.15	2.52	A	0.424	2.218	0.662	1.2	1.2	42.792	3.83	382.67	D
110.00-100.00			B	0.232	2.846	0.597	1.174	1.174	26.563			
			C	0.382	2.33	0.644	1.2	1.2	38.922			
			D	0.596	1.904	0.751	1.2	1.2	62.125			
T11	1.22	3.28	A	0.447	2.163	0.672	1.2	1.2	49.511	4.28	428.02	D
100.00-90.00			B	0.253	2.764	0.603	1.19	1.19	31.923			
			C	0.392	2.301	0.648	1.2	1.2	44.033			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			D	0.635	1.866	0.776	1.2	1.2	72.945			
T12	1.22	3.15	A	0.426	2.212	0.663	1.2	1.2	49.981	4.23	423.12	D
90.00-80.00			B	0.243	2.801	0.6	1.183	1.183	32.416			
			C	0.375	2.351	0.642	1.2	1.2	44.622			
			D	0.61	1.889	0.76	1.2	1.2	73.542			
T13	2.48	9.49	A	0.375	2.349	0.642	1.2	1.2	82.029	7.59	379.45	D
80.00-60.00			B	0.202	2.973	0.591	1.151	1.151	43.649			
			C	0.327	2.498	0.625	1.2	1.2	70.897			
			D	0.564	1.945	0.732	1.2	1.2	135.438			
T14	1.25	5.52	A	0.365	2.38	0.638	1.2	1.2	43.251	3.66	365.67	D
60.00-50.00			B	0.201	2.978	0.591	1.15	1.15	23.784			
			C	0.315	2.537	0.621	1.2	1.2	37.222			
			D	0.535	1.989	0.716	1.2	1.2	68.363			
T15	1.26	5.97	A	0.364	2.382	0.638	1.2	1.2	45.976	3.60	359.60	D
50.00-40.00			B	0.206	2.952	0.592	1.155	1.155	26.504			
			C	0.315	2.54	0.62	1.2	1.2	39.667			
			D	0.526	2.003	0.711	1.2	1.2	70.703			
T16	1.26	5.99	A	0.367	2.375	0.639	1.2	1.2	54.996	3.71	370.61	D
40.00-30.00			B	0.219	2.9	0.594	1.164	1.164	36.726			
			C	0.32	2.522	0.622	1.2	1.2	49.108			
			D	0.52	2.014	0.708	1.2	1.2	77.860			
T17	1.26	5.18	A	0.337	2.468	0.628	1.2	1.2	52.172	3.62	361.75	D
30.00-20.00			B	0.192	3.016	0.589	1.144	1.144	33.172			
			C	0.291	2.622	0.613	1.2	1.2	46.306			
			D	0.488	2.074	0.691	1.2	1.2	75.035			
T18	1.26	6.32	A	0.346	2.439	0.631	1.2	1.2	56.477	3.79	379.11	D
20.00-10.00			B	0.21	2.937	0.593	1.158	1.158	38.152			
			C	0.303	2.581	0.617	1.2	1.2	50.708			
			D	0.486	2.077	0.691	1.2	1.2	78.539			
T19	0.50	6.11	A	0.262	2.727	0.605	1.197	1.197	47.493	3.23	323.13	D
10.00-0.00			B	0.211	2.932	0.593	1.159	1.159	39.927			
			C	0.246	2.79	0.601	1.185	1.185	44.960			
			D	0.315	2.537	0.621	1.2	1.2	54.796			
Sum Weight:	17.62	65.76						OTM	5361.29 kip-ft	62.72		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.07	0.75	A	0.21	2.936	0.593	1	1	12.778	1.60	159.73	D
180.00-170.00			B	0.203	2.969	0.591	1	1	12.491			
			C	0.203	2.969	0.591	1	1	12.491			
			D	0.303	2.579	0.617	1	1	16.547			
T2	0.06	0.54	A	0.253	2.762	0.603	1	1	10.019	1.15	179.59	D
170.00-163.57			B	0.246	2.792	0.601	1	1	9.832			
			C	0.246	2.792	0.601	1	1	9.832			
			D	0.384	2.324	0.645	1	1	13.448			
T3	0.11	0.39	A	0.256	2.754	0.603	1	1	7.282	0.83	183.94	D
163.57-159.05			B	0.246	2.789	0.601	1	1	7.122			
			C	0.394	2.296	0.649	1	1	9.675			
			D	0.396	2.291	0.65	1	1	9.931			
T4	0.13	0.36	A	0.242	2.808	0.6	1	1	7.165	0.87	193.31	D
159.05-154.52			B	0.227	2.866	0.596	1	1	6.903			

Section Elevation	Add Weight	Self Weight	Face	e	C_F	R_R	D_F	D_R	A_E	F	w	Ctrl. Face
ft	K	K							ft^2	K	plf	
			C	0.391	2.304	0.648	1	1	9.908			
			D	0.429	2.204	0.664	1	1	10.937			
T5	0.13	0.37	A	0.234	2.839	0.598	1	1	7.273	0.89	196.59	D
154.52-150.00			B	0.22	2.895	0.595	1	1	7.011			
			C	0.377	2.345	0.642	1	1	9.995			
			D	0.413	2.245	0.657	1	1	11.014			
T6	0.29	0.97	A	0.234	2.837	0.598	1	1	17.345	2.09	209.20	D
150.00-140.00			B	0.222	2.889	0.595	1	1	16.767			
			C	0.366	2.377	0.638	1	1	23.172			
			D	0.421	2.226	0.66	1	1	26.495			
T7	0.29	1.53	A	0.24	2.813	0.599	1	1	19.630	2.25	225.35	D
140.00-130.00			B	0.229	2.86	0.597	1	1	19.051			
			C	0.36	2.394	0.636	1	1	25.486			
			D	0.41	2.252	0.656	1	1	28.782			
T8	0.35	1.43	A	0.271	2.694	0.608	1	1	21.697	2.26	226.11	D
130.00-120.00			B	0.198	2.99	0.59	1	1	17.878			
			C	0.322	2.515	0.623	1	1	24.454			
			D	0.382	2.328	0.645	1	1	28.557			
T9	0.41	2.05	A	0.31	2.556	0.619	1	1	25.948	2.49	249.07	D
120.00-110.00			B	0.205	2.959	0.591	1	1	20.028			
			C	0.318	2.529	0.621	1	1	26.369			
			D	0.425	2.215	0.662	1	1	33.864			
T10	0.43	1.91	A	0.301	2.585	0.616	1	1	26.617	2.51	250.90	D
110.00-100.00			B	0.188	3.031	0.588	1	1	19.757			
			C	0.295	2.608	0.614	1	1	26.155			
			D	0.404	2.27	0.653	1	1	34.163			
T11	0.45	2.50	A	0.325	2.505	0.624	1	1	31.382	2.78	277.95	D
100.00-90.00			B	0.211	2.932	0.593	1	1	23.872			
			C	0.31	2.555	0.619	1	1	30.309			
			D	0.438	2.184	0.668	1	1	40.478			
T12	0.45	2.43	A	0.31	2.556	0.619	1	1	31.835	2.79	278.82	D
90.00-80.00			B	0.203	2.968	0.591	1	1	24.365			
			C	0.296	2.604	0.615	1	1	30.775			
			D	0.42	2.229	0.66	1	1	41.078			
T13	0.91	7.96	A	0.268	2.707	0.607	1	1	48.219	4.66	233.17	D
80.00-60.00			B	0.167	3.128	0.584	1	1	32.089			
			C	0.255	2.756	0.603	1	1	46.012			
			D	0.378	2.342	0.643	1	1	69.106			
T14	0.46	4.57	A	0.258	2.744	0.604	1	1	25.420	2.29	228.96	D
60.00-50.00			B	0.163	3.144	0.584	1	1	17.328			
			C	0.244	2.798	0.6	1	1	24.167			
			D	0.358	2.401	0.635	1	1	35.464			
T15	0.46	5.12	A	0.26	2.736	0.605	1	1	27.522	2.29	228.95	D
50.00-40.00			B	0.17	3.114	0.585	1	1	19.485			
			C	0.246	2.791	0.601	1	1	26.175			
			D	0.355	2.41	0.634	1	1	37.412			
T16	0.46	4.78	A	0.261	2.734	0.605	1	1	34.907	2.53	252.92	D
40.00-30.00			B	0.175	3.089	0.586	1	1	27.367			
			C	0.247	2.787	0.601	1	1	33.635			
			D	0.351	2.423	0.633	1	1	44.161			
T17	0.46	4.27	A	0.239	2.819	0.599	1	1	33.163	2.47	247.05	D
30.00-20.00			B	0.156	3.177	0.582	1	1	25.467			
			C	0.226	2.872	0.596	1	1	31.886			
			D	0.327	2.499	0.624	1	1	42.529			
T18	0.46	5.02	A	0.246	2.792	0.601	1	1	36.034	2.62	261.71	D
20.00-10.00			B	0.167	3.125	0.584	1	1	28.533			
			C	0.233	2.842	0.598	1	1	34.774			
			D	0.328	2.494	0.625	1	1	45.139			
T19	0.19	4.70	A	0.197	2.994	0.59	1	1	32.560	2.39	238.63	D
10.00-0.00			B	0.167	3.126	0.584	1	1	29.688			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
			C	0.192	3.015	0.589	1	1	32.083			
			D	0.228	2.863	0.597	1	1	35.867			
Sum Weight:	6.57	51.64						OTM	3576.82 kip-ft	41.77		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.07	0.75	A	0.21	2.936	0.593	1.158	1.158	14.794	1.92	191.67	D
180.00-170.00			B	0.203	2.969	0.591	1.152	1.152	14.389			
			C	0.203	2.969	0.591	1.152	1.152	14.389			
			D	0.303	2.579	0.617	1.2	1.2	19.856			
T2	0.06	0.54	A	0.253	2.762	0.603	1.19	1.19	11.923	1.39	215.51	D
170.00-163.57			B	0.246	2.792	0.601	1.184	1.184	11.643			
			C	0.246	2.792	0.601	1.184	1.184	11.643			
			D	0.384	2.324	0.645	1.2	1.2	16.138			
T3	0.11	0.39	A	0.256	2.754	0.603	1.192	1.192	8.677	1.00	220.73	D
163.57-159.05			B	0.246	2.789	0.601	1.185	1.185	8.438			
			C	0.394	2.296	0.649	1.2	1.2	11.610			
			D	0.396	2.291	0.65	1.2	1.2	11.917			
T4	0.13	0.36	A	0.242	2.808	0.6	1.181	1.181	8.463	1.05	231.97	D
159.05-154.52			B	0.227	2.866	0.596	1.17	1.17	8.079			
			C	0.391	2.304	0.648	1.2	1.2	11.890			
			D	0.429	2.204	0.664	1.2	1.2	13.124			
T5	0.13	0.37	A	0.234	2.839	0.598	1.175	1.175	8.549	1.07	235.91	D
154.52-150.00			B	0.22	2.895	0.595	1.165	1.165	8.169			
			C	0.377	2.345	0.642	1.2	1.2	11.994			
			D	0.413	2.245	0.657	1.2	1.2	13.216			
T6	0.29	0.97	A	0.234	2.837	0.598	1.176	1.176	20.395	2.51	251.04	D
150.00-140.00			B	0.222	2.889	0.595	1.166	1.166	19.555			
			C	0.366	2.377	0.638	1.2	1.2	27.806			
			D	0.421	2.226	0.66	1.2	1.2	31.794			
T7	0.29	1.53	A	0.24	2.813	0.599	1.18	1.18	23.169	2.70	270.42	D
140.00-130.00			B	0.229	2.86	0.597	1.172	1.172	22.319			
			C	0.36	2.394	0.636	1.2	1.2	30.583			
			D	0.41	2.252	0.656	1.2	1.2	34.539			
T8	0.35	1.43	A	0.271	2.694	0.608	1.2	1.2	26.036	2.71	271.33	D
130.00-120.00			B	0.198	2.99	0.59	1.148	1.148	20.527			
			C	0.322	2.515	0.623	1.2	1.2	29.345			
			D	0.382	2.328	0.645	1.2	1.2	34.268			
T9	0.41	2.05	A	0.31	2.556	0.619	1.2	1.2	31.138	2.99	298.88	D
120.00-110.00			B	0.205	2.959	0.591	1.154	1.154	23.105			
			C	0.318	2.529	0.621	1.2	1.2	31.642			
			D	0.425	2.215	0.662	1.2	1.2	40.637			
T10	0.43	1.91	A	0.301	2.585	0.616	1.2	1.2	31.940	3.01	301.07	D
110.00-100.00			B	0.188	3.031	0.588	1.141	1.141	22.546			
			C	0.295	2.608	0.614	1.2	1.2	31.386			
			D	0.404	2.27	0.653	1.2	1.2	40.996			
T11	0.45	2.50	A	0.325	2.505	0.624	1.2	1.2	37.658	3.34	333.54	D
100.00-90.00			B	0.211	2.932	0.593	1.158	1.158	27.655			
			C	0.31	2.555	0.619	1.2	1.2	36.371			
			D	0.438	2.184	0.668	1.2	1.2	48.574			
T12	0.45	2.43	A	0.31	2.556	0.619	1.2	1.2	38.202	3.35	334.59	D

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
90.00-80.00			B	0.203	2.968	0.591	1.152	1.152	28.071			
			C	0.296	2.604	0.615	1.2	1.2	36.930			
			D	0.42	2.229	0.66	1.2	1.2	49.294			
T13	0.91	7.96	A	0.268	2.707	0.607	1.2	1.2	57.863	5.60	279.80	D
80.00-60.00			B	0.167	3.128	0.584	1.125	1.125	36.101			
			C	0.255	2.756	0.603	1.191	1.191	54.810			
			D	0.378	2.342	0.643	1.2	1.2	82.927			
T14	0.46	4.57	A	0.258	2.744	0.604	1.194	1.194	30.340	2.75	274.75	D
60.00-50.00			B	0.163	3.144	0.584	1.122	1.122	19.447			
			C	0.244	2.798	0.6	1.183	1.183	28.594			
			D	0.358	2.401	0.635	1.2	1.2	42.556			
T15	0.46	5.12	A	0.26	2.736	0.605	1.195	1.195	32.892	2.75	274.74	D
50.00-40.00			B	0.17	3.114	0.585	1.127	1.127	21.964			
			C	0.246	2.791	0.601	1.184	1.184	31.002			
			D	0.355	2.41	0.634	1.2	1.2	44.895			
T16	0.46	4.78	A	0.261	2.734	0.605	1.195	1.195	41.728	3.04	303.50	D
40.00-30.00			B	0.175	3.089	0.586	1.131	1.131	30.964			
			C	0.247	2.787	0.601	1.185	1.185	39.866			
			D	0.351	2.423	0.633	1.2	1.2	52.993			
T17	0.46	4.27	A	0.239	2.819	0.599	1.179	1.179	39.105	2.96	296.46	D
30.00-20.00			B	0.156	3.177	0.582	1.117	1.117	28.444			
			C	0.226	2.872	0.596	1.169	1.169	37.287			
			D	0.327	2.499	0.624	1.2	1.2	51.034			
T18	0.46	5.02	A	0.246	2.792	0.601	1.184	1.184	42.670	3.14	314.05	D
20.00-10.00			B	0.167	3.125	0.584	1.125	1.125	32.114			
			C	0.233	2.842	0.598	1.175	1.175	40.855			
			D	0.328	2.494	0.625	1.2	1.2	54.167			
T19	0.19	4.70	A	0.197	2.994	0.59	1.148	1.148	37.364	2.79	279.44	D
10.00-0.00			B	0.167	3.126	0.584	1.125	1.125	33.408			
			C	0.192	3.015	0.589	1.144	1.144	36.702			
			D	0.228	2.863	0.597	1.171	1.171	42.001			
Sum Weight:	6.57	51.64						OTM	4291.84 kip-ft	50.05		

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	30.80					
Bracing Weight	20.84					
Total Member Self-Weight	51.64			-10.19	11.24	
Total Weight	68.27			-10.19	11.24	
Wind 0 deg - No Ice		-0.12	-70.56	-7975.26	26.39	-42.91
Wind 30 deg - No Ice		39.58	-68.22	-7519.79	-4358.47	-44.83
Wind 45 deg - No Ice		56.04	-55.67	-6137.23	-6176.30	-37.90
Wind 60 deg - No Ice		68.68	-39.32	-4337.11	-7572.47	-28.40
Wind 90 deg - No Ice		71.09	0.12	4.97	-8039.40	-5.72
Wind 120 deg - No Ice		68.80	39.53	4342.98	-7587.62	20.84
Wind 135 deg - No Ice		56.21	55.84	6138.28	-6197.73	31.74
Wind 150 deg - No Ice		39.79	68.34	7514.57	-4384.71	40.47
Wind 180 deg - No Ice		0.12	70.56	7954.89	-3.91	42.91
Wind 210 deg - No Ice		-39.58	68.22	7499.42	4380.95	44.83
Wind 225 deg - No Ice		-56.04	55.67	6116.85	6198.78	37.90
Wind 240 deg - No Ice		-68.68	39.32	4316.74	7594.95	28.40

