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 4, 2014

Via Electronic and Overnight Mail

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

Re: Notice of Exempt Modification
State of Connecticut Department of Public Safety/T-Mobile co-location
Site ID CT11086B
142 Baldwin Drive, New Haven CT

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 State of Connecticut Department of Public Safety owns the existing lattice telecommunications tower and related facility at 142 Baldwin Drive, New Haven CT (West Rock State Park), Connecticut (Latitude: 41.345278, Longitude: -72.971111). T-Mobile intends to replace three existing antennas with six new antennas and related equipment at this existing telecommunications facility in New Haven ("New Haven 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 Mayor Toni Harp, and the property owner, Connecticut Department of Energy and Environmental Protection.

The existing New Haven Facility consists of a 120 self-supporting lattice structure.[1] T-Mobile plans to replace three existing antennas and three TMAs (tower mounted amplifiers)

[1] The online Connecticut Siting Council database does not include a docket or petition number for the approval of this structure, and therefore does not include limitations on the configuration of the antennas. There have been several notices of intent to modify the facility, the most recent being EM-SPRINT-062-130912 and EM-CING-093-121031.

with six new antennas and three TMAs on replacement pipe mounts at a centerline of 95 feet. (See the plans revised to March 31, 2014 attached hereto as Exhibit A). T-Mobile will also replace an equipment cabinet, install hybrid fiber cable and reuse existing coax cables. The existing New Haven Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated March 19, 2014 and attached hereto as Exhibit B.

The planned modifications to the New Haven 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 and additional antennas will be installed at a centerline of 95 feet, merely replacing existing antennas located at the same 95 foot elevation. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

2. The proposed modifications will not require an extension of the site boundaries or lease area, as depicted on Sheet L-1 of Exhibit A. T-Mobile's equipment will be located entirely within the existing concrete pad and therefore within the existing compound area.

3. The proposed modification to the New Haven 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 3, 2014, T-Mobile's operations would add 1.316% 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 45.076% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit C.

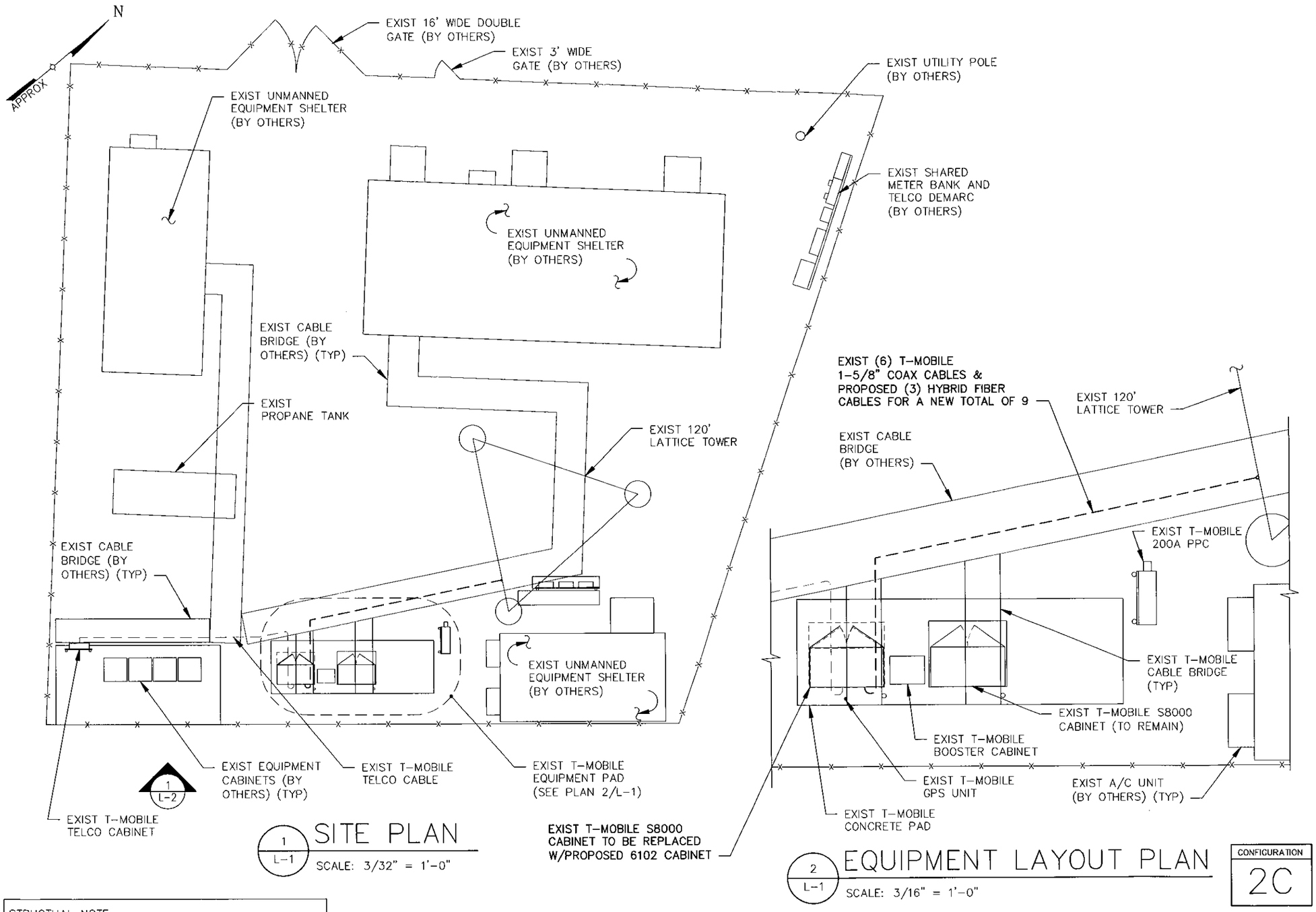
For the foregoing reasons, T-Mobile respectfully submits that the proposed replacement antennas and equipment at the New Haven Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement by the Council of this proposed exempt modification, T-Mobile shall commence construction approximately sixty days from the date of the Council's notice of acknowledgement.

Sincerely,

Julie D. Kohler, Esq.

cc: City of New Haven, Mayor Toni Harp
State of Connecticut Department of Public Safety
Connecticut Department of Energy and Environmental Protection
Halene Fujimoto, HPC Wireless

EXHIBIT A



1/L-1 SITE PLAN

SCALE: 3/32" = 1'-0"

2/L-1 EQUIPMENT LAYOUT PLAN

SCALE: 3/16" = 1'-0"

STRUCTUAL NOTE:
PROPOSED MOUNTS AND TOWER STRUCTURE TO BE VERIFIED FOR STRUCTURAL SUITABILITY OF PROPOSED INSTALLATION BY A STATE LICENSED P.E.

CONFIGURATION
2C

0 1 2 3
ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • SURVEYING
• ENGINEERING • 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.

T-MOBILE NORTHEAST, LLC.
4 SYLVAN DRIVE
PARSIPPANY, NJ 07054
PHONE: (973) 658-6500

APPROVALS

T-MOBILE _____
LANDLORD _____
RF _____
CONSTRUCTION _____

PROJECT NUMBER	DESIGNED BY
6646.CT11086B	TN

REV	DATE	REVISION	DRAWN BY
0	8/21/13	FOR COMMENT	NS
1	8/27/13	PER COMMENTS	NS
2	3/31/14	PER S.A.	SF
3	4/3/14	PER COMMENTS	MP

ISSUED BY _____ DATE _____

SITE INFORMATION

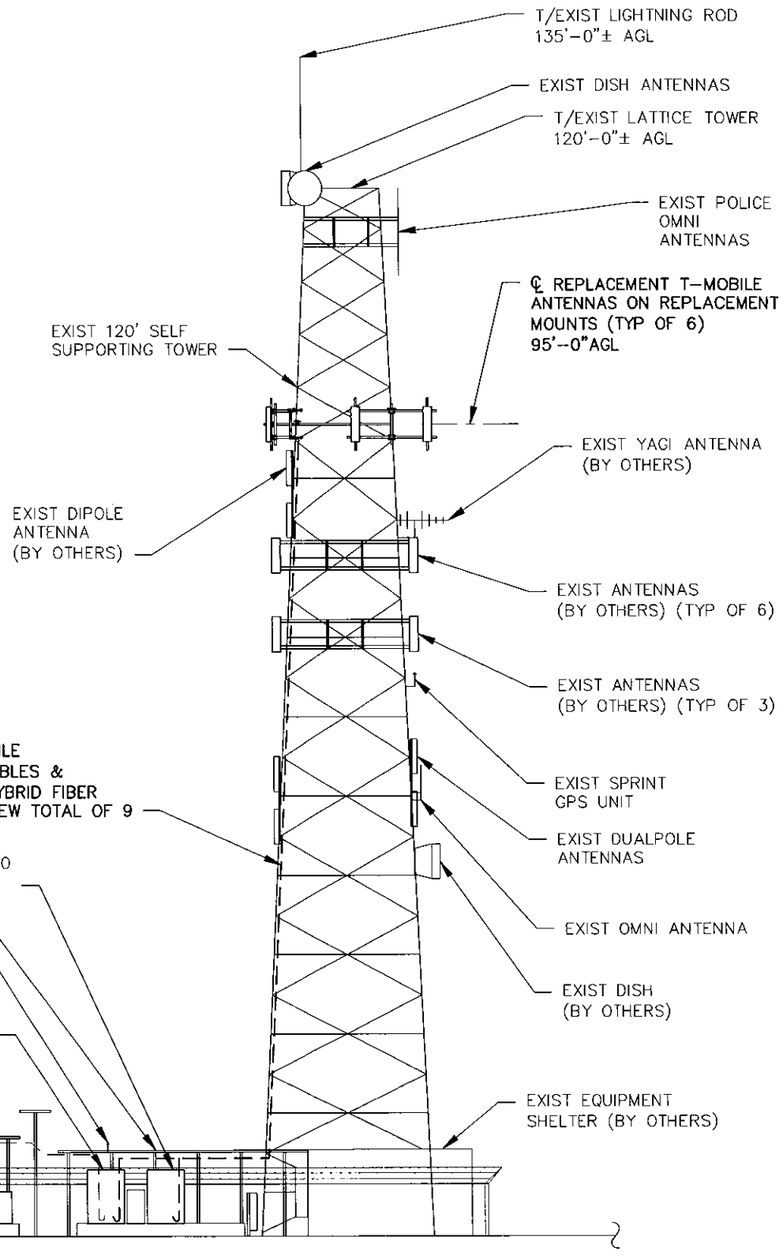
CT11086B
NEW HAVEN/ WC X59
(W. ROCK STATE PARK)
142 BALDWIN DRIVE
NEW HAVEN, CT 06515

SHEET TITLE

SITE PLAN &
EQUIPMENT LAYOUT PLAN

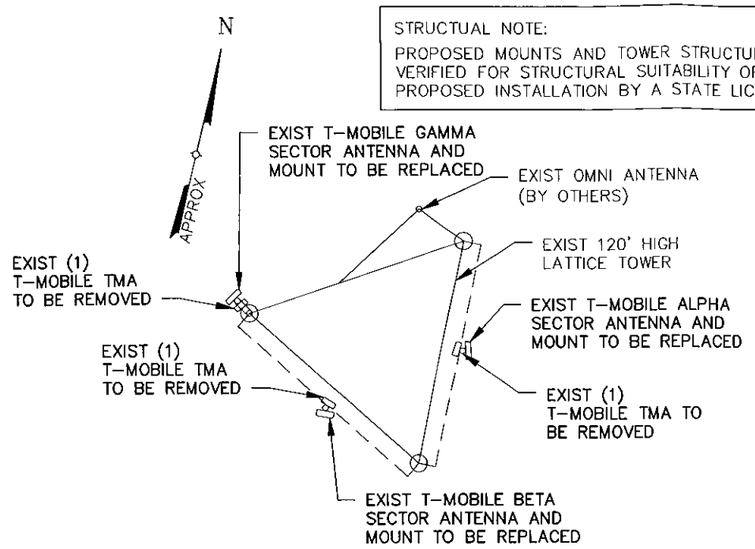
SHEET NUMBER

L-1



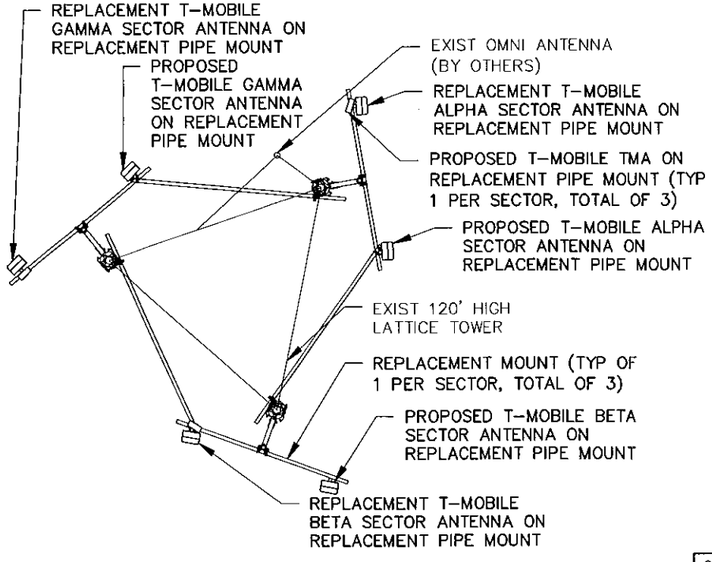
1 / L-2 EAST ELEVATION

SCALE: 3/32" = 1'-0"



2 / L-2 EXIST ANTENNA PLAN

SCALE: 1/8" = 1'-0"



3 / L-2 PROPOSED ANTENNA PLAN

SCALE: 1/8" = 1'-0"

STRUCTUAL NOTE:
PROPOSED MOUNTS AND TOWER STRUCTURE TO BE VERIFIED FOR STRUCTURAL SUITABILITY OF PROPOSED INSTALLATION BY A STATE LICENSED P.E.

CONFIGURATION
2C

0 1 2 3
ORIGINAL SIZE IN INCHES

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APPROVALS
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3	4/3/14	PER COMMENTS	MP

ISSUED BY | DATE

SITE INFORMATION
CT11086B
NEW HAVEN/ WC X59
(W. ROCK STATE PARK)
142 BALDWIN DRIVE
NEW HAVEN, CT 06515

SHEET TITLE
ELEVATION &
ANTENNA PLAN

SHEET NUMBER
L-2

EXHIBIT B

DETAILED STRUCTURAL ANALYSIS AND EVALUATION OF AN EXISTING 120' SELF-SUPPORT LATTICE TOWER FOR NEW ANTENNA ARRANGEMENT

T-Mobile Site #: CT11086B
Site Name: New Haven - State Police Tower #27
Address: 142 Baldwin Drive, New Haven, CT
(aka 1065 Wintergreen Avenue, Hamden, CT)

prepared for

T-Mobile

HPC Wireless Services
64 Mill Plain Road
Danbury, CT 06811

prepared by

URS

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

36928677.00000
HPC-069

March 19, 2014

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis of the existing 120' self-supporting lattice tower structure located at 142 Baldwin Drive, New Haven; (aka 1065 Wintergreen Avenue, Hamden), Connecticut. The analysis was conducted in accordance with the 2005 Connecticut State Building Code, the TIA/EIA-222-F standard, and the Connecticut State Police Requirements for a wind velocity of 90 mph (fastest mile) and 90 mph (fastest mile) concurrent with 0.5" ice. Twist (rotation) and sway (deflection) were determined in accordance with Connecticut State Police Requirements for a wind velocity of 90 mph (fastest mile) concurrent with 0.5" ice. The antenna loading considered in the analysis consists of all existing and proposed antennas, transmission lines, and ancillary items as outlined in the Introduction of this report.

The proposed T-Mobile antenna modification is listed below:

Proposed Antenna and Mount	Carrier	Antenna Center Elevation
Remove: **(3) APX16DWV-16DWV-S-E-ACU Panel Antennas** **(3) (GSM) TMA Units** **(3) Existing Mounts**	**T-Mobile (Existing)**	**@ 95'**
Install: **(3) Ericsson AIR21 B2A|B4P Panel Antennas** **(3) Ericsson AIR21 B4A|B2P Panel Antennas** **(3) (AWS) TMA Units** **(3) Antenna Mounts** **(2) Fiber Optic Cables**	**T-Mobile (Proposed)**	**@ 95'**

The results of the analysis indicates that the existing tower, anchor bolts and foundation are in compliance with the proposed loading conditions without modification. **The existing tower, anchor bolts and foundation are considered structurally adequate for the proposed antenna loading with the wind load classification specified above.**

The tower deflection (sway) is 0.3340 degrees, and the tower rotation (twist) is 0.1214 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:

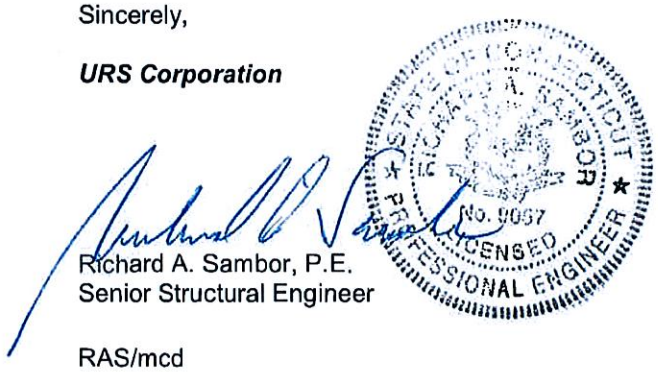
1) The tower structure's theoretical capacity, not including any assessment of the condition of the tower.
2) Tower geometry and structural member sizes utilized in the preparation of this report were obtained from manufacturer's original design documents prepared by Stainless, Inc. report number 358810, noted as revision B, dated March 3, 1995.
3) Geotechnical engineering report prepared by Dr. Clarence Welti, P.E., P.C., dated December 29, 1993.
4) Previous tower reinforcement and structural analysis performed by URS Corporation, project number CTK-003 / 36939367, signed and sealed September 20, 2012.
5) Previous structural analysis performed by URS Corporation, project number TWS-009 / 36922446, signed and sealed July 17, 2013.
6) Antenna inventory provided by Connecticut State Police via e-mail on February 8, 2014.
7) T-Mobile Radio Frequency Data Sheet dated March 3, 2014.
8) Antenna and mount configuration as specified within Section 2 and 6 of this report.
9) Coax cable orientation as specified in section 6 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 as well as the physical condition of the tower. 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



Richard A. Sambor, P.E.
Senior Structural Engineer

RAS/mcd

2. INTRODUCTION

The subject tower is located at 142 Baldwin Drive, New Haven; (aka 1065 Wintergreen Avenue, Hamden), Connecticut. The structure is an existing 120' self supporting steel tapered lattice tower, designed and manufactured by Stainless, Inc.

The inventory is summarized in the table below:

Antenna Type	***Carrier***	***Mount***	***Antenna Centerline Elevation***	***Cable***
(1) 4' Lightning Rod	Tower (existing)	18' Pipe Mast on Top of Tower	138'	---
(1) RFS Celwave PD1142 -2B Omni	DOT – 1 (existing)	(3) Side Arms	120'	(1) 7/8"
(1) RFS Celwave PD458 Omni	CTT – 2 (existing)		120'	(1) 7/8"
(2) Katherein OGT9-806 Omni	CSP 8 & 9 (existing)		120'	(2) 1-5/8"
(1) 6' Dipole	CSP – 52 (existing)		120'	(1) 1-1/4"
(3) 6' Microwave Dishes	CSP – 69,70 & 71 (future)		120'	---
(1) SC479-HF1DF	CSP – 65 (existing)		120'	(1) 1-5/8"
(3) SC479-HF1DF	CSP 66, 67 & 68 (existing)		120'	(3) 1-5/8"
(1) 6' Microwave Dish	CSP - 6 (existing)	(3) Dish Mounts	116'	(1) WE65
(1) 6' Microwave Dish	CSP - 4 (existing)		115'	(1) WE65
(1) 6' Microwave Dish	CSP - 7 (existing)		111'	(1) WE65
(1) Filter/Diplexer	CSP – 62 (existing)	(2) Side Arms	110'	(1) 1/2"
(1) Kathrein AP13-850/065 panel antennas	CSP – 41 (existing)		110'	(1) 1-5/8"
(1) SC479-HF1LDF	CSP – 54 (existing)		110'	(1) 1-5/8"
(2) SC479-HF1LDF	CSP – 60 & 61 (existing)		110'	(3) 1-5/8"
(1) AP13-850/065/ADT	CSP – 42 (existing)	Leg Mounted	105'	(1) 1-5/8"
(1) Filter/Diplexer	DEHMS – 43 (existing)	Leg Mounted	105'	---
(2) Katherein OGT9-806 Omni	CSP 10 & 11 (existing)	(2) Pipe Mounts	103'	(2) 1-5/8"
(1) RFS Celwave PD458 Omni	CTT – 3 (existing)	Leg Mounted	100'	(1) 7/8"

Antenna Type	*Carrier*	*Mount*	*Antenna Centerline Elevation*	*Cable*
(3) Ericsson AIR21 B2A|B4P Panel Antennas (3) Ericsson AIR21 B4A|B2P Panel Antennas (3) (AWS) TMA Units	**T-Mobile (Proposed)**	**(3) Antenna Mounts**	**95'**	(6) 1 5/8" **(1) 1 1/4" F.O. Cable (2) Fiber Optic Cables**
(1) 20' 4-Bay Dipole	USS – 24 (existing)	Side Arm	90'	(1) 7/8"
(1) RFS Celwave PD1142 -2B Omni	DEHMS – 26 (existing)	Side Arm	85'	(1) 7/8"
(1) 3' Yagi antenna	CSP – 14 (existing)	Leg Mounted	85'	(1) 7/8"
(4) SBNH-1D6565C (2A & 2B) (2) AM-X-CD-16-65-00T (2C) (6) TMAs (12) Diplexers	AT&T (existing)	Frame Mount	80'	(8) 1-1/4" (4) 1-1/4"
(1) 20' 4-Bay Dipole	USS – 12 (existing)	Leg Mounted	78'	(1) 7/8"
(3) Decibel DB980H90E-M panel antennas (3) RFS APXVSPP18-C-A20 (6) ALU RRH 4X45 65MHz (3) ALU RRH 800 MHz 2x50W (3) 800 MHz NOTCH FILTER (3) 1900 RRH COMBINER	Sprint (existing)	Pipe Mount	72'	(2) 1 5/8" (2) 1 1/4" (2) 1/2" (3) HYBRIFLEX 1 -1/4" Coax
(1) 2' Microwave Panel	NHVN – 57 (existing)	Leg Mounted	70'	(1) CAT5
(1) DB212	DEHMS – 47 (existing)	(2) Stand-offs	60'	(1) 7/8"
(1) DB803M-Y	CSP – 53 (existing)		60'	(1) 1/2"
(1) GPS	AT&T – 25 (existing)		60'	(1) 7/8"
(1) GPS	Sprint – 18 (existing)		60'	(1) 1/2"
(1) BA6312 Omni	NHVN – 45 (existing)		60'	(1) 7/8"
(1) 4' Whip	NHVN – 46 (existing)		60'	(1) 7/8"
(1) 20' Dipole	USS – 13 (existing)	2' Side Arm	56'	(1) 7/8"
(1) Decibel DB-264	CSP – 5 (existing)	Leg Mounted	55'	(1) 7/8"
(1) 1' Microwave Panel	NHVN – 58 (existing)	Leg Mounted	50'	(1) CAT5
(1) 4' Dish	NHVN – 44 (existing)	3' Side Arm	40'	(2) 1/2"
(1) 3' Microwave Panel	FBI –51 (existing)	Leg Mount	40'	(1) 1/2"

Antenna Type	*Carrier*	*Mount*	*Antenna Centerline Elevation*	*Cable*
(1) 1' Whip	FBI – 50 (existing)	Leg Mount	35'	(1) 1/2"
(1) 3' Whip	CSP – 48 (existing)	Leg Mount	30'	(1) 1/2"

Notes: Refer to coax feed-line plan within Section 6 of this report for coax locations.

