COHEN and WOLF P.C.
ATTORNEYS AT LAW

RACHEL A. SCHWARTZMAN

Please Reply To: Bridgeport
Writer's Direct Dial: (203) 337-4110
E-Mail: rschwartzman@cohenandwolf.com

August 29, 2014

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06501

Re: Notice of Exempt Modification
Fred Callahan/T-Mobile co-location
T-Mobile Site ID CT11174A
99 Cedarwood Lane, Newington, CT (aka 2111 Berlin Turnpike, Newington, 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, Fred Callahan owns the existing guyed lattice telecommunications tower and related facility at 99 Cedarwood Lane Newington, CT (aka 2111 Berlin Turnpike, Newington, CT) (-72.70856/41.69428). T-Mobile intends to replace 3 existing antennas with 3 new antennas and related equipment at this existing telecommunications facility in Newington ("Newington Facility"). Please accept this letter as notification, pursuant to R.C.S.A. §16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R. C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mayor Stephen Woolds, and the property owner, the Callahan Qualified Personal Residence.

The existing Newington Facility consists of a 170-foot guyed lattice tower.[1] T-Mobile plans to replace 3 existing panel antennas with 3 new panel antennas at a centerline of 163 feet. (See the plans revised to August 5, 2014 attached hereto as **Exhibit A**). T-Mobile will also install coax cables routed with existing coax cables, install radio remote units mounted on H-frames attached to an existing ice bridge post, and install bias tees. The existing Newington Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated August 22, 2014, and attached hereto as **Exhibit B**.

[1] While the online docket for the Connecticut Siting Council does not provide a docket or petition number for approval of this structure, it does reference this structure in connection with a notice of intent captioned EM-NEXTEL-094-060407, EM-POCKET-094-080917, EM-T-MOBILE-094-090113, and EM-CLEARWIRE-094-100311.

COHEN and WOLF P.C. ATTORNEYS AT LAW

The planned modifications to the Newington 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 existing antennas are at a centerline of 163 feet; the replacement antennas will be installed at the same 163 foot level. 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 on the site boundaries or lease area, as depicted on Sheet 1 of Exhibit A. T-Mobile's equipment will be located entirely within the existing compound area.

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

4. The operation of the replacement antennas will not increase the total radio frequency (RF) power density, measured at the base of the tower, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated August 28, 2014. T-Mobile's operations would add 5.29% 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 88.39% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as **Exhibit C.**

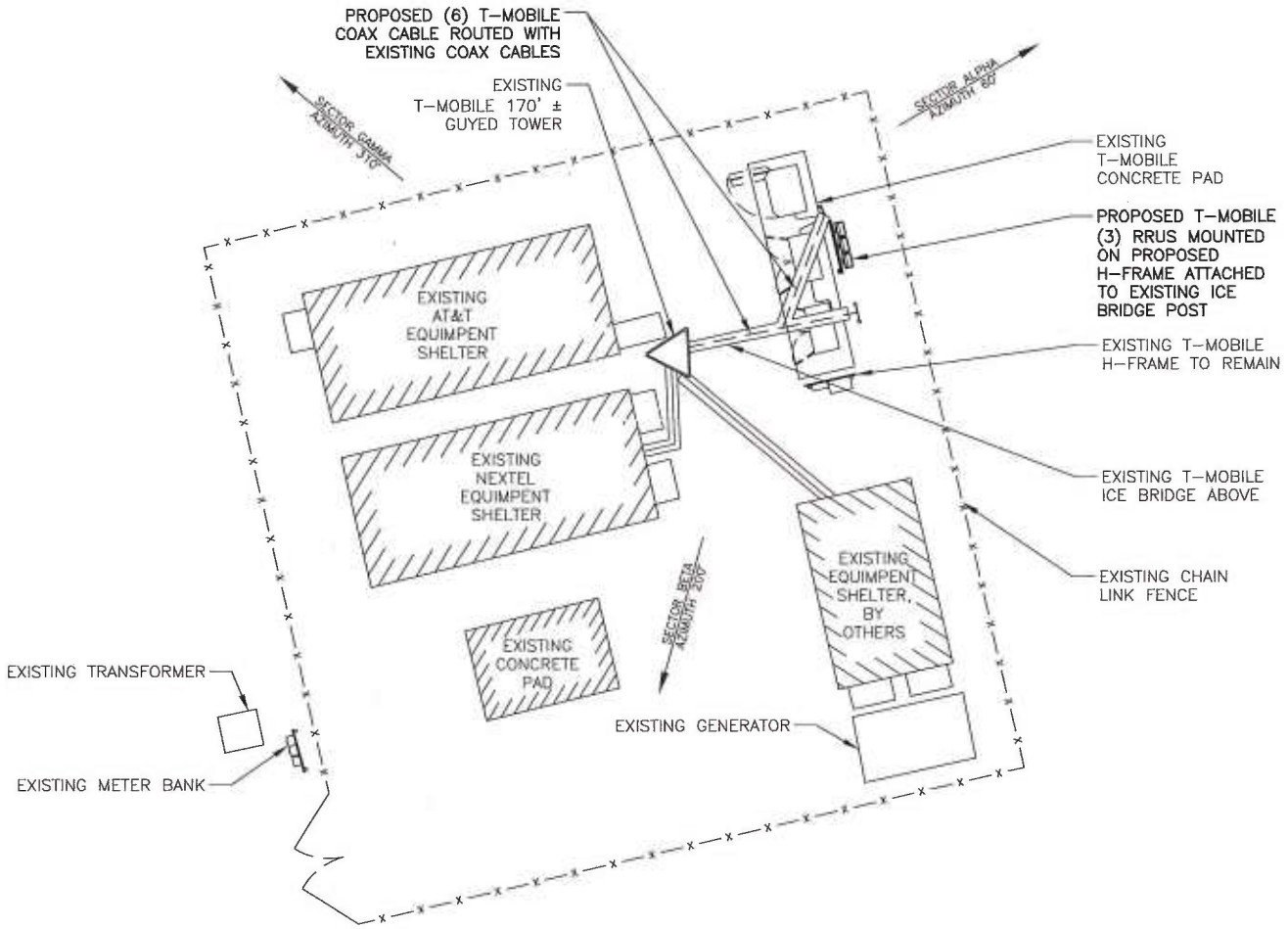
For the foregoing reasons, T-Mobile respectfully submits that the proposed replacement antennas and equipment at the Newington Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement of this exempt modification, T-Mobile shall commence construction approximately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

Sincerely,

Rachel A. Schwartzman, Esq.

cc: Mayor Stephen Woods, Town of Newington
Fred Callahan
The Callahan Qualified Personal Residence
Jamie Ford, EBI Consulting

EXHIBIT A



CONFIGURATION

704BU

APPROX. NORTH

NOTE:
ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE STRUCTURAL AND RF ENGINEERS.

SITE PLAN

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

PREPARED BY:
EBI Consulting
environmental | engineering | due diligence
21 B Street | Burlington, MA 01803
Tel: (781) 273-2500 | Fax: (781) 273-3311
www.ebiconsulting.com
EBI JOB NO.: 81140795

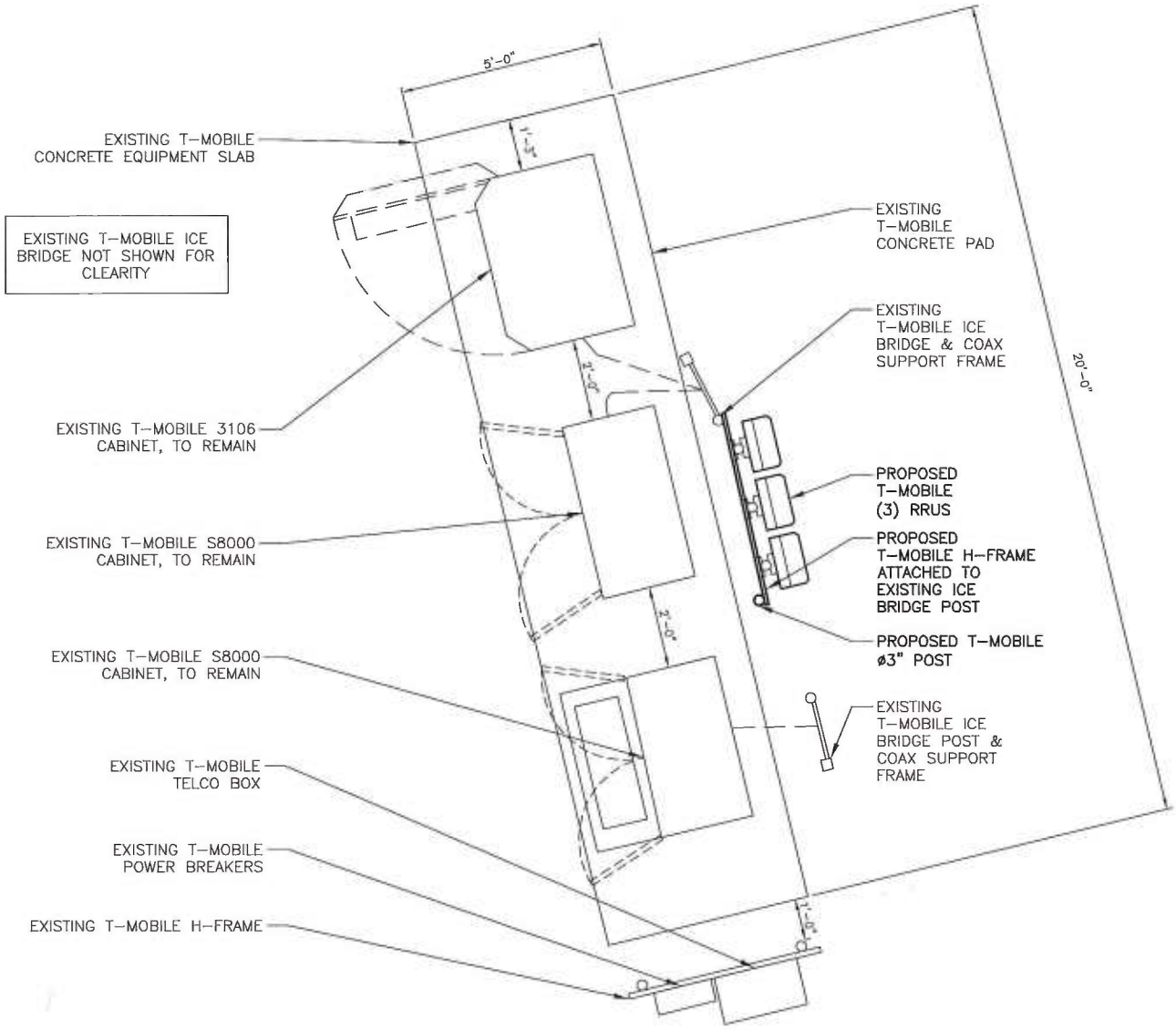
CLIENT:
T-Mobile Northeast, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860.692.7100

SITE INFO:
CT11174A
CALLAHAN
TOWER_1
99 CEDARWOOD LANE (BERLIN TPKE)
NEWINGTON, CT, 06111

SUBMITTALS			
NO.	DATE	DESCRIPTION	BY
A	08/05/14	FOR REVIEW	SH

DRAWN BY: SH
CHECKED BY: PM
DATE: 07/28/14

SHEET NO: LE-1



CONFIGURATION

704BU

APPROX. NORTH

NOTE:
ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE STRUCTURAL AND RF ENGINEERS.

EQUIPMENT PLAN

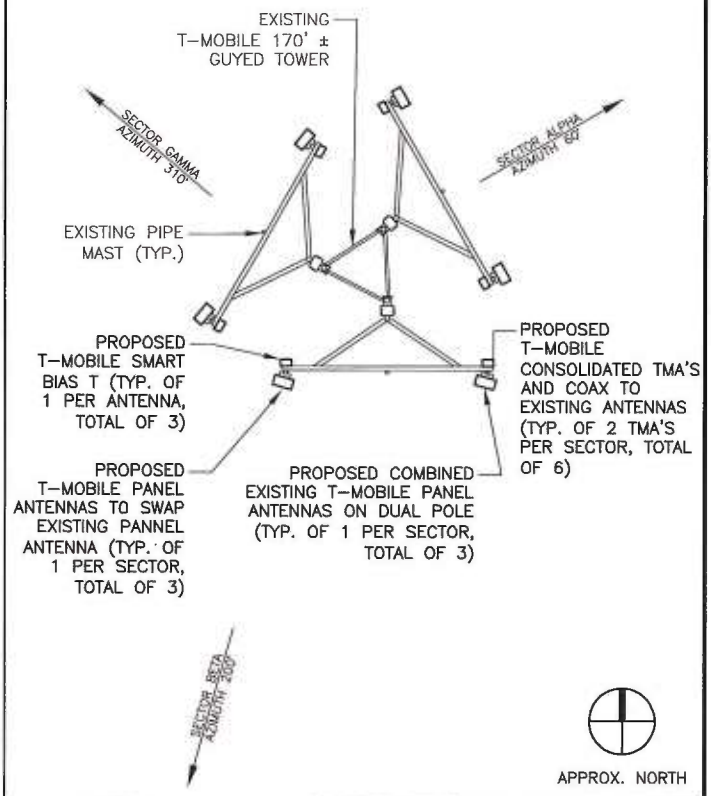
SCALE: 1/4" = 1'-0"

PREPARED BY:
EBI Consulting
environmental | engineering | due diligence
21 B Street | Burlington, MA 01803
Tel: (781) 273-2500 | Fax: (781) 273-3311
www.ebiconsulting.com
EBI JOB NO.: 81140795

CLIENT:
T-Mobile Northeast, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860.692.7100

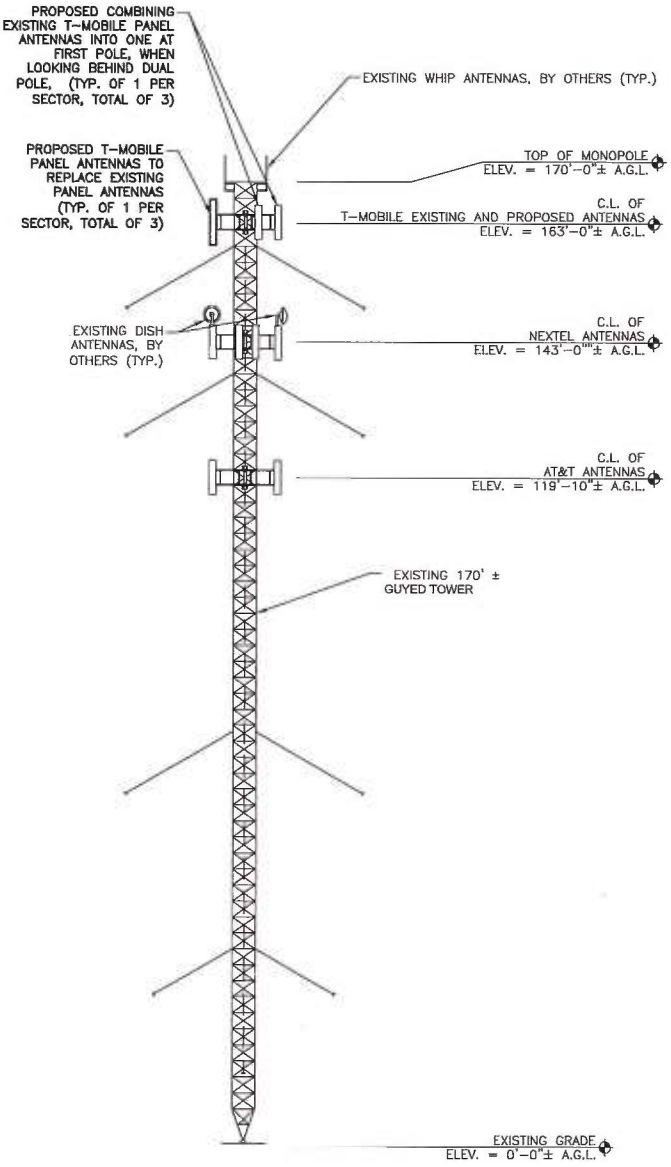
SITE INFO:
CT11174A
CALLAHAN
TOWER_1
99 CEDARWOOD LANE (BERLIN TPKE)
NEWINGTON, CT, 06111

SUBMITTALS				DRAWN BY:	SHEET NO:
NO.	DATE	DESCRIPTION	BY	SH	LE-2
A	08/05/14	FOR REVIEW	SH	CHECKED BY: PM	
				DATE: 07/28/14	



ANTENNA CONFIGURATION

NTS



CONFIGURATION

704BU

NOTE:
ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE STRUCTURAL AND RF ENGINEERS.

TOWER ELEVATION

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

PREPARED BY:
EBI Consulting
environmental | engineering | due diligence
21 B Street | Burlington, MA 01803
Tel: (781) 273-2500 | Fax: (781) 273-3311
www.ebiconsulting.com
EBI JOB NO.: 81140795

CLIENT:
T-Mobile Northeast, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860.692.7100

SITE INFO:
CT11174A
CALLAHAN
TOWER_1
99 CEDARWOOD LANE (BERLIN TPKE)
NEWINGTON, CT, 06111

SUBMITTALS

NO.	DATE	DESCRIPTION	BY
A	08/05/14	FOR REVIEW	SH

DRAWN BY: SH
CHECKED BY: PM
DATE: 07/28/14

SHEET NO: LE-3

EXHIBIT B

DETAILED STRUCTURAL ANALYSIS AND REINFORCEMENT OF AN EXISTING 170' GUYED TOWER FOR PROPOSED ANTENNA ARRANGEMENT

Site ID: CT11174A
Site Name: Callahan Tower
Address: 2111 Berlin Turnpike
Newington, CT

prepared for

T-Mobile

EBI Consulting
21 B Street
Burlington, MA 01803

prepared by

URS

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

36931279.00000
EBI-001

August 22, 2014

URS | Quality - It's Good Business

QMS Form 3-6 (MM)
Rev. 2013 QMS
Date: 13 July 2014

IE QMS - Americas

Independent Technical Review

Project Name	Structural Analysis - MODification	**Client**	EBI Consulting / T-Mobile
Project Location	~~99 Cedarwood Lane~~, Newington, CT	**PM**	Naish Artaiz
Project Number	369#####.00000 / EBI-001 369312	**PIC**	Naish Artaiz

Identifying Information

(This section is to be completed by the Project Manager or the PM's Designee.)

Assigned Reviewer: Name of Reviewer — Comments Required by: ~~Click to enter a date~~ 8/22/14

Work Product Originator: Michael Dalickas

Work Product to be Reviewed: Review proposed antenna upgrades and tower reinforcing with existing guyed structure

Review Scope: Verify calculations and existing tower inventory and method of tower reinforcement

Specific Instructions: TIA-222-F (ASD); Hartford County → 80 MPH max wind/69mph wind w/ ice

Submitted by: _____ 8/20/14
Project Manager Signature — **Date**

Comments

(This Section is to be completed by the Reviewer.)

Select:

A. ☐ Reviewer has no comments.

or

B. ☐ Comments have been provided on:

- ☑ Marked directly on work product
- ☑ Comment and Disposition Form 3-5
- ☐ Other; Specify: Click to enter text

_____ 8/21/14
Reviewer Signature — **Date**

Verification

(This section is to be completed by the Reviewer after verification of comment incorporation, if box B is checked off above.)

Select:

C. ☐ Verification of comment incorporation has been performed by Reviewer. There are no outstanding issues.

or

D. ☐ Verification of comment incorporation has been performed by Reviewer. Unresolved issues have been submitted to the Project Manager or Designee for resolution.

and

E. ☐ Reviewer asserts that the work product ITR is complete.

_____ _____
Reviewer Signature — **Date**

APPROVAL and DISTRIBUTION

☐ ITR is complete.

_____ Click here to enter a date
Project Manager or Designee Signature — **Date**

Distribution:

Project Central File – Quality File Folder

Other – Specify: Enter names here

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis of the modified, previously reinforced, 170' guyed tower structure located at 2111 Berlin Turnpike, Newington, CT. The analysis was conducted in accordance with the 2005 Connecticut State Building Code and the TIA/EIA-222-F standard for a wind velocity of 80 mph (fastest mile) and 69 mph (fastest mile) concurrent with ½" ice. The antenna loading considered in the analysis consists of all the existing antennas, transmission lines and ancillary items as outlined in the Introduction Section of this report.

The proposed T-Mobile antenna arrengements are as follows:

Antenna and Mount	Carrier	Antenna Center Elevation
Remove:		
(3) RFS APX15PV_15PV Panel Antennas	**T-Mobile**	**@ 163'**
Install:		
(3) Commscope LNX-6515DS-VTM Panel Antennas **(6) 1 5/8" Coax Cables** **(3) Bias T Units**	**T-Mobile**	**@ 163'**

The results of an initial analysis indicated the tower structure did not have sufficient capacity to support the proposed loadings without modification. The foundation, guy anchors and guy wires have sufficient capacity to support the proposed loadings without modification. The required tower modifications are shown in SK-1 thru SK-3. **Once the modifications are performed, the tower is considered adequate with the wind loading classification specified above and all the existing and proposed antenna loading. No installation of new antennas or equipment shall occur until the modifications have been completed.**

The analysis results presented herewith are based upon tower modifications proposed by URS Corporation tower modification report, project 36931230 / CAL-001, signed and sealed August 14, 2014. If the tower has not been modified to the specifications proposed by URS, please notify the engineer in writing immediately.

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) Original manufacturers drawings prepared by Charles Burns, P.E. on behalf of Mohawk Towers, dated December 1997.
3) Structural Analysis Report prepared by KM Consulting Engineers, signed and sealed on March 30, 2009.
4) Revised Structural Analysis Report prepared by GPD Associates, signed and sealed on June 5, 2009.
5) Structural Analysis Report prepared by Bay State Design, Inc., on behalf of Clearwire, signed and sealed on April 7, 2010.
6) Revised Structural Analysis Report prepared by Hudson Design Group, on behalf of AT&T, signed and sealed on June 13, 2012.
7) Geotechnical Engineering Report prepared by Terracon Consultants, Inc., dated August 24, 2012.
8) Structural Analysis Report – Upgrade, prepared by Atlantis Group on behalf of T-Mobile, signed and sealed on August 29, 2012.
9) Tower Inventory and transmission cable layout review performed by Roadrunner, Inc. sent via fax, dated July 10, 2014.
10) Tower Reinforcement and Structural Analysis, prepared by URS on behalf of Callahan Acres, project 36931230 / CAL-001, signed and sealed August 14, 2014.
11) Antenna and mount configuration as specified on the following page of this report.

This report is only valid as per the assumptions and data utilized in this report for antenna inventory, mounts and associated cables. The user of this report shall field verify the assumption of the antenna and mount configuration 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

cc: CF/Book – URS

2. INTRODUCTION

The subject tower is located at 2111 Berlin Turnpike in Newington, CT. The structure is a 170' guyed tower structure designed by Rohn Industries.

The inventory is summarized in Table 1:

Table 1: Antenna and Mount Configuration

Antenna Type	*Carrier*	*Mount*	*Antenna Centerline Elevation*	*Cable*
(1) DS4C03F36U-D (2) SC473-HF1LDF (1) TXRX 430-83H-01-M-X7 TTA Unit	Wethersfield (existing)	(2) 5' Side Mount Standoffs & (1) 1' Side Mount Standoff @ 170'	175'	(2) 7/8" (1) 1 5/8" (1) 1/2"
(1) RFD SC2-W100BC Dish	Wethersfield (existing)	Leg Mounted	167'	(1) 1/2"
(3) Commscope LNX-6515DS-VTM Panel Antennas (3) Bias T Units	**T-Mobile (Proposed)**	See Below Mount	163'	**(6) 1 5/8" Coax Cables**
(3) APX16DWV Panel Antennas (3) APX19PV-15PV Panel antennas (6) TMA Units	T-Mobile (existing)	(3) 12' T-Frame Sector Mounts	163'	(12) 1 5/8"
(1) VHLP2-180 Dish	Clearwire (existing)	Leg Mounted	146'	(1) 1/2"
(1) VHLP800-11 Dish (1) VHLP2-180 Dish	Clearwire (existing)	Leg Mounted	145'-6"	(2) 1/2"
(3)LLRx310R-V1 Panel Antennas	Clearwire (existing)	See below Mount	143'	(2) 2" Rigid Cables
(12) 844G65VTASX Panel Antennas (3) RRH Units	Sprint (existing)	(3) 12' T-Frame Sector Mounts	141'	(9) 1 1/4"
(6) Powerwave 7770 Panel Antennas (3) AM-X-CD-16-65-00 Panel Antennas (6) LGP 21400 TMA Units (6) LGP 21900 Diplexers (6) Powerwave 7020 RET's (6) RRH Units (1) DC6-48-60-18-8F Surge Arrestor	AT&T (existing)	(3) 12' T-Frame Sector Mounts	120'	(12) 7/8" (1) 3/8" F.O. Cable (2) 3/4" DC Cables
(3) 6'x6"x3" Panel Antennas	Pocket Wireless (existing)	Leg Mounted	109'	(6) 1 5/8"
(2) GPS Units	Town (existing)	Leg Mounted	50'	(2) LMR-400

This structural analysis of the communications tower was performed by URS Corporation (URS) for the T-Mobile. The purpose of this analysis was to investigate the structural integrity of the existing tower with its existing and proposed antenna loads. This analysis was conducted to evaluate stress on the tower and the effect of forces to the foundation of the tower resulting from existing and proposed antenna arrangements.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS

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

The analysis was conducted using TNX Tower 6.1.3.1. Two load conditions were evaluated as shown below which were compared to allowable stresses according to AISC and TIA/EIA.

Load Condition 1 = 80 mph (fastest mile) Wind Load (without ice) + Tower Dead Load
Load Condition 2 = 69 mph (fastest mile) Wind Load (with ice) + Ice Load + Tower Dead Load

Please note that wind pressure is a function of velocity squared. Under Load Condition 2, a 25 percent reduction in wind pressure is allowed by code to account for the unlikelihood of the full wind pressure and ice load occurring at the same time. The same results may be achieved by utilizing a lower wind pressure without taking the 25 percent reduction, as shown above.

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

Combined axial and bending stresses on the guyed tower structure were evaluated to compare with allowable stresses in accordance with AISC. The calculated stresses for portions of the structure were below the allowable stresses under the proposed configuration and loading. Detailed analysis and calculations for the proposed load condition are provided in section 6 of this report.

Table 1: Tower Component Stress vs. Capacity Summary Table:

Component / Section No.	*Controlling Component / Elevation*	*Stress (% Capacity)*	*Pass/Fail*	*Comments*
Tower Leg (T4)	ROHN 2 STD / 100' – 120'	98.5	**Pass**	
Diagonal (T2)	Pipe 1.5x16GA / 140' – 155'	82.0	**Pass**	
Secondary Horizontal (T3)	L1 3/4x1 3/4x1/4" / 120' – 140'	37.7	**Pass**	
Top Girt (T7)	Pipe 1.5 x 16GA / 40' – 60'	27.9	**Pass**	
Bottom Girt (T9)	Rohn 1.5 SCH 80 (XS) Pipe / 5' – 20'	79.1	**Pass**	
Mid Girt (T10)	3x1/4" Welded Plate / 0'-5'	1.6	**Pass**	
Guy @ 155'	EHS 1/2"	59.9	**Pass**	
Guy @ 132'	EHS 7/8"	51.5	**Pass**	
Guy @ 90'	EHS 7/16"	72.6	**Pass**	
Guy @ 50'	EHS 7/16"	80.3	**Pass**	
Top Guy Pull-Off (T2)	L2x2x3/16" / 155' – 170'	44.5	**Pass**	
Torque Arm Top (T3)	C12x20.7 w/ 8"x3/8" PL / 120' – 140'	98.3	**Pass**	
Connection Bolt	(1) 1/2" A325N Diagonal Member Bolt / 155'	82.0	**Pass**	
Tower Foundation	Bearing Capacity/Foundation Pad	55.9	**Pass**	
Anchor Uplift Resistance	Concrete Guy Anchor	81.1	**Pass**	See Below Note 2
Anchor Slide Resistance	Concrete Guy Anchor	97.1	**Pass**	See Below Note 2

Note 1: Connection bolts are assumed to be similar to that of ROHN Model 80 connection bolts as indicated in the Mohawk Towers Construction Plans, dated 1997.

Note 2: Concrete anchor is assumed NOT to have been anchored to rock material and buried within a Glacial Till layer as indicated in the Terracon geotechnical report, dated August 24, 2012.

The analysis results presented herewith are based upon tower modifications proposed by URS Corporation tower modification report, project 36931230 / CAL-001, signed and sealed August 14, 2014. If the tower has not been modified to the specifications proposed by URS, please notify the engineer in writing immediately.

5. CONCLUSIONS

The results of an initial analysis indicated the tower structure did not have sufficient capacity to support the existing and proposed loadings without modification. The foundation, guy anchors and guy wires have sufficient capacity to support the existing and proposed loadings without modification. The required tower modifications are shown in SK-1 thru SK-3. **Once the modifications are performed, the tower is considered adequate with the wind loading classification specified above and all the existing and proposed antenna loading. No installation of new antennas or equipment shall occur until the modifications have been completed.**

The analysis results presented herewith are based upon tower modifications proposed by URS Corporation tower modification report, project 36931230 / CAL-001, signed and sealed August 14, 2014. If the tower has not been modified to the specifications proposed by URS, please notify the engineer in writing immediately.

Limitations/Assumptions:

This report is based on the following:

1. All tower connection bolts for diagonal and horizontal members follow ROHN design standards for ROHN Model 80 tower structures, unless noted otherwise.
2. Tower inventory as listed in this report.
3. Tower is properly installed and maintained.
4. All members are as specified in the original design documents and are in good condition.
5. All required members are in place.
6. All bolts are in place and are properly tightened.
7. Tower is in plumb condition.
8. All member protective coatings are in good condition.
9. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
10. 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 conditions.