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 - No Ice		-71.09	-0.12	-25.34	8061.88	5.72
Wind 300 deg - No Ice		-68.80	-39.53	-4363.36	7610.10	-20.84
Wind 315 deg - No Ice		-56.21	-55.84	-6158.66	6220.21	-31.74
Wind 330 deg - No Ice		-39.79	-68.34	-7534.95	4407.19	-40.47
Member Ice	14.12					
Total Weight Ice	99.45			-12.56	38.52	
Wind 0 deg - Ice		-0.12	-87.10	-9643.94	51.90	-72.18
Wind 30 deg - Ice		48.95	-84.43	-9120.73	-5256.06	-73.18
Wind 45 deg - Ice		69.28	-68.90	-7445.35	-7456.08	-60.59
Wind 60 deg - Ice		84.89	-48.68	-5263.44	-9145.35	-43.86
Wind 90 deg - Ice		87.64	0.12	0.82	-9680.27	-5.86
Wind 120 deg - Ice		85.01	48.88	5261.49	-9158.72	39.02
Wind 135 deg - Ice		69.45	69.07	7439.15	-7475.00	56.63
Wind 150 deg - Ice		49.15	84.55	9108.99	-5279.24	70.38
Wind 180 deg - Ice		0.12	87.10	9618.82	25.14	72.18
Wind 210 deg - Ice		-48.95	84.43	9095.61	5333.10	73.18
Wind 225 deg - Ice		-69.28	68.90	7420.23	7533.11	60.59
Wind 240 deg - Ice		-84.89	48.68	5238.32	9222.38	43.86
Wind 270 deg - Ice		-87.64	-0.12	-25.94	9757.30	5.86
Wind 300 deg - Ice		-85.01	-48.88	-5286.61	9235.76	-39.02
Wind 315 deg - Ice		-69.45	-69.07	-7464.27	7552.03	-56.63
Wind 330 deg - Ice		-49.15	-84.55	-9134.10	5356.27	-70.38
Total Weight	68.27			-10.19	11.24	
Wind 0 deg - Service		-0.12	-70.56	-7973.05	16.98	-42.91
Wind 30 deg - Service		39.58	-68.22	-7517.58	-4367.88	-44.83
Wind 45 deg - Service		56.04	-55.67	-6135.01	-6185.71	-37.90
Wind 60 deg - Service		68.68	-39.32	-4334.89	-7581.88	-28.40
Wind 90 deg - Service		71.09	0.12	7.18	-8048.81	-5.72
Wind 120 deg - Service		68.80	39.53	4345.20	-7597.03	20.84
Wind 135 deg - Service		56.21	55.84	6140.50	-6207.14	31.74
Wind 150 deg - Service		39.79	68.34	7516.79	-4394.12	40.47
Wind 180 deg - Service		0.12	70.56	7957.11	-13.32	42.91
Wind 210 deg - Service		-39.58	68.22	7501.64	4371.54	44.83
Wind 225 deg - Service		-56.04	55.67	6119.07	6189.37	37.90
Wind 240 deg - Service		-68.68	39.32	4318.96	7585.54	28.40
Wind 270 deg - Service		-71.09	-0.12	-23.12	8052.47	5.72
Wind 300 deg - Service		-68.80	-39.53	-4361.14	7600.69	-20.84
Wind 315 deg - Service		-56.21	-55.84	-6156.44	6210.80	-31.74
Wind 330 deg - Service		-39.79	-68.34	-7532.73	4397.78	-40.47

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 45 deg - No Ice
5	Dead+Wind 60 deg - No Ice
6	Dead+Wind 90 deg - No Ice
7	Dead+Wind 120 deg - No Ice
8	Dead+Wind 135 deg - No Ice
9	Dead+Wind 150 deg - No Ice
10	Dead+Wind 180 deg - No Ice
11	Dead+Wind 210 deg - No Ice
12	Dead+Wind 225 deg - No Ice

Comb. No.	Description
13	Dead+Wind 240 deg - No Ice
14	Dead+Wind 270 deg - No Ice
15	Dead+Wind 300 deg - No Ice
16	Dead+Wind 315 deg - No Ice
17	Dead+Wind 330 deg - No Ice
18	Dead+Ice+Temp
19	Dead+Wind 0 deg+Ice+Temp
20	Dead+Wind 30 deg+Ice+Temp
21	Dead+Wind 45 deg+Ice+Temp
22	Dead+Wind 60 deg+Ice+Temp
23	Dead+Wind 90 deg+Ice+Temp
24	Dead+Wind 120 deg+Ice+Temp
25	Dead+Wind 135 deg+Ice+Temp
26	Dead+Wind 150 deg+Ice+Temp
27	Dead+Wind 180 deg+Ice+Temp
28	Dead+Wind 210 deg+Ice+Temp
29	Dead+Wind 225 deg+Ice+Temp
30	Dead+Wind 240 deg+Ice+Temp
31	Dead+Wind 270 deg+Ice+Temp
32	Dead+Wind 300 deg+Ice+Temp
33	Dead+Wind 315 deg+Ice+Temp
34	Dead+Wind 330 deg+Ice+Temp
35	Dead+Wind 0 deg - Service
36	Dead+Wind 30 deg - Service
37	Dead+Wind 45 deg - Service
38	Dead+Wind 60 deg - Service
39	Dead+Wind 90 deg - Service
40	Dead+Wind 120 deg - Service
41	Dead+Wind 135 deg - Service
42	Dead+Wind 150 deg - Service
43	Dead+Wind 180 deg - Service
44	Dead+Wind 210 deg - Service
45	Dead+Wind 225 deg - Service
46	Dead+Wind 240 deg - Service
47	Dead+Wind 270 deg - Service
48	Dead+Wind 300 deg - Service
49	Dead+Wind 315 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	180 - 170	Leg	Max Tension	21	6.70	-0.86	-0.83
			Max. Compression	29	-6.92	-0.99	-1.14
			Max. Mx	34	1.14	3.29	-2.58
			Max. My	24	1.15	-2.62	3.33
			Max. Vy	27	-2.81	1.25	-0.33
			Max. Vx	19	-2.81	-0.32	1.25
		Diagonal	Max Tension	27	5.71	0.00	0.00
			Max. Compression	19	-6.55	0.00	0.00
			Max. Mx	29	4.55	0.02	-0.00
			Max. My	17	4.23	0.01	0.00
			Max. Vy	29	0.01	0.02	-0.00
			Max. Vx	17	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	23	0.78	0.00	0.00
			Max. Compression	23	-0.80	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	18	0.01	-0.02	0.00
			Max. My	26	0.39	0.00	0.00
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
		Top Girt	Max Tension	27	0.51	0.00	0.00
			Max. Compression	14	-0.12	0.00	0.00
			Max. Mx	18	0.12	-0.02	0.00
			Max. My	34	0.03	0.00	0.00
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	34	-0.00	0.00	0.00
T2	170 - 163.573	Leg	Max Tension	29	19.66	-0.68	-0.82
			Max. Compression	29	-21.36	-1.00	-1.05
			Max. Mx	31	-15.04	1.44	-0.40
			Max. My	23	-14.89	-0.40	1.44
			Max. Vy	27	0.35	1.34	-0.30
			Max. Vx	19	0.35	-0.30	1.34
		Diagonal	Max Tension	32	6.51	0.00	0.00
			Max. Compression	24	-7.13	0.00	0.00
			Max. Mx	25	5.84	0.03	-0.00
			Max. My	15	4.23	0.00	0.00
			Max. Vy	25	0.01	0.03	-0.00
			Max. Vx	15	-0.00	0.00	0.00
		Top Girt	Max Tension	27	1.25	0.00	0.00
			Max. Compression	10	-0.73	0.00	0.00
			Max. Mx	18	0.34	-0.02	0.00
			Max. My	34	-0.09	0.00	0.00
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	34	-0.00	0.00	0.00
T3	163.573 - 159.049	Leg	Max Tension	25	32.78	-0.65	-0.65
			Max. Compression	25	-36.54	-1.05	-1.10
			Max. Mx	31	-25.51	1.74	-0.06
			Max. My	23	-26.00	-0.04	1.74
			Max. Vy	23	1.06	-0.69	-0.23
			Max. Vx	31	1.08	-0.23	-0.69
		Diagonal	Max Tension	31	5.69	0.00	0.00
			Max. Compression	31	-5.90	0.00	0.00
			Max. Mx	24	3.20	0.02	0.00
			Max. My	19	-5.74	-0.00	-0.01
			Max. Vy	24	0.01	0.02	0.00
			Max. Vx	19	0.00	0.00	0.00
		Top Girt	Max Tension	27	1.52	0.00	0.00
			Max. Compression	14	-0.90	0.00	0.00
			Max. Mx	27	1.52	-0.02	0.00
			Max. My	28	-0.44	0.00	0.00
			Max. Vy	27	0.01	0.00	0.00
			Max. Vx	28	0.00	0.00	0.00
T4	159.049 - 154.524	Leg	Max Tension	25	43.19	-0.39	-0.42
			Max. Compression	25	-48.73	-0.53	-0.51
			Max. Mx	30	8.90	1.33	-0.96
			Max. My	24	9.36	-0.96	1.33
			Max. Vy	34	-0.41	1.30	-0.95
			Max. Vx	24	-0.41	-0.96	1.33
		Diagonal	Max Tension	27	6.46	0.00	0.00
			Max. Compression	19	-6.15	0.00	0.00
			Max. Mx	24	2.68	0.04	0.00
			Max. My	27	-6.10	-0.01	0.01
			Max. Vy	24	0.02	0.04	0.00
			Max. Vx	27	-0.00	0.00	0.00
T5	154.524 - 150	Leg	Max Tension	25	52.82	-0.66	-0.61

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	25	-58.08	-0.91	-0.92
			Max. Mx	20	-55.82	-1.01	-0.74
			Max. My	30	-55.44	-0.74	-1.02
			Max. Vy	20	0.41	-1.01	-0.74
			Max. Vx	30	0.42	-0.74	-1.02
		Diagonal	Max Tension	31	6.01	0.00	0.00
			Max. Compression	31	-6.40	0.00	0.00
			Max. Mx	24	2.36	0.05	-0.00
			Max. My	27	-5.98	-0.01	0.01
			Max. Vy	24	-0.02	0.05	-0.00
			Max. Vx	27	-0.00	-0.01	0.01
T6	150 - 140	Leg	Max Tension	25	74.80	-0.68	-0.71
			Max. Compression	25	-81.08	-0.89	-0.79
			Max. Mx	30	14.10	1.66	-1.23
			Max. My	24	14.35	-1.24	1.67
			Max. Vy	30	-0.56	1.66	-1.23
			Max. Vx	24	-0.57	-1.24	1.67
		Diagonal	Max Tension	31	6.75	0.00	0.00
			Max. Compression	31	-6.84	0.00	0.00
			Max. Mx	24	3.07	0.07	-0.00
			Max. My	23	-6.30	-0.02	-0.01
			Max. Vy	24	-0.02	0.07	-0.00
			Max. Vx	23	0.00	0.00	0.00
		Top Girt	Max Tension	23	1.05	0.00	0.00
			Max. Compression	6	-0.90	0.00	0.00
			Max. Mx	27	1.04	-0.03	0.00
			Max. My	28	-0.38	0.00	0.00
			Max. Vy	27	0.02	0.00	0.00
			Max. Vx	28	-0.00	0.00	0.00
T7	140 - 130	Leg	Max Tension	25	89.59	-1.01	-1.02
			Max. Compression	25	-97.28	-0.22	-0.06
			Max. Mx	29	-3.77	4.87	-4.72
			Max. My	21	-5.07	-4.72	4.87
			Max. Vy	33	-1.03	4.78	-4.65
			Max. Vx	25	-1.03	-4.65	4.78
		Diagonal	Max Tension	31	8.96	0.00	0.00
			Max. Compression	24	-9.13	0.00	0.00
			Max. Mx	24	5.77	0.13	-0.00
			Max. My	23	-9.03	-0.03	-0.05
			Max. Vy	24	0.03	0.13	-0.00
			Max. Vx	23	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	25	1.46	0.00	0.00
			Max. Compression	25	-1.46	0.00	0.00
			Max. Mx	27	-0.83	-0.04	0.00
			Max. My	28	0.42	0.00	0.00
			Max. Vy	27	0.02	0.00	0.00
			Max. Vx	28	0.00	0.00	0.00
		Top Girt	Max Tension	32	0.89	0.00	0.00
			Max. Compression	31	-0.92	-0.09	0.00
			Max. Mx	19	-0.90	-0.12	0.00
			Max. My	19	-0.90	-0.12	0.01
			Max. Vy	19	-0.04	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Inner Bracing	Max Tension	33	0.17	0.00	0.00
			Max. Compression	33	-0.17	0.00	0.00
			Max. Mx	18	0.00	-0.03	0.00
			Max. My	31	-0.00	0.00	0.00
			Max. Vy	18	0.02	0.00	0.00
			Max. Vx	31	-0.00	0.00	0.00
T8	130 - 120	Leg	Max Tension	25	110.86	0.90	0.89

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	25	-120.84	-1.04	-0.76
			Max. Mx	30	-115.14	3.17	1.84
			Max. My	20	-114.82	1.83	3.16
			Max. Vy	20	1.32	2.19	-0.87
			Max. Vx	30	1.33	-0.85	2.24
		Diagonal	Max Tension	30	10.52	0.00	0.00
			Max. Compression	22	-10.75	0.00	0.00
			Max. Mx	24	3.83	0.17	-0.02
			Max. My	23	-10.10	-0.03	0.06
			Max. Vy	24	-0.04	0.17	-0.02
			Max. Vx	23	-0.01	-0.03	0.06
		Secondary Horizontal	Max Tension	25	1.81	0.00	0.00
			Max. Compression	25	-1.81	0.00	0.00
			Max. Mx	27	-1.38	-0.05	0.00
			Max. My	28	0.52	0.00	0.00
			Max. Vy	27	-0.02	0.00	0.00
			Max. Vx	28	0.00	0.00	0.00
T9	120 - 110	Leg	Max Tension	25	133.24	-1.86	-1.85
			Max. Compression	25	-146.60	-0.36	-0.27
			Max. Mx	21	-5.81	5.63	-5.46
			Max. My	29	-7.72	-5.45	5.63
			Max. Vy	33	-1.26	5.59	-5.41
			Max. Vx	25	-1.26	-5.43	5.60
		Diagonal	Max Tension	32	11.03	0.00	0.00
			Max. Compression	24	-11.25	0.00	0.00
			Max. Mx	32	6.45	0.12	-0.00
			Max. My	31	-11.00	-0.02	0.06
			Max. Vy	32	0.04	0.12	-0.00
			Max. Vx	31	-0.01	0.00	0.00
		Horizontal	Max Tension	23	0.94	0.00	0.00
			Max. Compression	23	-1.13	-0.15	0.01
			Max. Mx	27	-1.11	-0.20	0.01
			Max. My	19	-1.09	-0.20	0.01
			Max. Vy	27	-0.06	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	25	2.20	0.00	0.00
			Max. Compression	25	-2.20	0.00	0.00
			Max. Mx	27	-1.19	-0.05	0.00
			Max. My	28	0.63	0.00	0.00
			Max. Vy	27	-0.02	0.00	0.00
			Max. Vx	28	0.00	0.00	0.00
		Inner Bracing	Max Tension	25	0.11	0.00	0.00
			Max. Compression	25	-0.11	0.00	0.00
			Max. Mx	18	0.00	-0.05	0.00
			Max. My	31	-0.00	0.00	0.00
			Max. Vy	18	0.02	0.00	0.00
			Max. Vx	31	-0.00	0.00	0.00
T10	110 - 100	Leg	Max Tension	25	157.37	-2.11	-2.34
			Max. Compression	33	-173.51	-1.85	-1.68
			Max. Mx	23	-117.64	3.68	0.13
			Max. My	31	-117.92	0.16	3.59
			Max. Vy	34	1.32	-1.26	-0.67
			Max. Vx	24	1.34	-0.72	-1.23
		Diagonal	Max Tension	26	12.14	0.00	0.00
			Max. Compression	34	-12.37	0.00	0.00
			Max. Mx	24	4.81	0.21	-0.02
			Max. My	31	-11.93	-0.03	0.04
			Max. Vy	24	-0.05	0.21	-0.02
			Max. Vx	31	-0.01	-0.03	0.04