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

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

Stresses on the tower structure were evaluated to compare with the allowable stress in accordance with AISC. The results of the analysis indicate that the existing tower, anchor bolts and foundation are in compliance with the proposed loading conditions without modification (see tables below). **The existing tower structure, anchor bolts and foundation are considered structurally adequate for the proposed antenna loading with the wind load classifications specified in Section 3.**

The tower deflection (sway) is 0.3340 degrees, and the tower rotation (twist) is 0.1214 degrees. These figures are within the Connecticut State Police specification of 0.75 degrees for deflection (sway) and rotation (twist).

Tower Base Reactions:

Base Reactions	Proposed Tower Reactions
Axial Load (kips)	51
Shear per Leg (kips)	31
Total Shear (kips)	57
Uplift per Leg (kips)	206
Comp.per Leg (kips)	247
O.T. Moment (ft-kips)	4195

For detailed proposed tower reactions, see drawing no. E-1 in section 6 of this report.

Tower Component Stress vs. Capacity Summary:

Component/ (Section No.)	Existing Component Size	Controlling Component/Elevation	Stress (% capacity)	Pass/Fail
Tower Leg (T8)	P5x0.4	Compression/25'-50'	85.5 %	**Pass**
Diagonal (T9)	2L3-1/2x3x1/4	Compression/0'-25'	99.9 %	**Pass**
Horizontal (T7)	L3x3x1/4	Compression/50'-75'	84.4 %	**Pass**
Top Girt (T8)	L3x3x1/4	Compression/25'-50'	94.9 %	**Pass**
Inner Bracing (T8)	L2-1/2x2x3/16	Compression/25'-50'	7.3 %	**Pass**
Bolt Checks	(1) 3/4" A325X Diagonal Bolt	Member Bearing/50'	70.6 %	**Pass**
Anchor Bolts	1 1/2" dia. A36	Tension & Shear	90 %	**Pass**
Foundation	Rock Anchors	Tension	73 %	**Pass**

Tower Deflection (Sway) and Rotation (Twist) at the top of the tower (degrees):

Description	Current	Allowable
Tower Sway (degrees)	0.3340	N/A
Tower Twist (degrees)	0.1214	
Total (degrees)	0.4554	0.750

5. CONCLUSIONS AND RECOMMENDATIONS

The results of the analysis indicates that the existing tower, anchor bolts and foundation are in compliance with the proposed loading conditions without modification. **The existing tower, anchor bolts and foundation are considered structurally adequate for the proposed antenna loading with the wind load classification specified above.**

The tower deflection (sway) is 0.3340 degrees, and the tower rotation (twist) is 0.1214 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.
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.

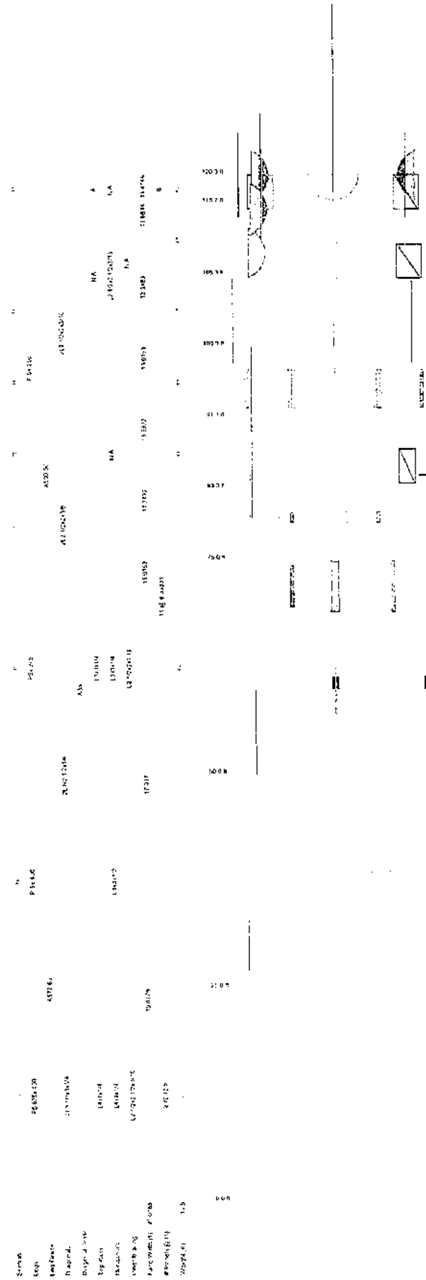
Ongoing and Periodic Inspection and Maintenance:

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

TNX TOWER INPUT / OUTPUT SUMMARY



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 5'x4" (Tower)	132	(2) TMA (ATT)	80
10'x2.5" Pipe Mount (Tower)	120	(2) TMA (ATT)	80
HAZ 20 (CGT - 1)	120	(2) DiA (ATT)	80
PD45E-1 (CTT - 2)	120	Mount (ATT)	80
OGT9-806 (CSP - 9)	120	Mount (ATT)	80
OGT9-806 (CSP - 8)	120	Mount (ATT)	80
SC479-HF1LDF (CSP - 59)	120	(4) Diplexer (ATT)	80
6' Dipole (CSP - 52)	120	(2) SBNH-1D6565C (ATT)	80
(2) SC479-HF1LDF (CSP - 55, 35)	120	(4) Diplexer (ATT)	80
Filter/Diplexer (CSP - 42)	120	(4) Diplexer (ATT)	80
6FT DISH (CSP - 69)	120	VHF150 (DPS - 12)	72
6FT DISH (CSP - 70)	120	800 MHz NOTCH FILTER (Sprint)	72
6FT DISH (CSP - 71)	120	800 MHz NOTCH FILTER (Sprint)	72
6' Side-Arm	119	800 MHz NOTCH FILTER (Sprint)	72
6' Side-Arm	115	1900 RRH COMBINER (Sprint)	72
6' Side-Arm	116	1900 RRH COMBINER (Sprint)	72
PAR-6-59AC (CSP - 6)	117	1900 RRH COMBINER (Sprint)	72
6x4" Pipe Mount (Dish Mount)	115	DB980H90E-M (Sprint/Nextel)	72
PAR6-65AC (CSP - 4)	115	Mount (Sprint/Nextel)	72
10'x4" Pipe Mount (Dish Mount)	115	Mount (Sprint/Nextel)	72
PAR-6-59AC (CSP - 7)	111	Mount (Sprint/Nextel)	72
6x4" Pipe Mount (Dish Mount)	111	APXVSPP18-C-A20 (Sprint)	72
6' Side-Arm	116	APXVSPP18-C-A20 (Sprint)	72
SC479-HF1LDF (CSP - 54)	110	APXVSPP18-C-A20 (Sprint)	72
Filter/Diplexer (CSP - 62)	113	(2) ALU RRH 1900 4X45 65MHz (Sprint)	72
SC479-HF1LDF (CSP - 69)	113	(2) ALU RRH 1900 4X45 65MHz (Sprint)	72
APXV-[illegible] w/Mount Pipe (CSP - 47)	113	(2) ALU RRH 1900 4X45 65MHz (Sprint)	72
(2) SC479-HF1LDF (CSP - 10, 44)	110	ALU RRH 800 MHz 2x50W (Sprint)	72
6' Side-Arm	113	ALU RRH 800 MHz 2x50W (Sprint)	72
APXV-[illegible] w/Mount Pipe (CSP - 42)	105	ALU RRH 800 MHz 2x50W (Sprint)	72
Diplexer (DEMHS - 43)	105	DB980H90E-M (Sprint/Nextel)	72
OGT9-806 (CSP - 11)	103	DB980H90E-M (Sprint/Nextel)	72
OGT9-806 (CSP - 10)	103	2' Microwave Panel (DEMHS - 37)	72
3'x4" Pipe Mount (CSP - 11)	103	GPS (Sprint/Nextel - 98)	67
3'x4" Pipe Mount (CSP - 10)	103	Mount (Sprint/Nextel)	67
PD458-1 (CTT - 3)	100	BA[illegible] (DEMHS - 45)	62
LLSF165L (T-Mobile)	95	3' Yagi (DEMHS - 46)	60
LLSF165L (T-Mobile)	95	GPS (ATT - 25)	60
LLSF165L (T-Mobile)	95	Mount (ATT)	60
(2) AIR 32A-B4P (T-Mobile)	95	OG[illegible] (DEMHS - 47)	60
(2) AIR 32A-B4P (T-Mobile)	95	COMBAV (CSP - 53)	60
(2) AIR 32A-B4P (T-Mobile)	95	5' Side-Arm	56
TMA (T-Mobile)	95	Mount	56
TMA (T-Mobile)	95	VHF150 (DSS - 13)	56
TMA (T-Mobile)	95	DA[illegible] (CSP - 5)	55
(4) 4-Bay Dipole (DSS - 24)	90	1' Microwave Panel (DEMHS - 38)	50
Mount	88	3' Side-Arm	44
Mount	86	10'x2" Pipe Mount	44
3' Yagi (CSP - 14)	85	2 Panel (FD - 59)	40
PD1142-1 (DEMHS - 26)	85	4FT DISH (DEMHS - 44)	40
(2) SBNH-1D6565C (ATT)	80	1 Omni (FUS - 80)	35
(2) [illegible] (ATT)	80	4' Yagi (CSP - 48)	30

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	[illegible]	B	[illegible]

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A500-57	50 ksi	62 ksi	A572-50	50 ksi	65 ksi
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: 99.9%

MAX. CORNER REACTIONS AT BASE:
DOWN: 247 K
UPLIFT: -206 K
SHEAR: 31 K

AXIAL 51 K
SHEAR 57 K
MOMENT 4195 kip-ft
TORQUE 64 kip-ft
90 mph WIND - 0.5000 in ICE

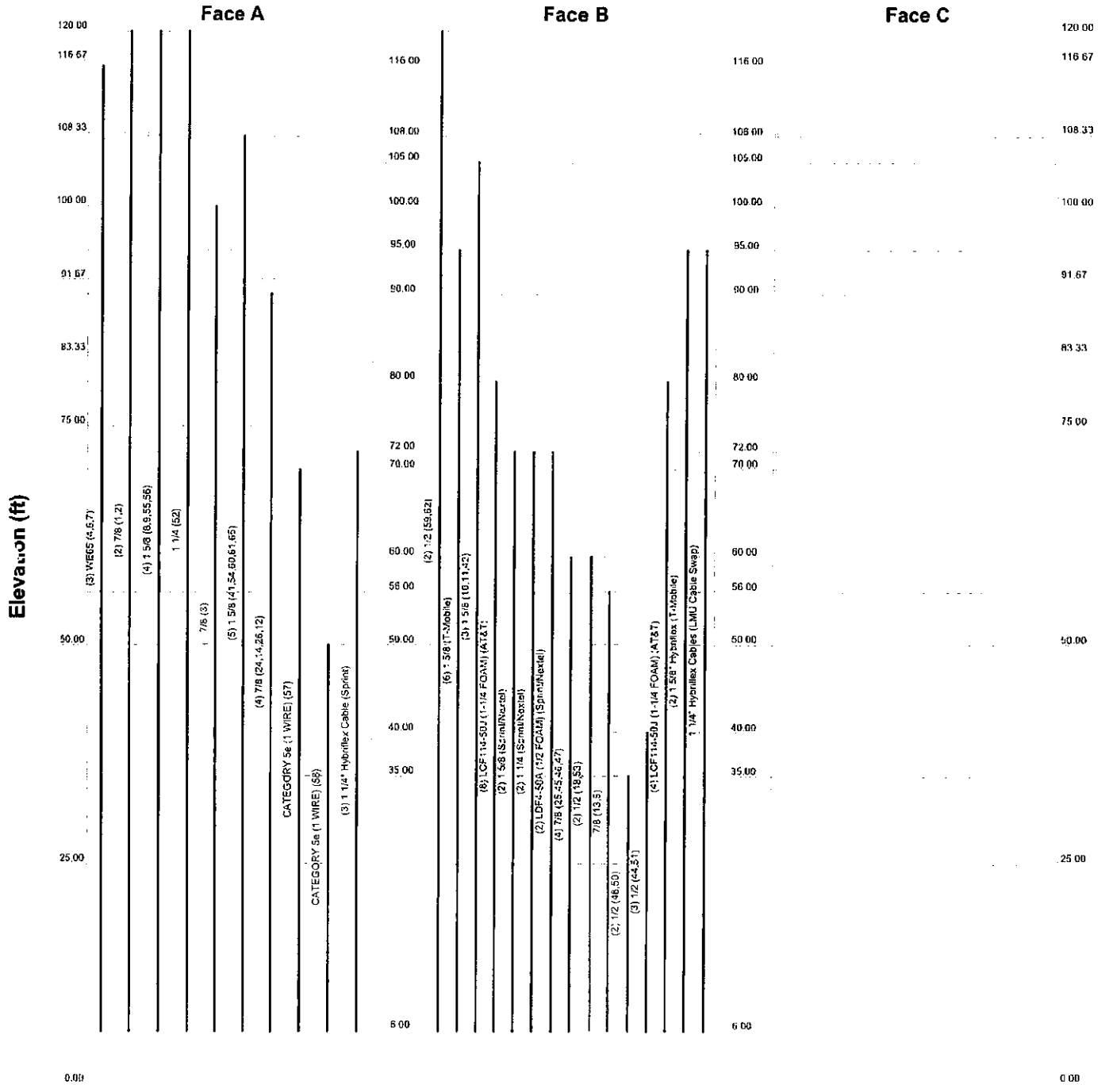
AXIAL 32 K
SHEAR 45 K
MOMENT 3407 kip-ft
TORQUE 62 kip-ft
REACTIONS - 90 mph WIND

URS Corporation	Job: 120' Self-Supporting Lattice Tower
500 Enterprise Drive, Suite 3B	Project: Connecticut State Police Tower - West Rock
Rocky Hill, CT 06067	Client: T-Mobile / HPC-059 — Drawn by: MCD — App'd:
Phone: 860-529-8882	Code: TIA/EIA-222-F — Date: 03/19/14 — Scale: NTS
FAX: 860-529-3991	Path: — Dwg No. E-1

TNX TOWER FEEDLINE DISTRIBUTION CHART

Feedline Distribution Chart
0' - 120'

Round Flat App In Face App Out Face Truss Leg

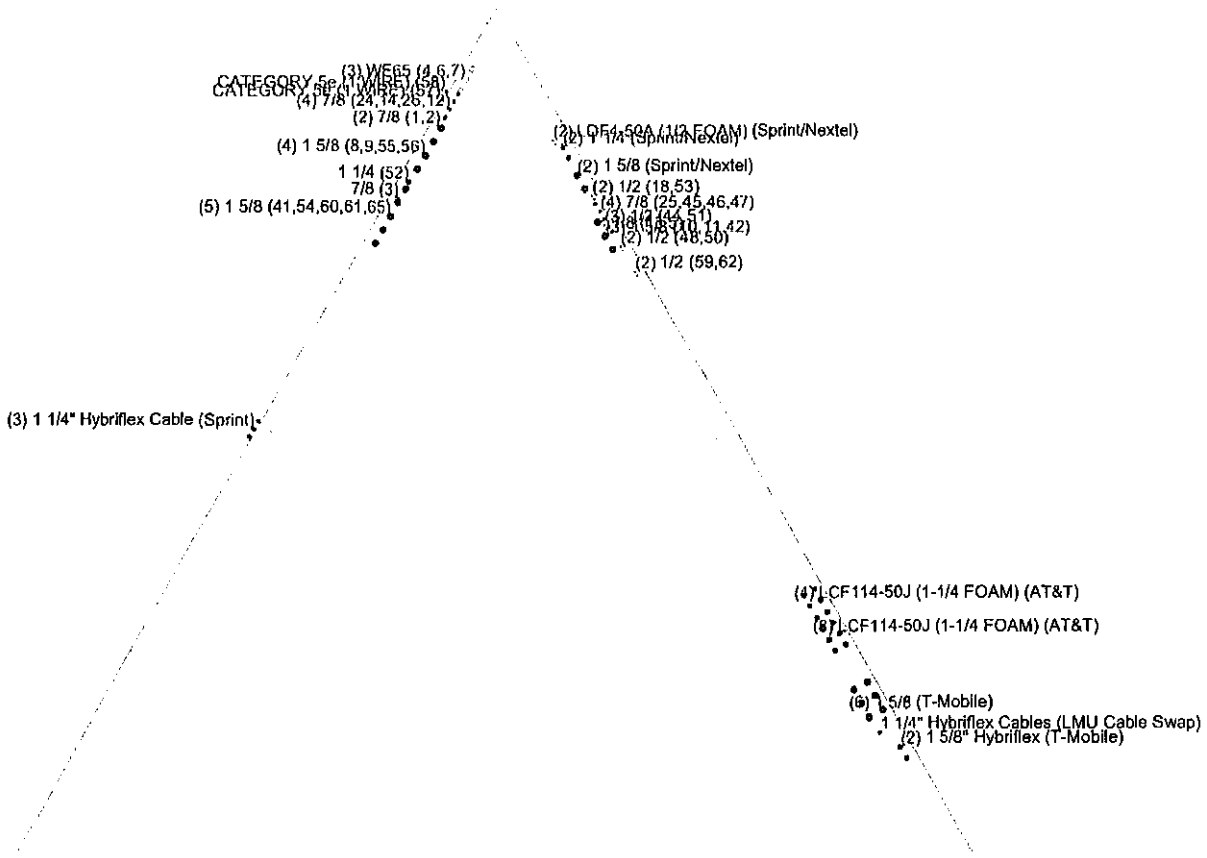


URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Job: ***120' Self-Supporting Lattice Tower*** Project: ***Connecticut State Police Tower - West Rock*** Client: T-Mobile / HPC-069 Drawn by: MCD App'd: Code: TIA/EIA-222-F Date: 03/19/14 Scale: NTS Path: Dwg No E-7

TNX TOWER FEEDLINE PLAN

Feedline Plan

Round Flat App In Face App Out Face



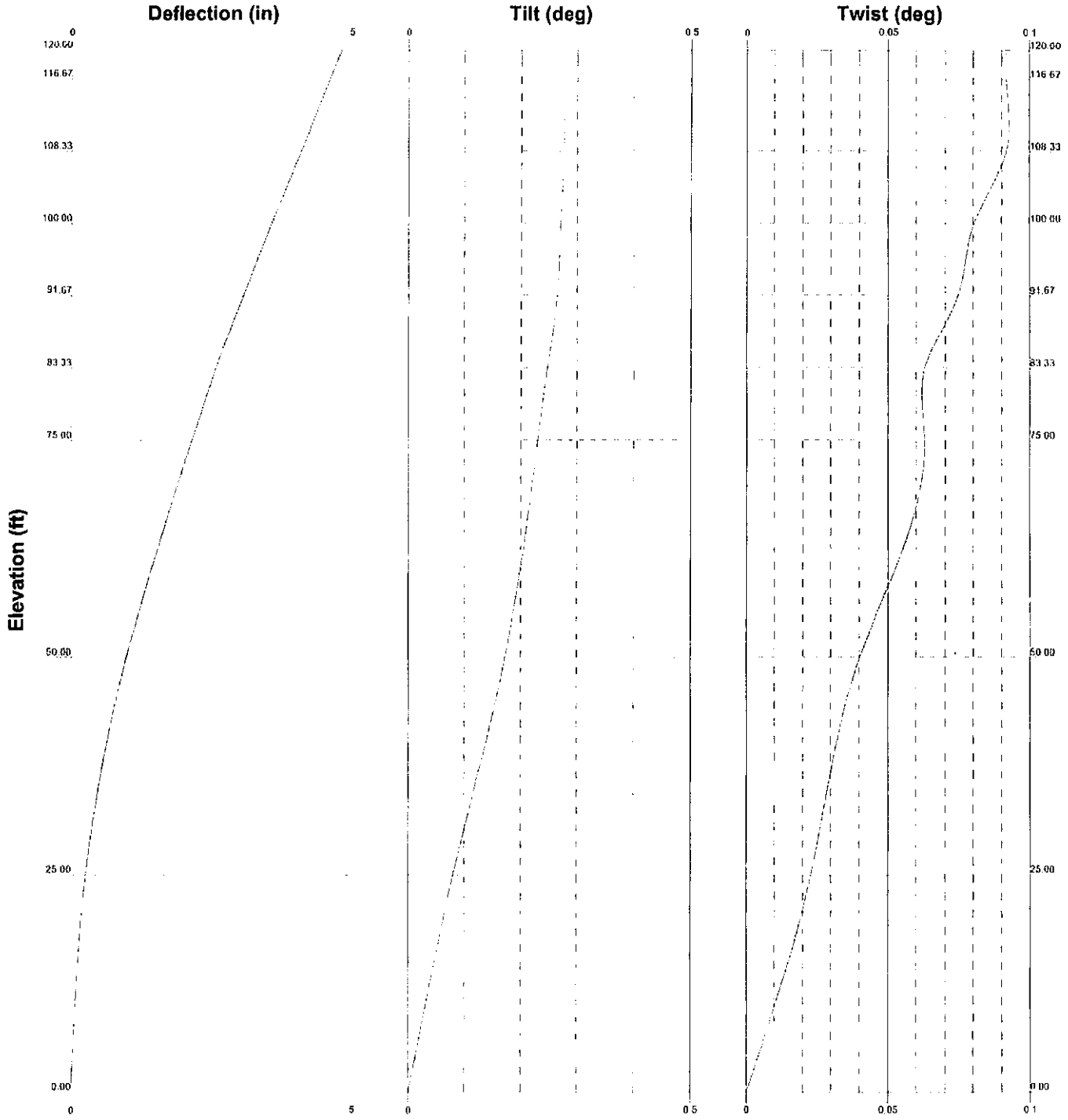
URS Corporation
500 Enterprise Drive, Suite 3B
Rocky Hill, CT 06067
Phone: 860-529-8882
FAX: 860-529-3991

Job:	***120' Self-Supporting Lattice Tower***
Project:	***Connecticut State Police Tower - West Rock***
Client:	T-Mobile / HPC-069
Drawn by:	MCD
App'd:	
Code:	TIA/EIA-222-F
Date:	03/19/14
Scale:	NTS
Path:	
Dwg No.	E-7