6. DRAWINGS AND DATA

TOWER REINFORCEMENT DRAWINGS (SK-1 TO SK-3)

GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL COMPLY WITH THE CONNECTICUT STATE BUILDING AND LIFE SAFETY CODES, SUPPLEMENTS AND AMENDMENTS.
2. CONTRACTOR IS TO REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUB-CONTRACTORS AND ALL RELATED PARTIES. THE SUB-CONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON DRAWINGS OR WRITTEN IN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION AND ELECTRICAL SUB-CONTRACTORS SHALL PAY FOR THEIR PERMITS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND ENSURE THE DISTRIBUTION OF NEW DRAWINGS TO SUB-CONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. CONTRACTOR SHALL FURNISH 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. INSTALLATION OF THIS WIRELESS COMMUNICATIONS EQUIPMENT SITE REQUIRES WORK IN THE IMMEDIATE VICINITY OF EXISTING TELECOMMUNICATION SYSTEMS, THE CONTRACTOR SHALL PROVIDE AND COORDINATE THE METHODS OF PROTECTION WITH THE VARIOUS TELECOMMUNICATION CARRIERS AND THE TOWER OWNER.
8. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER MFR'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR ARCHITECT.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
10. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ARCHITECT FOR REVIEW. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTAL TO THE ARCHITECT FOR REVIEW.
11. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA. SUBMIT TO THE ARCHITECT ANY DISCREPANCIES FROM THE DRAWINGS.
12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURE AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC, THAT MAY BE NECESSARY.
13. COORDINATE ALL CIVIL AND ELECTRICAL DRAWINGS FOR THE LOCATION OF ALL OPENINGS, RECESSES, BUILT-IN WORK, ETC.
14. CONTRACTOR TO CONTACT "CALL BEFORE YOU DIG" AT 1-800-922-4455 TO VERIFY AND IDENTIFY THE EXACT LOCATIONS OF ALL UNDERGROUND UTILITIES AND OBSTRUCTIONS IDENTIFIED PRIOR TO COMMENCING WORK IN THE CONTRACT AREA.
15. CONTRACTOR SHALL COMPLY WITH OWNER ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
16. EXISTING DIMENSIONS OF STRUCTURE SHOWN ON THESE DOCUMENTS ARE NOT GUARANTEED. CONTRACTOR SHALL TAKE FIELD DIMENSIONS AS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FIELD MEASUREMENT ARE SUBMITTED FOR REVIEW, DIMENSIONS ARE PROVIDED FOR THE ENGINEER'S REFERENCE ONLY.
17. CONTRACTOR TO VERIFY REQUIRED CLEARANCES INCLUDING BUT NOT LIMITED TO EXISTING BUILDINGS, EQUIPMENT PADS AND SHELTERS PRIOR TO COMMENCING WORK.

STRUCTURAL NOTES

STRUCTURAL STEEL:

STRUCTURAL STEEL BEAMS, CHANNELS, PLATES & ANGLES . . . . . ASTM A36
LEG PIPE COLUMN . . . . . ASTM A572 GRADE 50
STUB COLUMNS FY=46 KSI . . . . . ASTM A500
BOLTS . . . . . ASTM A325-N & A490-N
STRUCTURAL STEEL SHALL CONFORM TO ALL REQUIREMENTS OF THE 1999 AISC-LRFD SPECIFICATION, AS REFERENCED IN THE CODE.

UNLESS OTHERWISE NOTED, ALL STEEL WILL BE GALVANIZED IN ACCORDANCE WITH ASTM 123 AFTER FABRICATION. TOUCH UP ALL DAMAGED GALVANIZED STEEL WITH APPROVED COLD ZINC, 'GALVANOX", "DRY GALV", "ZINC-IT", OR APPROVED EQUIVALENT, IN ACCORDANCE WITH MANUFACTURERS GUIDELINES TOUCH-UP DAMAGED NON GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.

SHOP AND ERECTION DRAWINGS SHALL BE SUBMITTED FOR ALL STRUCTURAL STEEL WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. SUBMIT 2 SETS OF PRINTS FOR THE ENGINEER REVIEW.

EXISTING DIMENSIONS OF STRUCTURE SHOWN ON THESE DOCUMENTS ARE NOT GUARANTEED. CONTRACTOR SHALL TAKE FIELD DIMENSIONS AS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FIELD MEASUREMENT ARE SUBMITTED FOR REVIEW, DIMENSIONS ARE PROVIDED FOR THE ENGINEER'S REFERENCE ONLY.

CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4" AND MINIMUM OF (2) 3/4" BOLTS, U N O

ALL BOLT HOLES WILL BE DRILLED OR PUNCHED, WITH BURRS REMOVED PRIOR TO COATING.

MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.

THE OMISSION OF ANY MATERIAL THAT WAS SHOWN ON THE CONTRACT DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF PROVIDING THE SAME.

ALL WELDING SHALL BE DONE BY A CERTIFIED WELDER IN ACCORDANCE WITH AWS STANDARDS, USING E70XX ELECTRODES UNLESS OTHERWISE NOTED, WHERE WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZES PER "PREQUALIFIED WELDED JOINTS" TABLES IN AISC "MANUAL OF STEEL CONSTRUCTION", NINTH EDITION.

CONNECTIONS / FIELD ASSEMBLY:

BOLTED CONNECTIONS: UNLESS OTHERWISE NOTED, ALL JOINTS ARE SLIP CRITICAL TYPE, REQUIRING 3/4" DIA, A325-N BOLTS, A563 NUTS AND F436 WASHERS, ALL GALVANIZED. BEVELED WASHERS SHALL BE USED ON BEAM FLANGES HAVING A SLOPE GREATER THAN 1:20.

NON-STRUCTURAL CONNECTIONS, SUCH AS FOR STEEL GRATING, MAY USE 5/8" DIA GALVANIZED ASTM A307 BOLTS, UNLESS OTHERWISE NOTED

STRUCTURE IS DESIGNED TO BE LEVEL AND PLUMB, SELF-SUPPORTING AND STABLE AFTER WORK IS COMPLETED.

COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.

IF WELDING GALVANIZED MATERIALS, USE PRECAUTIONS & PROCEDURES PER AWS D1.1.

THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION. NO MEMBER OF THE TOWER SHALL BE LEFT DISCONNECTED FOR THE NEXT WORKING DAY. THE CONTRACTOR SHALL BE AWARE OF WEATHER AND WIND CONDITIONS AND NOT PERFORM MEMBER REPLACEMENT IN A WIND.

INSPECTIONS:

SPECIAL INSPECTIONS ARE REQUIRED PER THE CODE FOR STRUCTURAL STEEL WORK.

OWNER WILL SUPPLY THE SERVICES OF A SPECIAL INSPECTOR AND TESTING AGENTS AS REQUIRED. CONTRACTOR SHALL COORDINATE INSPECTIONS OF FABRICATOR'S AND ERECTOR'S WORK AND MATERIALS TO MEET THE REQUIREMENTS OF THE STATEMENT OF SPECIAL INSPECTIONS FOR THIS PROJECT

COPIES OF TESTING AND INSPECTION REPORTS WILL BE PROVIDED TO THE OWNER, BUILDING OFFICIAL, ENGINEER OF RECORD AND CONTRACTOR.

PROJECT NO. 36931279
Signed by: MCD
Drawn by: MCD
Checked by: KAB
Approved by: RAS

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

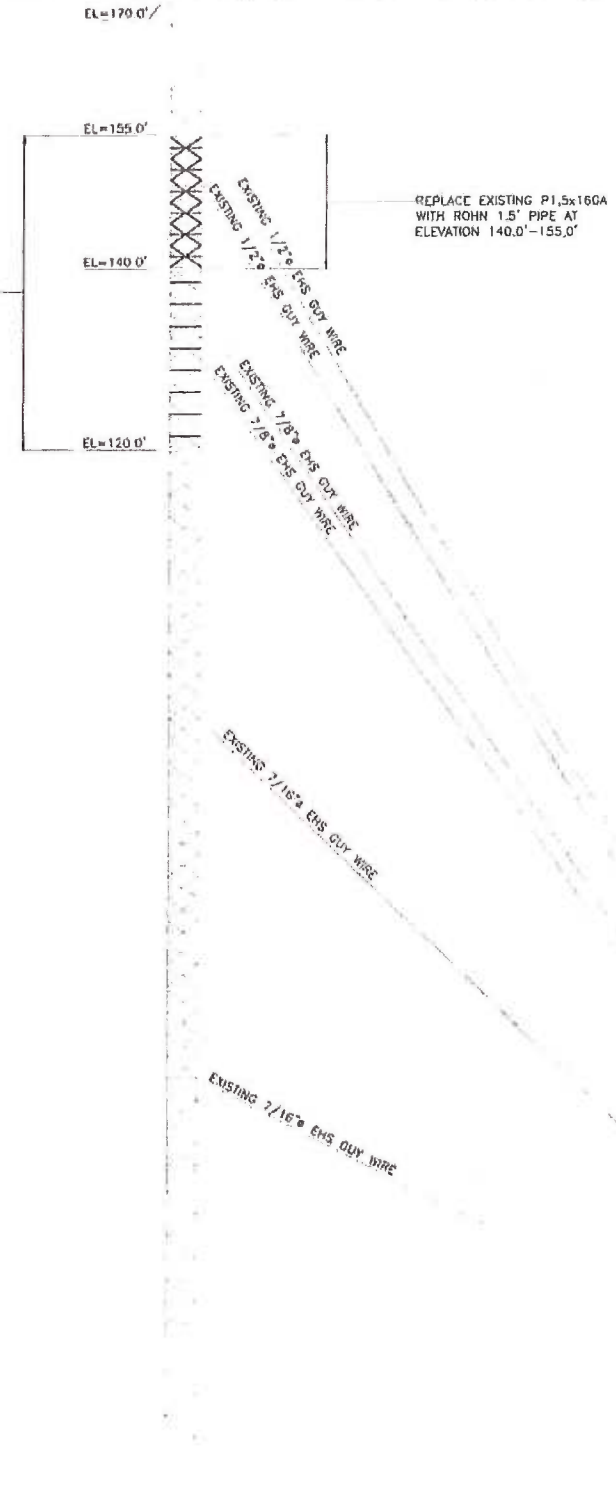
CALLAHAN TOWER - CT11174A
SITE ADDRESS: 2111 BERLIN TURNPIKE
NEWINGTON, CONNECTICUT 06111

REV.	DATE:	DESCRIPTION

Scale: AS NOTED | Date: 08/22/14
Job No EBI-001 | File No.

Dwg No. SK-1
Dwg. 1 of 3

SEE SHEET SK-1 FOR STRUCTURAL NOTES.



1 / SK-2 TOWER ELEVATION - REINFORCEMENT

SCALE: 1" = 20'-0"

NOTE: REFER TO SK-3 FOR ADDITIONAL TOWER REINFORCEMENT REQUIREMENTS

NOTE: REINFORCEMENT OF MEMBERS SHALL BE GALVANIZED AND PAINTED TO MATCH EXISTING TOWER PAINT SEQUENCE PER TIA AND FAA REGULATIONS.

PROJECT NO. 16931279
gned by: MCD
Drawn by: MCD
Checked by: KAB
Approved by: RAS

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

T-Mobile

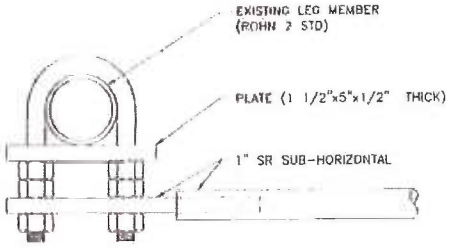
CALLAHAN TOWER - CT11174A
SITE ADDRESS: 2111 BERLIN TURNPIKE
NEWINGTON, CONNECTICUT 06111

REV	DATE:	DESCRIPTION

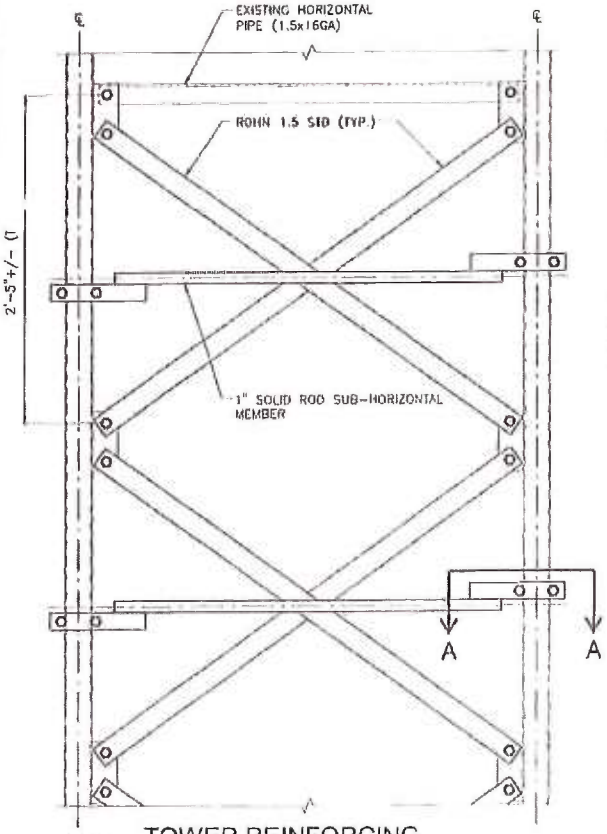
Scale: AS NOTED | Date: 08/22/14
Job No: EBI-001 | File No.

Dwg. No. SK-2

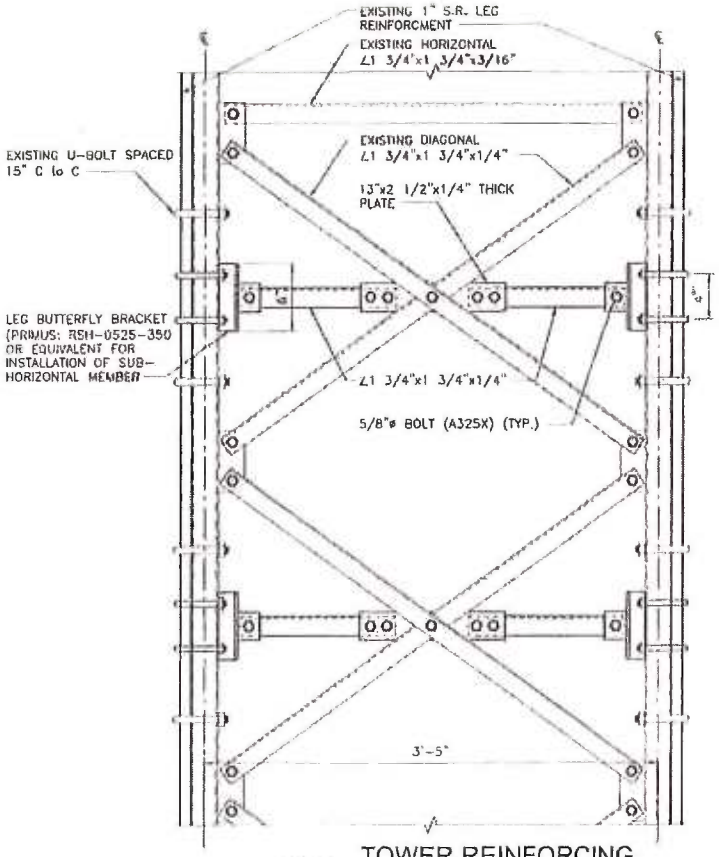
NOTE:
SOLID ROD SUB-HORIZONTAL BRACING (IN DETAIL 1) TAKEN FROM STRUCTURAL COMPONENTS OF BOULDER, COLORADO, PART NUMBERS ARE FOR DESCRIPTION PURPOSES NEW HORIZONTAL BRACING REINFORCEMENT SHALL BE, AT MINIMUM, EQUIVALENT TO THE DETAIL(S) SHOWN LOCATE HORIZONTAL BRACING AS CLOSE TO DIAGONAL CONNECTION WITHOUT CREATING A CONFLICT WITH EXISTING MEMBER(S).



3 / SK-3 SECTION A-A
SCALE: 1/2" = 1'-0"



1 / SK-3 TOWER REINFORCING AT ELEV. 140.0'-155.0'
SCALE: 3/4" = 1'-0"



2 / SK-3 TOWER REINFORCING AT ELEV. 120.0'-140.0'
SCALE: 3/4" = 1'-0"

PROJECT NO. 16931279
Signed by: MCD
Drawn by: MCD
Checked by: KAB
Approved by: RAS

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

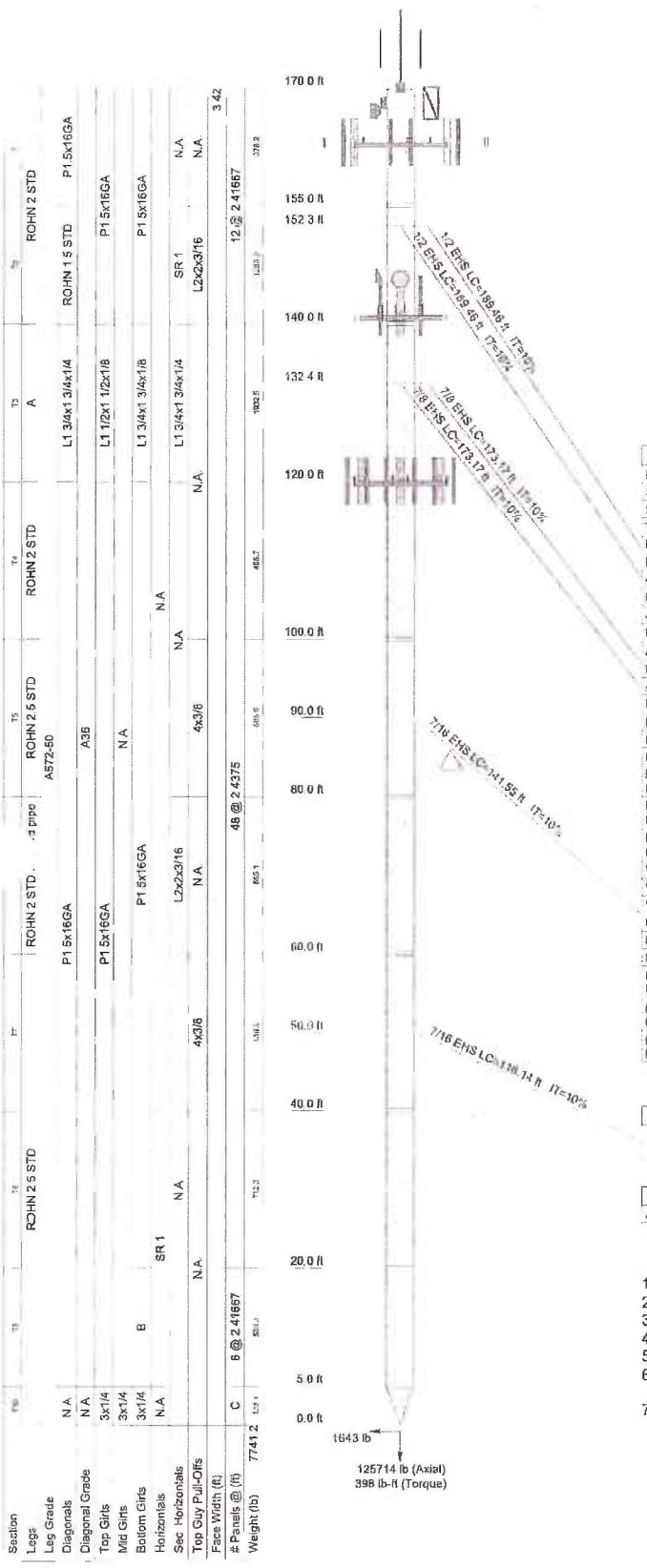
CALLAHAN TOWER - CT11174A
SITE ADDRESS: 2111 BERLIN TURNPIKE
NEWINGTON, CONNECTICUT 06111

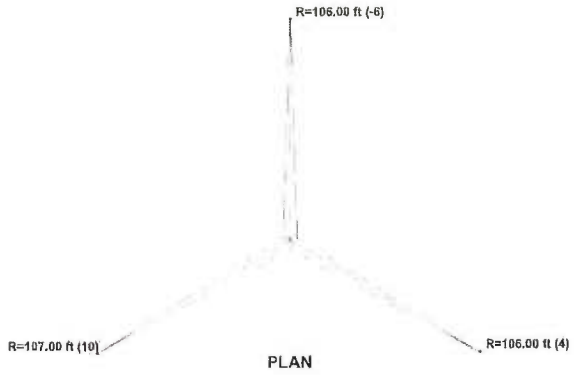
REV.	DATE:	DESCRIPTION

Scale: AS NOTED | Date: 08/22/14
Job No. EBI-001 | File No.

Dwg. No. SK-3
Dwg. 3 of 3

TNX TOWER INPUT/OUTPUT SUMMARY





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
DS4C03F36U-D 8' Omni (Town)	175	RRUS-11 (Sprint)	141.5
SC473-HF1LDF (Town)	175	RRUS-11 (Sprint)	141.5
SC473-HF1LDF (Town)	175	RRUS-11 (Sprint)	141.5
TTA 432-83H-01T (Town)	170	Pirod 12' T-Frame Sector Mount (1) (Sprint)	141
Pirod 4' Side Mount Standoff (1) (Town)	168	Pirod 12' T-Frame Sector Mount (1) (Sprint)	141
Pirod 4' Side Mount Standoff (1) (Town)	168	Pirod 12' T-Frame Sector Mount (1) (Sprint)	141
4' Standoff (Town)	168	AM-X-CD-16-65-00T w/ 96" pipe (ATI)	120
RFS SC2-W100BC	167	AM-X-CD-16-65-00T w/ 96" pipe (ATI)	120
APX16DWV-16WVS (T-Mobile)	163	(2) RRUS-11 (ATI)	120
LNX-6515DS-VTM (T-Mobile)	163	(2) RRUS-11 (ATI)	120
APX16DWV-16WVS (T-Mobile)	163	(2) RRUS-11 (ATI)	120
LNX-6515DS-VTM (T-Mobile)	163	DC6-48-60-18-8F (ATI)	120
(2) TMA (T-Mobile)	163	(2) 7770 w/ mount pipe (ATI)	120
(2) TMA (T-Mobile)	163	(2) 7770 w/ mount pipe (ATI)	120
(2) TMA (T-Mobile)	163	(2) LGP21900 (ATI)	120
Pirod 12' T-Frame Sector Mount (1) (T-Mobile)	163	(2) LGP21900 (ATI)	120
Pirod 12' T-Frame Sector Mount (1) (T-Mobile)	163	(2) 7070 S RET (ATI)	120
Pirod 12' T-Frame Sector Mount (1) (T-Mobile)	163	(2) 7070 S RET (ATI)	120
VHLP2-180	145	(2) 7070 S RET (ATI)	120
VHLP800-11	145.6	(2) TMA (ATI)	120
VHLP2-180	145.6	(2) TMA (ATT)	120
844H90T11EXY (Clearwire)	143	AM-X-CD-16-65-00T w/ 96" pipe (ATI)	120
844H90T11EXY (Clearwire)	143	Pirod 12' T-Frame Sector Mount (1) (ATI)	120
844H90T11EXY (Clearwire)	143	Pirod 12' T-Frame Sector Mount (1) (ATI)	120
(4) 844G65VTZASX w/Mount Pipe (Sprint)	141.5	(2) 7770 w/ mount pipe (ATI)	120
(4) 844G65VTZASX w/Mount Pipe (Sprint)	141.5	Pirod 12' T-Frame Sector Mount (1) (ATI)	120
(4) 844G65VTZASX w/Mount Pipe (Sprint)	141.5	(2) LGP21900 (ATI)	120
		(2) GPS (Town)	50

SYMBOL LIST

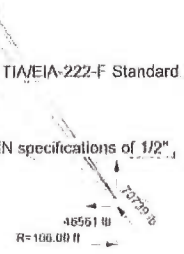
MARK	SIZE	MARK	SIZE
A	ROHN 2 STD w/ 1" Solid Rod	C	4 @ 1.125
B	ROHN 1.5 SCH XS (Extra Strong)		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard
3. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.
5. ANALYSIS ASSUMPTIONS:
6. Tower diagonal and horizontal bolts are assumed to match ROHN specifications of 1/2", ASTM 325N (unless indicated otherwise).
7. TOWER RATING: 98.5%



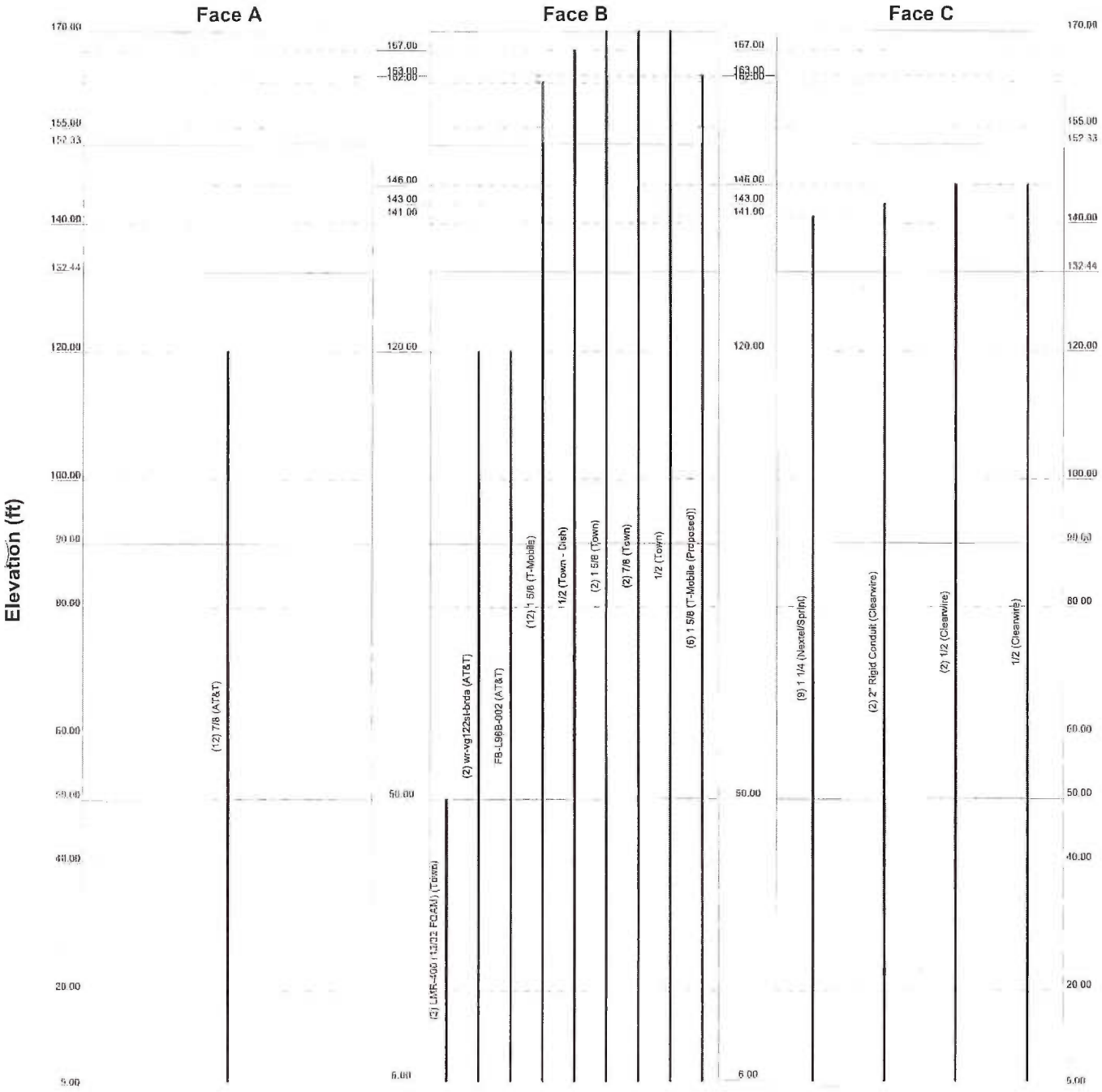
URS Corporation
500 Enterprise Drive, Suite 3B
Rocky Hill, CT 06067
Phone: 860-529-8882
FAX: 860-529-3991

Job:	*170' Callahan Tower (Newington, CT)*
Project:	*S.A. - Callahan Tower*
Client:	EBI Consulting / T-Mobile
Drawn by:	MCD
App'd:	
Code:	TIA/EIA-222-F
Date:	08/22/14
Scale:	NTS
Path:	
Dwg No.	E-1

TNX TOWER FEEDLINE DISTRIBUTION CHART

Feed Line Distribution Chart
5' - 170'

Round | Flat | App In Face | App Out Face | Truss Leg



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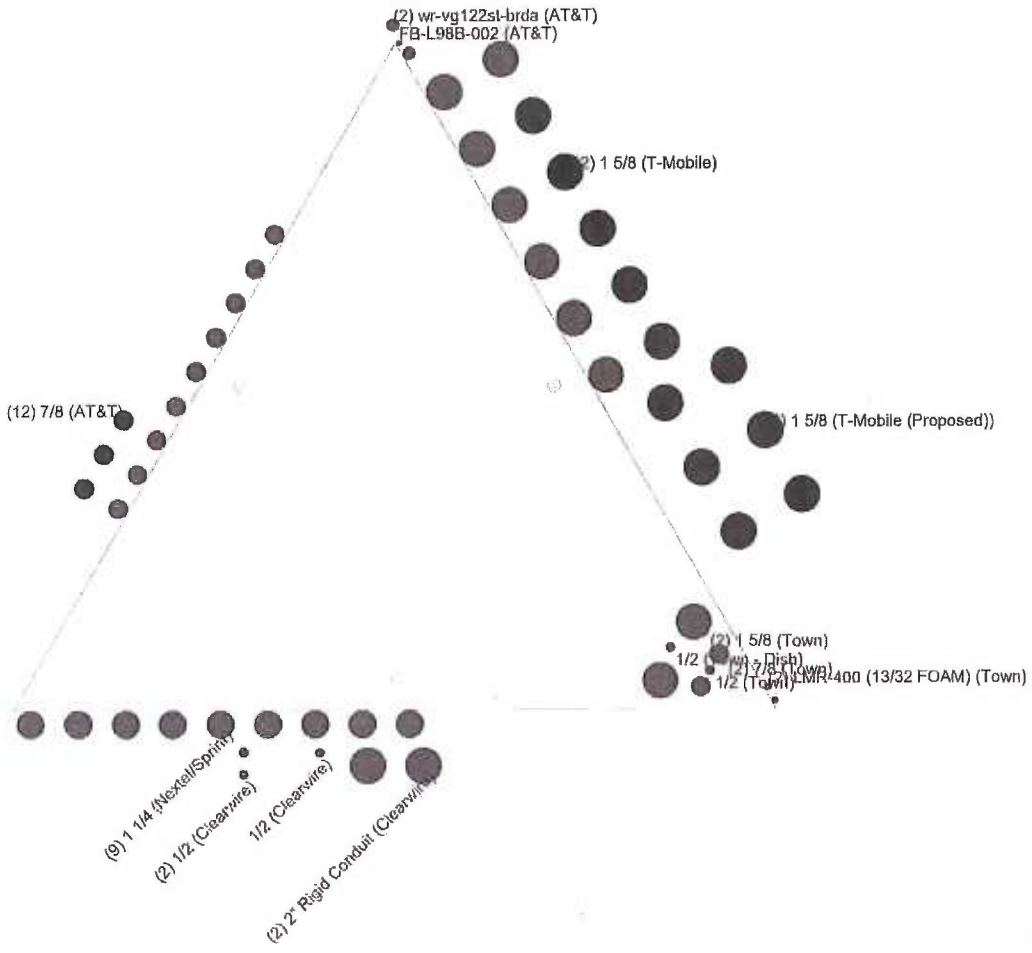
Drawn by:	MCD
App'd	
Code:	TIA/EIA-222-F
Date:	08/22/14
Scale:	NTS
Path:	
Dwg No.	E-7

