Robinson+Cole

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Also admitted in Massachusetts

December 10, 2015

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

Re: **Notice of Exempt Modification – Facility Modification**
Birch Mountain Road, Glastonbury, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the 165-foot level of an existing 225-foot tower off Birch Mountain Road in Glastonbury, Connecticut (the "Property"). The tower and underlying property are owned by M&R Gasser Family III, LLC ("M&R"). The Council approved Cellco's use of this tower in 1986. Cellco now intends to modify its facility by replacing all of its existing antennas with three (3) model LNX-6514DS, 700 MHz antennas; three (3) model LNX-6514DS, 850 MHz antennas; three (3) model HBXX-6517DS-VTM, 1900 MHz antennas; and three (3) model HBXX-6517DS-VTM, 2100 MHz antennas, all at the same level on the tower. Cellco also intends to install six (6) remote radio heads ("RRHs") and two (2) HYBRIFLEX™ antenna cables. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs and HYBRIFLEX™ cables.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that 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 Richard J. Johnson, Town Manager for the Town of Glastonbury. A copy of this letter is also being sent to M&R, the owner of the Property and the tower.

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

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1. The proposed modifications will not result in an increase in the height of the existing tower. The replacement antennas and RRHs will be located at the 165-foot level of the 225-foot tower.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A General Power Density table is included behind Attachment 2.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The tower and its foundation, with certain modifications, can support Cellco's proposed modifications. (*See* Detailed Structural Analysis and Modification report included in Attachment 3).

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Richard J. Johnson, Glastonbury Town Manager
M&R Gassner Family III, LLC
Tim Parks

ATTACHMENT 1

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

LNX-6514DS-VTM

Andrew® Antenna, 698–896 MHz, 65° horizontal beamwidth, RET compatible

- Great solution to maximize network coverage and capacity
- Excellent gain, VSWR, front-to-back ratio, and PIM specifications for robust network performance
- Ideal choice for site collocations and tough zoning restrictions
- Excellent solution for site sharing and maximizing capacity
- Fully compatible with Andrew remote electrical tilt system for greater OpEx savings
- The RF connectors are designed for IP67 rating and the radome for IP56 rating

Electrical Specifications

Frequency Band, MHz	**698–806**	**806–896**
Gain, dBi	15.8	15.9
Beamwidth, Horizontal, degrees	65	64
Beamwidth, Vertical, degrees	12.4	11.2
Beam Tilt, degrees	0–10	0–10
USLS (First Lobe), dB	17	18
Front-to-Back Ratio at 180°, dB	32	30
CPR at Boresight, dB	23	23
CPR at Sector, dB	12	10
Isolation, dB	30	30
VSWR | Return Loss, dB	1.4 | 15.6	1.4 | 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153
Input Power per Port, maximum, watts	400	400
Polarization	±45°	±45°
Impedance	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	**698–806**	**806–896**
Gain by all Beam Tilts, average, dBi	15.6	15.7
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.5
Gain by Beam Tilt, average, dBi	0 ° | 15.7 5 ° | 15.7 10 ° | 15.3	0 ° | 15.9 5 ° | 15.8 10 ° | 15.3
Beamwidth, Horizontal Tolerance, degrees	±0.9	±1.4
Beamwidth, Vertical Tolerance, degrees	±0.8	±0.6
USLS, beampeak to 20° above beampeak, dB	18	20
Front-to-Back Total Power at 180° ± 30°, dB	25	23
CPR at Boresight, dB	25	24
CPR at Sector, dB	15	12

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

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol®
Band	Single band
Brand	DualPol® | Teletilt®

Product Specifications

LNX-6514DS-VTM

Operating Frequency Band	698 – 896 MHz
Performance Note	Outdoor usage

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Aluminum
Radome Material	Fiberglass, UV resistant
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	2
Wind Loading, maximum	617.7 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Depth	180.5 mm | 7.1 in
Length	1851.0 mm | 72.9 in
Width	301.0 mm | 11.9 in
Net Weight	14.2 kg | 31.3 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 2.0 Actuator	LNX-6514DS-A1M
RET System	Teletilt®

Packed Dimensions

Depth	284.0 mm | 11.2 in
Length	2163.0 mm | 85.2 in
Width	411.0 mm | 16.2 in
Shipping Weight	32.3 kg | 71.2 lb

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

Included Products

DB380 — Pipe Mounting Kit for 2.4"-4.5" (60-115mm) OD round members on wide panel antennas. Includes 2 clamp sets and double nuts.

Product Specifications

LNX-6514DS-VTM

DB5083 — Downtilt Mounting Kit for 2.4"-4.5" (60 - 115 mm) OD round members. Includes a heavy-duty, galvanized steel downtilt mounting bracket assembly and associated hardware. This kit is compatible with the DB380 pipe mount kit for panel antennas that are equipped with two mounting brackets.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

Product Specifications

COMMSCOPE®

POWERED BY ANDREW.

HBXX-6517DS-VTM

Andrew® Quad Port Antenna, 1710–2180 MHz, 65° horizontal beamwidth, RET compatible

- Superior azimuth tracking and pattern symmetry with excellent passive intermodulation suppression

Electrical Specifications

Frequency Band, MHz	1710–1880	1850–1990	1920–2180
Gain, dBi	19.0	19.1	19.2
Beamwidth, Horizontal, degrees	67	66	65
Beamwidth, Vertical, degrees	5.0	4.7	4.4
Beam Tilt, degrees	0–6	0–6	0–6
USLS, dB	18	18	18
Front-to-Back Ratio at 180°, dB	30	30	30
CPR at Boresight, dB	21	22	21
CPR at Sector, dB	10	11	9
Isolation, dB	30	30	30
VSWR | Return Loss, dB	1.4 | 15.6	1.4 | 15.6	1.4 | 15.6
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350
Polarization	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	1710–1880	1850–1990	1920–2180
Gain by all Beam Tilts, average, dBi	18.5	18.6	18.8
Gain by all Beam Tilts Tolerance, dB	±0.4	±0.3	±0.4
Gain by Beam Tilt, average, dBi	0 ° | 18.4	0 ° | 18.4	0 ° | 18.7
	3 ° | 18.7	3 ° | 18.7	3 ° | 18.9
	6 ° | 18.4	6 ° | 18.5	6 ° | 18.6
Beamwidth, Horizontal Tolerance, degrees	±2.4	±1.7	±2.9
Beamwidth, Vertical Tolerance, degrees	±0.3	±0.3	±0.3
USLS, dB	18	19	19
Front-to-Back Total Power at 180° ± 30°, dB	25	26	26
CPR at Boresight, dB	22	23	22
CPR at Sector, dB	10	10	9

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

General Specifications

Antenna Brand	Andrew®
Antenna Type	DualPol® quad
Band	Single band
Brand	DualPol® | Teletilt®
Operating Frequency Band	1710 – 2180 MHz

Product Specifications

HBXX-6517DS-VTM

Performance Note	Outdoor usage

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground
Radiator Material	Low loss circuit board
Radome Material	PVC, UV resistant
RF Connector Interface	7-16 DIN Female
RF Connector Location	Bottom
RF Connector Quantity, total	4
Wind Loading, maximum	668.0 N @ 150 km/h 150.2 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Depth	166.0 mm | 6.5 in
Length	1903.0 mm | 74.9 in
Width	305.0 mm | 12.0 in
Net Weight	19.5 kg | 43.0 lb

Remote Electrical Tilt (RET) Information

Model with Factory Installed AISG 2.0 Actuator	HBXX-6517DS-A2M
RET System	Teletilt®

Packed Dimensions

Depth	292.0 mm | 11.5 in
Length	2219.0 mm | 87.4 in
Width	409.0 mm | 16.1 in
Shipping Weight	29.3 kg | 64.6 lb

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

Included Products

600899A-2 — Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

Product Specifications

HBXX-6517DS-VTM

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

PCS RF MODULES

RRH1900 2X60 - HW CHARACTERISTICS

LA6.0.1/13.3

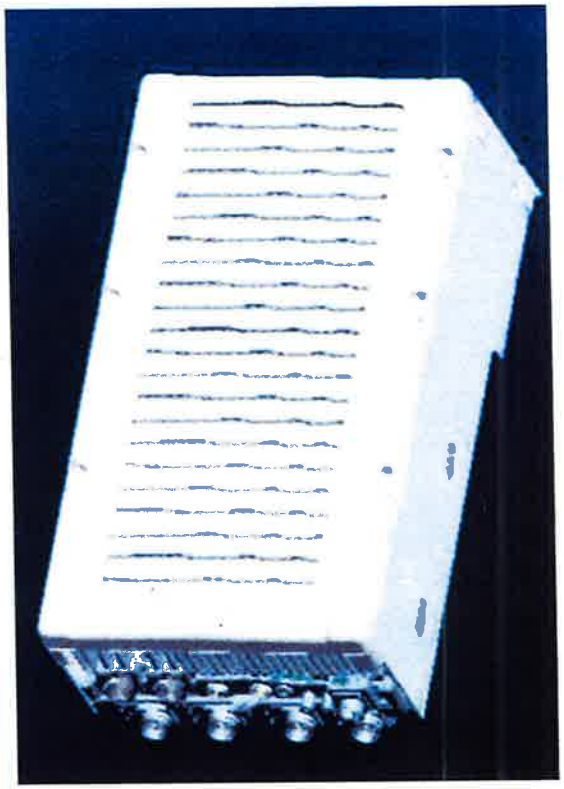
	RRH2x60
RF Output Power	2x60W
Instantaneous Bandwidth	20MHz
Transmitter	2 TX
Receiver 1900 HW version	2 Branch RX – LA6.0.1
Receiver 1900A HW version	4 Branch RX – LR13.3
Features	AISG 2.0 for RET/TMA
	Internal Smart Bias-T
Power	-48VDC
CPRI Ports	2 CPRI Rate 3 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX
Environmental	GR487 Compliance
RF Connectors	7/16 DIN (top mounted)

** Not a Verizon Wireless deployed product

NEW PCS RF MODULES FOR VZW
RRH2X60 - HW CHARACTERISTICS

LR14.3

	RRH2x60
RF Output Power	2x60W (4x30W HW Ready)
Instantaneous Bandwidth	60MHz
Target Reliability (Annual Return Rate)	<2%
Receiver	4 Branch Rx
Features	AISG 2.0 for RET/TMA
Power	-48VDC
	Internal Smart Bias-T
CPRI Ports	2 CPRI Rate 5 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX, RX
Environmental	GR487 Compliance
RF Connectors	7/16 DIN (downward facing)
Dimensions	22"(h) x 12"(w)x 9.4" (d)**
Weight	55lb**



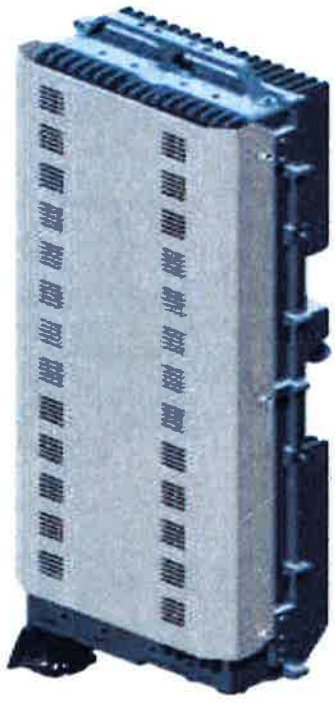
**- Includes solar shield but not mounting brackets (8 lbs.)

Alcatel·Lucent

ALCATEL-LUCENT WIRELESS PRODUCT DATASHEET

RRH2X60-AWS FOR BAND 4 APPLICATIONS

The Alcatel-Lucent RRH2x60-AWS is a high power, small form factor Remote Radio Head operating in the AWS frequency band (3GPP Band 4) for LTE technology. It is designed with an eco-efficient approach, providing operators with the means to achieve high quality and high capacity coverage with minimum site requirements and efficient operation.



A distributed Node B expands the deployment options by using two components, a Base Band Unit (BBU) containing the digital assets and a separate RRH containing the radio-frequency (RF) elements. This modular design optimizes available space and allows the main components of a Node B to be installed separately, within the same site or several kilometers apart.

The Alcatel-Lucent RRH2x60-AWS is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information.

SUPERIOR RF PERFORMANCE

The Alcatel-Lucent RRH2x60-AWS integrates all the latest technologies. This allows to offer best-in-class characteristics.

It delivers an outstanding 120 watts of total RF power thanks to its two transmit RF paths of 60 W each.

It is ideally suited to support multiple-input multiple-output (MIMO) 2x2 operation.

It includes four RF receivers to natively support 4-way uplink reception diversity. This improves the radio uplink coverage and this can be used to extend the cell radius commensurate with 2x2MIMO 2x60 W for the downlink.

It supports multiple discontinuous LTE carriers within an instantaneous bandwidth of 45 MHz corresponding to the entire AWS B4 spectrum.

The latest generation power amplifiers (PA) used in this product achieve high efficiency (>40%), resulting in improved power consumption figures.

OPTIMIZED TCO

The Alcatel-Lucent RRH2x60-AWS is designed to make available all the benefits of a distributed Node B, with excellent RF characteristics, with low capital expenditures (CAPEX) and low operating expenditures (OPEX).

The Alcatel-Lucent RRH2x60-AWS is a very cost-effective solution to deploy LTE MIMO.

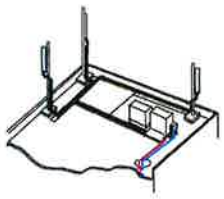
EASY INSTALLATION

The RRH2x60-AWS includes a reversible mounting bracket which allows for ease of installation behind an antenna, or on a rooftop knee wall while providing easy access to the mid body RF connectors.

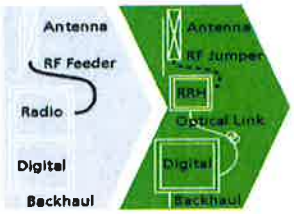
The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent RRH2x60-AWS installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

The Alcatel-Lucent RRH2x60-AWS is a zero-footprint solution and is convection cooled without fans for silent operation, simplifying negotiations with site property owners and minimizing environmental impacts.

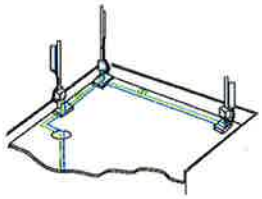
Installation can easily be done by a single person as the Alcatel–Lucent RRH2x60-AWS is compact and weighs about 20 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

FEATURES

- RRH2x60-AWS integrates two power amplifiers of 60W rating (at each antenna connector)
- Support multiple carriers over the entire 3GPP band 4
- RRH2x60-AWS is optimized for LTE operation
- RRH2x60-AWS is a very compact and lightweight product
- Advanced power management techniques are embedded to provide power savings, such as PA bias control

BENEFITS

- MIMO LTE operation with only one single unit per sector
- Improved uplink coverage with built-in 4-way receive diversity capability
- RRH can be mounted close to the antenna, eliminating nearly all losses in RF cables and thus reducing power consumption by 50% compared to conventional solutions
- Distributed configurations provide easily deployable and cost-effective solutions, near zero footprint and silent solutions, with minimum impact on the neighborhood, which ease the deployment
- RETA and TMA support without additional hardware thanks to the AISG v2.0 port and the integrated Bias-Tees. Bias-Tees support AISG DC supply and signaling.

TECHNICAL SPECIFICATIONS

Specifications listed are hardware capabilities. Some capabilities depend on support in a specific software release or future release.

Dimensions and weights

- HxWxD : 510x285x186mm (27 l with solar shield)
- Weight : 20 kg (44 lbs)

Electrical Data

- Power Supply : -48V DC (-40.5 to -57V)
- Power Consumption (ETSI average traffic load reference) : 250W @2x60W

RF Characteristics

- Frequency band: 1710-1755, UL / 2110-2155 MHz, DL (3GPP band 4)
- Output power: 2x60W at antenna connectors
- Technology supported: LTE
- Instantaneous bandwidth: 45 MHz
- Rx diversity: 2-way and 4-way uplink reception
- Typical sensitivity without Rx diversity: -105 dBm for LTE

Connectivity

- Two CPRI optical ports for daisychaining and up to six RRHs per fiber
- Type of optical fiber: Single-Mode (SM) and Multi-Mode (MM) SFPs
- Optical fiber length: up to 500m using MM fiber, up to 20km using SM fiber
- TMA/RETA : AISG 2.0 (RS485 connector and internal Bias-Tee)
- Six external alarms
- Surge protection for all external ports (DC and RF)

Environmental specifications

- Operating temperature: -40°C to 55°C including solar load
- Operating relative humidity: 8% to 100%
- Environmental Conditions : ETS 300 019-1-4 class 4.1E
- Ingress Protection : IEC 60529 IP65
- Acoustic Noise : Noiseless (natural convection cooling)

Safety and Regulatory Data

- EMC : 3GPP 25113, EN 301 489-1, EN 301 489-23, GR 1089, GR 3108, OET-65
- Safety : IEC60950-1, EN 60825-1, UL, ANSI/NFPA 70, CAN/CSA-C22.2
- Regulatory : FCC Part 15 Class B, CE Mark – European Directive : 2002/95/EC (ROHS); 2002/96/EC (WEEE); 1999/5/EC (R&TTE)
- Health : EN 50385

Alcatel·Lucent

AT THE SPEED OF IDEAS™

Product Data Sheet HB158-1-08U8-S8J18

HYBRIFLEX™ RRH Hybrid Feeder Cabling Solution, 1-5/8", Single-Mode Fiber

Product Description

RFS' HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines optical fiber and DC power for RRHs in a single lightweight aluminum corrugated cable, making it the world's most innovative solution for RRH deployments.

It was developed to reduce installation complexity and costs at Cellular sites. HYBRIFLEX allows mobile operators deploying an RRH architecture to standardize the RRH installation process and eliminate the need for and cost of cable grounding. HYBRIFLEX combines optical fiber (multi-mode or single-mode) and power in a single corrugated cable. It eliminates the need for junction boxes and can connect multiple RRHs with a single feeder. Standard RFS CELLFLEX® accessories can be used with HYBRIFLEX cable. Both pre-connectorized and on-site options are available.

Figure 1: HYBRIFLEX Series

Features/Benefits

- Aluminum corrugated armor with outstanding bending characteristics – minimizes installation time and enables mechanical protection and shielding
- Same accessories as 1 5/8" coaxial cable
- Outer conductor grounding – Eliminates typical grounding requirements and saves on installation costs
- Lightweight solution and compact design – Decreases tower loading
- Robust cabling – Eliminates need for expensive cable trays and ducts
- Installation of tight bundled fiber optic cable pairs directly to the RRH – Reduces CAPEX and wind load by eliminating need for interconnection
- Optical fiber and power cables housed in single corrugated cable – Saves CAPEX by standardizing RRH cable installation and reducing installation requirements
- Outdoor polyethylene jacket – Ensures long-lasting cable protection

Technical Specifications

Outer Conductor Armor	Corrugated Aluminum	[mm (in)]	46.5 (1.83)
Jacket	Polyethylene, PE	[mm (in)]	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Weight, Approximate		[kg/m (lb/ft)]	1.9 (1.30)
Minimum Bending Radius, Single Bending		[mm (in)]	200 (8)
Minimum Bending Radius, Repeated Bending		[mm (in)]	500 (20)
Recommended/Maximum Clamp Spacing		[m (ft)]	1.0 / 1.2 (3.25 / 4.0)
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	068 (0.205)
DC-Resistance Power Cable, 8.4mm² (8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		[µm]	50/125
Primary Coating (Acrylate)		[µm]	245
Buffer Diameter, Nominal		[µm]	900
Secondary Protection, Jacket, Nominal		[mm (in)]	2.0 (0.08)
Minimum Bending Radius		[mm (in)]	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL94-V0, UL1666 RoHS Compliant
Size (Power)		[mm² (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm² (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to149)

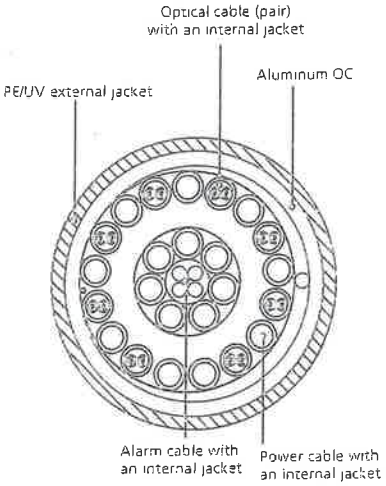


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

Site Name: Glastonbury, CT
Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissable Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)	(mW/cm^2)	(%)
VZW PCS	1970	11	394	4337.232	165	0.0573	1.0	5.73%
VZW Cellular	869	9	377	3396.546	165	0.0449	0.579333333	7.74%
VZW AWS	2145	1	3500	3500	165	0.0462	1.0	4.62%
VZW 700	746	1	2100	2100	165	0.0277	0.497333333	5.58%

Total Percentage of Maximum Permissible Exposure 23.67%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Part 1 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

MHz = Megahertz
mW/cm^2 = milliwatts per square centimeter
ERP = Effective Radiated Power

Absolute worst case maximum values used.

ATTACHMENT 3

AECOM

Submitted to
Verizon Wireless
99 East River Drive
East Hartford,
Connecticut 06108

Submitted by
AECOM
500 Enterprise Drive,
Suite 3B
Rocky Hill, CT 06067
August 4, 2015

DETAILED STRUCTURAL ANALYSIS AND MODIFICATION OF AN EXISTING 225' GUYED LATTICE TOWER FOR PROPOSED ANTENNA ARRANGEMENT

verizonwireless

Site Name: Glastonbury CT
Site Address: 48 Birch Mountain Road
Glastonbury, Connecticut

36928713
VZ5-194 Rev.1

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis of the modified 225' guyed lattice tower located at 48 Birch Mountain Road in Glastonbury, Connecticut. The analysis was conducted in accordance with the 2005 Connecticut State Building Code and the TIA/EIA-222-F standard for 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 existing and proposed antennas, transmission lines, and ancillary items as outlined in Section 6 of this report.

The proposed Verizon Wireless modification is as follows:

Proposed Antenna and Mount	Carrier	Antenna Center Elevation
Remove: **(3) BXA-70063-6CF Panel Antennas** **(4) LPA-80063BXA-70063-6CF_2 Panel Antennas** **(2) DB846F65ZAXY Panel Antenna** **(3) BXA-171063-12BF Panel Antennas**	**Verizon (existing)**	**165'**
Install: **(6) LNX-6514DS-VTM Panel Antennas** **(6) HBXX-6517DS-VTM Panel Antennas** **(3) RRH_2x60-AWS RRH Units** **(3) RRH_2x60-PCS RRH Units** **(2) DB-T1-6Z-8AB-0Z Distribution Boxes** **(2) HB158-1-08U8-S8J18 1-5/8" Fiber Optic Cables**	**Verizon (Proposed)**	**165'**

The results of an initial analysis indicated the existing tower structure did not have the capacity to support the propose loading conditions. The tower structure requires modifications shown on SK-1 and SK-2. **Once the modifications indicated on sheets SK-1 and SK-2 are performed, the modified structure is considered structurally adequate with the wind load classification specified above with the existing and proposed antenna loading.**

1. EXECUTIVE SUMMARY – *continued*

This analysis is based on:

1) The tower structure's theoretical capacity, not including any assessment of the condition of the tower.

2) Tower geometry and structural member sizes taken from Guyed Tower Inventory and Mapping Report prepared by CSB Communications, dated January 19, 2006.

3) Previous structural analysis and reinforcements performed by URS on behalf of Verizon Wireless, project number VZ5-108 (Revision 1) / 36922266, signed and sealed April 3, 2012.

4) Proposed antenna configuration obtained from Verizon Wireless Radio Frequency Data Sheet (RFDS), dated March, 17, 2014.

5) Tower site visit performed by URS, dated February 6, 2015.

6) Previous structural analysis performed by URS Corporation, on behalf of Verizon Wireless, project number 36928713 / VZ5-194, signed and sealed March 16, 2015.

7) Geotechnical assessment report performed by Dr. Clarence Welti, P.E., P.C, dated July 27, 2015.

8) Antenna and mount configuration as specified in Section 6 of this report.

This report is only valid as per the assumptions and data utilized in this report for antenna inventory, mounts and associated cables. The user of this report shall field verify the antenna, cabling and mount configuration used, as well as the physical condition of the tower members, connections and foundations. 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,

AECOM, contracting as URS Corporation AES

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

RAS/mcd

2. INTRODUCTION

The subject tower is located at 48 Birch Mountain Road in Glastonbury, Connecticut. The structure is a 225' guyed lattice tower.

The tower geometry and structure member sizes were taken from Guyed Tower Inventory and Mapping Report prepared by CSB Communications, dated January 19, 2006.

The inventory is summarized in the table below:

Antenna Type	*Carrier*	*Mount*	*Antenna Centerline Elevation*	*Cable*
(1) 18' Whip	Unknown (existing)	Leg	234'-9"	(1) 7/8"
(1) 15' Whip	Unknown (existing)	Leg	231'-6"	(1) 1-1/4"
(1) 8' Dipole	Unknown (existing)	Pipe	232'-6"	(1) 1-1/4"
(1) Lighted Beacon	Tower (existing)	Top of Leg	225'	(1) 1/2"
(1) 4' x 11" x 6" panel	Unknown (existing)	Leg	222'-6"	(1) 7/8"
(1) 10' Whip	Unknown (existing)	Torque Arm	222'	(1) 1-1/4"
(1) 12' Whip	Unknown (existing)	Torque Arm	221'	(1) 7/8"
(1) 3'-8" x 3'-8" panel	Unknown (existing)	Leg	218'-4"	(1) 7/8"
(1) 11' Whip (Inverted)	Unknown (existing)	Torque Arm	214'	(1) 1-1/4"
(1) 16' Dipole	Unknown (existing)	(6) 10' Side-arm Mounts @ (EL. 209')	217'-8"	(1) 7/8"
(1) 14' Whip			215'-2"	(1) 1-1/4"
(1) 10' Whip			215'	(1) 1-1/4"
(1) 20' Dipole			211'	(1) 1-5/8"
(1) 8'-6" Dipole (Inverted)			205'-9"	(1) 7/8"
(1) 8' Dipole (Inverted)			205'-3"	(1) 7/8"
(1) 10' Dipole (inverted)	Unknown (existing)	Torque Arm	209'	(1) 7/8"
(1) 16" x 13" corner reflector	Unknown (existing)	Leg	184'-4"	(1) 7/8"
(6) HBXX-6517DS-VTM Panel Antennas (3) RH_2x60-AWS RRH Units (3) RH_2x60-PCS RRH Units (2) DB-T1-6Z-8AB-0Z Distribution Boxes (6) LNX-6514DS-VTM Panel Antennas	**Verizon (Proposed)**	*See Below Mount*	**165'**	**(2) 1-5/8" Fiber Optic Cables**
(6) Diplexer Units	Verizon (existing)	(3) Gate Booms	165'	(12) 1-5/8"
(1) 38" x 2" x 66" Yagi	Unknown (existing)	Torque Arm	156'-3"	(1) 1/2"
(1) 15" x 24" Yagi	Unknown (existing)	Torque Arm	155'-7"	(1) 1/2"

Antenna Type	Carrier	Mount	Antenna Centerline Elevation	Cable
(1) 14" x 14" corner reflector	Unknown (existing)	Leg	153'	N/A
(1) 14" x 1" x 37" Yagi	Unknown (existing)	Leg	147'-7"	(1) 1/2"
(1) 3'-8" x 3" x 8" panel	Unknown (existing)	Leg	145'	(1) 1/2"
(1) 6' Whip	Unknown (existing)	Side Arm	143'-7"	(1) 7/8"
(1) 4' Whip	Unknown (existing)	Side Arm	144'-10"	(1) 7/8"
(1) 12' Whip	Unknown (existing)	Side Arm	144'-8"	(1) 7/8"
(1) 44" x 3" x 8" panel	Unknown (existing)	Leg	113'	(1) 7/8"
N/A	Unknown (existing)	Dish Mount	105'	N/A
(1) Yagi Antenna	Unknown (existing)	*Leg Mount*	105'	(1) 1/2"
(1) 7'-4" Dish	Unknown (existing)	Dish Mount	88'-6"	(2) EW63
(1) 7'-4" Dish	Unknown (existing)	Dish Mount	87'	(2) EW63
(1) 4' Dish	Unknown (existing)	Leg	63'	(1) EW63
(1) 4' Dish	Unknown (existing)	Leg	58'	(1) EW63
(2) 7" x 19" Yagi	Unknown (existing)	Side Arm	48'-2"	(2) 1/2"

Note: Refer to Section 6 Tower Feed Line Plan for coaxial cable locations.