TNX 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: ***120' Self-Supporting Lattice Tower***
Project: ***Connecticut State Police Tower - West Rock***
Client: T-Mobile / HPC-069 Drawn by: MCD App'd
Code: TIA/EIA-222-F Date: 03/19/14 Scale: NTS
Path: Dwg No. E-5

TNX TOWER DETAILED OUTPUT

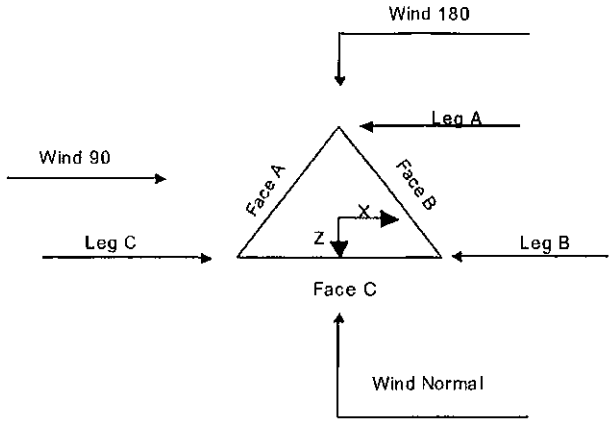
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 120.00 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 11.41 ft at the top and 21.02 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		



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	120.00-116.67			11.41	1	3.33
T2	116.67-108.33			11.68	1	8.33
T3	108.33-100.00			12.35	1	8.33
T4	100.00-91.67			13.02	1	8.33
T5	91.67-83.33			13.68	1	8.33
T6	83.33-75.00			14.35	1	8.33
T7	75.00-50.00			15.02	1	25.00
T8	50.00-25.00			17.02	1	25.00
T9	25.00-0.00			19.02	1	25.00

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
T1	120.00-116.67	3.33	K Brace Down	No	Yes	0.0000	0.0000
T2	116.67-108.33	8.33	K Brace Down	No	Yes	0.0000	0.0000
T3	108.33-100.00	8.33	K Brace Down	No	Yes	0.0000	0.0000
T4	100.00-91.67	8.33	K Brace Down	No	Yes	0.0000	0.0000
T5	91.67-83.33	8.33	K Brace Down	No	Yes	0.0000	0.0000
T6	83.33-75.00	8.33	K Brace Down	No	Yes	0.0000	0.0000

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
T7	75.00-50.00	8.33	K Brace Down	No	Yes	0.0000	0.0000
T8	50.00-25.00	8.33	K Brace Down	No	Yes	0.0000	0.0000
T9	25.00-0.00	12.50	K Brace 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 120.00-116.67	Pipe	P.5x.250	A500-50 (50 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T2 116.67-108.33	Pipe	P.5x.250	A500-50 (50 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T3 108.33-100.00	Pipe	P.5x.250	A500-50 (50 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T4 100.00-91.67	Pipe	P.5x.250	A500-50 (50 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T5 91.67-83.33	Pipe	P.5x.250	A500-50 (50 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T6 83.33-75.00	Pipe	P.5x.250	A500-50 (50 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T7 75.00-50.00	Pipe	P5x.375	A500-50 (50 ksi)	Double Angle	2L3x2 1/2x1/4	A36 (36 ksi)
T8 50.00-25.00	Pipe	P.5x.400	A572-60 (60 ksi)	Double Angle	2L3x2 1/2x1/4	A36 (36 ksi)
T9 25.00-0.00	Pipe	P6.875x.400	A572-60 (60 ksi)	Double Angle	2L3 1/2x3x1/4	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 120.00-116.67	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T4 100.00-91.67	Single Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T5 91.67-83.33	Single Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T6 83.33-75.00	Single Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T7 75.00-50.00	Single Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T8 50.00-25.00	Single Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T9 25.00-0.00	Single Angle	L4x4x1/4	A36 (36 ksi)	Solid Round		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 120.00-116.67	None	Flat Bar		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T2 116.67-108.33	None	Flat Bar		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T3 108.33-100.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T4 100.00-91.67	None	Flat Bar		A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T5 91.67-83.33	None	Flat Bar		A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T6 83.33-75.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T7 75.00-50.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T8 50.00-25.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L3x3x1/2	A36 (36 ksi)
T9 25.00-0.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L4x4x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T4 100.00-91.67	Solid Round		A572-50 (50 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T5 91.67-83.33	Solid Round		A572-50 (50 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T6 83.33-75.00	Solid Round		A572-50 (50 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T7 75.00-50.00	Solid Round		A572-50 (50 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T8 50.00-25.00	Solid Round		A572-50 (50 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T9 25.00-0.00	Solid Round		A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust Factor A_l	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 120.00-116.67	0.00	0.0000	A36 (36 ksi)	1	1	1	Mid-Pt	36.0000
T2	0.00	0.0000	A36	1	1	1	Mid-Pt	36.0000

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
116.67-108.33			(36 ksi)					
T3	0.00	0.0000	A36	1	1	1	Mid-Pt	36.0000
108.33-100.00			(36 ksi)					
T4	0.00	0.0000	A36	1	1	1	Mid-Pt	36.0000
100.00-91.67			(36 ksi)					
T5 91.67-83.33	0.00	0.0000	A36	1	1	1	Mid-Pt	36.0000
			(36 ksi)					
T6 83.33-75.00	0.00	0.0000	A36	1	1	1	Mid-Pt	36.0000
			(36 ksi)					
T7 75.00-50.00	0.00	0.0000	A36	1	1	1	Mid-Pt	36.0000
			(36 ksi)					
T8 50.00-25.00	0.00	0.0000	A36	1	1	1	Mid-Pt	36.0000
			(36 ksi)					
T9 25.00-0.00	0.00	0.0000	A36	1	1	1	Mid-Pt	36.0000
			(36 ksi)					

Tower Section Geometry *(cont'd)*

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Single Diags X	K Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz X	Sec. Horiz Y	Inner Brace X	Inner Brace Y
ft															
T1	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
120.00-116.67				1	1	1	1	1	1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
116.67-108.33				1	1	1	1	1	1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
108.33-100.00				1	1	1	1	1	1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
100.00-91.67				1	1	1	1	1	1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
91.67-83.33				1	1	1	1	1	1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
83.33-75.00				1	1	1	1	1	1	1	1	1	1	1	1
T7	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
75.00-50.00				1	1	1	1	1	1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
50.00-25.00				1	1	1	1	1	1	1	1	1	1	1	1
T9 25.00-0.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	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		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 120.00-116.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 116.67-108.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 108.33-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 100.00-91.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 91.67-83.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 83.33-75.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 75.00-50.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 50.00-25.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 25.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 120.00-116.67	Flange	0.0000 A325X	0	0.7500 A325X	1	0.6250 A325X	2	0.0000 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325N	0
T2 116.67-108.33	Flange	0.0000 A325X	0	0.7500 A325X	1	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325N	0
T3 108.33-100.00	Flange	0.0000 A325X	0	0.7500 A325X	1	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325N	0
T4 100.00-91.67	Flange	0.7500 A325X	6	0.7500 A325X	1	0.6250 A325X	2	0.0000 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325N	0
T5 91.67-83.33	Flange	0.7500 A325X	0	0.7500 A325X	1	0.6250 A325X	2	0.0000 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325N	0
T6 83.33-75.00	Flange	0.7500 A325X	0	0.7500 A325X	1	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325N	0
T7 75.00-50.00	Flange	0.7500 A325X	6	0.7500 A325X	1	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325N	0
T8 50.00-25.00	Flange	0.7500 A325X	6	0.7500 A325X	1	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325N	0
T9 25.00-0.00	Flange	1.0000 A325X	8	1.0000 A325X	1	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325N	0

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
WE65 (4,6,7)	A	Yes	Af (CfAe)	116.00 - 6.00	-2.0000	0.42	3	3	1.5836	1.5836	5.1284	0.53
7/8	A	Yes	Ar (CfAe)	120.00 - 6.00	-2.0000	0.37	2	2	1.1100	1.1100		0.54

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
(1,2)												
1 5/8	A	Yes	Ar (CfAe)	120.00 - 6.00	-2.0000	0.34	4	4	1.9800	1.9800		1.04
(8,9,55,56)												
1 1/4	A	Yes	Ar (CfAe)	120.00 - 6.00	-2.0000	0.3	1	1	1.5500	1.5500		0.66
(52)												
7/8	A	Yes	Ar (CfAe)	100.00 - 6.00	-2.0000	0.28	1	1	1.1100	1.1100		0.54
(3)												
1 5/8	A	Yes	Ar (CfAe)	108.00 - 6.00	-2.0000	0.26	5	5	1.9800	1.9800		1.04
(41,54,60,61,65)												
1/2	B	Yes	Ar (CfAe)	120.00 - 6.00	-2.0000	-0.19	2	2	0.5800	0.5800		0.25
(59,62)												
1 5/8	B	Yes	Ar (CfAe)	95.00 - 6.00	-5.0000	0.31	6	3	1.9800	1.9800		1.04
(T-Mobile)												
1 5/8	B	Yes	Ar (CfAe)	105.00 - 6.00	-3.5000	-0.24	3	3	1.9800	1.9800		1.04
(10,11,42)												
LCF114-50J	B	Yes	Ar (CfAe)	80.00 - 6.00	-4.5000	0.23	8	4	1.5800	1.5800		0.70
(1-1/4 FOAM)												
(AT&T)												
1 5/8	B	Yes	Ar (CfAe)	72.00 - 6.00	-2.0000	-0.3	2	2	1.9800	1.9800		1.04
(Sprint/Nextel)												
1 1/4	B	Yes	Ar (CfAe)	72.00 - 6.00	-2.0000	-0.335	2	2	1.5500	1.5500		0.66
(Sprint/Nextel)												
LDF4-50A	B	Yes	Ar (CfAe)	72.00 - 6.00	-4.0000	-0.35	2	2	0.6300	0.6300		0.15
(1/2 FOAM)												
(Sprint/Nextel)												
7/8	B	Yes	Ar (CfAe)	60.00 - 6.00	-2.0000	-0.26	4	4	1.1100	1.1100		0.54
(25,45,46,47)												
1/2	B	Yes	Ar (CfAe)	60.00 - 6.00	-2.0000	-0.28	2	2	0.5800	0.5800		0.25
(18,53)												
7/8	B	Yes	Ar (CfAe)	56.00 - 6.00	-2.0000	-0.24	1	1	1.1100	1.1100		0.54
(13,5)												
1/2	B	Yes	Ar (CfAe)	35.00 - 6.00	-2.0000	-0.22	2	2	0.5800	0.5800		0.25
(48,50)												
1/2	B	Yes	Ar (CfAe)	40.00 - 6.00	-3.0000	-0.25	3	3	0.5800	0.5800		0.25
(44,51)												
7/8	A	Yes	Ar (CfAe)	90.00 - 6.00	-2.0000	0.39	4	4	1.1100	1.1100		0.54
(24,14,26,12)												
CATEGORY 5e (1 WIRE)	A	Yes	Ar (CfAe)	70.00 - 6.00	0.0000	0.39	1	1	1.0000	1.0000		0.21
(57)												
CATEGORY 5e (1 WIRE)	A	Yes	Ar (CfAe)	50.00 - 6.00	0.0000	0.4	1	1	1.0000	1.0000		0.21
(58)												
LCF114-50J	B	Yes	Ar (CfAe)	80.00 - 6.00	-4.5000	0.19	4	2	1.5800	1.5800		0.70
(1-1/4 FOAM)												
(AT&T)												
1 1/4" Hybriflex Cable	A	Yes	Ar (CfAe)	72.00 - 6.00	0.0000	0	3	3	1.0000	1.2500		0.42
(Sprint)												
1 5/8" Hybriflex	B	Yes	Ar (CfAe)	95.00 - 6.00	-2.0000	0.375	2	2	1.6250	1.6250		0.21
(T-Mobile)												
1 1/4" Hybriflex Cables	B	Yes	Ar (CfAe)	95.00 - 6.00	-5.0000	0.345	1	1	1.2500	1.2500		0.42
(LMU Cable												

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
Swap)												

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	120.00-116.67	A	3.247	0.000	0.000	0.000	0.02
		B	0.322	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T2	116.67-108.33	A	8.118	3.035	0.000	0.000	0.06
		B	0.806	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T3	108.33-100.00	A	14.718	3.299	0.000	0.000	0.10
		B	3.281	0.000	0.000	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.00
T4	100.00-91.67	A	15.764	3.299	0.000	0.000	0.11
		B	7.831	0.000	0.000	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.00
T5	91.67-83.33	A	18.231	3.299	0.000	0.000	0.12
		B	12.181	0.000	0.000	0.000	0.09
		C	0.000	0.000	0.000	0.000	0.00
T6	83.33-75.00	A	18.847	3.299	0.000	0.000	0.13
		B	16.131	0.000	0.000	0.000	0.13
		C	0.000	0.000	0.000	0.000	0.00
T7	75.00-50.00	A	65.083	9.897	0.000	0.000	0.42
		B	76.767	0.000	0.000	0.000	0.59
		C	0.000	0.000	0.000	0.000	0.00
T8	50.00-25.00	A	68.521	9.897	0.000	0.000	0.43
		B	90.746	0.000	0.000	0.000	0.67
		C	0.000	0.000	0.000	0.000	0.00
T9	25.00-0.00	A	52.076	7.522	0.000	0.000	0.32
		B	71.171	0.000	0.000	0.000	0.52
		C	0.000	0.000	0.000	0.000	0.00

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	120.00-116.67	A	0.500	5.192	0.000	0.000	0.000	0.05
		B		0.439	0.322	0.000	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
T2	116.67-108.33	A	0.500	12.979	4.313	0.000	0.000	0.17
		B		1.097	0.806	0.000	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
T3	108.33-100.00	A	0.500	22.912	4.688	0.000	0.000	0.28
		B		4.822	0.806	0.000	0.000	0.05
		C		0.000	0.000	0.000	0.000	0.00
T4	100.00-91.67	A	0.500	24.792	4.688	0.000	0.000	0.29
		B		11.872	0.806	0.000	0.000	0.14
		C		0.000	0.000	0.000	0.000	0.00
T5	91.67-83.33	A	0.500	29.481	4.688	0.000	0.000	0.33
		B		18.722	0.806	0.000	0.000	0.24

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
		C		0.000	0.000	0.000	0.000	0.00
T6	83.33-75.00	A	0.500	30.653	4.688	0.000	0.000	0.34
		B		25.172	0.806	0.000	0.000	0.36
		C		0.000	0.000	0.000	0.000	0.00
T7	75.00-50.00	A	0.500	99.417	22.314	0.000	0.000	1.17
		B		121.087	5.693	0.000	0.000	1.64
		C		0.000	0.000	0.000	0.000	0.00
T8	50.00-25.00	A	0.500	104.979	23.439	0.000	0.000	1.22
		B		143.417	11.325	0.000	0.000	1.88
		C		0.000	0.000	0.000	0.000	0.00
T9	25.00-0.00	A	0.500	79.784	17.814	0.000	0.000	0.93
		B		111.498	11.178	0.000	0.000	1.47
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Shielding

Section	Elevation ft	Face	A_R ft²	A_R Ice ft²	A_F ft²	A_F Ice ft²
T1	120.00-116.67	A	0.000	0.279	0.437	0.698
		B	0.000	0.041	0.043	0.102
		C	0.000	0.000	0.000	0.000
T2	116.67-108.33	A	0.000	0.480	0.747	1.201
		B	0.000	0.051	0.054	0.127
		C	0.000	0.000	0.000	0.000
T3	108.33-100.00	A	0.000	0.743	1.182	1.856
		B	0.000	0.148	0.215	0.369
		C	0.000	0.000	0.000	0.000
T4	100.00-91.67	A	0.000	0.777	1.323	2.094
		B	0.000	0.327	0.543	0.880
		C	0.000	0.000	0.000	0.000
T5	91.67-83.33	A	0.000	0.883	1.471	2.381
		B	0.000	0.495	0.832	1.334
		C	0.000	0.000	0.000	0.000
T6	83.33-75.00	A	0.000	0.899	1.491	2.427
		B	0.000	0.648	1.086	1.749
		C	0.000	0.000	0.000	0.000
T7	75.00-50.00	A	0.000	3.007	5.463	9.021
		B	0.000	3.079	5.593	9.238
		C	0.000	0.000	0.000	0.000
T8	50.00-25.00	A	0.000	3.069	5.532	9.206
		B	0.000	3.639	6.401	10.916
		C	0.000	0.000	0.000	0.000
T9	25.00-0.00	A	0.000	1.704	3.782	6.293
		B	0.000	2.107	4.516	7.784
		C	0.000	0.000	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	120.00-116.67	-0.7056	-6.7622	-0.9046	-7.2131
T2	116.67-108.33	-1.2256	-13.6796	-1.5276	-14.8249
T3	108.33-100.00	-2.1078	-20.0463	-2.4317	-21.4405
T4	100.00-91.67	0.7016	-19.8024	0.6622	-21.2162
T5	91.67-83.33	3.9884	-19.9086	4.2164	-21.5783
T6	83.33-75.00	6.6251	-19.7416	7.1515	-21.3431
T7	75.00-50.00	7.4252	-23.4486	8.3200	-24.9293
T8	50.00-25.00	8.6543	-29.1458	9.4443	-30.4793
T9	25.00-0.00	7.7741	-26.0368	8.8673	-28.5731

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod 5/8x4'	C	None			0.0000	138.00	No Ice	0.25	0.25	0.03
(Tower)							1/2" Ice	0.66	0.66	0.03
16'x2.5" Pipe Mount	C	None			0.0000	128.00	No Ice	4.00	4.00	0.09
(Tower)							1/2" Ice	4.80	4.80	0.09
1142-2B	B	From Leg	6.00		0.0000	120.00	No Ice	1.12	1.12	0.01
(DOT - 1)			0.00				1/2" Ice	2.54	2.54	0.02
			0.00							
PD458-1	A	From Leg	0.00		0.0000	120.00	No Ice	2.88	2.88	0.02
(CTT - 2)			0.00				1/2" Ice	4.34	4.34	0.05
			0.00							
OGT9-806	B	From Leg	3.00		0.0000	120.00	No Ice	3.00	3.00	0.03
(CSP - 9)			0.00				1/2" Ice	4.03	4.03	0.05
			0.00							
OGT9-806	C	From Leg	6.00		0.0000	120.00	No Ice	3.00	3.00	0.03
(CSP - 8)			0.00				1/2" Ice	4.03	4.03	0.05
			0.00							
SC479-HF1LDF	C	From Leg	3.00		0.0000	120.00	No Ice	5.06	5.06	0.03
(CSP - 59)			0.00				1/2" Ice	6.54	6.54	0.07
			0.00							
6' Dipole	A	From Leg	6.00		0.0000	120.00	No Ice	2.70	2.70	0.02
(CSP - 52)			0.00				1/2" Ice	3.70	3.70	0.07
			0.00							
(2) SC479-HF1LDF	C	From Leg	1.00		0.0000	120.00	No Ice	5.06	5.06	0.03
(CSP - 55 & 56)			0.00				1/2" Ice	6.54	6.54	0.07
			0.00							
Filter/Diplexer	B	From Leg	0.50		0.0000	120.00	No Ice	3.15	1.05	0.02
(CSP - 62)			0.00				1/2" Ice	3.39	1.21	0.04
			0.00							
6' Side-Arm	A	From Leg	3.00		0.0000	118.00	No Ice	13.04	14.60	0.14
			0.00				1/2" Ice	18.07	19.40	0.15
			0.00							
6' Side-Arm	B	From Leg	3.00		0.0000	118.00	No Ice	13.04	14.60	0.14
			0.00				1/2" Ice	18.07	19.40	0.15
			0.00							
6' Side-Arm	C	From Leg	3.00		0.0000	118.00	No Ice	13.04	14.60	0.14
			0.00				1/2" Ice	18.07	19.40	0.15
			0.00							

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
6'x4" Pipe Mount	C	From Leg	0.50	0.0000	116.00	No Ice	2.09	2.09	0.05
(Dish Mount)			0.00			1/2" Ice	2.46	2.46	0.07
			0.00						
10'0"x4" Pipe Mount	A	From Leg	0.50	0.0000	115.00	No Ice	4.50	4.50	0.11
(Dish Mount)			0.00			1/2" Ice	5.24	5.24	0.14
			0.00						
6'x4" Pipe Mount	C	From Leg	0.50	0.0000	111.00	No Ice	2.09	2.09	0.05
(Dish Mount)			0.00			1/2" Ice	2.46	2.46	0.07
			0.00						
Filter/Diplexer	A	From Leg	0.50	0.0000	110.00	No Ice	3.15	1.05	0.02
(CSP - 62)			0.00			1/2" Ice	3.39	1.21	0.04
			0.00						
AP13-850/065/ADT w/Mount	A	From Leg	1.00	0.0000	110.00	No Ice	5.61	3.92	0.04
Pipe			0.00			1/2" Ice	6.30	4.96	0.08
(CSP - 41)			0.00						
SC479-HF1LDF	A	From Leg	1.00	0.0000	110.00	No Ice	5.06	5.06	0.03
(CSP - 54)			0.00			1/2" Ice	6.54	6.54	0.07
			0.00						
(2) SC479-HF1LDF	A	From Leg	1.00	0.0000	110.00	No Ice	5.06	5.06	0.03
(CSP - 60 & 61)			0.00			1/2" Ice	6.54	6.54	0.07
			0.00						
SC479-HF1LDF	B	From Leg	1.00	0.0000	110.00	No Ice	5.06	5.06	0.03
(CSP - 65)			0.00			1/2" Ice	6.54	6.54	0.07
			0.00						
6' Side-Arm	A	From Leg	3.00	0.0000	110.00	No Ice	13.04	14.60	0.14
			0.00			1/2" Ice	18.07	19.40	0.15
			0.00						
6' Side-Arm	B	From Leg	3.00	0.0000	110.00	No Ice	13.04	14.60	0.14
			0.00			1/2" Ice	18.07	19.40	0.15
			0.00						
AP13-850/065/ADT w/Mount	A	From Leg	1.00	0.0000	105.00	No Ice	5.61	3.92	0.04
Pipe			0.00			1/2" Ice	6.30	4.96	0.08
(CSP - 42)			0.00						
Diplexer	A	From Leg	1.00	0.0000	105.00	No Ice	0.47	0.12	0.01
(DEHMS - 43)			0.00			1/2" Ice	0.56	0.17	0.01
			0.00						
OGT9-806	B	From Leg	3.00	0.0000	103.00	No Ice	2.15	2.15	0.02
(CSP - 11)			0.00			1/2" Ice	3.25	3.25	0.03
			0.00						
OGT9-806	C	From Leg	6.00	0.0000	103.00	No Ice	2.15	2.15	0.02
(CSP - 10)			0.00			1/2" Ice	3.25	3.25	0.03
			0.00						
3'4"x4" Pipe Mount	B	From Leg	3.00	0.0000	103.00	No Ice	1.05	1.05	0.04
(CSP - 11)			0.00			1/2" Ice	1.27	1.27	0.05
			0.00						
3'4"x4" Pipe Mount	C	From Leg	6.00	0.0000	103.00	No Ice	1.05	1.05	0.04
(CSP - 10)			0.00			1/2" Ice	1.27	1.27	0.05
			0.00						
PD458-1	A	From Leg	6.00	0.0000	100.00	No Ice	2.88	2.88	0.02
(CTT - 3)			0.00			1/2" Ice	4.34	4.34	0.05
			0.00						
20' 4-Bay Dipole	C	From Leg	3.00	0.0000	90.00	No Ice	4.00	4.00	0.06
(USS - 24)			0.00			1/2" Ice	6.00	6.00	0.10
			0.00						
Mount	C	From Leg	1.50	0.0000	88.00	No Ice	0.77	0.77	0.03
			0.00			1/2" Ice	1.03	1.03	0.04
			0.00						