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Secondary Horizontal	Max Tension	33	2.60	0.00	0.00
			Max. Compression	33	-2.60	0.00	0.00
			Max. Mx	27	-1.37	-0.07	0.00
			Max. My	28	0.74	0.00	0.00
			Max. Vy	27	0.03	0.00	0.00
			Max. Vx	28	0.00	0.00	0.00
T11	100 - 90	Leg	Max Tension	33	182.52	-1.77	-1.42
			Max. Compression	33	-201.60	-0.51	-0.88
			Max. Mx	34	38.48	6.52	-5.67
			Max. My	24	40.80	-5.68	6.54
			Max. Vy	34	-1.03	6.52	-5.67
			Max. Vx	24	-1.02	-5.68	6.54
		Diagonal	Max Tension	27	12.66	0.00	0.00
			Max. Compression	27	-12.86	0.00	0.00
			Max. Mx	32	7.12	0.15	0.00
			Max. My	19	-12.78	-0.02	0.05
			Max. Vy	32	0.04	0.15	0.00
			Max. Vx	19	-0.01	0.00	0.00
		Horizontal	Max Tension	23	1.59	0.00	0.00
			Max. Compression	23	-1.69	-0.21	0.01
			Max. Mx	19	-1.65	-0.29	0.01
			Max. My	19	-1.65	-0.29	0.01
			Max. Vy	19	-0.07	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Inner Bracing	Max Tension	25	0.12	0.00	0.00
			Max. Compression	25	-0.12	0.00	0.00
			Max. Mx	18	0.00	-0.07	0.00
			Max. My	31	-0.00	0.00	0.00
			Max. Vy	18	0.03	0.00	0.00
			Max. Vx	31	-0.00	0.00	0.00
T12	90 - 80	Leg	Max Tension	33	207.85	-1.90	-2.10
			Max. Compression	33	-228.72	-1.04	-1.19
			Max. Mx	31	-154.77	3.86	-0.38
			Max. My	23	-154.50	-0.35	3.82
			Max. Vy	31	1.26	3.86	-0.38
			Max. Vx	20	1.25	-1.83	-2.43
		Diagonal	Max Tension	27	13.46	0.00	0.00
			Max. Compression	27	-13.73	0.00	0.00
			Max. Mx	34	5.41	0.18	0.01
			Max. My	19	-12.20	-0.00	0.03
			Max. Vy	34	-0.05	0.18	0.01
			Max. Vx	19	-0.01	-0.00	0.03
		Secondary Horizontal	Max Tension	33	3.43	0.00	0.00
			Max. Compression	33	-3.43	0.00	0.00
			Max. Mx	27	-1.53	-0.11	0.00
			Max. My	28	0.97	0.00	0.00
			Max. Vy	27	0.04	0.00	0.00
			Max. Vx	28	-0.00	0.00	0.00
T13	80 - 60	Leg	Max Tension	33	258.44	0.73	0.21
			Max. Compression	33	-284.68	6.96	-0.03
			Max. Mx	33	-284.68	6.96	-0.03
			Max. My	21	-12.36	-1.26	6.78
			Max. Vy	25	-1.08	6.95	-0.42
			Max. Vx	21	-1.44	-1.26	6.78
		Diagonal	Max Tension	27	14.03	0.00	0.00
			Max. Compression	27	-14.71	0.00	0.00
			Max. Mx	34	5.98	-0.09	-0.01
			Max. My	19	-13.49	-0.03	-0.03
			Max. Vy	34	0.04	-0.09	-0.01

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	19	0.01	0.00	0.00
		Top Girt	Max Tension	26	1.09	0.00	0.00
			Max. Compression	30	-0.87	-0.34	0.01
			Max. Mx	27	-0.72	-0.48	0.02
			Max. My	19	-0.72	-0.48	0.02
			Max. Vy	27	-0.10	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Inner Bracing	Max Tension	25	0.15	0.00	0.00
			Max. Compression	25	-0.15	0.00	0.00
			Max. Mx	18	0.00	0.14	0.00
			Max. My	31	0.00	0.00	-0.00
			Max. Vy	18	0.05	0.00	0.00
			Max. Vx	31	-0.00	0.00	0.00
T14	60 - 50	Leg	Max Tension	33	280.65	0.66	-0.44
			Max. Compression	33	-311.11	-0.37	0.53
			Max. Mx	25	277.35	-4.29	0.14
			Max. My	21	-15.35	-2.24	9.02
			Max. Vy	25	0.63	-4.29	0.14
			Max. Vx	21	-1.46	-2.24	9.02
		Diagonal	Max Tension	20	13.93	0.00	0.00
			Max. Compression	28	-14.28	0.00	0.00
			Max. Mx	32	7.49	-0.08	-0.01
			Max. My	19	-14.00	-0.04	-0.03
			Max. Vy	33	-0.04	-0.08	-0.01
			Max. Vx	19	0.00	0.00	0.00
		Horizontal	Max Tension	19	2.51	0.00	0.00
			Max. Compression	14	-1.33	0.34	-0.02
			Max. Mx	19	-0.63	0.66	-0.04
			Max. My	27	-0.62	0.66	-0.04
			Max. Vy	19	0.12	0.00	0.00
			Max. Vx	27	0.01	0.00	0.00
		Inner Bracing	Max Tension	33	0.15	0.00	0.00
			Max. Compression	33	-0.15	0.00	0.00
			Max. Mx	18	0.00	0.17	0.00
			Max. My	31	0.00	0.00	-0.00
			Max. Vy	18	-0.05	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00
T15	50 - 40	Leg	Max Tension	33	304.27	0.11	0.43
			Max. Compression	33	-336.42	2.14	-0.19
			Max. Mx	33	-335.89	5.86	0.07
			Max. My	33	-18.43	1.22	5.72
			Max. Vy	33	-2.18	5.85	0.07
			Max. Vx	33	-1.57	1.22	5.72
		Diagonal	Max Tension	20	14.12	0.00	0.00
			Max. Compression	28	-15.70	0.00	0.00
			Max. Mx	34	4.60	-0.16	-0.02
			Max. My	20	6.44	-0.15	-0.02
			Max. Vy	32	-0.07	-0.16	0.02
			Max. Vx	20	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	33	5.05	0.00	0.00
			Max. Compression	33	-5.05	0.00	0.00
			Max. Mx	18	0.26	-0.24	0.00
			Max. My	28	1.44	0.00	0.01
			Max. Vy	18	0.06	0.00	0.00
			Max. Vx	28	0.00	0.00	0.00
T16	40 - 30	Leg	Max Tension	33	324.53	-2.81	-1.88
			Max. Compression	33	-361.40	2.27	1.54
			Max. Mx	20	-106.81	7.63	-5.80
			Max. My	26	-105.77	-5.81	7.63
			Max. Vy	20	-1.80	7.63	-5.80

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	26	-1.81	-5.81	7.63
		Diagonal	Max Tension	20	15.09	0.00	0.00
			Max. Compression	28	-16.04	0.00	0.00
			Max. Mx	33	11.26	-0.17	-0.02
			Max. My	22	-15.75	-0.04	-0.05
			Max. Vy	33	-0.07	-0.17	-0.02
			Max. Vx	22	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	33	5.42	0.00	0.00
			Max. Compression	33	-5.42	0.00	0.00
			Max. Mx	18	0.29	-0.26	0.00
			Max. My	28	1.56	0.00	0.01
			Max. Vy	18	-0.07	0.00	0.00
			Max. Vx	28	-0.00	0.00	0.00
		Top Girt	Max Tension	34	3.02	0.00	0.00
			Max. Compression	14	-1.23	0.43	-0.03
			Max. Mx	19	0.00	0.73	-0.04
			Max. My	27	0.00	0.73	-0.04
			Max. Vy	19	0.13	0.00	0.00
			Max. Vx	27	0.01	0.00	0.00
		Inner Bracing	Max Tension	33	0.20	0.00	0.00
			Max. Compression	33	-0.19	0.00	0.00
			Max. Mx	18	0.00	0.21	0.00
			Max. My	31	0.00	0.00	-0.00
			Max. Vy	18	-0.06	0.00	0.00
			Max. Vx	33	-0.00	0.00	0.00
T17	30 - 20	Leg	Max Tension	33	347.77	-2.54	-3.19
			Max. Compression	33	-388.78	0.22	0.38
			Max. Mx	27	-256.28	6.49	0.54
			Max. My	19	-256.41	0.52	6.51
			Max. Vy	26	2.08	-3.66	-3.30
			Max. Vx	20	2.08	-3.28	-3.68
		Diagonal	Max Tension	20	14.70	0.00	0.00
			Max. Compression	28	-14.76	0.00	0.00
			Max. Mx	34	5.90	-0.20	-0.02
			Max. My	20	6.83	-0.19	-0.02
			Max. Vy	33	-0.07	-0.19	0.02
			Max. Vx	20	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	33	5.84	0.00	0.00
			Max. Compression	33	-5.84	0.00	0.00
			Max. Mx	18	0.32	-0.28	0.00
			Max. My	28	1.69	0.00	0.01
			Max. Vy	18	0.07	0.00	0.00
			Max. Vx	28	0.00	0.00	0.00
T18	20 - 10	Leg	Max Tension	33	368.80	-3.55	-2.69
			Max. Compression	33	-407.04	0.72	0.49
			Max. Mx	25	-18.80	-4.46	4.06
			Max. My	21	-19.55	4.04	-4.44
			Max. Vy	34	-1.39	2.45	1.78
			Max. Vx	28	-1.39	1.76	2.46
		Diagonal	Max Tension	20	14.72	0.00	0.00
			Max. Compression	22	-20.07	0.00	0.00
			Max. Mx	33	11.05	-0.18	-0.02
			Max. My	19	-9.66	-0.10	-0.06
			Max. Vy	34	-0.08	-0.18	-0.02
			Max. Vx	19	0.01	0.00	0.00
		Horizontal	Max Tension	19	6.03	0.00	0.00
			Max. Compression	14	-1.10	0.56	-0.03
			Max. Mx	19	0.99	0.79	-0.05
			Max. My	19	0.99	0.79	-0.05

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	19	-0.13	0.00	0.00
			Max. Vx	19	-0.01	0.00	0.00
		Secondary Horizontal	Max Tension	33	6.11	0.00	0.00
			Max. Compression	33	-6.11	0.00	0.00
			Max. Mx	18	0.31	-0.31	0.00
			Max. My	28	1.75	0.00	0.01
			Max. Vy	18	-0.07	0.00	0.00
			Max. Vx	28	-0.00	0.00	0.00
		Inner Bracing	Max Tension	32	0.07	0.00	0.00
			Max. Compression	32	-0.06	0.00	0.00
			Max. Mx	18	0.00	0.29	0.00
			Max. My	33	0.06	0.00	0.00
			Max. Vy	18	-0.07	0.00	0.00
			Max. Vx	33	-0.00	0.00	0.00
T19	10 - 0	Leg	Max Tension	33	365.68	-2.06	-2.29
			Max. Compression	33	-422.25	0.00	-0.00
			Max. Mx	27	-279.92	4.21	-0.33
			Max. My	19	-279.94	-0.35	4.22
			Max. Vy	34	1.51	-3.79	-3.38
			Max. Vx	28	1.50	-3.34	-3.80
		Diagonal	Max Tension	26	26.60	-0.04	0.00
			Max. Compression	28	-21.12	0.00	0.00
			Max. Mx	3	13.02	-0.06	0.03
			Max. My	34	-21.01	0.01	-0.09
			Max. Vy	20	0.03	-0.06	-0.00
			Max. Vx	34	-0.02	0.00	0.00
		Horizontal	Max Tension	28	16.73	0.00	0.00
			Max. Compression	26	-16.50	-0.06	0.02
			Max. Mx	31	7.45	-0.14	-0.03
			Max. My	27	-5.09	-0.04	0.03
			Max. Vy	31	-0.07	-0.14	-0.03
			Max. Vx	27	-0.01	-0.04	0.03
		Redund Horz 1 Bracing	Max Tension	33	6.34	0.00	0.00
			Max. Compression	33	-6.34	0.00	0.00
			Max. Mx	28	6.11	-0.01	0.00
			Max. My	28	-1.16	0.00	0.00
			Max. Vy	28	0.01	0.00	0.00
			Max. Vx	28	0.00	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	19	10.40	0.00	0.00
			Max. Compression	14	-6.31	0.00	0.00
			Max. Mx	34	4.65	-0.02	0.00
			Max. My	20	10.35	0.00	-0.00
			Max. Vy	34	0.01	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	19	0.01	0.00	0.00
			Max. Compression	16	-0.03	0.00	0.00
			Max. Mx	18	0.01	-0.02	0.00
			Max. Vy	18	0.02	0.00	0.00
		Redund Sub Horz Bracing	Max Tension	19	12.75	0.00	0.00
			Max. Compression	14	-7.34	0.00	0.00
			Max. Mx	18	4.30	-0.09	0.00
			Max. My	18	4.30	0.00	0.00
			Max. Vy	18	0.04	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
		Inner Bracing	Max Tension	33	0.17	0.00	0.00
			Max. Compression	33	-0.19	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	18	-0.00	0.32	0.00
			Max. My	31	0.00	0.00	-0.00
			Max. Vy	18	-0.07	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg D	Max. Vert	29	446.92	26.33	-28.11
	Max. H_x	30	433.06	27.19	-25.40
	Max. H_z	20	-381.43	-26.05	31.27
	Min. Vert	21	-396.29	-28.86	30.48
	Min. H_x	22	-382.34	-29.75	27.65
	Min. H_z	28	432.14	23.64	-28.86
Leg C	Max. Vert	25	445.82	-28.03	-26.43
	Max. H_x	32	-385.55	31.00	26.66
	Max. H_z	34	-384.65	28.16	29.40
	Min. Vert	33	-399.54	30.61	29.00
	Min. H_x	24	431.91	-28.40	-24.20
	Min. H_z	26	431.00	-25.71	-26.81
Leg B	Max. Vert	21	445.46	-28.06	26.30
	Max. H_x	30	-383.80	30.96	-26.52
	Max. H_z	20	430.68	-25.72	26.70
	Min. Vert	29	-397.76	30.55	-28.87
	Min. H_x	22	431.58	-28.44	24.06
	Min. H_z	28	-382.90	28.09	-29.29
Leg A	Max. Vert	33	448.70	26.49	28.12
	Max. H_x	32	434.80	27.36	25.40
	Max. H_z	34	433.89	23.79	28.88
	Min. Vert	25	-396.65	-28.95	-30.50
	Min. H_x	24	-382.67	-29.84	-27.66
	Min. H_z	26	-381.76	-26.12	-31.29

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	68.27	0.00	0.00	-10.19	11.24	0.00
Dead+Wind 0 deg - No Ice	68.27	-0.12	-70.56	-7982.39	26.50	-42.93
Dead+Wind 30 deg - No Ice	68.27	39.58	-68.22	-7525.82	-4361.91	-44.86
Dead+Wind 45 deg - No Ice	68.27	56.04	-55.67	-6142.15	-6181.24	-37.95
Dead+Wind 60 deg - No Ice	68.27	68.68	-39.32	-4340.60	-7578.55	-28.45
Dead+Wind 90 deg - No Ice	68.27	71.09	0.12	4.98	-8046.67	-5.76
Dead+Wind 120 deg - No Ice	68.27	68.80	39.53	4346.49	-7593.74	20.82
Dead+Wind 135 deg - No Ice	68.27	56.21	55.84	6143.21	-6202.71	31.72
Dead+Wind 150 deg - No Ice	68.27	39.79	68.34	7520.60	-4388.21	40.46
Dead+Wind 180 deg - No Ice	68.27	0.12	70.56	7961.98	-3.87	42.93
Dead+Wind 210 deg - No Ice	68.27	-39.58	68.22	7505.33	4384.56	44.87
Dead+Wind 225 deg - No Ice	68.27	-56.04	55.67	6121.65	6203.83	37.95
Dead+Wind 240 deg - No Ice	68.27	-68.68	39.32	4320.11	7601.11	28.45