This structural analysis of the communications tower was performed by AECOM for Verizon Wireless. The purpose of this analysis was to investigate the structural integrity of the modified tower with its existing and proposed antenna loads. This analysis was conducted to evaluate stress on the tower, tension in the guy wires 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

Stresses on the reinforced tower structure were evaluated to compare with allowable stresses in accordance with AISC. The results of an initial analysis indicated that the existing tower structure did not have enough capacity to support the proposed loading conditions. The tower require modifications shown on SK-1 and SK-2. **Once the modifications indicated on sheets SK-1 and SK-2 are performed, the modified structure is considered structurally adequate with the wind load classification specified with the existing and proposed antenna loading noted herein**. See below tables for tower and foundation component summary.

Tower Reactions:

Component	Value (kips)
Base Shear	2.192
Base Compression	118.891
Anchor Uplift	46.211
Anchor Shear	53.705

Tower Component vs. Capacity Summary:

COMPONENT (SECTION NO.)	CONTROLLING COMPONENT / ELEVATION	STRESS RATIO (% CAPACITY)	PASS / FAIL
Leg (T10)	ROHN 2.5 EH / 24.75'-44.75'	86.1	Pass
Diagonal (T8)	ROHN TS1.5x16 ga / 64.75' – 84.75'	88.0	Pass
Top Girt (T8)	ROHN TS1.5x16 ga / 64.75'-84.75'	71.0	Pass
Bottom Girt (T7)	ROHN TS1.5x16 ga / 84.75'-104.75'	75.5	Pass
Mid Girt (T12)	C14x2x3/16 / 0'-4.75'	0.1	Pass
Guy @ 202'	1/2 EHS Cable	85.5	Pass
Guy @ 152'	1/2 EHS Cable	84.7	Pass
Guy @ 117'	1/2 EHS Cable	78.4	Pass
Guy @ 87'	3/8 EHS Cable	76.5	Pass
Guy @ 45'	3/8 EHS Cable	75.2	Pass
Top Guy Pull-Off (T6)	4 1/2x3/8 / 104.75'-124.75'	9.1	Pass
Torque Arm Top (T7)	C8x13.75 / 84.75'-104.75'	51.3	Pass
Torque Arm Bottom (T4)	P2.5x.203 / 144.75'-164.75'	52.0	Pass
Bolts (T8)	(1) 5/8" A325X Bolt / 84.75'	95.3	Pass

Foundation:

Component / Controlling Element	Usage (%)
Tower Foundation Pad (5'x5'x1.5')	87.0
Guy Anchor / Uplift (%)	61.5
Guy Anchor / Shear (%)	69.2

5. CONCLUSIONS

The results of an initial analysis indicated the existing tower structure did not have the capacity to support the propose loading conditions. The tower structure requires modifications shown on SK-1 and SK-2. **Once the modifications indicated on sheets SK-1 and SK-2 are performed, the modified structure is considered structurally adequate with the wind load classification specified above with the existing and proposed antenna loading.**

Limitations/Assumptions:

This report is based on the following:

1. Tower inventory as listed in this report.
2. Tower is properly installed and maintained.
3. All members are as specified in the original design documents and are in good condition.
4. All required members are in place.
5. All bolts are in place and are properly tightened.
6. Tower is in plumb condition.
7. All member protective coatings are in good condition.
8. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
9. Foundations are in good condition without defect and were properly constructed to support original design loads as specified in the original design documents.
10. All coaxial cables are installed per Section 6 of this report.

AECOM is not responsible for any modifications completed prior to or hereafter in which AECOM 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

AECOM 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 AECOM. AECOM 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

REINFORCEMENT DRAWINGS SK-1 AND SK-2

GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL COMPLY WITH THE CONNECTICUT STATE BUILDING, SUPPLEMENTS AND AMENDMENTS AND LIFE SAFETY CODES.
2. CONTRACTOR IS TO REVIEW ALL DRAWINGS AND NOTES 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 NOTES 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.
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 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 OPERATING TELECOMMUNICATION SYSTEMS. THE CONTRACTOR SHALL PROVIDE AND COORDINATE THE METHODS OF PROTECTION WITH THE VARIOUS TELECOMMUNICATION CARRIERS AND THE TOWER OWNER. THERE SHALL BE NO INTERRUPTION OF OPERATION WITHOUT TIMELY COORDINATION WITH AND APPROVAL BY THE VARIOUS COMMUNICATIONS OPERATORS.
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 ANY DISCREPANCIES FROM THE DRAWINGS TO THE ARCHITECT.
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. 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.
14. EXISTING DIMENSIONS OF STRUCTURE SHOWN ARE BASED ON GUYED TOWER INVENTORY AND MAPPING REPORT PREPARED BY CSB COMMUNICATIONS, DATED JANUARY 2006 AND 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.
15. TOWER INVENTORY IS BASED ON INFORMATION OBTAINED FROM VERIZON WIRELESS DATED MARCH 2014.

STRUCTURAL NOTES

STRUCTURAL STEEL MATERIAL:

STRUCTURAL STEEL BEAMS, CHANNELS, PLATES..... A36
STRUCTURAL ANGLES..... A36
EXISTING TOWER LEG ..... A 572-Gr. 50

STRUCTURAL STEEL SHALL CONFORM TO ALL THE REQUIREMENTS OF THE ASTM 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.

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.

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.

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

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

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. 36928713
Designed by: MCD
Drawn by: KAP
Checked by: KAB
Approved by: RAS

AECOM
500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT
(860)-529-8882

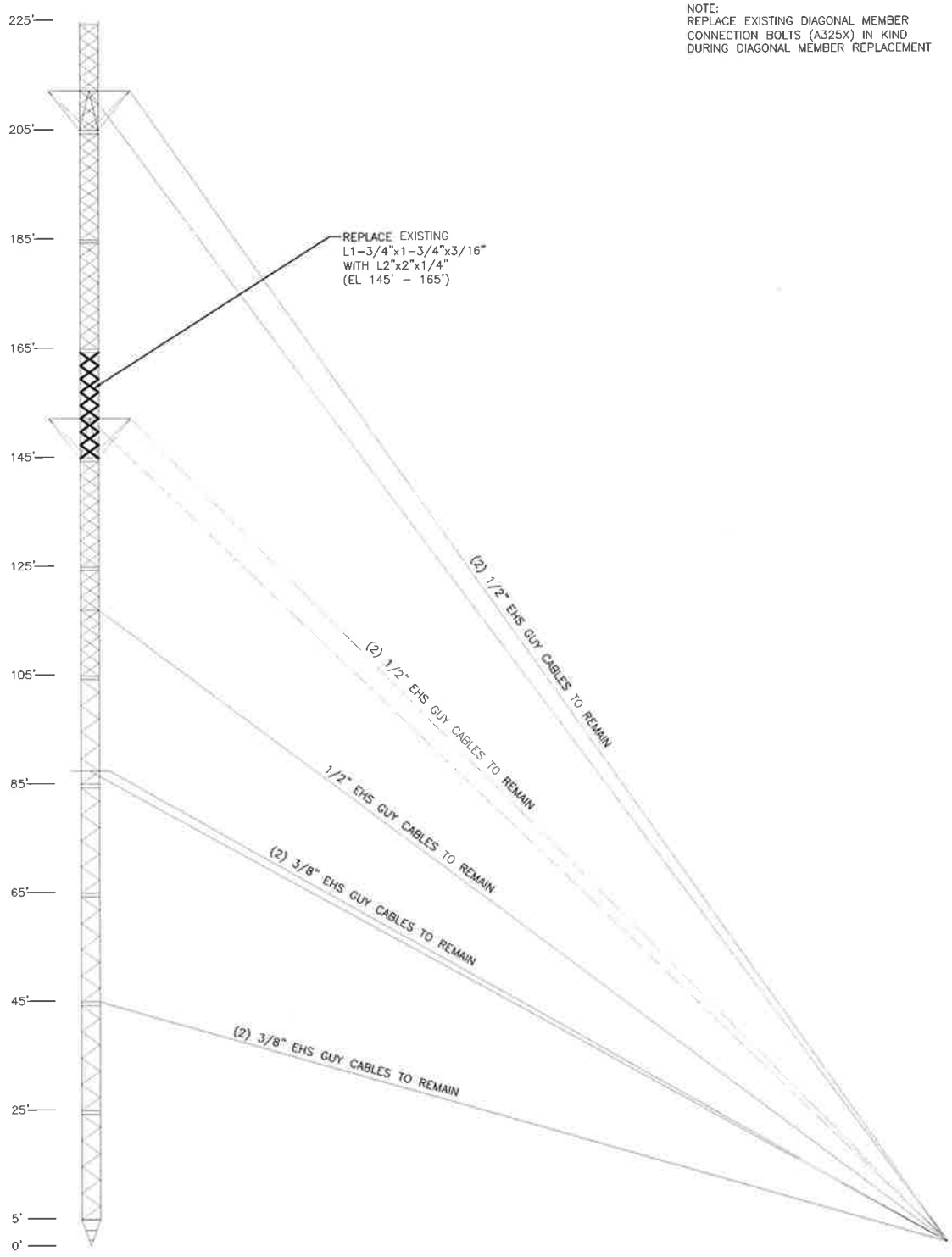
verizon wireless

SITE ADDRESS: 48 BIRCH MOUNTAIN ROAD
GLASTONBURY, CONNECTICUT 06033

REV.	DATE:	DESCRIPTION

Scale: AS NOTED | Date: 08/04/15
Job No. VZ5-194 | File No.

Dwg. No. SK-1



1 / SK-2 TOWER ELEVATION
SCALE: 1" = 30'-0"

PROJECT NO. 36928713	AECOM	verizon wireless
Designed by: MCD	500 ENTERPRISE DRIVE	SITE ADDRESS: 48 BIRCH MOUNTAIN ROAD
Drawn by: KAP	ROCKY HILL, CONNECTICUT	GLASTONBURY, CONNECTICUT 06033
Checked by: KAB	(860)-529-8882	
Approved by: RAS		

REV.	DATE:	DESCRIPTION

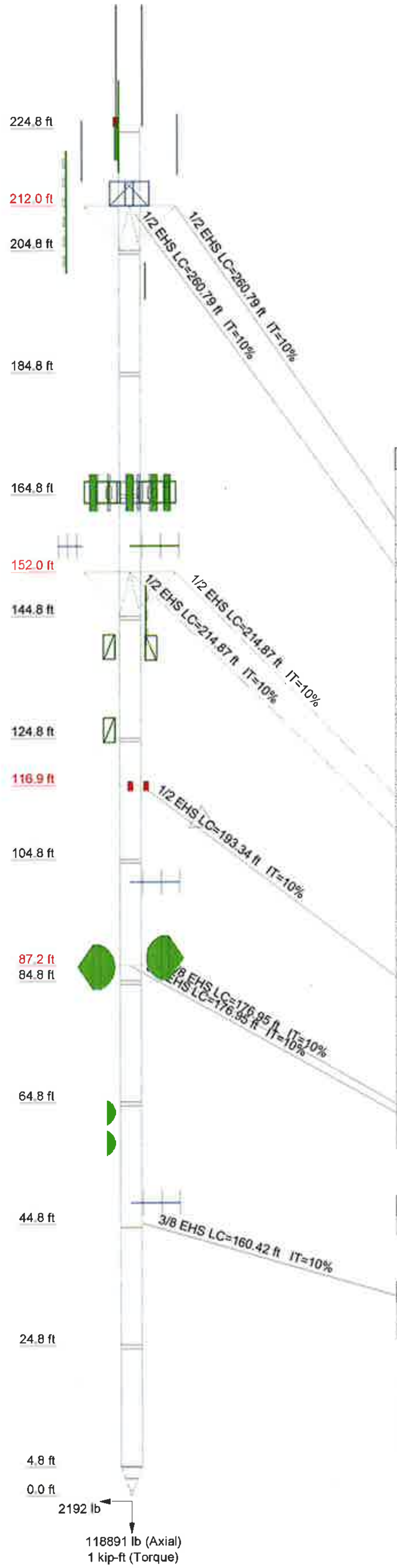
Scale: AS NOTED | Date: 08/04/15
Job No. VZ5-194 | File No.

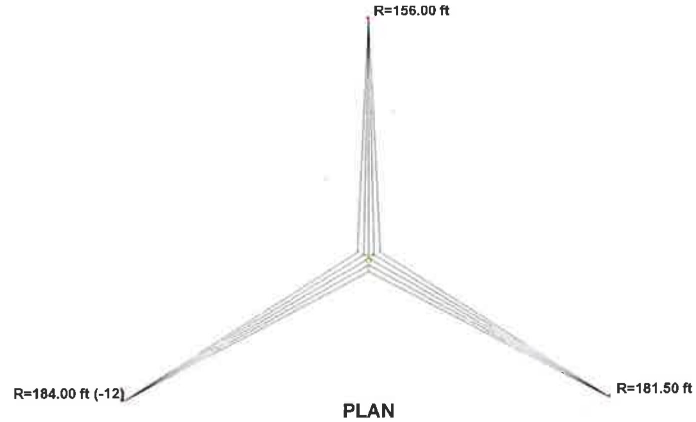
Dwg. No. SK-2

Dwg. 2 of 2

TNX TOWER INPUT/OUTPUT SUMMARY

Section	Legs	Leg Grade	Diagonals	Diagonal Grade	Top Girts	Mid Girts	Bottom Girts	Top Guy Pull-Offs	Face Width (ft)	# Panels @ (ft)	Weight (lb)
T1	ROHN 2.5 EH	A572-50	L1 3/4x1 3/4x3/16	A36	L1 3/4x1 3/4x3/16	N.A.	L1 3/4x1 3/4x3/16		3.4167	50 @ 2.42318	1574.4
T2	ROHN 2.5 STD		ROHN TS1.5x16 ga	A53-B-42	ROHN TS1.5x16 ga		ROHN TS1.5x16 ga	N.A.			546.0
T3											546.0
T4	ROHN 2.5 EH		L2x2x1/4	A36	L1 3/4x1 3/4x3/16		L1 3/4x1 3/4x3/16				1791.2
T5	ROHN 2.5 STD										546.0
T6							ROHN TS1.5x16 ga	4 1/2x3/8			604.9
T7	ROHN 2.5 EH		ROHN TS1.5x16 ga	A53-B-42	ROHN TS1.5x16 ga			N.A.			867.3
T8											568.2
T9							N.A.	4 1/2x3/8		41 @ 2.41276	617.9
T10							ROHN TS1.5x16 ga	N.A.			568.2
T11											568.2
T12			N.A.	N.A.	A	A	A			B	321.6
											9119.8





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
10' 4 Bay Di-Pole	244	HBXX-6517DS-VTM (Verizon-AWS)	165
3"x20' Omni	235	HBXX-6517DS-VTM (Verizon-AWS)	165
3"x20' Omni	235	RRH_2x60-AWS (Verizon-AWS)	165
21'x4.5" Pipe Mount	232.5	RRH_2x60-AWS (Verizon-AWS)	165
Beacon	225	RRH_2x60-AWS (Verizon-AWS)	165
Lightning Rod 2"x21' (Tower)	225	13'-6" T-Frame Sector Mount (Verizon)	165
48"x11"x6" Panel	222.5	13'-6" T-Frame Sector Mount (Verizon)	165
10' x 3" Dia Omni	222	13'-6" T-Frame Sector Mount (Verizon)	165
12' x 3" Dia Omni	221	DB-T1-6Z-8AB-0Z Dist. Box (Verizon-AWS)	165
16' Dipole	217.67		
14' x 3" Dia Omni	215.17	DB-T1-6Z-8AB-0Z Dist. Box (Verizon-AWS)	165
(2) 10' Side Arm	214	Yagi	156.25
(2) 10' Side Arm	214	Yagi	156.25
(2) 10' Side Arm	214	14" Corner Reflector	153
20' 4-Bay Dipole	211	10' Dipole	144.83
10' Dipole (inverted)	209	12' x 3" Dia Omni	144.67
8'-6" Dipole (inverted)	205.75	6' x 3" Dia Omni	143.67
8' Dipole (inverted)	205.25	44"x8"x3" Panel	143.58
5' x 8" Dia Omni	199.67	4' Side Mount Standoff	139.67
16" Corner Reflector	184.33	4' Side Mount Standoff	139.5
LNX-6514DS-VTM (Verizon-LTE)	165	1' Side Mount Standoff	135
LNX-6514DS-VTM (Verizon-LTE)	165	60"x4"x4" Panel	126
LNX-6514DS-VTM (Verizon-LTE)	165	3' Side Mount Standoff	126
LNX-6514DS-VTM (Verizon-850MHz)	165	L-810 Obstruction Lighting (1) (Tower)	116
LNX-6514DS-VTM (Verizon-850MHz)	165	L-810 Obstruction Lighting (1) (Tower)	116
LNX-6514DS-VTM (Verizon-850MHz)	165	44"x3"x8" Panel	113
(2) Diplexer (Verizon-850MHz)	165	4'x4" Pipe Mount	105.83
(2) Diplexer (Verizon-850MHz)	165	Yagi	101
(2) Diplexer (Verizon-850MHz)	165	7'-4" HP DISH	88.5
HBXX-6517DS-VTM (Verizon-PCS)	165	7'-4" HP DISH	87
HBXX-6517DS-VTM (Verizon-PCS)	165	20' Pipe Mount	81
HBXX-6517DS-VTM (Verizon-PCS)	165	4 FT DISH	63
RRH_2x60_PCS (Verizon-PCS)	165	4 FT DISH	58
RRH_2x60_PCS (Verizon-PCS)	165	1' Side Mount Standoff	48.17
RRH_2x60_PCS (Verizon-PCS)	165	(2) Yagi	48.17
HBXX-6517DS-VTM (Verizon-AWS)	165		

SYMBOL LIST

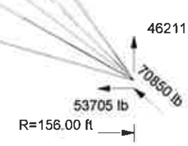
MARK	SIZE	MARK	SIZE
A	C14x2x3/16	B	5 @ 0.9375

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A53-B-42	42 ksi	63 ksi
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

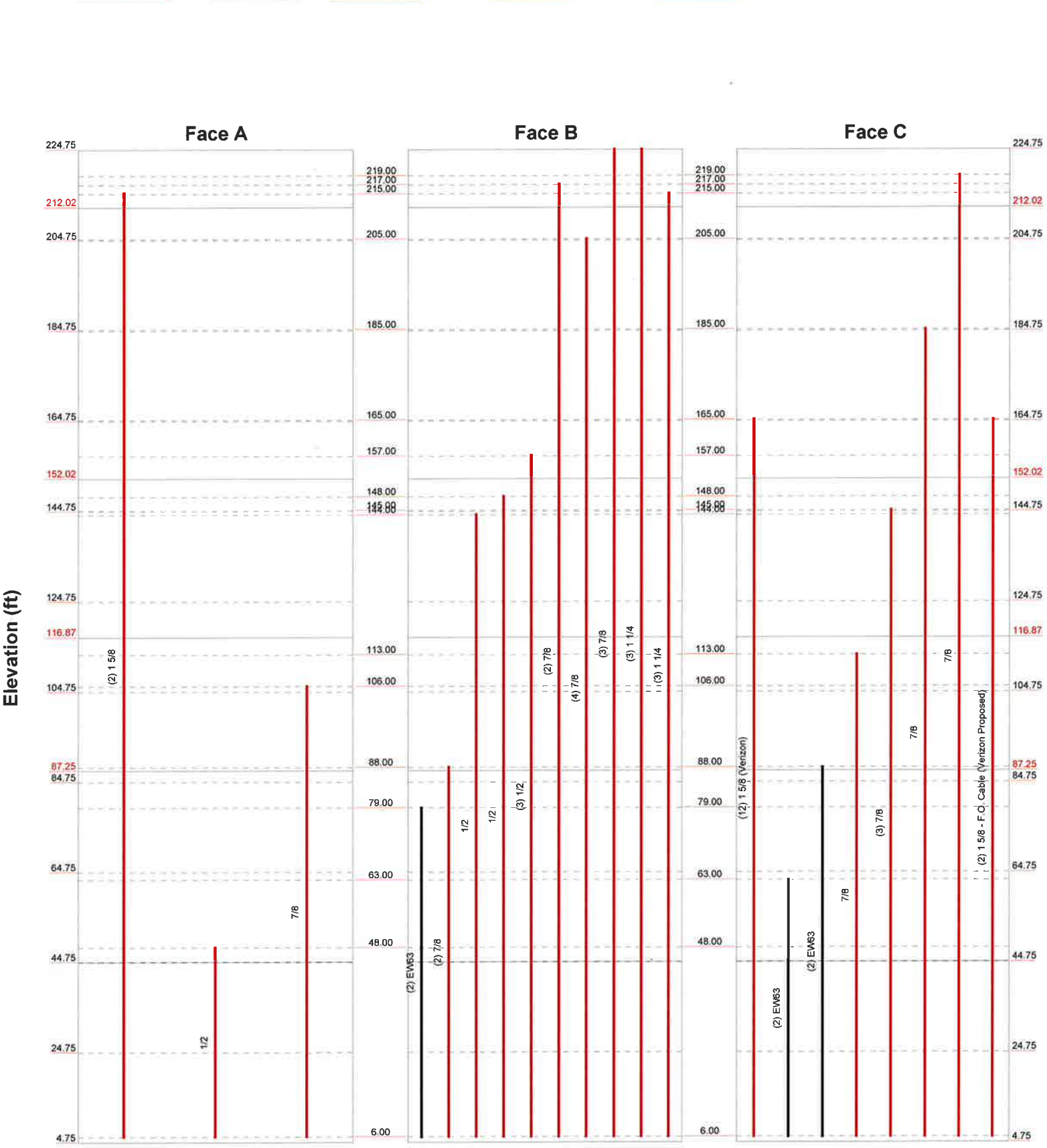
1. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 50 mph wind.
4. TOWER RATING: 95.3%



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

Job: **225' Guyed Lattice Tower**			
Project: **Glastonbury, CT**			
Client: Verizon Wireless	Drawn by: MCD	App'd:	
Code: TIA/EIA-222-F	Date: 08/04/15	Scale: N	
Path:		Dwg No.	

TNX TOWER FEEDLINE DISTRIBUTION CHART



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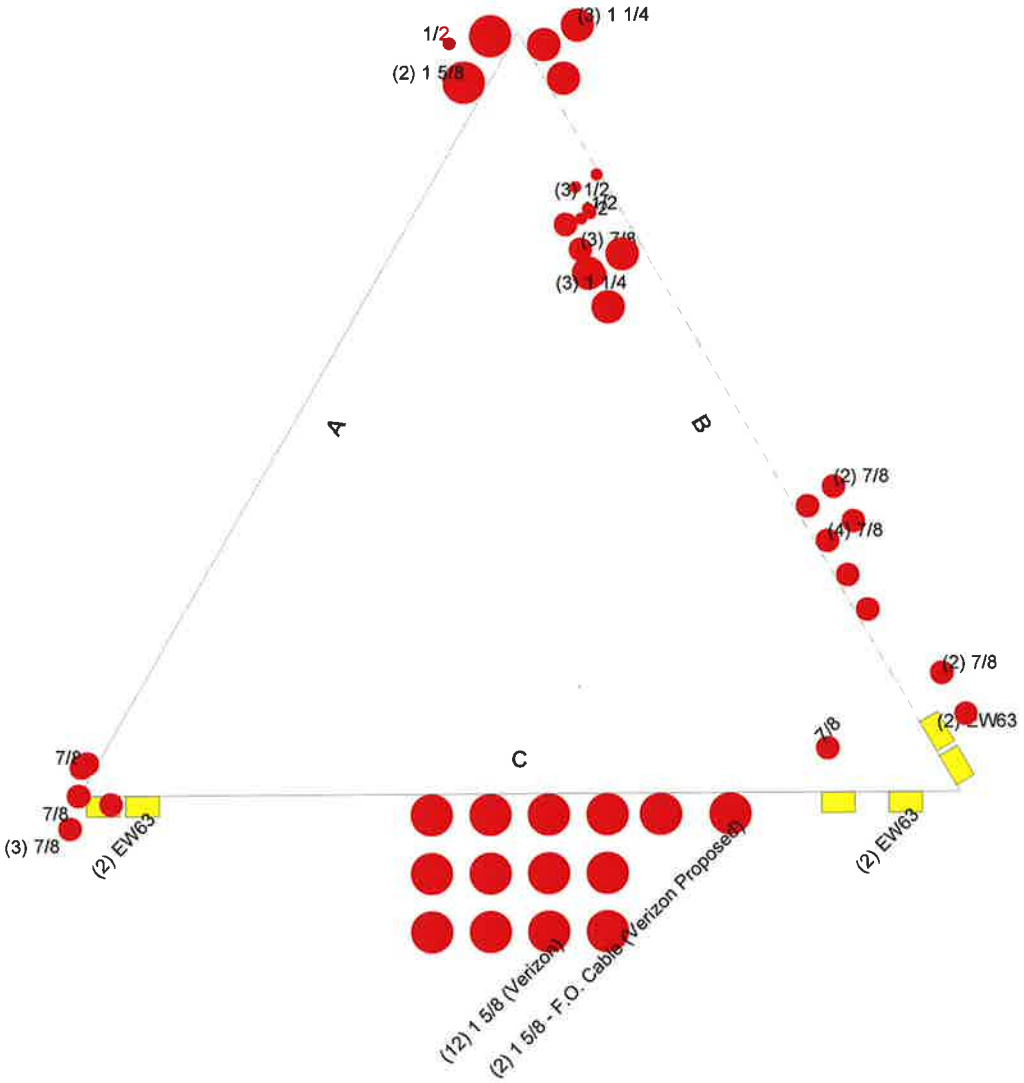
Code: TIA/EIA-222-F	Date: 08/04/15	Scale: N	
Path:		Dwg No.	

TNX TOWER FEEDLINE PLAN

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



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Job: **225' Guyed Lattice Tower**			
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Client: Verizon Wireless	Drawn by: MCD	App'd:	
Code: TIA/EIA-222-F	Date: 08/04/15	Scale: N	
Path:		Dwg No.	

GUY TENSIONS AND TOWER REACTIONS

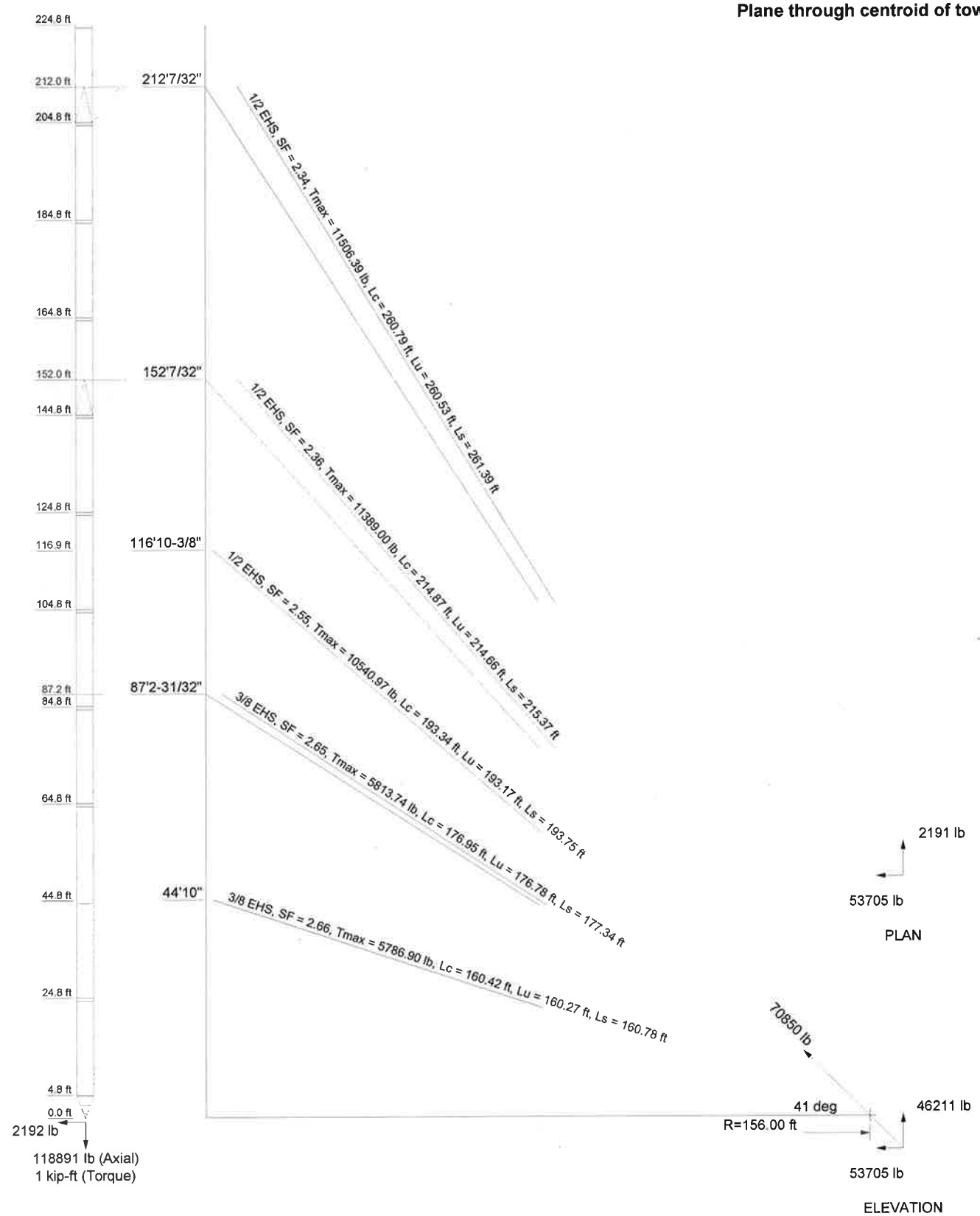
Guy Tensions and Tower Reactions

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

Maximum Values

Anchor 'A'@156 ft Azimuth 0 deg Elev 0 ft

Plane through centroid of tower



AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	Job: ***225' Guyed Lattice Tower***		
	Project: ***Glastonbury, CT***		
	Client: Verizon Wireless	Drawn by: MCD	App'd:
	Code: TIA/EIA-222-F	Date: 08/04/15	Scale: N
	Path:		Dwg No.