TNX TOWER FEEDLINE PLAN

Feed Line Plan

Round _____ Flat _____ App In Face _____ App Out Face _____



URS Corporation
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Job	170' Callahan Tower (Newington, CT)
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Client	EBI Consulting / T-Mobile
Drawn by	MCD
Appd	
Code	TIA/EIA-222-F
Date	08/22/14
Scale	NTS
Path	
Dwg No.	E-7

TNX TOWER ANCHOR REACTIONS

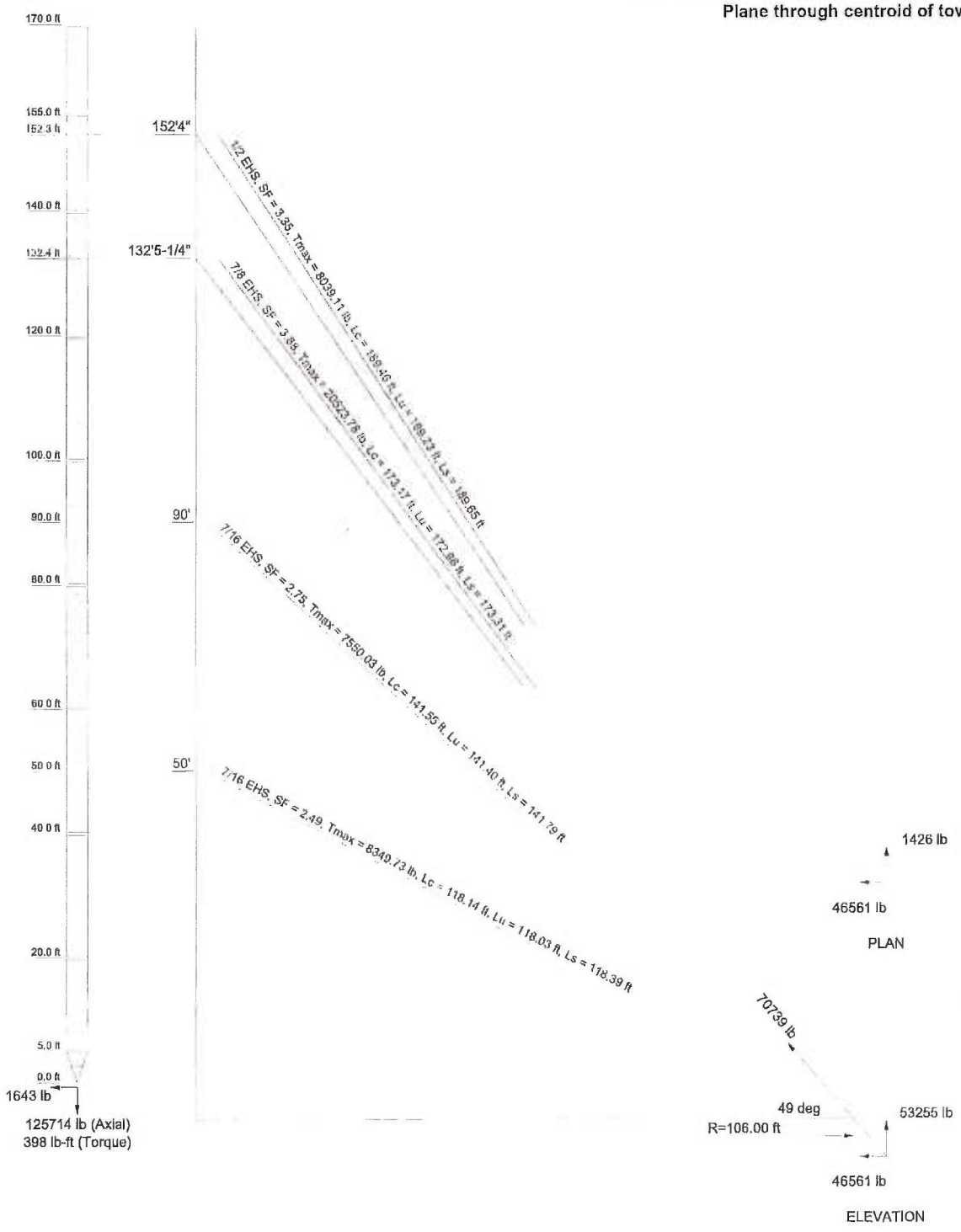
Guy Tensions and Tower Reactions

TIA/EIA-222-F - 80 mph/69 mph 0.5000 in Ice

Maximum Values

Anchor 'A'@106 ft Azimuth 0 deg Elev -6 ft

Plane through centroid of tower



URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Job: *170' Callahan Tower (Newington, CT)* Project: *S.A. - Callahan Tower* Client: EBI Consulting / T-Mobile Drawn by: MCD App'd: Code: TIA/EIA-222-F Date: 08/22/14 Scale: NTS Path: Dwg No. E-6

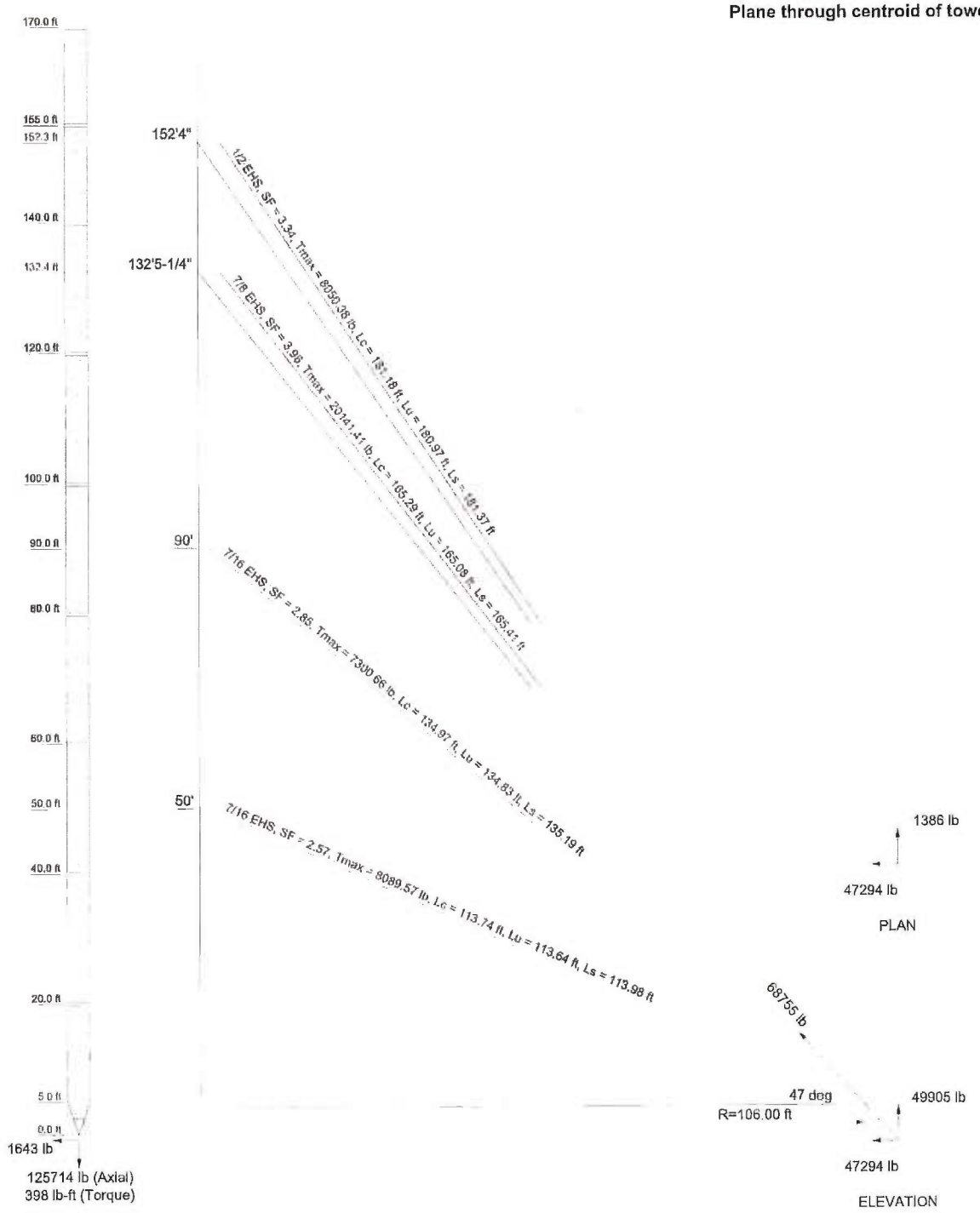
Guy Tensions and Tower Reactions

TIA/EIA-222-F - 80 mph/69 mph 0.5000 in Ice

Maximum Values

Anchor 'B'@106 ft Azimuth 120 deg Elev 4 ft

Plane through centroid of tower



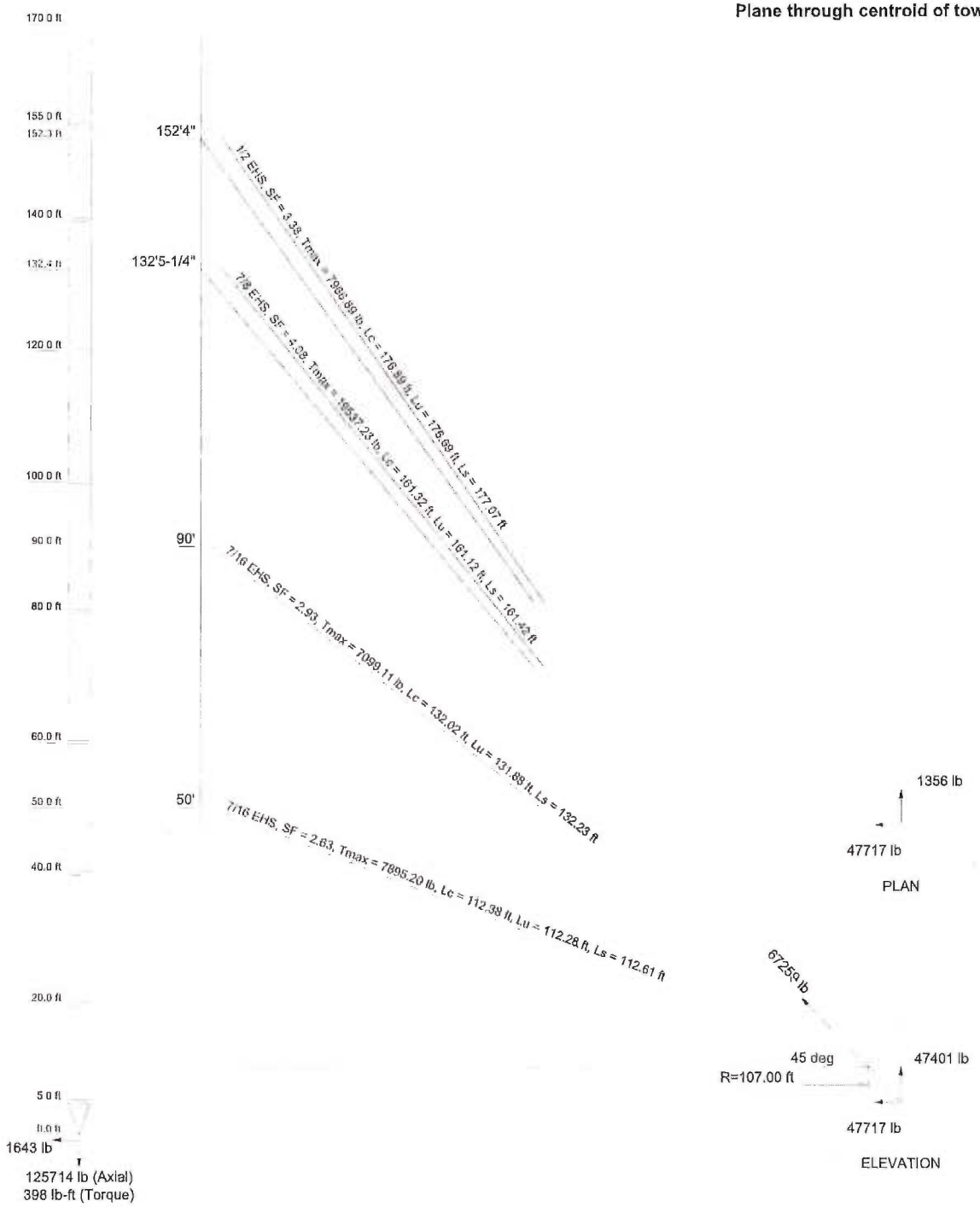
URS Corporation
500 Enterprise Drive, Suite 3B
Rocky Hill, CT 06067
Phone: 860-529-8882
FAX: 860-529-3991

Job:	*170' Callahan Tower (Newington, CT)*
Project	*S.A. - Callahan Tower*
Client	EBI Consulting / T-Mobile
Drawn by:	MCD
App'd	
Code:	TIA/EIA-222-F
Date:	08/22/14
Scale:	NTS
Path:	
Dwg No.	E-6

Guy Tensions and Tower Reactions

TIA/EIA-222-F - 80 mph/69 mph 0.5000 in Ice

Maximum Values
Anchor 'C'@107 ft Azimuth 240 deg Elev 10 ft
Plane through centroid of tower



URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: 860-529-8882 FAX: 860-529-3991	Job: ***170' Callahan Tower (Newington, CT)*** Project: ***S.A. - Callahan Tower*** Client: EBI Consulting / T-Mobile Drawn by: MCD App'd: Code: TIA/EIA-222-F Date: 08/22/14 Scale: NTS Path: Dwg No. E-6

TNX TOWER DETAILED OUTPUT

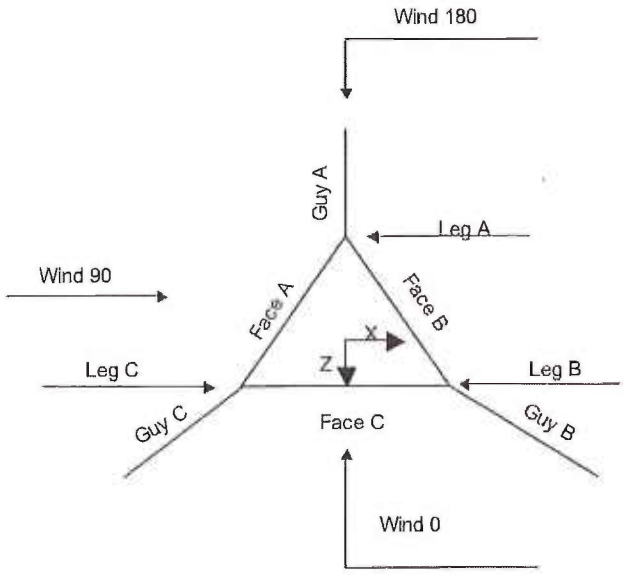
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 170.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.42 ft at the top and tapered at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

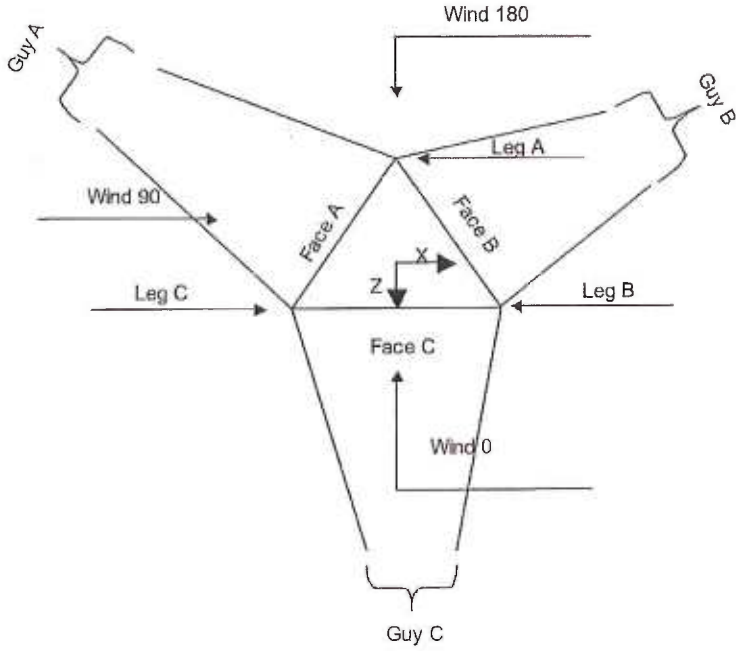
Tower is located in Hartford County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 69 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
ANALYSIS ASSUMPTIONS:.
Tower diagonal and horizontal bolts are assumed to match ROHN specifications of 1/2" ASTM 325N (unless indicated otherwise)..
Pressures are calculated at each section.
Safety factor used in guy design is 2.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	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	Use TIA-222-G Tension Splice Capacity Exemption	



Corner & Starmount Guyed Tower



Face Guyed

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	170.00-155.00			3.42	1	15.00
T2	155.00-140.00			3.42	1	15.00
T3	140.00-120.00			3.42	1	20.00
T4	120.00-100.00			3.42	1	20.00
T5	100.00-80.00			3.42	1	20.00
T6	80.00-60.00			3.42	1	20.00
T7	60.00-40.00			3.42	1	20.00
T8	40.00-20.00			3.42	1	20.00
T9	20.00-5.00			3.42	1	15.00
T10	5.00-0.00			3.42	1	5.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	170.00-155.00	2.42	X Brace	No	No	3.0000	3.0000
T2	155.00-140.00	2.42	X Brace	No	Yes	3.0000	3.0000
T3	140.00-120.00	2.44	X Brace	No	Yes	3.0000	3.0000
T4	120.00-100.00	2.44	X Brace	No	Yes	3.0000	3.0000
T5	100.00-80.00	2.44	X Brace	No	No	3.0000	3.0000
T6	80.00-60.00	2.44	X Brace	No	Yes	3.0000	3.0000
T7	60.00-40.00	2.44	X Brace	No	No	3.0000	3.0000
T8	40.00-20.00	2.44	K Brace Right	No	Yes	3.0000	3.0000
T9	20.00-5.00	2.42	K Brace Right	No	Yes	3.0000	3.0000
T10	5.00-0.00	1.13	X Brace	No	Yes	3.0000	3.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 170.00-155.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Pipe	P1.5x16GA	A36 (36 ksi)
T2 155.00-140.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Pipe	ROHN 1.5 STD	A36 (36 ksi)
T3 140.00-120.00	Arbitrary Shape	ROHN 2 STD w/ 1" Solid Rod	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x1/4	A36 (36 ksi)
T4 120.00-100.00	Pipe	ROHN 2 STD	A572-50 (50 ksi)	Pipe	P1.5x16GA	A36 (36 ksi)
T5 100.00-80.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	P1.5x16GA	A36 (36 ksi)
T6 80.00-60.00	Arbitrary Shape	ROHN 2 STD w/ 1/3rd pipe	A572-50 (50 ksi)	Pipe	P1.5x16GA	A36 (36 ksi)
T7 60.00-40.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	P1.5x16GA	A36 (36 ksi)
T8 40.00-20.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	P1.5x16GA	A36 (36 ksi)
T9 20.00-5.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	P1.5x16GA	A36 (36 ksi)
T10 5.00-0.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe		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 170.00-155.00	Pipe	P1.5x16GA	A36 (36 ksi)	Pipe	P1.5x16GA	A36 (36 ksi)
T2 155.00-140.00	Pipe	P1.5x16GA	A36 (36 ksi)	Pipe	P1.5x16GA	A36 (36 ksi)
T3 140.00-120.00	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)	Equal Angle	L1 3/4x1 3/4x1/8	A36 (36 ksi)
T4 120.00-100.00	Pipe	P1.5x16GA	A36 (36 ksi)	Pipe	P1.5x16GA	A36 (36 ksi)
T5 100.00-80.00	Pipe	P1.5x16GA	A36	Pipe	P1.5x16GA	A36

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T6 80.00-60.00	Pipe	P1.5x16GA	(36 ksi) A36 (36 ksi)	Pipe	P1.5x16GA	(36 ksi) A36 (36 ksi)
T7 60.00-40.00	Pipe	P1.5x16GA	A36 (36 ksi)	Pipe	P1.5x16GA	A36 (36 ksi)
T8 40.00-20.00	Pipe	P1.5x16GA	A36 (36 ksi)	Pipe	P1.5x16GA	A36 (36 ksi)
T9 20.00-5.00	Pipe	P1.5x16GA	A36 (36 ksi)	Pipe	ROHN 1.5 SCH XS (Extra Strong)	A36 (36 ksi)
T10 5.00-0.00	Flat Bar	3x1/4	A36 (36 ksi)	Flat Bar	3x1/4	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
T5 100.00-80.00	1	Pipe	P1.5x16GA	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T7 60.00-40.00	1	Pipe	P1.5x16GA	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T8 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T9 20.00-5.00	None	Flat Bar		A36 (36 ksi)	Solid Round	1	A36 (36 ksi)
T10 5.00-0.00	1	Flat Bar	3x1/4	A36 (36 ksi)	Solid Round		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
T2 155.00-140.00	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T3 140.00-120.00	Equal Angle	L1 3/4x1 3/4x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T6 80.00-60.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft^2	in					in	in
T1 170.00-155.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T2 155.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T3 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T4 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T5 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T6 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T7 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T8 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T9 20.00-5.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T10 5.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000

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	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
ft															
T1 170.00-155.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T2 155.00-140.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T3 140.00-120.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T4 120.00-100.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T5 100.00-80.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T6 80.00-60.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T7 60.00-40.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T8 40.00-20.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T9 20.00-5.00	No	No	1	1	1	1	1	1	1	1	1	1	1	1	1
T10 5.00-0.00	No	No	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 170.00-155.00	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
T2 155.00-140.00	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
T3 140.00-120.00	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 120.00-100.00	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
T5 100.00-80.00	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
T6 80.00-60.00	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 60.00-40.00	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 40.00-20.00	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 20.00-5.00	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
T10 5.00-0.00	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 170.00-155.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1
T2 155.00-140.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1
T3 140.00-120.00	Flange	0.7500 A325N	4	0.6250 A325N	1	0.6250 A325N	1	0.6250 A325N	1	0.6250 A325N	1	0.6250 A325N	1	0.6250 A325N	1
T4 120.00-100.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1
T5 100.00-80.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1
T6 80.00-60.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.7500 A325N	1	0.7500 A325N	1	0.7500 A325N	1	0.7500 A325N	1	0.7500 A325N	1
T7 60.00-40.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1
T8 40.00-20.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1
T9 20.00-5.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A490N	1	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1
T10 5.00-0.00	Flange	0.7500 A325N	4	0.5000 A325N	0	0.5000 A325N	0	0.5000 A325N	0	0.5000 A325N	0	0.5000 A325N	0	0.5000 A325N	1

Guy Data

Guy Elevation	Guy Grade		Guy Size	Initial Tension	%	Guy Modulus	Guy Weight	L_a	Anchor Radius	Anchor Azimuth Adj.	Anchor Elevation	End Fitting Efficiency
ft				lb		ksi	plf	ft	ft	°	ft	%
152.333	EHS	A	1/2	2690.00	10%	21000	0.517	189.29	106.00	0.0000	-6.00	100%
		B	1/2	2690.00	10%	21000	0.517	181.03	106.00	0.0000	4.00	100%
		C	1/2	2690.00	10%	21000	0.517	176.74	107.00	0.0000	10.00	100%
132.438	EHS	A	7/8	7970.00	10%	19000	1.581	173.02	106.00	0.0000	-6.00	100%
		B	7/8	7970.00	10%	19000	1.581	165.14	106.00	0.0000	4.00	100%
		C	7/8	7970.00	10%	19000	1.581	161.17	107.00	0.0000	10.00	100%
90	EHS	A	7/16	2080.00	10%	21000	0.399	141.43	106.00	0.0000	-6.00	100%
		B	7/16	2080.00	10%	21000	0.399	134.86	106.00	0.0000	4.00	100%
		C	7/16	2080.00	10%	21000	0.399	131.91	107.00	0.0000	10.00	100%
50	EHS	A	7/16	2080.00	10%	21000	0.399	118.04	106.00	0.0000	-6.00	100%
		B	7/16	2080.00	10%	21000	0.399	113.65	106.00	0.0000	4.00	100%
		C	7/16	2080.00	10%	21000	0.399	112.29	107.00	0.0000	10.00	100%

Guy Data(cont'd)

Guy Elevation	Mount Type	Torque-Arm Spread	Torque-Arm Leg Angle	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
ft		ft	°				
152.333	Torque Arm	7.00	0.0000	Channel	A36 (36 ksi)	Channel	C12x20.7
132.438	Torque Arm	7.00	0.0000	Channel	A36 (36 ksi)	Arbitrary Shape	C12x20.7 w/ 8"x3/8" plate
90	Corner						
50	Corner						

Guy Data (cont'd)

Guy Elevation	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap	Pull-Off Grade	Pull-Off Type	Pull-Off Size
ft								
152.33	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L2x2x3/16
132.44	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Equal Angle	
90.00	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Flat Bar	4x3/8
50.00	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Flat Bar	4x3/8

Guy Data (cont'd)

Guy Elevation	Cable Weight A	Cable Weight B	Cable Weight C	Cable Weight D	Tower Intercept A	Tower Intercept B	Tower Intercept C	Tower Intercept D
ft	lb	lb	lb	lb	ft	ft	ft	ft

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
152.333	97.87	93.59	91.38		3.39 3.2 sec/pulse	3.11 3.0 sec/pulse	2.96 3.0 sec/pulse	
132.438	273.54	261.08	254.81		2.93 3.0 sec/pulse	2.67 2.8 sec/pulse	2.55 2.8 sec/pulse	
90	56.43	53.81	52.63		1.90 2.4 sec/pulse	1.73 2.3 sec/pulse	1.66 2.2 sec/pulse	
50	47.10	45.34	44.80		1.33 2.0 sec/pulse	1.23 1.9 sec/pulse	1.21 1.9 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
152.333	No	No	1	1	1	1	1	1
132.438	No	No	1	1	1	1	1	1
90	No	No			1	1	1	1
50	No	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
152.333	0.7500 A325N	8	0.0000	1	0.7500 A325N	1	0.0000	1	0.0000 A325N	0	0.0000	1
132.438	0.7500 A325N	8	0.0000	1	0.7500 A325N	1	0.0000	1	0.0000 A325N	0	0.0000	1
90	0.6250 A325N	0	0.0000	0.75	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	1
50	0.6250 A325N	0	0.0000	0.75	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	1

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
152.333	A	73.17	21	15	0.5000
	B	78.17	21	16	0.5000
	C	81.17	21	16	0.5000
132.438	A	63.22	20	15	0.5000
	B	68.22	20	15	0.5000
	C	71.22	20	15	0.5000
90	A	42.00	18	13	0.5000
	B	47.00	18	14	0.5000

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
	C	50.00	18	14	0.5000
50	A	22.00	16	12	0.5000
	B	27.00	16	12	0.5000
	C	30.00	16	12	0.5000

Guy-Tensioning Information

Guy Elevation ft		H ft	V ft	Temperature At Time Of Tensioning: 0 F Initial Tension lb	0 F Intercept ft	20 F Initial Tension lb	20 F Intercept ft	40 F Initial Tension lb	40 F Intercept ft	60 F Initial Tension lb	60 F Intercept ft	80 F Initial Tension lb	80 F Intercept ft	100 F Initial Tension lb	100 F Intercept ft	120 F Initial Tension lb	120 F Intercept ft
152.333	A	104.04	158.33	3049	3.00	2929	3.12	2809	3.25	2690	3.39	2571	3.55	2453	3.72	2336	3.90
	B	104.04	148.33	3083	2.72	2951	2.84	2820	2.97	2690	3.11	2560	3.26	2431	3.43	2303	3.62
	C	105.04	142.33	3110	2.57	2969	2.69	2829	2.82	2690	2.96	2552	3.12	2414	3.30	2278	3.49
132.438	A	104.04	138.44	9163	2.55	8764	2.67	8366	2.79	7970	2.93	7576	3.08	7185	3.25	6798	3.43
	B	104.04	128.44	9279	2.30	8842	2.41	8405	2.54	7970	2.67	7538	2.82	7109	2.99	6684	3.18
	C	105.04	122.44	9372	2.17	8902	2.28	8435	2.41	7970	2.55	7508	2.70	7050	2.88	6597	3.07
90	A	104.03	96.00	2578	1.54	2411	1.64	2245	1.76	2080	1.90	1916	2.06	1755	2.25	1596	2.47
	B	104.03	86.00	2628	1.37	2445	1.47	2262	1.59	2080	1.73	1900	1.89	1723	2.09	1549	2.32
	C	105.03	80.00	2664	1.30	2468	1.40	2273	1.52	2080	1.66	1889	1.82	1700	2.03	1516	2.27
50	A	104.03	56.00	2797	0.99	2557	1.08	2317	1.19	2080	1.33	1846	1.50	1616	1.71	1393	1.98
	B	104.03	46.00	2854	0.90	2594	0.99	2336	1.10	2080	1.23	1827	1.40	1580	1.62	1342	1.91
	C	105.03	40.00	2888	0.87	2617	0.96	2347	1.07	2080	1.21	1816	1.38	1559	1.61	1312	1.91