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+Wind 270 deg - No Ice	68.27	-71.09	-0.12	-25.40	8069.18	5.76
Dead+Wind 300 deg - No Ice	68.27	-68.80	-39.53	-4366.83	7616.29	-20.82
Dead+Wind 315 deg - No Ice	68.27	-56.21	-55.84	-6163.54	6225.30	-31.72
Dead+Wind 330 deg - No Ice	68.27	-39.79	-68.34	-7540.92	4410.85	-40.46
Dead+Ice+Temp	99.45	0.00	0.00	-12.59	38.56	0.00
Dead+Wind 0 deg+Ice+Temp	99.45	-0.12	-87.10	-9659.99	52.13	-72.27
Dead+Wind 30 deg+Ice+Temp	99.45	48.95	-84.43	-9134.72	-5264.03	-73.29
Dead+Wind 45 deg+Ice+Temp	99.45	69.28	-68.90	-7456.79	-7467.47	-60.69
Dead+Wind 60 deg+Ice+Temp	99.45	84.89	-48.68	-5271.53	-9159.37	-43.96
Dead+Wind 90 deg+Ice+Temp	99.45	87.64	0.12	0.84	-9696.48	-5.91
Dead+Wind 120 deg+Ice+Temp	99.45	85.01	48.88	5269.63	-9172.76	39.02
Dead+Wind 135 deg+Ice+Temp	99.45	69.45	69.07	7450.60	-7486.41	56.66
Dead+Wind 150 deg+Ice+Temp	99.45	49.15	84.55	9122.96	-5287.24	70.45
Dead+Wind 180 deg+Ice+Temp	99.45	0.12	87.10	9634.81	25.29	72.27
Dead+Wind 210 deg+Ice+Temp	99.45	-48.95	84.43	9109.40	5341.43	73.29
Dead+Wind 225 deg+Ice+Temp	99.45	-69.28	68.90	7431.46	7544.78	60.69
Dead+Wind 240 deg+Ice+Temp	99.45	-84.89	48.68	5246.24	9236.61	43.96
Dead+Wind 270 deg+Ice+Temp	99.45	-87.64	-0.12	-26.00	9773.65	5.92
Dead+Wind 300 deg+Ice+Temp	99.45	-85.01	-48.88	-5294.63	9250.04	-39.01
Dead+Wind 315 deg+Ice+Temp	99.45	-69.45	-69.07	-7475.59	7563.77	-56.65
Dead+Wind 330 deg+Ice+Temp	99.45	-49.15	-84.55	-9147.99	5364.69	-70.43
Dead+Wind 0 deg - Service	68.27	-0.12	-70.56	-7982.39	26.50	-42.93
Dead+Wind 30 deg - Service	68.27	39.58	-68.22	-7525.82	-4361.91	-44.86
Dead+Wind 45 deg - Service	68.27	56.04	-55.67	-6142.15	-6181.24	-37.95
Dead+Wind 60 deg - Service	68.27	68.68	-39.32	-4340.60	-7578.55	-28.45
Dead+Wind 90 deg - Service	68.27	71.09	0.12	4.98	-8046.67	-5.76
Dead+Wind 120 deg - Service	68.27	68.80	39.53	4346.49	-7593.74	20.82
Dead+Wind 135 deg - Service	68.27	56.21	55.84	6143.21	-6202.71	31.72
Dead+Wind 150 deg - Service	68.27	39.79	68.34	7520.60	-4388.21	40.46
Dead+Wind 180 deg - Service	68.27	0.12	70.56	7961.98	-3.87	42.93
Dead+Wind 210 deg - Service	68.27	-39.58	68.22	7505.33	4384.56	44.87
Dead+Wind 225 deg - Service	68.27	-56.04	55.67	6121.65	6203.83	37.95
Dead+Wind 240 deg - Service	68.27	-68.68	39.32	4320.11	7601.11	28.45
Dead+Wind 270 deg - Service	68.27	-71.09	-0.12	-25.40	8069.18	5.76
Dead+Wind 300 deg - Service	68.27	-68.80	-39.53	-4366.83	7616.29	-20.82
Dead+Wind 315 deg - Service	68.27	-56.21	-55.84	-6163.54	6225.30	-31.72
Dead+Wind 330 deg - Service	68.27	-39.79	-68.34	-7540.92	4410.85	-40.46

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-68.27	0.00	-0.00	68.27	0.00	0.000%
2	-0.12	-68.27	-70.56	0.12	68.27	70.56	0.000%
3	39.58	-68.27	-68.22	-39.58	68.27	68.22	0.000%
4	56.04	-68.27	-55.67	-56.04	68.27	55.67	0.000%
5	68.68	-68.27	-39.32	-68.68	68.27	39.32	0.000%
6	71.09	-68.27	0.12	-71.09	68.27	-0.12	0.000%
7	68.80	-68.27	39.53	-68.80	68.27	-39.53	0.000%
8	56.21	-68.27	55.84	-56.21	68.27	-55.84	0.000%
9	39.79	-68.27	68.34	-39.79	68.27	-68.34	0.000%
10	0.12	-68.27	70.56	-0.12	68.27	-70.56	0.000%
11	-39.58	-68.27	68.22	39.58	68.27	-68.22	0.000%
12	-56.04	-68.27	55.67	56.04	68.27	-55.67	0.000%
13	-68.68	-68.27	39.32	68.68	68.27	-39.32	0.000%
14	-71.09	-68.27	-0.12	71.09	68.27	0.12	0.000%
15	-68.80	-68.27	-39.53	68.80	68.27	39.53	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
16	-56.21	-68.27	-55.84	56.21	68.27	55.84	0.000%
17	-39.79	-68.27	-68.34	39.79	68.27	68.34	0.000%
18	0.00	-99.45	0.00	-0.00	99.45	-0.00	0.000%
19	-0.12	-99.45	-87.10	0.12	99.45	87.10	0.000%
20	48.95	-99.45	-84.43	-48.95	99.45	84.43	0.000%
21	69.28	-99.45	-68.90	-69.28	99.45	68.90	0.001%
22	84.89	-99.45	-48.68	-84.89	99.45	48.68	0.000%
23	87.64	-99.45	0.12	-87.64	99.45	-0.12	0.000%
24	85.01	-99.45	48.88	-85.01	99.45	-48.88	0.000%
25	69.45	-99.45	69.07	-69.45	99.45	-69.07	0.001%
26	49.15	-99.45	84.55	-49.15	99.45	-84.55	0.000%
27	0.12	-99.45	87.10	-0.12	99.45	-87.10	0.000%
28	-48.95	-99.45	84.43	48.95	99.45	-84.43	0.001%
29	-69.28	-99.45	68.90	69.28	99.45	-68.90	0.001%
30	-84.89	-99.45	48.68	84.89	99.45	-48.68	0.000%
31	-87.64	-99.45	-0.12	87.64	99.45	0.12	0.000%
32	-85.01	-99.45	-48.88	85.01	99.45	48.88	0.000%
33	-69.45	-99.45	-69.07	69.45	99.45	69.07	0.001%
34	-49.15	-99.45	-84.55	49.15	99.45	84.55	0.001%
35	-0.12	-68.27	-70.56	0.12	68.27	70.56	0.000%
36	39.58	-68.27	-68.22	-39.58	68.27	68.22	0.000%
37	56.04	-68.27	-55.67	-56.04	68.27	55.67	0.000%
38	68.68	-68.27	-39.32	-68.68	68.27	39.32	0.000%
39	71.09	-68.27	0.12	-71.09	68.27	-0.12	0.000%
40	68.80	-68.27	39.53	-68.80	68.27	-39.53	0.000%
41	56.21	-68.27	55.84	-56.21	68.27	-55.84	0.000%
42	39.79	-68.27	68.34	-39.79	68.27	-68.34	0.000%
43	0.12	-68.27	70.56	-0.12	68.27	-70.56	0.000%
44	-39.58	-68.27	68.22	39.58	68.27	-68.22	0.000%
45	-56.04	-68.27	55.67	56.04	68.27	-55.67	0.000%
46	-68.68	-68.27	39.32	68.68	68.27	-39.32	0.000%
47	-71.09	-68.27	-0.12	71.09	68.27	0.12	0.000%
48	-68.80	-68.27	-39.53	68.80	68.27	39.53	0.000%
49	-56.21	-68.27	-55.84	56.21	68.27	55.84	0.000%
50	-39.79	-68.27	-68.34	39.79	68.27	68.34	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00080591
2	Yes	6	0.00067182	0.00025758
3	Yes	5	0.00079434	0.00033924
4	Yes	5	0.00050859	0.00025663
5	Yes	5	0.00083492	0.00028707
6	Yes	6	0.00074555	0.00021055
7	Yes	5	0.00083998	0.00028772
8	Yes	5	0.00051055	0.00025768
9	Yes	5	0.00079035	0.00033918
10	Yes	6	0.00066462	0.00025577
11	Yes	5	0.00078670	0.00033857
12	Yes	5	0.00050933	0.00025756
13	Yes	5	0.00084543	0.00028876
14	Yes	6	0.00075555	0.00021238
15	Yes	5	0.00084850	0.00028980
16	Yes	5	0.00051605	0.00025874

17	Yes	5	0.00079737	0.00034017
18	Yes	5	0.00000001	0.00055271
19	Yes	7	0.00094606	0.00037005
20	Yes	6	0.00089699	0.00039218
21	Yes	6	0.00080953	0.00034847
22	Yes	8	0.00097627	0.00030800
23	Yes	10	0.00099331	0.00028764
24	Yes	8	0.00098288	0.00030976
25	Yes	6	0.00081368	0.00034954
26	Yes	6	0.00089085	0.00039068
27	Yes	7	0.00093404	0.00036669
28	Yes	6	0.00088720	0.00038935
29	Yes	6	0.00083211	0.00035379
30	Yes	9	0.00079402	0.00024183
31	Yes	11	0.00085775	0.00024155
32	Yes	9	0.00079785	0.00024269
33	Yes	6	0.00083824	0.00035587
34	Yes	6	0.00089997	0.00039312
35	Yes	6	0.00067182	0.00025758
36	Yes	5	0.00079434	0.00033924
37	Yes	5	0.00050859	0.00025663
38	Yes	5	0.00083492	0.00028707
39	Yes	6	0.00074555	0.00021055
40	Yes	5	0.00083998	0.00028772
41	Yes	5	0.00051055	0.00025768
42	Yes	5	0.00079035	0.00033918
43	Yes	6	0.00066462	0.00025577
44	Yes	5	0.00078670	0.00033857
45	Yes	5	0.00050933	0.00025756
46	Yes	5	0.00084543	0.00028876
47	Yes	6	0.00075555	0.00021238
48	Yes	5	0.00084850	0.00028980
49	Yes	5	0.00051605	0.00025874
50	Yes	5	0.00079737	0.00034017

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		°	°
T1	180 - 170	12.242	48	0.6142	0.0234
T2	170 - 163.573	10.791	48	0.6030	0.0212
T3	163.573 - 159.049	9.884	48	0.5846	0.0214
T4	159.049 - 154.524	9.262	48	0.5676	0.0217
T5	154.524 - 150	8.663	48	0.5446	0.0229
T6	150 - 140	8.093	48	0.5180	0.0238
T7	140 - 130	6.933	48	0.4563	0.0249
T8	130 - 120	5.914	48	0.4091	0.0247
T9	120 - 110	5.006	48	0.3587	0.0224
T10	110 - 100	4.202	48	0.3180	0.0211
T11	100 - 90	3.492	48	0.2757	0.0199
T12	90 - 80	2.868	48	0.2401	0.0174
T13	80 - 60	2.321	48	0.2040	0.0152
T14	60 - 50	1.400	48	0.1641	0.0100
T15	50 - 40	1.004	48	0.1444	0.0075
T16	40 - 30	0.680	48	0.1238	0.0062
T17	30 - 20	0.412	48	0.0929	0.0049
T18	20 - 10	0.210	48	0.0619	0.0037
T19	10 - 0	0.075	40	0.0304	0.0024

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	PA6-65AC	48	12.242	0.6142	0.0234	40708
176.00	PA6-65AC	48	11.658	0.6114	0.0223	40708
172.00	6' Standoff	48	11.079	0.6067	0.0213	26063
170.00	20' 8 Bay Di-Pole	48	10.791	0.6030	0.0212	22252
169.00	4' Omni	48	10.648	0.6007	0.0212	21256
163.00	T-Frame	48	9.804	0.5827	0.0214	15392
160.00	3" Dia x 15' Omni	48	9.391	0.5716	0.0216	11106
150.00	2" Dia 10' Omni	48	8.093	0.5180	0.0238	8592
145.00	6' Standoff	48	7.495	0.4861	0.0245	8355
143.00	6' Standoff	48	7.266	0.4737	0.0247	8274
133.00	10'6"x4" Pipe Mount	48	6.207	0.4229	0.0250	10104
132.00	3' Stand-off	48	6.108	0.4184	0.0249	10425
130.00	PA6-65AC	48	5.914	0.4091	0.0247	10963
126.00	LeBlanc 10' Standoff (1)	48	5.538	0.3888	0.0239	11330
122.00	EUSF10-U	48	5.179	0.3683	0.0228	11372
120.00	3" Dia x 15' Omni	48	5.006	0.3587	0.0224	11476
116.00	ASP711	48	4.673	0.3417	0.0217	11990
115.00	6' Standoff	48	4.592	0.3377	0.0216	12160
112.00	6' Stand-off	48	4.355	0.3260	0.0213	12674
106.00	12' Wireless Frame	48	3.907	0.3010	0.0207	13187
101.00	LeBlanc 10' Standoff (1)	48	3.559	0.2797	0.0200	13434
100.00	4' Grid Dish	48	3.492	0.2757	0.0199	13540
88.00	3' Stand-off	48	2.753	0.2327	0.0170	16466
85.00	3' Stand-off	48	2.586	0.2214	0.0163	17187
80.00	6' Ice Shield	48	2.321	0.2040	0.0152	18688
76.00	10'6"x4" Pipe Mount	48	2.120	0.1931	0.0143	20785
75.00	6' Grid Dish	48	2.072	0.1908	0.0141	21446
56.00	3' Stand-off	48	1.235	0.1564	0.0089	22750
47.00	3' Stand-off	48	0.900	0.1387	0.0070	16125

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 170	14.405	32	0.7073	0.0361
T2	170 - 163.573	12.739	32	0.6950	0.0323
T3	163.573 - 159.049	11.694	32	0.6752	0.0314
T4	159.049 - 154.524	10.976	32	0.6569	0.0318
T5	154.524 - 150	10.283	32	0.6317	0.0334
T6	150 - 140	9.621	32	0.6023	0.0347
T7	140 - 130	8.270	32	0.5335	0.0361
T8	130 - 120	7.076	32	0.4802	0.0357
T9	120 - 110	6.010	32	0.4229	0.0334
T10	110 - 100	5.059	32	0.3765	0.0324
T11	100 - 90	4.216	32	0.3278	0.0312

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T12	90 - 80	3.472	32	0.2865	0.0279
T13	80 - 60	2.816	32	0.2444	0.0249
T14	60 - 50	1.704	32	0.1975	0.0165
T15	50 - 40	1.224	32	0.1741	0.0124
T16	40 - 30	0.831	32	0.1495	0.0102
T17	30 - 20	0.505	32	0.1124	0.0081
T18	20 - 10	0.259	32	0.0749	0.0060
T19	10 - 0	0.093	24	0.0368	0.0039

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	PA6-65AC	32	14.405	0.7073	0.0361	37046
176.00	PA6-65AC	32	13.735	0.7042	0.0346	37046
172.00	6' Standoff	32	13.069	0.6990	0.0330	23765
170.00	20' 8 Bay Di-Pole	32	12.739	0.6950	0.0323	20473
169.00	4' Omni	32	12.574	0.6925	0.0319	19746
163.00	T-Frame	32	11.602	0.6731	0.0314	14941
160.00	3" Dia x 15' Omni	32	11.125	0.6612	0.0316	10305
150.00	2" Dia 10' Omni	32	9.621	0.6023	0.0347	7772
145.00	6' Standoff	32	8.926	0.5669	0.0356	7498
143.00	6' Standoff	32	8.659	0.5529	0.0358	7395
133.00	10'6"x4" Pipe Mount	32	7.419	0.4959	0.0361	8895
132.00	3' Stand-off	32	7.304	0.4908	0.0360	9166
130.00	PA6-65AC	32	7.076	0.4802	0.0357	9627
126.00	LeBlanc 10' Standoff (1)	32	6.635	0.4572	0.0348	9996
122.00	EUSF10-U	32	6.213	0.4339	0.0338	10104
120.00	3" Dia x 15' Omni	32	6.010	0.4229	0.0334	10209
116.00	ASP711	32	5.616	0.4036	0.0328	10608
115.00	6' Standoff	32	5.521	0.3990	0.0327	10732
112.00	6' Stand-off	32	5.241	0.3856	0.0325	11108
106.00	12' Wireless Frame	32	4.710	0.3569	0.0321	11568
101.00	LeBlanc 10' Standoff (1)	32	4.296	0.3324	0.0314	11844
100.00	4' Grid Dish	32	4.216	0.3278	0.0312	11934
88.00	3' Stand-off	32	3.334	0.2778	0.0273	14130
85.00	3' Stand-off	32	3.134	0.2647	0.0264	14819
80.00	6' Ice Shield	32	2.816	0.2444	0.0249	16256
76.00	10'6"x4" Pipe Mount	32	2.575	0.2316	0.0235	18108
75.00	6' Grid Dish	32	2.516	0.2289	0.0231	18682
56.00	3' Stand-off	32	1.504	0.1883	0.0147	18912
47.00	3' Stand-off	32	1.097	0.1673	0.0115	13228