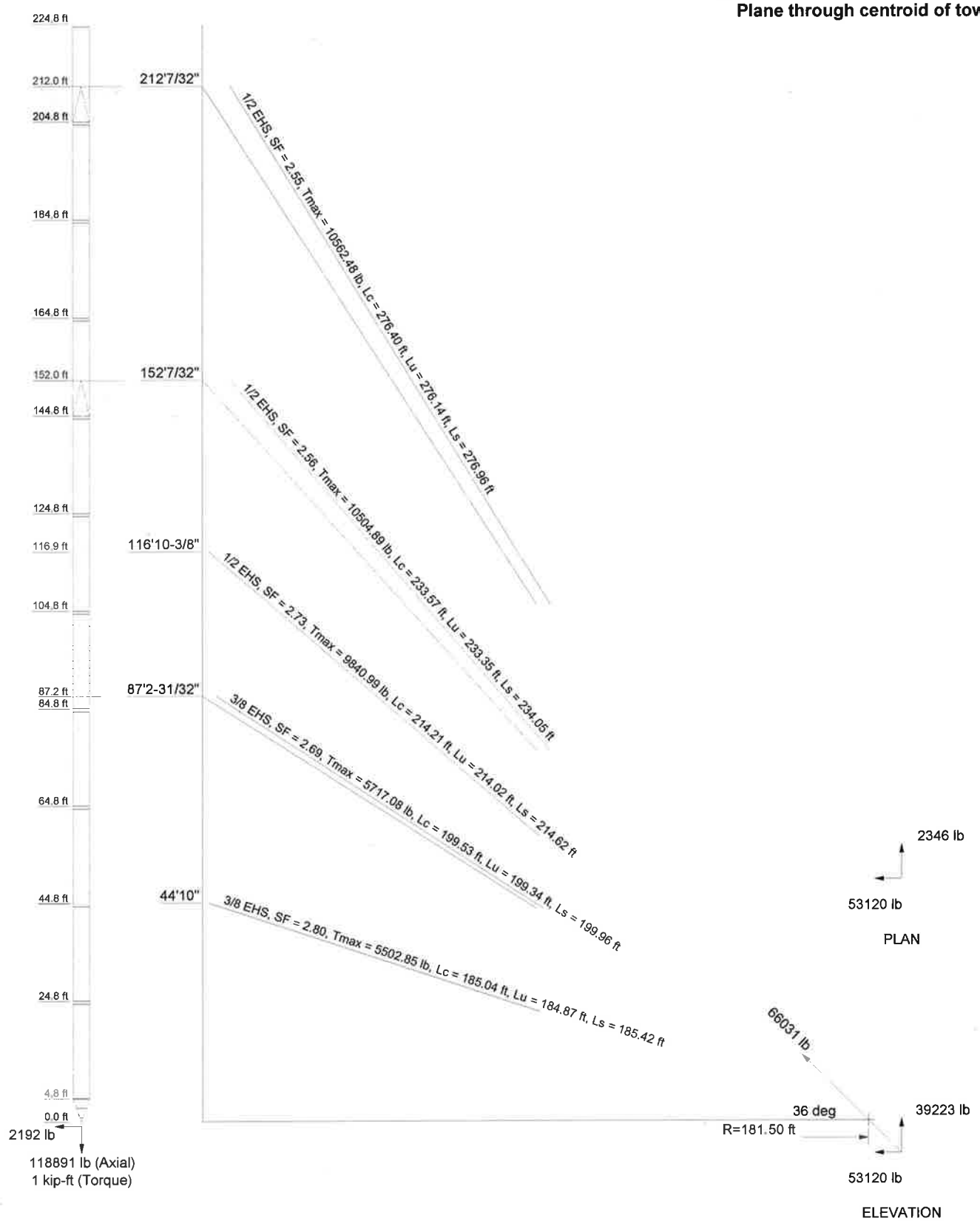
Guy Tensions and Tower Reactions

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

Maximum Values

Anchor 'B'@181.5 ft Azimuth 120 deg Elev 0 ft

Plane through centroid of tower



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Rocky Hill, CT
Phone: 860-529-8882
FAX: 860-529-3991

Job: ***225' Guyed Lattice Tower***			
Project: ***Glastonbury, CT***			
Client: Verizon Wireless	Drawn by: MCD	App'd:	
Code: TIA/EIA-222-F	Date: 08/04/15	Scale: N	
Path:		Dwg No.	

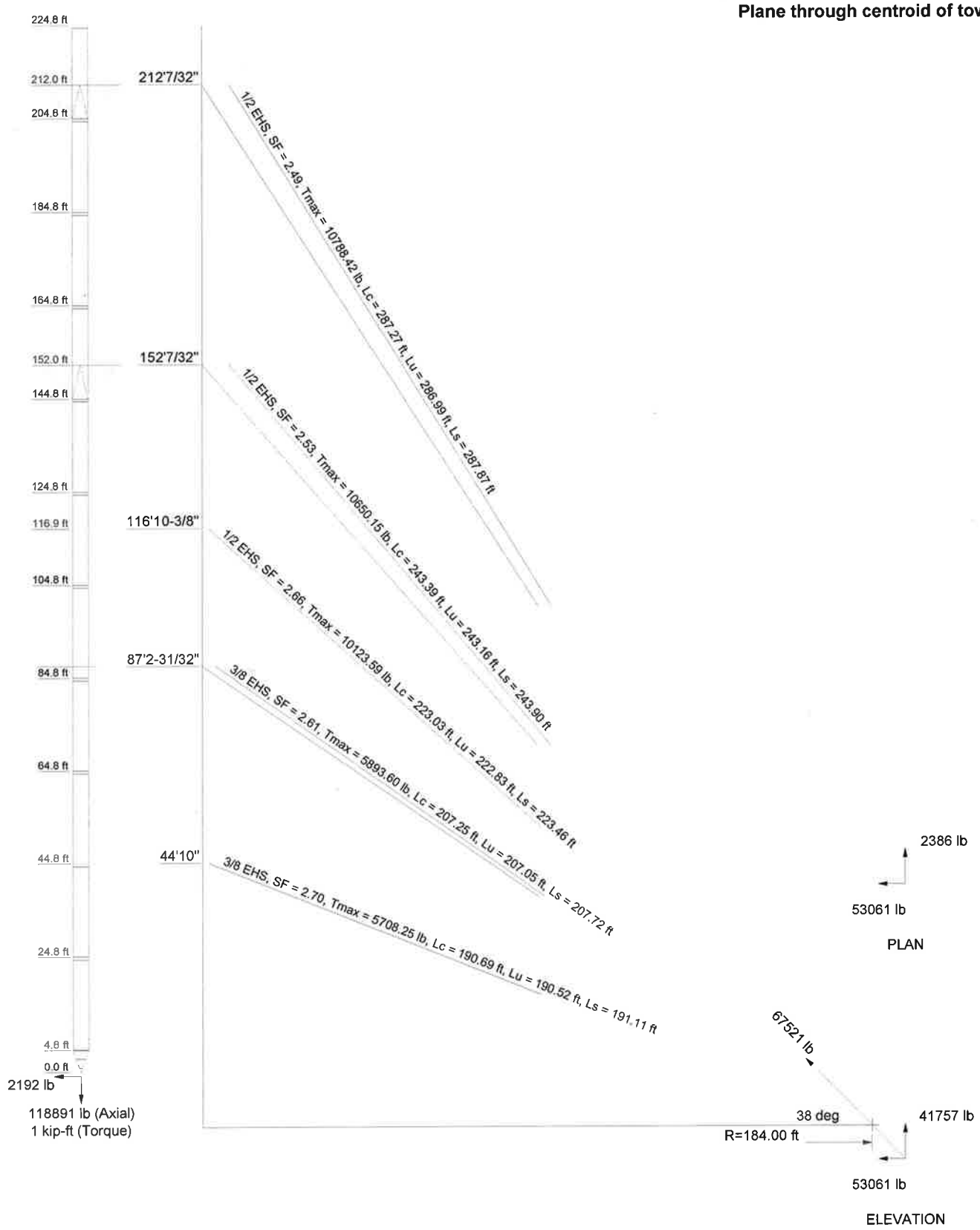
Guy Tensions and Tower Reactions

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

Maximum Values

Anchor 'C'@184 ft Azimuth 240 deg Elev -12 ft

Plane through centroid of tower



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Rocky Hill, CT
Phone: 860-529-8882
FAX: 860-529-3991

Job: ***225' Guyed Lattice Tower***			
Project: ***Glastonbury, CT***			
Client: Verizon Wireless	Drawn by: MCD	App'd:	
Code: TIA/EIA-222-F	Date: 08/04/15	Scale: N	
Path:		Dwg No.	

TNX TOWER DETAILED OUTPUT

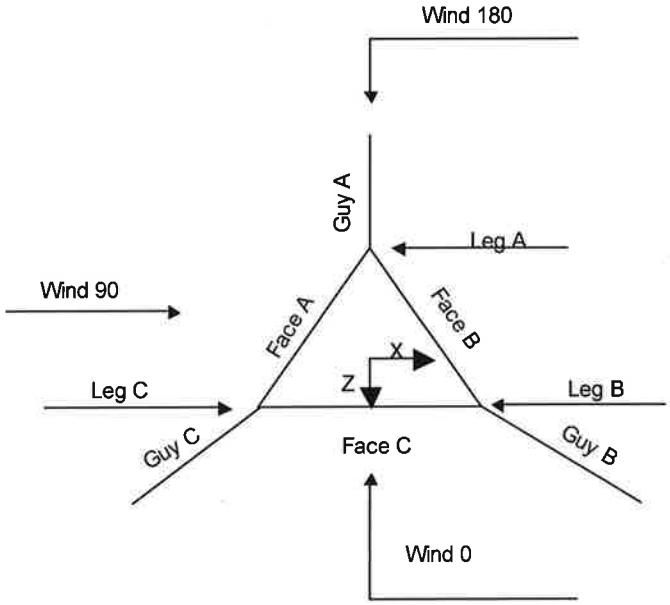
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 224.75 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:

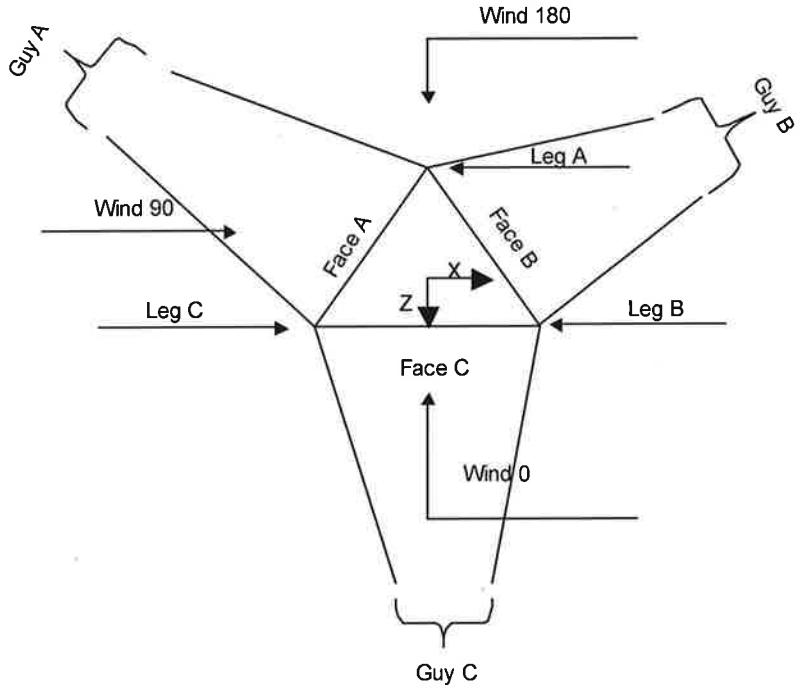
Basic wind speed of 80 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 69 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
Pressures are calculated at each section.
Safety factor used in guy design is 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	224.75-204.75			3.42	1	20.00
T2-T3	204.75-164.75			3.42	2	20.00
T4	164.75-144.75			3.42	1	20.00
T5-T6	144.75-104.75			3.42	2	20.00
T7	104.75-84.75			3.42	1	20.00
T8	84.75-64.75			3.42	1	20.00
T9-T11	64.75-4.75			3.42	3	20.00
T12	4.75-0.00			3.42	1	4.75

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	224.75-204.75	2.42	X Brace	No	No	7.3750	0.0000
T2-T3	204.75-164.75	2.42	CX Brace	No	No	7.3750	0.0000
T4	164.75-144.75	2.42	X Brace	No	No	7.3750	0.0000
T5-T6	144.75-104.75	2.42	CX Brace	No	No	7.3750	0.0000
T7	104.75-84.75	2.41	K Brace Left	No	No	7.3750	1.0000
T8	84.75-64.75	2.41	K Brace Left	No	No	7.3750	1.0000
T9-T11	64.75-4.75	2.41	K Brace Left	No	No	7.3750	1.0000
T12	4.75-0.00	0.94	X Brace	No	Yes	1.0000	11.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 224.75-204.75	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2-T3 204.75-164.75	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T4 164.75-144.75	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T5-T6 144.75-104.75	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T7 104.75-84.75	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T8 84.75-64.75	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T9-T11 64.75-4.75	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T12 4.75-0.00	Pipe	ROHN 2.5 EH	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 224.75-204.75	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2-T3 204.75-164.75	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T4 164.75-144.75	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T5-T6 144.75-104.75	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T7 104.75-84.75	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T8 84.75-64.75	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T9-T11 64.75-4.75	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T12 4.75-0.00	Channel	C14x2x3/16	A36 (36 ksi)	Channel	C14x2x3/16	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
T12 4.75-0.00	1	Channel	C14x2x3/16	A36 (36 ksi)	Channel		A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 224.75-204.75	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2-T3 204.75-164.75	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 164.75-144.75	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5-T6 144.75-104.75	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 104.75-84.75	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 84.75-64.75	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T9-T11 64.75-4.75	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T12 4.75-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	Yes	No	1	1	1	1	1	1	1	1
224.75-204.75				1	1	1	1	1	1	1
T2-T3	Yes	No	1	1	1	1	1	1	1	1
204.75-164.75				1	1	1	1	1	1	1
T4	Yes	No	1	1	1	1	1	1	1	1
164.75-144.75				1	1	1	1	1	1	1
T5-T6	Yes	No	1	1	1	1	1	1	1	1
144.75-104.75				1	1	1	1	1	1	1
T7	Yes	No	1	1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
104.75-84.75				1	1	1	1	1	1	1
T8	Yes	No	1	1	1	1	1	1	1	1
84.75-64.75				1	1	1	1	1	1	1
T9-T11	Yes	No	1	1	1	1	1	1	1	1
64.75-4.75				1	1	1	1	1	1	1
T12 4.75-0.00	Yes	No	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.0000	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
224.75-204.75														
T2-T3	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
204.75-164.75														
T4	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
164.75-144.75														
T5-T6	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
144.75-104.75														
T7	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
104.75-84.75														
T8 84.75-64.75	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-T11	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
64.75-4.75														
T12 4.75-0.00	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 Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T1	Flange	0.7500	4	0.6250	1	0.6250	1	0.6250	1	0.6250	0	0.6250	0	0.6250	0
224.75-204.75		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T2-T3	Flange	0.7500	4	0.5000	1	0.5000	1	0.5000	1	0.6250	0	0.6250	0	0.6250	0
204.75-164.75		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T4	Flange	0.7500	4	0.6250	1	0.6250	1	0.6250	1	0.6250	0	0.6250	0	0.6250	0
164.75-144.75		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T5-T6	Flange	0.7500	4	0.5000	1	0.5000	1	0.5000	1	0.6250	0	0.6250	0	0.6250	0
144.75-104.75		A325N		A325X		A325N		A325N		A325N		A325N		A325N	

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T7	Flange	0.7500	4	0.5000	1	0.5000	1	0.5000	1	0.6250	0	0.6250	0	0.6250	0
104.75-84.75		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T8 84.75-64.75	Flange	0.7500	4	0.6250	1	0.5000	1	0.5000	1	0.6250	0	0.6250	0	0.6250	0
		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T9-T11	Flange	0.7500	4	0.5000	1	0.5000	1	0.5000	1	0.6250	0	0.6250	0	0.6250	0
64.75-4.75		A325N		A325X		A325N		A325N		A325N		A325N		A325N	
T12 4.75-0.00	Flange	0.7500	4	0.5000	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325X		A325N		A325N		A325N		A325N		A325N	

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
116.866	EHS	A	1/2	2690.00	10%	21000	0.517	193.18	156.00	0.0000	0.00	100%
		B	1/2	2690.00	10%	21000	0.517	214.04	181.50	0.0000	0.00	100%
		C	1/2	2690.00	10%	21000	0.517	222.84	184.00	0.0000	-12.00	100%
152.02	EHS	A	1/2	2690.00	10%	21000	0.517	214.69	156.00	0.0000	0.00	100%
		B	1/2	2690.00	10%	21000	0.517	233.38	181.50	0.0000	0.00	100%
		C	1/2	2690.00	10%	21000	0.517	243.19	184.00	0.0000	-12.00	100%
212.02	EHS	A	1/2	2690.00	10%	21000	0.517	260.57	156.00	0.0000	0.00	100%
		B	1/2	2690.00	10%	21000	0.517	276.17	181.50	0.0000	0.00	100%
		C	1/2	2690.00	10%	21000	0.517	287.03	184.00	0.0000	-12.00	100%
44.8333	EHS	A	3/8	1540.00	10%	21000	0.273	160.28	156.00	0.0000	0.00	100%
		B	3/8	1540.00	10%	21000	0.273	184.88	181.50	0.0000	0.00	100%
		C	3/8	1540.00	10%	21000	0.273	190.52	184.00	0.0000	-12.00	100%
87.2461	EHS	A	3/8	1540.00	10%	21000	0.273	176.79	156.00	0.0000	0.00	100%
		B	3/8	1540.00	10%	21000	0.273	199.35	181.50	0.0000	0.00	100%
		C	3/8	1540.00	10%	21000	0.273	207.07	184.00	0.0000	-12.00	100%

Guy Data(cont'd)

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
116.866	Corner						
152.02	Torque Arm	15.00	45.0000	Bat Ear	A53-B-35 (35 ksi)	Pipe	P2.5x.203
212.02	Torque Arm	15.00	45.0000	Bat Ear	A53-B-35 (35 ksi)	Pipe	P2.5x.203
44.8333	Corner						
87.2461	Torque Arm	7.25	0.0000	Channel	A36 (36 ksi)	Channel	C8x13.75

Guy Data (cont'd)

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
116.87	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Flat Bar	4 1/2x3/8
152.02	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Solid Round	
212.02	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Solid Round	
44.83	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Flat Bar	4 1/2x3/8
87.25	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Solid Round	

Guy Data (cont'd)

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
116.866	99.88	110.66	115.21		3.55 3.3 sec/pulse	4.36 3.6 sec/pulse	4.72 3.8 sec/pulse	
152.02	111.00	120.66	125.73		4.37 3.6 sec/pulse	5.16 3.9 sec/pulse	5.60 4.1 sec/pulse	
212.02	134.72	142.78	148.39		6.40 4.4 sec/pulse	7.19 4.6 sec/pulse	7.76 4.8 sec/pulse	
44.8333	43.76	50.47	52.01		2.27 2.6 sec/pulse	3.02 3.0 sec/pulse	3.20 3.1 sec/pulse	
87.2461	48.26	54.42	56.53		2.75 2.9 sec/pulse	3.50 3.2 sec/pulse	3.77 3.4 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
116.866	No	No			1	1	1	1
152.02	No	No	0.65	0.65	1	1	1	1
212.02	No	No	0.65	0.65	1	1	1	1
44.8333	No	No			1	1	1	1
87.2461	No	No	1	1	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
116.866	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
152.02	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	1
212.02	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
44.8333	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
87.2461	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
116.866	A	58.43	19	14	0.5000
	B	58.43	19	14	0.5000
	C	52.43	19	14	0.5000
152.02	A	76.01	21	16	0.5000
	B	76.01	21	16	0.5000
	C	70.01	20	15	0.5000
212.02	A	106.01	23	17	0.5000
	B	106.01	23	17	0.5000
	C	100.01	22	17	0.5000
44.8333	A	22.42	16	12	0.5000
	B	22.42	16	12	0.5000
	C	16.42	16	12	0.5000
87.2461	A	43.62	18	13	0.5000
	B	43.62	18	13	0.5000
	C	37.62	17	13	0.5000

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top Bottom lb	F_x lb	F_y lb	F_z lb	M_x kip-ft	M_y kip-ft	M_z kip-ft
116.866	A	37.1888	2750.37 2690.00	0.00	1694.08	-2166.71	-3.34	0.00	0.00
	B	33.0627	2750.37 2690.00	1973.92	1539.27	1139.65	1.52	0.00	-2.63
	C	35.2965	2756.57 2690.00	-1924.51	1631.06	1111.11	1.61	0.00	2.79
			Sum:	**49.42**	4864.41	**84.05**	**-0.21**	0.00	**0.16**
152.02	A	45.0310	2768.53 2690.00	-95.25	1986.36	-1926.15	-8.60	14.86	-14.90
	A	45.0310	2768.53 2690.00	95.25	1986.36	-1926.15	-8.60	-14.86	14.90
	B	40.6057	2768.53 2690.00	1836.30	1836.58	959.01	15.91	15.90	0.00

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	kip-ft	kip-ft	kip-ft
	B	40.6057	2768.53 2690.00	1748.68	1836.58	1110.77	-7.95	-15.90	-13.77
	C	42.3679	2774.72 2690.00	-1704.29	1904.09	1081.17	-8.24	15.49	14.28
	C	42.3679	2774.72 2690.00	-1788.47	1904.09	935.37	16.49	-15.49	0.00
			Sum:	**92.21**	11454.05	**234.03**	**-1.00**	0.00	**0.51**
212.02	A	54.3885	2799.52 2690.00	-78.92	2298.72	-1595.92	-9.95	12.31	-17.24
	A	54.3885	2799.52 2690.00	78.92	2298.72	-1595.92	-9.95	-12.31	17.24
	B	50.0916	2799.52 2690.00	1560.48	2176.71	814.96	18.85	13.51	0.00
	B	50.0916	2799.52 2690.00	1486.02	2176.71	943.93	-9.43	-13.51	-16.33
	C	51.2451	2805.72 2690.00	-1452.10	2216.95	921.19	-9.60	13.20	16.63
	C	51.2451	2805.72 2690.00	-1523.82	2216.95	796.96	19.20	-13.20	0.00
			Sum:	**70.57**	13384.76	**285.21**	**-0.88**	0.00	**0.30**
44.8333	A	16.2289	1552.23 1540.00	0.00	453.96	-1484.36	-0.90	0.00	0.00
	B	14.0217	1552.23 1540.00	1298.91	399.82	749.93	0.39	0.00	-0.68
	C	17.3396	1555.50 1540.00	-1279.30	487.27	738.61	0.48	0.00	0.83
			Sum:	**19.61**	1341.06	**4.17**	**-0.02**	0.00	**0.15**
87.2461	A	29.5410	1563.80 1540.00	-31.79	789.27	-1349.63	-1.65	4.96	-2.86
	A	29.5410	1563.80 1540.00	31.79	789.27	-1349.63	-1.65	-4.96	2.86
	B	25.9292	1563.80 1540.00	1222.37	705.76	673.18	2.95	5.12	0.00
	B	25.9292	1563.80 1540.00	1194.18	705.76	722.01	-1.48	-5.12	-2.56
	C	28.6115	1567.07 1540.00	-1167.11	772.17	705.20	-1.62	5.00	2.80
	C	28.6115	1567.07 1540.00	-1194.28	772.17	658.15	3.23	-5.00	0.00
			Sum:	**55.15**	4534.40	**59.28**	**-0.21**	0.00	**0.24**

Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	kip-ft	kip-ft	kip-ft
116.866	A	37.1888	3956.92 3825.23	0.00	2460.67	-3098.77	-4.85	0.00	0.00
	B	33.0627	4001.82 3870.13	2855.51	2267.74	1648.63	2.24	0.00	-3.87
	C	35.2965	4016.71 3871.50	-2786.55	2404.33	1608.82	2.37	-0.00	4.11

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	kip-ft	kip-ft	kip-ft
			Sum:	**68.96**	7132.74	**158.68**	**-0.25**	0.00	**0.23**
152.02	A	45.0310	3982.74 3811.44	-135.97	2877.99	-2749.71	-12.46	21.21	-21.58
	A	45.0310	3982.74 3811.44	135.97	2877.99	-2749.71	-12.46	-21.21	21.58
	B	40.6057	4027.49 3856.19	2651.43	2696.87	1384.72	23.36	22.96	0.00
	B	40.6057	4027.49 3856.19	2524.92	2696.87	1603.85	-11.68	-22.96	-20.23
	C	42.3679	4041.94 3857.12	-2462.79	2798.39	1562.35	-12.12	22.38	20.99
	C	42.3679	4041.94 3857.12	-2584.43	2798.39	1351.66	24.23	-22.38	0.00
			Sum:	**129.13**	16746.51	**403.17**	**-1.13**	0.00	**0.76**
212.02	A	54.3885	4031.79 3792.88	-112.45	3327.36	-2274.07	-14.41	17.54	-24.96
	A	54.3885	4031.79 3792.88	112.45	3327.36	-2274.07	-14.41	-17.54	24.96
	B	50.0916	4077.02 3838.11	2249.18	3191.15	1174.64	27.64	19.48	0.00
	B	50.0916	4077.02 3838.11	2141.86	3191.15	1360.53	-13.82	-19.48	-23.93
	C	51.2451	4091.12 3838.70	-2094.45	3253.49	1328.68	-14.09	19.03	24.40
	C	51.2451	4091.12 3838.70	-2197.90	3253.49	1149.51	28.18	-19.03	0.00
			Sum:	**98.70**	19543.99	**465.23**	**-0.91**	0.00	**0.47**
44.8333	A	16.2289	2263.66 2227.50	0.00	692.20	-2155.23	-1.37	0.00	0.00
	B	14.0217	2310.82 2274.66	1925.41	630.05	1111.64	0.62	0.00	-1.08
	C	17.3396	2322.26 2276.41	-1899.76	762.08	1096.83	0.75	0.00	1.30
			Sum:	**25.66**	2084.33	**53.23**	**0.01**	0.00	**0.23**
87.2461	A	29.5410	2288.03 2217.65	-46.13	1181.98	-1958.53	-2.47	7.20	-4.28
	A	29.5410	2288.03 2217.65	46.13	1181.98	-1958.53	-2.47	-7.20	4.28
	B	25.9292	2334.26 2263.88	1810.11	1085.61	996.86	4.54	7.58	0.00
	B	25.9292	2334.26 2263.88	1768.36	1085.61	1069.17	-2.27	-7.58	-3.94
	C	28.6115	2345.47 2265.41	-1731.20	1187.41	1046.04	-2.49	7.42	4.30
	C	28.6115	2345.47 2265.41	-1771.50	1187.41	976.24	4.97	-7.42	0.00
			Sum:	**75.76**	6910.00	**171.25**	**-0.19**	0.00	**0.37**