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
LMR-400 (13/32 FOAM) (Town)	B	Yes	Ar (CfAe)	50.00 - 6.00	0.0000	0.48	2	2	0.4100	0.4100		0.07
7/8 (AT&T)	A	Yes	Ar (CfAe)	120.00 - 6.00	0.0000	0	12	9	1.0000	1.1100		0.54
wr-vg122st-brda (AT&T)	B	Yes	Ar (CfAe)	120.00 - 6.00	0.0000	-0.5	2	2	1.0000	0.7500		0.25
FB-L98B-002 (AT&T)	B	Yes	Ar (CfAe)	120.00 - 6.00	0.0000	-0.497	1	1	1.0000	0.3750		1.00
1 1/4 (Nextel/Sprint)	C	Yes	Ar (CfAe)	141.00 - 6.00	0.0000	0.23	9	9	1.0000	1.5500		0.66
2" Rigid Conduit (Clearwire)	C	Yes	Ar (CfAe)	143.00 - 6.00	2.0000	0	2	2	1.0000	2.0000		2.80
1 5/8 (T-Mobile)	B	Yes	Ar (CfAe)	162.00 - 6.00	0.0000	-0.2	12	6	1.5000	1.9800		1.04
1/2 (Town - Dish)	B	No	Ar (Leg)	167.00 - 6.00	0.0000	0.16	1	1	0.5800	0.5800		0.25
1 5/8 (Town)	B	No	Ar (Leg)	170.00 - 6.00	0.0000	0.15	2	1	1.6250	1.9800		1.04
7/8 (Town)	B	No	Ar (Leg)	170.00 - 6.00	0.0000	0.1	2	1	0.8750	1.1100		0.54
1/2 (Town)	B	No	Ar (Leg)	170.00 - 6.00	0.0000	0.1	1	1	0.5800	0.5800		0.25

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 (Clearwire)	C	Yes	Ar (CfAe)	146.00 - 6.00	2.0000	0.2	2	1	0.5800	0.5800		0.25
1/2 (Clearwire)	C	Yes	Ar (CfAe)	146.00 - 6.00	2.0000	0.1	1	1	0.5800	0.5800		0.25
1 5/8 (T-Mobile (Proposed))	B	Yes	Ar (CfAe)	163.00 - 6.00	2.0000	0.18	6	3	1.9800	1.9800		1.04

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 lb
T1	170.00-155.00	A	0.000	0.000	0.000	0.000	0.00
		B	16.058	0.000	0.000	0.000	191.43
		C	5.168	0.000	0.000	0.000	0.00
T2	155.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	27.587	0.000	0.000	0.000	335.70
		C	8.055	0.000	0.000	0.000	27.24
T3	140.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	36.783	0.000	0.000	0.000	447.60
		C	38.933	0.000	0.000	0.000	245.80
T4	120.00-100.00	A	16.650	0.000	0.000	0.000	129.60
		B	39.908	0.000	0.000	0.000	477.60
		C	38.933	0.000	0.000	0.000	245.80
T5	100.00-80.00	A	16.650	0.000	0.000	0.000	129.60
		B	39.908	0.000	0.000	0.000	477.60
		C	38.933	0.000	0.000	0.000	245.80
T6	80.00-60.00	A	16.650	0.000	0.000	0.000	129.60
		B	39.908	0.000	0.000	0.000	477.60
		C	38.933	0.000	0.000	0.000	245.80
T7	60.00-40.00	A	16.650	0.000	0.000	0.000	129.60
		B	40.592	0.000	0.000	0.000	479.00
		C	38.933	0.000	0.000	0.000	245.80
T8	40.00-20.00	A	16.650	0.000	0.000	0.000	129.60
		B	41.275	0.000	0.000	0.000	480.40
		C	38.933	0.000	0.000	0.000	245.80
T9	20.00-5.00	A	11.655	0.000	0.000	0.000	90.72
		B	28.892	0.000	0.000	0.000	336.28
		C	27.253	0.000	0.000	0.000	172.06
T10	5.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00

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 lb
T1	170.00-155.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		26.308	0.000	0.000	0.000	484.17
		C		9.918	0.000	0.000	0.000	0.00
T2	155.00-140.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		43.837	0.000	0.000	0.000	839.48

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 lb
		C		12.855	2.450	0.000	0.000	66.14
T3	140.00-120.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		58.450	0.000	0.000	0.000	1119.31
		C		28.267	39.000	0.000	0.000	673.73
T4	120.00-100.00	A	0.500	3.517	28.133	0.000	0.000	407.13
		B		63.658	2.917	0.000	0.000	1195.65
		C		28.267	39.000	0.000	0.000	673.73
T5	100.00-80.00	A	0.500	3.517	28.133	0.000	0.000	407.13
		B		63.658	2.917	0.000	0.000	1195.65
		C		28.267	39.000	0.000	0.000	673.73
T6	80.00-60.00	A	0.500	3.517	28.133	0.000	0.000	407.13
		B		63.658	2.917	0.000	0.000	1195.65
		C		28.267	39.000	0.000	0.000	673.73
T7	60.00-40.00	A	0.500	3.517	28.133	0.000	0.000	407.13
		B		64.833	3.600	0.000	0.000	1206.59
		C		28.267	39.000	0.000	0.000	673.73
T8	40.00-20.00	A	0.500	3.517	28.133	0.000	0.000	407.13
		B		66.008	4.283	0.000	0.000	1217.54
		C		28.267	39.000	0.000	0.000	673.73
T9	20.00-5.00	A	0.500	2.462	19.693	0.000	0.000	284.99
		B		46.206	2.998	0.000	0.000	852.28
		C		19.787	27.300	0.000	0.000	471.61
T10	5.00-0.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	170.00-155.00	A	0.000	0.000	0.000	0.000
		B	1.919	4.408	0.000	0.000
		C	0.000	0.000	0.000	0.000
T2	155.00-140.00	A	0.000	0.000	0.000	0.000
		B	4.668	11.438	0.248	0.373
		C	0.575	1.703	0.030	0.055
T3	140.00-120.00	A	0.000	0.000	0.000	0.000
		B	0.000	5.522	6.390	9.617
		C	0.000	6.611	6.852	11.514
T4	120.00-100.00	A	2.853	8.279	0.000	0.000
		B	5.626	13.818	0.000	0.000
		C	5.458	13.999	0.000	0.000
T5	100.00-80.00	A	2.853	8.411	0.278	0.527
		B	5.626	14.038	0.547	0.880
		C	5.458	14.222	0.531	0.892
T6	80.00-60.00	A	2.853	9.334	1.110	2.110
		B	5.626	15.579	2.188	3.522
		C	5.458	15.783	2.123	3.568
T7	60.00-40.00	A	2.853	8.411	0.278	0.527
		B	5.743	14.532	0.558	0.911
		C	5.458	14.222	0.531	0.892
T8	40.00-20.00	A	2.044	6.368	0.000	0.000
		B	4.198	11.377	0.000	0.000
		C	3.910	10.768	0.000	0.000
T9	20.00-5.00	A	1.474	4.567	0.000	0.000
		B	3.026	8.159	0.000	0.000

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
		C	2.819	7.722	0.000	0.000
T10	5.00-0.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	170.00-155.00	3.0356	-0.6604	3.1499	-0.2825
T2	155.00-140.00	3.4670	-1.2527	3.3095	-0.7970
T3	140.00-120.00	1.4887	1.1285	1.7487	0.8207
T4	120.00-100.00	0.3619	0.0422	0.5906	-0.1174
T5	100.00-80.00	0.3545	0.0485	0.5982	-0.0995
T6	80.00-60.00	0.3715	0.0713	0.6858	-0.0425
T7	60.00-40.00	0.4306	0.0904	0.6091	-0.0909
T8	40.00-20.00	0.5096	0.1124	0.5722	-0.1277
T9	20.00-5.00	0.4960	0.1105	0.5608	-0.1218
T10	5.00-0.00	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

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 lb
DS4C03F36U-D 8' Omni	A	From Leg	1.00	0.0000	175.00	No Ice	2.56	2.56	30.00
(Town)			0.00			1/2" Ice	3.28	3.28	48.53
			0.00						
SC473-HF1LDF	B	From Leg	1.00	0.0000	175.00	No Ice	1.44	1.44	17.00
(Town)			0.00			1/2" Ice	1.74	1.74	29.43
			0.00						
SC473-HF1LDF	C	From Leg	1.00	0.0000	175.00	No Ice	1.44	1.44	17.00
(Town)			0.00			1/2" Ice	1.74	1.74	29.43
			0.00						
TTA 432-83H-01T	A	None		0.0000	170.00	No Ice	1.63	0.95	25.00
(Town)						1/2" Ice	1.81	1.09	37.44
Pirod 4' Side Mount Standoff	A	From Leg	2.50	0.0000	168.00	No Ice	2.72	2.72	50.00
(1)			0.00			1/2" Ice	4.91	4.91	89.00
(Town)			0.00						
Pirod 4' Side Mount Standoff	B	From Leg	2.50	0.0000	168.00	No Ice	2.72	2.72	50.00
(1)			0.00			1/2" Ice	4.91	4.91	89.00
(Town)			0.00						
4' Standoff	C	From Leg	0.50	0.0000	168.00	No Ice	3.42	3.42	111.16
(Town)			0.00			1/2" Ice	3.67	3.67	147.20
			0.00						
844H90T11EXY	A	From Leg	1.00	0.0000	143.00	No Ice	3.06	3.73	14.00
(Clearwire)			0.00			1/2" Ice	3.39	4.10	40.30

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 lb
			0.00						
844H90T11EXY	B	From Leg	1.00	0.0000	143.00	No Ice	3.06	3.73	14.00
(Clearwire)			0.00			1/2" Ice	3.39	4.10	40.30
			0.00						
844H90T11EXY	C	From Leg	1.00	0.0000	143.00	No Ice	3.06	3.73	14.00
(Clearwire)			0.00			1/2" Ice	3.39	4.10	40.30
			0.00						
(4) 844G65VTZASX	A	From Leg	1.00	0.0000	141.50	No Ice	6.55	5.63	41.55
w/Mount Pipe			0.00			1/2" Ice	7.25	6.73	98.42
(Sprint)			0.00						
(4) 844G65VTZASX	B	From Leg	1.00	0.0000	141.50	No Ice	6.55	5.63	41.55
w/Mount Pipe			0.00			1/2" Ice	7.25	6.73	98.42
(Sprint)			0.00						
(4) 844G65VTZASX	C	From Leg	1.00	0.0000	141.50	No Ice	6.55	5.63	41.55
w/Mount Pipe			0.00			1/2" Ice	7.25	6.73	98.42
(Sprint)			0.00						
RRUS-11	A	From Leg	1.00	0.0000	141.50	No Ice	3.26	1.38	50.00
(Sprint)			0.00			1/2" Ice	3.50	1.56	70.87
			0.00						
RRUS-11	B	From Leg	1.00	0.0000	141.50	No Ice	3.26	1.38	50.00
(Sprint)			0.00			1/2" Ice	3.50	1.56	70.87
			0.00						
RRUS-11	C	From Leg	1.00	0.0000	141.50	No Ice	3.26	1.38	50.00
(Sprint)			0.00			1/2" Ice	3.50	1.56	70.87
			0.00						
Pirod 12' T-Frame Sector	A	From Leg	0.50	0.0000	141.00	No Ice	13.60	13.60	465.00
Mount (1)			0.00			1/2" Ice	18.40	18.40	600.00
(Sprint)			0.00						
Pirod 12' T-Frame Sector	B	From Leg	0.50	0.0000	141.00	No Ice	13.60	13.60	465.00
Mount (1)			0.00			1/2" Ice	18.40	18.40	600.00
(Sprint)			0.00						
Pirod 12' T-Frame Sector	C	From Leg	0.50	0.0000	141.00	No Ice	13.60	13.60	465.00
Mount (1)			0.00			1/2" Ice	18.40	18.40	600.00
(Sprint)			0.00						
Pirod 12' T-Frame Sector	A	From Leg	1.50	0.0000	120.00	No Ice	13.60	13.60	465.00
Mount (1)			0.00			1/2" Ice	18.40	18.40	600.00
(AT&T)			0.00						
Pirod 12' T-Frame Sector	B	From Leg	1.50	0.0000	120.00	No Ice	13.60	13.60	465.00
Mount (1)			0.00			1/2" Ice	18.40	18.40	600.00
(AT&T)			0.00						
Pirod 12' T-Frame Sector	C	From Leg	1.50	0.0000	120.00	No Ice	13.60	13.60	465.00
Mount (1)			0.00			1/2" Ice	18.40	18.40	600.00
(AT&T)			0.00						
(2) 7770 w/ mount pipe	A	From Leg	3.00	0.0000	120.00	No Ice	6.02	4.10	57.25
(AT&T)			0.00			1/2" Ice	6.47	4.75	101.14
			0.00						
(2) 7770 w/ mount pipe	B	From Leg	3.00	0.0000	120.00	No Ice	6.02	4.10	57.25
(AT&T)			0.00			1/2" Ice	6.47	4.75	101.14
			0.00						
(2) 7770 w/ mount pipe	C	From Leg	3.00	0.0000	120.00	No Ice	6.02	4.10	57.25
(AT&T)			0.00			1/2" Ice	6.47	4.75	101.14
			0.00						
(2) LGP21900	A	From Leg	2.00	0.0000	120.00	No Ice	0.23	0.12	2.50
(AT&T)			0.00			1/2" Ice	0.30	0.17	4.70
			0.00						
(2) LGP21900	B	From Leg	2.00	0.0000	120.00	No Ice	0.23	0.12	2.50
(AT&T)			0.00			1/2" Ice	0.30	0.17	4.70

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 lb
			0.00						
(2) LGP21900	C	From Leg	2.00	0.0000	120.00	No Ice	0.23	0.12	2.50
(AT&T)			0.00			1/2" Ice	0.30	0.17	4.70
			0.00						
(2) 7070.5 RET	A	From Leg	3.00	0.0000	120.00	No Ice	0.40	0.20	2.20
(AT&T)			0.00			1/2" Ice	0.49	0.27	5.13
			0.00						
(2) 7070.5 RET	B	From Leg	3.00	0.0000	120.00	No Ice	0.40	0.20	2.20
(AT&T)			0.00			1/2" Ice	0.49	0.27	5.13
			0.00						
(2) 7070.5 RET	C	From Leg	3.00	0.0000	120.00	No Ice	0.40	0.20	2.20
(AT&T)			0.00			1/2" Ice	0.49	0.27	5.13
			0.00						
(2) TMA	A	From Leg	2.00	0.0000	120.00	No Ice	1.06	0.45	20.00
(AT&T)			0.00			1/2" Ice	1.21	0.57	26.53
			0.00						
(2) TMA	B	From Leg	2.00	0.0000	120.00	No Ice	1.06	0.45	20.00
(AT&T)			0.00			1/2" Ice	1.21	0.57	26.53
			0.00						
(2) TMA	C	From Leg	2.00	0.0000	120.00	No Ice	1.06	0.45	20.00
(AT&T)			0.00			1/2" Ice	1.21	0.57	26.53
			0.00						
AM-X-CD-16-65-00T w/ 96"	A	From Leg	3.00	0.0000	120.00	No Ice	8.50	6.30	74.05
pipe			0.00			1/2" Ice	9.15	7.48	136.21
(AT&T)			0.00						
AM-X-CD-16-65-00T w/ 96"	B	From Leg	3.00	0.0000	120.00	No Ice	8.50	6.30	74.05
pipe			0.00			1/2" Ice	9.15	7.48	136.21
(AT&T)			0.00						
AM-X-CD-16-65-00T w/ 96"	C	From Leg	3.00	0.0000	120.00	No Ice	8.50	6.30	74.05
pipe			0.00			1/2" Ice	9.15	7.48	136.21
(AT&T)			0.00						
(2) RRUS-11	A	From Leg	2.00	0.0000	120.00	No Ice	2.07	1.08	44.00
(AT&T)			0.00			1/2" Ice	2.26	1.23	58.64
			0.00						
(2) RRUS-11	B	From Leg	2.00	0.0000	120.00	No Ice	2.07	1.08	44.00
(AT&T)			0.00			1/2" Ice	2.26	1.23	58.64
			0.00						
(2) RRUS-11	C	From Leg	2.00	0.0000	120.00	No Ice	2.07	1.08	44.00
(AT&T)			0.00			1/2" Ice	2.26	1.23	58.64
			0.00						
DC6-48-60-18-8F	A	From Leg	0.50	0.0000	120.00	No Ice	2.45	2.45	38.25
(AT&T)			0.00			1/2" Ice	2.95	2.95	64.62
			0.00						
(2) GPS	C	None		0.0000	50.00	No Ice	1.00	1.00	10.00
(Town)						1/2" Ice	1.50	1.50	15.00
APX16DWV-16WVS	A	From Leg	3.00	0.0000	163.00	No Ice	7.07	2.15	40.70
(T-Mobile)			6.00			1/2" Ice	7.52	2.49	73.65
			0.00						
LNX-6515DS-VTM	A	From Leg	3.00	0.0000	163.00	No Ice	11.45	7.70	50.00
(T-Mobile)			-6.00			1/2" Ice	12.06	8.29	115.87
			0.00						
APX16DWV-16WVS	B	From Leg	3.00	0.0000	163.00	No Ice	7.07	2.15	40.70
(T-Mobile)			6.00			1/2" Ice	7.52	2.49	73.65
			0.00						
LNX-6515DS-VTM	B	From Leg	3.00	0.0000	163.00	No Ice	11.45	7.70	50.00
(T-Mobile)			-6.00			1/2" Ice	12.06	8.29	115.87
			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 lb
APX16DWV-16WVS (T-Mobile)	C	From Leg	3.00 6.00 0.00	0.0000	163.00	No Ice 1/2" Ice	7.07 7.52	2.15 2.49	40.70 73.65
LNX-6515DS-VTM (T-Mobile)	C	From Leg	3.00 -6.00 0.00	0.0000	163.00	No Ice 1/2" Ice	11.45 12.06	7.70 8.29	50.00 115.87
(2) TMA (T-Mobile)	A	From Leg	3.00 6.00 0.00	0.0000	163.00	No Ice 1/2" Ice	1.06 1.21	0.45 0.57	20.00 26.53
(2) TMA (T-Mobile)	B	From Leg	3.00 6.00 0.00	0.0000	163.00	No Ice 1/2" Ice	1.06 1.21	0.45 0.57	20.00 26.53
(2) TMA (T-Mobile)	C	From Leg	3.00 6.00 0.00	0.0000	163.00	No Ice 1/2" Ice	1.06 1.21	0.45 0.57	20.00 26.53
Pirod 12' T-Frame Sector Mount (1) (T-Mobile)	A	None		0.0000	163.00	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465.00 600.00
Pirod 12' T-Frame Sector Mount (1) (T-Mobile)	B	None		0.0000	163.00	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465.00 600.00
Pirod 12' T-Frame Sector Mount (1) (T-Mobile)	C	None		0.0000	163.00	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465.00 600.00

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 lb
VHLP800-11	A	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	Worst		145.60	2.50	No Ice 1/2" Ice	4.90 84.00	49.00 282.00
VHLP2-180	A	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		145.60	2.00	No Ice 1/2" Ice	3.14 3.41	25.00 42.49
VHLP2-180	C	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	Worst		146.00	2.00	No Ice 1/2" Ice	3.14 3.41	25.00 42.49
RFS SC2-W100BC	C	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	Worst		167.00	2.00	No Ice 1/2" Ice	3.14 3.41	20.00 37.50

Tower Pressures - No Ice

$G_H = 1.125$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	162.50	1.577	26	54.269	A	0.000	14.454	5.938	41.08	0.000	0.000
170.00-155.00					B	0.000	28.593		20.77	0.000	0.000
					C	0.000	19.621		30.26	0.000	0.000
T2	147.50	1.534	25	54.269	A	0.537	16.065	5.938	35.76	0.000	0.000
155.00-140.00					B	0.290	38.985		15.12	0.000	0.000
					C	0.507	23.545		24.69	0.000	0.000
T3	130.00	1.48	24	73.288	A	25.062	0.000	11.198	44.68	0.000	0.000
140.00-120.00					B	18.672	36.783		20.19	0.000	0.000
					C	18.210	38.933		19.60	0.000	0.000
T4	110.00	1.411	23	72.358	A	0.000	32.757	7.917	24.17	0.000	0.000
120.00-100.00					B	0.000	53.243		14.87	0.000	0.000
					C	0.000	52.436		15.10	0.000	0.000
T5	90.00	1.332	22	73.192	A	0.783	34.281	9.583	27.33	0.000	0.000
100.00-80.00					B	0.513	54.767		17.34	0.000	0.000
					C	0.529	53.959		17.59	0.000	0.000
T6 80.00-60.00	70.00	1.24	20	72.550	A	11.992	24.762	8.837	24.04	0.000	0.000
					B	10.914	45.248		15.73	0.000	0.000
					C	10.979	44.440		15.95	0.000	0.000
T7 60.00-40.00	50.00	1.126	18	73.192	A	0.783	34.281	9.583	27.33	0.000	0.000
					B	0.502	55.334		17.16	0.000	0.000
					C	0.529	53.959		17.59	0.000	0.000
T8 40.00-20.00	30.00	1	16	73.192	A	0.000	31.999	9.583	29.95	0.000	0.000
					B	0.000	54.470		17.59	0.000	0.000
					C	0.000	52.416		18.28	0.000	0.000
T9 20.00-5.00	12.50	1	16	54.894	A	0.000	23.401	7.188	30.71	0.000	0.000
					B	0.000	39.086		18.39	0.000	0.000
					C	0.000	37.654		19.09	0.000	0.000
T10 5.00-0.00	2.50	1	16	9.816	A	1.120	2.576	2.576	69.70	0.000	0.000
					B	1.120	2.576		69.70	0.000	0.000
					C	1.120	2.576		69.70	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.125$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	162.50	1.577	19	0.5000	55.519	A	0.000	21.436	8.438	39.36	0.000	0.000
170.00-155.00						B	0.000	43.336		19.47	0.000	0.000
						C	0.000	31.354		26.91	0.000	0.000
T2	147.50	1.534	19	0.5000	55.519	A	0.537	24.927	8.438	33.14	0.000	0.000
155.00-140.00						B	0.165	57.327		14.68	0.000	0.000
						C	2.932	36.079		21.63	0.000	0.000
T3	130.00	1.48	18	0.5000	74.955	A	27.284	7.961	13.420	38.08	0.000	0.000
140.00-120.00						B	17.667	60.889		17.08	0.000	0.000
						C	54.771	29.616		15.90	0.000	0.000
T4	110.00	1.411	17	0.5000	74.025	A	28.133	23.344	11.250	21.85	0.000	0.000
120.00-100.00						B	2.917	77.947		13.91	0.000	0.000
						C	39.000	42.374		13.82	0.000	0.000
T5 100.00-80.00	90.00	1.332	16	0.5000	74.858	A	28.666	24.926	12.917	24.10	0.000	0.000
						B	3.096	79.441		15.65	0.000	0.000
						C	39.168	43.865		15.56	0.000	0.000
T6 80.00-60.00	70.00	1.24	15	0.5000	74.216	A	41.348	13.052	11.059	20.33	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						B	14.719	66.949		13.54	0.000	0.000
						C	50.757	31.353		13.47	0.000	0.000
T7 60.00-40.00	50.00	1.126	14	0.5000	74.858	A	28.666	24.926	12.917	24.10	0.000	0.000
						B	3.749	80.122		15.40	0.000	0.000
						C	39.168	43.865		15.56	0.000	0.000
T8 40.00-20.00	30.00	1	12	0.5000	74.858	A	28.133	22.864	12.917	25.33	0.000	0.000
						B	4.283	80.347		15.26	0.000	0.000
						C	39.000	43.214		15.71	0.000	0.000
T9 20.00-5.00	12.50	1	12	0.5000	56.144	A	19.693	17.416	9.688	26.11	0.000	0.000
						B	2.998	57.569		15.99	0.000	0.000
						C	27.300	31.586		16.45	0.000	0.000
T10 5.00-0.00	2.50	1	12	0.5000	10.256	A	1.120	3.845	3.472	69.92	0.000	0.000
						B	1.120	3.845		69.92	0.000	0.000
						C	1.120	3.845		69.92	0.000	0.000

Tower Pressure - Service

$G_H = 1.125$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	162.50	1.577	15	54.269	A	0.000	14.454	5.938	41.08	0.000	0.000
170.00-155.00					B	0.000	28.593		20.77	0.000	0.000
					C	0.000	19.621		30.26	0.000	0.000
T2	147.50	1.534	14	54.269	A	0.537	16.065	5.938	35.76	0.000	0.000
155.00-140.00					B	0.290	38.985		15.12	0.000	0.000
					C	0.507	23.545		24.69	0.000	0.000
T3	130.00	1.48	14	73.288	A	25.062	0.000	11.198	44.68	0.000	0.000
140.00-120.00					B	18.672	36.783		20.19	0.000	0.000
					C	18.210	38.933		19.60	0.000	0.000
T4	110.00	1.411	13	72.358	A	0.000	32.757	7.917	24.17	0.000	0.000
120.00-100.00					B	0.000	53.243		14.87	0.000	0.000
					C	0.000	52.436		15.10	0.000	0.000
T5	90.00	1.332	12	73.192	A	0.783	34.281	9.583	27.33	0.000	0.000
100.00-80.00					B	0.513	54.767		17.34	0.000	0.000
					C	0.529	53.959		17.59	0.000	0.000
T6 80.00-60.00	70.00	1.24	11	72.550	A	11.992	24.762	8.837	24.04	0.000	0.000
					B	10.914	45.248		15.73	0.000	0.000
					C	10.979	44.440		15.95	0.000	0.000
T7 60.00-40.00	50.00	1.126	10	73.192	A	0.783	34.281	9.583	27.33	0.000	0.000
					B	0.502	55.334		17.16	0.000	0.000
					C	0.529	53.959		17.59	0.000	0.000
T8 40.00-20.00	30.00	1	9	73.192	A	0.000	31.999	9.583	29.95	0.000	0.000
					B	0.000	54.470		17.59	0.000	0.000
					C	0.000	52.416		18.28	0.000	0.000
T9 20.00-5.00	12.50	1	9	54.894	A	0.000	23.401	7.188	30.71	0.000	0.000
					B	0.000	39.086		18.39	0.000	0.000
					C	0.000	37.654		19.09	0.000	0.000
T10 5.00-0.00	2.50	1	9	9.816	A	1.120	2.576	2.576	69.70	0.000	0.000
					B	1.120	2.576		69.70	0.000	0.000
					C	1.120	2.576		69.70	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	lb	lb							ft^2	lb	plf	
T1	191.43	378.16	A	0.266	2.389	0.606	1	1	8.762	1104.12	73.61	B
170.00-155.00			B	0.527	1.868	0.712	1	1	20.346			
			C	0.362	2.145	0.637	1	1	12.492			
T2	362.94	826.95	A	0.306	2.28	0.618	1	1	10.461	1655.90	110.39	B
155.00-140.00		TA 456.98	B	0.724	1.779	0.837	1	1	32.924			
			C	0.443	1.985	0.67	1	1	16.286			
T3	693.40	1250.39	A	0.342	2.19	0.63	1	1	25.062	2578.54	128.93	C
140.00-120.00		TA 682.09	B	0.757	1.79	0.862	1	1	50.380			
			C	0.78	1.802	0.88	1	1	52.473			
T4	853.00	496.70	A	0.453	1.969	0.675	1	1	22.095	2087.38	104.37	B
120.00-100.00			B	0.736	1.783	0.846	1	1	45.051			
			C	0.725	1.78	0.838	1	1	43.932			
T5	853.00	686.65	A	0.479	1.929	0.687	1	1	24.335	2093.79	104.69	B
100.00-80.00			B	0.755	1.79	0.861	1	1	47.664			
			C	0.744	1.785	0.853	1	1	46.538			
T6	853.00	865.11	A	0.507	1.892	0.701	1	1	29.347	2076.92	103.85	B
80.00-60.00			B	0.774	1.799	0.876	1	1	50.534			
			C	0.764	1.794	0.868	1	1	49.534			
T7	854.40	686.65	A	0.479	1.929	0.687	1	1	24.335	1803.36	90.17	B
60.00-40.00			B	0.763	1.793	0.867	1	1	48.465			
			C	0.744	1.785	0.853	1	1	46.538			
T8	855.80	712.32	A	0.437	1.995	0.667	1	1	21.358	1527.60	76.38	B
40.00-20.00			B	0.744	1.785	0.852	1	1	46.434			
			C	0.716	1.778	0.832	1	1	43.587			
T9 20.00-5 00	599.06	559.79	A	0.426	2.014	0.663	1	1	15.507	1060.59	70.71	B
			B	0.712	1.777	0.829	1	1	32.385			
			C	0.686	1.776	0.81	1	1	30.498			
T10 5.00-0.00	0.00	139.43	A	0.377	2.112	0.642	1	1	2.774	108.00	21.60	C
			B	0.377	2.112	0.642	1	1	2.774			
			C	0.377	2.112	0.642	1	1	2.774			
Sum Weight:	6116.03	7741.22								16096.22		

Tower Forces - No Ice - Wind 60 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	lb	lb							ft^2	lb	plf	
T1	191.43	378.16	A	0.266	2.389	0.606	0.8	1	8.762	1104.12	73.61	B
170.00-155.00			B	0.527	1.868	0.712	0.8	1	20.346			
			C	0.362	2.145	0.637	0.8	1	12.492			
T2	362.94	826.95	A	0.306	2.28	0.618	0.8	1	10.353	1652.99	110.20	B
155.00-140.00		TA 456.98	B	0.724	1.779	0.837	0.8	1	32.866			
			C	0.443	1.985	0.67	0.8	1	16.185			
T3	693.40	1250.39	A	0.342	2.19	0.63	0.8	1	20.050	2399.58	119.98	C
140.00-120.00		TA 682.09	B	0.757	1.79	0.862	0.8	1	46.645			
			C	0.78	1.802	0.88	0.8	1	48.831			
T4	853.00	496.70	A	0.453	1.969	0.675	0.8	1	22.095	2087.38	104.37	B
120.00-100.00			B	0.736	1.783	0.846	0.8	1	45.051			
			C	0.725	1.78	0.838	0.8	1	43.932			
T5	853.00	686.65	A	0.479	1.929	0.687	0.8	1	24.179	2089 28	104.46	B