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	180	Diagonal	A325X	0.6250	2	3.27	8.16	0.402 ✓	1.333	Member Bearing

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Secondary Horizontal	A325X	0.6250	2	0.40	8.16	0.049 ✓	1.333	Member Bearing
		Top Girt	A325X	0.6250	2	0.25	8.16	0.031 ✓	1.333	Member Bearing
T2	170	Diagonal	A325X	0.6250	2	3.56	8.16	0.437 ✓	1.333	Member Bearing
		Top Girt	A325X	0.6250	2	0.63	8.16	0.077 ✓	1.333	Member Bearing
T3	163.573	Diagonal	A325X	0.6250	2	2.95	8.16	0.361 ✓	1.333	Member Bearing
		Top Girt	A325X	0.6250	2	0.76	8.16	0.093 ✓	1.333	Member Bearing
T4	159.049	Diagonal	A325X	0.6250	2	3.23	8.16	0.396 ✓	1.333	Member Bearing
T5	154.524	Diagonal	A325X	0.6250	2	3.20	8.16	0.392 ✓	1.333	Member Bearing
T6	150	Diagonal	A325X	0.6250	2	3.42	8.16	0.420 ✓	1.333	Member Bearing
		Top Girt	A325X	0.6250	2	0.53	8.16	0.065 ✓	1.333	Member Bearing
T7	140	Diagonal	A325X	0.6250	2	4.57	9.20	0.496 ✓	1.333	Bolt Shear
		Top Girt	A325X	0.6250	2	0.46	8.16	0.056 ✓	1.333	Member Bearing
T8	130	Diagonal	A325X	0.6250	2	5.38	9.20	0.584 ✓	1.333	Bolt Shear
		Secondary Horizontal	A325X	0.6250	2	0.91	9.20	0.099 ✓	1.333	Bolt Shear
T9	120	Diagonal	A325X	0.6250	2	5.62	9.20	0.611 ✓	1.333	Bolt Shear
		Horizontal	A325X	0.6250	2	0.56	9.20	0.061 ✓	1.333	Bolt Shear
		Secondary Horizontal	A325X	0.6250	2	1.10	8.16	0.135 ✓	1.333	Member Bearing
T10	110	Diagonal	A325X	0.6250	2	6.18	9.20	0.672 ✓	1.333	Bolt Shear
		Secondary Horizontal	A325X	0.6250	2	1.30	9.20	0.141 ✓	1.333	Bolt Shear
T11	100	Diagonal	A325X	0.6250	2	6.43	9.20	0.699 ✓	1.333	Bolt Shear
		Horizontal	A325X	0.6250	2	0.84	9.20	0.092 ✓	1.333	Bolt Shear
T12	90	Diagonal	A325X	0.6250	2	6.86	9.20	0.746 ✓	1.333	Bolt Shear
		Secondary Horizontal	A325X	0.6250	2	1.72	9.20	0.186 ✓	1.333	Bolt Shear
T13	80	Diagonal	A325X	0.6250	2	7.36	16.31	0.451 ✓	1.333	Member Bearing
		Top Girt	A325X	0.6250	2	0.54	9.20	0.059 ✓	1.333	Bolt Shear
T14	60	Diagonal	A325X	0.6250	2	7.14	16.31	0.438 ✓	1.333	Member Bearing
		Horizontal	A325X	0.6250	2	1.25	16.31	0.077 ✓	1.333	Member Bearing
T15	50	Diagonal	A325X	0.6250	2	7.85	18.41	0.426 ✓	1.333	Bolt Shear
		Secondary Horizontal	A325X	0.6250	2	2.52	9.20	0.274 ✓	1.333	Bolt Shear
T16	40	Diagonal	A325X	0.6250	2	8.02	18.41	0.436 ✓	1.333	Bolt Shear
		Secondary Horizontal	A325X	0.6250	2	2.71	9.20	0.295 ✓	1.333	Bolt Shear
		Top Girt	A325X	0.6250	2	1.51	16.31	0.093 ✓	1.333	Member Bearing
T17	30	Diagonal	A325X	0.6250	2	7.38	18.41	0.401 ✓	1.333	Bolt Shear
		Secondary Horizontal	A325X	0.6250	2	2.92	9.20	0.317 ✓	1.333	Bolt Shear
T18	20	Diagonal	A325X	0.6250	2	10.03	18.41	0.545 ✓	1.333	Bolt Shear
		Horizontal	A325X	0.6250	2	3.02	16.31	0.185 ✓	1.333	Member Bearing
		Secondary Horizontal	A325X	0.6250	2	3.05	9.20	0.332 ✓	1.333	Bolt Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T19	10	Diagonal	A325X	0.6250	2	13.30	18.41	0.723 ✔	1.333	Bolt Shear
		Horizontal	A325X	0.6250	2	8.36	18.41	0.454 ✔	1.333	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio P / P_a
T1	180 - 170	L3 1/2x3 1/2x3/8	10.00	5.00	87.3 K=1.00	14.519	2.4800	-6.92	36.01	0.192 ✔
T2	170 - 163.573	L5x5x5/16	6.43	6.43	77.6 K=1.00	15.232	3.0300	-21.36	46.15	0.463 ✔
T3	163.573 - 159.049	L5x5x5/16	4.53	4.53	54.7 K=1.00	17.404	3.0300	-36.54	52.74	0.693 ✔
T4	159.049 - 154.524	L5x5x5/16	4.53	4.53	54.7 K=1.00	17.404	3.0300	-48.73	52.74	0.924 ✔
T5	154.524 - 150	L5x5x5/16	4.53	4.53	54.7 K=1.00	17.404	3.0300	-58.08	52.74	1.101 ✔
T6	150 - 140	L5x5x3/8	10.01	5.01	60.7 K=1.00	17.364	3.6100	-81.08	62.68	1.293 ✔
T7	140 - 130	L6x6x1/2	10.01	5.23	53.2 K=1.00	18.066	5.7500	-97.28	103.88	0.936 ✔
T8	130 - 120	L6x6x1/2	10.01	5.21	53.0 K=1.00	18.083	5.7500	-120.84	103.98	1.162 ✔
T9	120 - 110	L6x6x3/4	10.01	5.20	53.3 K=1.00	18.057	8.4400	-146.60	152.40	0.962 ✔
T10	110 - 100	L6x6x3/4	10.01	5.18	53.2 K=1.00	18.069	8.4400	-173.51	152.50	1.138 ✔
T11	100 - 90	L8x8x3/4	10.01	10.01	76.0 K=1.00	15.789	11.4000	-201.60	180.00	1.120 ✔
T12	90 - 80	L8x8x3/4	10.01	5.16	39.2 K=1.00	19.253	11.4000	-228.72	219.49	1.042 ✔
T13	80 - 60	L8x8x1 w/ 1/2x7 Plates	20.03	10.01	48.3 K=1.00	18.499	22.0000	-284.68	406.97	0.700 ✔
T14	60 - 50	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	10.01	48.6 K=1.00	18.477	23.7340	-311.11	438.54	0.709 ✔
T15	50 - 40	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	5.13	24.9 K=1.00	20.291	23.7340	-336.42	481.58	0.699 ✔
T16	40 - 30	L8x8x1 1/8	10.01	5.12	39.4 K=1.00	19.236	16.7000	-361.40	321.24	1.125 ✔
T17	30 - 20	L8x8x1 1/8	10.01	5.12	39.4 K=1.00	19.239	16.7000	-388.78	321.29	1.210 ✔
T18	20 - 10	L8x8x1 1/8	10.01	5.11	39.3 K=1.00	19.242	16.7000	-407.04	321.34	1.267

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L8x8x1 1/8	10.01	5.01	38.5 K=1.00	19.307	16.7000	-422.25	322.43	1.310

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	L2 1/2x2 1/2x3/16	11.41	5.49	130.1 K=0.98	8.827	0.9020	-6.55	7.96	0.823
T2	170 - 163.573	L2 1/2x2 1/2x3/16	8.46	4.02	103.0 K=1.06	12.592	0.9020	-7.13	11.36	0.628
T3	163.573 - 159.049	L2x2x3/16	7.25	3.51	110.1 K=1.03	11.658	0.7150	-5.90	8.34	0.707
T4	159.049 - 154.524	L2 1/2x2x3/16	7.51	3.63	106.6 K=1.04	12.128	0.8090	-6.15	9.81	0.627
T5	154.524 - 150	L2 1/2x2x3/16	7.77	3.76	109.3 K=1.03	11.766	0.8090	-6.40	9.52	0.672
T6	150 - 140	L2 1/2x2x3/16	8.61	4.20	118.4 K=1.00	10.505	0.8090	-6.84	8.50	0.805
T7	140 - 130	L3x2 1/2x1/4	12.53	6.33	138.3 K=0.96	7.810	1.3100	-9.13	10.23	0.892
T8	130 - 120	L3x3x1/4	12.98	6.54	129.6 K=0.98	8.886	1.4400	-10.75	12.80	0.840
T9	120 - 110	L3x3x1/4	13.45	6.76	133.1 K=0.97	8.432	1.4400	-11.25	12.14	0.926
T10	110 - 100	L3 1/2x3x1/4	13.94	7.00	130.0 K=0.98	8.832	1.5600	-12.37	13.78	0.898
T11	100 - 90	L3 1/2x3x1/4	14.44	7.25	133.6 K=0.97	8.366	1.5600	-12.86	13.05	0.985
T12	90 - 80	L3 1/2x3x1/4	14.97	7.50	137.3 K=0.96	7.920	1.5600	-13.73	12.36	1.111
T13	80 - 60	2L2 1/2x2x3/16	16.07	8.04	122.1 K=1.00	9.977	1.6200	-14.71	16.16	0.910
T14	60 - 50	2L2 1/2x2x3/16	16.63	8.32	126.4 K=1.00	9.352	1.6200	-14.28	15.15	0.943
T15	50 - 40	2L2 1/2x2x3/8	17.21	8.60	131.0 K=0.97	8.696	3.0900	-15.70	26.87	0.584
T16	40 - 30	2L2 1/2x2x3/8	17.80	8.90	134.5 K=0.97	8.254	3.0900	-16.04	25.50	0.629
T17	30 - 20	2L2 1/2x2x3/8	18.40	9.19	138.0 K=0.96	7.837	3.0900	-14.76	24.22	0.610
T18	20 - 10	2L2 1/2x2x3/8	19.00	9.49	141.6 K=0.95	7.446	3.0900	-20.07	23.01	0.872
T19	10 - 0	2L2 1/2x2 1/2x1/4	13.37	6.47	110.5 K=1.09	11.606	2.3800	-21.12	27.62	0.765

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T9	120 - 110	L2 1/2x2 1/2x1/4	9.12	4.10	110.1 K=1.10	11.660	1.1900	-1.13	13.88	0.081 ✓
T11	100 - 90	L2 1/2x2 1/2x1/4	10.56	4.82	118.8 K=1.01	10.447	1.1900	-1.69	12.43	0.136 ✓
T14	60 - 50	2L2x2x3/16	13.43	6.15	119.8 K=1.00	10.316	1.4300	-1.33	14.75	0.090 ✓
T18	20 - 10	2L2x2x3/16	16.29	7.60	141.2 K=0.96	7.486	1.4300	-1.10	10.70	0.103 ✓
T19	10 - 0	2L2 1/2x2 1/2x1/4	17.01	7.96	123.2 K=0.99	9.813	2.3800	-16.50	23.35	0.707 ✓

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	L2x2x3/16	6.00	5.28	141.5 K=0.88	7.454	0.7150	-0.80	5.33	0.151 ✓
T7	140 - 130	L2x2x1/4	8.03	7.53	192.1 K=0.83	4.048	0.9380	-1.46	3.80	0.384 ✓
T8	130 - 120	L2x2x1/4	8.75	7.82	198.2 K=0.83	3.802	0.9380	-1.81	3.57	0.509 ✓
T9	120 - 110	L2x2x3/16	9.47	8.54	211.7 K=0.81	3.331	0.7150	-2.20	2.38	0.924 ✓
T10	110 - 100	L2x2x1/4	10.19	9.26	228.0 K=0.80	2.873	0.9380	-2.60	2.69	0.967 ✓
T12	90 - 80	L2 1/2x2 1/2x1/4	11.62	10.53	209.8 K=0.82	3.392	1.1900	-3.43	4.04	0.850 ✓
T15	50 - 40	L3 1/2x3 1/2x1/4	14.49	13.36	191.8 K=0.83	4.061	1.6900	-5.05	6.86	0.736 ✓
T16	40 - 30	L3 1/2x3 1/2x1/4	15.21	14.12	200.8 K=0.82	3.705	1.6900	-5.42	6.26	0.866 ✓
T17	30 - 20	L3 1/2x3 1/2x1/4	15.93	14.83	209.2 K=0.82	3.412	1.6900	-5.84	5.77	1.012 ✓
T18	20 - 10	L3 1/2x3 1/2x1/4	16.65	15.55	217.6 K=0.81	3.154	1.6900	-6.11	5.33	1.146 ✓

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	L2x2x3/16	6.00	5.28	145.1 K=0.90	7.091	0.7150	-0.12	5.07	0.024

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T2	170 - 163.573	L2x2x3/16	6.00	5.28	145.1 K=0.90	7.091	0.7150	-0.73	5.07	0.144
T3	163.573 - 159.049	L2x2x3/16	6.00	5.16	142.8 K=0.91	7.325	0.7150	-0.90	5.24	0.172
T6	150 - 140	L2 1/2x2 1/2x3/16	6.97	6.13	137.6 K=0.93	7.889	0.9020	-0.90	7.12	0.127
T7	140 - 130	L2 1/2x2 1/2x3/16	7.69	3.42	101.5 K=1.22	12.788	0.9020	-0.92	11.53	0.079
T13	80 - 60	L2 1/2x2 1/2x1/4	11.99	5.45	130.1 K=0.98	8.825	1.1900	-0.87	10.50	0.083
T16	40 - 30	2L2x2x3/16	14.86	6.86	130.3 K=0.98	8.795	1.4300	-1.23	12.58	0.098

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L2 1/2x2 1/2x3/16	4.25	3.92	107.5 K=1.13	12.004	0.9020	-6.34	10.83	0.585

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L2 1/2x2 1/2x3/16	6.45	5.92	143.6 K=1.00	7.239	0.9020	-6.31	6.53	0.966

Redundant Hip (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L2 1/2x2 1/2x3/16	6.01	6.01	145.8 K=1.00	7.024	0.9020	-0.03	6.34	0.005

Redundant Sub-Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L3x3x5/16	8.86	8.86	180.6 K=1.00	4.578	1.7800	-7.34	8.15	0.901 ✔

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T7	140 - 130	L2x2x3/16	5.44	5.44	165.6 K=1.00	5.444	0.7150	-0.17	3.89	0.044 ✔
T9	120 - 110	L2 1/2x2x3/16	6.45	6.45	181.3 K=1.00	4.542	0.8090	-0.11	3.67	0.031 ✔
T11	100 - 90	L2 1/2x2x3/16	7.47	7.47	209.8 K=1.00	3.392	0.8090	-0.12	2.74	0.044 ✔
T13	80 - 60	2L2x2x3/16	8.48	8.48	164.9 K=1.00	5.490	1.4300	-0.15	7.85	0.020 ✔
T14	60 - 50	2L2x2x3/16	9.49	9.49	184.6 K=1.00	4.380	1.4300	-0.15	6.26	0.023 ✔
T16	40 - 30	2L2x2x3/16	10.51	10.51	204.4 K=1.00	3.575	1.4300	-0.19	5.11	0.038 ✔
T18	20 - 10	2L2x2 1/2x3/16	11.52	11.52	230.4 K=1.00	2.812	1.6200	-0.06	4.56	0.013 ✔
T19	10 - 0	2L2x2 1/2x3/16	12.03	12.03	240.6 K=1.00	2.580	1.6200	-0.19	4.18	0.046 ✔

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	L3 1/2x3 1/2x3/8	10.00	5.00	56.1	21.600	2.4800	6.70	53.57	0.125 ✔
T2	170 - 163.573	L5x5x5/16	6.43	6.43	49.1	21.600	3.0300	19.66	65.45	0.300 ✔
T3	163.573 - 159.049	L5x5x5/16	4.53	4.53	34.6	21.600	3.0300	32.78	65.45	0.501 ✔
T4	159.049 - 154.524	L5x5x5/16	4.53	4.53	34.6	21.600	3.0300	43.19	65.45	0.660 ✔
T5	154.524 - 150	L5x5x5/16	4.53	4.53	34.6	21.600	3.0300	52.82	65.45	0.807 ✔
T6	150 - 140	L5x5x3/8	10.01	5.01	38.5	21.600	3.6100	74.65	77.98	0.957 ✔
T7	140 - 130	L6x6x1/2	10.01	5.23	33.7	21.600	5.7500	89.59	124.20	0.721