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount	B	From Leg	1.50 0.00 0.00	0.0000	86.00	No Ice 1/2" Ice	5.65 7.58	5.65 7.58	0.11 0.14
3' Yagi (CSP - 14)	B	From Leg	3.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice	1.80 3.24	1.80 3.24	0.01 0.02
PD1142-1 (DEHMS - 26)	C	From Leg	3.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice	1.32 3.21	1.32 3.21	0.01 0.02
(2) SBNH-1D6565C (ATT)	A	From Face	0.50 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice	11.41 12.02	7.70 8.29	0.06 0.13
(2) SBNH-1D6565C (ATT)	B	From Face	0.50 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice	11.41 12.02	7.70 8.29	0.06 0.13
(2) AM-X-CD-16-65-00T-RET (6') (ATT)	C	From Face	0.50 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice	8.26 8.81	4.64 5.09	0.05 0.10
(2) TMA (ATT)	A	From Face	0.25 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice	1.06 1.21	0.45 0.57	0.02 0.03
(2) TMA (ATT)	B	From Face	0.25 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice	1.06 1.21	0.45 0.57	0.02 0.03
(2) TMA (ATT)	C	From Face	0.25 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice	1.06 1.21	0.45 0.57	0.02 0.03
Mount (ATT)	A	From Face	0.50 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice	7.86 10.66	7.86 10.66	0.24 0.34
Mount (ATT)	B	From Face	0.50 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice	7.86 10.66	7.86 10.66	0.24 0.34
Mount (ATT)	C	From Face	0.50 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice	7.86 10.66	7.86 10.66	0.24 0.34
(4) Diplexer (ATT)	A	From Face	0.25 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice	0.47 0.56	0.12 0.17	0.01 0.01
(4) Diplexer (ATT)	B	From Face	0.25 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice	0.47 0.56	0.12 0.17	0.01 0.01
(4) Diplexer (ATT)	C	From Face	0.25 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice	0.47 0.56	0.12 0.17	0.01 0.01
VHF150 (USS - 12)	A	From Leg	2.00 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	1.38 1.65	0.94 1.28	0.02 0.02
DB980H90E-M (Sprint/Nextel)	B	From Face	0.50 5.00 0.00	0.0000	72.00	No Ice 1/2" Ice	3.80 4.18	2.19 2.56	0.01 0.03
DB980H90E-M (Sprint/Nextel)	B	From Face	0.50 -5.00 0.00	0.0000	72.00	No Ice 1/2" Ice	3.80 4.18	2.19 2.56	0.01 0.03
DB980H90E-M (Sprint/Nextel)	C	From Face	0.50 5.00	0.0000	72.00	No Ice 1/2" Ice	3.80 4.18	2.19 2.56	0.01 0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft / ft / ft	°	ft		ft^2	ft^2	K
			0.00						
Mount (Sprint/Nextel)	A	From Face	0.50	0.0000	72.00	No Ice	9.73	9.73	0.31
			0.00			1/2" Ice	13.12	13.12	0.42
			0.00						
Mount (Sprint/Nextel)	B	From Face	0.50	0.0000	72.00	No Ice	9.73	9.73	0.31
			0.00			1/2" Ice	13.12	13.12	0.42
			0.00						
Mount (Sprint/Nextel)	C	From Face	0.50	0.0000	72.00	No Ice	9.73	9.73	0.31
			0.00			1/2" Ice	13.12	13.12	0.42
			0.00						
APXVSPP18-C-A20 (Sprint)	A	From Leg	0.00	0.0000	72.00	No Ice	8.26	5.28	0.06
			0.00			1/2" Ice	8.81	5.74	0.11
			0.00						
APXVSPP18-C-A20 (Sprint)	B	From Leg	0.00	0.0000	72.00	No Ice	8.26	5.28	0.06
			2.00			1/2" Ice	8.81	5.74	0.11
			0.00						
APXVSPP18-C-A20 (Sprint)	C	From Face	0.00	0.0000	72.00	No Ice	8.26	5.28	0.06
			0.00			1/2" Ice	8.81	5.74	0.11
			0.00						
(2) ALU RRH 1900 4X45 65MHz (Sprint)	A	From Leg	0.00	0.0000	72.00	No Ice	2.71	2.98	0.07
			0.00			1/2" Ice	2.95	3.35	0.10
			0.50						
(2) ALU RRH 1900 4X45 65MHz (Sprint)	B	From Leg	0.00	0.0000	72.00	No Ice	2.71	2.98	0.07
			2.00			1/2" Ice	2.95	3.35	0.10
			0.50						
(2) ALU RRH 1900 4X45 65MHz (Sprint)	C	From Face	0.00	0.0000	72.00	No Ice	2.71	2.98	0.07
			0.00			1/2" Ice	2.95	3.35	0.10
			0.50						
ALU RRH 800 MHz 2x50W (Sprint)	A	From Leg	0.00	0.0000	72.00	No Ice	2.00	1.89	0.06
			0.00			1/2" Ice	2.19	2.17	0.09
			3.00						
ALU RRH 800 MHz 2x50W (Sprint)	B	From Leg	0.00	0.0000	72.00	No Ice	2.00	1.89	0.06
			2.00			1/2" Ice	2.19	2.17	0.09
			3.00						
ALU RRH 800 MHz 2x50W (Sprint)	C	From Face	0.00	0.0000	72.00	No Ice	2.00	1.89	0.06
			0.00			1/2" Ice	2.19	2.17	0.09
			3.00						
800 MHz NOTCH FILTER (Sprint)	A	From Leg	0.00	0.0000	72.00	No Ice	0.87	0.49	0.01
			0.00			1/2" Ice	0.99	0.65	0.02
			3.00						
800 MHz NOTCH FILTER (Sprint)	B	From Leg	0.00	0.0000	72.00	No Ice	0.87	0.49	0.01
			2.00			1/2" Ice	0.99	0.65	0.02
			3.00						
800 MHz NOTCH FILTER (Sprint)	C	From Face	0.00	0.0000	72.00	No Ice	0.87	0.49	0.01
			0.00			1/2" Ice	0.99	0.65	0.02
			3.00						
1900 RRH COMBINER (Sprint)	A	From Leg	0.00	0.0000	72.00	No Ice	1.31	0.42	0.04
			0.00			1/2" Ice	1.48	0.56	0.05
			0.50						
1900 RRH COMBINER (Sprint)	B	From Leg	0.00	0.0000	72.00	No Ice	1.31	0.42	0.04
			2.00			1/2" Ice	1.48	0.56	0.05
			0.50						
1900 RRH COMBINER (Sprint)	C	From Face	0.00	0.0000	72.00	No Ice	1.31	0.42	0.04
			0.00			1/2" Ice	1.48	0.56	0.05
			0.50						
2' Microwave Panel (NIIVN - 57)	B	From Leg	1.00	0.0000	70.00	No Ice	5.60	1.40	0.05
			0.00			1/2" Ice	5.92	1.60	0.08

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
			0.00						
GPS	A	From Leg	3.00	0.0000	60.00	No Ice	1.00	1.00	0.01
(Sprint/Nextel - 18)			0.00			1/2" Ice	1.50	1.50	0.01
			0.00						
Mount	A	From Leg	1.50	0.0000	60.00	No Ice	2.72	2.72	0.05
(Sprint/Nextel)			0.00			1/2" Ice	4.91	4.91	0.09
			0.00						
BA6312	A	From Leg	3.00	0.0000	60.00	No Ice	0.45	0.45	0.00
(NHVN - 45)			0.00			1/2" Ice	1.09	1.09	0.01
			0.00						
4' Whip	A	From Leg	1.00	0.0000	60.00	No Ice	1.13	1.13	0.03
(NHVN - 46)			0.00			1/2" Ice	1.50	1.50	0.04
			0.00						
GPS	B	From Leg	3.00	0.0000	60.00	No Ice	1.00	1.00	0.01
(ATT - 25)			0.00			1/2" Ice	1.50	1.50	0.01
			0.00						
Mount	B	From Leg	1.50	0.0000	60.00	No Ice	2.72	2.72	0.05
(ATT)			0.00			1/2" Ice	4.91	4.91	0.09
			0.00						
DB212-1	A	From Leg	1.00	0.0000	60.00	No Ice	4.40	4.40	0.03
(DEHMS - 47)			0.00			1/2" Ice	8.42	8.42	0.07
			0.00						
DB803M-Y	C	From Leg	1.00	0.0000	60.00	No Ice	0.50	0.50	0.00
(CSP - 53)			0.00			1/2" Ice	0.68	0.68	0.01
			0.00						
2' Sidearm	A	From Leg	1.00	0.0000	56.00	No Ice	3.90	3.90	0.09
			0.00			1/2" Ice	4.40	4.40	0.10
			0.00						
Mount	C	From Leg	1.50	0.0000	56.00	No Ice	1.63	1.63	0.03
			0.00			1/2" Ice	2.45	2.45	0.40
			0.00						
VHF150	A	From Leg	2.00	0.0000	56.00	No Ice	1.38	0.94	0.02
(USS - 13)			0.00			1/2" Ice	1.65	1.28	0.02
			0.00						
DB264-A	C	From Leg	1.00	0.0000	55.00	No Ice	3.16	3.16	0.04
(CSP - 5)			0.00			1/2" Ice	5.69	5.69	0.05
			0.00						
1' Microwave Panel	A	From Leg	1.00	0.0000	50.00	No Ice	1.40	0.70	0.01
(NHVN - 58)			0.00			1/2" Ice	1.56	0.82	0.02
			0.00						
5'0"x3" Pipe Mount	A	From Face	1.50	0.0000	44.00	No Ice	1.36	1.36	0.03
			5.00			1/2" Ice	1.67	1.67	0.04
			0.00						
3' Side arm	A	From Leg	1.50	0.0000	44.00	No Ice	5.90	5.90	0.13
			0.00			1/2" Ice	6.60	6.60	0.15
			0.00						
3' Panel	A	From Leg	1.00	0.0000	40.00	No Ice	4.20	2.10	0.05
(FBI - 51)			0.00			1/2" Ice	4.52	2.38	0.08
			0.00						
1' Omni	A	From Leg	1.00	0.0000	35.00	No Ice	0.20	0.20	0.01
(FBI - 50)			0.00			1/2" Ice	0.29	0.29	0.01
			0.00						
4' Whip	C	From Leg	1.00	0.0000	30.00	No Ice	1.13	1.13	0.03
(CSP - 48)			0.00			1/2" Ice	1.50	1.50	0.04
			0.00						
EUSF10-U	A	From Leg	0.50	0.0000	95.00	No Ice	8.91	3.67	0.41
(T-Mobile)			0.00			1/2" Ice	12.66	5.24	0.51

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00						
EUSF10-U (T-Mobile)	C	From Leg	0.50 0.00 0.00	0.0000	95.00	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	95.00	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	95.00	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	95.00	No Ice 1/2" Ice	6.42 6.86	4.22 4.64	0.08 0.12
(2) AIR B2A/B4P (T-Mobile)	C	From Leg	1.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice	6.42 6.86	4.22 4.64	0.08 0.12
TMA (T-Mobile)	A	From Leg	1.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	0.01 0.02
TMA (T-Mobile)	B	From Leg	1.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	0.01 0.02
TMA (T-Mobile)	C	From Leg	1.00 0.00 0.00	0.0000	95.00	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
4 FT DISH (NHVN - 44)	A	Paraboloid w/Radome	From Leg	1.50 5.00 0.00	0.0000		40.00	4.00	No Ice 1/2" Ice	12.57 13.10	0.14 0.28
PA6-65AC (CSP - 4)	A	Paraboloid w/o Radome	From Leg	2.00 0.00 0.00	30.0000		115.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24
PA6-65AC (CSP - 6)	C	Paraboloid w/o Radome	From Leg	2.00 0.00 0.00	-30.0000		116.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24
PA6-65AC (CSP - 7)	C	Paraboloid w/o Radome	From Leg	2.00 0.00 0.00	60.0000		111.00	6.00	No Ice 1/2" Ice	28.27 29.05	0.09 0.24
6FT DISH (CSP - 69)	A	Paraboloid w/o Radome	From Leg	2.00 0.00 0.00	0.0000		120.00	6.00	No Ice 1/2" Ice	28.30 29.05	0.44 0.59
6FT DISH (CSP - 70)	B	Paraboloid w/o Radome	From Leg	2.00 0.00 0.00	0.0000		120.00	6.00	No Ice 1/2" Ice	28.30 29.05	0.44 0.59

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter		Aperture Area	Weight
				ft	°	°	ft	ft		ft²	K
6FT DISH (CSP - 71)	C	Paraboloid w/o Radome	From Leg	2.00 0.00 0.00	0.0000		120.00	6.00	No Ice 1/2" Ice	28.30 29.05	0.44 0.59

Tower Pressures - No Ice

$G_H = 1.149$

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	ft²		ft²	ft²	ft²		ft²	ft²
T1	118.33	1.44	30	39.883	A	4.557	6.028	2.781	26.27	0.000	0.000
120.00-116.67					B	4.950	3.103		34.53	0.000	0.000
					C	4.994	2.781		35.77	0.000	0.000
T2	112.50	1.42	29	103.599	A	8.811	15.070	6.952	29.11	0.000	0.000
116.67-108.33					B	6.469	7.757		48.87	0.000	0.000
					C	6.523	6.952		51.59	0.000	0.000
T3	104.17	1.389	29	109.157	A	8.868	21.670	6.952	22.76	0.000	0.000
108.33-100.00					B	6.536	10.232		41.46	0.000	0.000
					C	6.751	6.952		50.73	0.000	0.000
T4	95.83	1.356	28	114.715	A	9.482	22.716	6.952	21.59	0.000	0.000
100.00-91.67					B	6.963	14.782		31.97	0.000	0.000
					C	7.506	6.952		48.08	0.000	0.000
T5 91.67-83.33	87.50	1.321	27	120.273	A	9.594	25.182	6.952	19.99	0.000	0.000
					B	6.934	19.132		26.67	0.000	0.000
					C	7.766	6.952		47.23	0.000	0.000
T6 83.33-75.00	79.17	1.284	27	125.831	A	9.836	25.799	6.952	19.51	0.000	0.000
					B	6.942	23.082		23.15	0.000	0.000
					C	8.028	6.952		46.41	0.000	0.000
T7 75.00-50.00	62.50	1.2	25	412.014	A	32.879	88.287	23.204	19.15	0.000	0.000
					B	22.852	99.971		18.89	0.000	0.000
					C	28.445	23.204		44.93	0.000	0.000
T8 50.00-25.00	37.50	1.037	22	460.861	A	35.479	89.376	20.856	16.70	0.000	0.000
					B	24.712	111.601		15.30	0.000	0.000
					C	31.113	20.856		40.13	0.000	0.000
T9 25.00-0.00	12.50	1	21	514.792	A	34.766	80.752	28.676	24.82	0.000	0.000
					B	26.510	99.847		22.69	0.000	0.000
					C	31.026	28.676		48.03	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.149$

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	ft²		ft²	ft²	ft²		ft²	ft²
T1	118.33	1.44	30	0.5000	40.161	A	4.295	10.247	3.337	22.95	0.000	0.000
120.00-116.67						B	5.213	5.732		30.49	0.000	0.000
						C	4.994	5.334		32.31	0.000	0.000
T2	112.50	1.42	29	0.5000	104.294	A	9.635	23.450	8.342	25.21	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		ft^2	ft^2	ft^2		ft^2	ft^2
116.67-108.33						B	7.201	11.998		43.45	0.000	0.000
						C	6.523	10.951		47.74	0.000	0.000
T3	104.17	1.389	29	0.5000	109.852	A	9.583	33.213	8.342	19.49	0.000	0.000
108.33-100.00						B	7.187	15.717		36.42	0.000	0.000
						C	6.751	11.043		46.88	0.000	0.000
T4 100.00-91.67	95.83	1.356	28	0.5000	115.410	A	10.100	35.149	8.342	18.44	0.000	0.000
						B	7.432	22.680		27.70	0.000	0.000
						C	7.506	11.135		44.75	0.000	0.000
T5 91.67-83.33	87.50	1.321	27	0.5000	120.968	A	10.072	39.825	8.342	16.72	0.000	0.000
						B	7.238	29.455		22.74	0.000	0.000
						C	7.766	11.227		43.92	0.000	0.000
T6 83.33-75.00	79.17	1.284	27	0.5000	126.526	A	10.289	41.075	8.342	16.24	0.000	0.000
						B	7.084	35.846		19.43	0.000	0.000
						C	8.028	11.321		43.11	0.000	0.000
T7 75.00-50.00	62.50	1.2	25	0.5000	414.099	A	41.737	133.266	27.375	15.64	0.000	0.000
						B	24.901	154.864		15.23	0.000	0.000
						C	28.445	36.857		41.92	0.000	0.000
T8 50.00-25.00	37.50	1.037	22	0.5000	462.946	A	45.346	137.308	25.027	13.70	0.000	0.000
						B	31.522	175.176		12.11	0.000	0.000
						C	31.113	35.398		37.63	0.000	0.000
T9 25.00-0.00	12.50	1	21	0.5000	516.877	A	42.546	119.340	32.848	20.29	0.000	0.000
						B	34.420	150.650		17.75	0.000	0.000
						C	31.026	41.259		45.44	0.000	0.000

Tower Pressure - Service

$G_H = 1.149$

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		ft^2	ft^2	ft^2		ft^2	ft^2
T1	118.33	1.44	30	39.883	A	4.557	6.028	2.781	26.27	0.000	0.000
120.00-116.67					B	4.950	3.103		34.53	0.000	0.000
					C	4.994	2.781		35.77	0.000	0.000
T2	112.50	1.42	29	103.599	A	8.811	15.070	6.952	29.11	0.000	0.000
116.67-108.33					B	6.469	7.757		48.87	0.000	0.000
					C	6.523	6.952		51.59	0.000	0.000
T3	104.17	1.389	29	109.157	A	8.868	21.670	6.952	22.76	0.000	0.000
108.33-100.00					B	6.536	10.232		41.46	0.000	0.000
					C	6.751	6.952		50.73	0.000	0.000
T4	95.83	1.356	28	114.715	A	9.482	22.716	6.952	21.59	0.000	0.000
100.00-91.67					B	6.963	14.782		31.97	0.000	0.000
					C	7.506	6.952		48.08	0.000	0.000
T5 91.67-83.33	87.50	1.321	27	120.273	A	9.594	25.182	6.952	19.99	0.000	0.000
					B	6.934	19.132		26.67	0.000	0.000
					C	7.766	6.952		47.23	0.000	0.000
T6 83.33-75.00	79.17	1.284	27	125.831	A	9.836	25.799	6.952	19.51	0.000	0.000
					B	6.942	23.082		23.15	0.000	0.000
					C	8.028	6.952		46.41	0.000	0.000
T7 75.00-50.00	62.50	1.2	25	412.014	A	32.879	88.287	23.204	19.15	0.000	0.000
					B	22.852	99.971		18.89	0.000	0.000
					C	28.445	23.204		44.93	0.000	0.000
T8 50.00-25.00	37.50	1.037	22	460.861	A	35.479	89.376	20.856	16.70	0.000	0.000
					B	24.712	111.601		15.30	0.000	0.000

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		ft^2	ft^2	ft^2		ft^2	ft^2
					C	31.113	20.856		40.13	0.000	0.000
T9 25.00-0.00	12.50	1	21	514.792	A	34.766	80.752	28.676	24.82	0.000	0.000
					B	26.510	99.847		22.69	0.000	0.000
					C	31.026	28.676		48.03	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

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	
T1	0.02	0.45	A	0.265	2.392	0.606	1	1	8.209	0.67	202.16	A
120.00-116.67			B	0.202	2.59	0.591	1	1	6.783			
			C	0.195	2.613	0.589	1	1	6.632			
T2	0.07	0.77	A	0.231	2.497	0.597	1	1	17.810	1.50	180.51	A
116.67-108.33			B	0.137	2.819	0.58	1	1	10.966			
			C	0.13	2.846	0.579	1	1	10.546			
T3	0.12	0.78	A	0.28	2.351	0.61	1	1	22.085	1.72	206.17	A
108.33-100.00			B	0.154	2.758	0.582	1	1	12.491			
			C	0.126	2.864	0.578	1	1	10.769			
T4	0.16	0.92	A	0.281	2.349	0.61	1	1	23.343	1.77	212.55	A
100.00-91.67			B	0.19	2.631	0.588	1	1	15.659			
			C	0.126	2.862	0.578	1	1	11.525			
T5	0.21	0.94	A	0.289	2.325	0.613	1	1	25.022	1.83	219.79	A
91.67-83.33			B	0.217	2.541	0.594	1	1	18.298			
			C	0.122	2.876	0.578	1	1	11.782			
T6	0.26	1.30	A	0.283	2.342	0.611	1	1	25.596	1.83	220.03	A
83.33-75.00			B	0.239	2.472	0.599	1	1	20.769			
			C	0.119	2.889	0.577	1	1	12.041			
T7	1.01	4.33	A	0.294	2.312	0.614	1	1	87.097	5.76	230.30	A
75.00-50.00			B	0.298	2.301	0.615	1	1	84.366			
			C	0.125	2.864	0.578	1	1	41.857			
T8	1.09	4.95	A	0.271	2.376	0.607	1	1	89.769	5.32	212.79	B
50.00-25.00			B	0.296	2.307	0.615	1	1	93.304			
			C	0.113	2.913	0.576	1	1	43.136			
T9 25.00-0.00	0.84	5.10	A	0.224	2.517	0.596	1	1	82.869	5.05	202.04	B
			B	0.245	2.451	0.601	1	1	86.491			
			C	0.116	2.901	0.577	1	1	47.568			
Sum Weight:	3.79	19.54						OTM	1525.58 kip-ft	25.46		

Tower Forces - No Ice - Wind 45 To Face

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	
T1	0.02	0.45	A	0.265	2.392	0.606	0.825	1	7.412	0.61	182.52	A
120.00-116.67			B	0.202	2.59	0.591	0.825	1	5.917			
			C	0.195	2.613	0.589	0.825	1	5.759			
T2	0.07	0.77	A	0.231	2.497	0.597	0.825	1	16.268	1.37	164.88	A
116.67-108.33			B	0.137	2.819	0.58	0.825	1	9.833			
			C	0.13	2.846	0.579	0.825	1	9.404			