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	kip-ft	kip-ft	kip-ft
116.866	A	37.1888	2750.37 2690.00	0.00	1694.08	-2166.71	-3.34	0.00	0.00
	B	33.0627	2750.37 2690.00	1973.92	1539.27	1139.65	1.52	0.00	-2.63
	C	35.2965	2756.57 2690.00	-1924.51	1631.06	1111.11	1.61	0.00	2.79
			Sum:	**49.42**	4864.41	**84.05**	**-0.21**	0.00	**0.16**
152.02	A	45.0310	2768.53 2690.00	-95.25	1986.36	-1926.15	-8.60	14.86	-14.90
	A	45.0310	2768.53 2690.00	95.25	1986.36	-1926.15	-8.60	-14.86	14.90
	B	40.6057	2768.53 2690.00	1836.30	1836.58	959.01	15.91	15.90	0.00
	B	40.6057	2768.53 2690.00	1748.68	1836.58	1110.77	-7.95	-15.90	-13.77
	C	42.3679	2774.72 2690.00	-1704.29	1904.09	1081.17	-8.24	15.49	14.28
	C	42.3679	2774.72 2690.00	-1788.47	1904.09	935.37	16.49	-15.49	0.00
			Sum:	**92.21**	11454.05	**234.03**	**-1.00**	0.00	**0.51**
212.02	A	54.3885	2799.52 2690.00	-78.92	2298.72	-1595.92	-9.95	12.31	-17.24
	A	54.3885	2799.52 2690.00	78.92	2298.72	-1595.92	-9.95	-12.31	17.24
	B	50.0916	2799.52 2690.00	1560.48	2176.71	814.96	18.85	13.51	0.00
	B	50.0916	2799.52 2690.00	1486.02	2176.71	943.93	-9.43	-13.51	-16.33
	C	51.2451	2805.72 2690.00	-1452.10	2216.95	921.19	-9.60	13.20	16.63
	C	51.2451	2805.72 2690.00	-1523.82	2216.95	796.96	19.20	-13.20	0.00
			Sum:	**70.57**	13384.76	**285.21**	**-0.88**	0.00	**0.30**
44.8333	A	16.2289	1552.23 1540.00	0.00	453.96	-1484.36	-0.90	0.00	0.00
	B	14.0217	1552.23 1540.00	1298.91	399.82	749.93	0.39	0.00	-0.68
	C	17.3396	1555.50 1540.00	-1279.30	487.27	738.61	0.48	0.00	0.83
			Sum:	**19.61**	1341.06	**4.17**	**-0.02**	0.00	**0.15**
87.2461	A	29.5410	1563.80 1540.00	-31.79	789.27	-1349.63	-1.65	4.96	-2.86
	A	29.5410	1563.80 1540.00	31.79	789.27	-1349.63	-1.65	-4.96	2.86
	B	25.9292	1563.80 1540.00	1222.37	705.76	673.18	2.95	5.12	0.00
	B	25.9292	1563.80 1540.00	1194.18	705.76	722.01	-1.48	-5.12	-2.56
	C	28.6115	1567.07 1540.00	-1167.11	772.17	705.20	-1.62	5.00	2.80
	C	28.6115	1567.07 1540.00	-1194.28	772.17	658.15	3.23	-5.00	0.00
			Sum:	**55.15**	4534.40	**59.28**	**-0.21**	0.00	**0.24**

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
116.866	A	154.03	116.87	3426	2.79	3178	3.01	2932	3.26	2690	3.55	2453	3.89	2222	4.29	2001	4.76
	B	179.53	116.87	3491	3.37	3219	3.65	2952	3.97	2690	4.36	2436	4.81	2192	5.34	1961	5.96
	C	182.03	128.87	3447	3.69	3190	3.98	2938	4.32	2690	4.72	2449	5.18	2218	5.71	1998	6.33
152.02	A	151.86	152.02	3269	3.60	3074	3.83	2881	4.08	2690	4.37	2502	4.69	2318	5.06	2139	5.48
	B	177.33	152.02	3346	4.16	3124	4.45	2905	4.79	2690	5.16	2480	5.60	2276	6.09	2080	6.65
	C	179.83	164.02	3309	4.56	3100	4.87	2893	5.21	2690	5.60	2491	6.04	2299	6.54	2113	7.10
212.02	A	151.86	212.02	3081	5.60	2950	5.85	2819	6.11	2690	6.40	2562	6.71	2436	7.06	2311	7.43
	B	177.33	212.02	3156	6.14	2999	6.46	2843	6.81	2690	7.19	2539	7.61	2391	8.07	2246	8.58
	C	179.83	224.02	3133	6.68	2983	7.01	2836	7.37	2690	7.76	2547	8.19	2406	8.66	2268	9.17
44.8333	A	154.03	44.83	2115	1.65	1921	1.82	1729	2.02	1540	2.27	1355	2.58	1177	2.97	1009	3.46
	B	179.53	44.83	2119	2.20	1923	2.42	1729	2.69	1540	3.02	1356	3.43	1181	3.94	1018	4.56
	C	182.03	56.83	2099	2.35	1910	2.59	1723	2.87	1540	3.20	1362	3.62	1193	4.13	1034	4.76
87.2461	A	153.95	87.25	2011	2.11	1852	2.29	1695	2.50	1540	2.75	1388	3.05	1240	3.41	1097	3.85
	B	179.44	87.25	2036	2.65	1868	2.89	1703	3.17	1540	3.50	1382	3.90	1229	4.38	1084	4.96
	C	181.94	99.25	2011	2.89	1852	3.14	1695	3.43	1540	3.77	1389	4.18	1244	4.66	1105	5.24

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 5/8 (Verizon)	C	Yes	Ar (CfAe)	165.00 - 6.00	0.0000	0	12	4	0.7500	1.9800		1.04
EW63	C	Yes	Af (CfAe)	63.00 - 6.00	0.0000	-0.4	2	2	1.5742	1.5742	5.0668	0.51
1 5/8	A	Yes	Ar (CfAe)	215.00 - 6.00	0.0000	0.45	2	2	0.5000	1.9800		1.04
1/2	A	Yes	Ar (CfAe)	48.00 - 6.00	2.2000	0.45	1	1	0.5000	0.5800		0.25
EW63	B	Yes	Af (CfAe)	79.00 - 6.00	0.0000	0.45	2	2	0.2500	1.5742	5.0668	0.51
7/8	B	Yes	Ar (CfAe)	88.00 - 6.00	1.5000	0.4	2	2	1.1100	1.1100		0.54
EW63	C	Yes	Af (CfAe)	88.00 - 6.00	0.0000	0.45	2	2	0.2500	1.5742	5.0668	0.51
7/8	A	Yes	Ar (CfAe)	106.00 - 6.00	0.0000	-0.47	1	1	1.1100	1.1100		0.54
7/8	C	No	Ar (Leg)	113.00 - 6.00	0.0000	0	1	1	1.1100	1.1100		0.54
7/8	C	No	Ar (Leg)	145.00 - 6.00	0.0000	0	3	2	1.1100	1.1100		0.54
1/2	B	Yes	Ar (CfAe)	144.00 - 6.00	-1.5000	-0.28	1	1	0.5800	0.5800		0.25
1/2	B	Yes	Ar (CfAe)	148.00 - 6.00	-1.0000	-0.28	1	1	0.5800	0.5800		0.25
1/2	B	Yes	Ar (CfAe)	157.00 - 6.00	-1.0000	-0.3	3	2	0.5800	0.5800		0.25
7/8	C	No	Ar (Leg)	185.00 - 6.00	0.0000	0	1	1	1.1100	1.1100		0.54
7/8	B	Yes	Ar (CfAe)	217.00 - 6.00	1.5000	0.15	2	2	0.7500	1.1100		0.54
7/8	B	Yes	Ar (CfAe)	205.00 - 6.00	0.0000	0.2	4	4	0.7500	1.1100		0.54
7/8	B	Yes	Ar (CfAe)	224.75 - 6.00	-2.0000	-0.25	3	3	0.2500	1.1100		0.54
1 1/4	B	Yes	Ar (CfAe)	224.75 - 6.00	-2.0000	-0.2	3	2	0.2500	1.5500		0.66
1 1/4	B	Yes	Ar (CfAe)	215.00 - 6.00	0.0000	-0.45	3	2	0.2500	1.5500		0.66
7/8	C	Yes	Ar (CfAe)	219.00 - 6.00	-1.5000	-0.35	1	1	1.1100	1.1100		0.54
1 5/8 - F.O. Cable (Verizon Proposed)	C	Yes	Ar (CfAe)	165.00 - 6.00	0.0000	-0.2	2	2	1.2500 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	224.75-204.75	A	3.382	0.000	0.000	0.000	21.32
		B	15.723	0.000	0.000	0.000	106.07
		C	1.318	0.000	0.000	0.000	7.70
T2	204.75-184.75	A	6.623	0.000	0.000	0.000	41.60
		B	26.983	0.000	0.000	0.000	176.40
		C	1.873	0.000	0.000	0.000	10.94
T3	184.75-164.75	A	8.450	0.000	0.000	0.000	41.60
		B	26.983	0.000	0.000	0.000	176.40
		C	3.948	0.000	0.000	0.000	25.24
T4	164.75-144.75	A	8.496	0.000	0.000	0.000	41.60
		B	28.325	0.000	0.000	0.000	186.40
		C	23.546	0.000	0.000	0.000	313.20
T5	144.75-124.75	A	12.150	0.000	0.000	0.000	41.60
		B	30.814	0.000	0.000	0.000	201.21
		C	27.200	0.000	0.000	0.000	345.20
T6	124.75-104.75	A	13.029	0.000	0.000	0.000	42.27
		B	30.850	0.000	0.000	0.000	201.40
		C	27.963	0.000	0.000	0.000	349.65
T7	104.75-84.75	A	15.850	0.000	0.000	0.000	52.40
		B	31.451	0.000	0.000	0.000	204.91
		C	29.050	0.853	0.000	0.000	359.32
T8	84.75-64.75	A	15.850	0.000	0.000	0.000	52.40
		B	34.550	3.739	0.000	0.000	237.54
		C	29.050	5.247	0.000	0.000	376.40
T9	64.75-44.75	A	16.007	0.000	0.000	0.000	53.21
		B	34.550	5.247	0.000	0.000	243.40
		C	29.050	10.036	0.000	0.000	395.01
T10	44.75-24.75	A	16.817	0.000	0.000	0.000	57.40
		B	34.550	5.247	0.000	0.000	243.40
		C	29.050	10.495	0.000	0.000	396.80
T11	24.75-4.75	A	15.766	0.000	0.000	0.000	53.81
		B	32.391	4.919	0.000	0.000	228.19
		C	27.234	9.839	0.000	0.000	372.00
T12	4.75-0.00	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	224.75-204.75	A	0.500	2.545	2.118	0.000	0.000	54.03
		B		12.143	11.086	0.000	0.000	279.94
		C		2.506	0.000	0.000	0.000	21.71
T2	204.75-184.75	A	0.500	5.011	4.133	0.000	0.000	105.43
		B		19.050	22.933	0.000	0.000	485.75
		C		3.561	0.000	0.000	0.000	30.85
T3	184.75-164.75	A	0.500	8.483	4.133	0.000	0.000	105.43
		B		19.050	22.933	0.000	0.000	485.75
		C		7.220	0.171	0.000	0.000	70.73
T4	164.75-144.75	A	0.500	8.571	4.133	0.000	0.000	105.43
		B		21.091	24.118	0.000	0.000	520.28
		C		22.021	13.650	0.000	0.000	844.93
T5	144.75-124.75	A	0.500	15.517	4.133	0.000	0.000	105.43
		B		26.851	24.867	0.000	0.000	573.01
		C		28.967	13.650	0.000	0.000	935.19
T6	124.75-104.75	A	0.500	17.187	4.133	0.000	0.000	107.34

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
		B		26.950	24.867	0.000	0.000	573.69
		C		30.417	13.650	0.000	0.000	947.76
T7	104.75-84.75	A	0.500	22.550	4.133	0.000	0.000	135.90
		B		28.093	24.867	0.000	0.000	583.59
		C		32.483	14.751	0.000	0.000	975.98
T8	84.75-64.75	A	0.500	22.550	4.133	0.000	0.000	135.90
		B		33.983	29.694	0.000	0.000	679.89
		C		32.483	20.425	0.000	0.000	1029.18
T9	64.75-44.75	A	0.500	22.978	4.133	0.000	0.000	138.86
		B		33.983	31.642	0.000	0.000	698.15
		C		32.483	27.241	0.000	0.000	1097.19
T10	44.75-24.75	A	0.500	25.183	4.133	0.000	0.000	154.10
		B		33.983	31.642	0.000	0.000	698.15
		C		32.483	27.895	0.000	0.000	1103.71
T11	24.75-4.75	A	0.500	23.609	3.875	0.000	0.000	144.46
		B		31.859	29.664	0.000	0.000	654.51
		C		30.453	26.151	0.000	0.000	1034.73
T12	4.75-0.00	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	224.75-204.75	A	0.000	0.420	0.533	0.735
		B	0.000	2.092	2.478	3.661
		C	0.000	0.226	0.208	0.395
T2	204.75-184.75	A	0.892	2.049	0.000	0.000
		B	3.645	9.453	0.000	0.000
		C	0.250	0.792	0.000	0.000
T3	184.75-164.75	A	0.892	2.049	0.000	0.000
		B	3.645	9.453	0.000	0.000
		C	0.283	0.872	0.000	0.000
T4	164.75-144.75	A	0.000	0.820	1.175	1.620
		B	0.000	4.072	5.043	8.049
		C	0.000	2.888	3.855	5.709
T5	144.75-124.75	A	0.892	2.049	0.000	0.000
		B	4.163	11.645	0.000	0.000
		C	2.925	7.220	0.000	0.000
T6	124.75-104.75	A	0.907	2.137	0.126	0.175
		B	4.168	11.883	0.578	0.972
		C	2.925	7.354	0.406	0.601
T7	104.75-84.75	A	0.623	1.550	0.000	0.000
		B	2.318	6.506	0.000	0.000
		C	1.659	4.086	0.000	0.000
T8	84.75-64.75	A	0.623	1.550	0.000	0.000
		B	2.822	7.871	0.000	0.000
		C	1.983	4.840	0.000	0.000
T9	64.75-44.75	A	0.581	1.521	0.161	0.245
		B	2.685	7.717	0.746	1.241
		C	2.138	5.507	0.594	0.886
T10	44.75-24.75	A	0.694	1.873	0.000	0.000
		B	2.933	8.130	0.000	0.000
		C	2.369	5.894	0.000	0.000
T11	24.75-4.75	A	0.651	1.756	0.000	0.000

Section	Elevation	Face	A_R	A_R Ice	A_F	A_F Ice
	ft		ft^2	ft^2	ft^2	ft^2
		B	2.750	7.622	0.000	0.000
		C	2.221	5.526	0.000	0.000
T12	4.75-0.00	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	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	224.75-204.75	1.0447	-2.9270	0.4986	-0.6195
T2	204.75-184.75	2.3507	-3.8939	1.3801	-0.8116
T3	184.75-164.75	1.8347	-3.4468	0.7680	-0.4304
T4	164.75-144.75	1.7721	-0.6415	0.8943	1.1251
T5	144.75-124.75	1.2411	-0.5776	0.1995	1.1125
T6	124.75-104.75	1.0071	-0.4545	-0.0541	1.2117
T7	104.75-84.75	0.7551	-0.2053	-0.2533	1.4643
T8	84.75-64.75	1.1048	0.6461	0.2730	2.0831
T9	64.75-44.75	1.7556	1.0923	0.8584	2.3880
T10	44.75-24.75	1.8325	1.0089	0.9110	2.1845
T11	24.75-4.75	1.7940	0.9877	0.8926	2.1405
T12	4.75-0.00	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
10' 4 Bay Di-Pole	A	From Leg	0.75 0.00 0.00	0.0000	244.00	No Ice 1/2" Ice	2.00 3.00	2.00 3.00	25.00 50.00
3"x20' Omni	B	From Leg	0.50 0.00 0.00	0.0000	235.00	No Ice 1/2" Ice	6.00 8.00	6.00 8.00	30.00 75.00
3"x20' Omni	C	From Leg	0.50 0.00 0.00	0.0000	235.00	No Ice 1/2" Ice	6.00 8.00	6.00 8.00	30.00 75.00
21'x4.5" Pipe Mount	A	From Leg	0.50 0.00 0.00	0.0000	232.50	No Ice 1/2" Ice	9.45 11.55	9.45 11.55	226.00 290.00
Beacon	C	From Leg	0.50 0.00 0.00	0.0000	225.00	No Ice 1/2" Ice	1.20 1.36	1.20 1.36	50.00 211.00
48"x11"x6" Panel	C	From Leg	0.50 0.00 0.00	0.0000	222.50	No Ice 1/2" Ice	5.13 5.52	2.87 3.18	30.00 60.72
10' x 3" Dia Omni	B	From Face	8.00	0.0000	222.00	No Ice	3.00	3.00	30.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	4.03	4.03	51.79
			0.00						
12' x 3" Dia Omni	A	From Face	8.00	0.0000	221.00	No Ice	3.60	3.60	40.00
			0.00			1/2" Ice	4.83	4.83	61.06
			0.00						
16' Dipole	A	From Leg	10.00	0.0000	217.67	No Ice	4.00	4.00	55.00
			0.00			1/2" Ice	6.00	6.00	100.00
			0.00						
14' x 3" Dia Omni	C	From Leg	10.00	0.0000	215.17	No Ice	4.20	4.20	40.00
			0.00			1/2" Ice	5.63	5.63	70.34
			0.00						
(2) 10' Side Arm	A	From Face	0.50	0.0000	214.00	No Ice	6.60	6.60	300.00
			0.00			1/2" Ice	8.80	8.80	550.00
			0.00						
(2) 10' Side Arm	B	From Face	0.50	0.0000	214.00	No Ice	6.60	6.60	300.00
			0.00			1/2" Ice	8.80	8.80	550.00
			0.00						
(2) 10' Side Arm	C	From Face	0.50	0.0000	214.00	No Ice	6.60	6.60	300.00
			0.00			1/2" Ice	8.80	8.80	550.00
			0.00						
20' 4-Bay Dipole	C	From Leg	10.00	0.0000	211.00	No Ice	4.00	4.00	55.00
			0.00			1/2" Ice	6.00	6.00	100.00
			0.00						
10' Dipole (inverted)	C	From Face	8.00	0.0000	209.00	No Ice	4.00	4.00	50.00
			0.00			1/2" Ice	6.00	6.00	71.79
			0.00						
8'-6" Dipole (inverted)	A	From Leg	10.00	0.0000	205.75	No Ice	4.00	4.00	50.00
			0.00			1/2" Ice	6.00	6.00	71.79
			0.00						
8' Dipole (inverted)	A	From Leg	10.00	0.0000	205.25	No Ice	4.00	4.00	50.00
			0.00			1/2" Ice	6.00	6.00	71.79
			0.00						
5' x 8" Dia Omni	B	From Leg	1.00	0.0000	199.67	No Ice	2.70	2.70	50.00
			0.00			1/2" Ice	3.05	3.05	78.02
			0.00						
16" Corner Reflector	C	From Leg	0.50	0.0000	184.33	No Ice	2.88	2.88	25.00
			0.00			1/2" Ice	3.31	3.31	40.00
			0.00						
Yagi	C	From Face	8.00	0.0000	156.25	No Ice	2.23	2.23	8.00
			0.00			1/2" Ice	3.15	3.15	24.65
			0.00						
Yagi	A	From Face	8.00	0.0000	156.25	No Ice	2.23	2.23	8.00
			0.00			1/2" Ice	3.15	3.15	24.65
			0.00						
14" Corner Reflector	A	From Leg	0.50	0.0000	153.00	No Ice	2.88	2.88	25.00
			0.00			1/2" Ice	3.31	3.31	40.00
			0.00						
10' Dipole	B	From Leg	1.00	0.0000	144.83	No Ice	4.00	4.00	50.00
			0.00			1/2" Ice	6.00	6.00	71.79
			0.00						
12' x 3" Dia Omni	B	From Leg	4.00	0.0000	144.67	No Ice	3.60	3.60	40.00
			0.00			1/2" Ice	4.83	4.83	61.06
			0.00						
6' x 3" Dia Omni	C	From Leg	4.00	0.0000	143.67	No Ice	1.77	1.77	20.00
			0.00			1/2" Ice	2.13	2.13	33.23
			0.00						
44"x8"x3" Panel	C	From Leg	0.50	0.0000	143.58	No Ice	5.13	2.59	30.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	5.50	2.90	60.04
			0.00						
4' Side Mount Standoff	C	From Leg	2.00	0.0000	139.67	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00						
4' Side Mount Standoff	B	From Leg	2.00	0.0000	139.50	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00						
1' Side Mount Standoff	B	From Leg	1.00	0.0000	135.00	No Ice	0.75	0.75	30.00
			0.00			1/2" Ice	0.95	0.95	35.41
			0.00						
3' Side Mount Standoff	C	From Leg	2.00	0.0000	126.00	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00						
60"x4"x4" Panel	C	From Leg	3.00	0.0000	126.00	No Ice	2.78	2.78	100.00
			0.00			1/2" Ice	3.15	3.15	118.31
			0.00						
44"x3"x8" Panel	C	From Leg	0.50	0.0000	113.00	No Ice	1.52	3.42	500.00
			0.00			1/2" Ice	1.79	3.76	518.28
			0.00						
4'x4" Pipe Mount	C	From Leg	0.50	0.0000	105.83	No Ice	1.32	1.32	44.00
			0.00			1/2" Ice	1.58	1.58	56.99
			0.00						
20' Pipe Mount	B	From Leg	1.00	0.0000	81.00	No Ice	9.00	9.00	220.00
			0.00			1/2" Ice	11.00	11.00	290.00
			0.00						
(2) Yagi	A	From Leg	1.50	0.0000	48.17	No Ice	1.00	1.00	15.00
			0.00			1/2" Ice	1.50	1.50	20.00
			0.00						
1' Side Mount Standoff	A	From Leg	0.50	0.0000	48.17	No Ice	0.75	0.75	30.00
			0.00			1/2" Ice	0.95	0.95	35.41
			0.00						
LNX-6514DS-VTM (Verizon-LTE)	A	From Face	3.00	0.0000	165.00	No Ice	8.41	5.41	31.30
			0.00			1/2" Ice	8.96	5.86	81.81
			0.00						
LNX-6514DS-VTM (Verizon-LTE)	B	From Face	3.00	0.0000	165.00	No Ice	8.41	5.41	31.30
			0.00			1/2" Ice	8.96	5.86	81.81
			0.00						
LNX-6514DS-VTM (Verizon-LTE)	C	From Face	3.00	0.0000	165.00	No Ice	8.41	5.41	31.30
			0.00			1/2" Ice	8.96	5.86	81.81
			0.00						
LNX-6514DS-VTM (Verizon-850MHz)	A	From Face	3.00	0.0000	165.00	No Ice	8.41	5.41	31.30
			6.00			1/2" Ice	8.96	5.86	81.81
			0.00						
LNX-6514DS-VTM (Verizon-850MHz)	B	From Face	3.00	0.0000	165.00	No Ice	8.41	5.41	31.30
			6.00			1/2" Ice	8.96	5.86	81.81
			0.00						
LNX-6514DS-VTM (Verizon-850MHz)	C	From Face	3.00	0.0000	165.00	No Ice	8.41	5.41	31.30
			6.00			1/2" Ice	8.96	5.86	81.81
			0.00						
(2) Diplexer (Verizon-850MHz)	A	From Face	3.00	0.0000	165.00	No Ice	0.23	0.17	10.00
			6.00			1/2" Ice	0.30	0.24	12.20
			0.00						
(2) Diplexer (Verizon-850MHz)	B	From Face	3.00	0.0000	165.00	No Ice	0.23	0.17	10.00
			6.00			1/2" Ice	0.30	0.24	12.20
			0.00						
(2) Diplexer	C	From Face	3.00	0.0000	165.00	No Ice	0.23	0.17	10.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(Verizon-850MHz)			6.00 0.00			1/2" Ice	0.30	0.24	12.20
HBXX-6517DS-VTM (Verizon-PCS)	A	From Face	3.00 -4.00 0.00	0.0000	165.00	No Ice 1/2" Ice	8.74 9.31	5.24 5.71	43.00 93.49
HBXX-6517DS-VTM (Verizon-PCS)	B	From Face	3.00 -4.00 0.00	0.0000	165.00	No Ice 1/2" Ice	8.74 9.31	5.24 5.71	43.00 93.49
HBXX-6517DS-VTM (Verizon-PCS)	C	From Face	3.00 -4.00 0.00	0.0000	165.00	No Ice 1/2" Ice	8.74 9.31	5.24 5.71	43.00 93.49
RRH_2x60_PCS (Verizon-PCS)	A	From Face	3.00 -4.00 0.00	0.0000	165.00	No Ice 1/2" Ice	3.16 3.62	3.30 3.85	74.42 108.94
RRH_2x60_PCS (Verizon-PCS)	B	From Face	3.00 -4.00 0.00	0.0000	165.00	No Ice 1/2" Ice	3.16 3.62	3.30 3.85	74.42 108.94
RRH_2x60_PCS (Verizon-PCS)	C	From Face	3.00 -4.00 0.00	0.0000	165.00	No Ice 1/2" Ice	3.16 3.62	3.30 3.85	74.42 108.94
HBXX-6517DS-VTM (Verizon-AWS)	A	From Face	3.00 -6.00 0.00	0.0000	165.00	No Ice 1/2" Ice	8.74 9.31	5.24 5.71	43.00 93.49
HBXX-6517DS-VTM (Verizon-AWS)	B	From Face	3.00 -6.00 0.00	0.0000	165.00	No Ice 1/2" Ice	8.74 9.31	5.24 5.71	43.00 93.49
HBXX-6517DS-VTM (Verizon-AWS)	C	From Face	3.00 -6.00 0.00	0.0000	165.00	No Ice 1/2" Ice	8.74 9.31	5.24 5.71	43.00 93.49
RRH_2x60-AWS (Verizon-AWS)	A	From Face	3.00 -6.00 0.00	0.0000	165.00	No Ice 1/2" Ice	3.66 4.13	3.31 3.88	78.74 114.87
RRH_2x60-AWS (Verizon-AWS)	B	From Face	3.00 -6.00 0.00	0.0000	165.00	No Ice 1/2" Ice	3.66 4.13	3.31 3.88	78.74 114.87
RRH_2x60-AWS (Verizon-AWS)	C	From Face	3.00 -6.00 0.00	0.0000	165.00	No Ice 1/2" Ice	3.66 4.13	3.31 3.88	78.74 114.87
13'-6" T-Frame Sector Mount (Verizon)	A	From Leg	3.25 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465.00 600.00
13'-6" T-Frame Sector Mount (Verizon)	B	From Leg	3.25 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465.00 600.00
13'-6" T-Frame Sector Mount (Verizon)	C	From Leg	3.25 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	13.60 18.40	13.60 18.40	465.00 600.00
L-810 Obstruction Lighting (1) (Tower)	A	From Leg	1.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice	0.36 0.52	0.36 0.52	6.65 12.44
L-810 Obstruction Lighting (1) (Tower)	B	From Leg	1.00 0.00 0.00	0.0000	116.00	No Ice 1/2" Ice	0.36 0.52	0.36 0.52	6.65 12.44
Yagi	A	From Leg	0.50 0.00 0.00	0.0000	101.00	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	15.00 20.00
Lightning Rod 2"x21'	C	From Leg	0.00	0.0000	225.00	No Ice	4.20	4.20	80.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(Tower)			0.00 0.00			1/2" Ice	6.33	6.33	112.30
DB-T1-6Z-8AB-0Z Dist. Box (Verizon-AWS)	A	From Face	3.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	5.60 5.92	2.33 2.56	45.00 81.13
DB-T1-6Z-8AB-0Z Dist. Box (Verizon-AWS)	B	From Face	3.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	5.60 5.92	2.33 2.56	45.00 81.13

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
7'-4" HP DISH	B	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		88.50	7.33	No Ice 1/2" Ice	42.32 43.28	180.00 380.00
7'-4" HP DISH	C	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		87.00	7.33	No Ice 1/2" Ice	42.32 43.28	180.00 380.00
4 FT DISH	C	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	0.0000		63.00	4.00	No Ice 1/2" Ice	12.56 13.09	170.00 237.19
4 FT DISH	C	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	0.0000		58.00	4.00	No Ice 1/2" Ice	12.56 13.09	170.00 237.19