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio P / P_a
T8	130 - 120	L6x6x1/2	10.01	5.21	33.6	21.600	5.7500	110.86	124.20	0.893
T9	120 - 110	L6x6x3/4	10.01	5.20	34.1	21.600	8.4400	133.24	182.30	0.731
T10	110 - 100	L6x6x3/4	10.01	5.18	34.0	21.600	8.4400	157.37	182.30	0.863
T11	100 - 90	L8x8x3/4	10.01	10.01	48.6	21.600	11.4000	182.52	246.24	0.741
T12	90 - 80	L8x8x3/4	10.01	5.16	25.1	21.600	11.4000	207.85	246.24	0.844
T13	80 - 60	L8x8x1 w/ 1/2x7 Plates	20.03	10.01	48.3	21.600	22.0000	258.44	475.20	0.544
T14	60 - 50	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	10.01	48.6	21.600	23.7340	280.65	512.65	0.547
T15	50 - 40	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	5.13	24.9	21.600	23.7340	304.27	512.65	0.594
T16	40 - 30	L8x8x1 1/8	10.01	5.12	25.4	21.600	16.7000	324.53	360.72	0.900
T17	30 - 20	L8x8x1 1/8	10.01	5.12	25.4	21.600	16.7000	347.77	360.72	0.964
T18	20 - 10	L8x8x1 1/8	10.01	5.11	25.4	21.600	16.7000	368.80	360.72	1.022
T19	10 - 0	L8x8x1 1/8	10.01	5.01	24.8	21.600	16.7000	365.68	360.72	1.014

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio P / P_a
T1	180 - 170	L2 1/2x2 1/2x3/16	11.41	5.49	88.0	29.000	0.5710	5.71	16.56	0.345
T2	170 - 163.573	L2 1/2x2 1/2x3/16	8.46	4.02	65.2	29.000	0.5710	6.51	16.56	0.393
T3	163.573 - 159.049	L2x2x3/16	7.25	3.51	72.4	29.000	0.4308	5.69	12.49	0.455
T4	159.049 - 154.524	L2 1/2x2x3/16	7.51	3.63	77.0	29.000	0.5013	6.46	14.54	0.445
T5	154.524 - 150	L2 1/2x2x3/16	7.77	3.76	79.6	29.000	0.5013	6.01	14.54	0.414
T6	150 - 140	L2 1/2x2x3/16	8.61	4.20	88.2	29.000	0.5013	6.75	14.54	0.464
T7	140 - 130	L3x2 1/2x1/4	12.53	6.33	104.5	29.000	0.8419	8.96	24.41	0.367
T8	130 - 120	L3x3x1/4	12.98	6.54	87.2	29.000	0.9394	10.52	27.24	0.386
T9	120 - 110	L3x3x1/4	13.45	6.76	90.0	29.000	0.9394	11.03	27.24	0.405
T10	110 - 100	L3 1/2x3x1/4	13.94	7.00	94.8	29.000	1.0294	12.14	29.85	0.407

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T11	100 - 90	L3 1/2x3x1/4	14.44	7.25	98.1	29.000	1.0294	12.66	29.85	0.424
T12	90 - 80	L3 1/2x3x1/4	14.97	7.50	101.4	29.000	1.0294	13.46	29.85	0.451
T13	80 - 60	2L2 1/2x2x3/16	16.07	8.04	125.4	29.000	1.0041	14.03	29.12	0.482
T14	60 - 50	2L2 1/2x2x3/16	16.63	8.32	129.6	29.000	1.0041	13.93	29.12	0.479
T15	50 - 40	2L2 1/2x2x3/8	17.21	8.60	137.8	29.000	1.8956	14.12	54.97	0.257
T16	40 - 30	2L2 1/2x2x3/8	17.80	8.90	142.3	29.000	1.8956	15.09	54.97	0.274
T17	30 - 20	2L2 1/2x2x3/8	18.40	9.19	147.0	29.000	1.8956	14.70	54.97	0.267
T18	20 - 10	2L2 1/2x2x3/8	19.00	9.49	151.6	29.000	1.8956	14.72	54.97	0.268
T19	10 - 0	2L2 1/2x2 1/2x1/4	13.37	6.47	104.3	29.000	1.5037	26.60	43.61	0.610

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T9	120 - 110	L2 1/2x2 1/2x1/4	9.12	4.10	67.3	29.000	0.7519	0.94	21.80	0.043
T11	100 - 90	L2 1/2x2 1/2x1/4	10.56	4.82	78.5	29.000	0.7519	1.59	21.80	0.073
T14	60 - 50	2L2x2x3/16	13.43	6.15	123.7	29.000	0.8616	2.51	24.99	0.100
T18	20 - 10	2L2x2x3/16	16.29	7.60	152.0	29.000	0.8616	6.03	24.99	0.241
T19	10 - 0	2L2 1/2x2 1/2x1/4	17.01	7.96	127.5	29.000	1.5037	16.73	43.61	0.384

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	L2x2x3/16	6.00	5.28	111.0	29.000	0.4308	0.78	12.49	0.063
T7	140 - 130	L2x2x1/4	8.03	7.53	148.4	21.600	0.9380	1.46	20.26	0.072
T8	130 - 120	L2x2x1/4	8.75	7.82	162.6	29.000	0.5629	1.81	16.32	0.111

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T9	120 - 110	L2x2x3/16	9.47	8.54	174.4	29.000	0.4308	2.20	12.49	0.176 ✔
T10	110 - 100	L2x2x1/4	10.19	9.26	190.9	29.000	0.5629	2.60	16.32	0.160 ✔
T12	90 - 80	L2 1/2x2 1/2x1/4	11.62	10.53	171.0	29.000	0.7519	3.43	21.80	0.157 ✔
T15	50 - 40	L3 1/2x3 1/2x1/4	14.49	13.36	151.8	29.000	1.1269	5.05	32.68	0.155 ✔
T16	40 - 30	L3 1/2x3 1/2x1/4	15.21	14.12	160.1	29.000	1.1269	5.42	32.68	0.166 ✔
T17	30 - 20	L3 1/2x3 1/2x1/4	15.93	14.83	168.0	29.000	1.1269	5.84	32.68	0.179 ✔
T18	20 - 10	L3 1/2x3 1/2x1/4	16.65	15.55	175.9	29.000	1.1269	6.11	32.68	0.187 ✔

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	L2x2x3/16	6.00	5.28	111.0	29.000	0.4308	0.51	12.49	0.040 ✔
T2	170 - 163.573	L2x2x3/16	6.00	5.28	111.0	29.000	0.4308	1.25	12.49	0.100 ✔
T3	163.573 - 159.049	L2x2x3/16	6.00	5.16	108.6	29.000	0.4308	1.52	12.49	0.122 ✔
T6	150 - 140	L2 1/2x2 1/2x3/16	6.97	6.13	101.1	29.000	0.5710	1.05	16.56	0.064 ✔
T7	140 - 130	L2 1/2x2 1/2x3/16	7.69	3.42	56.1	29.000	0.5710	0.89	16.56	0.054 ✔
T13	80 - 60	L2 1/2x2 1/2x1/4	11.99	5.45	88.4	29.000	0.7519	1.09	21.80	0.050 ✔
T16	40 - 30	2L2x2x3/16	14.86	6.86	137.6	29.000	0.8616	3.02	24.99	0.121 ✔

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L2 1/2x2 1/2x3/16	4.25	3.92	60.5	21.600	0.9020	6.34	19.48	0.325 ✔

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L2 1/2x2 1/2x3/16	6.45	5.92	91.4	21.600	0.9020	10.40	19.48	0.534

Redundant Hip (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L2 1/2x2 1/2x3/16	6.01	6.01	92.8	21.600	0.9020	0.01	19.48	0.000*

* DL controls

Redundant Sub-Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T19	10 - 0	L3x3x5/16	8.86	8.86	115.4	21.600	1.7800	12.75	38.45	0.332

Inner Bracing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T7	140 - 130	L2x2x3/16	5.44	5.44	105.8	21.600	0.7150	0.17	15.44	0.011
T9	120 - 110	L2 1/2x2x3/16	6.45	6.45	129.1	21.600	0.8090	0.11	17.47	0.006
T11	100 - 90	L2 1/2x2x3/16	7.47	7.47	149.4	21.600	0.8090	0.12	17.47	0.007
T13	80 - 60	2L2x2x3/16	8.48	8.48	164.9	21.600	1.4300	0.15	30.89	0.005
T14	60 - 50	2L2x2x3/16	9.49	9.49	184.6	21.600	1.4300	0.15	30.89	0.005
T16	40 - 30	2L2x2x3/16	10.51	10.51	204.4	21.600	1.4300	0.20	30.89	0.006
T18	20 - 10	2L2x2 1/2x3/16	11.52	11.52	230.4	21.600	1.6200	0.07	34.99	0.002
T19	10 - 0	2L2x2 1/2x3/16	12.03	12.03	240.6	21.600	1.6200	0.17	34.99	0.005

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	180 - 170	Leg	L3 1/2x3 1/2x3/8	1	-6.92	48.00	14.4	Pass
T2	170 - 163.573	Leg	L5x5x5/16	21	-21.36	61.52	34.7	Pass
T3	163.573 - 159.049	Leg	L5x5x5/16	38	-36.54	70.30	52.0	Pass
T4	159.049 - 154.524	Leg	L5x5x5/16	54	-48.73	70.30	69.3	Pass
T5	154.524 - 150	Leg	L5x5x5/16	66	-58.08	70.30	82.6	Pass
T6	150 - 140	Leg	L5x5x3/8	78	-81.08	83.56	97.0	Pass
T7	140 - 130	Leg	L6x6x1/2	102	-97.28	138.47	70.2	Pass
T8	130 - 120	Leg	L6x6x1/2	127	-120.84	138.60	87.2	Pass
T9	120 - 110	Leg	L6x6x3/4	143	-146.60	203.15	72.2	Pass
T10	110 - 100	Leg	L6x6x3/4	170	-173.51	203.29	85.4	Pass
T11	100 - 90	Leg	L8x8x3/4	186	-201.60	239.94	84.0	Pass
T12	90 - 80	Leg	L8x8x3/4	207	-228.72	292.58	78.2	Pass
T13	80 - 60	Leg	L8x8x1 w/ 1/2x7 Plates	223	-284.68	542.49	52.5	Pass
T14	60 - 50	Leg	L8x8x1-1/8 w/ 1/2x7 Plates	252	-311.11	584.58	53.2	Pass
T15	50 - 40	Leg	L8x8x1-1/8 w/ 1/2x7 Plates	273	-336.42	641.95	52.4	Pass
T16	40 - 30	Leg	L8x8x1 1/8	289	-361.40	428.21	84.4	Pass
T17	30 - 20	Leg	L8x8x1 1/8	314	-388.78	428.28	90.8	Pass
T18	20 - 10	Leg	L8x8x1 1/8	330	-407.04	428.35	95.0	Pass
T19	10 - 0	Leg	L8x8x1 1/8	355	-422.25	429.80	98.2	Pass
T1	180 - 170	Diagonal	L2 1/2x2 1/2x3/16	15	-6.55	10.61	61.7	Pass
T2	170 - 163.573	Diagonal	L2 1/2x2 1/2x3/16	30	-7.13	15.14	47.1	Pass
T3	163.573 - 159.049	Diagonal	L2x2x3/16	50	-5.90	11.11	53.1	Pass
T4	159.049 - 154.524	Diagonal	L2 1/2x2x3/16	60	-6.15	13.08	47.0	Pass
T5	154.524 - 150	Diagonal	L2 1/2x2x3/16	69	-6.40	12.69	50.4	Pass
T6	150 - 140	Diagonal	L2 1/2x2x3/16	85	-6.84	11.33	60.4	Pass
T7	140 - 130	Diagonal	L3x2 1/2x1/4	115	-9.13	13.64	66.9	Pass
T8	130 - 120	Diagonal	L3x3x1/4	134	-10.75	17.06	63.0	Pass
T9	120 - 110	Diagonal	L3x3x1/4	156	-11.25	16.19	69.5	Pass
T10	110 - 100	Diagonal	L3 1/2x3x1/4	177	-12.37	18.37	67.3	Pass
T11	100 - 90	Diagonal	L3 1/2x3x1/4	203	-12.86	17.40	73.9	Pass
T12	90 - 80	Diagonal	L3 1/2x3x1/4	215	-13.73	16.47	83.4	Pass
T13	80 - 60	Diagonal	2L2 1/2x2x3/16	240	-14.71	21.54	68.3	Pass
T14	60 - 50	Diagonal	2L2 1/2x2x3/16	269	-14.28	20.20	70.7	Pass
T15	50 - 40	Diagonal	2L2 1/2x2x3/8	281	-15.70	35.82	43.8	Pass
T16	40 - 30	Diagonal	2L2 1/2x2x3/8	306	-16.04	34.00	47.2	Pass
T17	30 - 20	Diagonal	2L2 1/2x2x3/8	322	-14.76	32.28	45.7	Pass
T18	20 - 10	Diagonal	2L2 1/2x2x3/8	344	-20.07	30.67	65.4	Pass
T19	10 - 0	Diagonal	2L2 1/2x2 1/2x1/4	386	-21.12	36.82	57.4	Pass
T9	120 - 110	Horizontal	L2 1/2x2 1/2x1/4	149	-1.13	18.50	6.1	Pass
T11	100 - 90	Horizontal	L2 1/2x2 1/2x1/4	190	-1.69	16.57	10.2	Pass
T14	60 - 50	Horizontal	2L2x2x3/16	255	2.51	33.31	7.5	Pass
T18	20 - 10	Horizontal	2L2x2x3/16	333	6.03	33.31	18.1	Pass
T19	10 - 0	Horizontal	2L2 1/2x2 1/2x1/4	382	-16.50	31.13	53.0	Pass
T1	180 - 170	Secondary Horizontal	L2x2x3/16	20	-0.80	7.10	11.3	Pass
T7	140 - 130	Secondary Horizontal	L2x2x1/4	122	-1.46	5.06	28.8	Pass
T8	130 - 120	Secondary Horizontal	L2x2x1/4	138	-1.81	4.75	38.2	Pass
T9	120 - 110	Secondary Horizontal	L2x2x3/16	163	-2.20	3.17	69.3	Pass
T10	110 - 100	Secondary Horizontal	L2x2x1/4	181	-2.60	3.59	72.5	Pass
T12	90 - 80	Secondary Horizontal	L2 1/2x2 1/2x1/4	218	-3.43	5.38	63.8	Pass
T15	50 - 40	Secondary Horizontal	L3 1/2x3 1/2x1/4	284	-5.05	9.15	55.2	Pass
T16	40 - 30	Secondary Horizontal	L3 1/2x3 1/2x1/4	309	-5.42	8.35	65.0	Pass
T17	30 - 20	Secondary Horizontal	L3 1/2x3 1/2x1/4	325	-5.84	7.69	75.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P_{allow} K	% Capacity	Pass Fail
T18	20 - 10	Secondary Horizontal	L3 1/2x3 1/2x1/4	350	-6.11	7.11	86.0	Pass
T1	180 - 170	Top Girt	L2x2x3/16	5	0.51	16.65	3.0	Pass
T2	170 - 163.573	Top Girt	L2x2x3/16	27	-0.73	6.76	10.8	Pass
T3	163.573 - 159.049	Top Girt	L2x2x3/16	42	-0.90	6.98	12.9	Pass
T6	150 - 140	Top Girt	L2 1/2x2 1/2x3/16	84	-0.90	9.49	9.5	Pass
T7	140 - 130	Top Girt	L2 1/2x2 1/2x3/16	106	-0.92	15.38	6.0	Pass
T13	80 - 60	Top Girt	L2 1/2x2 1/2x1/4	225	-0.87	14.00	6.2	Pass
T16	40 - 30	Top Girt	2L2x2x3/16	292	3.02	33.31	9.1	Pass
T19	10 - 0	Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	378	-6.34	14.43	43.9	Pass
T19	10 - 0	Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	385	-6.31	8.70	72.4	Pass
T19	10 - 0	Redund Hip 1 Bracing	L2 1/2x2 1/2x3/16	372	-0.03	8.44	0.3	Pass
T19	10 - 0	Redund Sub Horz Bracing	L3x3x5/16	389	-7.34	10.86	67.6	Pass
T7	140 - 130	Inner Bracing	L2x2x3/16	112	-0.17	5.19	3.3	Pass
T9	120 - 110	Inner Bracing	L2 1/2x2x3/16	151	-0.11	4.90	2.3	Pass
T11	100 - 90	Inner Bracing	L2 1/2x2x3/16	192	-0.12	3.66	3.3	Pass
T13	80 - 60	Inner Bracing	2L2x2x3/16	229	-0.15	10.46	1.5	Pass
T14	60 - 50	Inner Bracing	2L2x2x3/16	258	-0.15	8.35	1.7	Pass
T16	40 - 30	Inner Bracing	2L2x2x3/16	297	-0.19	6.82	2.8	Pass
T18	20 - 10	Inner Bracing	2L2x2 1/2x3/16	336	-0.06	6.07	1.0	Pass
T19	10 - 0	Inner Bracing	2L2x2 1/2x3/16	395	-0.19	5.57	3.5	Pass
							Summary	
						Leg (T19)	98.2	Pass
						Diagonal (T12)	83.4	Pass
						Horizontal (T19)	53.0	Pass
						Secondary Horizontal (T18)	86.0	Pass
						Top Girt (T3)	12.9	Pass
						Redund Horz 1 Bracing (T19)	43.9	Pass
						Redund Diag 1 Bracing (T19)	72.4	Pass
						Redund Hip 1 Bracing (T19)	0.3	Pass
						Redund Sub Horz Bracing (T19)	67.6	Pass
						Inner Bracing (T19)	3.5	Pass
						Bolt Checks	55.9	Pass
						RATING =	**98.2**	**Pass**