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
T3	0.12	0.78	A	0.28	2.351	0.61	0.825	1	20.533	1.60	191.68	A
108.33-100.00			B	0.154	2.758	0.582	0.825	1	11.348			
			C	0.126	2.864	0.578	0.825	1	9.588			
T4	0.16	0.92	A	0.281	2.349	0.61	0.825	1	21.684	1.65	197.44	A
100.00-91.67			B	0.19	2.631	0.588	0.825	1	14.441			
			C	0.126	2.862	0.578	0.825	1	10.211			
T5	0.21	0.94	A	0.289	2.325	0.613	0.825	1	23.343	1.71	205.04	A
91.67-83.33			B	0.217	2.541	0.594	0.825	1	17.084			
			C	0.122	2.876	0.578	0.825	1	10.423			
T6	0.26	1.30	A	0.283	2.342	0.611	0.825	1	23.875	1.71	205.24	A
83.33-75.00			B	0.239	2.472	0.599	0.825	1	19.554			
			C	0.119	2.889	0.577	0.825	1	10.636			
T7	1.01	4.33	A	0.294	2.312	0.614	0.825	1	81.343	5.38	215.09	A
75.00-50.00			B	0.298	2.301	0.615	0.825	1	80.366			
			C	0.125	2.864	0.578	0.825	1	36.879			
T8	1.09	4.95	A	0.271	2.376	0.607	0.825	1	83.560	5.07	202.93	B
50.00-25.00			B	0.296	2.307	0.615	0.825	1	88.979			
			C	0.113	2.913	0.576	0.825	1	37.691			
T9 25.00-0.00	0.84	5.10	A	0.224	2.517	0.596	0.825	1	76.785	4.78	191.20	B
			B	0.245	2.451	0.601	0.825	1	81.852			
			C	0.116	2.901	0.577	0.825	1	42.139			
Sum Weight:	3.79	19.54						OTM	1421.62 kip-ft	23.87		

Tower Forces - No Ice - Wind 60 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	0.02	0.45	A	0.265	2.392	0.606	0.8	1	7.298	0.60	179.72	A
120.00-116.67			B	0.202	2.59	0.591	0.8	1	5.793			
			C	0.195	2.613	0.589	0.8	1	5.634			
T2	0.07	0.77	A	0.231	2.497	0.597	0.8	1	16.047	1.36	162.65	A
116.67-108.33			B	0.137	2.819	0.58	0.8	1	9.672			
			C	0.13	2.846	0.579	0.8	1	9.241			
T3	0.12	0.78	A	0.28	2.351	0.61	0.8	1	20.311	1.58	189.61	A
108.33-100.00			B	0.154	2.758	0.582	0.8	1	11.184			
			C	0.126	2.864	0.578	0.8	1	9.419			
T4	0.16	0.92	A	0.281	2.349	0.61	0.8	1	21.446	1.63	195.29	A
100.00-91.67			B	0.19	2.631	0.588	0.8	1	14.267			
			C	0.126	2.862	0.578	0.8	1	10.024			
T5	0.21	0.94	A	0.289	2.325	0.613	0.8	1	23.103	1.69	202.93	A
91.67-83.33			B	0.217	2.541	0.594	0.8	1	16.911			
			C	0.122	2.876	0.578	0.8	1	10.228			
T6	0.26	1.30	A	0.283	2.342	0.611	0.8	1	23.629	1.69	203.12	A
83.33-75.00			B	0.239	2.472	0.599	0.8	1	19.380			
			C	0.119	2.889	0.577	0.8	1	10.435			
T7	1.01	4.33	A	0.294	2.312	0.614	0.8	1	80.521	5.32	212.91	A
75.00-50.00			B	0.298	2.301	0.615	0.8	1	79.795			
			C	0.125	2.864	0.578	0.8	1	36.168			
T8	1.09	4.95	A	0.271	2.376	0.607	0.8	1	82.673	5.04	201.52	B
50.00-25.00			B	0.296	2.307	0.615	0.8	1	88.361			
			C	0.113	2.913	0.576	0.8	1	36.913			
T9 25.00-0.00	0.84	5.10	A	0.224	2.517	0.596	0.8	1	75.916	4.74	189.65	B
			B	0.245	2.451	0.601	0.8	1	81.189			

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
Sum Weight:	3.79	19.54	C	0.116	2.901	0.577	0.8	1 OTM	41.363 1406.77 kip-ft	23.65		

Tower Forces - No Ice - Wind 90 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	0.02	0.45	A	0.265	2.392	0.606	0.85	1	7.526	0.62	185.33	A
120.00-116.67			B	0.202	2.59	0.591	0.85	1	6.041			
			C	0.195	2.613	0.589	0.85	1	5.883			
T2	0.07	0.77	A	0.231	2.497	0.597	0.85	1	16.488	1.39	167.11	A
116.67-108.33			B	0.137	2.819	0.58	0.85	1	9.995			
			C	0.13	2.846	0.579	0.85	1	9.567			
T3	0.12	0.78	A	0.28	2.351	0.61	0.85	1	20.755	1.61	193.75	A
108.33-100.00			B	0.154	2.758	0.582	0.85	1	11.511			
			C	0.126	2.864	0.578	0.85	1	9.757			
T4	0.16	0.92	A	0.281	2.349	0.61	0.85	1	21.921	1.66	199.60	A
100.00-91.67			B	0.19	2.631	0.588	0.85	1	14.615			
			C	0.126	2.862	0.578	0.85	1	10.399			
T5	0.21	0.94	A	0.289	2.325	0.613	0.85	1	23.583	1.73	207.15	A
91.67-83.33			B	0.217	2.541	0.594	0.85	1	17.258			
			C	0.122	2.876	0.578	0.85	1	10.617			
T6	0.26	1.30	A	0.283	2.342	0.611	0.85	1	24.121	1.73	207.35	A
83.33-75.00			B	0.239	2.472	0.599	0.85	1	19.727			
			C	0.119	2.889	0.577	0.85	1	10.836			
T7	1.01	4.33	A	0.294	2.312	0.614	0.85	1	82.165	5.43	217.26	A
75.00-50.00			B	0.298	2.301	0.615	0.85	1	80.938			
			C	0.125	2.864	0.578	0.85	1	37.590			
T8	1.09	4.95	A	0.271	2.376	0.607	0.85	1	84.447	5.11	204.34	B
50.00-25.00			B	0.296	2.307	0.615	0.85	1	89.597			
			C	0.113	2.913	0.576	0.85	1	38.469			
T9 25.00-0.00	0.84	5.10	A	0.224	2.517	0.596	0.85	1	77.654	4.82	192.75	B
			B	0.245	2.451	0.601	0.85	1	82.514			
			C	0.116	2.901	0.577	0.85	1	42.914			
Sum Weight:	3.79	19.54						OTM	1436.47 kip-ft	24.10		

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	0.06	0.69	A	0.362	2.144	0.637	1	1	10.821	0.80	238.83	A
120.00-116.67			B	0.273	2.372	0.608	1	1	8.698			
			C	0.257	2.416	0.604	1	1	8.214			
T2	0.18	1.12	A	0.317	2.251	0.621	1	1	24.205	1.84	221.16	A
116.67-108.33			B	0.184	2.65	0.587	1	1	14.247			

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	0.168	2.708	0.584	1	1	12.922			
T3	0.33	1.14	A	0.39	2.085	0.647	1	1	31.085	2.14	257.33	A
108.33-100.00			B	0.209	2.568	0.592	1	1	16.495			
			C	0.162	2.728	0.583	1	1	13.193			
T4	0.44	1.34	A	0.392	2.08	0.648	1	1	32.891	2.21	265.22	A
100.00-91.67			B	0.261	2.405	0.605	1	1	21.147			
			C	0.162	2.73	0.583	1	1	14.001			
T5	0.58	1.38	A	0.412	2.04	0.657	1	1	36.229	2.33	279.15	A
91.67-83.33			B	0.303	2.287	0.617	1	1	25.409			
			C	0.157	2.746	0.583	1	1	14.307			
T6	0.71	1.74	A	0.406	2.052	0.654	1	1	37.154	2.33	279.93	A
83.33-75.00			B	0.339	2.197	0.629	1	1	29.620			
			C	0.153	2.761	0.582	1	1	14.616			
T7	2.82	5.89	A	0.423	2.021	0.661	1	1	129.838	7.50	300.12	A
75.00-50.00			B	0.434	2	0.666	1	1	128.057			
			C	0.158	2.743	0.583	1	1	49.921			
T8	3.10	6.61	A	0.395	2.075	0.649	1	1	134.513	7.30	291.86	B
50.00-25.00			B	0.446	1.979	0.672	1	1	149.182			
			C	0.144	2.795	0.581	1	1	51.662			
T9 25.00-0.00	2.40	6.79	A	0.313	2.261	0.62	1	1	116.540	6.68	267.02	B
			B	0.358	2.153	0.635	1	1	130.141			
			C	0.14	2.809	0.58	1	1	54.955			
Sum Weight:	10.60	26.70						OTM	1950.96 kip-ft	33.13		

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	0.06	0.69	A	0.362	2.144	0.637	0.825	1	10.070	0.74	222.24	A
120.00-116.67			B	0.273	2.372	0.608	0.825	1	7.786			
			C	0.257	2.416	0.604	0.825	1	7.340			
T2	0.18	1.12	A	0.317	2.251	0.621	0.825	1	22.519	1.71	205.75	A
116.67-108.33			B	0.184	2.65	0.587	0.825	1	12.987			
			C	0.168	2.708	0.584	0.825	1	11.781			
T3	0.33	1.14	A	0.39	2.085	0.647	0.825	1	29.408	2.03	243.45	A
108.33-100.00			B	0.209	2.568	0.592	0.825	1	15.237			
			C	0.162	2.728	0.583	0.825	1	12.012			
T4	0.44	1.34	A	0.392	2.08	0.648	0.825	1	31.123	2.09	250.97	A
100.00-91.67			B	0.261	2.405	0.605	0.825	1	19.846			
			C	0.162	2.73	0.583	0.825	1	12.687			
T5	0.58	1.38	A	0.412	2.04	0.657	0.825	1	34.466	2.21	265.57	A
91.67-83.33			B	0.303	2.287	0.617	0.825	1	24.143			
			C	0.157	2.746	0.583	0.825	1	12.948			
T6	0.71	1.74	A	0.406	2.052	0.654	0.825	1	35.354	2.22	266.36	A
83.33-75.00			B	0.339	2.197	0.629	0.825	1	28.381			
			C	0.153	2.761	0.582	0.825	1	13.211			
T7	2.82	5.89	A	0.423	2.021	0.661	0.825	1	122.534	7.08	283.24	A
75.00-50.00			B	0.434	2	0.666	0.825	1	123.700			
			C	0.158	2.743	0.583	0.825	1	44.943			
T8	3.10	6.61	A	0.395	2.075	0.649	0.825	1	126.577	7.03	281.07	B
50.00-25.00			B	0.446	1.979	0.672	0.825	1	143.666			
			C	0.144	2.795	0.581	0.825	1	46.218			
T9 25.00-0.00	2.40	6.79	A	0.313	2.261	0.62	0.825	1	109.095	6.37	254.66	B

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
			B	0.358	2.153	0.635	0.825	1	124.117			
			C	0.14	2.809	0.58	0.825	1	49.526			
Sum Weight:	10.60	26.70						OTM	1847.32 kip-ft	31.48		

Tower Forces - With Ice - Wind 60 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	0.06	0.69	A	0.362	2.144	0.637	0.8	1	9.962	0.73	219.87	A
120.00-116.67			B	0.273	2.372	0.608	0.8	1	7.655			
			C	0.257	2.416	0.604	0.8	1	7.215			
T2	0.18	1.12	A	0.317	2.251	0.621	0.8	1	22.278	1.70	203.55	A
116.67-108.33			B	0.184	2.65	0.587	0.8	1	12.807			
			C	0.168	2.708	0.584	0.8	1	11.618			
T3	0.33	1.14	A	0.39	2.085	0.647	0.8	1	29.168	2.01	241.47	A
108.33-100.00			B	0.209	2.568	0.592	0.8	1	15.057			
			C	0.162	2.728	0.583	0.8	1	11.843			
T4	0.44	1.34	A	0.392	2.08	0.648	0.8	1	30.871	2.07	248.93	A
100.00-91.67			B	0.261	2.405	0.605	0.8	1	19.661			
			C	0.162	2.73	0.583	0.8	1	12.500			
T5	0.58	1.38	A	0.412	2.04	0.657	0.8	1	34.214	2.20	263.63	A
91.67-83.33			B	0.303	2.287	0.617	0.8	1	23.962			
			C	0.157	2.746	0.583	0.8	1	12.754			
T6	0.71	1.74	A	0.406	2.052	0.654	0.8	1	35.097	2.20	264.42	A
83.33-75.00			B	0.339	2.197	0.629	0.8	1	28.204			
			C	0.153	2.761	0.582	0.8	1	13.010			
T7	2.82	5.89	A	0.423	2.021	0.661	0.8	1	121.491	7.04	281.60	B
75.00-50.00			B	0.434	2	0.666	0.8	1	123.077			
			C	0.158	2.743	0.583	0.8	1	44.232			
T8	3.10	6.61	A	0.395	2.075	0.649	0.8	1	125.444	6.99	279.53	B
50.00-25.00			B	0.446	1.979	0.672	0.8	1	142.878			
			C	0.144	2.795	0.581	0.8	1	45.440			
T9 25.00-0.00	2.40	6.79	A	0.313	2.261	0.62	0.8	1	108.031	6.32	252.90	B
			B	0.358	2.153	0.635	0.8	1	123.257			
			C	0.14	2.809	0.58	0.8	1	48.750			
Sum Weight:	10.60	26.70						OTM	1833.73 kip-ft	31.27		

Tower Forces - With Ice - Wind 90 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	0.06	0.69	A	0.362	2.144	0.637	0.85	1	10.177	0.75	224.61	A
120.00-116.67			B	0.273	2.372	0.608	0.85	1	7.916			
			C	0.257	2.416	0.604	0.85	1	7.465			
T2	0.18	1.12	A	0.317	2.251	0.621	0.85	1	22.760	1.73	207.96	A

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
116.67-108.33			B	0.184	2.65	0.587	0.85	1	13.167			
			C	0.168	2.708	0.584	0.85	1	11.944			
T3	0.33	1.14	A	0.39	2.085	0.647	0.85	1	29.647	2.05	245.43	A
108.33-100.00			B	0.209	2.568	0.592	0.85	1	15.417			
			C	0.162	2.728	0.583	0.85	1	12.180			
T4	0.44	1.34	A	0.392	2.08	0.648	0.85	1	31.376	2.11	253.01	A
100.00-91.67			B	0.261	2.405	0.605	0.85	1	20.032			
			C	0.162	2.73	0.583	0.85	1	12.875			
T5	0.58	1.38	A	0.412	2.04	0.657	0.85	1	34.718	2.23	267.51	A
91.67-83.33			B	0.303	2.287	0.617	0.85	1	24.323			
			C	0.157	2.746	0.583	0.85	1	13.142			
T6	0.71	1.74	A	0.406	2.052	0.654	0.85	1	35.611	2.24	268.30	A
83.33-75.00			B	0.339	2.197	0.629	0.85	1	28.558			
			C	0.153	2.761	0.582	0.85	1	13.412			
T7	2.82	5.89	A	0.423	2.021	0.661	0.85	1	123.577	7.14	285.65	A
75.00-50.00			B	0.434	2	0.666	0.85	1	124.322			
			C	0.158	2.743	0.583	0.85	1	45.654			
T8	3.10	6.61	A	0.395	2.075	0.649	0.85	1	127.711	7.07	282.61	B
50.00-25.00			B	0.446	1.979	0.672	0.85	1	144.454			
			C	0.144	2.795	0.581	0.85	1	46.995			
T9 25.00-0.00	2.40	6.79	A	0.313	2.261	0.62	0.85	1	110.158	6.41	256.43	B
			B	0.358	2.153	0.635	0.85	1	124.978			
			C	0.14	2.809	0.58	0.85	1	50.301			
Sum Weight:	10.60	26.70						OTM	1862.13 kip-ft	31.72		

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	0.02	0.45	A	0.265	2.392	0.606	1	1	8.209	0.67	202.16	A
120.00-116.67			B	0.202	2.59	0.591	1	1	6.783			
			C	0.195	2.613	0.589	1	1	6.632			
T2	0.07	0.77	A	0.231	2.497	0.597	1	1	17.810	1.50	180.51	A
116.67-108.33			B	0.137	2.819	0.58	1	1	10.966			
			C	0.13	2.846	0.579	1	1	10.546			
T3	0.12	0.78	A	0.28	2.351	0.61	1	1	22.085	1.72	206.17	A
108.33-100.00			B	0.154	2.758	0.582	1	1	12.491			
			C	0.126	2.864	0.578	1	1	10.769			
T4	0.16	0.92	A	0.281	2.349	0.61	1	1	23.343	1.77	212.55	A
100.00-91.67			B	0.19	2.631	0.588	1	1	15.659			
			C	0.126	2.862	0.578	1	1	11.525			
T5	0.21	0.94	A	0.289	2.325	0.613	1	1	25.022	1.83	219.79	A
91.67-83.33			B	0.217	2.541	0.594	1	1	18.298			
			C	0.122	2.876	0.578	1	1	11.782			
T6	0.26	1.30	A	0.283	2.342	0.611	1	1	25.596	1.83	220.03	A
83.33-75.00			B	0.239	2.472	0.599	1	1	20.769			
			C	0.119	2.889	0.577	1	1	12.041			
T7	1.01	4.33	A	0.294	2.312	0.614	1	1	87.097	5.76	230.30	A
75.00-50.00			B	0.298	2.301	0.615	1	1	84.366			
			C	0.125	2.864	0.578	1	1	41.857			
T8	1.09	4.95	A	0.271	2.376	0.607	1	1	89.769	5.32	212.79	B
50.00-25.00			B	0.296	2.307	0.615	1	1	93.304			
			C	0.113	2.913	0.576	1	1	43.136			

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
T9 25.00-0.00	0.84	5.10	A	0.224	2.517	0.596	1	1	82.869	5.05	202.04	B
			B	0.245	2.451	0.601	1	1	86.491			
			C	0.116	2.901	0.577	1	1	47.568			
Sum Weight:	3.79	19.54						OTM	1525.58 kip-ft	25.46		

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 ft²	F K	w plf	Ctrl Face
T1	0.02	0.45	A	0.265	2.392	0.606	0.825	1	7.412	0.61	182.52	A
120.00-116.67			B	0.202	2.59	0.591	0.825	1	5.917			
			C	0.195	2.613	0.589	0.825	1	5.759			
T2	0.07	0.77	A	0.231	2.497	0.597	0.825	1	16.268	1.37	164.88	A
116.67-108.33			B	0.137	2.819	0.58	0.825	1	9.833			
			C	0.13	2.846	0.579	0.825	1	9.404			
T3	0.12	0.78	A	0.28	2.351	0.61	0.825	1	20.533	1.60	191.68	A
108.33-100.00			B	0.154	2.758	0.582	0.825	1	11.348			
			C	0.126	2.864	0.578	0.825	1	9.588			
T4	0.16	0.92	A	0.281	2.349	0.61	0.825	1	21.684	1.65	197.44	A
100.00-91.67			B	0.19	2.631	0.588	0.825	1	14.441			
			C	0.126	2.862	0.578	0.825	1	10.211			
T5	0.21	0.94	A	0.289	2.325	0.613	0.825	1	23.343	1.71	205.04	A
91.67-83.33			B	0.217	2.541	0.594	0.825	1	17.084			
			C	0.122	2.876	0.578	0.825	1	10.423			
T6	0.26	1.30	A	0.283	2.342	0.611	0.825	1	23.875	1.71	205.24	A
83.33-75.00			B	0.239	2.472	0.599	0.825	1	19.554			
			C	0.119	2.889	0.577	0.825	1	10.636			
T7	1.01	4.33	A	0.294	2.312	0.614	0.825	1	81.343	5.38	215.09	A
75.00-50.00			B	0.298	2.301	0.615	0.825	1	80.366			
			C	0.125	2.864	0.578	0.825	1	36.879			
T8	1.09	4.95	A	0.271	2.376	0.607	0.825	1	83.560	5.07	202.93	B
50.00-25.00			B	0.296	2.307	0.615	0.825	1	88.979			
			C	0.113	2.913	0.576	0.825	1	37.691			
T9 25.00-0.00	0.84	5.10	A	0.224	2.517	0.596	0.825	1	76.785	4.78	191.20	B
			B	0.245	2.451	0.601	0.825	1	81.852			
			C	0.116	2.901	0.577	0.825	1	42.139			
Sum Weight:	3.79	19.54						OTM	1421.62 kip-ft	23.87		

Tower Forces - Service - Wind 60 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	0.02	0.45	A	0.265	2.392	0.606	0.8	1	7.298	0.60	179.72	A
120.00-116.67			B	0.202	2.59	0.591	0.8	1	5.793			
			C	0.195	2.613	0.589	0.8	1	5.634			

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
T2	0.07	0.77	A	0.231	2.497	0.597	0.8	1	16.047	1.36	162.65	A
116.67-108.33			B	0.137	2.819	0.58	0.8	1	9.672			
			C	0.13	2.846	0.579	0.8	1	9.241			
T3	0.12	0.78	A	0.28	2.351	0.61	0.8	1	20.311	1.58	189.61	A
108.33-100.00			B	0.154	2.758	0.582	0.8	1	11.184			
			C	0.126	2.864	0.578	0.8	1	9.419			
T4	0.16	0.92	A	0.281	2.349	0.61	0.8	1	21.446	1.63	195.29	A
100.00-91.67			B	0.19	2.631	0.588	0.8	1	14.267			
			C	0.126	2.862	0.578	0.8	1	10.024			
T5	0.21	0.94	A	0.289	2.325	0.613	0.8	1	23.103	1.69	202.93	A
91.67-83.33			B	0.217	2.541	0.594	0.8	1	16.911			
			C	0.122	2.876	0.578	0.8	1	10.228			
T6	0.26	1.30	A	0.283	2.342	0.611	0.8	1	23.629	1.69	203.12	A
83.33-75.00			B	0.239	2.472	0.599	0.8	1	19.380			
			C	0.119	2.889	0.577	0.8	1	10.435			
T7	1.01	4.33	A	0.294	2.312	0.614	0.8	1	80.521	5.32	212.91	A
75.00-50.00			B	0.298	2.301	0.615	0.8	1	79.795			
			C	0.125	2.864	0.578	0.8	1	36.168			
T8	1.09	4.95	A	0.271	2.376	0.607	0.8	1	82.673	5.04	201.52	B
50.00-25.00			B	0.296	2.307	0.615	0.8	1	88.361			
			C	0.113	2.913	0.576	0.8	1	36.913			
T9 25.00-0.00	0.84	5.10	A	0.224	2.517	0.596	0.8	1	75.916	4.74	189.65	B
			B	0.245	2.451	0.601	0.8	1	81.189			
			C	0.116	2.901	0.577	0.8	1	41.363			
Sum Weight:	3.79	19.54						OTM	1406.77 kip-ft	23.65		