Tower Pressures - No Ice

$G_H = 1.106$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1	214.75	1.708	28	73.126	A	9.482	12.966	9.583	42.69	0.000	0.000
224.75-204.75					B	7.537	25.307		29.18	0.000	0.000
					C	9.807	10.901		46.28	0.000	0.000
T2	194.75	1.661	27	73.126	A	0.000	23.899	9.583	40.10	0.000	0.000
204.75-184.75					B	0.000	41.506		23.09	0.000	0.000
					C	0.000	19.791		48.42	0.000	0.000
T3	174.75	1.61	26	73.126	A	0.000	25.726	9.583	37.25	0.000	0.000
184.75-164.75					B	0.000	41.506		23.09	0.000	0.000
					C	0.000	21.832		43.90	0.000	0.000
T4	154.75	1.555	25	73.126	A	10.138	18.080	9.583	33.96	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
164.75-144.75					B	6.270	37.908		21.69	0.000	0.000
					C	7.459	33.130		23.61	0.000	0.000
T5	134.75	1.495	24	73.126	A	0.000	29.426	9.583	32.57	0.000	0.000
144.75-124.75					B	0.000	44.819		21.38	0.000	0.000
					C	0.000	42.443		22.58	0.000	0.000
T6	114.75	1.428	23	73.126	A	1.066	30.289	9.583	30.56	0.000	0.000
124.75-104.75					B	0.613	44.850		21.08	0.000	0.000
					C	0.785	43.206		21.78	0.000	0.000
T7	94.75	1.352	22	73.126	A	0.000	29.494	9.583	32.49	0.000	0.000
104.75-84.75					B	0.000	43.400		22.08	0.000	0.000
					C	0.853	41.658		22.54	0.000	0.000
T8 84.75-64.75	74.75	1.263	21	73.126	A	0.000	29.494	9.583	32.49	0.000	0.000
					B	3.739	45.995		19.27	0.000	0.000
					C	5.247	41.334		20.57	0.000	0.000
T9 64.75-44.75	54.75	1.156	19	73.126	A	1.030	29.296	9.583	31.60	0.000	0.000
					B	5.693	45.735		18.63	0.000	0.000
					C	10.633	40.782		18.64	0.000	0.000
T10	34.75	1.015	17	73.126	A	0.000	30.390	9.583	31.53	0.000	0.000
44.75-24.75					B	5.247	45.884		18.74	0.000	0.000
					C	10.495	40.948		18.63	0.000	0.000
T11 24.75-4.75	14.75	1	16	73.126	A	0.000	29.382	9.583	32.62	0.000	0.000
					B	4.919	43.908		19.63	0.000	0.000
					C	9.839	39.280		19.51	0.000	0.000
T12 4.75-0.00	2.38	1	16	9.324	A	6.190	2.465	2.465	28.48	0.000	0.000
					B	6.190	2.465		28.48	0.000	0.000
					C	6.190	2.465		28.48	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.106$

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	214.75	1.708	21	0.5000	74.792	A	11.398	20.765	12.917	40.16	0.000	0.000
224.75-204.75						B	17.440	28.690		28.00	0.000	0.000
						C	9.620	20.920		42.29	0.000	0.000
T2	194.75	1.661	20	0.5000	74.792	A	4.133	30.186	12.917	37.64	0.000	0.000
204.75-184.75						B	22.933	36.821		21.62	0.000	0.000
						C	0.000	29.993		43.07	0.000	0.000
T3	174.75	1.61	20	0.5000	74.792	A	4.133	33.658	12.917	34.18	0.000	0.000
184.75-164.75						B	22.933	36.821		21.62	0.000	0.000
						C	0.171	33.571		38.28	0.000	0.000
T4	154.75	1.555	19	0.5000	74.792	A	13.827	26.391	12.917	32.12	0.000	0.000
164.75-144.75						B	27.382	35.659		20.49	0.000	0.000
						C	19.254	37.773		22.65	0.000	0.000
T5	134.75	1.495	18	0.5000	74.792	A	4.133	40.692	12.917	28.82	0.000	0.000
144.75-124.75						B	24.867	42.430		19.19	0.000	0.000
						C	13.650	48.970		20.63	0.000	0.000
T6	114.75	1.428	18	0.5000	74.792	A	5.150	42.538	12.917	27.09	0.000	0.000
124.75-104.75						B	25.087	42.556		19.10	0.000	0.000
						C	14.240	50.552		19.94	0.000	0.000
T7 104.75-84.75	94.75	1.352	17	0.5000	74.792	A	4.133	41.723	12.917	28.17	0.000	0.000
						B	24.867	42.310		19.23	0.000	0.000
						C	14.751	49.120		20.22	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
T8 84.75-64.75	74.75	1.263	16	0.5000	74.792	A	4.133	41.723	12.917	28.17	0.000	0.000
						B	29.694	46.835		16.88	0.000	0.000
						C	20.425	48.366		18.78	0.000	0.000
T9 64.75-44.75	54.75	1.156	14	0.5000	74.792	A	5.080	41.783	12.917	27.56	0.000	0.000
						B	31.592	46.592		16.52	0.000	0.000
						C	27.547	47.302		17.26	0.000	0.000
T10 44.75-24.75	34.75	1.015	12	0.5000	74.792	A	4.133	44.033	12.917	26.82	0.000	0.000
						B	31.642	46.576		16.51	0.000	0.000
						C	27.895	47.312		17.17	0.000	0.000
T11 24.75-4.75	14.75	1	12	0.5000	74.792	A	3.875	42.576	12.917	27.81	0.000	0.000
						B	29.664	44.960		17.31	0.000	0.000
						C	26.151	45.650		17.99	0.000	0.000
T12 4.75-0.00	2.38	1	12	0.5000	9.745	A	6.190	3.764	3.322	33.37	0.000	0.000
						B	6.190	3.764		33.37	0.000	0.000
						C	6.190	3.764		33.37	0.000	0.000

Tower Pressure - Service

$G_H = 1.106$

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 224.75-204.75	214.75	1.708	11	73.126	A	9.482	12.966	9.583	42.69	0.000	0.000
					B	7.537	25.307		29.18	0.000	0.000
					C	9.807	10.901		46.28	0.000	0.000
T2 204.75-184.75	194.75	1.661	11	73.126	A	0.000	23.899	9.583	40.10	0.000	0.000
					B	0.000	41.506		23.09	0.000	0.000
					C	0.000	19.791		48.42	0.000	0.000
T3 184.75-164.75	174.75	1.61	10	73.126	A	0.000	25.726	9.583	37.25	0.000	0.000
					B	0.000	41.506		23.09	0.000	0.000
					C	0.000	21.832		43.90	0.000	0.000
T4 164.75-144.75	154.75	1.555	10	73.126	A	10.138	18.080	9.583	33.96	0.000	0.000
					B	6.270	37.908		21.69	0.000	0.000
					C	7.459	33.130		23.61	0.000	0.000
T5 144.75-124.75	134.75	1.495	10	73.126	A	0.000	29.426	9.583	32.57	0.000	0.000
					B	0.000	44.819		21.38	0.000	0.000
					C	0.000	42.443		22.58	0.000	0.000
T6 124.75-104.75	114.75	1.428	9	73.126	A	1.066	30.289	9.583	30.56	0.000	0.000
					B	0.613	44.850		21.08	0.000	0.000
					C	0.785	43.206		21.78	0.000	0.000
T7 104.75-84.75	94.75	1.352	9	73.126	A	0.000	29.494	9.583	32.49	0.000	0.000
					B	0.000	43.400		22.08	0.000	0.000
					C	0.853	41.658		22.54	0.000	0.000
T8 84.75-64.75	74.75	1.263	8	73.126	A	0.000	29.494	9.583	32.49	0.000	0.000
					B	3.739	45.995		19.27	0.000	0.000
					C	5.247	41.334		20.57	0.000	0.000
T9 64.75-44.75	54.75	1.156	7	73.126	A	1.030	29.296	9.583	31.60	0.000	0.000
					B	5.693	45.735		18.63	0.000	0.000
					C	10.633	40.782		18.64	0.000	0.000
T10 44.75-24.75	34.75	1.015	6	73.126	A	0.000	30.390	9.583	31.53	0.000	0.000
					B	5.247	45.884		18.74	0.000	0.000
					C	10.495	40.948		18.63	0.000	0.000
T11 24.75-4.75	14.75	1	6	73.126	A	0.000	29.382	9.583	32.62	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					B	4.919	43.908		19.63	0.000	0.000
					C	9.839	39.280		19.51	0.000	0.000
T12 4.75-0.00	2.38	1	6	9.324	A	6.190	2.465	2.465	28.48	0.000	0.000
					B	6.190	2.465		28.48	0.000	0.000
					C	6.190	2.465		28.48	0.000	0.000

Tower Forces - No 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	135.08	928.35	A	0.307	2.278	0.618	1	1	17.496	1501.47	75.07	B
224.75-204.75		TA 646.05	B	0.449	1.975	0.673	1	1	24.565			
			C	0.283	2.342	0.611	1	1	16.467			
T2	228.94	546.01	A	0.327	2.227	0.624	1	1	14.924	1676.47	83.82	B
204.75-184.75			B	0.568	1.828	0.734	1	1	30.478			
			C	0.271	2.377	0.607	1	1	12.020			
T3	243.24	546.01	A	0.352	2.167	0.633	1	1	16.288	1625.36	81.27	B
184.75-164.75			B	0.568	1.828	0.734	1	1	30.478			
			C	0.299	2.3	0.615	1	1	13.437			
T4	541.21	1145.17	A	0.386	2.093	0.646	1	1	21.817	1773.66	88.68	B
164.75-144.75		TA 646.05	B	0.604	1.801	0.756	1	1	34.934			
			C	0.555	1.839	0.727	1	1	31.548			
T5	588.01	546.01	A	0.402	2.059	0.653	1	1	19.203	1661.24	83.06	B
144.75-124.75			B	0.613	1.797	0.762	1	1	34.133			
			C	0.58	1.817	0.742	1	1	31.484			
T6	593.33	604.86	A	0.429	2.01	0.664	1	1	21.170	1623.87	81.19	B
124.75-104.75			B	0.622	1.792	0.767	1	1	35.019			
			C	0.602	1.803	0.755	1	1	33.388			
T7	616.63	568.18	A	0.403	2.057	0.653	1	1	19.259	1441.12	72.06	B
104.75-84.75		TA 299.17	B	0.593	1.808	0.75	1	1	32.535			
			C	0.581	1.817	0.742	1	1	31.778			
T8	666.34	568.18	A	0.403	2.057	0.653	1	1	19.259	1659.21	82.96	B
84.75-64.75			B	0.68	1.776	0.806	1	1	40.806			
			C	0.637	1.786	0.777	1	1	37.362			
T9	691.63	617.88	A	0.415	2.036	0.658	1	1	20.299	1642.85	82.14	C
64.75-44.75			B	0.703	1.776	0.822	1	1	43.298			
			C	0.703	1.776	0.822	1	1	44.161			
T10	697.60	568.18	A	0.416	2.034	0.658	1	1	19.999	1443.05	72.15	C
44.75-24.75			B	0.699	1.776	0.819	1	1	42.842			
			C	0.703	1.776	0.822	1	1	44.170			
T11	654.00	568.18	A	0.402	2.06	0.652	1	1	19.167	1329.04	66.45	C
24.75-4.75			B	0.668	1.778	0.797	1	1	39.930			
			C	0.672	1.777	0.8	1	1	41.267			
T12 4.75-0.00	0.00	321.55	A	0.928	1.967	1	1	1	8.654	308.46	64.94	C
			B	0.928	1.967	1	1	1	8.654			
			C	0.928	1.967	1	1	1	8.654			
Sum Weight:	5655.99	9119.83								17685.80		

Tower Forces - No 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	135.08	928.35	A	0.307	2.278	0.618	0.8	1	15.599	1409.33	70.47	B
224.75-204.75		TA 646.05	B	0.449	1.975	0.673	0.8	1	23.058			
			C	0.283	2.342	0.611	0.8	1	14.506			
T2	228.94	546.01	A	0.327	2.227	0.624	0.8	1	14.924	1676.47	83.82	B
204.75-184.75			B	0.568	1.828	0.734	0.8	1	30.478			
			C	0.271	2.377	0.607	0.8	1	12.020			
T3	243.24	546.01	A	0.352	2.167	0.633	0.8	1	16.288	1625.36	81.27	B
184.75-164.75			B	0.568	1.828	0.734	0.8	1	30.478			
			C	0.299	2.3	0.615	0.8	1	13.437			
T4	541.21	1145.17	A	0.386	2.093	0.646	0.8	1	19.789	1709.99	85.50	B
164.75-144.75		TA 646.05	B	0.604	1.801	0.756	0.8	1	33.680			
			C	0.555	1.839	0.727	0.8	1	30.056			
T5	588.01	546.01	A	0.402	2.059	0.653	0.8	1	19.203	1661.24	83.06	B
144.75-124.75			B	0.613	1.797	0.762	0.8	1	34.133			
			C	0.58	1.817	0.742	0.8	1	31.484			
T6	593.33	604.86	A	0.429	2.01	0.664	0.8	1	20.957	1618.19	80.91	B
124.75-104.75			B	0.622	1.792	0.767	0.8	1	34.896			
			C	0.602	1.803	0.755	0.8	1	33.230			
T7	616.63	568.18	A	0.403	2.057	0.653	0.8	1	19.259	1441.12	72.06	B
104.75-84.75		TA 299.17	B	0.593	1.808	0.75	0.8	1	32.535			
			C	0.581	1.817	0.742	0.8	1	31.608			
T8	666.34	568.18	A	0.403	2.057	0.653	0.8	1	19.259	1628.80	81.44	B
84.75-64.75			B	0.68	1.776	0.806	0.8	1	40.058			
			C	0.637	1.786	0.777	0.8	1	36.313			
T9	691.63	617.88	A	0.415	2.036	0.658	0.8	1	20.093	1568.41	78.42	B
64.75-44.75			B	0.703	1.776	0.822	0.8	1	42.160			
			C	0.703	1.776	0.822	0.8	1	42.035			
T10	697.60	568.18	A	0.416	2.034	0.658	0.8	1	19.999	1374.48	68.72	C
44.75-24.75			B	0.699	1.776	0.819	0.8	1	41.792			
			C	0.703	1.776	0.822	0.8	1	42.071			
T11	654.00	568.18	A	0.402	2.06	0.652	0.8	1	19.167	1265.67	63.28	C
24.75-4.75			B	0.668	1.778	0.797	0.8	1	38.946			
			C	0.672	1.777	0.8	0.8	1	39.299			
T12 4.75-0.00	0.00	321.55	A	0.928	1.967	1	0.8	1	7.416	264.34	55.65	C
			B	0.928	1.967	1	0.8	1	7.416			
			C	0.928	1.967	1	0.8	1	7.416			
Sum Weight:	5655.99	9119.83								17243.39		

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	135.08	928.35	A	0.307	2.278	0.618	0.85	1	16.073	1432.37	71.62	B
224.75-204.75		TA 646.05	B	0.449	1.975	0.673	0.85	1	23.435			
			C	0.283	2.342	0.611	0.85	1	14.996			
T2	228.94	546.01	A	0.327	2.227	0.624	0.85	1	14.924	1676.47	83.82	B
204.75-184.75			B	0.568	1.828	0.734	0.85	1	30.478			
			C	0.271	2.377	0.607	0.85	1	12.020			
T3	243.24	546.01	A	0.352	2.167	0.633	0.85	1	16.288	1625.36	81.27	B
184.75-164.75			B	0.568	1.828	0.734	0.85	1	30.478			
			C	0.299	2.3	0.615	0.85	1	13.437			
T4	541.21	1145.17	A	0.386	2.093	0.646	0.85	1	20.296	1725.91	86.30	B
164.75-144.75		TA 646.05	B	0.604	1.801	0.756	0.85	1	33.994			
			C	0.555	1.839	0.727	0.85	1	30.429			

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
T5	588.01	546.01	A	0.402	2.059	0.653	0.85	1	19.203	1661.24	83.06	B
144.75-124.75			B	0.613	1.797	0.762	0.85	1	34.133			
			C	0.58	1.817	0.742	0.85	1	31.484			
T6	593.33	604.86	A	0.429	2.01	0.664	0.85	1	21.011	1619.61	80.98	B
124.75-104.75			B	0.622	1.792	0.767	0.85	1	34.927			
			C	0.602	1.803	0.755	0.85	1	33.270			
T7	616.63	568.18	A	0.403	2.057	0.653	0.85	1	19.259	1441.12	72.06	B
104.75-84.75		TA 299.17	B	0.593	1.808	0.75	0.85	1	32.535			
			C	0.581	1.817	0.742	0.85	1	31.650			
T8	666.34	568.18	A	0.403	2.057	0.653	0.85	1	19.259	1636.41	81.82	B
84.75-64.75			B	0.68	1.776	0.806	0.85	1	40.245			
			C	0.637	1.786	0.777	0.85	1	36.575			
T9	691.63	617.88	A	0.415	2.036	0.658	0.85	1	20.144	1583.52	79.18	C
64.75-44.75			B	0.703	1.776	0.822	0.85	1	42.444			
			C	0.703	1.776	0.822	0.85	1	42.566			
T10	697.60	568.18	A	0.416	2.034	0.658	0.85	1	19.999	1391.62	69.58	C
44.75-24.75			B	0.699	1.776	0.819	0.85	1	42.055			
			C	0.703	1.776	0.822	0.85	1	42.595			
T11	654.00	568.18	A	0.402	2.06	0.652	0.85	1	19.167	1281.51	64.08	C
24.75-4.75			B	0.668	1.778	0.797	0.85	1	39.192			
			C	0.672	1.777	0.8	0.85	1	39.791			
T12 4.75-0.00	0.00	321.55	A	0.928	1.967	1	0.85	1	7.726	275.37	57.97	C
			B	0.928	1.967	1	0.85	1	7.726			
			C	0.928	1.967	1	0.85	1	7.726			
Sum Weight:	5655.99	9119.83								17350.50		

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	355.68	1438.21	A	0.43	2.008	0.664	1	1	25.193	1639.50	81.98	B
224.75-204.75		TA 875.76	B	0.617	1.795	0.764	1	1	39.359			
			C	0.408	2.048	0.655	1	1	23.323			
T2	622.03	940.39	A	0.459	1.959	0.677	1	1	24.580	2290.74	114.54	B
204.75-184.75			B	0.799	1.815	0.896	1	1	55.908			
			C	0.401	2.062	0.652	1	1	19.556			
T3	661.90	940.39	A	0.505	1.893	0.7	1	1	27.701	2220.91	111.05	B
184.75-164.75			B	0.799	1.815	0.896	1	1	55.908			
			C	0.451	1.972	0.674	1	1	22.791			
T4	1470.64	1694.12	A	0.538	1.856	0.717	1	1	32.761	2375.86	118.79	B
164.75-144.75		TA 875.76	B	0.843	1.854	0.932	1	1	60.627			
			C	0.762	1.793	0.866	1	1	51.984			
T5	1613.63	940.39	A	0.599	1.804	0.753	1	1	34.782	2601.97	130.10	B
144.75-124.75			B	0.9	1.924	0.983	1	1	66.572			
			C	0.837	1.848	0.928	1	1	59.071			
T6	1628.79	1021.81	A	0.638	1.785	0.777	1	1	38.217	2513.40	125.67	B
124.75-104.75			B	0.904	1.93	0.987	1	1	67.095			
			C	0.866	1.88	0.953	1	1	62.403			
T7	1695.48	839.57	A	0.613	1.796	0.762	1	1	35.914	2343.71	117.19	B
104.75-84.75		TA 416.50	B	0.898	1.921	0.981	1	1	66.390			
			C	0.854	1.866	0.942	1	1	61.019			
T8	1844.97	839.57	A	0.613	1.796	0.762	1	1	35.914	2568.30*	128.41	B
84.75-64.75			B	1	2.1	1	1	1	76.529			
			C	0.92	1.953	1	1	1	68.791			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T9	1934.19	899.31	A	0.627	1.79	0.77	1	1	37.262	2349.68*	117.48	C
64.75-44.75			B	1	2.1	1	1	1	78.185			
			C	1	2.1	1	1	1	74.849			
T10	1955.95	839.57	A	0.644	1.783	0.782	1	1	38.546	2063.48*	103.17	C
44.75-24.75			B	1	2.1	1	1	1	78.218			
			C	1	2.1	1	1	1	75.207			
T11	1833.71	839.57	A	0.621	1.792	0.767	1	1	36.519	2033.24*	101.66	B
24.75-4.75			B	0.998	2.095	1	1	1	74.624			
			C	0.96	2.021	1	1	1	71.802			
T12 4.75-0.00	0.00	488.15	A	1	2.1	1	1	1	9.954	264.91*	55.77	C
			B	1	2.1	1	1	1	9.954			
			C	1	2.1	1	1	1	9.954			
Sum Weight:	15616.97	13889.08			*$2A_g$ limit					25265.71		

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 ft^2	F lb	w plf	Ctrl. Face
T1	355.68	1438.21	A	0.43	2.008	0.664	0.8	1	22.913	1494.21	74.71	B
224.75-204.75		TA 875.76	B	0.617	1.795	0.764	0.8	1	35.871			
			C	0.408	2.048	0.655	0.8	1	21.399			
T2	622.03	940.39	A	0.459	1.959	0.677	0.8	1	23.754	2102.81	105.14	B
204.75-184.75			B	0.799	1.815	0.896	0.8	1	51.321			
			C	0.401	2.062	0.652	0.8	1	19.556			
T3	661.90	940.39	A	0.505	1.893	0.7	0.8	1	26.875	2038.71	101.94	B
184.75-164.75			B	0.799	1.815	0.896	0.8	1	51.321			
			C	0.451	1.972	0.674	0.8	1	22.757			
T4	1470.64	1694.12	A	0.538	1.856	0.717	0.8	1	29.996	2161.26	108.06	B
164.75-144.75		TA 875.76	B	0.843	1.854	0.932	0.8	1	55.151			
			C	0.762	1.793	0.866	0.8	1	48.133			
T5	1613.63	940.39	A	0.599	1.804	0.753	0.8	1	33.955	2407.58	120.38	B
144.75-124.75			B	0.9	1.924	0.983	0.8	1	61.598			
			C	0.837	1.848	0.928	0.8	1	56.341			
T6	1628.79	1021.81	A	0.638	1.785	0.777	0.8	1	37.187	2325.45	116.27	B
124.75-104.75			B	0.904	1.93	0.987	0.8	1	62.078			
			C	0.866	1.88	0.953	0.8	1	59.555			
T7	1695.48	839.57	A	0.613	1.796	0.762	0.8	1	35.088	2168.14	108.41	B
104.75-84.75		TA 416.50	B	0.898	1.921	0.981	0.8	1	61.417			
			C	0.854	1.866	0.942	0.8	1	58.069			
T8	1844.97	839.57	A	0.613	1.796	0.762	0.8	1	35.088	2545.19	127.26	B
84.75-64.75			B	1	2.1	1	0.8	1	70.590			
			C	0.92	1.953	1	0.8	1	64.706			
T9	1934.19	899.31	A	0.627	1.79	0.77	0.8	1	36.246	2349.68*	117.48	B
64.75-44.75			B	1	2.1	1	0.8	1	71.866			
			C	1	2.1	1	0.8	1	69.340			
T10	1955.95	839.57	A	0.644	1.783	0.782	0.8	1	37.719	2063.48*	103.17	B
44.75-24.75			B	1	2.1	1	0.8	1	71.889			
			C	1	2.1	1	0.8	1	69.628			
T11	1833.71	839.57	A	0.621	1.792	0.767	0.8	1	35.744	1956.37	97.82	B
24.75-4.75			B	0.998	2.095	1	0.8	1	68.691			
			C	0.96	2.021	1	0.8	1	66.571			
T12 4.75-0.00	0.00	488.15	A	1	2.1	1	0.8	1	8.716	248.78	52.38	C
			B	1	2.1	1	0.8	1	8.716			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
Sum Weight:	15616.97	13889.08	C	1	2.1 *$2A_g$ limit	1	0.8	1	8.716	23861.67		

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 ft^2	F lb	w plf	Ctrl. Face
T1	355.68	1438.21	A	0.43	2.008	0.664	0.85	1	23.483	1530.54	76.53	B
224.75-204.75		TA 875.76	B	0.617	1.795	0.764	0.85	1	36.743			
			C	0.408	2.048	0.655	0.85	1	21.880			
T2	622.03	940.39	A	0.459	1.959	0.677	0.85	1	23.960	2149.79	107.49	B
204.75-184.75			B	0.799	1.815	0.896	0.85	1	52.468			
			C	0.401	2.062	0.652	0.85	1	19.556			
T3	661.90	940.39	A	0.505	1.893	0.7	0.85	1	27.081	2084.26	104.21	B
184.75-164.75			B	0.799	1.815	0.896	0.85	1	52.468			
			C	0.451	1.972	0.674	0.85	1	22.765			
T4	1470.64	1694.12	A	0.538	1.856	0.717	0.85	1	30.687	2214.91	110.75	B
164.75-144.75		TA 875.76	B	0.843	1.854	0.932	0.85	1	56.520			
			C	0.762	1.793	0.866	0.85	1	49.096			
T5	1613.63	940.39	A	0.599	1.804	0.753	0.85	1	34.162	2456.18	122.81	B
144.75-124.75			B	0.9	1.924	0.983	0.85	1	62.842			
			C	0.837	1.848	0.928	0.85	1	57.023			
T6	1628.79	1021.81	A	0.638	1.785	0.777	0.85	1	37.444	2372.44	118.62	B
124.75-104.75			B	0.904	1.93	0.987	0.85	1	63.332			
			C	0.866	1.88	0.953	0.85	1	60.267			
T7	1695.48	839.57	A	0.613	1.796	0.762	0.85	1	35.294	2212.03	110.60	B
104.75-84.75		TA 416.50	B	0.898	1.921	0.981	0.85	1	62.660			
			C	0.854	1.866	0.942	0.85	1	58.807			
T8	1844.97	839.57	A	0.613	1.796	0.762	0.85	1	35.294	2568.30*	128.41	B
84.75-64.75			B	1	2.1	1	0.85	1	72.075			
			C	0.92	1.953	1	0.85	1	65.728			
T9	1934.19	899.31	A	0.627	1.79	0.77	0.85	1	36.500	2349.68*	117.48	B
64.75-44.75			B	1	2.1	1	0.85	1	73.446			
			C	1	2.1	1	0.85	1	70.717			
T10	1955.95	839.57	A	0.644	1.783	0.782	0.85	1	37.926	2063.48*	103.17	B
44.75-24.75			B	1	2.1	1	0.85	1	73.471			
			C	1	2.1	1	0.85	1	71.023			
T11	1833.71	839.57	A	0.621	1.792	0.767	0.85	1	35.937	1998.61	99.93	B
24.75-4.75			B	0.998	2.095	1	0.85	1	70.175			
			C	0.96	2.021	1	0.85	1	67.879			
T12 4.75-0.00	0.00	488.15	A	1	2.1	1	0.85	1	9.025	257.62	54.23	C
			B	1	2.1	1	0.85	1	9.025			
			C	1	2.1	1	0.85	1	9.025			
Sum Weight:	15616.97	13889.08			*$2A_g$ limit					24257.83		

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	135.08	928.35	A	0.307	2.278	0.618	1	1	17.496	586.51	29.33	B
224.75-204.75		TA 646.05	B	0.449	1.975	0.673	1	1	24.565			
			C	0.283	2.342	0.611	1	1	16.467			
T2	228.94	546.01	A	0.327	2.227	0.624	1	1	14.924	654.87	32.74	B
204.75-184.75			B	0.568	1.828	0.734	1	1	30.478			
			C	0.271	2.377	0.607	1	1	12.020			
T3	243.24	546.01	A	0.352	2.167	0.633	1	1	16.288	634.91	31.75	B
184.75-164.75			B	0.568	1.828	0.734	1	1	30.478			
			C	0.299	2.3	0.615	1	1	13.437			
T4	541.21	1145.17	A	0.386	2.093	0.646	1	1	21.817	692.84	34.64	B
164.75-144.75		TA 646.05	B	0.604	1.801	0.756	1	1	34.934			
			C	0.555	1.839	0.727	1	1	31.548			
T5	588.01	546.01	A	0.402	2.059	0.653	1	1	19.203	648.92	32.45	B
144.75-124.75			B	0.613	1.797	0.762	1	1	34.133			
			C	0.58	1.817	0.742	1	1	31.484			
T6	593.33	604.86	A	0.429	2.01	0.664	1	1	21.170	634.32	31.72	B
124.75-104.75			B	0.622	1.792	0.767	1	1	35.019			
			C	0.602	1.803	0.755	1	1	33.388			
T7	616.63	568.18	A	0.403	2.057	0.653	1	1	19.259	562.94	28.15	B
104.75-84.75		TA 299.17	B	0.593	1.808	0.75	1	1	32.535			
			C	0.581	1.817	0.742	1	1	31.778			
T8	666.34	568.18	A	0.403	2.057	0.653	1	1	19.259	648.13	32.41	B
84.75-64.75			B	0.68	1.776	0.806	1	1	40.806			
			C	0.637	1.786	0.777	1	1	37.362			
T9	691.63	617.88	A	0.415	2.036	0.658	1	1	20.299	641.74	32.09	C
64.75-44.75			B	0.703	1.776	0.822	1	1	43.298			
			C	0.703	1.776	0.822	1	1	44.161			
T10	697.60	568.18	A	0.416	2.034	0.658	1	1	19.999	563.69	28.18	C
44.75-24.75			B	0.699	1.776	0.819	1	1	42.842			
			C	0.703	1.776	0.822	1	1	44.170			
T11	654.00	568.18	A	0.402	2.06	0.652	1	1	19.167	519.16	25.96	C
24.75-4.75			B	0.668	1.778	0.797	1	1	39.930			
			C	0.672	1.777	0.8	1	1	41.267			
T12 4.75-0.00	0.00	321.55	A	0.928	1.967	1	1	1	8.654	120.49	25.37	C
			B	0.928	1.967	1	1	1	8.654			
			C	0.928	1.967	1	1	1	8.654			
Sum Weight:	5655.99	9119.83								6908.52		