ANCHOR BOLT EVALUATION

ANCHOR BOLT ANALYSIS

Input Data

Max Pier Reactions:

Uplift:	$Uplift := 400 \cdot kips$	*user input*
Shear:	$Shear := 42 \cdot kips$	*user input*
Compression:	$Compression := 449 kips$	*user input*

Anchor Bolt Data:

Use ASTM A36

Number of Anchor Bolts = N	$N := 4$	*user input*	
Bolt Ultimate Strength:	$F_u := 58 \cdot ksi$	*user input*	
Bolt Yield Strength:	$Fy := 36 \cdot ksi$	*user input*	
Bolt Modulus:	$E := 29000 \cdot ksi$	*user input*	
Thickness of Anchor Bolts	$D := 2.5in$	*user input*	
Threads per Inch:	$n := 4$	*user input*	
Coefficient of Friction:	$\mu := 0.55$	*user input*	(for baseplate with grout ASCE 10-97)

Anchor Bolt Area:

Gross Area of Bolt:

$$A_g := \frac{\pi}{4} \cdot D^2 \qquad A_g = 4.909 \cdot in^2$$

Net Area of Bolt:

$$A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 \qquad A_n = 3.999 \cdot in^2$$

Check Tensile Forces:

Maximum Tensile Force (Gross Area):

$$AllowableTension := 1.33 \cdot \left(0.33 \cdot A_g \cdot F_u \right) \qquad AllowableTension = 125.0 \cdot kips$$

Note: 1.33 increase allowed per TIA/EIA

Maximum Tensile Force (Net Area):

$$F_{net.area} := 1.33 \cdot \left(0.60 \cdot A_n \cdot Fy \right) \qquad F_{net.area} = 114.9 \cdot kips$$

Note: 1.33 increase allowed per TIA/EIA

Applied Tension:

$$MaxTension := \frac{Uplift}{N} \qquad MaxTension = 100.0 \cdot kips$$

Check Stresses:

$$\frac{MaxTension}{F_{net.area}} = 0.87$$

$$Condition1 := if\left(\frac{MaxTension}{F_{net.area}} \le 1.00, "OK", "Overstressed" \right)$$

Condition1 = "OK"

Check Anchor Bolt Area:

Based on the ASCE 10-97 Design of Latticed Stell Transmission Structures

Required Area:

$$A_{s1} := \frac{Uplift}{Fy} + \frac{Shear}{\mu \cdot 0.85 \cdot Fy} \qquad A_{s1} = 13.6 \cdot in^2$$

$$A_{s2} := \left| \frac{Shear - (0.3 \cdot Compression)}{\mu \cdot 0.85 \cdot Fy} \right| \qquad A_{s2} = 5.5 \cdot in^2$$

Provided Area:

$$A_{sprovided} := A_n \cdot N \qquad A_{sprovided} = 16.0 \cdot in^2$$

$$Condition2 := if\left(\frac{A_{s1}}{A_{sprovided}} \le 1.00, "OK", "Overstressed" \right) \qquad \frac{A_{s1}}{A_{sprovided}} = 0.85$$

Condition2 = "OK"

$$Condition3 := if\left(\frac{A_{s2}}{A_{sprovided}} \le 1.00, "OK", "Overstressed" \right) \qquad \frac{A_{s2}}{A_{sprovided}} = 0.34$$

Condition3 = "OK"

FOUNDATION ANALYSIS

FOOTING WITH FOUR CONCRETE PIERS

INPUT DATA

TOWER FORCES:

Moment Caused by Tower	$M_t := 10658 \cdot kip \cdot ft$
Shear at Base of Tower	$S_t := 98kip$
Max Compressive Force	$C_t := 449kip$
Max Uplift	$U_t := 400kip$
Max Pier Shear	$S_p := 42kip$
Height of Tower	$H_t := 180 \cdot ft$
Width of Tower at Base	$W_t := 17.729 \cdot ft$
Weight of Tower	$WT_t := 1 \cdot kip$

NOTE: Weight of Tower is incorporated into the other loads listed above and is therefore set equal to one for programming.

FOOTING DIMENSIONS:

Width of Footing	$W_f := 35 \cdot ft + 2ft$
Overall Depth of Footing	$D_f := 9.5ft$
Length of Pier	$L_p := 6.5 \cdot ft - 0ft$
Extension of Pier Above Grade	$L_{pag} := 1.0 \cdot ft$
Square Dimension of Pier	$d_p := 4.0 \cdot ft$
Thickness of Footing	$T_f := 3.0 \cdot ft + 0ft$
Reinforement Cover:	$Cvr := 3in$
Ftg. Edge To Pier CL:	$X_t := 8.635ft$

MATERIAL PROPERTIES:

Compressive Strength of Concrete	$f'c := 3000 \cdot psi$	Unit Weight of Soil	$\gamma_s := 100pcf$
Yield Strength of Steel Reinforcement	$fy := 60000 \cdot psi$	Unit Weight of Concrete	$\gamma_c := 150 \cdot pcf$
Internal Friction Angle of Soil	$\phi_s := 30 \cdot deg$	Depth to Neglect	$n := 1.5 \cdot ft$
Allowable Bearing Capacity	$q_s := 3400 \cdot psf$	Cohesion of Clay Type Soil Note: Use 0 for Sandy Soil	$c := 0 \cdot ksf$
Stability Factor of Safety	$FS_{req} := 2.0$		
Coefficient of Lateral Soil Pressure	$K_p := \frac{1 + \sin(\phi_s)}{1 - \sin(\phi_s)}$	$K_p = 3$	

What is Position of Center of Tower with respect to Center of Pad? 1=Offset 2=Not Offset $Pos_{tower} := 1$

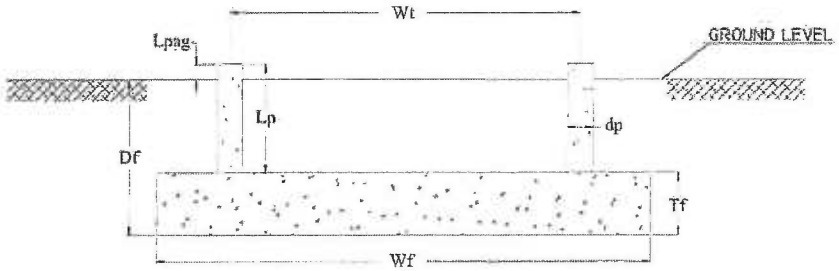
PIER REINFORCEMENT:

Bar Size	$BSpier := 9$	Bar Diameter	$d_{bpier} := 1.128 \cdot in$
Number of Bars	$NBpier := 24$	Bar Area	$A_{bpier} := 1.00 \cdot in^2$

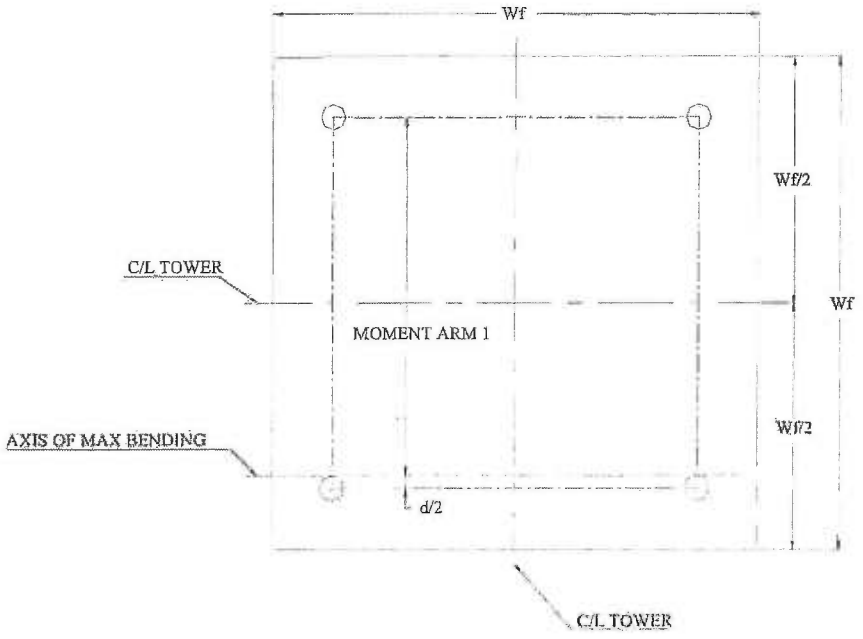
PAD REINFORCEMENT:

Bar Size	$BS_{pad} := 9$	Bar Diameter	$d_{bpad} := 1.128 \cdot in$
Number of Bars	$NB_{pad} := 42$	Bar Area	$A_{bpad} := 1.00 \cdot in^2$

Typical Footing Plan and Elevation:



ELEVATION



PLAN

STABILITY OF FOOTING

Passive Pressure:

Pressure at Neglect: $P_{pn} := K_p \cdot \gamma_s \cdot n + c \cdot 2 \cdot \sqrt{K_p}$ $P_{pn} = 0.45 \cdot ksf$

Pressure at Footing Top: $P_{pt} := K_p \cdot \gamma_s \cdot (D_f - T_f) + c \cdot 2 \cdot \sqrt{K_p}$ $P_{pt} = 1.95 \cdot ksf$

Pressure at Top: $P_{top} := if[n < (D_f - T_f), P_{pt}, P_{pn}]$ $P_{top} = 1.95 \cdot ksf$

Pressure at Bottom: $P_{bot} := K_p \cdot \gamma_s \cdot D_f + c \cdot 2 \cdot \sqrt{K_p}$ $P_{bot} = 2.85 \cdot ksf$

Average Pressure: $P_{ave} := \frac{P_{top} + P_{bot}}{2}$ $P_{ave} = 2.4 \cdot ksf$

Soil Shear:

Effective Soil Depth: $T_{pp} := if[n < (D_f - T_f), T_f, (D_f - n)]$ $T_{pp} = 3 \cdot ft$

Area of Resistance: $A_{pp} := W_f \cdot T_{pp}$ $A_{pp} = 111 \cdot ft^2$

Shear Resistance: $S_u := P_{ave} \cdot A_{pp}$ $S_u = 266.4 \cdot kip$

Stabilizing Dead Load:

Weight of Concrete Pad: $WT_c := (W_f^2 \cdot T_f) \cdot \gamma_c$ $WT_c = 616.05 \cdot kip$

Weight of Soil above Footing:

$$Depth := \begin{cases} D_f - n - T_f & \text{if } n < (D_f - T_f) \\ 0 & \text{otherwise} \end{cases}$$

$Depth = 5 \cdot ft$

$WT_{s1} := W_f^2 \cdot Depth \cdot \gamma_s$ $WT_{s1} = 684.5 \cdot kip$

Weight of Soil Wedge at Back Face: $WT_{s2} := \left[\frac{(D_f - n)^2 \cdot \tan(\phi_s)}{2} \cdot W_f\right] \cdot \gamma_s$ $WT_{s2} = 68.3583 \cdot kip$

Distance to center of Tower Leg from Edge of Footing: $X_{t1} := \frac{W_f}{2} - \frac{W_t}{2}$ $X_{t2} := \frac{W_f}{2} - \frac{W_t}{2}$ $X_t := if(Pos_{tower} = 1, X_{t1}, X_{t2})$

Additional Offset of Footing: $X_{off1} := \frac{W_f}{2} - \left(\frac{W_t \cdot \cos(30 \cdot deg)}{3} + X_t\right)$ $X_{off1} = 10.63541667 ft$ $X_{off2} := 0$

$X_{off} := if(Pos_{tower} = 1, X_{off1}, X_{off2})$ $X_{off} = 10.6354 \cdot ft$

Stability Analysis:

Resisting Moment: $M_r := (WT_c + WT_{s1}) \cdot \frac{W_f}{2} + WT_t \cdot \left(\frac{W_f}{2} - X_{off}\right) + S_u \cdot \frac{T_{pp}}{3} + WT_{s2} \cdot \left(W_f + \frac{T_{pp} \cdot \tan(\phi_s)}{3}\right)$

$M_r = 26903.1623 \cdot kip \cdot ft$

Overturning Moment: $M_{ot} := M_t + S_t \cdot (L_p + T_f) + WT_t \cdot X_{off}$ $M_{ot} = 11599.6354 \cdot kip \cdot ft$

Factor of Safety: $FS := \frac{M_r}{M_{ot}}$ $FS = 2.32$

$SafetyCheck := if(FS > FS_{req}, "Okay", "No Good")$ $SafetyCheck = "Okay"$

BEARING PRESSURES

Loading Eccentricity:

Total Axial Load: $LOAD_{tot} := WT_c + WT_{s1} + WT_t$ $LOAD_{tot} = 1301.55 \cdot kip$

Total Moment: $M_{ot} := M_t + S_t \cdot (L_p + T_f) + WT_t$ $M_{ot} = 11590 \cdot kip \cdot ft$

Eccentricity: $e := \frac{M_{ot}}{LOAD_{tot}}$ $e = 8.9048 \cdot ft$

Dist. From Ftg. CL to Kern Edge: $X_k := \frac{W_f}{6}$ $X_k = 6.1667 \cdot ft$

Calculate Soil Pressures:

Maximum Contact Pressure:

$$P_{max} := \begin{cases} \frac{LOAD_{tot}}{W_f^2} \cdot \left(1 + \frac{6 \cdot e}{W_f}\right) & \text{if } e \le X_k \\ \frac{2 \cdot LOAD_{tot}}{3 \cdot W_f \cdot \left(\frac{W_f}{2} - e\right)} & \text{otherwise} \end{cases}$$

$P_{max} = 2.4441 \cdot ksf$

Minimum Contact Pressure:

$$P_{min} := \begin{cases} \frac{LOAD_{tot}}{W_f^2} \cdot \left(1 - \frac{6 \cdot e}{W_f}\right) & \text{if } e \le X_k \\ 0ksf & \text{otherwise} \end{cases}$$

$P_{min} = 0 \cdot ksf$

Length of Applied Pressure:

$$X_p := \begin{cases} W_f & \text{if } e \le X_k \\ 3 \cdot \left(\frac{W_f}{2} - e\right) & \text{otherwise} \end{cases}$$

$X_p = 28.7857 \cdot ft$

Pressure Slope:

$$m_p := \frac{P_{max} - P_{min}}{X_p}$$

$m_p = 0.0849 \cdot ksf$

Soil Bearing Pressure Check:

$BearingStatus := if(P_{max} < q_s, "Okay", "No Good")$ $BearingStatus = "Okay"$

Concrete Bearing Capacity (ACI 10.17):

(ACI 9.3.2.2) $\phi_c := 0.75$

$$P_b := \phi_c \cdot 0.85 \cdot f'c \cdot \frac{d_p^{\,2} \cdot \pi}{4} \qquad P_b = 3460.7785 \cdot kip$$

$$BearingCheck := if\left(P_b > C_t, \text{"Okay"}, \text{"No Good"}\right) \qquad BearingCheck = \text{"Okay"}$$

SHEAR STRENGTH OF CONCRETE

Beam (One-Way) Shear Action (ACI 11.3.1.1):