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
100.00-80.00			B	0.755	1.79	0.861	0.8	1	47.561			
			C	0.744	1.785	0.853	0.8	1	46.432			
T6	853.00	865.11	A	0.507	1.892	0.701	0.8	1	26.949	1987.21	99.36	B
80.00-60.00			B	0.774	1.799	0.876	0.8	1	48.351			
			C	0.764	1.794	0.868	0.8	1	47.339			
T7	854.40	686.65	A	0.479	1.929	0.687	0.8	1	24.179	1799.63	89.98	B
60.00-40.00			B	0.763	1.793	0.867	0.8	1	48.364			
			C	0.744	1.785	0.853	0.8	1	46.432			
T8	855.80	712.32	A	0.437	1.995	0.667	0.8	1	21.358	1527.60	76.38	B
40.00-20.00			B	0.744	1.785	0.852	0.8	1	46.434			
			C	0.716	1.778	0.832	0.8	1	43.587			
T9 20.00-5.00	599.06	559.79	A	0.426	2.014	0.663	0.8	1	15.507	1060.59	70.71	B
			B	0.712	1.777	0.829	0.8	1	32.385			
			C	0.686	1.776	0.81	0.8	1	30.498			
T10 5.00-0.00	0.00	139.43	A	0.377	2.112	0.642	0.8	1	2.550	99.28	19.86	C
			B	0.377	2.112	0.642	0.8	1	2.550			
			C	0.377	2.112	0.642	0.8	1	2.550			
Sum Weight:	6116.03	7741.22								15807.67		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	191.43	378.16	A	0.266	2.389	0.606	0.85	1	8.762	1104.12	73.61	B
170.00-155.00			B	0.527	1.868	0.712	0.85	1	20.346			
			C	0.362	2.145	0.637	0.85	1	12.492			
T2	362.94	826.95	A	0.306	2.28	0.618	0.85	1	10.380	1653.72	110.25	B
155.00-140.00		TA 456.98	B	0.724	1.779	0.837	0.85	1	32.881			
			C	0.443	1.985	0.67	0.85	1	16.210			
T3	693.40	1250.39	A	0.342	2.19	0.63	0.85	1	21.303	2444.32	122.22	C
140.00-120.00		TA 682.09	B	0.757	1.79	0.862	0.85	1	47.579			
			C	0.78	1.802	0.88	0.85	1	49.742			
T4	853.00	496.70	A	0.453	1.969	0.675	0.85	1	22.095	2087.38	104.37	B
120.00-100.00			B	0.736	1.783	0.846	0.85	1	45.051			
			C	0.725	1.78	0.838	0.85	1	43.932			
T5	853.00	686.65	A	0.479	1.929	0.687	0.85	1	24.218	2090.41	104.52	B
100.00-80.00			B	0.755	1.79	0.861	0.85	1	47.587			
			C	0.744	1.785	0.853	0.85	1	46.459			
T6	853.00	865.11	A	0.507	1.892	0.701	0.85	1	27.548	2009.64	100.48	B
80.00-60.00			B	0.774	1.799	0.876	0.85	1	48.897			
			C	0.764	1.794	0.868	0.85	1	47.888			
T7	854.40	686.65	A	0.479	1.929	0.687	0.85	1	24.218	1800.56	90.03	B
60.00-40.00			B	0.763	1.793	0.867	0.85	1	48.389			
			C	0.744	1.785	0.853	0.85	1	46.459			
T8	855.80	712.32	A	0.437	1.995	0.667	0.85	1	21.358	1527.60	76.38	B
40.00-20.00			B	0.744	1.785	0.852	0.85	1	46.434			
			C	0.716	1.778	0.832	0.85	1	43.587			
T9 20.00-5.00	599.06	559.79	A	0.426	2.014	0.663	0.85	1	15.507	1060.59	70.71	B
			B	0.712	1.777	0.829	0.85	1	32.385			
			C	0.686	1.776	0.81	0.85	1	30.498			
T10 5.00-0.00	0.00	139.43	A	0.377	2.112	0.642	0.85	1	2.606	101.46	20.29	C
			B	0.377	2.112	0.642	0.85	1	2.606			
			C	0.377	2.112	0.642	0.85	1	2.606			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
Sum Weight:	6116.03	7741.22								15879.80		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl Face
T1	484.17	708.29	A	0.386	2.092	0.646	1	1	13.849	1499.68	99.98	B
170.00-155.00			B	0.781	1.803	0.881	1	1	38.167			
			C	0.565	1.83	0.733	1	1	22.972			
T2	905.62	1233.37	A	0.459	1.96	0.677	1	1	17.420	2353.92*	156.93	B
155.00-140.00		TA 612.67	B	1	2.1	1	1	1	57.491			
			C	0.703	1.776	0.822	1	1	32.581			
T3	1793.04	1973.13	A	0.47	1.942	0.683	1	1	32.720	3065.35*	153.27	C
140.00-120.00		TA 824.29	B	1	2.1	1	1	1	78.556			
			C	1	2.1	1	1	1	84.387			
T4	2276.51	927.71	A	0.695	1.776	0.817	1	1	47.197	2886.23*	144.31	C
120.00-100.00			B	1	2.1	1	1	1	80.864			
			C	1	2.1	1	1	1	81.374			
T5	2276.51	1156.56	A	0.716	1.778	0.831	1	1	49.389	2756.09*	137.80	C
100.00-80.00			B	1	2.1	1	1	1	82.537			
			C	1	2.1	1	1	1	83.033			
T6	2276.51	1525.33	A	0.733	1.782	0.844	1	1	52.363	2543.13*	127.16	C
80.00-60.00			B	1	2.1	1	1	1	81.668			
			C	1	2.1	1	1	1	82.109			
T7	2287.45	1156.56	A	0.716	1.778	0.831	1	1	49.389	2330.01*	116.50	C
60.00-40.00			B	1	2.1	1	1	1	83.871			
			C	1	2.1	1	1	1	83.033			
T8	2298.39	1079.69	A	0.681	1.776	0.807	1	1	46.577	2069.18*	103.46	C
40.00-20.00			B	1	2.1	1	1	1	84.630			
			C	1	2.1	1	1	1	82.214			
T9 20.00-5.00	1608.88	840.17	A	0.661	1.779	0.793	1	1	33.501	1551.89*	103.46	C
			B	1	2.1	1	1	1	60.567			
			C	1	2.1	1	1	1	58.886			
T10 5.00-0.00	0.00	196.83	A	0.484	1.922	0.69	1	1	3.771	100.15	20.03	C
			B	0.484	1.922	0.69	1	1	3.771			
			C	0.484	1.922	0.69	1	1	3.771			
Sum Weight:	16207.08	12234.60			*$2A_g$ limit					21155.64		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	484.17	708.29	A	0.386	2.092	0.646	0.8	1	13.849	1499.68	99.98	B
170.00-155.00			B	0.781	1.803	0.881	0.8	1	38.167			
			C	0.565	1.83	0.733	0.8	1	22.972			
T2	905.62	1233.37	A	0.459	1.96	0.677	0.8	1	17.312	2353.92*	156.93	B

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
155.00-140.00		TA 612.67	B	1	2.1	1	0.8	1	57.458			
			C	0.703	1.776	0.822	0.8	1	31.994			
T3	1793.04	1973.13	A	0.47	1.942	0.683	0.8	1	27.263	3065.35*	153.27	C
140.00-120.00		TA 824.29	B	1	2.1	1	0.8	1	75.023			
			C	1	2.1	1	0.8	1	73.433			
T4	2276.51	927.71	A	0.695	1.776	0.817	0.8	1	41.570	2886.23*	144.31	C
120.00-100.00			B	1	2.1	1	0.8	1	80.280			
			C	1	2.1	1	0.8	1	73.574			
T5	2276.51	1156.56	A	0.716	1.778	0.831	0.8	1	43.656	2756.09*	137.80	C
100.00-80.00			B	1	2.1	1	0.8	1	81.918			
			C	1	2.1	1	0.8	1	75.200			
T6	2276.51	1525.33	A	0.733	1.782	0.844	0.8	1	44.094	2543.13*	127.16	C
80.00-60.00			B	1	2.1	1	0.8	1	78.724			
			C	1	2.1	1	0.8	1	71.958			
T7	2287.45	1156.56	A	0.716	1.778	0.831	0.8	1	43.656	2330.01*	116.50	C
60.00-40.00			B	1	2.1	1	0.8	1	83.121			
			C	1	2.1	1	0.8	1	75.200			
T8	2298.39	1079.69	A	0.681	1.776	0.807	0.8	1	40.950	2069.18*	103.46	C
40.00-20.00			B	1	2.1	1	0.8	1	83.774			
			C	1	2.1	1	0.8	1	74.414			
T9 20.00-5.00	1608.88	840.17	A	0.661	1.779	0.793	0.8	1	29.563	1551.89*	103.46	B
			B	1	2.1	1	0.8	1	59.967			
			C	1	2.1	1	0.8	1	53.426			
T10 5.00-0.00	0.00	196.83	A	0.484	1.922	0.69	0.8	1	3.547	94.20	18.84	C
			B	0.484	1.922	0.69	0.8	1	3.547			
			C	0.484	1.922	0.69	0.8	1	3.547			
Sum Weight:	16207.08	12234.60			*$2A_E$ limit					21149.69		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl Face
T1	484.17	708.29	A	0.386	2.092	0.646	0.85	1	13.849	1499.68	99.98	B
170.00-155.00			B	0.781	1.803	0.881	0.85	1	38.167			
			C	0.565	1.83	0.733	0.85	1	22.972			
T2	905.62	1233.37	A	0.459	1.96	0.677	0.85	1	17.339	2353.92*	156.93	B
155.00-140.00		TA 612.67	B	1	2.1	1	0.85	1	57.466			
			C	0.703	1.776	0.822	0.85	1	32.141			
T3	1793.04	1973.13	A	0.47	1.942	0.683	0.85	1	28.627	3065.35*	153.27	C
140.00-120.00		TA 824.29	B	1	2.1	1	0.85	1	75.906			
			C	1	2.1	1	0.85	1	76.171			
T4	2276.51	927.71	A	0.695	1.776	0.817	0.85	1	42.977	2886.23*	144.31	C
120.00-100.00			B	1	2.1	1	0.85	1	80.426			
			C	1	2.1	1	0.85	1	75.524			
T5	2276.51	1156.56	A	0.716	1.778	0.831	0.85	1	45.089	2756.09*	137.80	C
100.00-80.00			B	1	2.1	1	0.85	1	82.073			
			C	1	2.1	1	0.85	1	77.158			
T6	2276.51	1525.33	A	0.733	1.782	0.844	0.85	1	46.161	2543.13*	127.16	C
80.00-60.00			B	1	2.1	1	0.85	1	79.460			
			C	1	2.1	1	0.85	1	74.496			
T7	2287.45	1156.56	A	0.716	1.778	0.831	0.85	1	45.089	2330.01*	116.50	C
60.00-40.00			B	1	2.1	1	0.85	1	83.308			
			C	1	2.1	1	0.85	1	77.158			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl Face
T8	2298.39	1079.69	A	0.681	1.776	0.807	0.85	1	42.357	2069.18*	103.46	C
40.00-20.00			B	1	2.1	1	0.85	1	83.988			
			C	1	2.1	1	0.85	1	76.364			
T9 20.00-5.00	1608.88	840 17	A	0.661	1.779	0.793	0.85	1	30.547	1551.89*	103.46	C
			B	1	2.1	1	0.85	1	60.117			
			C	1	2.1	1	0.85	1	54.791			
T10 5.00-0.00	0.00	196.83	A	0.484	1.922	0.69	0.85	1	3.603	95.69	19.14	C
			B	0.484	1.922	0.69	0.85	1	3.603			
			C	0.484	1.922	0.69	0.85	1	3.603			
Sum Weight:	16207.08	12234.60			*$2A_g$ limit					21151.18		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl Face
T1	191.43	378.16	A	0.266	2.389	0.606	1	1	8.762	621.07	41.40	B
170.00-155.00			B	0.527	1.868	0.712	1	1	20.346			
			C	0.362	2.145	0.637	1	1	12.492			
T2	362.94	826.95	A	0.306	2.28	0.618	1	1	10.461	931.44	62.10	B
155.00-140.00		TA 456.98	B	0.724	1.779	0.837	1	1	32.924			
			C	0.443	1.985	0.67	1	1	16.286			
T3	693.40	1250.39	A	0.342	2.19	0.63	1	1	25.062	1450.43	72.52	C
140.00-120.00		TA 682.09	B	0.757	1.79	0.862	1	1	50.380			
			C	0.78	1.802	0.88	1	1	52.473			
T4	853.00	496.70	A	0.453	1.969	0.675	1	1	22.095	1174.15	58.71	B
120.00-100.00			B	0.736	1.783	0.846	1	1	45.051			
			C	0.725	1.78	0.838	1	1	43.932			
T5	853.00	686.65	A	0.479	1.929	0.687	1	1	24.335	1177.76	58.89	B
100.00-80.00			B	0.755	1.79	0.861	1	1	47.664			
			C	0.744	1.785	0.853	1	1	46.538			
T6	853.00	865.11	A	0.507	1.892	0.701	1	1	29.347	1168.27	58.41	B
80.00-60.00			B	0.774	1.799	0.876	1	1	50.534			
			C	0.764	1.794	0.868	1	1	49.534			
T7	854.40	686.65	A	0.479	1.929	0.687	1	1	24.335	1014.39	50.72	B
60.00-40.00			B	0.763	1.793	0.867	1	1	48.465			
			C	0.744	1.785	0.853	1	1	46.538			
T8	855.80	712.32	A	0.437	1.995	0.667	1	1	21.358	859.28	42.96	B
40.00-20.00			B	0.744	1.785	0.852	1	1	46.434			
			C	0.716	1.778	0.832	1	1	43.587			
T9 20.00-5.00	599.06	559.79	A	0.426	2.014	0.663	1	1	15.507	596.58	39.77	B
			B	0.712	1.777	0.829	1	1	32.385			
			C	0.686	1.776	0.81	1	1	30.498			
T10 5.00-0.00	0.00	139.43	A	0.377	2.112	0.642	1	1	2.774	60.75	12.15	C
			B	0.377	2.112	0.642	1	1	2.774			
			C	0.377	2.112	0.642	1	1	2.774			
Sum Weight:	6116.03	7741.22								9054.12		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	191.43	378.16	A	0.266	2.389	0.606	0.8	1	8.762	621.07	41.40	B
170.00-155.00			B	0.527	1.868	0.712	0.8	1	20.346			
			C	0.362	2.145	0.637	0.8	1	12.492			
T2	362.94	826.95	A	0.306	2.28	0.618	0.8	1	10.353	929.81	61.99	B
155.00-140.00		TA 456.98	B	0.724	1.779	0.837	0.8	1	32.866			
			C	0.443	1.985	0.67	0.8	1	16.185			
T3	693.40	1250.39	A	0.342	2.19	0.63	0.8	1	20.050	1349.76	67.49	C
140.00-120.00		TA 682.09	B	0.757	1.79	0.862	0.8	1	46.645			
			C	0.78	1.802	0.88	0.8	1	48.831			
T4	853.00	496.70	A	0.453	1.969	0.675	0.8	1	22.095	1174.15	58.71	B
120.00-100.00			B	0.736	1.783	0.846	0.8	1	45.051			
			C	0.725	1.78	0.838	0.8	1	43.932			
T5	853.00	686.65	A	0.479	1.929	0.687	0.8	1	24.179	1175.22	58.76	B
100.00-80.00			B	0.755	1.79	0.861	0.8	1	47.561			
			C	0.744	1.785	0.853	0.8	1	46.432			
T6	853.00	865.11	A	0.507	1.892	0.701	0.8	1	26.949	1117.81	55.89	B
80.00-60.00			B	0.774	1.799	0.876	0.8	1	48.351			
			C	0.764	1.794	0.868	0.8	1	47.339			
T7	854.40	686.65	A	0.479	1.929	0.687	0.8	1	24.179	1012.29	50.61	B
60.00-40.00			B	0.763	1.793	0.867	0.8	1	48.364			
			C	0.744	1.785	0.853	0.8	1	46.432			
T8	855.80	712.32	A	0.437	1.995	0.667	0.8	1	21.358	859.28	42.96	B
40.00-20.00			B	0.744	1.785	0.852	0.8	1	46.434			
			C	0.716	1.778	0.832	0.8	1	43.587			
T9 20.00-5.00	599.06	559.79	A	0.426	2.014	0.663	0.8	1	15.507	596.58	39.77	B
			B	0.712	1.777	0.829	0.8	1	32.385			
			C	0.686	1.776	0.81	0.8	1	30.498			
T10 5.00-0.00	0.00	139.43	A	0.377	2.112	0.642	0.8	1	2.550	55.84	11.17	C
			B	0.377	2.112	0.642	0.8	1	2.550			
			C	0.377	2.112	0.642	0.8	1	2.550			
Sum Weight:	6116.03	7741.22								8891.81		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	191.43	378.16	A	0.266	2.389	0.606	0.85	1	8.762	621.07	41.40	B
170.00-155.00			B	0.527	1.868	0.712	0.85	1	20.346			
			C	0.362	2.145	0.637	0.85	1	12.492			
T2	362.94	826.95	A	0.306	2.28	0.618	0.85	1	10.380	930.21	62.01	B
155.00-140.00		TA 456.98	B	0.724	1.779	0.837	0.85	1	32.881			
			C	0.443	1.985	0.67	0.85	1	16.210			
T3	693.40	1250.39	A	0.342	2.19	0.63	0.85	1	21.303	1374.93	68.75	C
140.00-120.00		TA 682.09	B	0.757	1.79	0.862	0.85	1	47.579			
			C	0.78	1.802	0.88	0.85	1	49.742			
T4	853.00	496.70	A	0.453	1.969	0.675	0.85	1	22.095	1174.15	58.71	B
120.00-100.00			B	0.736	1.783	0.846	0.85	1	45.051			
			C	0.725	1.78	0.838	0.85	1	43.932			
T5	853.00	686.65	A	0.479	1.929	0.687	0.85	1	24.218	1175.86	58.79	B
100.00-80.00			B	0.755	1.79	0.861	0.85	1	47.587			
			C	0.744	1.785	0.853	0.85	1	46.459			
T6	853.00	865.11	A	0.507	1.892	0.701	0.85	1	27.548	1130.42	56.52	B
80.00-60.00			B	0.774	1.799	0.876	0.85	1	48.897			
			C	0.764	1.794	0.868	0.85	1	47.888			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T7	854.40	686.65	A	0.479	1.929	0.687	0.85	1	24.218	1012.82	50.64	B
60.00-40.00			B	0.763	1.793	0.867	0.85	1	48.389			
			C	0.744	1.785	0.853	0.85	1	46.459			
T8	855.80	712.32	A	0.437	1.995	0.667	0.85	1	21.358	859.28	42.96	B
40.00-20.00			B	0.744	1.785	0.852	0.85	1	46.434			
			C	0.716	1.778	0.832	0.85	1	43.587			
T9 20.00-5.00	599.06	559.79	A	0.426	2.014	0.663	0.85	1	15.507	596.58	39.77	B
			B	0.712	1.777	0.829	0.85	1	32.385			
			C	0.686	1.776	0.81	0.85	1	30.498			
T10 5.00-0.00	0.00	139.43	A	0.377	2.112	0.642	0.85	1	2.606	57.07	11.41	C
			B	0.377	2.112	0.642	0.85	1	2.606			
			C	0.377	2.112	0.642	0.85	1	2.606			
Sum Weight:	6116.03	7741.22								8932.39		

Force Totals (Does not include forces on guys)

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Leg Weight	2831.31			
Bracing Weight	4909.91			
Total Member Self-Weight	7741.22			
Guy Weight	2444.66			
Total Weight	23024.87			
Wind 0 deg - No Ice		0.00	-28673.24	856.22
Wind 30 deg - No Ice		14228.41	-24644.34	398.01
Wind 60 deg - No Ice		24581.86	-14192.35	-154.24
Wind 90 deg - No Ice		28456.83	0.00	-653.11
Wind 120 deg - No Ice		24831.75	14336.62	-982.61
Wind 150 deg - No Ice		14228.41	24644.34	-1051.12
Wind 180 deg - No Ice		0.00	28384.69	-830.13
Wind 210 deg - No Ice		-14228.41	24644.34	-398.01
Wind 240 deg - No Ice		-24831.75	14336.62	126.38
Wind 270 deg - No Ice		-28456.83	0.00	653.11
Wind 300 deg - No Ice		-24581.86	-14192.35	984.38
Wind 330 deg - No Ice		-14228.41	-24644.34	1051.12
Member Ice	4493.38			
Guy Ice	1937.94			
Total Weight Ice	43021.18			
Wind 0 deg - Ice		0.00	-33631.53	1897.12
Wind 30 deg - Ice		16813.54	-29121.90	-897.07
Wind 60 deg - Ice		29120.61	-16812.79	-3450.89
Wind 90 deg - Ice		33627.07	0.00	-5080.05
Wind 120 deg - Ice		29125.76	16815.77	-5348.01
Wind 150 deg - Ice		16813.54	29121.90	-4182.98
Wind 180 deg - Ice		0.00	33625.58	-1897.12
Wind 210 deg - Ice		-16813.54	29121.90	897.07
Wind 240 deg - Ice		-29125.76	16815.77	3450.89
Wind 270 deg - Ice		-33627.07	0.00	5080.05
Wind 300 deg - Ice		-29120.61	-16812.79	5348.01
Wind 330 deg - Ice		-16813.54	-29121.90	4182.98
Total Weight	23024.87			
Wind 0 deg - Service		0.00	-16128.70	481.62
Wind 30 deg - Service		8003.48	-13862.44	223.88
Wind 60 deg - Service		13827.30	-7983.19	-86.76

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Wind 90 deg - Service		16006.97	0.00	-367.37
Wind 120 deg - Service		13967.86	8064.35	-552.72
Wind 150 deg - Service		8003.48	13862.44	-591.25
Wind 180 deg - Service		0.00	15966.39	-466.95
Wind 210 deg - Service		-8003.48	13862.44	-223.88
Wind 240 deg - Service		-13967.86	8064.35	71.09
Wind 270 deg - Service		-16006.97	0.00	367.37
Wind 300 deg - Service		-13827.30	-7983.19	553.71
Wind 330 deg - Service		-8003.48	-13862.44	591.25

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T1	170 - 155	Leg	Max Tension	4	13018.79	-31.42	18.38
			Max. Compression	19	-15420.99	-18.17	-10.36
			Max. Mx	24	8683.16	-408.43	-69.48
			Max. My	21	10253.09	13.28	446.84
			Max. Vy	18	1770.76	-35.42	8.21
			Max. Vx	21	1926.71	-4.16	-34.65
		Diagonal	Max Tension	26	2212.97	0.00	0.00
			Max. Compression	26	-2264.11	0.00	0.00
			Max. Mx	19	1657.42	-12.98	0.07
			Max. My	20	-1825.86	1.06	-4.91
			Max. Vy	19	8.49	-12.98	0.07
			Max. Vx	20	2.35	1.06	-4.91
		Top Girt	Max Tension	10	12.40	0.00	0.00
			Max. Compression	21	-21.69	0.00	0.00
			Max. Mx	14	-6.99	3.90	0.00
			Max. My	18	-4.93	0.00	-0.00
			Max. Vy	14	-4.56	0.00	0.00
			Max. Vx	18	-0.00	0.00	0.00
		Bottom Girt	Max Tension	21	847.64	0.00	0.00
			Max. Compression	6	-766.20	0.00	0.00
			Max. Mx	14	56.66	3.90	0.00
			Max. My	18	72.24	0.00	-0.00
			Max. Vy	14	-4.56	0.00	0.00
			Max. Vx	18	-0.00	0.00	0.00
T2	155 - 140	Leg	Max Tension	17	15288.81	-631.71	375.70
			Max. Compression	15	-37950.44	1.24	673.90
			Max. Mx	24	-10453.41	-717.94	133.09
			Max. My	21	15159.59	-2.95	-753.34
			Max. Vy	23	-3787.65	579.37	-344.23
			Max. Vx	15	-4713.00	1.24	673.90
		Diagonal	Max Tension	25	3354.71	0.00	0.00
			Max. Compression	19	-4509.02	0.00	0.00
			Max. Mx	15	1511.94	-83.88	-5.24
			Max. My	18	-2430.07	8.12	-15.61
			Max. Vy	15	43.77	-83.88	-5.24
			Max. Vx	18	7.47	8.12	-15.61
		Secondary Horizontal	Max Tension	17	803.12	0.00	0.00
			Max. Compression	15	-657.32	0.00	0.00
			Max. Mx	14	183.80	5.44	0.00
			Max. My	18	579.76	0.00	-0.00
			Max. Vy	14	-6.37	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
		Top Girt	Max Tension	14	61.12	0.00	0.00
			Max. Compression	4	-2.88	0.00	0.00
			Max. Mx	14	57.29	3.90	0.00
			Max. My	18	49.71	0.00	-0.00
			Max. Vy	14	-4.56	0.00	0.00
			Max. Vx	18	-0.00	0.00	0.00
		Bottom Girt	Max Tension	16	345.37	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	224.18	3.90	0.00
			Max. My	18	327.16	0.00	-0.00
			Max. Vy	14	-4.56	0.00	0.00
			Max. Vx	18	-0.00	0.00	0.00
		Guy A	Bottom Tension	21	7862.02		
			Top Tension	21	8039.11		
			Top Cable Vert	21	6831.39		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Top Cable Norm	21	4237.84		
			Top Cable Tan	21	6.68		
			Bot Cable Vert	21	-6429.12		
			Bot Cable Norm	21	4525.23		
			Bot Cable Tan	21	7.17		
		Guy B	Bottom Tension	25	7884.47		
			Top Tension	25	8050.38		
			Top Cable Vert	25	6703.08		
			Top Cable Norm	25	4458.39		
			Top Cable Tan	25	7.07		
			Bot Cable Vert	25	-6314.29		
			Bot Cable Norm	25	4721.70		
			Bot Cable Tan	25	6.16		
		Guy C	Bottom Tension	17	7807.65		
			Top Tension	17	7966.89		
			Top Cable Vert	17	6523.16		
			Top Cable Norm	17	4573.81		
			Top Cable Tan	17	6.34		
			Bot Cable Vert	17	-6141.83		
			Bot Cable Norm	17	4820.51		
			Bot Cable Tan	17	6.37		
		Top Guy Pull-Off	Max Tension	17	3630.68	0.00	0.00
			Max. Compression	2	-2690.09	0.00	0.00
			Max. Mx	14	397.95	-6.57	0.00
			Max. My	18	250.05	0.00	0.00
			Max. Vy	14	7.68	0.00	0.00
			Max. Vx	18	-0.00	0.00	0.00
		Torque Arm Top	Max Tension	16	4178.72	0.00	0.00
			Max. Compression	5	-1425.49	0.00	0.00
			Max. Mx	21	-788.22	-24079.40	-0.00
			Max. My	18	-124.29	-14406.83	-0.00
			Max. Vy	21	6930.29	-24079.40	-0.00
			Max. Vx	18	-0.00	-14406.83	-0.00
T3	140 - 120	Leg	Max Tension	21	36486.57	-593.43	3.91
			Max. Compression	15	-62349.33	186.91	2.96
			Max. Mx	21	20592.69	-1889.74	17.41
			Max. My	20	-11365.12	-760.85	-2166.35
			Max. Vy	23	-4693.72	1847.08	-155.39
			Max. Vx	20	2154.72	-760.85	-2166.35
		Diagonal	Max Tension	24	5713.64	-113.47	-30.72
			Max. Compression	22	-5992.09	-77.03	-36.19
			Max. Mx	25	3200.83	156.37	-0.15
			Max. My	20	-4243.58	-0.20	-70.96
			Max. Vy	25	-78.45	156.37	-0.15
			Max. Vx	20	-33.80	0.00	0.00
		Secondary Horizontal	Max Tension	21	3234.67	0.00	0.00
			Max. Compression	15	-1673.92	0.00	0.00
			Max. Mx	14	679.58	-6.79	0.00
			Max. My	18	973.17	0.00	0.00
			Max. Vy	14	-7.94	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
		Top Girt	Max Tension	23	1181.80	0.00	0.00
			Max. Compression	21	-921.96	0.00	0.00
			Max. Mx	14	137.95	-4.14	0.00
			Max. My	18	186.54	0.00	0.00
			Max. Vy	14	4.84	0.00	0.00
			Max. Vx	18	-0.00	0.00	0.00
		Bottom Girt	Max Tension	23	1279.01	0.00	0.00
			Max. Compression	8	-447.09	0.00	0.00
			Max. Mx	14	380.81	-4.75	0.00