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	135.08	928.35	A	0.307	2.278	0.618	0.8	1	15.599	550.52	27.53	B
224.75-204.75		TA 646.05	B	0.449	1.975	0.673	0.8	1	23.058			
			C	0.283	2.342	0.611	0.8	1	14.506			
T2	228.94	546.01	A	0.327	2.227	0.624	0.8	1	14.924	654.87	32.74	B
204.75-184.75			B	0.568	1.828	0.734	0.8	1	30.478			
			C	0.271	2.377	0.607	0.8	1	12.020			
T3	243.24	546.01	A	0.352	2.167	0.633	0.8	1	16.288	634.91	31.75	B
184.75-164.75			B	0.568	1.828	0.734	0.8	1	30.478			
			C	0.299	2.3	0.615	0.8	1	13.437			
T4	541.21	1145.17	A	0.386	2.093	0.646	0.8	1	19.789	667.97	33.40	B
164.75-144.75		TA 646.05	B	0.604	1.801	0.756	0.8	1	33.680			
			C	0.555	1.839	0.727	0.8	1	30.056			

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
T5	588.01	546.01	A	0.402	2.059	0.653	0.8	1	19.203	648.92	32.45	B
144.75-124.75			B	0.613	1.797	0.762	0.8	1	34.133			
			C	0.58	1.817	0.742	0.8	1	31.484			
T6	593.33	604.86	A	0.429	2.01	0.664	0.8	1	20.957	632.10	31.61	B
124.75-104.75			B	0.622	1.792	0.767	0.8	1	34.896			
			C	0.602	1.803	0.755	0.8	1	33.230			
T7	616.63	568.18	A	0.403	2.057	0.653	0.8	1	19.259	562.94	28.15	B
104.75-84.75		TA 299.17	B	0.593	1.808	0.75	0.8	1	32.535			
			C	0.581	1.817	0.742	0.8	1	31.608			
T8	666.34	568.18	A	0.403	2.057	0.653	0.8	1	19.259	636.25	31.81	B
84.75-64.75			B	0.68	1.776	0.806	0.8	1	40.058			
			C	0.637	1.786	0.777	0.8	1	36.313			
T9	691.63	617.88	A	0.415	2.036	0.658	0.8	1	20.093	612.66	30.63	B
64.75-44.75			B	0.703	1.776	0.822	0.8	1	42.160			
			C	0.703	1.776	0.822	0.8	1	42.035			
T10	697.60	568.18	A	0.416	2.034	0.658	0.8	1	19.999	536.90	26.85	C
44.75-24.75			B	0.699	1.776	0.819	0.8	1	41.792			
			C	0.703	1.776	0.822	0.8	1	42.071			
T11	654.00	568.18	A	0.402	2.06	0.652	0.8	1	19.167	494.40	24.72	C
24.75-4.75			B	0.668	1.778	0.797	0.8	1	38.946			
			C	0.672	1.777	0.8	0.8	1	39.299			
T12 4.75-0.00	0.00	321.55	A	0.928	1.967	1	0.8	1	7.416	103.26	21.74	C
			B	0.928	1.967	1	0.8	1	7.416			
			C	0.928	1.967	1	0.8	1	7.416			
Sum Weight:	5655.99	9119.83								6735.70		

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	135.08	928.35	A	0.307	2.278	0.618	0.85	1	16.073	559.52	27.98	B
224.75-204.75		TA 646.05	B	0.449	1.975	0.673	0.85	1	23.435			
			C	0.283	2.342	0.611	0.85	1	14.996			
T2	228.94	546.01	A	0.327	2.227	0.624	0.85	1	14.924	654.87	32.74	B
204.75-184.75			B	0.568	1.828	0.734	0.85	1	30.478			
			C	0.271	2.377	0.607	0.85	1	12.020			
T3	243.24	546.01	A	0.352	2.167	0.633	0.85	1	16.288	634.91	31.75	B
184.75-164.75			B	0.568	1.828	0.734	0.85	1	30.478			
			C	0.299	2.3	0.615	0.85	1	13.437			
T4	541.21	1145.17	A	0.386	2.093	0.646	0.85	1	20.296	674.18	33.71	B
164.75-144.75		TA 646.05	B	0.604	1.801	0.756	0.85	1	33.994			
			C	0.555	1.839	0.727	0.85	1	30.429			
T5	588.01	546.01	A	0.402	2.059	0.653	0.85	1	19.203	648.92	32.45	B
144.75-124.75			B	0.613	1.797	0.762	0.85	1	34.133			
			C	0.58	1.817	0.742	0.85	1	31.484			
T6	593.33	604.86	A	0.429	2.01	0.664	0.85	1	21.011	632.66	31.63	B
124.75-104.75			B	0.622	1.792	0.767	0.85	1	34.927			
			C	0.602	1.803	0.755	0.85	1	33.270			
T7	616.63	568.18	A	0.403	2.057	0.653	0.85	1	19.259	562.94	28.15	B
104.75-84.75		TA 299.17	B	0.593	1.808	0.75	0.85	1	32.535			
			C	0.581	1.817	0.742	0.85	1	31.650			
T8	666.34	568.18	A	0.403	2.057	0.653	0.85	1	19.259	639.22	31.96	B
84.75-64.75			B	0.68	1.776	0.806	0.85	1	40.245			
			C	0.637	1.786	0.777	0.85	1	36.575			

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
T9	691.63	617.88	A	0.415	2.036	0.658	0.85	1	20.144	618.56	30.93	C
64.75-44.75			B	0.703	1.776	0.822	0.85	1	42.444			
			C	0.703	1.776	0.822	0.85	1	42.566			
T10	697.60	568.18	A	0.416	2.034	0.658	0.85	1	19.999	543.60	27.18	C
44.75-24.75			B	0.699	1.776	0.819	0.85	1	42.055			
			C	0.703	1.776	0.822	0.85	1	42.595			
T11	654.00	568.18	A	0.402	2.06	0.652	0.85	1	19.167	500.59	25.03	C
24.75-4.75			B	0.668	1.778	0.797	0.85	1	39.192			
			C	0.672	1.777	0.8	0.85	1	39.791			
T12 4.75-0.00	0.00	321.55	A	0.928	1.967	1	0.85	1	7.726	107.57	22.65	C
			B	0.928	1.967	1	0.85	1	7.726			
			C	0.928	1.967	1	0.85	1	7.726			
Sum Weight:	5655.99	9119.83								6777.54		

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 kip-ft
Leg Weight	4730.66			
Bracing Weight	4389.16			
Total Member Self-Weight	9119.83			
Guy Weight	2356.97			
Total Weight	24312.37			
Wind 0 deg - No Ice		746.44	-30248.09	-1.56
Wind 30 deg - No Ice		15416.56	-25888.73	-0.36
Wind 60 deg - No Ice		26145.52	-15085.51	-0.59
Wind 90 deg - No Ice		30382.31	-477.85	-0.94
Wind 120 deg - No Ice		26750.46	14404.14	0.26
Wind 150 deg - No Ice		14788.68	25230.79	1.97
Wind 180 deg - No Ice		-130.56	29058.82	2.45
Wind 210 deg - No Ice		-15027.03	25497.71	2.14
Wind 240 deg - No Ice		-26446.53	15090.57	1.29
Wind 270 deg - No Ice		-30131.66	63.22	-0.06
Wind 300 deg - No Ice		-25718.81	-14688.39	-1.86
Wind 330 deg - No Ice		-14710.67	-25602.32	-2.75
Member Ice	4769.25			
Guy Ice	3145.64			
Total Weight Ice	46614.04			
Wind 0 deg - Ice		582.92	-36832.42	-2.67
Wind 30 deg - Ice		18272.16	-31011.18	-0.21
Wind 60 deg - Ice		30941.24	-17856.38	1.11
Wind 90 deg - Ice		36187.44	-372.93	1.98
Wind 120 deg - Ice		32328.90	17855.03	3.32
Wind 150 deg - Ice		17780.99	30502.95	4.17
Wind 180 deg - Ice		-101.51	34852.28	3.39
Wind 210 deg - Ice		-17966.35	30711.06	1.59
Wind 240 deg - Ice		-32090.79	18390.66	-0.65
Wind 270 deg - Ice		-35991.49	48.91	-2.76
Wind 300 deg - Ice		-30608.21	-17546.90	-4.50
Wind 330 deg - Ice		-17721.31	-30787.82	-4.76
Total Weight	24312.37			
Wind 0 deg - Service		291.58	-11815.66	-0.61
Wind 30 deg - Service		6022.09	-10112.79	-0.14
Wind 60 deg - Service		10213.09	-5892.78	-0.23

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques kip-ft
Wind 90 deg - Service		11868.09	-186.66	-0.37
Wind 120 deg - Service		10449.40	5626.62	0.10
Wind 150 deg - Service		5776.83	9855.78	0.77
Wind 180 deg - Service		-51.00	11351.10	0.96
Wind 210 deg - Service		-5869.93	9960.04	0.84
Wind 240 deg - Service		-10330.68	5894.76	0.50
Wind 270 deg - Service		-11770.18	24.69	-0.02
Wind 300 deg - Service		-10046.41	-5737.65	-0.73
Wind 330 deg - Service		-5746.36	-10000.91	-1.07

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 kip-ft	Minor Axis Moment kip-ft
T1	224.75 - 204.75	Leg	Max Tension	12	9760.44	0.09	0.02
			Max. Compression	15	-14926.51	-0.06	-0.77
			Max. Mx	24	-4076.86	1.41	-0.53
			Max. My	26	-3373.44	0.29	1.52
			Max. Vy	24	-1039.84	1.41	-0.53
			Max. Vx	26	1193.40	0.29	1.52
		Diagonal	Max Tension	20	5189.96	0.00	0.00
			Max. Compression	23	-3828.84	-0.02	-0.01
			Max. Mx	21	4563.30	0.09	0.00
			Max. My	22	-208.93	-0.03	-0.03
			Max. Vy	21	-46.32	0.09	0.00
			Max. Vx	22	15.66	-0.03	-0.03
		Top Girt	Max Tension	6	108.94	0.00	0.00
			Max. Compression	21	-269.85	0.00	0.00
			Max. Mx	14	-47.09	-0.01	0.00
			Max. My	23	-166.06	0.00	-0.00
			Max. Vy	14	-6.59	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Bottom Girt	Max Tension	12	645.29	0.00	0.00
			Max. Compression	15	-3517.99	0.00	0.00
			Max. Mx	14	-863.84	-0.01	0.00
			Max. My	23	-605.79	0.00	-0.00
			Max. Vy	14	-6.59	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Guy A	Bottom Tension	21	11270.24		
			Top Tension	21	11506.39		
			Top Cable Vert	21	9517.55		
			Top Cable Norm	21	6466.30		
			Top Cable Tan	21	14.42		
			Bot Cable Vert	21	-8938.53		
			Bot Cable Norm	21	6864.45		
			Bot Cable Tan	21	15.37		
		Guy B	Bottom Tension	25	10325.69		
			Top Tension	25	10562.48		
			Top Cable Vert	25	8291.29		
			Top Cable Norm	25	6543.73		
			Top Cable Tan	25	6.51		
			Bot Cable Vert	25	-7683.28		
			Bot Cable Norm	25	6898.31		
			Bot Cable Tan	25	19.00		
		Guy C	Bottom Tension	17	10538.34		
			Top Tension	17	10788.42		
			Top Cable Vert	17	8604.71		
			Top Cable Norm	17	6507.62		
			Top Cable Tan	17	8.53		
			Bot Cable Vert	17	-7975.33		
			Bot Cable Norm	17	6888.43		
			Bot Cable Tan	17	17.61		
		Torque Arm Top	Max Tension	21	12004.45	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	4411.77	0.06	0.00
			Max. My	23	2227.04	0.00	0.00
			Max. Vy	25	30.90	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Torque Arm Bottom	Max Tension	13	1919.83	0.00	0.00
			Max. Compression	21	-15949.46	0.00	0.00
			Max. Mx	22	-8588.84	0.08	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	23	695.85	0.00	-0.00
			Max. Vy	22	30.98	0.00	0.00
			Max. Vx	23	0.11	0.00	0.00
T2	204.75 - 184.75	Leg	Max Tension	6	7105.55	0.07	0.04
			Max. Compression	21	-31923.56	0.01	-0.05
			Max. Mx	23	767.76	0.49	-0.16
			Max. My	15	20.74	0.09	0.52
			Max. Vy	24	1214.73	0.48	-0.10
			Max. Vx	15	1225.09	0.09	0.52
		Diagonal	Max Tension	23	1053.83	0.00	0.00
			Max. Compression	24	-1291.67	0.00	0.00
			Max. Mx	22	353.10	0.00	0.00
			Max. My	21	-223.98	0.00	-0.00
			Max. Vy	22	-3.63	0.00	0.00
			Max. Vx	21	0.01	0.00	0.00
		Top Girt	Max Tension	12	205.02	0.00	0.00
			Max. Compression	15	-459.80	0.00	0.00
			Max. Mx	14	-50.78	0.00	0.00
			Max. My	23	52.85	0.00	0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Bottom Girt	Max Tension	15	266.49	0.00	0.00
			Max. Compression	12	-46.07	0.00	0.00
			Max. Mx	14	95.12	0.00	0.00
			Max. My	20	126.02	0.00	-0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
T3	184.75 - 164.75	Leg	Max Tension	6	7023.26	0.02	0.05
			Max. Compression	21	-31260.96	0.04	0.04
			Max. Mx	18	-20816.40	0.81	-0.19
			Max. My	21	-21569.39	-0.02	0.91
			Max. Vy	11	-1208.54	-0.38	0.06
			Max. Vx	8	1137.40	0.09	0.38
		Diagonal	Max Tension	22	1752.46	0.00	0.00
			Max. Compression	22	-2069.47	0.00	0.00
			Max. Mx	22	1752.46	0.00	0.00
			Max. My	19	-161.04	0.00	-0.00
			Max. Vy	22	-3.64	0.00	0.00
			Max. Vx	19	0.02	0.00	0.00
		Top Girt	Max Tension	19	353.33	0.00	0.00
			Max. Compression	21	-68.50	0.00	0.00
			Max. Mx	14	81.15	0.00	0.00
			Max. My	20	149.15	0.00	-0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Bottom Girt	Max Tension	21	202.58	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	79.35	0.00	0.00
			Max. My	20	84.82	0.00	-0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
T4	164.75 - 144.75	Leg	Max Tension	21	10630.95	0.00	-0.08
			Max. Compression	23	-43865.02	0.81	-0.40
			Max. Mx	18	-17244.59	-1.71	-0.43
			Max. My	16	-17363.61	-0.48	1.67
			Max. Vy	19	2484.06	-1.01	-0.67
			Max. Vx	15	-2862.88	-0.06	1.17
		Diagonal	Max Tension	20	7203.01	-0.18	-0.03

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	23	-5427.54	0.00	0.00
			Max. Mx	21	6308.72	0.21	0.00
			Max. My	22	-2157.33	-0.08	-0.07
			Max. Vy	21	-104.60	0.21	0.00
			Max. Vx	22	-35.27	0.00	0.00
		Top Girt	Max Tension	19	1175.08	0.00	0.00
			Max. Compression	8	-842.92	0.00	0.00
			Max. Mx	14	133.48	-0.01	0.00
			Max. My	20	202.27	0.00	0.00
			Max. Vy	14	-6.59	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Bottom Girt	Max Tension	12	811.81	0.00	0.00
			Max. Compression	19	-2742.76	0.00	0.00
			Max. Mx	14	-686.18	-0.01	0.00
			Max. My	20	-1242.73	0.00	0.00
			Max. Vy	14	-6.59	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Guy A	Bottom Tension	21	11219.04		
			Top Tension	21	11389.00		
			Top Cable Vert	21	8192.18		
			Top Cable Norm	21	7911.86		
			Top Cable Tan	21	8.03		
			Bot Cable Vert	21	-7753.56		
			Bot Cable Norm	21	8108.58		
			Bot Cable Tan	21	11.41		
		Guy B	Bottom Tension	25	10334.65		
			Top Tension	25	10504.89		
			Top Cable Vert	25	6991.01		
			Top Cable Norm	25	7840.81		
			Top Cable Tan	25	11.36		
			Bot Cable Vert	25	-6533.56		
			Bot Cable Norm	25	8007.35		
			Bot Cable Tan	25	5.28		
		Guy C	Bottom Tension	17	10466.52		
			Top Tension	17	10650.15		
			Top Cable Vert	17	7335.09		
			Top Cable Norm	17	7721.53		
			Top Cable Tan	17	11.22		
			Bot Cable Vert	17	-6854.57		
			Bot Cable Norm	17	7909.67		
			Bot Cable Tan	17	6.07		
		Torque Arm Top	Max Tension	21	14246.28	0.00	0.00
			Max. Compression	13	-1587.32	0.00	0.00
			Max. Mx	14	4022.99	0.06	0.00
			Max. My	19	-1242.46	0.00	0.00
			Max. Vy	14	30.90	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Torque Arm Bottom	Max Tension	23	2660.14	0.00	0.00
			Max. Compression	21	-14479.08	0.00	0.00
			Max. Mx	22	-7156.73	0.08	0.00
			Max. My	19	2581.14	0.00	-0.00
			Max. Vy	22	31.12	0.00	0.00
			Max. Vx	19	-0.15	0.00	0.00
T5	144.75 - 124.75	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	23	-36782.00	-0.13	0.15
			Max. Mx	19	-28955.90	-0.49	-0.07
			Max. My	15	-29158.16	-0.03	0.44
			Max. Vy	24	856.58	0.47	-0.04
			Max. Vx	15	654.16	-0.03	0.44
		Diagonal	Max Tension	20	1150.35	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	23	-1577.69	0.00	0.00
			Max. Mx	22	-186.24	0.00	0.00
			Max. My	19	-79.15	0.00	-0.00
			Max. Vy	22	-3.64	0.00	0.00
			Max. Vx	19	0.02	0.00	0.00
		Top Girt	Max Tension	25	197.81	0.00	0.00
			Max. Compression	15	-93.29	0.00	0.00
			Max. Mx	14	17.04	0.00	0.00
			Max. My	20	-10.63	0.00	-0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Bottom Girt	Max Tension	21	552.86	0.00	0.00
			Max. Compression	2	-25.08	0.00	0.00
			Max. Mx	14	212.15	0.00	0.00
			Max. My	20	311.38	0.00	-0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
T6	124.75 - 104.75	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	23	-45065.68	-0.11	0.06
			Max. Mx	19	-38116.46	-0.41	-0.27
			Max. My	15	-37126.65	-0.03	0.49
			Max. Vy	18	901.25	-0.23	0.05
			Max. Vx	15	-1110.80	-0.03	0.49
		Diagonal	Max Tension	16	1650.10	0.00	0.00
			Max. Compression	23	-1814.72	0.00	0.00
			Max. Mx	22	1092.12	0.00	0.00
			Max. My	19	-346.71	0.00	-0.00
			Max. Vy	22	-3.63	0.00	0.00
			Max. Vx	19	0.02	0.00	0.00
		Top Girt	Max Tension	19	409.18	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	198.47	0.00	0.00
			Max. My	20	266.67	0.00	-0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Bottom Girt	Max Tension	24	423.70	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	221.07	0.00	0.00
			Max. My	20	379.26	0.00	-0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
		Guy A	Bottom Tension	21	10410.03		
			Top Tension	21	10540.97		
			Top Cable Vert	21	6489.67		
			Top Cable Norm	21	8306.39		
			Top Cable Tan	21	0.20		
			Bot Cable Vert	21	-6136.85		
			Bot Cable Norm	21	8408.79		
			Bot Cable Tan	21	0.20		
		Guy B	Bottom Tension	25	9709.91		
			Top Tension	25	9840.99		
			Top Cable Vert	25	5503.17		
			Top Cable Norm	25	8158.44		
			Top Cable Tan	25	3.84		
			Bot Cable Vert	25	-5133.64		
			Bot Cable Norm	25	8241.86		
			Bot Cable Tan	25	3.84		
		Guy C	Bottom Tension	17	9979.10		
			Top Tension	17	10123.59		
			Top Cable Vert	17	5987.97		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Top Cable Norm	17	8162.80		
			Top Cable Tan	17	3.88		
			Bot Cable Vert	17	-5595.35		
			Bot Cable Norm	17	8262.84		
			Bot Cable Tan	17	3.88		
		Top Guy Pull-Off	Max Tension	19	4263.76	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	2106.94	0.01	0.00
			Max. My	20	3090.21	0.00	-0.00
			Max. Vy	14	-13.57	0.00	0.00
			Max. Vx	20	0.00	0.00	0.00
T7	104.75 - 84.75	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	22	-40586.36	0.79	-0.17
			Max. Mx	20	-29056.72	-3.50	-1.17
			Max. My	16	-27138.27	0.60	3.89
			Max. Vy	19	-3086.07	-1.34	-0.60
			Max. Vx	15	3279.46	0.23	1.39
		Diagonal	Max Tension	23	3165.70	0.00	0.00
			Max. Compression	17	-3522.30	0.00	0.00
			Max. Mx	19	-543.17	0.00	0.00
			Max. My	25	-211.85	0.00	0.00
			Max. Vy	19	-3.62	0.00	0.00
			Max. Vx	25	-0.02	0.00	0.00
		Top Girt	Max Tension	24	514.04	0.00	0.00
			Max. Compression	17	-415.29	0.00	0.00
			Max. Mx	14	65.78	0.00	0.00
			Max. My	19	272.21	0.00	-0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
		Bottom Girt	Max Tension	15	2759.84	0.00	0.00
			Max. Compression	22	-2659.69	0.00	0.00
			Max. Mx	14	29.85	0.00	0.00
			Max. My	19	-407.23	0.00	-0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	19	0.00	0.00	0.00
		Guy A	Bottom Tension	21	5743.73		
			Top Tension	21	5813.74		
			Top Cable Vert	21	2949.42		
			Top Cable Norm	21	5010.04		
			Top Cable Tan	21	1.70		
			Bot Cable Vert	21	-2730.95		
			Bot Cable Norm	21	5052.95		
			Bot Cable Tan	21	2.46		
		Guy B	Bottom Tension	25	5647.03		
			Top Tension	25	5717.08		
			Top Cable Vert	25	2591.94		
			Top Cable Norm	25	5095.77		
			Top Cable Tan	25	3.50		
			Bot Cable Vert	25	-2361.54		
			Bot Cable Norm	25	5129.53		
			Bot Cable Tan	25	0.07		
		Guy C	Bottom Tension	17	5813.93		
			Top Tension	17	5893.60		
			Top Cable Vert	17	2918.44		
			Top Cable Norm	17	5120.28		
			Top Cable Tan	17	3.72		
			Bot Cable Vert	17	-2670.32		
			Bot Cable Norm	17	5164.41		
			Bot Cable Tan	17	0.11		
		Torque Arm Top	Max Tension	18	5408.29	-1.54	-0.00
			Max. Compression	18	-2422.66	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	21	-1208.87	-10.74	0.00
			Max. My	16	-2220.46	-9.95	0.00
			Max. Vy	21	2996.55	-10.74	0.00
			Max. Vx	16	0.00	-9.95	0.00
T8	84.75 - 64.75	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-54506.01	-0.08	-0.16
			Max. Mx	15	-32848.03	-1.49	-0.30
			Max. My	23	-33576.21	0.48	1.37
			Max. Vy	19	-3102.93	-1.08	-0.50
			Max. Vx	15	3296.54	0.19	1.12
		Diagonal	Max Tension	18	4349.80	0.00	0.00
			Max. Compression	24	-4721.76	0.00	0.00
			Max. Mx	18	-1506.57	0.00	0.00
			Max. My	25	-90.07	0.00	0.00
			Max. Vy	18	-3.62	0.00	0.00
			Max. Vx	25	0.02	0.00	0.00
		Top Girt	Max Tension	25	2591.91	0.00	0.00
			Max. Compression	19	-2596.31	0.00	0.00
			Max. Mx	14	78.37	0.00	0.00
			Max. My	23	-2257.49	0.00	-0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	23	0.00	0.00	0.00
		Bottom Girt	Max Tension	21	575.53	0.00	0.00
			Max. Compression	15	-383.09	0.00	0.00
			Max. Mx	14	58.68	0.00	0.00
			Max. My	24	-379.01	0.00	0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	24	-0.00	0.00	0.00
T9	64.75 - 44.75	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-56654.13	0.12	-0.04
			Max. Mx	18	-22575.21	-0.43	-0.02
			Max. My	22	-26228.67	0.22	-0.39
			Max. Vy	23	651.83	0.19	-0.13
			Max. Vx	21	-802.82	0.09	-0.25
		Diagonal	Max Tension	24	1302.88	0.00	0.00
			Max. Compression	24	-1445.09	0.00	0.00
			Max. Mx	18	1192.23	0.00	0.00
			Max. My	17	-248.64	0.00	-0.00
			Max. Vy	18	-3.63	0.00	0.00
			Max. Vx	17	-0.02	0.00	0.00
		Top Girt	Max Tension	24	413.97	0.00	0.00
			Max. Compression	22	-277.27	0.00	0.00
			Max. Mx	14	72.48	0.00	0.00
			Max. My	24	413.97	0.00	0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	24	-0.00	0.00	0.00
		Guy A	Bottom Tension	21	5750.86		
			Top Tension	21	5786.90		
			Top Cable Vert	21	1683.46		
			Top Cable Norm	21	5536.62		
			Top Cable Tan	21	0.03		
			Bot Cable Vert	21	-1531.58		
			Bot Cable Norm	21	5543.16		
			Bot Cable Tan	21	0.03		
		Guy B	Bottom Tension	25	5466.79		
			Top Tension	25	5502.85		
			Top Cable Vert	25	1409.73		
			Top Cable Norm	25	5319.22		
			Top Cable Tan	25	1.49		
			Bot Cable Vert	25	-1240.76		
			Bot Cable Norm	25	5324.13		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Bot Cable Tan	25	1.49		
		Guy C	Bottom Tension	17	5662.55		
			Top Tension	17	5708.25		
			Top Cable Vert	17	1781.85		
			Top Cable Norm	17	5423.02		
			Top Cable Tan	17	1.45		
			Bot Cable Vert	17	-1597.82		
			Bot Cable Norm	17	5432.45		
			Bot Cable Tan	17	1.45		
		Top Guy Pull-Off	Max Tension	18	2912.73	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	1270.21	0.01	0.00
			Max. My	24	2269.72	0.00	0.00
			Max. Vy	14	-13.57	0.00	0.00
			Max. Vx	24	-0.00	0.00	0.00
T10	44.75 - 24.75	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-57545.82	-0.02	0.00
			Max. Mx	18	-23099.17	-0.38	0.00
			Max. My	22	-26229.42	0.18	-0.36
			Max. Vy	18	-639.84	-0.21	-0.14
			Max. Vx	21	-804.01	0.09	-0.19
		Diagonal	Max Tension	26	1381.52	0.00	0.00
			Max. Compression	20	-1755.45	0.00	0.00
			Max. Mx	18	732.30	0.00	0.00
			Max. My	17	-326.83	0.00	-0.00
			Max. Vy	18	-3.64	0.00	0.00
			Max. Vx	17	-0.03	0.00	0.00
		Top Girt	Max Tension	20	774.08	0.00	0.00
			Max. Compression	26	-487.09	0.00	0.00
			Max. Mx	14	103.81	0.00	0.00
			Max. My	24	578.87	0.00	0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	24	-0.00	0.00	0.00
		Bottom Girt	Max Tension	25	378.34	0.00	0.00
			Max. Compression	17	-261.99	0.00	0.00
			Max. Mx	14	84.46	0.00	0.00
			Max. My	24	363.34	0.00	0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	24	-0.00	0.00	0.00
T11	24.75 - 4.75	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-56269.40	-0.11	-0.20
			Max. Mx	18	-43426.30	-0.46	0.04
			Max. My	21	-43911.58	0.08	-0.40
			Max. Vy	18	3229.01	-0.46	0.04
			Max. Vx	21	2656.85	0.08	-0.40
		Diagonal	Max Tension	24	2641.89	0.00	0.00
			Max. Compression	24	-2736.08	0.00	0.00
			Max. Mx	18	2551.48	0.00	0.00
			Max. My	17	-346.40	0.00	-0.00
			Max. Vy	18	-3.65	0.00	0.00
			Max. Vx	17	-0.03	0.00	0.00
		Top Girt	Max Tension	17	561.61	0.00	0.00
			Max. Compression	23	-277.79	0.00	0.00
			Max. Mx	14	57.56	0.00	0.00
			Max. My	24	-265.07	0.00	0.00
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	24	-0.00	0.00	0.00
		Bottom Girt	Max Tension	22	843.07	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	543.52	0.00	0.00
			Max. My	24	812.75	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	14	-3.61	0.00	0.00
			Max. Vx	24	-0.00	0.00	0.00
T12	4.75 - 0	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-47402.09	-0.17	-0.01
			Max. Mx	23	-30730.16	-1.50	-0.06
			Max. My	17	-37596.87	-0.52	0.51
			Max. Vy	23	14964.24	-1.15	-0.14
			Max. Vx	24	1061.21	-1.49	-0.17
		Top Girt	Max Tension	22	9614.47	-0.63	0.03
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	24	9411.49	-1.46	-0.10
			Max. My	17	7659.42	-1.38	-0.13
			Max. Vy	17	-430.98	-1.38	-0.13
			Max. Vx	17	-78.33	-1.38	-0.13
		Bottom Girt	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-845.88	-0.64	-0.03
			Max. Mx	17	-832.31	-1.30	-0.07
			Max. My	16	-800.62	-1.22	-0.07
			Max. Vy	24	2521.84	-1.27	-0.04
			Max. Vx	17	-204.46	-1.30	-0.07
		Mid Girt	Max Tension	23	46.68	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	23	45.83	0.01	0.00
			Max. My	16	42.98	0.00	0.00
			Max. Vy	23	-18.39	0.00	0.00
			Max. Vx	16	3.82	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	19	118890.86	-1729.50	-878.52
	Max. H_x	24	114646.52	2060.07	186.55
	Max. H_z	15	114770.09	-25.39	2100.24
	Max. M_x	1	0.00	-2.60	27.26
	Max. M_z	1	0.00	-2.60	27.26
	Max. Torsion	24	1.06	2060.07	186.55
	Min. Vert	1	57562.56	-2.60	27.26
	Min. H_x	18	115774.39	-2015.78	204.77
	Min. H_z	21	116804.67	17.75	-1972.40
	Min. M_x	1	0.00	-2.60	27.26
	Min. M_z	1	0.00	-2.60	27.26
	Min. Torsion	17	-1.06	-1846.45	1153.11
Guy C @ 184 ft Elev -12 ft Azimuth 240 deg	Max. Vert	10	-1219.50	-1036.13	597.63
	Max. H_x	10	-1219.50	-1036.13	597.63
	Max. H_z	17	-41756.93	-45965.41	26507.76
	Min. Vert	17	-41756.93	-45965.41	26507.76
	Min. H_x	17	-41756.93	-45965.41	26507.76
	Min. H_z	10	-1219.50	-1036.13	597.63
Guy B @ 181.5 ft Elev 0 ft Azimuth 120 deg	Max. Vert	6	-1024.56	990.45	571.93
	Max. H_x	25	-39222.82	46023.61	26524.57
	Max. H_z	25	-39222.82	46023.61	26524.57