Load Factor: (EIA 3.1.1)

$$LF := if\left[H_t \le 700 \cdot ft, 1.3, if\left[H_t \ge 1200, 1.7, 1.3 + \left(\frac{H_t - 700}{1200 - 700}\right) \cdot 0.4\right]\right] \qquad LF = 1.3$$

"d" Distance:

$$d := T_f - Cvr - .5 \cdot in \qquad d = 32.5 \cdot in$$

Factored Pressure at "d" Distance:

$$P_d := LF \cdot \left[P_{max} - \left(X_t - \frac{d_p}{2} - d\right) \cdot m_p\right] \qquad P_d = 2.6334 \cdot ksf$$

Factored Pressure at Edge:

$$P_{edge} := LF \cdot P_{max} \qquad P_{edge} = 3.1773 \cdot ksf$$

Average Pressure:

$$P_{ave} := \frac{P_d + P_{edge}}{2} \qquad P_{ave} = 2.9054 \cdot ksf$$

Capacity Reduction Factor: (ACI 9.3.2.3)

$$\phi_{ev} := .85$$

Applied Shear Force:

$$V_{req} := \frac{P_{ave} \cdot \left(X_t - 0.5 \cdot d_p - d\right) \cdot W_f}{\phi_c} \qquad V_{req} = 623.1316 \cdot kip$$

Available Shear: (ACI 11.3.1.1)

$$V_{Avail} := 2 \cdot \sqrt{f'c \cdot psi} \cdot W_f \cdot d \qquad V_{Avail} = 1580.7273 \cdot kip$$

Check Capacity:

$$BeamShearCheck := if\left(V_{req} < V_{Avail}, \text{"Okay"}, \text{"No Good"}\right)$$

$BeamShearCheck = \text{"Okay"}$

Punching (Two-Way) Shear Action (ACI 11.12.2.1):

Critical Perimeter: $b_o := 4(d_p + d)$ → $b_o = 26.8333 \cdot ft$

Capacity Reduction Factor: (ACI 9.3.2.3) $\phi_c := .85$ $C_t = 449 \cdot kip$

Factored Maximum Punching Shear Force $FL := \frac{LF \cdot C_t}{\phi_c}$ → $FL = 686.7059 \cdot kip$

Available Shear: $V_{Avail} := 4 \cdot \sqrt{f'c \cdot psi} \cdot b_o \cdot d$ → $V_{Avail} = 2292.7666 \cdot kip$

Check Capacity: $PunchingShearCheck := if(V_{req} < V_{Avail}, "Okay", "No Good")$

$PunchingShearCheck = "Okay"$

BENDING

Maximim Bending Moment:

Distance From Edge of FTG To Face of Pier: $X_b := \frac{W_f}{2} - e - \frac{d_p}{2}$ → $X_b = 7.5952 \cdot ft$

Moment Due To Overturning:

Factored Pressure at "d" Distance: $P_{face} := LF \cdot (P_{max} - X_b \cdot m_p)$ → $P_{face} = 2.3389 \cdot ksf$

Factored Pressure at Edge: $P_{edge} := LF \cdot P_{max}$ → $P_{edge} = 3.1773 \cdot ksf$

Moment Due To Rectangular Loading: $M_1 := (P_{face} \cdot X_b \cdot W_f) \cdot \left(\frac{1}{2} \cdot X_b\right)$ → $M_1 = 2496.1653 \cdot kip \cdot ft$

Moment Due to Triangular Loading: $M_2 := \left[\frac{1}{2} \cdot X_b \cdot (P_{edge} - P_{face})\right] \cdot \left(\frac{2}{3} \cdot X_b\right)$ → $M_2 = 16.1206 \cdot kip \cdot ft$

Sum Moments: $M_{ot} := M_1 + M_2$ → $M_{ot} = 2512.2858 \cdot kip \cdot ft$

Moment Due To Uplift:

Pier Forces: $M_{nT} := LF\cdot\left[U_f\cdot\left(W_f - 2\cdot X_b - \frac{d}{2} - d\right) + S_f\cdot\left(D_f + L_{pag}\right)\right]$ $M_{nT} = 10566.1581\cdot kip\cdot ft$

Concrete Resistance: $M_{nS} := \frac{1}{2}\cdot\left(W_f - X_b - d_p\right)^2\cdot\left(T_f\cdot W_f\right)\cdot\gamma_s$ $M_{nS} = 3581.9822\cdot kip\cdot ft$

Soil Resistance: $M_{nC} := \frac{1}{2}\cdot\left(W_f - X_b - d_p\right)^2\cdot\left(T_f\cdot W_f\right)\cdot\gamma_c$ $M_{nC} = 5372.9734\cdot kip\cdot ft$

Sum Moments $M_{uplift} := M_{nT} - M_{nS} - M_{nC}$ $M_{uplift} = 1611.2025\cdot kips\cdot ft$

Select Controlling Moment: $M_u := \begin{cases} M_{ot} & \text{if } M_{ot} \geq M_{uplift} \\ M_{uplift} & \text{otherwise} \end{cases}$ $M_u = 2512.2858\cdot kips\cdot ft$

Strength Reduction Factor: (ACI 9.3.2.2) $\phi_m := .90$

Design Moment: $M_n := \frac{M_u}{\phi_m}$ $M_n = 2791.4287\cdot kips\cdot ft$

Size Reinforcing Steel:

Effective Width: $b_{eff} := W_f$ $b_{eff} = 444\cdot in$

Stress Block: $a := d\cdot\left(1 - \sqrt{1 - 2.3529\cdot\frac{M_n}{f'c\cdot b_{eff}\cdot d^2}}\right)$ $a = 0.9234\cdot in$

Steel Req'd For Bending: $A_s := \frac{M_n}{fy\cdot\left(d - \frac{a}{2}\right)}$ $A_s = 17.4256\cdot in^2$

Reinforcement Ratio: $\rho := \frac{A_s}{b_{eff}\cdot d}$ $\rho = 0.0012$

Steel Req'd For Temperature and Shrinkage: (ACI 7.12.2.1b) $\rho_{sh} := \text{if}(fy \geq 60000\cdot psi, 0.0018, 0.0020)$ $\rho_{sh} = 0.0018$

$As := \text{if}\left(\rho \geq \rho_{sh}, A_s, \rho_{sh}\cdot b_{eff}\cdot d\right)$ $As = 25.974\cdot in^2$

$As_{prov} := A_{bpad}\cdot NB_{pad}$ $As_{prov} = 42\cdot in^2$

Check Provided Steel: $PadReinforcement := \text{if}\left(As_{prov} > As, \text{"Okay"}, \text{"No Good"}\right)$

PadReinforcement = "Okay"

DEVELOPMENT LENGTH OF PAD REINFORCEMENT

TENSION (ACI 12.2.3)

Bar Spacing:

$$B_{sPad} := \frac{W_f - 2 \cdot Cvr - NB_{pad} \cdot d_{bpad}}{NB_{pad} - 1}$$

$B_{sPad} = 9.5274 \cdot in$

Development Length Factors:

Reinforcement Location Factor	$\alpha := 1.0$
Coating Factor	$\beta := 1.0$
Concrete strength Factor	$\lambda := 1.0$
Reinforcement Size Factor	$\gamma := 1.0$

Spacing or Cover Dimension:

$$c := if\left(Cvr < \frac{B_{sPad}}{2}, Cvr, \frac{B_{sPad}}{2}\right)$$

$c = 3 \cdot in$

Transverse Reinforcement Index: As allowed by ACI 12.2.4 $k_{tr} := 0$

$$L_{dbt} := \frac{3}{40} \cdot \frac{fy}{\sqrt{f'c \cdot psi}} \cdot \frac{\alpha \cdot \beta \cdot \gamma \cdot \lambda}{\frac{c + k_{tr}}{d_{bpad}}} \cdot d_{bpad}$$

$L_{dbt} = 34.8457 \cdot in$

$L_{dbmin} := 12 \cdot in$

Minimum Development Length: (ACI 12.2.1)

$L_{dbtCheck} := if\left(L_{dbt} \geq L_{dbmin}, "Use\ L.dbt", "Use\ L.dbmin"\right)$ $L_{dbtCheck} = "Use\ L.dbt"$

Available Length in Pad:

$$L_{Pad} := \frac{W_f}{2} - \frac{W_t}{2} - Cvr$$

$L_{Pad} = 112.626 \cdot in$

$LpadTension := if\left(L_{Pad} > L_{dbt}, "Okay", "No\ Good"\right)$ $LpadTension = "Okay"$

REINFORCEMENT IN PIER

Pier Area:

(ACI 10.8.4 and 10.9.1)

$$A_p := \frac{\pi \cdot d_p^{\,2}}{4}$$

$A_p = 1809.5574 \cdot in^2$

$A_{smin} := 0.01 \cdot 0.5 \cdot A_p$

$A_{smin} = 9.0478 \cdot in^2$

$A_{sprov} := NBpier \cdot A_{bpier}$

$A_{sprov} = 24 \cdot in^2$

$SteelAreaCheck := if\left(A_{sprov} > A_{smin}, "Okay", "No\ Good"\right)$ $SteelAreaCheck = "Okay"$

NOTE: Anchor Bolts are not accounted for in reinforcement calculation and will provide additional reinforcement to satisfy minimum requirement of steel.

Bar Spacing In Pier: $B_{sPier} := \frac{d_p \cdot \pi}{NBpier} - d_{bpier}$ $B_{sPier} = 5.1552 \cdot in$

Diameter of Reinforcement Cage: $Diam_{cage} := d_p - 2 \cdot Cvr$ $Diam_{cage} = 42 \cdot in$

Maximum Moment in Pier: $M_p := (S_p \cdot L_p) \cdot LF$ $M_p = 4259 \cdot kips \cdot in$

Pier Check evaluated from outside program and results are listed below;

(defined variables) $(f'_c \ f_y \ cl \ Spiral) = (3 \ 60 \ 4 \ 0)$

The required input is column diameter in inches, number of reinforcing bars, bar size number, factored axial load in kips and moment in kip inches: $(D \ N \ n \ P_u \ M_{xu}) := (48 \ 24 \ 9 \ 144 \ 16045)$

Clears any previous output: $(\phi P_n \ \phi M_{xn} \ f_{sp} \ \rho) := (0 \ 0 \ 0 \ 0)$

$(\phi P_n \ \phi M_{xn} \ f_{sp} \ \rho) := \phi P'_n(D, N, n, P_u, M_{xu})^T$

The Output is given as useable axial load in kips, moment capacity in kip inches, splicing stress in ksi, and reinforcement ratio: $(\phi P_n \ \phi M_{xn} \ f_{sp} \ \rho) = (208.5987 \ 23242.8205 \ -60 \ 0.0133)$

Column size and reinforcement may be changed to match capacity to the applied load.

$AxialLoadCheck := if(\phi P_n \geq P_u, "Okay", "No Good")$ $AxialLoadCheck = "Okay"$

$BendingCheck := if(\phi M_{xn} \geq M_{xu}, "Okay", "No Good")$ $BendingCheck = "Okay"$

DEVELOPMENT LENGTH OF PIER REINFORCEMENT

TENSION (ACI 12.2.3)

Spacing and Cover: $Cvr = 3 \cdot in$ $B_{sPier} = 5.1552 \cdot in$

Factors for development:

Reinforcement Location Factor	$\alpha := 1.0$	
Coating Factor	$\beta := 1.0$	
Concrete strength Factor	$\lambda := 1.0$	
Reinforcement Size Factor	$\gamma := 1.0$	

Spacing or Cover Dimension: $c := if\left(Cvr < \frac{B_{sPier}}{2}, Cvr, \frac{B_{sPier}}{2}\right)$ $c = 2.5776 \cdot in$

Transverse Reinforcement: As allowed by ACI 12.2.4 $k_{tr} := 0$

$$L_{dbt} := \frac{3}{40} \cdot \frac{fy}{\sqrt{f'c \cdot psi}} \cdot \frac{\alpha \cdot \beta \cdot \gamma \cdot \lambda}{\frac{c + k_{tr}}{d_{bpier}}} \cdot d_{bpier} \qquad L_{dbt} = 40.5561 \cdot in$$

Minimum Development Length: (ACI 12.2.1) $L_{dbmin} := 12 \cdot in$

$L_{dbtCheck} := if\left(L_{dbt} \geq L_{dbmin}, \text{"Use L.dbt"}, \text{"Use L.dbmin"}\right)$ $L_{dbtCheck} = \text{"Use L.dbt"}$

COMPRESSION: (ACI 12.3.2)

$$L_{dbc1} := \frac{.02 \cdot d_{bpier} \cdot fy}{\sqrt{f'c \cdot psi}} \qquad L_{dbc1} = 24.7132 \cdot in$$

$L_{dbmin} := 0.0003 \cdot \frac{in^2}{lb} \cdot \left(d_{bpier} \cdot fy\right)$ $L_{dbmin} = 20.304 \cdot in$

$L_{dbc} := if\left(L_{dbc1} \geq L_{dbmin}, L_{dbc1}, L_{dbmin}\right)$ $L_{dbc} = 24.7132 \cdot in$

Available Length in Pier: $L_{pier} := L_p - 3 \cdot in$ $L_{pier} = 75 \cdot in$

Available Length in Pad: $L_{pad} := T_f - 3 \cdot in$ $L_{pad} = 33 \cdot in$

Available Length: $L_{total} := L_{pad} + L_{pier}$ $L_{total} = 108 \cdot in$

$L_{tension} := if\left(L_{total} > L_{dbt}, \text{"Okay"}, \text{"No Good"}\right)$ $L_{tension} = \text{"Okay"}$

$L_{compression} := if\left(L_{total} > L_{dbc}, \text{"Okay"}, \text{"No Good"}\right)$ $L_{compression} = \text{"Okay"}$

EXHIBIT C

EBI Consulting
environmental | engineering | due diligence

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CT11040D

Wilton / State Police

46 Fenwood Lane
Wilton, CT 06897

April 24, 2014

EBI Project Number: 62142574

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

EBI Consulting
environmental | engineering | due diligence

April 24, 2014

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

Re: Emissions Values for Site: **CT11040D - Wilton / State Police**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 46 Fenwood Lane, Wilton, CT, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of μW/cm2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter (μW/cm2). The general population exposure limit for the cellular band is 567 μW/cm2, and the general population exposure limit for the PCS and AWS bands is 1000 μW/cm2. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 46 Fenwood Lane, Wilton, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, the actual antenna pattern gain value in the direction of the sample area was used. For this report the sample point is a 6 foot person standing at the base of the tower

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

1) 2 GSM channels (1940.000 MHz—to 1950.000 MHz) were considered for each sector of the proposed installation.
2) 2 UMTS channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation.
3) 2 LTE channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation.
4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
6) The antenna used in this modeling is the Ericsson AIR21 for LTE, UMTS and GSM. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.6 dBd gain value at its main lobe. Actual antenna gain values were used for all calculations as per the manufacturers specifications.

7) The antenna mounting height centerline of the proposed antennas is **122 feet** above ground level (AGL).
8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general public threshold limits.

Site ID	CT11040D - Wilton / State Police
Site Addresss	46 Fenwood Lane, Wilton, CT 06897
Site Type	Self Support Tower

Sector 1

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	122	116	None	0	0	48.326044	1.291134	0.12911%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	122	116	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	122	116	1-5/8"	0	0	24.163022	0.645567	0.06456%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	122	116	1-5/8"	0	0	24.163022	0.645567	0.06456%
															Sector total Power Density Value:		0.258%

Sector 2

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	122	116	None	0	0	48.326044	1.291134	0.12911%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	122	116	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	122	116	1-5/8"	0	0	24.163022	0.645567	0.06456%
2b	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	122	116	1-5/8"	0	0	24.163022	0.645567	0.06456%
															Sector total Power Density Value:		0.258%

Sector 3

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	122	116	None	0	0	48.326044	1.291134	0.12911%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	122	116	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	122	116	1-5/8"	0	0	24.163022	0.645567	0.06456%
2b	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	122	116	1-5/8"	0	0	24.163022	0.645567	0.06456%
															Sector total Power Density Value:		0.258%

Site Composite MPE %

Carrier	MPE %
T-Mobile	0.775%
AT&T	6.510%
CL&P	1.920%
Sprint	9.940%
State Police	33.210%
NEU	4.260%
WPD	1.990%
DEA	11.340%
WTR	0.990%
USS	9.900%
FCP	2.480%
DHS	2.870%
DOE	0,08%
Total Site MPE %	86.185%

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Summary

All calculations performed for this analysis yielded results that were well within the allowable limits for general public exposure to RF Emissions.

The anticipated Maximum Composite contributions from the T-Mobile facility are **0.775% (0.258% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously.

The anticipated composite MPE value for this site assuming all carriers present is **86.185%** of the allowable FCC established general public limit. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were within the allowable 100% threshold standard per the federal government.

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