Section No.	Elevation ft	Component Type	Condition	Gov Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	24	-283.91	0.00	0.00
			Max. Vy	14	-5.56	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00
		Guy A	Bottom Tension	21	20190.49		
			Top Tension	21	20523.78		
			Top Cable Vert	21	16556.24		
			Top Cable Norm	21	12129.16		
			Top Cable Tan	21	6.10		
			Bot Cable Vert	21	-15930.36		
			Bot Cable Norm	21	12404.81		
			Bot Cable Tan	21	8.42		
		Guy B	Bottom Tension	25	19832.16		
			Top Tension	25	20141.41		
			Top Cable Vert	25	15801.01		
			Top Cable Norm	25	12490.18		
			Top Cable Tan	25	6.74		
			Bot Cable Vert	25	-15201.32		
			Bot Cable Norm	25	12737.13		
			Bot Cable Tan	25	7.03		
		Guy C	Bottom Tension	17	19242.36		
			Top Tension	17	19537.23		
			Top Cable Vert	17	14981.32		
			Top Cable Norm	17	12540.46		
			Top Cable Tan	17	6.05		
			Bot Cable Vert	17	-14396.20		
			Bot Cable Norm	17	12767.84		
			Bot Cable Tan	17	7.11		
		Torque Arm Top	Max Tension	26	13364.10	-8881.58	0.00
			Max. Compression	20	-6316.10	0.00	0.00
			Max. Mx	21	-4496.58	-55729.97	0.00
			Max. My	20	127.21	-54381.55	-0.00
			Max. Vy	21	15990.16	-55729.97	0.00
			Max. Vx	20	-0.00	-54381.55	-0.00
T4	120 - 100	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	15	-36985.57	-10.73	-158.74
			Max. Mx	24	-24775.02	-359.31	-92.24
			Max. My	21	-24582.12	20.09	387.50
			Max. Vy	18	-2792.25	-94.35	114.29
			Max. Vx	21	-3123.69	-3.81	-144.02
		Diagonal	Max Tension	18	1269.10	0.00	0.00
			Max. Compression	20	-1796.30	-10.79	-0.24
			Max. Mx	22	-392.38	-56.50	0.66
			Max. My	22	-556.74	-0.55	2.34
			Max. Vy	22	29.18	-56.50	0.66
			Max. Vx	22	1.11	0.00	0.00
		Top Girt	Max Tension	23	816.80	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	574.56	3.90	0.00
			Max. My	24	555.71	0.00	-0.00
			Max. Vy	14	-4.56	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00
		Bottom Girt	Max Tension	23	507.72	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	355.71	3.90	0.00
			Max. My	19	392.65	0.00	0.00
			Max. Vy	14	-4.56	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
T5	100 - 80	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	22	-45139.60	-4.90	55.68
			Max. Mx	18	-28092.48	-265.57	-123.53
			Max. My	15	-28188.45	1.57	304.64

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	23	875.66	254.38	-121.72
			Max. Vx	15	987.72	1.32	290.60
		Diagonal	Max Tension	18	1056.11	0.00	0.00
			Max. Compression	18	-1394.38	-4.12	-0.57
			Max. Mx	22	-56.10	-40.77	0.43
			Max. My	23	-848.91	-25.91	1.74
			Max. Vy	22	21.69	-40.77	0.43
			Max. Vx	23	-0.83	-25.91	1.74
		Top Girt	Max Tension	23	489.80	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	363.53	3.90	0.00
			Max. My	19	372.30	0.00	0.00
			Max. Vy	14	-4.56	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
		Bottom Girt	Max Tension	23	911.33	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	17	406.86	3.90	0.00
			Max. My	20	601.07	0.00	0.00
			Max. Vy	17	-4.56	0.00	0.00
			Max. Vx	20	-0.00	0.00	0.00
		Guy A	Bottom Tension	21	7457.43		
			Top Tension	21	7550.03		
			Top Cable Vert	21	5194.54		
			Top Cable Norm	21	5479.02		
			Top Cable Tan	21	0.04		
			Bot Cable Vert	21	-4955.41		
			Bot Cable Norm	21	5572.90		
			Bot Cable Tan	21	0.04		
		Guy B	Bottom Tension	25	7217.68		
			Top Tension	25	7300.66		
			Top Cable Vert	25	4724.43		
			Top Cable Norm	25	5565.91		
			Top Cable Tan	25	0.01		
			Bot Cable Vert	25	-4500.69		
			Bot Cable Norm	25	5642.57		
			Bot Cable Tan	25	0.01		
		Guy C	Bottom Tension	17	7021.89		
			Top Tension	17	7099.11		
			Top Cable Vert	17	4373.64		
			Top Cable Norm	17	5591.84		
			Top Cable Tan	17	0.06		
			Bot Cable Vert	17	-4159.31		
			Bot Cable Norm	17	5657.49		
			Bot Cable Tan	17	0.06		
		Top Guy Pull-Off	Max Tension	23	3609.45	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	16	1711.13	10.77	0.00
			Max. My	20	3388.08	0.00	-0.00
			Max. Vy	16	12.60	0.00	0.00
			Max. Vx	20	-0.00	0.00	0.00
T6	80 - 60	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	22	-46348.91	-376.41	56.32
			Max. Mx	22	-45568.33	-589.77	60.89
			Max. My	24	-38734.55	-51.39	115.31
			Max. Vy	23	-1103.73	47.39	-1.42
			Max. Vx	24	480.77	55.77	-4.70
		Diagonal	Max Tension	22	269.43	0.00	0.00
			Max. Compression	22	-1486.40	0.00	0.00
			Max. Mx	22	-1179.67	-36.93	-0.16
			Max. My	23	-1187.03	-0.29	2.10
			Max. Vy	22	19.86	-36.93	-0.16

Section No.	Elevation ft	Component Type	Condition	Gov Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	23	-1.00	-0.29	2.10
		Secondary Horizontal	Max Tension	23	1077.07	0.00	0.00
			Max. Compression	22	-802.79	0.00	0.00
			Max. Mx	17	548.78	-6.57	0.00
			Max. My	19	750.13	0.00	-0.00
			Max. Vy	17	7.68	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
		Top Girt	Max Tension	18	200.42	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	17	197.65	3.90	0.00
			Max. My	20	184.46	0.00	0.00
			Max. Vy	17	-4.56	0.00	0.00
			Max. Vx	20	-0.00	0.00	0.00
		Bottom Girt	Max Tension	21	254.19	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	17	245.22	3.90	0.00
			Max. My	19	197.63	0.00	0.00
			Max. Vy	17	-4.56	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
T7	60 - 40	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	22	-49251.81	-219.08	108.30
			Max. Mx	24	-28079.01	374.48	82.68
			Max. My	22	-41029.07	-10.80	-372.47
			Max. Vy	24	-984.24	292.05	-125.20
			Max. Vx	15	-1065.95	6.30	315.80
		Diagonal	Max Tension	22	1196.19	0.00	0.00
			Max. Compression	22	-1536.71	0.00	0.00
			Max. Mx	22	123.01	-45.29	1.31
			Max. My	23	-820.73	-29.36	2.68
			Max. Vy	22	23.85	-45.29	1.31
			Max. Vx	23	-1.28	0.00	0.00
		Top Girt	Max Tension	23	938.96	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	17	416.08	3.90	0.00
			Max. My	19	525.66	0.00	0.00
			Max. Vy	17	-4.56	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Bottom Girt	Max Tension	20	878.98	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	17	350.39	3.90	0.00
			Max. My	19	358.55	0.00	0.00
			Max. Vy	17	-4.56	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Guy A	Bottom Tension	21	8295.61		
			Top Tension	21	8349.73		
			Top Cable Vert	21	4013.55		
			Top Cable Norm	21	7321.84		
			Top Cable Tan	21	0.07		
			Bot Cable Vert	21	-3852.47		
			Bot Cable Norm	21	7346.81		
			Bot Cable Tan	21	0.07		
		Guy B	Bottom Tension	25	8045.10		
			Top Tension	25	8089.57		
			Top Cable Vert	25	3324.40		
			Top Cable Norm	25	7374.92		
			Top Cable Tan	25	0.10		
			Bot Cable Vert	25	-3180.21		
			Bot Cable Norm	25	7389.86		
			Bot Cable Tan	25	0.10		
		Guy C	Bottom Tension	17	7856.53		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Top Tension	17	7895.20		
			Top Cable Vert	17	2861.78		
			Top Cable Norm	17	7358.29		
			Top Cable Tan	17	0.09		
			Bot Cable Vert	17	-2726.27		
			Bot Cable Norm	17	7368.35		
			Bot Cable Tan	17	0.09		
		Top Guy Pull-Off	Max Tension	23	4602.35	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	17	1636.27	10.77	0.00
			Max. My	19	2627.21	0.00	0.00
			Max. Vy	17	12.60	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
T8	40 - 20	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	22	-52566.04	496.94	67.55
			Max. Mx	23	-48874.27	-582.34	-26.55
			Max. My	23	-48443.92	-267.12	519.12
			Max. Vy	18	-950.37	19.05	-201.54
			Max. Vx	15	890.23	-198.27	93.91
		Diagonal	Max Tension	24	849.01	0.00	0.00
			Max. Compression	18	-1964.30	0.00	0.00
			Max. Mx	20	2.34	4.81	0.00
			Max. My	19	-819.85	0.00	0.03
			Max. Vy	20	-4.59	0.00	0.00
			Max. Vx	19	-0.03	0.00	0.00
		Horizontal	Max Tension	22	920.10	0.00	0.00
			Max. Compression	22	-910.47	0.00	0.00
			Max. Mx	17	579.52	5.44	0.00
			Max. My	19	838.39	0.00	0.00
			Max. Vy	17	-6.37	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Top Girt	Max Tension	18	493.10	0.00	0.00
			Max. Compression	25	-304.86	0.00	0.00
			Max. Mx	17	206.31	3.90	0.00
			Max. My	19	-112.85	0.00	0.00
			Max. Vy	17	-4.56	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Bottom Girt	Max Tension	23	465.69	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	17	304.50	3.90	0.00
			Max. My	19	213.04	0.00	0.00
			Max. Vy	17	-4.56	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
T9	20 - 5	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	22	-52516.62	-455.69	-42.53
			Max. Mx	24	-45105.07	1900.41	854.82
			Max. My	22	-45589.36	-47.37	-2105.97
			Max. Vy	24	-8451.77	1900.41	854.82
			Max. Vx	20	9732.54	-19.86	-2085.32
		Diagonal	Max Tension	20	1962.32	0.00	0.00
			Max. Compression	20	-2794.12	0.00	0.00
			Max. Mx	20	1962.32	4.81	0.00
			Max. My	19	-223.69	0.00	0.03
			Max. Vy	20	-4.59	0.00	0.00
			Max. Vx	19	-0.03	0.00	0.00
		Horizontal	Max Tension	22	909.61	0.00	0.00
			Max. Compression	22	-909.61	0.00	0.00
			Max. Mx	17	651.13	5.44	0.00
			Max. My	19	838.03	0.00	0.00
			Max. Vy	17	-6.37	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
		Top Girt	Max Tension	18	527.19	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	17	215.02	3.90	0.00
			Max. My	19	447.82	0.00	0.00
			Max. Vy	17	-4.56	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Bottom Girt	Max Tension	22	5799.16	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	17	4625.43	7.72	0.00
			Max. My	19	4156.60	0.00	0.00
			Max. Vy	17	-9.03	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
T10	5 - 0	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	22	-48994.32	-27.14	-86.25
			Max. Mx	22	-45935.75	2105.90	-44.30
			Max. My	26	-41319.13	-123.28	-254.00
			Max. Vy	23	7844.19	-68.79	-44.53
			Max. Vx	25	-736.83	-1107.97	177.03
		Top Girt	Max Tension	23	5112.40	-10.27	0.32
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	20	4486.61	-197.00	-4.18
			Max. My	19	4341.31	-188.10	-4.63
			Max. Vy	20	101.93	-197.00	-4.18
			Max. Vx	19	3.72	-188.10	-4.63
		Bottom Girt	Max Tension	1	0.00	0.00	0.00
			Max. Compression	20	-3970.26	-582.38	-3.80
			Max. Mx	19	-3882.99	-582.39	-3.95
			Max. My	18	-3744.11	-499.87	-4.38
			Max. Vy	19	3234.81	-582.39	-3.95
			Max. Vx	18	43.87	-499.87	-4.38
		Mid Girt	Max Tension	20	4.78	0.00	0.00
			Max. Compression	22	-40.09	0.00	0.00
			Max. Mx	15	-18.32	1.52	0.00
			Max. My	18	-3.38	0.00	0.30
			Max. Vy	15	3.56	0.00	0.00
			Max. Vx	18	-0.70	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	23	125714.11	1429.38	-796.40
	Max. H_x	24	123592.24	1624.97	5.12
	Max. H_z	15	123443.89	-2.63	1642.78
	Max. M_x	1	0.00	5.52	4.40
	Max. M_z	1	0.00	5.52	4.40
	Max. Torsion	19	281.25	-1421.45	-786.44
	Min. Vert	1	79460.27	5.52	4.40
	Min. H_x	18	122419.36	-1627.24	14.70
	Min. H_z	21	120423.96	14.96	-1584.23
	Min. M_x	1	0.00	5.52	4.40
	Min. M_z	1	0.00	5.52	4.40
	Min. Torsion	24	-397.53	1624.97	5.12
Guy C @ 107 ft Elev 10 ft Azimuth 240 deg	Max. Vert	10	-1108.47	-714.98	412.35

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Max. H_x	10	-1108.47	-714.98	412.35
	Max. H_z	17	-47401.26	-41315.22	23874.92
	Min. Vert	17	-47401.26	-41315.22	23874.92
	Min. H_x	17	-47401.26	-41315.22	23874.92
	Min. H_z	10	-1108.47	-714.98	412.35
Guy B @ 106 ft Elev 4 ft Azimuth 120 deg	Max. Vert	6	-1494.82	903.64	520.53
	Max. H_x	25	-49905.42	40944.22	23669.83
	Max. H_z	25	-49905.42	40944.22	23669.83
	Min. Vert	25	-49905.42	40944.22	23669.83
	Min. H_x	6	-1494.82	903.64	520.53
	Min. H_z	6	-1494.82	903.64	520.53
Guy A @ 106 ft Elev -6 ft Azimuth 0 deg	Max. Vert	2	-2241.41	0.78	-1460.89
	Max. H_x	24	-28448.88	1425.76	-24393.49
	Max. H_z	2	-2241.41	0.78	-1460.89
	Min. Vert	21	-53255.28	-8.90	-46560.58
	Min. H_x	18	-28985.90	-1417.06	-24787.14
	Min. H_z	21	-53255.28	-8.90	-46560.58

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	79460.27	-5.52	-4.40	0.00	0.00	41.16
Dead+Wind 0 deg - No Ice+Guy	89729.37	0.57	-1348.64	0.00	0.00	164.55
Dead+Wind 30 deg - No Ice+Guy	88601.31	619.44	-1145.50	0.00	0.00	167.26
Dead+Wind 60 deg - No Ice+Guy	86677.57	1089.78	-634.05	0.00	0.00	83.80
Dead+Wind 90 deg - No Ice+Guy	88621.58	1308.45	31.19	0.00	0.00	-17.07
Dead+Wind 120 deg - No Ice+Guy	90666.21	1172.02	662.29	0.00	0.00	-48.63
Dead+Wind 150 deg - No Ice+Guy	89725.57	679.37	1087.41	0.00	0.00	-46.06
Dead+Wind 180 deg - No Ice+Guy	86661.73	-9.81	1243.64	0.00	0.00	-68.97
Dead+Wind 210 deg - No Ice+Guy	90041.12	-695.05	1093.54	0.00	0.00	-61.46
Dead+Wind 240 deg - No Ice+Guy	91535.93	-1180.22	669.53	0.00	0.00	23.58
Dead+Wind 270 deg - No Ice+Guy	89345.64	-1314.51	41.57	0.00	0.00	108.26
Dead+Wind 300 deg - No Ice+Guy	86818.18	-1094.52	-624.44	0.00	0.00	117.89
Dead+Wind 330 deg - No Ice+Guy	89003.66	-618.78	-1138.09	0.00	0.00	123.48
Dead+Ice+Temp+Guy	103988.65	-12.17	1.70	0.00	0.00	56.56
Dead+Wind 0 deg+Ice+Temp+Guy	123443.89	2.63	-1642.78	0.00	0.00	289.69
Dead+Wind 30 deg+Ice+Temp+Guy	122117.90	807.39	-1408.44	0.00	0.00	204.38

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead+Wind 60 deg+Ice+Temp+Guy	119404.18	1408.32	-818.53	0.00	0.00	-28.21
Dead+Wind 90 deg+Ice+Temp+Guy	122419.36	1627.24	-14.70	0.00	0.00	-253.46
Dead+Wind 120 deg+Ice+Temp+Guy	124746.48	1421.45	786.44	0.00	0.00	-281.25
Dead+Wind 150 deg+Ice+Temp+Guy	124280.84	789.42	1344.69	0.00	0.00	-210.01
Dead+Wind 180 deg+Ice+Temp+Guy	120423.96	-14.96	1584.23	0.00	0.00	-164.23
Dead+Wind 210 deg+Ice+Temp+Guy	124691.10	-807.48	1353.53	0.00	0.00	-40.70
Dead+Wind 240 deg+Ice+Temp+Guy	125714.11	-1429.38	796.40	0.00	0.00	201.13
Dead+Wind 270 deg+Ice+Temp+Guy	123592.24	-1624.97	-5.12	0.00	0.00	397.53
Dead+Wind 300 deg+Ice+Temp+Guy	119989.24	-1411.21	-801.53	0.00	0.00	389.37
Dead+Wind 330 deg+Ice+Temp+Guy	122869.64	-802.80	-1389.49	0.00	0.00	315.08
Dead+Wind 0 deg - Service+Guy	80747.80	-3.37	-744.38	0.00	0.00	101.82
Dead+Wind 30 deg - Service+Guy	81073.48	353.33	-631.82	0.00	0.00	102.82
Dead+Wind 60 deg - Service+Guy	81223.69	616.22	-362.18	0.00	0.00	64.63
Dead+Wind 90 deg - Service+Guy	80766.29	723.88	1.58	0.00	0.00	20.07
Dead+Wind 120 deg - Service+Guy	80241.11	650.06	370.51	0.00	0.00	4.78
Dead+Wind 150 deg - Service+Guy	80365.27	368.60	619.18	0.00	0.00	-0.62
Dead+Wind 180 deg - Service+Guy	80538.34	-7.64	708.33	0.00	0.00	-18.32
Dead+Wind 210 deg - Service+Guy	80302.48	-385.76	623.50	0.00	0.00	-20.22
Dead+Wind 240 deg - Service+Guy	80155.05	-667.52	377.60	0.00	0.00	18.70
Dead+Wind 270 deg - Service+Guy	80606.16	-738.27	8.90	0.00	0.00	64.41
Dead+Wind 300 deg - Service+Guy	81072.35	-625.20	-357.77	0.00	0.00	79.39
Dead+Wind 330 deg - Service+Guy	80978.69	-360.33	-630.28	0.00	0.00	84.44

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0.00	-23024.15	-0.00	-0.26	23023.75	1.74	0.008%
2	-11.01	-23115.39	-31483.08	10.95	23115.21	31481.47	0.004%
3	15608.79	-22999.39	-27064.27	-15608.91	22999.25	27062.75	0.004%
4	26971.26	-22887.92	-15586.55	-26969.35	22887.82	15586.45	0.005%
5	31212.89	-23014.57	6.79	-31211.80	23014.44	-5.97	0.004%
6	27233.20	-23142.84	15750.49	-27231.76	23142.63	-15749.50	0.004%
7	15627.63	-23039.34	27083.32	-15625.96	23039.13	-27082.27	0.005%
8	11.01	-22932.92	31194.53	-12.03	22932.75	-31192.16	0.007%

	Sum of Applied Forces			Sum of Reactions			
Load Comb	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
9	-15608.79	-23048.93	27064.27	15607.64	23048.78	-27063.59	0.003%
10	-27221.15	-23160.39	15730.83	27219.08	23160.10	-15729.48	0.006%
11	-31212.89	-23033.74	-6.79	31211.24	23033.54	7.98	0.005%
12	-26983.30	-22905.47	-15606.21	26981.91	22905.41	15606.73	0.004%
13	-15627.63	-23008.97	-27083.32	15627.65	23008.81	27081.55	0.005%
14	0.00	-43019.90	-0.00	-1.02	43019.89	2.62	0.007%
15	-21.62	-43200.87	-39098.83	21.54	43200.48	39096.56	0.004%
16	19499.99	-42968.02	-33829.94	-19500.16	42967.82	33828.57	0.002%
17	33770.85	-42744.60	-19526.49	-33769.74	42744.55	19527.40	0.002%
18	38989.24	-42999.86	12.90	-38988.20	42999.66	-12.05	0.002%
19	33798.85	-43258.49	19567.63	-33796.88	43258.05	-19566.27	0.004%
20	19536.47	-43051.76	33867.33	-19534.95	43051.47	-33866.48	0.003%
21	21.62	-42838.96	39092.88	-23.02	42838.84	-39091.96	0.003%
22	-19499.99	-43071.81	33829.94	19498.00	43071.43	-33828.88	0.004%
23	-33776.00	-43295.22	19529.46	33774.46	43294.87	-19528.46	0.003%
24	-38989.24	-43039.96	-12.90	38987.72	43039.66	14.09	0.003%
25	-33793.70	-42781.33	-19564.65	33792.51	42781.29	19566.10	0.003%
26	-19536.47	-42988.07	-33867.33	19536.57	42987.84	33865.80	0.003%
27	-6.19	-23075.47	-17709.23	6.10	23075.40	17707.39	0.006%
28	8779.94	-23010.22	-15223.65	-8780.06	23010.14	15220.81	0.010%
29	15171.33	-22947.52	-8767.43	-15168.51	22947.45	8766.29	0.011%
30	17557.25	-23018.76	3.82	-17555.93	23018.71	-2.72	0.006%
31	15318.67	-23090.91	8859.65	-15317.91	23090.86	-8859.08	0.003%
32	8790.54	-23032.69	15234.37	-8789.73	23032.65	-15233.75	0.004%
33	6.19	-22972.83	17546.92	-6.40	22972.76	-17544.45	0.009%
34	-8779.94	-23038.09	15223.65	8778.72	23038.03	-15222.84	0.005%
35	-15311.90	-23100.78	8848.59	15310.40	23100.69	-8847.57	0.006%
36	-17557.25	-23029.54	-3.82	17556.38	23029.51	4.49	0.004%
37	-15178.11	-22957.39	-8778.50	15176.78	22957.36	8778.11	0.005%
38	-8790.54	-23015.61	-15234.37	8790.28	23015.52	15231.25	0.011%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	10	0.00000001	0.00006762
2	Yes	18	0.00000001	0.00008322
3	Yes	17	0.00000001	0.00008736
4	Yes	12	0.00000001	0.00008264
5	Yes	18	0.00000001	0.00007823
6	Yes	19	0.00010724	0.00008380
7	Yes	18	0.00012980	0.00010576
8	Yes	13	0.00013650	0.00012388
9	Yes	19	0.00000001	0.00007243
10	Yes	19	0.00014393	0.00011131
11	Yes	18	0.00014963	0.00011076
12	Yes	13	0.00000001	0.00007588
13	Yes	17	0.00012666	0.00009819
14	Yes	9	0.00000001	0.00007169
15	Yes	19	0.00012890	0.00009934
16	Yes	19	0.00009304	0.00006779
17	Yes	14	0.00000001	0.00006556
18	Yes	20	0.00009288	0.00006628
19	Yes	20	0.00012943	0.00010158
20	Yes	20	0.00010131	0.00008143
21	Yes	15	0.00010711	0.00007941

22	Yes	20	0.00012970	0.00010299
23	Yes	21	0.00009730	0.00007725
24	Yes	20	0.00012464	0.00009185
25	Yes	15	0.00014122	0.00009133
26	Yes	19	0.00009715	0.00007394
27	Yes	12	0.00000001	0.00010051
28	Yes	11	0.00000001	0.00012162
29	Yes	10	0.00000001	0.00012407
30	Yes	12	0.00000001	0.00009034
31	Yes	14	0.00000001	0.00006103
32	Yes	13	0.00000001	0.00006058
33	Yes	11	0.00000001	0.00009894
34	Yes	13	0.00000001	0.00008890
35	Yes	14	0.00000001	0.00011509
36	Yes	13	0.00000001	0.00006655
37	Yes	11	0.00000001	0.00005938
38	Yes	11	0.00000001	0.00013373

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb	Tilt °	Twist °
T1	170 - 155	3.496	33	0.2809	0.0286
T2	155 - 140	2.659	33	0.2451	0.0277
T3	140 - 120	2.089	33	0.1260	0.0248
T4	120 - 100	1.915	33	0.0291	0.0224
T5	100 - 80	1.881	33	0.0246	0.0277
T6	80 - 60	1.754	33	0.0413	0.0350
T7	60 - 40	1.550	35	0.0777	0.0408
T8	40 - 20	1.220	35	0.0910	0.0494
T9	20 - 5	0.734	35	0.1473	0.0600
T10	5 - 0	0.193	35	0.1785	0.0559

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb	Deflection in	Tilt °	Twist °	Radius of Curvature ft
175.00	DS4C03F36U-D 8' Omni	33	3.496	0.2809	0.0286	28248
170.00	TTA 432-83H-01T	33	3.496	0.2809	0.0286	28248
168.00	Pirod 4' Side Mount Standoff (1)	33	3.378	0.2790	0.0285	28248
167.00	RFS SC2-W100BC	33	3.320	0.2780	0.0285	28248
163.00	APX16DWV-16WVS	33	3.089	0.2723	0.0284	20177
152.33	Guy	33	2.531	0.2289	0.0273	8321
146.00	VHLP2-180	33	2.269	0.1790	0 0261	6489
145.60	VHLP800-11	33	2.255	0.1755	0.0260	6400
143.00	844H90T11EXY	33	2.170	0.1525	0.0255	5903
141.50	(4) 844G65VTZASX w/Mount Pipe	33	2.127	0.1392	0.0251	5738
141.00	Pirod 12' T-Frame Sector Mount (1)	33	2 113	0.1347	0.0250	5713
132.44	Guy	33	1.965	0.0658	0.0235	8038
120.00	Pirod 12' T-Frame Sector Mount (1)	33	1.915	0.0291	0.0224	35554
90.00	Guy	33	1.833	0.0334	0.0316	32369
50.00	Guy	35	1.400	0.0829	0.0443	39578

Maximum Tower Deflections - Design Wind

Section No	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	170 - 155	8.703	20	0.5995	0.3386
T2	155 - 140	7.042	20	0.5339	0.3332
T3	140 - 120	5.889	23	0.2956	0.3044
T4	120 - 100	5.817	23	0.0890	0.2601
T5	100 - 80	6.194	23	0.0408	0.2537
T6	80 - 60	6.214	23	0.0785	0.2498
T7	60 - 40	5.632	23	0.2218	0.2431
T8	40 - 20	4.457	23	0.3449	0.2423
T9	20 - 5	2.620	23	0.5381	0.2317
T10	5 - 0	0.684	23	0.6354	0.1976

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
175.00	DS4C03F36U-D 8' Omni	20	8.703	0.5995	0.3386	16028
170.00	TTA 432-83H-01T	20	8.703	0.5995	0.3386	16028
168.00	Pirod 4' Side Mount Standoff (1)	20	8.472	0.5965	0.3386	16028
167.00	RFS SC2-W100BC	20	8.357	0.5948	0.3386	16028
163.00	APX16DWV-16WVS	20	7.900	0.5849	0.3381	11448
152.33	Guy	20	6.781	0.5027	0.3298	4479
146.00	VHLP2-180	20	6.241	0.4045	0.3182	3120
145.60	VHLP800-11	20	6.211	0.3975	0.3174	3057
143.00	844H90T11EXY	20	6.035	0.3508	0.3115	2715
141.50	(4) 844G65VTZASX w/Mount Pipe	23	5.952	0.3232	0.3080	2594
141.00	Pirod 12' T-Frame Sector Mount (1)	23	5.930	0.3140	0.3068	2569
132.44	Guy	23	5.722	0.1623	0.2855	3378
120.00	Pirod 12' T-Frame Sector Mount (1)	23	5.817	0.0890	0.2601	9441
90.00	Guy	23	6.272	0.0567	0.2531	8776
50.00	Guy	23	5.117	0.2815	0.2472	8299

Bolt Design Data

Section No	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	170	Leg	A325N	0.7500	4	62.70	19438.60	0.003 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	2212.97	2523.00	0.877 ✓	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	21.69	4036.80	0.005 ✓	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	847.64	2523.00	0.336 ✓	1.333	Member Bearing
T2	155	Leg	A325N	0.7500	4	3254.96	19413.30	0.168 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	4509.02	4123.34	1.094 ✓	1.333	Bolt Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
		Secondary Horizontal	A325N	0.5000	1	803.12	4123.34	0.195 ✓	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	61.12	2523.00	0.024 ✓	1	Member Bearing
		Bottom Girt	A325N	0.5000	1	345.37	2523.00	0.137 ✓	1.333	Member Bearing
		Top Guy Pull-Off@152.333	A325N	0.7500	1	3630.68	6117.19	0.594 ✓	1.333	Member Bearing
		Torque Arm Top@152.333	A325N	0.7500	8	522.34	9277.52	0.056 ✓	1.333	Bolt Shear
T3	140	Leg	A325N	0.7500	4	3821.50	19302.40	0.198 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	5992.09	6442.72	0.930 ✓	1.333	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	3234.67	6442.72	0.502 ✓	1.333	Bolt Shear
		Top Girt	A325N	0.6250	1	1181.80	3398.44	0.348 ✓	1.333	Member Bearing
		Bottom Girt	A325N	0.6250	1	1279.01	3398.44	0.376 ✓	1.333	Member Bearing
		Torque Arm Top@132.438	A325N	0.7500	8	1670.51	9277.52	0.180 ✓	1.333	Bolt Shear
T4	120	Leg	A325N	0.7500	4	0.00	19424.90	0.000 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1269.10	2523.00	0.503 ✓	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	816.80	2523.00	0.324 ✓	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	507.72	2523.00	0.201 ✓	1.333	Member Bearing
T5	100	Leg	A325N	0.7500	4	0.00	19438.40	0.000 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1056.11	2523.00	0.419 ✓	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	489.80	2523.00	0.194 ✓	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	911.33	2523.00	0.361 ✓	1.333	Member Bearing
T6	80	Leg	A325N	0.7500	4	0.00	19437.00	0.000 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1486.40	4036.80	0.368 ✓	1.333	Member Bearing
		Secondary Horizontal	A325N	0.7500	1	1077.07	6117.19	0.176 ✓	1.333	Member Bearing
		Top Girt	A325N	0.7500	1	155.20	3784.50	0.041 ✓	1	Member Bearing
		Bottom Girt	A325N	0.7500	1	254.19	3784.50	0.067 ✓	1.333	Member Bearing
T7	60	Leg	A325N	0.7500	4	0.00	19435.90	0.000 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1196.19	2523.00	0.474 ✓	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	938.96	2523.00	0.372 ✓	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	878.97	2523.00	0.348 ✓	1.333	Member Bearing
T8	40	Leg	A325N	0.7500	4	0.00	19437.20	0.000 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1964.30	4036.80	0.487 ✓	1.333	Member Bearing
		Horizontal	A325N	0.5000	1	920.10	4123.34	0.223 ✓	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	493.11	2523.00	0.195 ✓	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	465.69	2523.00	0.185 ✓	1.333	Member Bearing
T9	20	Leg	A325N	0.7500	4	0.00	19438.20	0.000 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1962.32	2523.00	0.778 ✓	1.333	Member Bearing
		Horizontal	A325N	0.5000	1	909.61	4123.34	0.221 ✓	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	527.19	2523.00	0.209 ✓	1.333	Member Bearing