Tower Forces - Service - Wind 90 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	0.02	0.45	A	0.265	2.392	0.606	0.85	1	7.526	0.62	185.33	A
120.00-116.67			B	0.202	2.59	0.591	0.85	1	6.041			
			C	0.195	2.613	0.589	0.85	1	5.883			
T2	0.07	0.77	A	0.231	2.497	0.597	0.85	1	16.488	1.39	167.11	A
116.67-108.33			B	0.137	2.819	0.58	0.85	1	9.995			
			C	0.13	2.846	0.579	0.85	1	9.567			
T3	0.12	0.78	A	0.28	2.351	0.61	0.85	1	20.755	1.61	193.75	A
108.33-100.00			B	0.154	2.758	0.582	0.85	1	11.511			
			C	0.126	2.864	0.578	0.85	1	9.757			
T4	0.16	0.92	A	0.281	2.349	0.61	0.85	1	21.921	1.66	199.60	A
100.00-91.67			B	0.19	2.631	0.588	0.85	1	14.615			
			C	0.126	2.862	0.578	0.85	1	10.399			
T5	0.21	0.94	A	0.289	2.325	0.613	0.85	1	23.583	1.73	207.15	A
91.67-83.33			B	0.217	2.541	0.594	0.85	1	17.258			
			C	0.122	2.876	0.578	0.85	1	10.617			
T6	0.26	1.30	A	0.283	2.342	0.611	0.85	1	24.121	1.73	207.35	A
83.33-75.00			B	0.239	2.472	0.599	0.85	1	19.727			
			C	0.119	2.889	0.577	0.85	1	10.836			
T7	1.01	4.33	A	0.294	2.312	0.614	0.85	1	82.165	5.43	217.26	A
75.00-50.00			B	0.298	2.301	0.615	0.85	1	80.938			
			C	0.125	2.864	0.578	0.85	1	37.590			
T8	1.09	4.95	A	0.271	2.376	0.607	0.85	1	84.447	5.11	204.34	B
50.00-25.00			B	0.296	2.307	0.615	0.85	1	89.597			

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	0.113	2.913	0.576	0.85	1	38.469			
T9 25.00-0.00	0.84	5.10	A	0.224	2.517	0.596	0.85	1	77.654	4.82	192.75	B
			B	0.245	2.451	0.601	0.85	1	82.514			
			C	0.116	2.901	0.577	0.85	1	42.914			
Sum Weight:	3.79	19.54						OTM	1436.47 kip-ft	24.10		

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	6.83					
Bracing Weight	12.71					
Total Member Self-Weight	19.54			-20.50	-8.80	
Total Weight	32.48			-20.50	-8.80	
Wind 0 deg - No Ice		0.59	-45.21	-3492.61	-80.86	4.35
Wind 30 deg - No Ice		22.09	-37.16	-2856.89	-1731.95	-29.22
Wind 45 deg - No Ice		31.16	-29.83	-2288.88	-2439.62	-37.57
Wind 60 deg - No Ice		37.45	-21.25	-1655.70	-2910.22	-44.94
Wind 90 deg - No Ice		43.01	-1.29	-182.67	-3308.52	-59.32
Wind 120 deg - No Ice		38.37	22.40	1686.25	-2933.74	-50.43
Wind 135 deg - No Ice		29.66	31.24	2400.78	-2254.62	-34.07
Wind 150 deg - No Ice		20.42	38.40	2951.50	-1520.35	-20.75
Wind 180 deg - No Ice		0.49	43.52	3339.89	-58.12	10.70
Wind 210 deg - No Ice		-20.86	37.97	2907.00	1562.35	28.97
Wind 225 deg - No Ice		-30.17	30.89	2366.29	2302.77	36.31
Wind 240 deg - No Ice		-38.46	23.14	1777.77	2932.44	50.59
Wind 270 deg - No Ice		-42.56	0.60	43.90	3241.19	61.58
Wind 300 deg - No Ice		-36.07	-21.02	-1619.48	2733.16	50.06
Wind 315 deg - No Ice		-29.47	-30.38	-2345.71	2224.38	38.32
Wind 330 deg - No Ice		-20.82	-37.55	-2898.09	1561.79	29.02
Member Ice	7.16					
Total Weight Ice	51.13			-48.78	-16.78	
Wind 0 deg - Ice		0.61	-56.72	-4310.65	-90.66	10.36
Wind 30 deg - Ice		27.85	-47.07	-3566.80	-2137.35	-35.41
Wind 45 deg - Ice		39.30	-37.90	-2872.67	-3009.91	-49.20
Wind 60 deg - Ice		47.41	-26.97	-2078.35	-3606.36	-61.26
Wind 90 deg - Ice		54.49	-1.33	-215.13	-4107.73	-81.74
Wind 120 deg - Ice		48.35	28.15	2052.21	-3626.47	-72.98
Wind 135 deg - Ice		37.76	39.36	2932.43	-2820.14	-53.76
Wind 150 deg - Ice		26.13	48.34	3608.72	-1920.40	-36.73
Wind 180 deg - Ice		0.51	54.99	4103.23	-67.63	5.22
Wind 210 deg - Ice		-26.58	47.90	3562.82	1947.78	35.15
Wind 225 deg - Ice		-38.28	39.00	2896.76	2853.91	47.90
Wind 240 deg - Ice		-48.45	28.91	2145.97	3609.49	67.26
Wind 270 deg - Ice		-54.03	0.61	17.36	4023.06	84.05
Wind 300 deg - Ice		-45.99	-26.73	-2041.42	3409.10	72.27
Wind 315 deg - Ice		-37.55	-38.47	-2931.30	2773.48	58.12
Wind 330 deg - Ice		-26.54	-47.47	-3609.31	1947.31	45.21
Total Weight	32.48			-20.50	-8.80	
Wind 0 deg - Service		0.59	-45.21	-3478.00	-73.79	4.35
Wind 30 deg - Service		22.09	-37.16	-2842.28	-1724.88	-29.22
Wind 45 deg - Service		31.16	-29.83	-2274.26	-2432.55	-37.57
Wind 60 deg - Service		37.45	-21.25	-1641.08	-2903.16	-44.94

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 90 deg - Service		43.01	-1.29	-168.06	-3301.46	-59.32
Wind 120 deg - Service		38.37	22.40	1700.87	-2926.67	-50.43
Wind 135 deg - Service		29.66	31.24	2415.39	-2247.55	-34.07
Wind 150 deg - Service		20.42	38.40	2966.11	-1513.29	-20.75
Wind 180 deg - Service		0.49	43.52	3354.50	-51.06	10.70
Wind 210 deg - Service		-20.86	37.97	2921.61	1569.41	28.97
Wind 225 deg - Service		-30.17	30.89	2380.91	2309.83	36.31
Wind 240 deg - Service		-38.46	23.14	1792.39	2939.50	50.59
Wind 270 deg - Service		-42.56	0.60	58.52	3248.25	61.58
Wind 300 deg - Service		-36.07	-21.02	-1604.87	2740.22	50.06
Wind 315 deg - Service		-29.47	-30.38	-2331.10	2231.44	38.32
Wind 330 deg - Service		-20.82	-37.55	-2883.48	1568.86	29.02

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
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

Comb. No.	Description
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	120 - 116.667	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	30	-1.34	1.08	-0.47
			Max. Mx	27	-0.77	-1.21	-0.51
			Max. My	27	-1.24	0.52	-1.61
			Max. Vy	27	0.78	-1.21	-0.51
			Max. Vx	26	0.86	0.16	-1.50
		Diagonal	Max Tension	31	1.72	0.00	0.00
			Max. Compression	31	-1.92	0.00	0.00
			Max. Mx	20	1.48	0.04	0.00
			Max. My	30	-0.12	0.00	-0.00
			Max. Vy	20	-0.02	0.00	0.00
			Max. Vx	30	0.00	0.00	0.00
		Top Girt	Max Tension	32	1.93	0.02	0.01
			Max. Compression	24	-2.04	0.02	0.01
			Max. Mx	27	-0.86	0.03	0.00
			Max. My	34	1.77	0.02	0.01
			Max. Vy	27	0.02	0.03	0.00
			Max. Vx	34	-0.00	0.00	0.00
T2	116.667 - 108.333	Leg	Max Tension	15	0.56	-0.77	-0.03
			Max. Compression	19	-4.07	0.74	0.09
			Max. Mx	24	-2.83	-1.22	-0.01
			Max. My	27	-2.08	0.52	1.84
			Max. Vy	22	-1.11	-1.14	-0.04
			Max. Vx	27	-1.67	0.52	-1.61
		Diagonal	Max Tension	20	6.82	0.00	0.00
			Max. Compression	20	-6.98	0.00	0.00
			Max. Mx	20	6.82	0.07	0.00
			Max. My	30	0.25	0.00	-0.00
			Max. Vy	20	0.03	0.00	0.00
			Max. Vx	30	0.00	0.00	0.00
		Horizontal	Max Tension	27	4.59	0.00	0.00
			Max. Compression	19	-4.09	0.03	0.01
			Max. Mx	32	0.06	0.03	0.01
			Max. My	27	0.01	0.02	0.01
			Max. Vy	32	0.02	0.03	0.01
			Max. Vx	27	-0.00	0.00	0.00
T3	108.333 - 100	Leg	Max Tension	22	7.21	-0.82	-0.23
			Max. Compression	19	-12.86	0.47	0.01
			Max. Mx	27	6.88	-0.87	-0.18
			Max. My	27	-7.28	0.25	-1.19
			Max. Vy	27	-0.20	-0.87	-0.18

Section No.	Elevation ft	Component Type	Condition	Gov Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	31	-0.29	-0.11	-1.05
		Diagonal	Max Tension	28	9.02	0.00	0.00
			Max. Compression	28	-9.19	0.00	0.00
			Max. Mx	20	9.01	0.07	0.00
			Max. My	30	0.78	0.00	-0.00
			Max. Vy	20	-0.03	0.00	0.00
			Max. Vx	30	0.00	0.00	0.00
		Horizontal	Max Tension	27	6.06	0.00	0.00
			Max. Compression	20	-5.56	0.03	0.02
			Max. Mx	22	0.11	0.03	0.01
			Max. My	27	0.01	0.03	0.02
			Max. Vy	22	0.02	0.03	0.01
			Max. Vx	27	-0.00	0.00	0.00
T4	100 - 91.6667	Leg	Max Tension	22	17.47	-0.49	0.19
			Max. Compression	19	-25.27	0.56	-0.01
			Max. Mx	27	15.94	1.07	0.01
			Max. My	31	-3.96	-0.04	1.12
			Max. Vy	27	0.53	-0.62	0.01
			Max. Vx	31	0.58	-0.04	-0.62
		Diagonal	Max Tension	28	10.13	0.00	0.00
			Max. Compression	28	-10.37	0.00	0.00
			Max. Mx	20	10.11	0.08	0.00
			Max. My	30	0.98	0.00	-0.00
			Max. Vy	20	-0.03	0.00	0.00
			Max. Vx	30	0.00	0.00	0.00
		Top Girt	Max Tension	28	6.50	0.04	-0.00
			Max. Compression	28	-6.45	0.04	-0.00
			Max. Mx	22	0.31	0.06	0.02
			Max. My	19	0.37	0.03	-0.02
			Max. Vy	22	0.03	0.06	0.02
			Max. Vx	19	0.00	0.03	-0.02
		Inner Bracing	Max Tension	28	0.11	0.00	0.00
			Max. Compression	28	-0.11	0.00	0.00
			Max. Mx	18	-0.00	-0.03	0.00
			Max. My	19	0.10	0.00	-0.00
			Max. Vy	18	0.02	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
T5	91.6667 - 83.3333	Leg	Max Tension	22	28.13	-0.61	0.01
			Max. Compression	19	-38.13	0.79	-0.02
			Max. Mx	27	27.23	-0.81	0.01
			Max. My	23	-8.69	0.01	0.90
			Max. Vy	32	0.22	-0.80	-0.09
			Max. Vx	20	0.26	-0.01	-0.78
		Diagonal	Max Tension	28	11.31	0.00	0.00
			Max. Compression	28	-11.56	0.00	0.00
			Max. Mx	20	11.29	0.08	0.00
			Max. My	30	1.04	0.00	-0.00
			Max. Vy	20	-0.03	0.00	0.00
			Max. Vx	30	0.00	0.00	0.00
		Top Girt	Max Tension	28	7.48	0.05	-0.00
			Max. Compression	28	-7.39	0.05	-0.00
			Max. Mx	22	0.29	0.07	0.02
			Max. My	19	0.46	0.03	-0.02
			Max. Vy	22	0.04	0.07	0.02
			Max. Vx	19	0.00	0.03	-0.02
		Inner Bracing	Max Tension	28	0.13	0.00	0.00
			Max. Compression	28	-0.13	0.00	0.00
			Max. Mx	18	-0.00	-0.03	0.00
			Max. My	19	0.12	0.00	-0.00
			Max. Vy	18	0.02	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. Vx	19	0.00	0.00	0.00
T6	83.3333 - 75	Leg	Max Tension	22	40.64	-0.81	0.07
			Max. Compression	19	-53.17	1.27	-0.09
			Max. Mx	27	39.06	-1.37	0.10
			Max. My	23	-10.98	-0.06	1.41
			Max. Vy	27	-0.62	-0.81	0.01
			Max. Vx	23	0.70	0.01	0.90
		Diagonal	Max Tension	28	12.61	0.00	0.00
			Max. Compression	28	-12.96	0.00	0.00
			Max. Mx	20	12.58	0.14	0.00
			Max. My	30	1.03	0.00	-0.01
			Max. Vy	20	-0.05	0.00	0.00
			Max. Vx	30	0.00	0.00	0.00
		Top Girt	Max Tension	28	8.56	0.05	-0.00
			Max. Compression	28	-8.48	0.05	-0.00
			Max. Mx	22	0.18	0.08	0.02
			Max. My	30	1.67	0.03	-0.02
			Max. Vy	22	0.04	0.08	0.02
			Max. Vx	19	0.00	0.03	-0.02
		Inner Bracing	Max Tension	28	0.15	0.00	0.00
			Max. Compression	28	-0.15	0.00	0.00
			Max. Mx	18	-0.00	-0.03	0.00
			Max. My	19	0.13	0.00	-0.00
			Max. Vy	18	-0.02	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
T7	75 - 50	Leg	Max Tension	22	86.86	-0.42	0.17
			Max. Compression	19	-108.83	0.34	0.01
			Max. Mx	27	53.20	-1.37	0.10
			Max. My	23	-12.38	-0.06	1.41
			Max. Vy	27	-0.85	-1.37	0.10
			Max. Vx	28	0.86	-0.04	1.30
		Diagonal	Max Tension	28	16.00	0.00	0.00
			Max. Compression	28	-16.39	0.00	0.00
			Max. Mx	20	15.93	0.16	0.00
			Max. My	30	1.39	0.00	-0.01
			Max. Vy	20	-0.05	0.00	0.00
			Max. Vx	30	0.00	0.00	0.00
		Horizontal	Max Tension	28	11.60	0.00	0.00
			Max. Compression	28	-11.46	0.07	-0.00
			Max. Mx	22	1.00	0.09	0.02
			Max. My	19	0.83	0.04	-0.03
			Max. Vy	22	0.04	0.09	0.02
			Max. Vx	19	0.00	0.04	-0.03
		Top Girt	Max Tension	28	10.13	0.06	-0.00
			Max. Compression	28	-9.99	0.06	-0.00
			Max. Mx	22	-0.07	0.08	0.02
			Max. My	19	1.13	0.04	-0.03
			Max. Vy	22	0.04	0.08	0.02
			Max. Vx	19	0.00	0.04	-0.03
		Inner Bracing	Max Tension	28	0.17	0.00	0.00
			Max. Compression	28	-0.17	0.00	0.00
			Max. Mx	18	-0.00	-0.04	0.00
			Max. My	19	0.01	0.00	-0.00
			Max. Vy	18	0.02	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
T8	50 - 25	Leg	Max Tension	22	138.36	-0.51	0.10
			Max. Compression	19	-169.53	0.37	-0.03
			Max. Mx	27	134.99	-0.51	0.04
			Max. My	23	-19.46	-0.02	0.69
			Max. Vy	27	-0.20	-0.51	0.07
			Max. Vx	24	0.32	-0.27	0.65

Section No	Elevation ft	Component Type	Condition	Gov. Load Comb	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Diagonal	Max Tension	28	17.06	0.00	0.00
			Max. Compression	28	-17.60	0.00	0.00
			Max. Mx	20	16.89	0.19	0.00
			Max. My	24	1.90	0.00	0.01
			Max. Vy	20	-0.06	0.00	0.00
			Max. Vx	24	-0.00	0.00	0.00
		Horizontal	Max Tension	28	13.08	0.00	0.00
			Max. Compression	28	-12.90	0.13	-0.00
			Max. Mx	22	1.54	0.20	0.02
			Max. My	19	0.92	0.07	-0.03
			Max. Vy	22	0.08	0.20	0.02
			Max. Vx	30	0.00	0.07	-0.03
		Top Girt	Max Tension	28	12.05	0.07	-0.00
			Max. Compression	28	-11.91	0.07	-0.00
			Max. Mx	22	1.01	0.10	0.02
			Max. My	19	0.74	0.04	-0.03
			Max. Vy	22	0.04	0.10	0.02
			Max. Vx	19	0.00	0.04	-0.03
		Inner Bracing	Max Tension	28	0.21	0.00	0.00
			Max. Compression	28	-0.21	0.00	0.00
			Max. Mx	18	-0.00	-0.05	0.00
			Max. My	19	0.18	0.00	-0.00
			Max. Vy	18	0.02	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
T9	25 - 0	Leg	Max Tension	22	180.66	-0.74	0.20
			Max. Compression	19	-219.25	0.00	-0.00
			Max. Mx	30	-184.21	1.43	-0.22
			Max. My	23	-25.28	0.34	1.31
			Max. Vy	30	0.21	1.43	-0.22
			Max. Vx	23	0.31	0.34	1.31
		Diagonal	Max Tension	34	21.57	0.00	0.00
			Max. Compression	34	-22.13	0.00	0.00
			Max. Mx	34	21.57	0.32	0.00
			Max. My	30	-2.72	0.00	0.01
			Max. Vy	34	-0.08	0.00	0.00
			Max. Vx	24	-0.00	0.00	0.00
		Horizontal	Max Tension	33	14.04	0.00	0.00
			Max. Compression	25	-14.10	0.11	0.01
			Max. Mx	22	1.98	0.19	0.04
			Max. My	30	-0.74	-0.01	-0.05
			Max. Vy	22	0.07	0.19	0.04
			Max. Vx	30	0.01	-0.01	-0.05
		Top Girt	Max Tension	28	13.43	0.13	-0.00
			Max. Compression	25	-13.34	0.15	0.01
			Max. Mx	22	1.47	0.22	0.04
			Max. My	30	2.19	0.03	-0.05
			Max. Vy	22	0.07	0.22	0.04
			Max. Vx	30	0.01	0.03	-0.05
		Inner Bracing	Max Tension	25	0.23	0.00	0.00
			Max. Compression	25	-0.23	0.00	0.00
			Max. Mx	18	-0.01	-0.07	0.00
			Max. My	19	0.20	0.00	-0.00
			Max. Vy	18	-0.03	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	30	241.27	26.11	-17.29
	Max. H_x	30	241.27	26.11	-17.29
	Max. H_z	21	-199.16	-22.43	16.53
	Min. Vert	22	-205.55	-23.89	15.70
	Min. H_x	22	-205.55	-23.89	15.70
	Min. H_z	29	226.48	23.76	-17.35
Leg B	Max. Vert	24	239.50	-25.83	-17.26
	Max. H_x	32	-195.13	23.02	15.60
	Max. H_z	33	-189.51	21.61	16.48
	Min. Vert	32	-195.13	23.02	15.60
	Min. H_x	24	239.50	-25.83	-17.26
	Min. H_z	25	225.85	-23.52	-17.47
Leg A	Max. Vert	19	247.42	0.24	31.47
	Max. H_x	31	16.09	9.25	0.67
	Max. H_z	19	247.42	0.24	31.47
	Min. Vert	27	-202.29	0.10	-28.72
	Min. H_x	23	28.90	-9.21	1.79
	Min. H_z	27	-202.29	0.10	-28.72

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	32.48	0.00	0.00	-20.50	-8.80	0.00
Dead+Wind 0 deg - No Ice	32.48	0.59	-45.21	-3406.16	-80.99	4.37
Dead+Wind 30 deg - No Ice	32.48	22.09	-37.16	-2785.91	-1691.06	-29.23
Dead+Wind 45 deg - No Ice	32.48	31.16	-29.83	-2231.43	-2382.37	-37.59
Dead+Wind 60 deg - No Ice	32.48	37.45	-21.25	-1615.57	-2840.68	-44.97
Dead+Wind 90 deg - No Ice	32.48	43.01	-1.29	-183.06	-3226.57	-59.37
Dead+Wind 120 deg - No Ice	32.48	38.37	22.40	1642.88	-2858.75	-50.49
Dead+Wind 135 deg - No Ice	32.48	29.66	31.24	2343.47	-2197.10	-34.13
Dead+Wind 150 deg - No Ice	32.48	20.42	38.40	2880.66	-1479.14	-20.79
Dead+Wind 180 deg - No Ice	32.48	0.49	43.52	3259.57	-58.17	10.67
Dead+Wind 210 deg - No Ice	32.48	-20.86	37.97	2836.06	1521.27	28.98
Dead+Wind 225 deg - No Ice	32.48	-30.17	30.89	2308.91	2245.37	36.33
Dead+Wind 240 deg - No Ice	32.48	-38.46	23.14	1734.54	2857.48	50.63
Dead+Wind 270 deg - No Ice	32.48	-42.56	0.60	43.89	3159.13	61.64
Dead+Wind 300 deg - No Ice	32.48	-36.07	-21.02	-1579.29	2663.32	50.12
Dead+Wind 315 deg - No Ice	32.48	-29.47	-30.38	-2288.35	2166.77	38.37
Dead+Wind 330 deg - No Ice	32.48	-20.82	-37.55	-2827.17	1520.64	29.05
Dead+Ice+Temp	51.13	0.00	0.00	-48.76	-16.77	-0.00
Dead+Wind 0 deg+Ice+Temp	51.13	0.61	-56.72	-4193.54	-90.86	10.38
Dead+Wind 30 deg+Ice+Temp	51.13	27.85	-47.07	-3469.61	-2081.37	-35.44
Dead+Wind 45 deg+Ice+Temp	51.13	39.30	-37.90	-2793.88	-2931.35	-49.26
Dead+Wind 60 deg+Ice+Temp	51.13	47.41	-26.97	-2023.13	-3510.59	-61.34
Dead+Wind 90 deg+Ice+Temp	51.13	54.49	-1.33	-215.75	-3995.50	-81.85
Dead+Wind 120 deg+Ice+Temp	51.13	48.35	28.15	1993.36	-3524.88	-73.11
Dead+Wind 135 deg+Ice+Temp	51.13	37.76	39.36	2853.70	-2741.25	-53.89
Dead+Wind 150 deg+Ice+Temp	51.13	26.13	48.34	3511.61	-1863.97	-36.82
Dead+Wind 180 deg+Ice+Temp	51.13	0.51	54.99	3992.55	-67.71	5.18
Dead+Wind 210 deg+Ice+Temp	51.13	-26.58	47.90	3465.60	1891.52	35.18
Dead+Wind 225 deg+Ice+Temp	51.13	-38.28	39.00	2817.93	2775.16	47.97
Dead+Wind 240 deg+Ice+Temp	51.13	-48.45	28.91	2087.32	3507.92	67.34
Dead+Wind 270 deg+Ice+Temp	51.13	-54.03	0.61	17.28	3910.68	84.18
Dead+Wind 300 deg+Ice+Temp	51.13	-45.99	-26.73	-1986.12	3312.91	72.40
Dead+Wind 315 deg+Ice+Temp	51.13	-37.55	-38.47	-2852.64	2694.42	58.23