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Min. Vert	25	-39222.82	46023.61	26524.57
	Min. H_x	6	-1024.56	990.45	571.93
	Min. H_z	6	-1024.56	990.45	571.93
Guy A @ 156 ft Elev 0 ft Azimuth 0 deg	Max. Vert	2	-1387.46	-0.69	-1078.95
	Max. H_x	24	-25132.52	2181.12	-28571.06
	Max. H_z	2	-1387.46	-0.69	-1078.95
	Min. Vert	21	-46211.44	17.91	-53705.13
	Min. H_x	18	-24502.71	-2190.53	-27850.31
	Min. H_z	21	-46211.44	17.91	-53705.13

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	57562.56	2.60	-27.26	0.00	0.00	0.00
Dead+Wind 0 deg - No Ice+Guy	77242.71	66.18	-1624.71	0.00	0.00	0.39
Dead+Wind 30 deg - No Ice+Guy	74676.07	887.13	-1279.27	0.00	0.00	0.81
Dead+Wind 60 deg - No Ice+Guy	71153.26	1413.96	-841.17	0.00	0.00	0.67
Dead+Wind 90 deg - No Ice+Guy	77138.76	1510.50	-160.12	0.00	0.00	0.32
Dead+Wind 120 deg - No Ice+Guy	80839.11	1387.51	679.42	0.00	0.00	0.21
Dead+Wind 150 deg - No Ice+Guy	78156.11	629.50	1245.55	0.00	0.00	0.18
Dead+Wind 180 deg - No Ice+Guy	74416.43	-11.72	1495.61	0.00	0.00	-0.09
Dead+Wind 210 deg - No Ice+Guy	78106.12	-668.38	1263.54	0.00	0.00	-0.38
Dead+Wind 240 deg - No Ice+Guy	79751.96	-1375.87	729.85	0.00	0.00	-0.59
Dead+Wind 270 deg - No Ice+Guy	76135.97	-1511.38	-118.90	0.00	0.00	-0.64
Dead+Wind 300 deg - No Ice+Guy	70524.87	-1381.82	-814.06	0.00	0.00	-0.55
Dead+Wind 330 deg - No Ice+Guy	73752.89	-831.60	-1260.99	0.00	0.00	-0.26
Dead+Ice+Temp+Guy	87334.03	-5.55	-60.42	0.00	0.00	0.00
Dead+Wind 0 deg+Ice+Temp+Guy	114770.09	25.39	-2100.24	0.00	0.00	0.25
Dead+Wind 30 deg+Ice+Temp+Guy	113084.99	1146.11	-1780.72	0.00	0.00	1.00
Dead+Wind 60 deg+Ice+Temp+Guy	112243.05	1846.45	-1153.11	0.00	0.00	1.06
Dead+Wind 90 deg+Ice+Temp+Guy	115774.39	2015.78	-204.77	0.00	0.00	0.82
Dead+Wind 120 deg+Ice+Temp+Guy	118890.86	1729.50	878.52	0.00	0.00	0.76
Dead+Wind 150 deg+Ice+Temp+Guy	117651.23	884.96	1683.49	0.00	0.00	0.59
Dead+Wind 180 deg+Ice+Temp+Guy	116804.67	-17.75	1972.40	0.00	0.00	-0.03

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	kip-ft	kip-ft	kip-ft
Dead+Wind 210 deg+Ice+Temp+Guy	117540.22	-932.83	1684.51	0.00	0.00	-0.67
Dead+Wind 240 deg+Ice+Temp+Guy	117546.77	-1771.17	907.65	0.00	0.00	-1.00
Dead+Wind 270 deg+Ice+Temp+Guy	114646.52	-2060.07	-186.55	0.00	0.00	-1.06
Dead+Wind 300 deg+Ice+Temp+Guy	111388.56	-1866.42	-1149.02	0.00	0.00	-1.01
Dead+Wind 330 deg+Ice+Temp+Guy	112114.88	-1145.95	-1787.66	0.00	0.00	-0.65
Dead+Wind 0 deg - Service+Guy	57728.91	33.14	-729.98	0.00	0.00	0.16
Dead+Wind 30 deg - Service+Guy	58139.97	360.33	-590.77	0.00	0.00	0.30
Dead+Wind 60 deg - Service+Guy	58664.87	583.35	-351.64	0.00	0.00	0.24
Dead+Wind 90 deg - Service+Guy	58673.04	679.91	-43.60	0.00	0.00	0.11
Dead+Wind 120 deg - Service+Guy	58784.84	637.06	297.16	0.00	0.00	0.07
Dead+Wind 150 deg - Service+Guy	59479.56	327.26	525.46	0.00	0.00	0.06
Dead+Wind 180 deg - Service+Guy	59964.77	-2.73	602.31	0.00	0.00	-0.04
Dead+Wind 210 deg - Service+Guy	59484.74	-332.73	532.37	0.00	0.00	-0.14
Dead+Wind 240 deg - Service+Guy	58775.49	-619.50	318.31	0.00	0.00	-0.22
Dead+Wind 270 deg - Service+Guy	58731.87	-665.69	-29.20	0.00	0.00	-0.24
Dead+Wind 300 deg - Service+Guy	58738.82	-562.91	-341.53	0.00	0.00	-0.20
Dead+Wind 330 deg - Service+Guy	58200.54	-328.87	-581.70	0.00	0.00	-0.08

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-24312.11	0.00	0.68	24312.12	-2.49	0.011%
2	759.58	-24569.80	-33864.18	-759.53	24569.76	33862.86	0.003%
3	17161.62	-24358.31	-29013.37	-17161.73	24358.26	29011.54	0.004%
4	29111.28	-24130.44	-16892.70	-29110.51	24130.43	16893.94	0.004%
5	33764.45	-24341.11	-482.13	-33763.37	24341.07	482.86	0.003%
6	29708.62	-24546.17	16191.77	-29706.84	24546.10	-16190.75	0.005%
7	16515.76	-24294.91	28332.84	-16514.40	24294.86	-28332.21	0.004%
8	-143.70	-24054.43	32674.91	142.74	24054.40	-32674.01	0.003%
9	-16772.09	-24265.92	28622.35	16770.37	24265.85	-28621.47	0.005%
10	-29412.29	-24493.79	16897.77	29411.11	24493.74	-16897.03	0.003%
11	-33513.80	-24283.12	67.50	33512.49	24283.07	-66.55	0.004%
12	-28676.97	-24078.06	-16476.02	28676.40	24078.05	16476.92	0.003%
13	-16437.75	-24329.32	-28704.36	16437.98	24329.27	28702.66	0.004%
14	0.00	-46613.47	0.00	0.15	46613.47	1.10	0.002%
15	614.52	-47229.52	-45281.87	-614.47	47229.48	45280.51	0.002%
16	22347.14	-46722.13	-38310.83	-22347.42	46722.09	38308.98	0.003%
17	37865.18	-46175.89	-22079.97	-37864.20	46175.88	22081.53	0.003%
18	44079.62	-46683.96	-382.63	-44078.58	46683.93	383.44	0.002%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
19	39235.66	-47178.46	22032.21	-39233.84	47178.39	-22031.20	0.003%
20	21813.41	-46575.30	37748.29	-21811.89	46575.26	-37747.76	0.003%
21	-133.11	-45997.42	43301.72	133.76	45997.37	-43300.04	0.003%
22	-22041.34	-46504.81	38010.72	22039.48	46504.75	-38009.97	0.003%
23	-39014.73	-47051.05	22614.24	39013.55	47051.00	-22613.52	0.002%
24	-43883.68	-46542.98	58.62	43882.43	46542.94	-57.59	0.003%
25	-37514.98	-46048.48	-21724.08	37514.21	46048.48	21725.29	0.002%
26	-21753.73	-46651.64	-38033.16	21754.13	46651.60	38031.40	0.003%
27	296.71	-24412.77	-13228.19	-296.70	24412.77	13227.15	0.004%
28	6703.76	-24330.16	-11333.35	-6704.15	24330.16	11331.61	0.006%
29	11371.59	-24241.15	-6598.71	-11369.83	24241.13	6599.42	0.007%
30	13189.24	-24323.44	-188.33	-13188.01	24323.43	189.39	0.006%
31	11604.93	-24403.54	6324.91	-11602.24	24403.52	-6323.62	0.011%
32	6451.47	-24305.39	11067.51	-6450.06	24305.39	-11067.07	0.005%
33	-56.13	-24211.46	12763.64	56.15	24211.43	-12761.95	0.006%
34	-6551.60	-24294.07	11180.60	6550.32	24294.06	-11180.08	0.005%
35	-11489.18	-24383.08	6600.69	11487.22	24383.07	-6599.65	0.008%
36	-13091.33	-24300.79	26.37	13090.29	24300.78	-25.34	0.005%
37	-11201.94	-24220.69	-6435.95	11200.67	24220.68	6436.71	0.005%
38	-6420.99	-24318.83	-11212.64	6421.68	24318.84	11210.91	0.007%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	10	0.00000001	0.00009269
2	Yes	21	0.00005842	0.00005381
3	Yes	20	0.00009039	0.00007439
4	Yes	17	0.00008860	0.00004706
5	Yes	21	0.00006406	0.00005584
6	Yes	21	0.00008960	0.00008415
7	Yes	21	0.00007686	0.00006274
8	Yes	13	0.00008175	0.00006259
9	Yes	20	0.00009565	0.00008225
10	Yes	21	0.00006226	0.00006003
11	Yes	20	0.00008224	0.00007111
12	Yes	17	0.00000001	0.00003772
13	Yes	20	0.00009219	0.00007146
14	Yes	11	0.00000001	0.00003842
15	Yes	22	0.00005605	0.00004248
16	Yes	21	0.00008859	0.00005811
17	Yes	18	0.00009233	0.00004467
18	Yes	22	0.00006065	0.00004409
19	Yes	22	0.00008396	0.00006626
20	Yes	22	0.00007900	0.00005283
21	Yes	13	0.00008028	0.00008520
22	Yes	21	0.00009330	0.00006612
23	Yes	22	0.00005705	0.00004679
24	Yes	21	0.00007667	0.00005527
25	Yes	18	0.00008008	0.00003953
26	Yes	21	0.00009318	0.00005720
27	Yes	11	0.00000001	0.00004352
28	Yes	11	0.00000001	0.00006950
29	Yes	11	0.00000001	0.00007361
30	Yes	12	0.00000001	0.00007003
31	Yes	11	0.00000001	0.00009375

32	Yes	12	0.00000001	0.00006251
33	Yes	11	0.00000001	0.00008033
34	Yes	12	0.00000001	0.00006020
35	Yes	11	0.00000001	0.00007057
36	Yes	12	0.00000001	0.00006436
37	Yes	11	0.00000001	0.00006003
38	Yes	11	0.00000001	0.00007119

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	224.75 - 204.75	3.528	33	0.0318	0.0736
T2	204.75 - 184.75	3.471	33	0.0407	0.0614
T3	184.75 - 164.75	3.307	33	0.0810	0.0401
T4	164.75 - 144.75	2.798	33	0.1496	0.0132
T5	144.75 - 124.75	2.187	33	0.1188	0.0146
T6	124.75 - 104.75	1.709	33	0.0999	0.0432
T7	104.75 - 84.75	1.510	30	0.0522	0.0629
T8	84.75 - 64.75	1.448	30	0.0290	0.1019
T9	64.75 - 44.75	1.405	30	0.0398	0.1203
T10	44.75 - 24.75	1.145	30	0.0796	0.1105
T11	24.75 - 4.75	0.738	30	0.1185	0.0854
T12	4.75 - 0	0.149	30	0.1463	0.0507

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
244.00	10' 4 Bay Di-Pole	33	3.528	0.0318	0.0736	344266
235.00	3"x20' Omni	33	3.528	0.0318	0.0736	344266
232.50	21'x4.5" Pipe Mount	33	3.528	0.0318	0.0736	344266
225.00	Beacon	33	3.528	0.0318	0.0736	344266
222.50	48"x11"x6" Panel	33	3.522	0.0277	0.0725	344266
222.00	10' x 3" Dia Omni	33	3.521	0.0284	0.0723	344266
221.00	12' x 3" Dia Omni	33	3.518	0.0298	0.0718	344266
217.67	16' Dipole	33	3.510	0.0343	0.0701	243125
215.17	14' x 3" Dia Omni	33	3.503	0.0372	0.0687	179679
214.00	(2) 10' Side Arm	33	3.500	0.0384	0.0680	160123
212.02	Guy	33	3.494	0.0399	0.0668	135213
211.00	20' 4-Bay Dipole	33	3.491	0.0406	0.0661	125187
209.00	10' Dipole	33	3.485	0.0413	0.0647	109474
205.75	8'-6" Dipole	33	3.475	0.0412	0.0622	102858
205.25	8' Dipole	33	3.473	0.0410	0.0618	93485
199.67	5' x 8" Dia Omni	33	3.451	0.0361	0.0565	31170
184.33	16" Corner Reflector	33	3.300	0.0829	0.0395	10533
165.00	LNX-6514DS-VTM	33	2.806	0.1494	0.0133	39152
156.25	Yagi	33	2.533	0.1429	0.0121	133866
153.00	14" Corner Reflector	33	2.432	0.1362	0.0120	58835
152.02	Guy	33	2.402	0.1340	0.0121	50325
144.83	10' Dipole	33	2.190	0.1189	0.0146	25849
144.67	12' x 3" Dia Omni	33	2.185	0.1186	0.0147	25704
143.67	6' x 3" Dia Omni	33	2.157	0.1171	0.0154	25057
143.58	44"x8"x3" Panel	33	2.155	0.1170	0.0155	25018

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
139.67	4' Side Mount Standoff	33	2.050	0.1126	0.0202	24936
139.50	4' Side Mount Standoff	33	2.045	0.1124	0.0205	24966
135.00	1' Side Mount Standoff	33	1.933	0.1092	0.0276	25778
126.00	3' Side Mount Standoff	33	1.734	0.1017	0.0416	27593
116.87	Guy	30	1.607	0.0833	0.0519	29798
116.00	L-810 Obstruction Lighting (1)	30	1.598	0.0811	0.0526	29695
113.00	44"x3"x8" Panel	30	1.570	0.0731	0.0551	29344
105.83	4'x4" Pipe Mount	30	1.517	0.0546	0.0617	28716
101.00	Yagi	30	1.490	0.0446	0.0679	29716
88.50	7'-4" HP DISH	30	1.452	0.0303	0.0935	35061
87.25	Guy	30	1.451	0.0297	0.0965	36113
87.00	7'-4" HP DISH	30	1.450	0.0296	0.0971	36400
81.00	20' Pipe Mount	30	1.447	0.0289	0.1086	80737
63.00	4 FT DISH	30	1.392	0.0417	0.1203	15903
58.00	4 FT DISH	30	1.341	0.0511	0.1193	19592
48.17	(2) Yagi	30	1.202	0.0721	0.1135	40447
44.83	Guy	30	1.146	0.0794	0.1106	51817

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	224.75 - 204.75	18.132	23	0.2871	0.2509
T2	204.75 - 184.75	17.127	19	0.2373	0.2191
T3	184.75 - 164.75	15.933	19	0.4422	0.1369
T4	164.75 - 144.75	13.770	19	0.6075	0.1288
T5	144.75 - 124.75	11.460	19	0.4852	0.1290
T6	124.75 - 104.75	9.638	19	0.4037	0.2348
T7	104.75 - 84.75	8.372	19	0.2343	0.2876
T8	84.75 - 64.75	7.600	19	0.1711	0.3822
T9	64.75 - 44.75	7.003	19	0.2494	0.4736
T10	44.75 - 24.75	5.610	19	0.4122	0.4152
T11	24.75 - 4.75	3.562	19	0.5831	0.3185
T12	4.75 - 0	0.713	19	0.7037	0.1834

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
244.00	10' 4 Bay Di-Pole	23	18.132	0.2871	0.2509	110915
235.00	3"x20' Omni	23	18.132	0.2871	0.2509	110915
232.50	21'x4.5" Pipe Mount	23	18.132	0.2871	0.2509	110915
225.00	Beacon	23	18.132	0.2871	0.2509	110915
222.50	48"x11"x6" Panel	23	18.010	0.2742	0.2488	110915
222.00	10' x 3" Dia Omni	23	17.983	0.2714	0.2483	110915
221.00	12' x 3" Dia Omni	23	17.929	0.2659	0.2474	110915
217.67	16' Dipole	23	17.748	0.2492	0.2438	78330
215.17	14' x 3" Dia Omni	23	17.612	0.2391	0.2406	57889
214.00	(2) 10' Side Arm	23	17.548	0.2354	0.2389	51588
212.02	Guy	19	17.448	0.2307	0.2357	43563

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
211.00	20' 4-Bay Dipole	19	17.404	0.2292	0.2338	40333
209.00	10' Dipole	19	17.317	0.2283	0.2298	35173
205.75	8'-6" Dipole	19	17.172	0.2337	0.2219	25709
205.25	8' Dipole	19	17.149	0.2354	0.2205	23944
199.67	5' x 8" Dia Omni	19	16.888	0.2692	0.2019	9957
184.33	16" Corner Reflector	19	15.898	0.4476	0.1367	3693
165.00	LNX-6514DS-VTM	19	13.800	0.6075	0.1291	18962
156.25	Yagi	19	12.755	0.5726	0.1208	16713
153.00	14" Corner Reflector	19	12.376	0.5478	0.1195	12591
152.02	Guy	19	12.263	0.5399	0.1195	11719
144.83	10' Dipole	19	11.469	0.4857	0.1288	7876
144.67	12' x 3" Dia Omni	19	11.452	0.4847	0.1292	7848
143.67	6' x 3" Dia Omni	19	11.347	0.4789	0.1322	7728
143.58	44"x8"x3" Panel	19	11.338	0.4784	0.1325	7721
139.67	4' Side Mount Standoff	19	10.942	0.4605	0.1477	7807
139.50	4' Side Mount Standoff	19	10.926	0.4598	0.1485	7816
135.00	1' Side Mount Standoff	19	10.500	0.4448	0.1736	7931
126.00	3' Side Mount Standoff	19	9.735	0.4107	0.2285	7926
116.87	Guy	19	9.076	0.3428	0.2615	8054
116.00	L-810 Obstruction Lighting (1)	19	9.019	0.3350	0.2635	8058
113.00	44"x3"x8" Panel	19	8.831	0.3070	0.2691	8072
105.83	4'x4" Pipe Mount	19	8.427	0.2422	0.2843	8165
101.00	Yagi	19	8.191	0.2109	0.3009	8512
88.50	7'-4" HP DISH	19	7.709	0.1714	0.3606	9313
87.25	Guy	19	7.671	0.1707	0.3676	9528
87.00	7'-4" HP DISH	19	7.664	0.1706	0.3690	9594
81.00	20' Pipe Mount	19	7.504	0.1762	0.4048	20378
63.00	4 FT DISH	19	6.918	0.2613	0.4744	3900
58.00	4 FT DISH	19	6.628	0.2985	0.4680	4612
48.17	(2) Yagi	19	5.899	0.3814	0.4313	7821
44.83	Guy	19	5.618	0.4114	0.4156	9094

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	224.75	Leg	A325N	0.7500	4	631.49	19438.00	0.032 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.6250	1	5189.96	5097.66	1.018 ✓	1.333	Member Bearing
		Top Girt	A325N	0.6250	1	269.85	6442.72	0.042 ✓	1.333	Bolt Shear
		Bottom Girt	A325N	0.6250	1	3517.99	6442.72	0.546 ✓	1.333	Bolt Shear
T2	204.75	Leg	A325N	0.7500	4	616.67	19428.90	0.032 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	1053.83	2740.50	0.385 ✓	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	459.80	4123.34	0.112 ✓	1.333	Bolt Shear
		Bottom Girt	A325N	0.5000	1	266.49	2740.50	0.097 ✓	1.333	Member Bearing
T3	184.75	Leg	A325N	0.7500	4	1755.82	19438.50	0.090 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	1752.46	2740.50	0.639 ✓	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	353.33	2740.50	0.129 ✓	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	202.57	2740.50	0.074 ✓	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
T4	164.75	Leg	A325N	0.7500	4	0.00	19419.80	0.000 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.6250	1	7203.01	6796.88	1.060 ✓	1.333	Member Bearing
		Top Girt	A325N	0.6250	1	1175.08	5097.66	0.231 ✓	1.333	Member Bearing
		Bottom Girt	A325N	0.6250	1	2742.76	6442.72	0.426 ✓	1.333	Bolt Shear
T5	144.75	Leg	A325N	0.7500	4	0.00	19435.00	0.000 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	1150.35	2740.50	0.420 ✓	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	197.81	2740.50	0.072 ✓	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	552.85	2740.50	0.202 ✓	1.333	Member Bearing
T6	124.75	Leg	A325N	0.7500	4	0.00	19437.30	0.000 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	1650.10	2740.50	0.602 ✓	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	409.18	2740.50	0.149 ✓	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	423.70	2740.50	0.155 ✓	1.333	Member Bearing
T7	104.75	Leg	A325N	0.7500	4	0.00	19437.60	0.000 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	3165.70	2740.50	1.155 ✓	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	514.04	2740.50	0.188 ✓	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	2759.84	2740.50	1.007 ✓	1.333	Member Bearing
T8	84.75	Leg	A325N	0.7500	4	0.00	19438.20	0.000 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.6250	1	4349.80	3425.63	1.270 ✓	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	2591.91	2740.50	0.946 ✓	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	575.53	2740.50	0.210 ✓	1.333	Member Bearing
T9	64.75	Leg	A325N	0.7500	4	0.00	19437.90	0.000 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	1302.88	2740.50	0.475 ✓	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	413.97	2740.50	0.151 ✓	1.333	Member Bearing
T10	44.75	Leg	A325N	0.7500	4	0.00	19437.90	0.000 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	1381.52	2740.50	0.504 ✓	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	774.08	2740.50	0.282 ✓	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	378.34	2740.50	0.138 ✓	1.333	Member Bearing
T11	24.75	Leg	A325N	0.7500	4	0.00	19437.60	0.000 ✓	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	2641.89	2740.50	0.964 ✓	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	561.61	2740.50	0.205 ✓	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	843.07	2740.50	0.308 ✓	1.333	Member Bearing
T12	4.75	Leg	A325N	0.7500	4	0.00	18004.40	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.