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
		Bottom Girt	A490N	0.5000	1	5799.16	5497.79	1.055 ✔	1.333	Bolt Shear
T10	5	Leg	A325N	0.7500	4	0.00	19057.80	0.000 ✔	1.333	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T lb	Allowable T_a lb	Required S.F.	Actual S.F.
T2	152.33 (A) (567)	1/2 EHS	2690.00	26900.04	8039.11	13450.00	2.000	3.346 ✔
	152.33 (A) (568)	1/2 EHS	2690.00	26900.04	7962.53	13450.00	2.000	3.378 ✔
	152.33 (B) (563)	1/2 EHS	2690.00	26900.04	7780.78	13450.00	2.000	3.457 ✔
	152.33 (B) (564)	1/2 EHS	2690.00	26900.04	8050.38	13450.00	2.000	3.341 ✔
	152.33 (C) (556)	1/2 EHS	2690.00	26900.04	7966.89	13450.00	2.000	3.376 ✔
	152.33 (C) (557)	1/2 EHS	2690.00	26900.04	7763.89	13450.00	2.000	3.465 ✔
T3	132.44 (A) (579)	7/8 EHS	7970.00	79699.84	20523.80	39850.00	2.000	3.883 ✔
	132.44 (A) (580)	7/8 EHS	7970.00	79699.84	20262.30	39850.00	2.000	3.933 ✔
	132.44 (B) (575)	7/8 EHS	7970.00	79699.84	19382.30	39850.00	2.000	4.112 ✔
	132.44 (B) (576)	7/8 EHS	7970.00	79699.84	20141.40	39850.00	2.000	3.957 ✔
	132.44 (C) (571)	7/8 EHS	7970.00	79699.84	19537.20	39850.00	2.000	4.079 ✔
	132.44 (C) (572)	7/8 EHS	7970.00	79699.84	19010.70	39850.00	2.000	4.192 ✔
T5	90.00 (A) (585)	7/16 EHS	2080.00	20800.02	7550.03	10400.00	2.000	2.755 ✔
	90.00 (B) (584)	7/16 EHS	2080.00	20800.02	7300.66	10400.00	2.000	2.849 ✔
	90.00 (C) (583)	7/16 EHS	2080.00	20800.02	7099.11	10400.00	2.000	2.930 ✔
T7	50.00 (A) (588)	7/16 EHS	2080.00	20800.02	8349.73	10400.00	2.000	2.491 ✔
	50.00 (B) (587)	7/16 EHS	2080.00	20800.02	8089.57	10400.00	2.000	2.571 ✔
	50.00 (C) (586)	7/16 EHS	2080.00	20800.02	7895.20	10400.00	2.000	2.635 ✔

Compression Checks

Leg Design Data (Compression)

Section No	Elevation ft	Size	L ft	L_u ft	Kl/r	Mast Stability Index	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	170 - 155	ROHN 2 STD	15.00	2.42	36.8 K=1.00	1.00	26.267	1.0745	-15421.00	28224.70	0.546 ✔
T2	155 - 140	ROHN 2 STD	15.00	1.21	18.4 K=1.00	1.00	28.464	1.0745	-37950.40	30585.10	1.241 ✔
T3	140 - 120	ROHN 2 STD w/ 1" Solid Rod	20.00	1.22	23.6 K=1.00	0.99	27.563	1.8578	-62349.30	51207.20	1.218 ✔
T4	120 - 100	ROHN 2 STD	20.00	2.44	37.2 K=1.00	1.00	26.224	1.0745	-36985.60	28178.50	1.313 ✔
T5	100 - 80	ROHN 2.5 STD	20.00	2.44	30.9 K=1.00	1.00	27.044	1.7040	-45139.60	46084.60	0.979 ✔
T6	80 - 60	ROHN 2 STD w/ 1/3rd pipe	20.00	1.22	19.4 K=1.00	0.97	27.638	1.8149	-46348.90	50160.30	0.924 ✔
T7	60 - 40	ROHN 2.5 STD	20.00	2.44	30.9 K=1.00	0.98	26.537	1.7040	-49251.80	45220.10	1.089 ✔
T8	40 - 20	ROHN 2.5 STD	20.00	2.44	30.9 K=1.00	0.98	26.561	1.7040	-52566.00	45262.10	1.161 ✔
T9	20 - 5	ROHN 2.5 STD	15.00	2.42	30.6 K=1.00	0.98	26.564	1.7040	-52516.60	45265.50	1.160 ✔
T10	5 - 0	ROHN 2.5 STD	5.38	2.42	30.6 K=1.00	0.97	26.289	1.7040	-37300.90	44797.00	0.833* ✔

* 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 lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	170 - 155	P1.5x16GA	4.19	1.97	36.3 K=1.00	19.476	0.3356	-2264.11	6536.80	0.346 ✔
T2	155 - 140	ROHN 1.5 STD	4.19	1.97	38.0 K=1.00	19.346	0.7995	-4509.02	15465.90	0.292 ✔
T3	140 - 120	L1 3/4x1 3/4x1/4	4.20	1.98	69.5 K=1.00	16.477	0.8125	-5992.09	13388.00	0.448 ✔
T4	120 - 100	P1.5x16GA	4.20	1.98	36.4 K=1.00	19.468	0.3356	-1796.30	6534.11	0.275 ✔
T5	100 - 80	P1.5x16GA	4.20	1.95	36.0 K=1.00	19.504	0.3356	-1394.38	6546.18	0.213 ✔
T6	80 - 60	P1.5x16GA	4.20	1.96	36.2 K=1.00	19.488	0.3356	-1486.40	6540.78	0.227 ✔
T7	60 - 40	P1.5x16GA	4.20	1.95	36.0 K=1.00	19.504	0.3356	-1536.71	6546.18	0.235 ✔
T8	40 - 20	P1.5x16GA	4.20	3.91	71.9 K=1.00	16.229	0.3356	-1964.30	5447.03	0.361 ✔
T9	20 - 5	P1.5x16GA	4.19	3.89	71.7 K=1.00	16.251	0.3356	-2794.12	5454.32	0.512 ✔

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
T8	40 - 20	1	3.42	3.18	152.7 K=1.00	6.408	0.7854	-910.47	5032.58	0.181 ✔
T9	20 - 5	1	3.42	3.18	152.7 K=1.00	6.408	0.7854	-909.61	5032.58	0.181 ✔

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
T2	155 - 140	1	3.42	3.22	154.7 K=1.00	6.243	0.7854	-657.32	4903.26	0.134 ✔
T3	140 - 120	L1 3/4x1 3/4x1/4	3.42	3.22	113.3 K=1.00	11.227	0.8125	-1673.92	9122.12	0.184 ✔
T6	80 - 60	L2x2x3/16	3.42	3.20	97.4 K=1.00	13.300	0.7150	-802.79	9509.50	0.084 ✔

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 lb	Allow. P_a lb	Ratio P / P_a
T1	170 - 155	P1.5x16GA	3.42	3.22	59.3 K=1.00	17.493	0.3356	-21.69	5871.19	0.004 ✔
T2	155 - 140	P1.5x16GA	3.42	3.22	59.3 K=1.00	17.493	0.3356	-2.88	5871.19	0.000 ✔
T3	140 - 120	L1 1/2x1 1/2x1/8	3.42	3.22	130.5 K=1.00	8.763	0.3594	-921.96	3149.17	0.293 ✔
T8	40 - 20	P1.5x16GA	3.42	3.18	58.6 K=1.00	17.566	0.3356	-304.86	5895.72	0.052 ✔

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
T1	170 - 155	P1.5x16GA	3.42	3.22	59.3 K=1.00	17.493	0.3356	-766.20	5871.19	0.131 ✔
T3	140 - 120	L1 3/4x1 3/4x1/8	3.42	3.22	111.5 K=1.00	11.471	0.4219	-447.09	4839.22	0.092

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	5 - 0	3x1/4	0.17	0.00	0.0 K=1.00	21.600	0.7500	-3265.17	16200.00	0.202*

* DL controls

Mid Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	5 - 0	3x1/4	1.71	1.47	244.5 K=1.00	2.498	0.7500	-40.09	1873.56	0.021
		KL/R > 200 (C) - 555								

Top Guy Pull-Off Design Data (Compression)

Section No	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	155 - 140	L2x2x3/16	3.42	3.22	98.1 K=1.00	13.213	0.7150	-2666.59	9446.97	0.282
T5	100 - 80	4x3/8	3.42	3.18	352.6 K=1.00	21.600	1.5000	0.00	1802.16	0.000*
T7	60 - 40	4x3/8	3.42	3.18	352.6 K=1.00	21.600	1.5000	0.00	1802.16	0.000*

* DL controls

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T2	155 - 140	L2x2x3/16	-4.64	-0.173	23.760	0.007	-4.64	-0.337	23.760	0.014
T5	100 - 80	4x3/8	10.77	-0.129	27.000	0.005	0.00	0.000	27.000	0.000
T7	60 - 40	4x3/8	10.77	-0.129	27.000	0.005	-0.00	-0.000	27.000	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb Stress Ratio	Allow. Stress Ratio	Criteria
T2	155 - 140	L2x2x3/16	0.282	0.007	0.014	0.304 ✔	1.333	H1-3 ✔
T5	100 - 80	4x3/8	0.000	0.005	0.000	0.005* ✔	1.000	H1-3 ✔
T7	60 - 40	4x3/8	0.000	0.005	0.000	0.005* ✔	1.000	H1-3 ✔

* DL controls

Torque-Arm Top Design Data

Section No	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	155 - 140 (558)	C12x20.7	3.50	3.40	105.3 K=1.00	12.299	6.0900	-904.31	74898.00	0.012
T2	155 - 140 (559)	C12x20.7	3.50	3.40	105.3 K=1.00	12.299	6.0900	-687.01	74898.00	0.009
T2	155 - 140 (565)	C12x20.7	3.50	3.40	105.3 K=1.00	12.299	6.0900	-625.32	74898.00	0.008
T2	155 - 140 (566)	C12x20.7	3.50	3.40	105.3 K=1.00	12.299	6.0900	-721.83	74898.00	0.010
T2	155 - 140 (569)	C12x20.7	3.50	3.40	105.3 K=1.00	12.299	6.0900	-902.10	74898.00	0.012
T2	155 - 140 (570)	C12x20.7	3.50	3.40	105.3 K=1.00	12.299	6.0900	-788.29	74898.00	0.011
T3	140 - 120 (573)	C12x20.7 w/ 8"x3/8" plate	3.50	3.40	61.6 K=1.00	17.271	9.0900	-4239.96	156997.00	0.027
T3	140 - 120 (574)	C12x20.7 w/ 8"x3/8" plate	3.50	3.40	61.6 K=1.00	17.271	9.0900	-4261.23	156997.00	0.027
T3	140 - 120 (577)	C12x20.7 w/ 8"x3/8" plate	3.50	3.40	61.6 K=1.00	17.271	9.0900	-3824.25	156997.00	0.024
T3	140 - 120 (578)	C12x20.7 w/ 8"x3/8" plate	3.50	3.40	61.6 K=1.00	17.271	9.0900	-3790.26	156997.00	0.024
T3	140 - 120 (581)	C12x20.7 w/ 8"x3/8" plate	3.50	3.40	61.6 K=1.00	17.271	9.0900	-4484.24	156997.00	0.029
T3	140 - 120 (582)	C12x20.7 w/ 8"x3/8" plate	3.50	3.40	61.6 K=1.00	17.271	9.0900	-4496.76	156997.00	0.029

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T2	155 - 140 (558)	C12x20.7	-23038.75	-12.859	21.600	0.595	-0.00	-0.000	21.600	0.000
T2	155 - 140 (559)	C12x20.7	-24074.83	-13.437	21.600	0.622	-0.00	-0.000	21.600	0.000
T2	155 - 140 (565)	C12x20.7	-23469.58	-13.099	21.600	0.606	0.00	-0.000	21.600	0.000
T2	155 - 140 (566)	C12x20.7	-23015.50	-12.846	21.600	0.595	-0.00	-0.000	21.600	0.000
T2	155 - 140 (569)	C12x20.7	-23493.4	-13.113	21.600	0.607	0.00	-0.000	21.600	0.000

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T2	155 - 140 (570)	C12x20.7	-24079.42	-13.440	21.600	0.622	-0.00	-0.000	21.600	0.000
T3	140 - 120 (573)	C12x20.7 w/ 8"x3/8" plate	-50317.33	-24.985	21.600	1.157	-0.00	-0.000	21.600	0.000
T3	140 - 120 (574)	C12x20.7 w/ 8"x3/8" plate	-55707.33	-27.662	21.600	1.281	-0.00	-0.000	21.600	0.000
T3	140 - 120 (577)	C12x20.7 w/ 8"x3/8" plate	-52627.42	-26.132	21.600	1.210	0.00	-0.000	21.600	0.000
T3	140 - 120 (578)	C12x20.7 w/ 8"x3/8" plate	-50301.58	-24.977	21.600	1.156	-0.00	-0.000	21.600	0.000
T3	140 - 120 (581)	C12x20.7 w/ 8"x3/8" plate	-52663.50	-26.150	21.600	1.211	0.00	-0.000	21.600	0.000
T3	140 - 120 (582)	C12x20.7 w/ 8"x3/8" plate	-55730.00	-27.673	21.600	1.281	0.00	-0.000	21.600	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_n}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb Stress Ratio	Allow. Stress Ratio	Criteria
T2	155 - 140 (558)	C12x20.7	0.012	0.595	0.000	0.607 ✔	1.333	H1-3 ✔
T2	155 - 140 (559)	C12x20.7	0.009	0.622	0.000	0.631 ✔	1.333	H1-3 ✔
T2	155 - 140 (565)	C12x20.7	0.008	0.606	0.000	0.615 ✔	1.333	H1-3 ✔
T2	155 - 140 (566)	C12x20.7	0.010	0.595	0.000	0.604 ✔	1.333	H1-3 ✔
T2	155 - 140 (569)	C12x20.7	0.012	0.607	0.000	0.619 ✔	1.333	H1-3 ✔
T2	155 - 140 (570)	C12x20.7	0.011	0.622	0.000	0.633 ✔	1.333	H1-3 ✔
T3	140 - 120 (573)	C12x20.7 w/ 8"x3/8" plate	0.027	1.157	0.000	1.184 ✔	1.333	H1-3 ✔
T3	140 - 120 (574)	C12x20.7 w/ 8"x3/8" plate	0.027	1.281	0.000	1.308 ✔	1.333	H1-3 ✔
T3	140 - 120 (577)	C12x20.7 w/ 8"x3/8" plate	0.024	1.210	0.000	1.234 ✔	1.333	H1-3 ✔
T3	140 - 120 (578)	C12x20.7 w/ 8"x3/8" plate	0.024	1.156	0.000	1.181 ✔	1.333	H1-3 ✔
T3	140 - 120 (581)	C12x20.7 w/ 8"x3/8" plate	0.029	1.211	0.000	1.239 ✔	1.333	H1-3 ✔
T3	140 - 120 (582)	C12x20.7 w/ 8"x3/8" plate	0.029	1.281	0.000	1.310 ✔	1.333	H1-3 ✔

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 lb	Allow P_a lb	Ratio $\frac{P}{P_a}$
T1	170 - 155	ROHN 2 STD	15.00	2.42	36.8	30.000	1.0745	13018.80	32235.90	0.404 ✔
T2	155 - 140	ROHN 2 STD	15.00	1.21	18.4	30.000	1.0745	15288.80	32235.90	0.474 ✔
T3	140 - 120	ROHN 2 STD w/ 1" Solid Rod	20.00	1.22	23.6	30.000	1.8578	36486.60	55734.00	0.655 ✔

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow P_a lb	Ratio $\frac{P}{P_a}$
T1	170 - 155	P1.5x16GA	4.19	1.97	36.3	21.600	0.3356	2212.97	7249.72	0.305 ✔
T2	155 - 140	ROHN 1.5 STD	4.19	1.97	38.0	21.600	0.7995	3354.71	17268.30	0.194 ✔
T3	140 - 120	L1 3/4x1 3/4x1/4	4.20	1.98	44.9	29.000	0.4688	5713.64	13593.80	0.420 ✔
T4	120 - 100	P1.5x16GA	4.20	1.98	36.4	21.600	0.3356	1269.10	7249.72	0.175 ✔
T5	100 - 80	P1.5x16GA	4.20	1.95	36.0	21.600	0.3356	1056.11	7249.72	0.146 ✔
T6	80 - 60	P1.5x16GA	4.20	1.96	36.2	21.600	0.3356	269.43	7249.72	0.037 ✔
T7	60 - 40	P1.5x16GA	4.20	1.95	36.0	21.600	0.3356	1196.19	7249.72	0.165 ✔
T8	40 - 20	P1.5x16GA	4.20	3.91	71.9	21.600	0.3356	849.01	7249.72	0.117 ✔
T9	20 - 5	P1.5x16GA	4.19	3.89	71.7	21.600	0.3356	1962.32	7249.72	0.271 ✔

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow P_a lb	Ratio $\frac{P}{P_a}$
T8	40 - 20	1	3.42	3.18	152.7	21.600	0.7854	920.10	16964.60	0.054 ✔
T9	20 - 5	1	3.42	3.18	152.7	21.600	0.7854	909.61	16964.60	0.054 ✔

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	155 - 140		3.42	3.22	154.7	21.600	0.7854	803.12	16964.60	0.047 ✓
T3	140 - 120	L1 3/4x1 3/4x1/4	3.42	3.22	73.1	29.000	0.4688	3234.67	13593.80	0.238 ✓
T6	80 - 60	L2x2x3/16	3.42	3.20	62.2	29.000	0.4132	1077.07	11982.90	0.090 ✓

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 lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	170 - 155	P1.5x16GA	3.42	3.22	59.3	21.600	0.3356	12.40	7249.72	0.002 ✓
T2	155 - 140	P1.5x16GA	3.42	3.22	59.3	21.600	0.3356	61.12	7249.72	0.008* ✓
T3	140 - 120	L1 1/2x1 1/2x1/8	3.42	3.22	83.1	29.000	0.1992	1181.80	5777.34	0.205 ✓
T4	120 - 100	P1.5x16GA	3.42	3.22	59.3	21.600	0.3356	816.80	7249.72	0.113 ✓
T5	100 - 80	P1.5x16GA	3.42	3.18	58.6	21.600	0.3356	489.80	7249.72	0.068 ✓
T6	80 - 60	P1.5x16GA	3.42	3.20	58.9	21.600	0.3356	155.20	7249.72	0.021* ✓
T7	60 - 40	P1.5x16GA	3.42	3.18	58.6	21.600	0.3356	938.96	7249.72	0.130 ✓
T8	40 - 20	P1.5x16GA	3.42	3.18	58.6	21.600	0.3356	493.11	7249.72	0.068 ✓
T9	20 - 5	P1.5x16GA	3.42	3.18	58.6	21.600	0.3356	527.19	7249.72	0.073 ✓
T10	5 - 0	3x1/4	3.25	3.01	500.4	21.600	0.7500	3899.98	16200.00	0.241* ✓
		L/R > 500 (T) - 548								

* DL controls

Bottom Girt Design Data (Tension)

Section No	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	170 - 155	P1.5x16GA	3.42	3.22	59.3	21.600	0.3356	847.64	7249.72	0.117 ✓
T2	155 - 140	P1.5x16GA	3.42	3.22	59.3	21.600	0.3356	345.37	7249.72	0.048

Section No	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T3	140 - 120	L1 3/4x1 3/4x1/8	3.42	3.22	70.9	29.000	0.2461	1279.01	7136.72	0.179
T4	120 - 100	P1.5x16GA	3.42	3.22	59.3	21.600	0.3356	507.72	7249.72	0.070
T5	100 - 80	P1.5x16GA	3.42	3.18	58.6	21.600	0.3356	911.33	7249.72	0.126
T6	80 - 60	P1.5x16GA	3.42	3.20	58.9	21.600	0.3356	254.19	7249.72	0.035
T7	60 - 40	P1.5x16GA	3.42	3.18	58.6	21.600	0.3356	878.97	7249.72	0.121
T8	40 - 20	P1.5x16GA	3.42	3.18	58.6	21.600	0.3356	465.69	7249.72	0.064
T9	20 - 5	ROHN 1.5 SCH XS (Extra Strong)	3.42	3.18	63.1	21.600	1.0681	5799.16	23071.90	0.251

Mid Girt Design Data (Tension)

Section No	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	5 - 0	3x1/4	1.71	1.47	244.5	21.600	0.7500	4.78	16200.00	0.000

Top Guy Pull-Off Design Data (Tension)

Section No	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	155 - 140	L2x2x3/16	3.42	3.22	62.7	21.600	0.7150	3630.68	15444.00	0.235
T5	100 - 80	4x3/8	3.42	3.18	352.6	21.600	1.5000	3609.45	32400.00	0.111
T7	60 - 40	4x3/8	3.42	3.18	352.6	21.600	1.5000	4602.35	32400.00	0.142

Top Guy Pull-Off Bending Design Data

Section No	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T2	155 - 140	L2x2x3/16	-4.64	0.173	23.760	0.007	-4.64	0.340	23.760	0.014
T5	100 - 80	4x3/8	10.77	0.129	27.000	0.005	-0.00	0.000	27.000	0.000
T7	60 - 40	4x3/8	10.77	0.129	27.000	0.005	-0.00	0.000	27.000	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	155 - 140	L2x2x3/16	0.235	0.007	0.014	0.257 ✓	1.333	H2-1 ✓
T5	100 - 80	4x3/8	0.111	0.005	0.000	0.116 ✓	1.333	H2-1 ✓
T7	60 - 40	4x3/8	0.142	0.005	0.000	0.147 ✓	1.333	H2-1 ✓

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	155 - 140 (558)	C12x20.7	3.50	3.40	51.1	21.600	6.0900	43.83	131544.00	0.000
T2	155 - 140 (559)	C12x20.7	3.50	3.40	51.1	21.600	6.0900	504.70	131544.00	0.004
T2	155 - 140 (565)	C12x20.7	3.50	3.40	51.1	21.600	6.0900	477.28	131544.00	0.004
T2	155 - 140 (566)	C12x20.7	3.50	3.40	51.1	21.600	6.0900	298.10	131544.00	0.002
T2	155 - 140 (569)	C12x20.7	3.50	3.40	51.1	21.600	6.0900	75.09	131544.00	0.001
T2	155 - 140 (570)	C12x20.7	3.50	3.40	51.1	21.600	6.0900	347.29	131544.00	0.003
T3	140 - 120 (573)	C12x20.7 w/ 8"x3/8" plate	3.50	3.40	61.6	21.600	9.0900	164.70	196344.00	0.001
T3	140 - 120 (574)	C12x20.7 w/ 8"x3/8" plate	3.50	3.40	61.6	21.600	9.0900	127.21	196344.00	0.001
T3	140 - 120 (577)	C12x20.7 w/ 8"x3/8" plate	3.50	3.40	61.6	21.600	9.0900	295.19	196344.00	0.002
T3	140 - 120 (578)	C12x20.7 w/ 8"x3/8" plate	3.50	3.40	61.6	21.600	9.0900	143.45	196344.00	0.001
T3	140 - 120 (581)	C12x20.7 w/ 8"x3/8" plate	3.50	3.40	61.6	21.600	9.0900	64.17	196344.00	0.000
T3	140 - 120 (582)	C12x20.7 w/ 8"x3/8" plate	3.50	3.40	61.6	21.600	9.0900	5022.01	196344.00	0.026

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T2	155 - 140 (558)	C12x20.7	-21531.67	12.018	21.600	0.556	0.00	0.000	27.000	0.000
T2	155 - 140 (559)	C12x20.7	-23123.75	12.906	21.600	0.598	0.00	0.000	27.000	0.000
T2	155 - 140 (565)	C12x20.7	-22537.42	12.579	21.600	0.582	-0.00	0.000	27.000	0.000
T2	155 - 140 (566)	C12x20.7	-21904.33	12.226	21.600	0.566	0.00	0.000	27.000	0.000
T2	155 - 140 (569)	C12x20.7	-21891.83	12.219	21.600	0.566	-0.00	0.000	27.000	0.000
T2	155 - 140 (570)	C12x20.7	-22849.00	12.753	21.600	0.590	-0.00	0.000	27.000	0.000
T3	140 - 120 (573)	C12x20.7 w/ 8"x3/8" plate	-40235.50	19.979	21.600	0.925	0.00	0.000	21.600	0.000
T3	140 - 120 (574)	C12x20.7 w/ 8"x3/8" plate	-54381.58	27.003	21.600	1.250	-0.00	0.000	21.600	0.000
T3	140 - 120 (577)	C12x20.7 w/ 8"x3/8" plate	-51276.75	25.462	21.600	1.179	0.00	0.000	21.600	0.000