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 330 deg+Ice+Temp	51.13	-26.54	-47.47	-3512.21	1890.92	45.30
Dead+Wind 0 deg - Service	32.48	0.59	-45.21	-3406.16	-80.99	4.37
Dead+Wind 30 deg - Service	32.48	22.09	-37.16	-2785.91	-1691.06	-29.23
Dead+Wind 45 deg - Service	32.48	31.16	-29.83	-2231.43	-2382.37	-37.59
Dead+Wind 60 deg - Service	32.48	37.45	-21.25	-1615.57	-2840.68	-44.97
Dead+Wind 90 deg - Service	32.48	43.01	-1.29	-183.06	-3226.57	-59.37
Dead+Wind 120 deg - Service	32.48	38.37	22.40	1642.88	-2858.75	-50.49
Dead+Wind 135 deg - Service	32.48	29.66	31.24	2343.47	-2197.10	-34.13
Dead+Wind 150 deg - Service	32.48	20.42	38.40	2880.66	-1479.14	-20.79
Dead+Wind 180 deg - Service	32.48	0.49	43.52	3259.57	-58.17	10.67
Dead+Wind 210 deg - Service	32.48	-20.86	37.97	2836.06	1521.27	28.98
Dead+Wind 225 deg - Service	32.48	-30.17	30.89	2308.91	2245.37	36.33
Dead+Wind 240 deg - Service	32.48	-38.46	23.14	1734.54	2857.48	50.63
Dead+Wind 270 deg - Service	32.48	-42.56	0.60	43.89	3159.13	61.64
Dead+Wind 300 deg - Service	32.48	-36.07	-21.02	-1579.29	2663.32	50.12
Dead+Wind 315 deg - Service	32.48	-29.47	-30.38	-2288.35	2166.77	38.37
Dead+Wind 330 deg - Service	32.48	-20.82	-37.55	-2827.17	1520.64	29.05

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-32.48	0.00	0.00	32.48	0.00	0.000%
2	0.59	-32.48	-45.21	-0.59	32.48	45.21	0.000%
3	22.09	-32.48	-37.16	-22.09	32.48	37.16	0.000%
4	31.16	-32.48	-29.83	-31.16	32.48	29.83	0.000%
5	37.45	-32.48	-21.25	-37.45	32.48	21.25	0.000%
6	43.01	-32.48	-1.29	-43.01	32.48	1.29	0.000%
7	38.37	-32.48	22.40	-38.37	32.48	-22.40	0.000%
8	29.66	-32.48	31.24	-29.66	32.48	-31.24	0.000%
9	20.42	-32.48	38.40	-20.42	32.48	-38.40	0.000%
10	0.49	-32.48	43.52	-0.49	32.48	-43.52	0.000%
11	-20.86	-32.48	37.97	20.86	32.48	-37.97	0.000%
12	-30.17	-32.48	30.89	30.17	32.48	-30.89	0.000%
13	-38.46	-32.48	23.14	38.46	32.48	-23.14	0.000%
14	-42.56	-32.48	0.60	42.56	32.48	-0.60	0.000%
15	-36.07	-32.48	-21.02	36.07	32.48	21.02	0.000%
16	-29.47	-32.48	-30.38	29.47	32.48	30.38	0.000%
17	-20.82	-32.48	-37.55	20.82	32.48	37.55	0.000%
18	0.00	-51.13	0.00	0.00	51.13	0.00	0.000%
19	0.61	-51.13	-56.72	-0.61	51.13	56.72	0.000%
20	27.85	-51.13	-47.07	-27.85	51.13	47.07	0.000%
21	39.30	-51.13	-37.90	-39.30	51.13	37.90	0.000%
22	47.41	-51.13	-26.97	-47.41	51.13	26.97	0.000%
23	54.49	-51.13	-1.33	-54.49	51.13	1.33	0.000%
24	48.35	-51.13	28.15	-48.35	51.13	-28.15	0.000%
25	37.76	-51.13	39.36	-37.76	51.13	-39.36	0.000%
26	26.13	-51.13	48.34	-26.13	51.13	-48.34	0.000%
27	0.51	-51.13	54.99	-0.51	51.13	-54.99	0.000%
28	-26.58	-51.13	47.90	26.58	51.13	-47.90	0.000%
29	-38.28	-51.13	39.00	38.28	51.13	-39.00	0.000%
30	-48.45	-51.13	28.91	48.45	51.13	-28.91	0.000%
31	-54.03	-51.13	0.61	54.03	51.13	-0.61	0.000%
32	-45.99	-51.13	-26.73	45.99	51.13	26.73	0.000%
33	-37.55	-51.13	-38.47	37.55	51.13	38.47	0.000%
34	-26.54	-51.13	-47.47	26.54	51.13	47.47	0.000%
35	0.59	-32.48	-45.21	-0.59	32.48	45.21	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
36	22.09	-32.48	-37.16	-22.09	32.48	37.16	0.000%
37	31.16	-32.48	-29.83	-31.16	32.48	29.83	0.000%
38	37.45	-32.48	-21.25	-37.45	32.48	21.25	0.000%
39	43.01	-32.48	-1.29	-43.01	32.48	1.29	0.000%
40	38.37	-32.48	22.40	-38.37	32.48	-22.40	0.000%
41	29.66	-32.48	31.24	-29.66	32.48	-31.24	0.000%
42	20.42	-32.48	38.40	-20.42	32.48	-38.40	0.000%
43	0.49	-32.48	43.52	-0.49	32.48	-43.52	0.000%
44	-20.86	-32.48	37.97	20.86	32.48	-37.97	0.000%
45	-30.17	-32.48	30.89	30.17	32.48	-30.89	0.000%
46	-38.46	-32.48	23.14	38.46	32.48	-23.14	0.000%
47	-42.56	-32.48	0.60	42.56	32.48	-0.60	0.000%
48	-36.07	-32.48	-21.02	36.07	32.48	21.02	0.000%
49	-29.47	-32.48	-30.38	29.47	32.48	30.38	0.000%
50	-20.82	-32.48	-37.55	20.82	32.48	37.55	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00000001
4	Yes	4	0.00000001	0.00000001
5	Yes	4	0.00000001	0.00000001
6	Yes	4	0.00000001	0.00000001
7	Yes	4	0.00000001	0.00000001
8	Yes	4	0.00000001	0.00000001
9	Yes	4	0.00000001	0.00000001
10	Yes	4	0.00000001	0.00000001
11	Yes	4	0.00000001	0.00000001
12	Yes	4	0.00000001	0.00000001
13	Yes	4	0.00000001	0.00000001
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00000001
16	Yes	4	0.00000001	0.00000001
17	Yes	4	0.00000001	0.00000001
18	Yes	4	0.00000001	0.00000001
19	Yes	4	0.00000001	0.00000001
20	Yes	4	0.00000001	0.00000001
21	Yes	4	0.00000001	0.00000001
22	Yes	4	0.00000001	0.00000001
23	Yes	4	0.00000001	0.00000001
24	Yes	4	0.00000001	0.00000001
25	Yes	4	0.00000001	0.00000001
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00000001
28	Yes	4	0.00000001	0.00000001
29	Yes	4	0.00000001	0.00000001
30	Yes	4	0.00000001	0.00000001
31	Yes	4	0.00000001	0.00000001
32	Yes	4	0.00000001	0.00000001
33	Yes	4	0.00000001	0.00000001
34	Yes	4	0.00000001	0.00000001
35	Yes	4	0.00000001	0.00000001
36	Yes	4	0.00000001	0.00000001

37	Yes	4	0.00000001	0.00000001
38	Yes	4	0.00000001	0.00000001
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	120 - 116.667	4.811	35	0.2762	0.0918
T2	116.667 - 108.333	4.612	35	0.2764	0.0930
T3	108.333 - 100	4.099	35	0.2764	0.0893
T4	100 - 91.6667	3.581	35	0.2721	0.0814
T5	91.6667 - 83.3333	3.081	35	0.2627	0.0735
T6	83.3333 - 75	2.600	35	0.2480	0.0659
T7	75 - 50	2.168	35	0.2277	0.0608
T8	50 - 25	1.006	35	0.1715	0.0418
T9	25 - 0	0.264	35	0.0803	0.0209

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
138.00	Lightning Rod 5/8x4'	35	4.811	0.2762	0.0918	31410
128.00	16'x2.5" Pipe Mount	35	4.811	0.2762	0.0918	31410
120.00	6FT DISH	35	4.811	0.2762	0.0918	31410
118.00	6' Side-Arm	35	4.692	0.2763	0.0927	31410
116.00	PA6-65AC	35	4.572	0.2764	0.0931	31410
115.00	PA6-65AC	35	4.511	0.2765	0.0930	31410
111.00	PA6-65AC	35	4.265	0.2766	0.0914	53246
110.00	Filter/Diplexer	35	4.203	0.2766	0.0907	64825
105.00	AP13-850/065/ADT w/Mount Pipe	35	3.891	0.2753	0.0863	102058
103.00	OGT9-806	35	3.766	0.2743	0.0843	59139
100.00	PD458-1	35	3.581	0.2721	0.0814	41678
95.00	EUSF10-U	35	3.279	0.2670	0.0767	59561
90.00	20' 4-Bay Dipole	35	2.982	0.2602	0.0719	38920
88.00	Mount	35	2.864	0.2570	0.0700	24286
86.00	Mount	35	2.749	0.2535	0.0681	17347
85.00	3' Yagi	35	2.692	0.2515	0.0672	15678
80.00	(2) SBNH-1D6565C	35	2.422	0.2402	0.0636	19114
78.00	VHF150	35	2.319	0.2352	0.0625	28457
72.00	DB980H90E-M	35	2.017	0.2208	0.0590	70365
70.00	2' Microwave Panel	35	1.918	0.2165	0.0577	55558
60.00	GPS	35	1.438	0.1960	0.0502	25019

Elevation ft	Appurtenance	Gov Load Comb	Deflection in	Tilt °	Twist °	Radius of Curvature ft
56.00	2' Sidearm	35	1.258	0.1871	0.0469	20509
55.00	DB264-A	35	1.215	0.1848	0.0461	19625
50.00	1' Microwave Panel	35	1.006	0.1715	0.0418	16469
44.00	5'0"x3" Pipe Mount	35	0.781	0.1523	0.0368	15076
40.00	4 FT DISH	35	0.646	0.1378	0.0334	14438
35.00	1' Omni	35	0.496	0.1187	0.0293	13714
30.00	4' Whip	35	0.369	0.0992	0.0251	13059

Maximum Tower Deflections - Design Wind

Section No	Elevation ft	Horz. Deflection in	Gov Load Comb	Tilt °	Twist °
T1	120 - 116.667	5.843	19	0.3338	0.1199
T2	116.667 - 108.333	5.603	19	0.3340	0.1214
T3	108.333 - 100	4.984	19	0.3339	0.1174
T4	100 - 91.6667	4.361	19	0.3290	0.1076
T5	91.6667 - 83.3333	3.756	19	0.3178	0.0976
T6	83.3333 - 75	3.174	19	0.3005	0.0878
T7	75 - 50	2.650	19	0.2764	0.0815
T8	50 - 25	1.238	19	0.2090	0.0565
T9	25 - 0	0.328	19	0.0983	0.0284

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
138.00	Lightning Rod 5/8x4'	19	5.843	0.3338	0.1199	27851
128.00	16'x2.5" Pipe Mount	19	5.843	0.3338	0.1199	27851
120.00	6FT DISH	19	5.843	0.3338	0.1199	27851
118.00	6' Side-Arm	19	5.699	0.3339	0.1209	27851
116.00	PA6-65AC	19	5.554	0.3341	0.1215	27851
115.00	PA6-65AC	19	5.481	0.3341	0.1214	27851
111.00	PA6-65AC	19	5.184	0.3343	0.1197	43557
110.00	Filter/Diplexer	19	5.109	0.3342	0.1189	51640
105.00	AP13-850/065/ADT w/Mount Pipe	19	4.734	0.3327	0.1138	100817
103.00	OGT9-806	19	4.584	0.3315	0.1113	52784
100.00	PD458-1	19	4.361	0.3290	0.1076	36217
95.00	EUSF10-U	19	3.996	0.3230	0.1016	52911
90.00	20' 4-Bay Dipole	19	3.637	0.3149	0.0956	33831
88.00	Mount	19	3.495	0.3112	0.0931	20745
86.00	Mount	19	3.355	0.3070	0.0907	14694
85.00	3' Yagi	19	3.287	0.3047	0.0895	13251
80.00	(2) SBNH-1D6565C	19	2.959	0.2912	0.0850	16126
78.00	VHF150	19	2.834	0.2852	0.0836	24075
72.00	DB980H90E-M	19	2.468	0.2682	0.0792	60070
70.00	2' Microwave Panel	19	2.347	0.2630	0.0775	47160
60.00	GPS	19	1.764	0.2385	0.0676	21003
56.00	2' Sidearm	19	1.545	0.2278	0.0632	17189
55.00	DB264-A	19	1.492	0.2250	0.0621	16443
50.00	1' Microwave Panel	19	1.238	0.2090	0.0565	13771

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
44.00	5'0"x3" Pipe Mount	19	0.962	0.1857	0.0497	12538
40.00	4 FT DISH	19	0.797	0.1682	0.0452	11964
35.00	1' Omni	19	0.614	0.1450	0.0397	11317
30.00	4' Whip	19	0.457	0.1214	0.0341	10736

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	120	Diagonal	A325X	0.7500	1	1.72	13.59	0.127 ✔	1.333	Member Bearing
		Top Girt	A325X	0.6250	2	1.02	8.16	0.125 ✔	1.333	Member Bearing
T2	116.667	Diagonal	A325X	0.7500	1	6.82	13.59	0.502 ✔	1.333	Member Bearing
		Horizontal	A325X	0.6250	2	2.29	8.16	0.281 ✔	1.333	Member Bearing
T3	108.333	Diagonal	A325X	0.7500	1	9.02	13.59	0.664 ✔	1.333	Member Bearing
		Horizontal	A325X	0.6250	2	3.03	8.16	0.371 ✔	1.333	Member Bearing
T4	100	Leg	A325X	0.7500	6	2.91	19.44	0.150 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	10.13	13.59	0.745 ✔	1.333	Member Bearing
		Top Girt	A325X	0.6250	2	3.25	9.20	0.353 ✔	1.333	Bolt Shear
T5	91.6667	Diagonal	A325X	0.7500	1	11.31	13.59	0.832 ✔	1.333	Member Bearing
		Top Girt	A325X	0.6250	2	3.74	9.20	0.406 ✔	1.333	Bolt Shear
T6	83.3333	Diagonal	A325X	0.7500	1	12.96	26.51	0.489 ✔	1.333	Bolt Shear
		Top Girt	A325X	0.6250	2	4.28	9.20	0.465 ✔	1.333	Bolt Shear
T7	75	Leg	A325X	0.7500	6	9.02	19.44	0.464 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	16.00	18.13	0.883 ✔	1.333	Member Bearing
		Horizontal	A325X	0.6250	2	5.80	9.20	0.630 ✔	1.333	Bolt Shear
		Top Girt	A325X	0.6250	2	5.07	9.20	0.551 ✔	1.333	Bolt Shear
T8	50	Leg	A325X	0.7500	6	17.29	19.44	0.890 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	17.06	18.13	0.941 ✔	1.333	Member Bearing
		Horizontal	A325X	0.6250	2	6.54	9.20	0.711 ✔	1.333	Bolt Shear
		Top Girt	A325X	0.6250	2	6.03	9.20	0.655 ✔	1.333	Bolt Shear
T9	25	Leg	A325X	1.0000	8	19.43	34.56	0.562 ✔	1.333	Bolt Tension
		Diagonal	A325X	1.0000	1	21.57	25.38	0.850 ✔	1.333	Member Bearing
		Horizontal	A325X	0.6250	2	7.05	9.20	0.766 ✔	1.333	Bolt Shear
		Top Girt	A325X	0.6250	2	6.72	9.20	0.730 ✔	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 $\frac{P}{P_a}$
T1	120 - 116.667	P.5x.250	3.34	3.34	23.8 K=1.00	27.884	3.7306	-1.14	104.03	0.011* ✔
T2	116.667 - 108.333	P.5x.250	8.34	8.34	59.5 K=1.00	22.798	3.7306	-4.07	85.05	0.048 ✔
T3	108.333 - 100	P.5x.250	8.34	8.34	59.5 K=1.00	22.798	3.7306	-12.86	85.05	0.151 ✔
T4	100 - 91.6667	P.5x.250	8.34	8.34	59.5 K=1.00	22.798	3.7306	-25.27	85.05	0.297 ✔
T5	91.6667 - 83.3333	P.5x.250	8.34	8.34	59.5 K=1.00	22.798	3.7306	-38.13	85.05	0.448 ✔
T6	83.3333 - 75	P.5x.250	8.34	8.34	59.5 K=1.00	22.798	3.7306	-53.17	85.05	0.625 ✔
T7	75 - 50	P5x.375	25.03	8.34	54.4 K=1.00	23.645	6.1120	-108.83	144.52	0.753 ✔
T8	50 - 25	P.5x.400	25.03	8.34	61.3 K=1.00	25.746	5.7805	-169.53	148.83	1.139 ✔
T9	25 - 0	P6.875x.400	25.03	12.51	65.5 K=1.00	24.741	8.1367	-219.25	201.31	1.089 ✔

* DL controls

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	120 - 116.667	2L2 1/2x2x3/16	6.73	6.19	106.9 K=1.14	12.090	1.6200	-1.92	19.59	0.098 ✔
T2	116.667 - 108.333	2L2 1/2x2x3/16	10.37	9.73	147.8 K=1.00	6.834	1.6200	-6.98	11.07	0.630 ✔
T3	108.333 - 100	2L2 1/2x2x3/16	10.58	9.94	151.1 K=1.00	6.544	1.6200	-9.19	10.60	0.867 ✔
T4	100 - 91.6667	2L2 1/2x2x3/16	10.78	10.16	154.4 K=1.00	6.266	1.6200	-10.37	10.15	1.021 ✔
T5	91.6667 - 83.3333	2L2 1/2x2x3/16	11.00	10.39	157.8 K=1.00	5.999	1.6200	-11.56	9.72	1.190 ✔
T6	83.3333 - 75	2L2 1/2x2x3/8	11.22	10.62	165.9 K=1.00	5.428	3.0900	-12.96	16.77	0.773 ✔
T7	75 - 50	2L3x2 1/2x1/4	11.91	11.30	143.4 K=1.00	7.259	2.6300	-16.39	19.09	0.859 ✔
T8	50 - 25	2L3x2 1/2x1/4	12.65	12.08	153.4 K=1.00	6.350	2.6300	-17.60	16.70	1.054 ✔
T9	25 - 0	2L3 1/2x3x1/4	16.33	15.51	167.7 K=1.00	5.309	3.1300	-22.13	16.62	1.332 ✔

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 $\frac{P}{P_a}$
T2	116.667 - 108.333	L2 1/2x2 1/2x3/16	11.68	10.84	149.0 K=0.89	6.726	0.9020	-4.09	6.07	0.674 ✔
T3	108.333 - 100	L2 1/2x2 1/2x3/16	12.35	11.50	155.3 K=0.88	6.189	0.9020	-5.56	5.58	0.995 ✔
T7	75 - 50	L3x3x1/4	16.35	7.73	145.4 K=0.93	7.068	1.4400	-11.46	10.18	1.126 ✔
T8	50 - 25	L3x3x1/2	18.35	8.75	165.3 K=0.92	5.466	2.7500	-12.90	15.03	0.858 ✔
T9	25 - 0	L4x4x1/4	20.02	9.51	134.1 K=0.93	8.306	1.9400	-14.10	16.11	0.875 ✔

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	120 - 116.667	L2 1/2x2 1/2x3/16	11.41	10.57	146.5 K=0.90	6.960	0.9020	-2.04	6.28	0.325 ✔
T4	100 - 91.6667	L3x3x1/4	13.02	6.09	116.6 K=0.95	10.761	1.4400	-6.45	15.50	0.416 ✔
T5	91.6667 - 83.3333	L3x3x1/4	13.68	6.42	122.5 K=0.94	9.920	1.4400	-7.39	14.28	0.518 ✔
T6	83.3333 - 75	L3x3x1/4	14.35	6.75	128.4 K=0.94	9.063	1.4400	-8.48	13.05	0.650 ✔
T7	75 - 50	L3x3x1/4	15.02	7.09	134.2 K=0.93	8.293	1.4400	-9.99	11.94	0.836 ✔
T8	50 - 25	L3x3x1/4	17.02	8.06	151.1 K=0.92	6.540	1.4400	-11.91	9.42	1.265 ✔
T9	25 - 0	L4x4x1/4	19.02	9.09	128.6 K=0.94	9.030	1.9400	-13.34	17.52	0.761 ✔

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 $\frac{P}{P_a}$
T4	100 - 91.6667	L2 1/2x2x3/16	6.51	6.51	182.9 K=1.00	4.465	0.8090	-0.11	3.61	0.031 ✔
T5	91.6667 - 83.3333	L2 1/2x2x3/16	6.84	6.84	192.3 K=1.00	4.040	0.8090	-0.13	3.27	0.039 ✔
T6	83.3333 - 75	L2 1/2x2x3/16	7.17	7.17	201.6 K=1.00	3.673	0.8090	-0.15	2.97	0.049 ✔
T7	75 - 50	L2 1/2x2x3/16	7.51	7.51	211.0 K=1.00	3.354	0.8090	-0.17	2.71	0.064

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 $\frac{P}{P_a}$
T8	50 - 25	L2 1/2x2x3/16	8.51	8.51	239.1 K=1.00	2.612	0.8090	-0.21	2.11	0.098
T9	25 - 0	L2 1/2x2 1/2x3/16	9.51	9.51	230.5 K=1.00	2.810	0.9020	-0.23	2.53	0.091

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 $\frac{P}{P_a}$
T2	116.667 - 108.333	P.5x.250	8.34	8.34	59.5	30.000	3.7306	0.56	111.92	0.005
T3	108.333 - 100	P.5x.250	8.34	8.34	59.5	30.000	3.7306	7.21	111.92	0.064
T4	100 - 91.6667	P.5x.250	8.34	8.34	59.5	30.000	3.7306	17.47	111.92	0.156
T5	91.6667 - 83.3333	P.5x.250	8.34	8.34	59.5	30.000	3.7306	28.13	111.92	0.251
T6	83.3333 - 75	P.5x.250	8.34	8.34	59.5	30.000	3.7306	40.64	111.92	0.363
T7	75 - 50	P5x.375	25.03	8.34	54.4	30.000	6.1120	86.86	183.36	0.474
T8	50 - 25	P.5x.400	25.03	8.34	61.3	36.000	5.7805	138.36	208.10	0.665
T9	25 - 0	P6.875x.400	25.03	12.51	65.5	36.000	8.1367	180.66	292.92	0.617