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T3	140 - 120 (578)	C12x20.7 w/ 8"x3/8" plate	-48222.17	23.945	21.600	1.109	-0.00	0.000	21.600	0.000
T3	140 - 120 (581)	C12x20.7 w/ 8"x3/8" plate	-42047.50	20.879	21.600	0.967	-0.00	0.000	21.600	0.000
T3	140 - 120 (582)	C12x20.7 w/ 8"x3/8" plate	-44697.42	22.195	21.600	1.028	0.00	0.000	21.600	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	155 - 140 (558)	C12x20.7	0.000	0.556	0.000	0.557 ✔	1.333	H2-1 ✔
T2	155 - 140 (559)	C12x20.7	0.004	0.598	0.000	0.601 ✔	1.333	H2-1 ✔
T2	155 - 140 (565)	C12x20.7	0.004	0.582	0.000	0.586 ✔	1.333	H2-1 ✔
T2	155 - 140 (566)	C12x20.7	0.002	0.566	0.000	0.568 ✔	1.333	H2-1 ✔
T2	155 - 140 (569)	C12x20.7	0.001	0.566	0.000	0.566 ✔	1.333	H2-1 ✔
T2	155 - 140 (570)	C12x20.7	0.003	0.590	0.000	0.593 ✔	1.333	H2-1 ✔
T3	140 - 120 (573)	C12x20.7 w/ 8"x3/8" plate	0.001	0.925	0.000	0.926 ✔	1.333	H2-1 ✔
T3	140 - 120 (574)	C12x20.7 w/ 8"x3/8" plate	0.001	1.250	0.000	1.251 ✔	1.333	H2-1 ✔
T3	140 - 120 (577)	C12x20.7 w/ 8"x3/8" plate	0.002	1.179	0.000	1.180 ✔	1.333	H2-1 ✔
T3	140 - 120 (578)	C12x20.7 w/ 8"x3/8" plate	0.001	1.109	0.000	1.109 ✔	1.333	H2-1 ✔
T3	140 - 120 (581)	C12x20.7 w/ 8"x3/8" plate	0.000	0.967	0.000	0.967 ✔	1.333	H2-1 ✔
T3	140 - 120 (582)	C12x20.7 w/ 8"x3/8" plate	0.026	1.028	0.000	1.053 ✔	1.333	H2-1 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	170 - 155	Leg	ROHN 2 STD	2	-15421.00	37623.52	41.0	Pass
T2	155 - 140	Leg	ROHN 2 STD	48	-37950.40	40769.94	93.1	Pass
T3	140 - 120	Leg	ROHN 2 STD w/ 1" Solid Rod	111	-62349.30	68259.19	91.3	Pass
T4	120 - 100	Leg	ROHN 2 STD	192	-36985.60	37561.94	98.5	Pass
T5	100 - 80	Leg	ROHN 2.5 STD	249	-45139.60	61430.77	73.5	Pass
T6	80 - 60	Leg	ROHN 2 STD w/ 1/3rd pipe	309	-46348.90	66863.68	69.3	Pass
T7	60 - 40	Leg	ROHN 2.5 STD	390	-49251.80	60278.39	81.7	Pass
T8	40 - 20	Leg	ROHN 2.5 STD	450	-52566.00	60334.38	87.1	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
T9	20 - 5	Leg	ROHN 2.5 STD	504	-52516.60	60338.91	87.0	Pass
T10	5 - 0	Leg	ROHN 2.5 STD	546	-37300.90	44797.00	83.3	Pass
T1	170 - 155	Diagonal	P1.5x16GA	13	-2264.11	8713.55	26.0 65.8 (b)	Pass
T2	155 - 140	Diagonal	ROHN 1.5 STD	57	-4509.02	20616.04	21.9 82.0 (b)	Pass
T3	140 - 120	Diagonal	L1 3/4x1 3/4x1/4	157	-5992.09	17846.20	33.6 69.8 (b)	Pass
T4	120 - 100	Diagonal	P1.5x16GA	244	-1796.30	8709.97	20.6 37.7 (b)	Pass
T5	100 - 80	Diagonal	P1.5x16GA	277	-1394.38	8726.06	16.0 31.4 (b)	Pass
T6	80 - 60	Diagonal	P1.5x16GA	321	-1486.40	8718.86	17.0 27.6 (b)	Pass
T7	60 - 40	Diagonal	P1.5x16GA	429	-1536.71	8726.06	17.6 35.6 (b)	Pass
T8	40 - 20	Diagonal	P1.5x16GA	499	-1964.30	7260.89	27.1 36.5 (b)	Pass
T9	20 - 5	Diagonal	P1.5x16GA	518	-2794.12	7270.61	38.4 58.3 (b)	Pass
T8	40 - 20	Horizontal	1	462	-910.47	6708.43	13.6 16.7 (b)	Pass
T9	20 - 5	Horizontal	1	521	-909.61	6708.43	13.6 16.5 (b)	Pass
T2	155 - 140	Secondary Horizontal	1	62	-657.32	6536.04	10.1 14.6 (b)	Pass
T3	140 - 120	Secondary Horizontal	L1 3/4x1 3/4x1/4	169	3234.67	18120.53	17.9 37.7 (b)	Pass
T6	80 - 60	Secondary Horizontal	L2x2x3/16	332	1077.07	15973.21	6.7 13.2 (b)	Pass
T1	170 - 155	Top Girt	P1.5x16GA	4	-21.69	7826.30	0.3 0.4 (b)	Pass
T2	155 - 140	Top Girt	P1.5x16GA	49	61.12	7249.72	0.8 1.8 (b)	Pass
T3	140 - 120	Top Girt	L1 1/2x1 1/2x1/8	112	-921.96	4197.84	22.0 26.1 (b)	Pass
T4	120 - 100	Top Girt	P1.5x16GA	194	816.80	9663.88	8.5 24.3 (b)	Pass
T5	100 - 80	Top Girt	P1.5x16GA	251	489.80	9663.88	5.1 14.6 (b)	Pass
T6	80 - 60	Top Girt	P1.5x16GA	311	155.20	7249.72	2.1 3.1 (b)	Pass
T7	60 - 40	Top Girt	P1.5x16GA	392	938.96	9663.88	9.7 27.9 (b)	Pass
T8	40 - 20	Top Girt	P1.5x16GA	451	493.11	9663.88	5.1 14.7 (b)	Pass
T9	20 - 5	Top Girt	P1.5x16GA	507	527.19	9663.88	5.5 15.7 (b)	Pass
T10	5 - 0	Top Girt	3x1/4	548	3899.98	16200.00	24.1	Pass
T1	170 - 155	Bottom Girt	P1.5x16GA	9	-766.20	7826.30	9.8 25.2 (b)	Pass
T2	155 - 140	Bottom Girt	P1.5x16GA	54	345.37	9663.88	3.6 10.3 (b)	Pass
T3	140 - 120	Bottom Girt	L1 3/4x1 3/4x1/8	116	1279.01	9513.25	13.4 28.2 (b)	Pass
T4	120 - 100	Bottom Girt	P1.5x16GA	197	507.72	9663.88	5.3 15.1 (b)	Pass
T5	100 - 80	Bottom Girt	P1.5x16GA	254	911.33	9663.88	9.4 27.1 (b)	Pass
T6	80 - 60	Bottom Girt	P1.5x16GA	313	254.19	9663.88	2.6 5.0 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T7	60 - 40	Bottom Girt	P1.5x16GA	396	878.97	9663.88	9.1 26.1 (b)	Pass
T8	40 - 20	Bottom Girt	P1.5x16GA	456	465.69	9663.88	4.8 13.8 (b)	Pass
T9	20 - 5	Bottom Girt	ROHN 1.5 SCH XS (Extra Strong)	510	5799.16	30754.84	18.9 79.1 (b)	Pass
T10	5 - 0	Bottom Girt	3x1/4	551	-3265.17	16200.00	30.0	Pass
T10	5 - 0	Mid Girt	3x1/4	555	-40.09	2497.46	1.6	Pass
T2	155 - 140	Guy A@152.333	1/2	567	8039.11	13450.00	59.8	Pass
T3	140 - 120	Guy A@132.438	7/8	579	20523.80	39850.00	51.5	Pass
T5	100 - 80	Guy A@90	7/16	585	7550.03	10400.00	72.6	Pass
T7	60 - 40	Guy A@50	7/16	588	8349.73	10400.00	80.3	Pass
T2	155 - 140	Guy B@152.333	1/2	564	8050.38	13450.00	59.9	Pass
T3	140 - 120	Guy B@132.438	7/8	576	20141.40	39850.00	50.5	Pass
T5	100 - 80	Guy B@90	7/16	584	7300.66	10400.00	70.2	Pass
T7	60 - 40	Guy B@50	7/16	587	8089.57	10400.00	77.8	Pass
T2	155 - 140	Guy C@152.333	1/2	556	7966.89	13450.00	59.2	Pass
T3	140 - 120	Guy C@132.438	7/8	571	19537.20	39850.00	49.0	Pass
T5	100 - 80	Guy C@90	7/16	583	7099.11	10400.00	68.3	Pass
T7	60 - 40	Guy C@50	7/16	586	7895.20	10400.00	75.9	Pass
T2	155 - 140	Top Guy Pull-Off@152.333	L2x2x3/16	560	-2666.59	12592.81	22.8 44.5 (b)	Pass
T5	100 - 80	Top Guy Pull-Off@90	4x3/8	257	3609.45	43189.20	8.7	Pass
T7	60 - 40	Top Guy Pull-Off@50	4x3/8	398	4602.35	43189.20	11.0	Pass
T2	155 - 140	Torque Arm Top@152.333	C12x20.7	570	-788.29	99839.03	47.5	Pass
T3	140 - 120	Torque Arm Top@132.438	C12x20.7 w/ 8"x3/8" plate	582	-4496.76	209276.99	98.3	Pass
							Summary	
						Leg (T4)	98.5	Pass
						Diagonal (T2)	82.0	Pass
						Horizontal (T8)	16.7	Pass
						Secondary Horizontal (T3)	37.7	Pass
						Top Girt (T7)	27.9	Pass
						Bottom Girt (T9)	79.1	Pass
						Mid Girt (T10)	1.6	Pass
						Guy A (T7)	80.3	Pass
						Guy B (T7)	77.8	Pass
						Guy C (T7)	75.9	Pass
						Top Guy Pull-Off (T2)	44.5	Pass
						Torque Arm Top (T3)	98.3	Pass
						Bolt Checks	82.0	Pass
						RATING =	**98.5**	**Pass**

FOUNDATION ANALYSIS

URS

Job	170' Guyed Lattice Tower - Newington, CT	Project No.	EBI-001	Page / Sheet	of / 1 of 2
Description	Spread Footing w/ Pier Analysis - TIA Req	Computed by	MCD	Date	08/22/14
		Checked by		Date	

FOUNDATION ANALYSIS

TOWER FORCES:

Moment Caused by Tower	$M_t := 0 \cdot ft \cdot kips$
Shear at Base of Tower	$S_t := 16431bf$
Max Compressive Force	$C_t := 125714lbf$
Height of Tower	$H_t := 170 \cdot ft$

FOOTING DIMENSIONS:

Overall Depth of Footing	$D_f := 4.5ft$
Length of Pier	$L_p := 1.75 \cdot ft$
Extension of Pier Above Grade	$L_{pag} := 0.5 \cdot ft$
Diameter of Pier	$d_p := 2 \cdot ft$
Thickness of Footing	$T_f := 2.75 \cdot ft$
Width of Footing:	$W_f := 9.5ft$

PROPERTIES:

Internal Friction Angle of Soil	$\phi_s := 30 \cdot deg$
Allowable Bearing Capacity	$q_s := 4000 \cdot psf$
Unit Weight of Soil	$\gamma_s := 120 \cdot pcf$
Unit Weight of Concrete	$\gamma_c := 150 \cdot pcf$
Depth to Neglect	$n := 0ft$
Cohesion of Clay Type Soil Note: Use 0 for Sandy Soil	$c := 0 \cdot ksf$
Seismic Zone Factor: UBC Fig 23-2	$Z := 2$
Coefficient of Friction between Concrete:	$\mu := 0.45$

STABILITY OF FOOTING

Coefficient of Lateral Soil Pressure:

$$K_p := \frac{1 + \sin(\phi_s)}{1 - \sin(\phi_s)} \qquad K_p = 3$$

Passive Pressure:

$$P_{pn} := K_p \cdot \gamma_s \cdot n + c \cdot 2 \cdot \sqrt{K_p} \qquad P_{pn} = 0 \cdot ksf$$

$$P_{pt} := K_p \cdot \gamma_s \cdot (D_f - T_f) + c \cdot 2 \cdot \sqrt{K_p} \qquad P_{pt} = 0.63 \cdot ksf$$

$$P_{top} := if\left[n < (D_f - T_f), P_{pt}, P_{pn}\right] \qquad P_{top} = 0.63 \cdot ksf$$

$$P_{bot} := K_p \cdot \gamma_s \cdot D_f + c \cdot 2 \cdot \sqrt{K_p} \qquad P_{bot} = 1.62 \cdot ksf$$

$$P_{ave} := \frac{P_{top} + P_{bot}}{2} \qquad P_{ave} = 1.125 \cdot ksf$$

$$T_p := if\left[n < (D_f - T_f), T_f, (D_f - n)\right] \qquad T_p = 2.75 \cdot ft$$

$$A_p := W_f \cdot T_p \qquad A_p = 26.125 \cdot ft^2$$

Ultimate Shear:

$$S_u := P_{ave} \cdot A_p \qquad S_u = 29.3906 \cdot kip$$

Weight of Concrete Pad:

$$WT_c := \left[\left(W_f^2 \cdot T_f\right) + d_p^2 L_p\right] \cdot \gamma_c \qquad WT_c = 38.2781 \cdot kip$$

Weight of Soil: above Footing:

$$WT_{s1} := \left[W_f^2 \cdot \left(\left|L_p - L_{pag}\right|\right) - \frac{d_p^2 \cdot \pi}{4} \cdot \left(\left|L_p - L_{pag}\right|\right)\right] \cdot \gamma_s \qquad WT_{s1} = 13.0663 \cdot kip$$

Weight of Soil Wedge at back face:

$$WT_{s2} := \left(\frac{D_f^2 \cdot \tan\left(\phi_s\right)}{2} \cdot W_f\right) \gamma_s \qquad WT_{s2} = 6.6641 \cdot kip$$

Total Weight:

$$WT_{tot} := WT_c + WT_{s1} + C_t \qquad WT_{tot} = 177.0584 \cdot kip$$

Resisting Moment:

$$M_r := \left(WT_{tot}\right) \cdot \frac{W_f}{2} + S_u \cdot \frac{T_f}{3} + WT_{s2} \cdot \left(W_f + \frac{D_f \cdot \tan\left(\phi_s\right)}{3}\right) \qquad M_r = 937.0486 \cdot kip \cdot ft$$

Overturning Moment:

$$M_{ot} := M_t + S_f \left(L_p + T_f\right) \qquad M_{ot} = 7.3935 \cdot kip \cdot ft$$

Factor of Safety:

$$FS := \frac{M_r}{M_{ot}} \qquad FS_{req} := 2 \qquad FS = 126.74$$

$$SafetyCheck := if\left(FS > FS_{req}, \text{"Okay"}, \text{"No Good"}\right) \qquad SafetyCheck = \text{"Okay"}$$

BEARING PRESSURE CAUSED BY FOOTING

$$A_{mat} := W_f^2 \qquad A_{mat} = 90.25 \cdot ft^2$$

$$S := \frac{W_f^3}{6} \qquad S = 142.8958 \cdot ft^3$$

$$P_{max} := \frac{WT_{tot}}{A_{mat}} + \frac{M_{ot}}{S} \qquad P_{max} = 2.0136 \cdot ksf$$

$$P_{min} := \frac{WT_{tot}}{A_{mat}} - \frac{M_{ot}}{S} \qquad P_{min} = 1.9101 \cdot ksf$$

$$MaxPressure := if\left(P_{max} < q_s, \text{"Okay"}, \text{"No Good"}\right) \qquad MaxPressure = \text{"Okay"}$$

$$MinPressure := if\left[\left(P_{min} \geq 0\right) \cdot \left(P_{min} < q_s\right), \text{"Okay"}, \text{"No Good"}\right] \qquad MinPressure = \text{"Okay"}$$

ANCHOR DETAILS

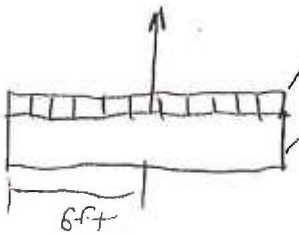
Page ____ of ____

Job ____ Project No. ____ Sheet ____ of ____

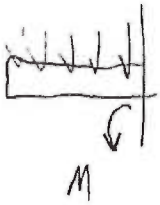
Description ____ Computed by ____ Date ____

____ Checked by ____ Date ____

Reference



concrete block = 4ft x 12ft = 48sf x 130pcf
= 6240plf

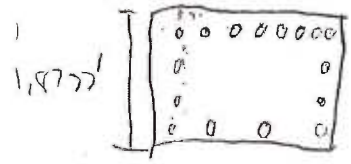


$$M = \frac{w \times \ell^2}{2} = \frac{(6240\ plf)(6ft)^2}{2} = 112{,}320\ lb\text{-}ft$$

$$= 112.3\ k\text{-}ft$$

soil resistance

tie = #4 bar ϕ = 0.5in



8 #4
2 #4
2 #4
4 #4

$d_1 = 3 + 0.5in + \frac{0.5}{2} = 3.75in$
$d_2 = 3.75 + 5 = 8.75in$
$d_3 = 8.75 + 5 = 13.75$
$d_4 = 13.75 + 5 = 18.75in$

Assume $\frac{c}{d} = 0.3$

$c_1 = 0.3 \times d_1 = 0.3 \times 3.75 = 1.125in$
$c_2 = 0.3 \times d_2 = 0.3 \times 8.75 = 2.625in$
$c_3 = 0.3 \times d_3 = 0.3 \times 13.75 = 4.125in$
$c_4 = 0.3 \times d_4 = 0.3 \times 18.75 = 5.625in$

$M_1 = (8 \times 0.20in^2 \times 60ksi)\left(d_1 - \frac{a_1}{2}\right) = (8 \times 0.2 \times 60)\left(3.75in - \frac{1.125in}{2}\right) = 306\ k\text{-}in = 25.5\ k\text{-}ft$

$M_2 = (2 \times 0.2in \times 60ksi)\left(d_2 - \frac{a_2}{2}\right) = (2 \times 0.2 \times 60)\left(8.75in - \frac{2.625in}{2}\right) = 178\ k\text{-}in = 14.875\ k\text{-}ft$

$M_3 = (2 \times 0.2 \times 60ksi)\left(d_3 - a_3/2\right) = (2 \times 0.2 \times 60)\left(13.75in - \frac{4.125in}{2}\right) = 280.5\ k\text{-}in = 23.375\ k\text{-}ft$

$M_4 = (4 \times 0.2 \times 60ksi)\left(d_4 - a_4/2\right) = (4 \times 0.2 \times 60)\left(18.75in - \frac{5.625in}{2}\right) = 765\ k\text{-}in = 63.75\ k\text{-}ft$

$127.5\ k\text{-}ft$

$127.5k\text{-}ft + 112.3k\text{-}ft = 239.8\ k\text{-}ft$ bend resist

$M_{anchor} = \frac{PL}{4} = \frac{(7157\ lb)(12ft)}{4} = 21{,}471\ lb\text{-}ft = 21.5\ k\text{-}ft$

$\frac{21.5}{23.98} = 88.9\%$

fly

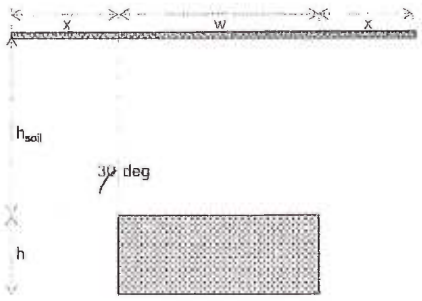
URS

Job :	Calahan Tower - Newington, CT	Project No.:	EBI-001	Page	___ of ___
Description:	Anchor Block Evaluation	Computed by:	MCD	Sheet	1 of 2
	Anchor Block A	Checked by:		Date	8/22/14
				Date	

CHECK UPLIFT RESISTANCE

RESULTS FROM COMPUTER ANALYSIS:

Uplift =	53.255	kips
Sliding =	46.561	kips



Foundation Section

CONCRETE PARAMETERS:

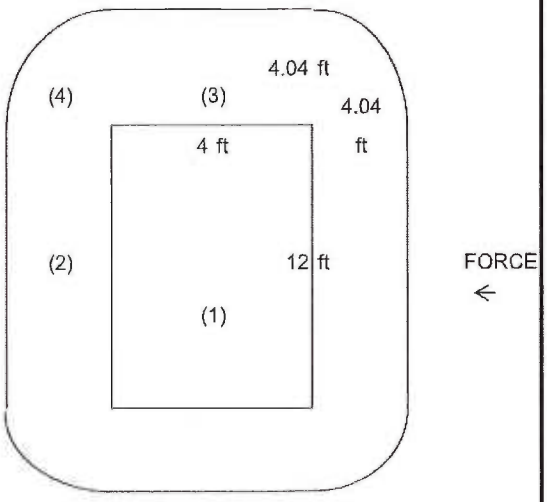
γ_{conc} =	150	pcf
w =	4	ft
h =	1.833333	ft
d =	12	ft
Vol. =	*87.999984*	ft^3
Wc =	*13.20*	kips

SOIL PARAMETERS:

γ_{soil} =	130	pcf
h_{soil} =	7	ft
x =	*4.04*	ft

Soil Weight (Wr):

(1) =	43.68	kips
(2) =	44.13	kips
(3) =	14.71	kips
(4) =	15.56	kips
*(5) Anchor Reinf. =	0	kips
Total =	118.09	kips



Foundation Plan View

CHECK UPLIFT (PER EIA/TIA-222-F STANDARD):

Wr / 2.0 + Wc / 1.25 > UPLIFT				(Wr + Wc) / 1.5 > UPLIFT			
69.60	>	*53.255*	***OK***	*87.53*	>	*53.255*	***OK***

CHECK UPLIFT (PER 2005 CT BLDG CODE 3108.4):

(Wr + Wc) / 2.0 > UPLIFT				*65.64*	>	*53.255*	***OK***

→ ***GUY ANCHORS AGAINST UPLIFT ARE ADEQUATE***

URS

Job :	Calahan Tower - Newington, CT	Project No.:	EBI-001	Page	of
Description:	Anchor Block Evaluation	Computed by:	MCD	Sheet	2 of 2
	Anchor Block A	Checked by:		Date	8/22/14
				Date	

CHECK SLIDING RESISTANCE

SOIL PARAMETERS

$\gamma soil$ = 130 pcf

h_{soil} = 7 ft

h = 1.833333 ft

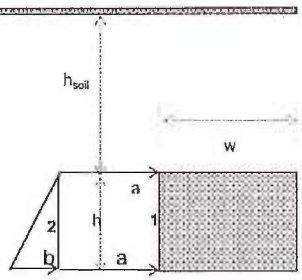
ϕ = 30 degrees

ANCHOR PARAMETERS

w = 4.0 ft

h = 1.8 ft

d = 12.0 ft



Foundation Elevation View

K_a = 0.33

K_p = 3.00

Δ = 2.67

HORIZONTAL FORCES

1 =	53.39	k
2 =	3.50	k
RESIST TO SLIDING =	56.88	k

SOIL & CONCRETE WEIGHT =	Wr + Wc =	131.29	k
UPLIFT REACTIONS =		-53.255	k
SUM =		78.03	k

COEF. OF FRICTION, (0.5) =	39.02	k
RESIST TO SLIDING =	56.88	k
SUM =	95.90	k

SF AGAINST SLIDING

SF = 2.06 > 2.0 OK

→ *GUY ANCHORS AGAINST SLIDING ARE ADEQUATE*

URS

Job :	Calahan Tower - Newington, CT	Project No.:	EBI-001	Page	of
Description:	Anchor Block Evaluation	Computed by:	MCD	Sheet	1 of 2
	Anchor Block B	Checked by:		Date	8/22/14
				Date	

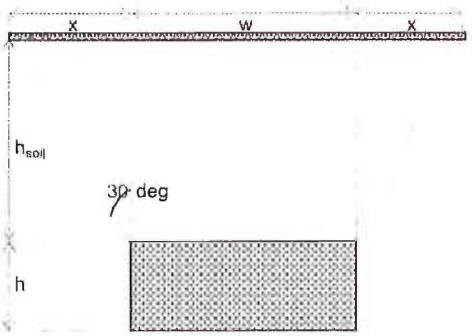
CHECK UPLIFT RESISTANCE

RESULTS FROM COMPUTER ANALYSIS:

Uplift =	49.905	kips
Sliding =	47.294	kips

CONCRETE PARAMETERS:

γ_{conc} =	150	pcf
w =	4	ft
h =	1.833333333	ft
d =	12	ft
Vol. =	*87.99999998*	ft^3
Wc =	*13.20*	kips



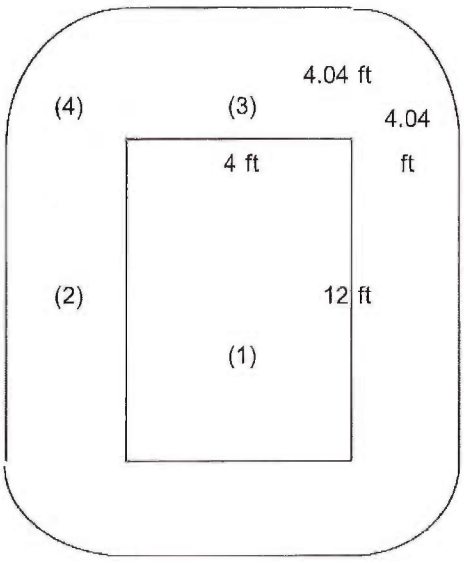
Foundation Section

SOIL PARAMETERS:

γ_{soil} =	130	pcf
h_{soil} =	7	ft
x =	*4.04*	ft

Soil Weight (Wr):

(1) =	43.68	kips
(2) =	44.13	kips
(3) =	14.71	kips
(4) =	15.56	kips
*(5) Anchor Reinf. =	0	kips
Total =	118.09	kips



Foundation Plan View

CHECK UPLIFT (PER EIA/TIA-222-F STANDARD):

Wr / 2.0 + Wc / 1.25 > UPLIFT				(Wr + Wc) / 1.5 > UPLIFT		
69.60	>	*49.905*	***OK***	*87.53*	>	*49.905*	***OK***

CHECK UPLIFT (PER 2005 CT BLDG CODE 3108.4):

(Wr + Wc) / 2.0 > UPLIFT *65.64* > *49.905* ***OK***

→ ***GUY ANCHORS AGAINST UPLIFT ARE ADEQUATE***

URS

Job :	Calahan Tower - Newington, CT	Project No.:	EBI-001	Page	of
Description:	Anchor Block Evaluation	Computed by:	MCD	Sheet	2 of 2
	Anchor Block B	Checked by:		Date	8/22/14
				Date	

CHECK SLIDING RESISTANCE

SOIL PARAMETERS

$\gamma soil$ = 130 pcf

h_{soil} = 7 ft

h = 1.833333 ft

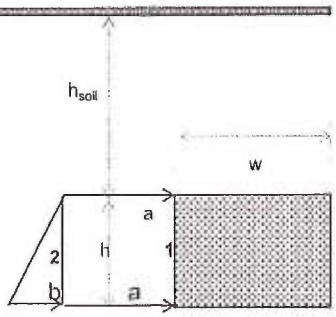
ϕ = 30 degrees

ANCHOR PARAMETERS

w = 4.0 ft

h = 1.8 ft

d = 12.0 ft



Foundation Elevation View

K_a = 0.33

K_p = 3.00

Δ = 2.67

HORIZONTAL FORCES

1 =	53.39	k
2 =	3.50	k
RESIST TO SLIDING =	56.88	k

SOIL & CONCRETE WEIGHT =	Wr + Wc =	131.29	k
UPLIFT REACTIONS =		-49.905	k
SUM =		81.38	k

COEF. OF FRICTION, (0.5) =	40.69	k
RESIST TO SLIDING =	56.88	k
SUM =	97.57	k

SF AGAINST SLIDING

SF = 2.06 > 2.0 OK

→ *GUY ANCHORS AGAINST SLIDING ARE ADEQUATE*

URS

Job :	Calahan Tower - Newington, CT	Project No.:	EBI-001	Page	of
Description:	Anchor Block Evaluation	Computed by:	MCD	Sheet	1 of 2
	Anchor Block C	Checked by:		Date	8/22/14
				Date	

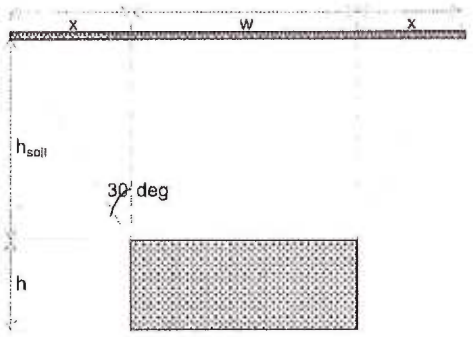
CHECK UPLIFT RESISTANCE

RESULTS FROM COMPUTER ANALYSIS:

Uplift =	47.401	kips
Sliding =	47.717	kips

CONCRETE PARAMETERS:

γ_{conc} =	150	pcf
w =	4	ft
h =	1.833333333	ft
d =	12	ft
Vol. =	*88*	ft^3
Wc =	*13.20*	kips



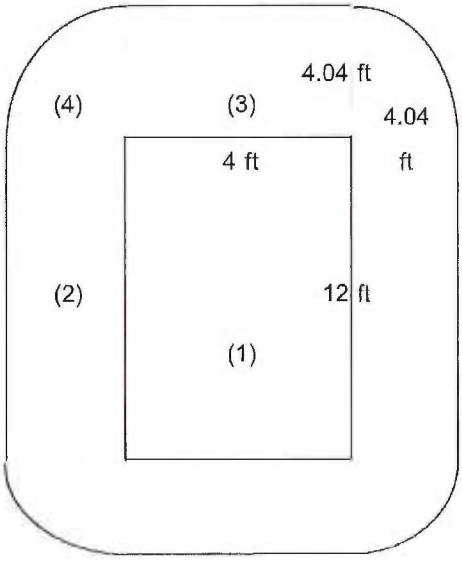
Foundation Section

SOIL PARAMETERS:

γ_{soil} =	130	pcf
h_{soil} =	7	ft
x =	*4.04*	ft

Soil Weight (Wr):

(1) =	43.68	kips
(2) =	44.13	kips
(3) =	14.71	kips
(4) =	15.56	kips
*(5) Anchor Reinf. =	0	kips
Total =	118.09	kips



Foundation Plan View

CHECK UPLIFT (PER EIA/TIA-222-F STANDARD):

Wr / 2.0 + Wc / 1.25 > UPLIFT

69.60 > *47.401* ***OK***

(Wr + Wc) / 1.5 > UPLIFT

87.53 > *47.401* ***OK***

CHECK UPLIFT (PER 2005 CT BLDG CODE 3108.4):

(Wr + Wc) / 2.0 > UPLIFT *65.64* > *47.401* ***OK***

→ ***GUY ANCHORS AGAINST UPLIFT ARE ADEQUATE***

URS

Job :	Calahan Tower - Newington, CT	Project No.:	EBI-001	Page	of
Description:	Anchor Block Evaluation	Computed by:	MCD	Sheet	2 of 2
	Anchor Block C	Checked by:		Date	8/22/14
				Date	

CHECK SLIDING RESISTANCE

SOIL PARAMETERS

$\gamma soil$ = 130 pcf

h_{soil} = 7 ft

h = 1.833333 ft

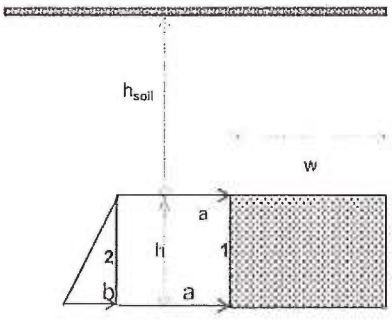
ϕ = 30 degrees

ANCHOR PARAMETERS

w = 4.0 ft

h = 1.8 ft

d = 12.0 ft



Foundation Elevation View

K_a = 0.33

K_p = 3.00

Δ = 2.67

HORIZONTAL FORCES

1 =	53.39	k
2 =	3.50	k
RESIST TO SLIDING =	56.88	k

SOIL & CONCRETE WEIGHT =	Wr + Wc =	131.29	k
UPLIFT REACTIONS =		-47.401	k
SUM =		83.89	k

COEF. OF FRICTION, (0.5) =	41.94	k
RESIST TO SLIDING =	56.88	k
SUM =	98.83	k

SF AGAINST SLIDING

SF = 2.07 > 2.0 OK

→ *GUY ANCHORS AGAINST SLIDING ARE ADEQUATE*

EXHIBIT C

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

T-Mobile Existing Facility

Site ID: CT11174A

Callahan Tower
99 Cedar Wood Lane
Newington, CT 06111

August 28, 2014

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	88.39 %

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

EBI Consulting
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August 28, 2014

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

Emissions Analysis for Site: **CT11174A – Callahan Tower**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **99 Cedar Wood Lane, Newington, 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 700 MHz Band is 467 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 **99 Cedar Wood Lane, Newington, 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, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of 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 (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel

2) **2** UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

5) 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.

6) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antennas used in this modeling are the **RFS APX16DWV-16DWVS-E-A20** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **RFS APX16DWV-16DWVS-E-A20** has a maximum gain of **16.3 dBd** at its main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antenna mounting height centerline of the proposed antennas is **163 feet** above ground level (AGL).

9) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

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T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20
Gain:	16.3 dBd	Gain:	16.3 dBd	Gain:	16.3 dBd
Height (AGL):	163	Height (AGL):	163	Height (AGL):	163
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	# PCS Channels:	6
Total TX Power:	240	Total TX Power:	240	# AWS Channels:	240
ERP (W):	3,833.82	ERP (W):	3,833.82	ERP (W):	3,833.82
Antenna A1 MPE%	1.49	Antenna B1 MPE%	1.49	Antenna C1 MPE%	1.49
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	163	Height (AGL):	163	Height (AGL):	163
Frequency Bands	700 Mhz	Frequency Bands	700 Mhz	Frequency Bands	700 Mhz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power:	30	Total TX Power:	30	Total TX Power:	30
ERP (W):	445.37	ERP (W):	445.37	ERP (W):	445.37
Antenna A2 MPE%	0.27	Antenna B2 MPE%	0.27	Antenna C2 MPE%	0.27

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	**5.29**
AT&T	22.33 %
Clearwire	0.91 %
Nextel	3.88 %
Carbone's Auto Body	55.20 %
Town of Weathersfield	0.78 %
Site Total MPE %:	**88.39 %**

T-Mobile Sector 1 Total:	1.76 %
T-Mobile Sector 2 Total:	1.76 %
T-Mobile Sector 3 Total:	1.76 %
Site Total:	88.39 %

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Summary

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

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector 1:	1.76 %
Sector 2:	1.76 %
Sector 3 :	1.76 %
T-Mobile Total:	5.29 %
Site Total:	88.39 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **88.39%** 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 well within the allowable 100% threshold standard per the federal government.

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