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 $\frac{P}{P_a}$
T1	120 - 116.667	2L2 1/2x2x3/16	6.73	6.19	98.5	29.000	0.9689	1.72	28.10	0.061
T2	116.667 - 108.333	2L2 1/2x2x3/16	10.37	9.73	152.3	29.000	0.9689	6.82	28.10	0.243
T3	108.333 - 100	2L2 1/2x2x3/16	10.58	9.94	155.5	29.000	0.9689	9.02	28.10	0.321
T4	100 - 91.6667	2L2 1/2x2x3/16	10.78	10.16	158.8	29.000	0.9689	10.13	28.10	0.360
T5	91.6667 - 83.3333	2L2 1/2x2x3/16	11.00	10.39	162.2	29.000	0.9689	11.31	28.10	0.402

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
T6	83.3333 - 75	2L2 1/2x2x3/8	11.22	10.62	170.4	29.000	1.8253	12.61	52.93	0.238 ✔
T7	75 - 50	2L3x2 1/2x1/4	11.91	11.30	147.1	29.000	1.6444	16.00	47.69	0.336 ✔
T8	50 - 25	2L3x2 1/2x1/4	12.65	12.08	157.1	29.000	1.6444	17.06	47.69	0.358 ✔
T9	25 - 0	2L3 1/2x3x1/4	16.33	15.51	171.8	29.000	1.9256	21.57	55.84	0.386 ✔

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 P / P_a
T2	116.667 - 108.333	L2 1/2x2 1/2x3/16	11.68	10.84	173.7	29.000	0.5710	4.59	16.56	0.277 ✔
T3	108.333 - 100	L2 1/2x2 1/2x3/16	12.35	11.50	184.0	29.000	0.5710	6.06	16.56	0.366 ✔
T7	75 - 50	L3x3x1/4	16.35	7.73	102.5	29.000	0.9394	11.60	27.24	0.426 ✔
T8	50 - 25	L3x3x1/2	18.35	8.75	119.8	29.000	1.7813	13.08	51.66	0.253 ✔
T9	25 - 0	L4x4x1/4	20.02	9.51	93.3	29.000	1.3144	14.04	38.12	0.368 ✔

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 P / P_a
T1	120 - 116.667	L2 1/2x2 1/2x3/16	11.41	10.57	169.6	29.000	0.5710	1.93	16.56	0.117 ✔
T4	100 - 91.6667	L3x3x1/4	13.02	6.09	81.3	29.000	0.9394	6.50	27.24	0.239 ✔
T5	91.6667 - 83.3333	L3x3x1/4	13.68	6.42	85.6	29.000	0.9394	7.48	27.24	0.274 ✔
T6	83.3333 - 75	L3x3x1/4	14.35	6.75	89.9	29.000	0.9394	8.56	27.24	0.314 ✔
T7	75 - 50	L3x3x1/4	15.02	7.09	94.2	29.000	0.9394	10.13	27.24	0.372 ✔
T8	50 - 25	L3x3x1/4	17.02	8.06	106.8	29.000	0.9394	12.05	27.24	0.442 ✔
T9	25 - 0	L4x4x1/4	19.02	9.09	89.3	29.000	1.3144	13.43	38.12	0.352 ✔

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 $\frac{P}{P_a}$
T4	100 - 91.6667	L2 1/2x2x3/16	6.51	6.51	130.2	21.600	0.8090	0.11	17.47	0.006 ✔
T5	91.6667 - 83.3333	L2 1/2x2x3/16	6.84	6.84	136.9	21.600	0.8090	0.13	17.47	0.007 ✔
T6	83.3333 - 75	L2 1/2x2x3/16	7.17	7.17	143.6	21.600	0.8090	0.15	17.47	0.008 ✔
T7	75 - 50	L2 1/2x2x3/16	7.51	7.51	150.2	21.600	0.8090	0.17	17.47	0.010 ✔
T8	50 - 25	L2 1/2x2x3/16	8.51	8.51	170.2	21.600	0.8090	0.21	17.47	0.012 ✔
T9	25 - 0	L2 1/2x2 1/2x3/16	9.51	9.51	146.7	21.600	0.9020	0.23	19.48	0.012 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	120 - 116.667	Leg	P.5x.250	1	-1.14	104.03	2.5	Pass
T2	116.667 - 108.333	Leg	P.5x.250	13	-3.78	113.37	3.6	Pass
T3	108.333 - 100	Leg	P.5x.250	27	-12.86	113.37	11.3	Pass
T4	100 - 91.6667	Leg	P.5x.250	39	-25.27	113.37	22.3	Pass
T5	91.6667 - 83.3333	Leg	P.5x.250	54	-38.13	113.37	33.6	Pass
T6	83.3333 - 75	Leg	P.5x.250	69	-53.17	113.37	46.9	Pass
T7	75 - 50	Leg	P5x.375	84	-108.83	192.64	56.5	Pass
T8	50 - 25	Leg	P.5x.400	123	-169.53	198.39	85.5	Pass
T9	25 - 0	Leg	P6.875x.400	162	-219.25	268.35	81.7	Pass
T1	120 - 116.667	Diagonal	2L2 1/2x2x3/16	7	-1.92	26.11	7.3 9.5 (b)	Pass
T2	116.667 - 108.333	Diagonal	2L2 1/2x2x3/16	23	-6.98	14.76	47.3	Pass
T3	108.333 - 100	Diagonal	2L2 1/2x2x3/16	36	-9.19	14.13	65.0	Pass
T4	100 - 91.6667	Diagonal	2L2 1/2x2x3/16	48	-10.37	13.53	76.6	Pass
T5	91.6667 - 83.3333	Diagonal	2L2 1/2x2x3/16	63	-11.56	12.95	89.3	Pass
T6	83.3333 - 75	Diagonal	2L2 1/2x2x3/8	78	-12.96	22.36	58.0	Pass
T7	75 - 50	Diagonal	2L3x2 1/2x1/4	96	-16.39	25.45	64.4 66.2 (b)	Pass
T8	50 - 25	Diagonal	2L3x2 1/2x1/4	135	-17.60	22.26	79.1	Pass
T9	25 - 0	Diagonal	2L3 1/2x3x1/4	171	-22.13	22.15	99.9	Pass
T2	116.667 - 108.333	Horizontal	L2 1/2x2 1/2x3/16	22	-4.09	8.09	50.5	Pass
T3	108.333 - 100	Horizontal	L2 1/2x2 1/2x3/16	34	-5.56	7.44	74.7	Pass
T7	75 - 50	Horizontal	L3x3x1/4	94	-11.46	13.57	84.4	Pass
T8	50 - 25	Horizontal	L3x3x1/2	133	-12.90	20.04	64.4	Pass
T9	25 - 0	Horizontal	L4x4x1/4	169	-14.10	21.48	65.7	Pass
T1	120 - 116.667	Top Girt	L2 1/2x2 1/2x3/16	4	-2.04	8.37	24.4	Pass
T4	100 - 91.6667	Top Girt	L3x3x1/4	42	-6.45	20.66	31.2	Pass
T5	91.6667 - 83.3333	Top Girt	L3x3x1/4	57	-7.39	19.04	38.8	Pass
T6	83.3333 - 75	Top Girt	L3x3x1/4	72	-8.48	17.40	48.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T7	75 - 50	Top Girt	L3x3x1/4	87	-9.99	15.92	62.7	Pass
T8	50 - 25	Top Girt	L3x3x1/4	126	-11.91	12.55	94.9	Pass
T9	25 - 0	Top Girt	L4x4x1/4	164	-13.34	23.35	57.1	Pass
T4	100 - 91.6667	Inner Bracing	L2 1/2x2x3/16	50	-0.11	4.81	2.3	Pass
T5	91.6667 - 83.3333	Inner Bracing	L2 1/2x2x3/16	65	-0.13	4.36	2.9	Pass
T6	83.3333 - 75	Inner Bracing	L2 1/2x2x3/16	81	-0.15	3.96	3.7	Pass
T7	75 - 50	Inner Bracing	L2 1/2x2x3/16	120	-0.17	3.62	4.8	Pass
T8	50 - 25	Inner Bracing	L2 1/2x2x3/16	158	-0.21	2.82	7.3	Pass
T9	25 - 0	Inner Bracing	L2 1/2x2 1/2x3/16	185	-0.23	3.38	6.8	Pass
							Summary	
						Leg (T8)	85.5	Pass
						Diagonal (T9)	99.9	Pass
						Horizontal (T7)	84.4	Pass
						Top Girt (T8)	94.9	Pass
						Inner Bracing (T8)	7.3	Pass
						Bolt Checks	70.6	Pass
						RATING =	**99.9**	**Pass**

Program Version 6.0.0.8 - 9/7/2011 File:P:/08/LMU Cable Swap - Files/ERI Files/120' Stainless_Lattice_New_Haven_CT.eri

ANCHOR BOLT ANALYSIS

ANCHOR BOLT ANALYSIS

Input Data

Max Corner Reactions:

Uplift:	Uplift := 206·kips	*user input*
Shear:	Shear := 31·kips	*user input*
Compression:	Compression := 247·kips	*user input*

Anchor Bolt Data:

Use ASTM A36 (actual material strength unknown therefore assume min design values)

Number of Anchor Bolts = N	N := 6	*user input*	
Bolt Ultimate Strength:	F_u := 58·ksi	*user input*	
Bolt Yield Strength:	Fy := 36·ksi	*user input*	
Bolt Modulus:	E := 29000·ksi	*user input*	
Thickness of Anchor Bolts	D := 1.5in	*user input*	
Threads per Inch:	n := 6.0	*user input*	
Coefficient of Friction:	μ := 0.55	*user input*	(for baseplate with grout ASCE 10-97)

Anchor Bolt Area:

Gross Area of Bolt:

$$A_g := \frac{\pi}{4} \cdot D^2 \qquad A_g = 1.767 \cdot in^2$$

Net Area of Bolt:

$$A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 \qquad A_n = 1.405 \cdot in^2$$

Check Tensile Forces:

Maximum Tensile Force (Gross Area):

$$AllowableTension := 1.333 \cdot (0.33 \cdot A_g \cdot F_u) \qquad AllowableTension = 45.1 \cdot kips$$

Note: 1.333 increase allowed per TIA/EIA

Maximum Tensile Force (Net Area):

$$F_{net.area} := 1.333 \cdot (0.60 \cdot A_n \cdot Fy) \qquad F_{net.area} = 40.5 \cdot kips$$

Note: 1.333 increase allowed per TIA/EIA

Applied Tension:

$$MaxTension := \frac{Uplift}{N} \qquad MaxTension = 34.3 \cdot kips$$

Check Stresses:

$$\frac{MaxTension}{F_{net.area}} = 0.85$$

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

Condition1 = "OK"

Check Anchor Bolt Area:

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

Required Area:

$$A_{s1} := \frac{Uplift}{Fy} + \frac{Shear}{\mu \cdot 0.85 \cdot Fy} \qquad A_{s1} = 7.6\ in^2$$

$$A_{s2} := \left| \frac{Shear - (0.3 \cdot Compression)}{\mu \cdot 0.85 \cdot Fy} \right| \qquad A_{s2} = 2.6\ in^2$$

Provided Area:

$$A_{sprovided} := A_n \cdot N \qquad A_{sprovided} = 8.4\ in^2$$

$$Condition2 := if\left(\frac{A_{s1}}{A_{sprovided}} \le 1.00, "OK", "Overstressed" \right) \qquad \frac{A_{s1}}{A_{sprovided}} = 0.90$$

Condition2 = "OK"

$$Condition3 := if\left(\frac{A_{s2}}{A_{sprovided}} \le 1.00, "OK", "Overstressed" \right) \qquad \frac{A_{s2}}{A_{sprovided}} = 0.30$$

Condition3 = "OK"

FOUNDATION ANALYSIS

URS

Job	120' Stainless Tower - New Haven, CT	Project No.	HPC-069	Page / Sheet	of / 1 of 4
Description	Foundation with Rock Anchors	Computed by	MCD	Date	03/19/14
		Checked by		Date	

FOUNDATION CHECK

INPUT DATA

Max Pier Reactions:

Uplift:	$Uplift := 206 \cdot kips$	*user input*
Shear:	$Shear := 31 \cdot kips$	*user input*
Compression:	$Compression := 247 \cdot kips$	*user input*

Structure

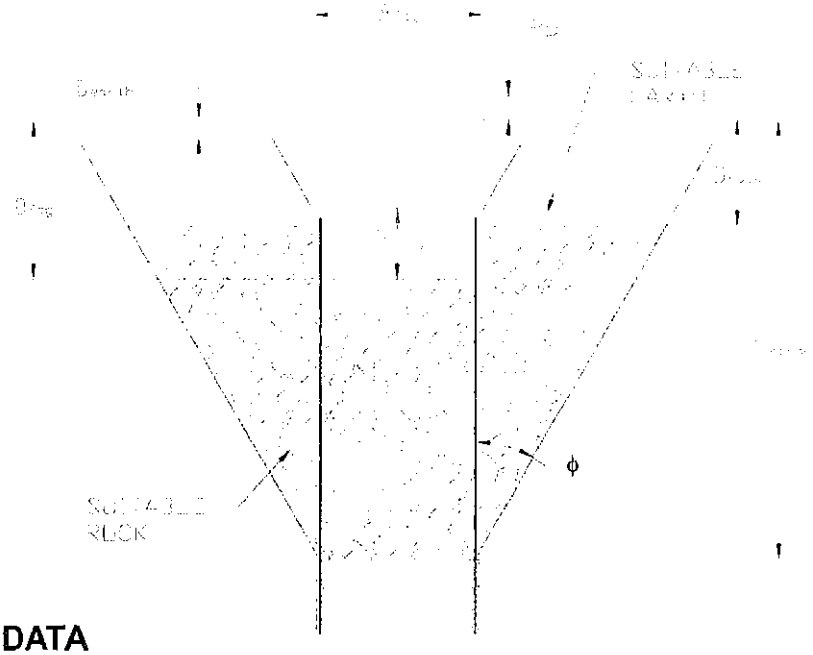
Footing Width:	$B_{ftg} := 6ft$	*user input*
Footing Length:	$L_{ftg} := 6ft$	*user input*
Footing Thickness:	$TH_{ftg} := 2.5ft$	*user input*

Depths:

Depth to Bottom of Footing: (from grade line)	$D_{ftg} := 4.0ft$	*user input*
Depth to Suitable Rock: (from grade line)	$D_{rock} := 2.0ft$	*user input*
Depth to Suitable Earth: (from grade line)	$D_{earth} := 0ft$	*user input*
Anchor Depth:	$D_{anchor} := 24.0ft$	*user input*

Soil Properties:

Internal Friction Angle:	$\phi := 45deg$	*user input*
Unit Weight of Earth:	$\gamma_{earth} := 100 \frac{lb}{ft^3}$	*user input*
Unit Weight of Rock:	$\gamma_{rock} := 178 \frac{lb}{ft^3}$	*user input*
Allowable Bearing:	$Bearing := 50000 \cdot psf$	*user input*
Pier Projection Above Grade:	$P_p := 0.5 \cdot ft$	*user input*



ROCK ANCHOR DATA

Anchors:

Number of Anchors (along width):	$NW_{anchor} := 2$	*user input*
Number of Anchors (along length):	$NL_{anchor} := 2$	*user input*
Hole Diameter:	$hole_d := 2.5in$	*user input*
Allowable Bond Stress:	$\sigma_{bond} := 100 \cdot psi$	*user input*
Anchor Spacing* (along length):	$SL_{anchor} := 3ft$	*user input*
Anchor Spacing* (along width):	$SW_{anchor} := 3ft$	*user input*
Rock Anchor Yield Strength:	$Fy_{anchor} := 150ksi$	*user input*
Rock Anchor Diameter:	$Anchor_{Dia} := 1.00in$	*user input*

Check Tensile Forces:

Force (per anchor):

$$P_{design} := \frac{Uplift}{NW_{anchor} + NL_{anchor}} \qquad P_{design} = 51.50 \cdot kips$$

Rock Anchor Allowble Tension:

$$T_{allowable} := \frac{0.6 \cdot Fy_{anchor} \cdot Anchor_{Dia}^{2} \cdot \pi}{4} \qquad T_{allowable} = 70.69 \cdot kips$$

$$TensionCheck := if\left(\frac{P_{design}}{T_{allowable}} \le 1.00, "OK", "Overstressed"\right) \qquad \frac{P_{design}}{T_{allowable}} = 0.73$$

TensionCheck = "OK"

CALCULATE RESISTANCE

Intermediate Dimensions:

Suitable Earth Height: $H := D_{rock} - D_{earth}$ $H = 2.00\,ft$

Suitable Rock Height: $Z := D_{anchor} - D_{earth} - D_{rock}$ $Z = 22.00\,ft$

Total Anchor Width: $W := (NW_{anchor} - 1) \cdot SW_{anchor}$ $W = 3.00\,ft$

Total Anchor Length: $L := (NL_{anchor} - 1) \cdot SL_{anchor}$ $L = 3.00\,ft$

Earth Above Footing: $PD := D_{ftg} - D_{earth} - TH_{ftg}$ $PD = 1.50\,ft$

Volumes:

Gross Volume:

$GV_1 := W \cdot L \cdot (Z + H)$ $GV_1 = 216.00 \cdot ft^3$

$GV_2 := \left[\frac{1}{2} \cdot (Z + H) \cdot \tan(\phi) \cdot (Z + H)\right] \cdot (W + L) \cdot 2$ $GV_2 = 3456.00 \cdot ft^3$

$GV_3 := \frac{1}{3} \cdot \pi \cdot [(Z + H) \cdot \tan(\phi)]^2 \cdot (Z + H)$ $GV_3 = 14476.46 \cdot ft^3$

$GV := GV_1 + GV_2 + GV_3$ $GV = 18148.46 \cdot ft^3$

Rock Volume:

$RV_1 := W \cdot L \cdot (H)$ $RV_1 = 18.00 \cdot ft^3$

$RV_2 := \left[\frac{1}{2} \cdot (Z) \cdot \tan(\phi) \cdot (Z)\right] \cdot (W + L) \cdot 2$ $RV_2 = 2904.00 \cdot ft^3$

$RV_3 := \frac{1}{3} \cdot \pi \cdot [(Z) \cdot \tan(\phi)]^2 \cdot (Z)$ $RV_3 = 11150.56 \cdot ft^3$

$RV := RV_1 + RV_2 + RV_3$ $RV = 14072.56 \cdot ft^3$

Volume of Neglect Above Footing:

$NV_1 := B_{ftg} \cdot L_{ftg} \cdot H$ $NV_1 = 72.00 \cdot ft^3$

$NV_2 := \left[\frac{1}{2} \cdot (PD) \cdot \tan(\phi) \cdot (PD)\right] \cdot (B_{ftg} + L_{ftg}) \cdot 2$ $NV_2 = 27.00 \cdot ft^3$

$NV_3 := \frac{1}{3} \cdot \pi \cdot [(PD) \cdot \tan(\phi)]^2 \cdot (PD)$ $NV_3 = 3.53 \cdot ft^3$

$NV := NV_1 + NV_2 + NV_3$ $NV = 102.53 \cdot ft^3$

Total Suitable Earth Volume: $EV := GV - RV - NV$ $EV = 3973.37 \cdot ft^3$

Resisting Forces:

Resisting Rock Force: $F_{rock} := RV \cdot \gamma_{rock}$ $F_{rock} = 2504.92 \cdot kips$

Resisting Earth Force: $F_{earth} := EV \cdot \gamma_{earth}$ $F_{earth} = 397.34 \cdot kips$

Total Resisting Force: $F_{total} := F_{rock} + F_{earth}$ $F_{total} = 2902.25 \cdot kips$

Check Uplift:

$$Condition1 := if\left(\frac{F_{total}}{Uplift} \geq 2.00, "OK", "Overstressed"\right) \qquad \frac{F_{total}}{Uplift} = 14.09$$

Condition1 = "OK"

Embedment Length:

$$L_b := \frac{P_{design}}{\pi \cdot hole_d \cdot \sigma_{bond}} \qquad L_b = 5.46\,ft$$

$$Condition2 := if\left(\frac{Z}{L_b} \geq 2.00, "OK", "Overstressed"\right) \qquad \frac{Z}{L_b} = 4.03$$

Condition2 = "OK"

Check Bearing (with Post tension Force included):

$$MaxBearing := \left[\frac{Compression + \left(NW_{anchor} + NL_{anchor}\right)\left(P_{design}\right)}{B_{ftg} \cdot L_{ftg}}\right] + \frac{Shear \cdot \left(D_{ftg} + P_p\right)}{\left(\frac{B_{ftg} \cdot L_{ftg}^{\,2}}{6}\right)} \qquad MaxBearing = 16458.33 \cdot psf$$

$$Condition3 := if\left(\frac{MaxBearing}{Bearing} \leq 1.00, "OK", "Overstressed"\right) \qquad \frac{MaxBearing}{Bearing} = 0.33$$

Condition3 = "OK"

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: CT11086B

New Haven / WC X59

142 Baldwin Drive
New Haven, CT 06515

April 3, 2014

EBI PROJECT NUMBER: 62142010

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

EBI Consulting
environmental | engineering | due diligence

April 3, 2014

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

Re: Emissions Values for Site: **CT11086B - New Haven / WC X59**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 142 Baldwin Drive, New Haven, 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 142 Baldwin Drive, New Haven, 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 (1935.000 MHz—to 1945.000 MHz / 1980.000 MHz—to 1985.000 MHz) were considered for each sector of the proposed installation.
2) 2 UMTS channels (2110.000 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 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 **95 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 calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT11086B - New Haven / WC X59
Site Addresss	142 Baldwin Drive, New Haven, CT 06515
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	95	89	None	0	0	48.326044	2.193346	0.21933%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	95	89	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	95	89	1-5/8"	0	0	24.163022	1.096673	0.10967%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	95	89	1-5/8"	0	0	24.163022	1.096673	0.10967%
														Sector total Power Density Value:		0.439%	

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	95	89	None	0	0	48.326044	2.193346	0.21933%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	95	89	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	95	89	1-5/8"	0	0	24.163022	1.096673	0.10967%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	95	89	1-5/8"	0	0	24.163022	1.096673	0.10967%
														Sector total Power Density Value:		0.439%	

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	95	89	None	0	0	48.326044	2.193346	0.21933%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	95	89	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	95	89	1-5/8"	0	0	24.163022	1.096673	0.10967%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	95	89	1-5/8"	0	0	24.163022	1.096673	0.10967%
														Sector total Power Density Value:		0.439%	

Site Composite MPE %	
Carrier	MPE %
T-Mobile	1.316%
AT&T	8.000%
CTT	1.730%
CSP	3.170%
Sprint	14.710%
DOT	1.400%
FBI	8.500%
IRS	3.350%
OEM	2.900%
Total Site MPE %	**45.076%**

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environmental | engineering | due diligence

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 **1.316 % (0.439% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **45.076%** of the allowable FCC established general public limit sampled at the ground level. 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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