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T lb	Allowable T_a lb	Required S.F.	Actual S.F.
T1	212.02 (A) (556)	1/2 EHS	2690.00	26900.04	11244.50	13450.00	2.000	2.392 ✔
	212.02 (A) (557)	1/2 EHS	2690.00	26900.04	11506.40	13450.00	2.000	2.338 ✔
	212.02 (B) (550)	1/2 EHS	2690.00	26900.04	10551.10	13450.00	2.000	2.549 ✔
	212.02 (B) (551)	1/2 EHS	2690.00	26900.04	10562.50	13450.00	2.000	2.547 ✔
	212.02 (C) (544)	1/2 EHS	2690.00	26900.04	10788.40	13450.00	2.000	2.493 ✔
	212.02 (C) (545)	1/2 EHS	2690.00	26900.04	10533.80	13450.00	2.000	2.554 ✔
T4	152.02 (A) (538)	1/2 EHS	2690.00	26900.04	11284.00	13450.00	2.000	2.384 ✔
	152.02 (A) (539)	1/2 EHS	2690.00	26900.04	11389.00	13450.00	2.000	2.362 ✔
	152.02 (B) (532)	1/2 EHS	2690.00	26900.04	10504.90	13450.00	2.000	2.561 ✔
	152.02 (B) (533)	1/2 EHS	2690.00	26900.04	10264.00	13450.00	2.000	2.621 ✔
	152.02 (C) (526)	1/2 EHS	2690.00	26900.04	10507.00	13450.00	2.000	2.560 ✔
	152.02 (C) (527)	1/2 EHS	2690.00	26900.04	10650.20	13450.00	2.000	2.526 ✔
T6	116.87 (A) (525)	1/2 EHS	2690.00	26900.04	10541.00	13450.00	2.000	2.552 ✔
	116.87 (B) (524)	1/2 EHS	2690.00	26900.04	9840.99	13450.00	2.000	2.733 ✔
	116.87 (C) (520)	1/2 EHS	2690.00	26900.04	10123.60	13450.00	2.000	2.657 ✔
T7	87.25 (A) (573)	3/8 EHS	1540.00	15399.96	5776.39	7700.00	2.000	2.666 ✔
	87.25 (A) (574)	3/8 EHS	1540.00	15399.96	5813.74	7700.00	2.000	2.649 ✔
	87.25 (B) (569)	3/8 EHS	1540.00	15399.96	5717.08	7700.00	2.000	2.694 ✔
	87.25 (B) (570)	3/8 EHS	1540.00	15399.96	5385.43	7700.00	2.000	2.860 ✔
	87.25 (C) (565)	3/8 EHS	1540.00	15399.96	5591.30	7700.00	2.000	2.754 ✔
	87.25 (C) (566)	3/8 EHS	1540.00	15399.96	5893.60	7700.00	2.000	2.613 ✔
T9	44.83 (A) (564)	3/8 EHS	1540.00	15399.96	5786.90	7700.00	2.000	2.661 ✔
	44.83 (B) (563)	3/8 EHS	1540.00	15399.96	5502.85	7700.00	2.000	2.799 ✔
	44.83 (C) (562)	3/8 EHS	1540.00	15399.96	5708.25	7700.00	2.000	2.698 ✔

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 $\frac{P}{P_a}$

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	224.75 - 204.75	ROHN 2.5 EH	20.00	2.42	31.5 K=1.00	1.00	26.969	2.2535	-14926.50	60776.70	0.246 ✓
T2	204.75 - 184.75	ROHN 2.5 STD	20.00	2.42	30.7 K=1.00	0.98	26.507	1.7040	-31923.60	45168.70	0.707 ✓
T3	184.75 - 164.75	ROHN 2.5 STD	20.00	2.42	30.7 K=1.00	0.98	26.499	1.7040	-31261.00	45156.40	0.692 ✓
T4	164.75 - 144.75	ROHN 2.5 EH	20.00	2.42	31.5 K=1.00	0.98	26.484	2.2535	-43865.00	59683.10	0.735 ✓
T5	144.75 - 124.75	ROHN 2.5 STD	20.00	2.42	30.7 K=1.00	1.00	27.067	1.7040	-36782.00	46123.20	0.797 ✓
T6	124.75 - 104.75	ROHN 2.5 STD	20.00	2.42	30.7 K=1.00	1.00	27.067	1.7040	-45065.70	46123.20	0.977 ✓
T7	104.75 - 84.75	ROHN 2.5 EH	20.00	2.41	62.7 K=2.00	1.00	22.257	2.2535	-40586.40	50157.70	0.809 ✓
T8	84.75 - 64.75	ROHN 2.5 EH	20.00	2.41	62.7 K=2.00	1.00	22.257	2.2535	-54506.00	50157.70	1.087 ✓
T9	64.75 - 44.75	ROHN 2.5 EH	20.00	2.41	62.7 K=2.00	1.00	22.257	2.2535	-56654.10	50157.70	1.130 ✓
T10	44.75 - 24.75	ROHN 2.5 EH	20.00	2.41	62.7 K=2.00	1.00	22.257	2.2535	-57545.80	50157.70	1.147 ✓
T11	24.75 - 4.75	ROHN 2.5 EH	20.00	2.41	62.7 K=2.00	1.00	22.257	2.2535	-56269.40	50157.70	1.122 ✓
T12	4.75 - 0	ROHN 2.5 EH	5.14	2.03	26.4 K=1.00	0.98	27.051	2.2535	-47402.10	60960.00	0.778 ✓

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	224.75 - 204.75	L1 3/4x1 3/4x3/16	4.19	1.83	77.9 K=1.22	15.588	0.6211	-3828.84	9681.54	0.395 ✓
T2	204.75 - 184.75	ROHN TS1.5x16 ga	4.19	3.90	91.6 K=1.00	15.296	0.2627	-1291.67	4019.03	0.321 ✓
T3	184.75 - 164.75	ROHN TS1.5x16 ga	4.19	3.90	91.6 K=1.00	15.296	0.2627	-2069.47	4019.03	0.515 ✓
T4	164.75 - 144.75	L2x2x1/4	4.19	1.83	72.1 K=1.28	16.214	0.9380	-5427.54	15208.80	0.357 ✓
T5	144.75 - 124.75	ROHN TS1.5x16 ga	4.19	3.90	91.6 K=1.00	15.296	0.2627	-1577.69	4019.03	0.393 ✓
T6	124.75 - 104.75	ROHN TS1.5x16 ga	4.19	3.90	91.6 K=1.00	15.296	0.2627	-1814.72	4019.03	0.452 ✓
T7	104.75 - 84.75	ROHN TS1.5x16 ga	4.18	3.89	91.5 K=1.00	15.317	0.2627	-3522.30	4024.51	0.875 ✓
T8	84.75 - 64.75	ROHN TS1.5x16 ga	4.18	3.89	91.5 K=1.00	15.317	0.2627	-4721.76	4024.51	1.173 ✓
T9	64.75 - 44.75	ROHN TS1.5x16 ga	4.18	3.89	91.5 K=1.00	15.317	0.2627	-1445.09	4024.51	0.359 ✓

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	44.75 - 24.75	ROHN TS1.5x16 ga	4.18	3.89	91.5 K=1.00	15.317	0.2627	-1755.45	4024.51	0.436 ✔
T11	24.75 - 4.75	ROHN TS1.5x16 ga	4.18	3.89	91.5 K=1.00	15.317	0.2627	-2736.08	4024.51	0.680 ✔

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 $\frac{P}{P_a}$
T1	224.75 - 204.75	L1 3/4x1 3/4x3/16	3.42	2.94	111.3 K=1.08	11.494	0.6211	-269.85	7138.61	0.038 ✔
T2	204.75 - 184.75	ROHN TS1.5x16 ga	3.42	3.18	74.7 K=1.00	17.822	0.2627	-459.80	4682.83	0.098 ✔
T3	184.75 - 164.75	ROHN TS1.5x16 ga	3.42	3.18	74.7 K=1.00	17.822	0.2627	-68.50	4682.83	0.015 ✔
T4	164.75 - 144.75	L1 3/4x1 3/4x3/16	3.42	2.94	111.3 K=1.08	11.494	0.6211	-842.92	7138.61	0.118 ✔
T5	144.75 - 124.75	ROHN TS1.5x16 ga	3.42	3.18	74.7 K=1.00	17.822	0.2627	-93.29	4682.83	0.020 ✔
T7	104.75 - 84.75	ROHN TS1.5x16 ga	3.42	3.18	74.7 K=1.00	17.822	0.2627	-415.29	4682.83	0.089 ✔
T8	84.75 - 64.75	ROHN TS1.5x16 ga	3.42	3.18	74.7 K=1.00	17.822	0.2627	-2596.31	4682.83	0.554 ✔
T9	64.75 - 44.75	ROHN TS1.5x16 ga	3.42	3.18	74.7 K=1.00	17.822	0.2627	-277.27	4682.83	0.059 ✔
T10	44.75 - 24.75	ROHN TS1.5x16 ga	3.42	3.18	74.7 K=1.00	17.822	0.2627	-487.09	4682.83	0.104 ✔
T11	24.75 - 4.75	ROHN TS1.5x16 ga	3.42	3.18	74.7 K=1.00	17.822	0.2627	-277.79	4682.83	0.059 ✔

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 $\frac{P}{P_a}$
T1	224.75 - 204.75	L1 3/4x1 3/4x3/16	3.42	2.94	111.3 K=1.08	11.494	0.6211	-3517.99	7138.61	0.493 ✔
T2	204.75 - 184.75	ROHN TS1.5x16 ga	3.42	3.18	74.7 K=1.00	17.822	0.2627	-46.07	4682.83	0.010 ✔
T4	164.75 - 144.75	L1 3/4x1 3/4x3/16	3.42	2.94	111.3 K=1.08	11.494	0.6211	-2742.76	7138.61	0.384 ✔
T5	144.75 - 124.75	ROHN TS1.5x16 ga	3.42	3.18	74.7 K=1.00	17.822	0.2627	-25.08	4682.83	0.005 ✔
T7	104.75 - 84.75	ROHN TS1.5x16 ga	3.42	3.18	74.7 K=1.00	17.822	0.2627	-2659.69	4682.83	0.568 ✔
T8	84.75 - 64.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	17.822	0.2627	-383.09	4682.83	0.082

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 $\frac{P}{P_a}$
					K=1.00					✔
T10	44.75 - 24.75	ROHN TS1.5x16 ga	3.42	3.18	74.7 K=1.00	17.822	0.2627	-261.99	4682.83	0.056 ✔
T12	4.75 - 0	C14x2x3/16	0.66	0.42	17.2 K=1.00	20.767	3.3047	-845.88	68629.00	0.012 ✔

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 $\frac{P}{P_a}$
T6	124.75 - 104.75	4 1/2x3/8	3.42	3.18	352.2 K=1.00	21.600	1.6875	0.00	2031.64	0.000*
T9	64.75 - 44.75	4 1/2x3/8	3.42	3.18	352.2 K=1.00	21.600	1.6875	0.00	2031.64	0.000*

* DL controls

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T6	124.75 - 104.75	4 1/2x3/8	0.01	-0.110	27.000	0.004	0.00	0.000	27.000	0.000
T9	64.75 - 44.75	4 1/2x3/8	0.01	-0.110	27.000	0.004	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
T6	124.75 - 104.75	4 1/2x3/8	0.000	0.004	0.000	0.004* ✔	1.000	H1-3 ✔
T9	64.75 - 44.75	4 1/2x3/8	0.000	0.004	0.000	0.004* ✔	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 $\frac{P}{P_a}$
T1	224.75 - 204.75 (546)	P2.5x.203	7.86	7.74	98.1 K=0.65	21.000	1.7040	0.00	28417.60	0.000*
T1	224.75 - 204.75 (547)	P2.5x.203	7.86	7.74	98.1 K=0.65	21.000	1.7040	0.00	28417.60	0.000*
T1	224.75 - 204.75 (552)	P2.5x.203	7.86	7.74	98.1 K=0.65	21.000	1.7040	0.00	28417.60	0.000*
T1	224.75 - 204.75 (553)	P2.5x.203	7.86	7.74	98.1 K=0.65	21.000	1.7040	0.00	28417.60	0.000*
T1	224.75 - 204.75 (558)	P2.5x.203	7.86	7.74	98.1 K=0.65	21.000	1.7040	0.00	28417.60	0.000*
T1	224.75 - 204.75 (559)	P2.5x.203	7.86	7.74	98.1 K=0.65	21.000	1.7040	0.00	28417.60	0.000*
T4	164.75 - 144.75 (528)	P2.5x.203	7.86	7.74	63.7 K=0.65	16.677	1.7040	-1478.04	28417.60	0.052
T4	164.75 - 144.75 (529)	P2.5x.203	7.86	7.74	63.7 K=0.65	16.677	1.7040	-1167.66	28417.60	0.041
T4	164.75 - 144.75 (534)	P2.5x.203	7.86	7.74	63.7 K=0.65	16.677	1.7040	-1410.39	28417.60	0.050
T4	164.75 - 144.75 (535)	P2.5x.203	7.86	7.74	63.7 K=0.65	16.677	1.7040	-1342.30	28417.60	0.047
T4	164.75 - 144.75 (540)	P2.5x.203	7.86	7.74	63.7 K=0.65	16.677	1.7040	-1587.25	28417.60	0.056
T4	164.75 - 144.75 (541)	P2.5x.203	7.86	7.74	63.7 K=0.65	16.677	1.7040	-1242.30	28417.60	0.044
T7	104.75 - 84.75 (567)	C8x13.75	3.63	3.51	98.3 K=1.00	13.193	4.0400	-1237.70	53299.90	0.023
T7	104.75 - 84.75 (568)	C8x13.75	3.63	3.51	98.3 K=1.00	13.193	4.0400	-1249.00	53299.90	0.023
T7	104.75 - 84.75 (571)	C8x13.75	3.63	3.51	98.3 K=1.00	13.193	4.0400	-1496.96	53299.90	0.028
T7	104.75 - 84.75 (572)	C8x13.75	3.63	3.51	98.3 K=1.00	13.193	4.0400	-1558.07	53299.90	0.029
T7	104.75 - 84.75 (575)	C8x13.75	3.63	3.51	98.3 K=1.00	13.193	4.0400	-1108.59	53299.90	0.021
T7	104.75 - 84.75 (576)	C8x13.75	3.63	3.51	98.3 K=1.00	13.193	4.0400	-1208.93	53299.90	0.023

* DL controls

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	224.75 - 204.75 (546)	P2.5x.203	0.06	-0.685	23.100	0.030	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (547)	P2.5x.203	0.06	-0.685	23.100	0.030	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (552)	P2.5x.203	0.06	-0.685	23.100	0.030	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (553)	P2.5x.203	0.06	-0.685	23.100	0.030	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (558)	P2.5x.203	0.06	-0.685	23.100	0.030	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (559)	P2.5x.203	0.06	-0.685	23.100	0.030	0.00	0.000	23.100	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T4	164.75 - 144.75 (528)	P2.5x.203	0.04	-0.505	23.100	0.022	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (529)	P2.5x.203	0.06	-0.685	23.100	0.030	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (534)	P2.5x.203	0.06	-0.685	23.100	0.030	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (535)	P2.5x.203	0.06	-0.685	23.100	0.030	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (540)	P2.5x.203	0.04	-0.505	23.100	0.022	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (541)	P2.5x.203	0.06	-0.685	23.100	0.030	0.00	0.000	23.100	0.000
T7	104.75 - 84.75 (567)	C8x13.75	-10.71	-14.235	21.600	0.659	-0.00	-0.000	21.600	0.000
T7	104.75 - 84.75 (568)	C8x13.75	-10.62	-14.107	21.600	0.653	0.00	-0.000	21.600	0.000
T7	104.75 - 84.75 (571)	C8x13.75	-9.51	-12.641	21.600	0.585	-0.00	-0.000	21.600	0.000
T7	104.75 - 84.75 (572)	C8x13.75	-10.26	-13.629	21.600	0.631	0.00	-0.000	21.600	0.000
T7	104.75 - 84.75 (575)	C8x13.75	-9.04	-12.012	21.600	0.556	-0.00	-0.000	21.600	0.000
T7	104.75 - 84.75 (576)	C8x13.75	-10.74	-14.276	21.600	0.661	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
T1	224.75 - 204.75 (546)	P2.5x.203	0.000	0.030	0.000	0.030* ✔	1.000	H1-3 ✔
T1	224.75 - 204.75 (547)	P2.5x.203	0.000	0.030	0.000	0.030* ✔	1.000	H1-3 ✔
T1	224.75 - 204.75 (552)	P2.5x.203	0.000	0.030	0.000	0.030* ✔	1.000	H1-3 ✔
T1	224.75 - 204.75 (553)	P2.5x.203	0.000	0.030	0.000	0.030* ✔	1.000	H1-3 ✔
T1	224.75 - 204.75 (558)	P2.5x.203	0.000	0.030	0.000	0.030* ✔	1.000	H1-3 ✔
T1	224.75 - 204.75 (559)	P2.5x.203	0.000	0.030	0.000	0.030* ✔	1.000	H1-3 ✔
T4	164.75 - 144.75 (528)	P2.5x.203	0.052	0.022	0.000	0.074 ✔	1.333	H1-3 ✔
T4	164.75 - 144.75 (529)	P2.5x.203	0.041	0.030	0.000	0.071 ✔	1.333	H1-3 ✔
T4	164.75 - 144.75 (534)	P2.5x.203	0.050	0.030	0.000	0.079 ✔	1.333	H1-3 ✔
T4	164.75 - 144.75 (535)	P2.5x.203	0.047	0.030	0.000	0.077 ✔	1.333	H1-3 ✔
T4	164.75 - 144.75 (540)	P2.5x.203	0.056	0.022	0.000	0.078 ✔	1.333	H1-3 ✔
T4	164.75 - 144.75 (541)	P2.5x.203	0.044	0.030	0.000	0.073 ✔	1.333	H1-3 ✔

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
T7	104.75 - 84.75 (567)	C8x13.75	0.023	0.659	0.000	0.682 ✔	1.333	H1-3 ✔
T7	104.75 - 84.75 (568)	C8x13.75	0.023	0.653	0.000	0.677 ✔	1.333	H1-3 ✔
T7	104.75 - 84.75 (571)	C8x13.75	0.028	0.585	0.000	0.613 ✔	1.333	H1-3 ✔
T7	104.75 - 84.75 (572)	C8x13.75	0.029	0.631	0.000	0.660 ✔	1.333	H1-3 ✔
T7	104.75 - 84.75 (575)	C8x13.75	0.021	0.556	0.000	0.577 ✔	1.333	H1-3 ✔
T7	104.75 - 84.75 (576)	C8x13.75	0.023	0.661	0.000	0.684 ✔	1.333	H1-3 ✔

* DL controls

Torque-Arm Bottom 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 $\frac{P}{P_a}$
T1	224.75 - 204.75 (548)	P2.5x.203	10.71	10.54	86.8 K=0.65	14.312	1.7040	-15195.80	24387.70	0.623
T1	224.75 - 204.75 (549)	P2.5x.203	10.71	10.54	86.8 K=0.65	14.312	1.7040	-15876.80	24387.70	0.651
T1	224.75 - 204.75 (554)	P2.5x.203	10.71	10.54	86.8 K=0.65	14.312	1.7040	-14887.90	24387.70	0.610
T1	224.75 - 204.75 (555)	P2.5x.203	10.71	10.54	86.8 K=0.65	14.312	1.7040	-14652.90	24387.70	0.601
T1	224.75 - 204.75 (560)	P2.5x.203	10.71	10.54	86.8 K=0.65	14.312	1.7040	-15084.50	24387.70	0.619
T1	224.75 - 204.75 (561)	P2.5x.203	10.71	10.54	86.8 K=0.65	14.312	1.7040	-15920.90	24387.70	0.653
T4	164.75 - 144.75 (530)	P2.5x.203	10.71	10.54	86.8 K=0.65	14.312	1.7040	-13162.30	24387.70	0.540
T4	164.75 - 144.75 (531)	P2.5x.203	10.71	10.54	86.8 K=0.65	14.312	1.7040	-14450.50	24387.70	0.593
T4	164.75 - 144.75 (536)	P2.5x.203	10.71	10.54	86.8 K=0.65	14.312	1.7040	-13752.20	24387.70	0.564
T4	164.75 - 144.75 (537)	P2.5x.203	10.71	10.54	86.8 K=0.65	14.312	1.7040	-13491.70	24387.70	0.553
T4	164.75 - 144.75 (542)	P2.5x.203	10.71	10.54	86.8 K=0.65	14.312	1.7040	-12845.20	24387.70	0.527
T4	164.75 - 144.75 (543)	P2.5x.203	10.71	10.54	86.8 K=0.65	14.312	1.7040	-14392.20	24387.70	0.590

Torque-Arm Bottom Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	224.75 - 204.75 (548)	P2.5x.203	0.08	-0.933	23.100	0.040	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (549)	P2.5x.203	0.08	-0.935	23.100	0.040	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (554)	P2.5x.203	0.08	-0.932	23.100	0.040	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (555)	P2.5x.203	0.08	-0.933	23.100	0.040	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (560)	P2.5x.203	0.08	-0.932	23.100	0.040	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (561)	P2.5x.203	0.08	-0.932	23.100	0.040	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (530)	P2.5x.203	0.08	-0.931	23.100	0.040	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (531)	P2.5x.203	0.08	-0.931	23.100	0.040	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (536)	P2.5x.203	0.08	-0.932	23.100	0.040	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (537)	P2.5x.203	0.08	-0.932	23.100	0.040	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (542)	P2.5x.203	0.08	-0.931	23.100	0.040	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (543)	P2.5x.203	0.08	-0.931	23.100	0.040	0.00	0.000	23.100	0.000

Torque-Arm Bottom 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
T1	224.75 - 204.75 (548)	P2.5x.203	0.623	0.040	0.000	0.663 ✔	1.333	H1-3 ✔
T1	224.75 - 204.75 (549)	P2.5x.203	0.651	0.040	0.000	0.691 ✔	1.333	H1-3 ✔
T1	224.75 - 204.75 (554)	P2.5x.203	0.610	0.040	0.000	0.651 ✔	1.333	H1-3 ✔
T1	224.75 - 204.75 (555)	P2.5x.203	0.601	0.040	0.000	0.641 ✔	1.333	H1-3 ✔
T1	224.75 - 204.75 (560)	P2.5x.203	0.619	0.040	0.000	0.659 ✔	1.333	H1-3 ✔
T1	224.75 - 204.75 (561)	P2.5x.203	0.653	0.040	0.000	0.693 ✔	1.333	H1-3 ✔
T4	164.75 - 144.75 (530)	P2.5x.203	0.540	0.040	0.000	0.580 ✔	1.333	H1-3 ✔
T4	164.75 - 144.75 (531)	P2.5x.203	0.593	0.040	0.000	0.633 ✔	1.333	H1-3 ✔
T4	164.75 - 144.75 (536)	P2.5x.203	0.564	0.040	0.000	0.604 ✔	1.333	H1-3 ✔
T4	164.75 - 144.75 (537)	P2.5x.203	0.553	0.040	0.000	0.594 ✔	1.333	H1-3 ✔
T4	164.75 - 144.75 (542)	P2.5x.203	0.527	0.040	0.000	0.567 ✔	1.333	H1-3 ✔
T4	164.75 -	P2.5x.203	0.590	0.040	0.000	0.630	1.333	H1-3 ✔

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
	144.75 (543)					✓		

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	224.75 - 204.75	ROHN 2.5 EH	20.00	2.42	31.5	30.000	2.2535	9760.44	67606.20	0.144 ✓
T2	204.75 - 184.75	ROHN 2.5 STD	20.00	2.42	30.7	30.000	1.7040	7105.55	51121.50	0.139 ✓
T3	184.75 - 164.75	ROHN 2.5 STD	20.00	2.42	30.7	30.000	1.7040	7023.26	51121.50	0.137 ✓
T4	164.75 - 144.75	ROHN 2.5 EH	20.00	2.42	31.5	30.000	2.2535	10631.00	67606.20	0.157 ✓

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	224.75 - 204.75	L1 3/4x1 3/4x3/16	4.19	1.83	43.5	29.000	0.3604	5189.96	10450.20	0.497 ✓
T2	204.75 - 184.75	ROHN TS1.5x16 ga	4.19	3.90	91.6	25.200	0.2627	1053.83	6621.31	0.159 ✓
T3	184.75 - 164.75	ROHN TS1.5x16 ga	4.19	3.90	91.6	25.200	0.2627	1752.46	6621.31	0.265 ✓
T4	164.75 - 144.75	L2x2x1/4	4.19	1.83	38.4	29.000	0.5629	7203.01	16323.40	0.441 ✓
T5	144.75 - 124.75	ROHN TS1.5x16 ga	4.19	3.90	91.6	25.200	0.2627	1150.35	6621.31	0.174 ✓
T6	124.75 - 104.75	ROHN TS1.5x16 ga	4.19	3.90	91.6	25.200	0.2627	1650.10	6621.31	0.249 ✓
T7	104.75 - 84.75	ROHN TS1.5x16 ga	4.18	3.89	91.5	25.200	0.2627	3165.70	6621.31	0.478 ✓
T8	84.75 - 64.75	ROHN TS1.5x16 ga	4.18	3.89	91.5	25.200	0.2627	4349.80	6621.31	0.657 ✓
T9	64.75 - 44.75	ROHN TS1.5x16 ga	4.18	3.89	91.5	25.200	0.2627	1302.88	6621.31	0.197 ✓
T10	44.75 - 24.75	ROHN TS1.5x16 ga	4.18	3.89	91.5	25.200	0.2627	1381.52	6621.31	0.209 ✓
T11	24.75 - 4.75	ROHN TS1.5x16 ga	4.18	3.89	91.5	25.200	0.2627	2641.89	6621.31	0.399 ✓

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 $\frac{P}{P_a}$

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	224.75 - 204.75	L1 3/4x1 3/4x3/16	3.42	2.94	71.0	29.000	0.3604	108.94	10450.20	0.010 ✔
T2	204.75 - 184.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	205.02	6621.31	0.031 ✔
T3	184.75 - 164.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	353.33	6621.31	0.053 ✔
T4	164.75 - 144.75	L1 3/4x1 3/4x3/16	3.42	2.94	71.0	29.000	0.3604	1175.08	10450.20	0.112 ✔
T5	144.75 - 124.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	197.81	6621.31	0.030 ✔
T6	124.75 - 104.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	409.18	6621.31	0.062 ✔
T7	104.75 - 84.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	514.04	6621.31	0.078 ✔
T8	84.75 - 64.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	2591.91	6621.31	0.391 ✔
T9	64.75 - 44.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	413.97	6621.31	0.063 ✔
T10	44.75 - 24.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	774.08	6621.31	0.117 ✔
T11	24.75 - 4.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	561.61	6621.31	0.085 ✔
T12	4.75 - 0	C14x2x3/16	3.36	3.12	100.0	21.600	3.3047	9614.47	71381.30	0.135 ✔

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	224.75 - 204.75	L1 3/4x1 3/4x3/16	3.42	2.94	71.0	29.000	0.3604	645.29	10450.20	0.062 ✔
T2	204.75 - 184.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	266.49	6621.31	0.040 ✔
T3	184.75 - 164.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	202.57	6621.31	0.031 ✔
T4	164.75 - 144.75	L1 3/4x1 3/4x3/16	3.42	2.94	71.0	29.000	0.3604	811.81	10450.20	0.078 ✔
T5	144.75 - 124.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	552.85	6621.31	0.083 ✔
T6	124.75 - 104.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	423.70	6621.31	0.064

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 $\frac{P}{P_a}$
T7	104.75 - 84.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	2759.84	6621.31	0.417 ✔
T8	84.75 - 64.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	575.53	6621.31	0.087 ✔
T10	44.75 - 24.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	378.34	6621.31	0.057 ✔
T11	24.75 - 4.75	ROHN TS1.5x16 ga	3.42	3.18	74.7	25.200	0.2627	843.07	6621.31	0.127 ✔

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 $\frac{P}{P_a}$
T12	4.75 - 0	C14x2x3/16	2.01	1.77	56.7	21.600	3.3047	36.64	71381.30	0.001* ✔

* DL controls

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 $\frac{P}{P_a}$
T6	124.75 - 104.75	4 1/2x3/8	3.42	3.18	352.2	21.600	1.6875	4263.75	36450.00	0.117
T9	64.75 - 44.75	4 1/2x3/8	3.42	3.18	352.2	21.600	1.6875	2912.69	36450.00	0.080

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T6	124.75 - 104.75	4 1/2x3/8	0.01	0.110	27.000	0.004	0.00	0.000	27.000	0.000
T9	64.75 - 44.75	4 1/2x3/8	0.01	0.110	27.000	0.004	-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 $\frac{f_{bv}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria

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
T6	124.75 - 104.75	4 1/2x3/8	0.117	0.004	0.000	0.121 ✔	1.333	H2-1 ✔
T9	64.75 - 44.75	4 1/2x3/8	0.080	0.004	0.000	0.084 ✔	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 $\frac{P}{P_a}$
T1	224.75 - 204.75 (546)	P2.5x.203	7.86	7.74	98.1	21.000	1.7040	12004.40	35785.10	0.335
T1	224.75 - 204.75 (547)	P2.5x.203	7.86	7.74	98.1	21.000	1.7040	11926.10	35785.10	0.333
T1	224.75 - 204.75 (552)	P2.5x.203	7.86	7.74	98.1	21.000	1.7040	11058.30	35785.10	0.309
T1	224.75 - 204.75 (553)	P2.5x.203	7.86	7.74	98.1	21.000	1.7040	11625.50	35785.10	0.325
T1	224.75 - 204.75 (558)	P2.5x.203	7.86	7.74	98.1	21.000	1.7040	11174.70	35785.10	0.312
T1	224.75 - 204.75 (559)	P2.5x.203	7.86	7.74	98.1	21.000	1.7040	11769.50	35785.10	0.329
T4	164.75 - 144.75 (528)	P2.5x.203	7.86	7.74	98.1	21.000	1.7040	14246.10	35785.10	0.398
T4	164.75 - 144.75 (529)	P2.5x.203	7.86	7.74	98.1	21.000	1.7040	13730.90	35785.10	0.384
T4	164.75 - 144.75 (534)	P2.5x.203	7.86	7.74	98.1	21.000	1.7040	13413.70	35785.10	0.375
T4	164.75 - 144.75 (535)	P2.5x.203	7.86	7.74	98.1	21.000	1.7040	13547.70	35785.10	0.379
T4	164.75 - 144.75 (540)	P2.5x.203	7.86	7.74	98.1	21.000	1.7040	13899.00	35785.10	0.388
T4	164.75 - 144.75 (541)	P2.5x.203	7.86	7.74	98.1	21.000	1.7040	13542.90	35785.10	0.378
T7	104.75 - 84.75 (567)	C8x13.75	3.63	3.51	68.4	21.600	4.0400	116.10	87264.00	0.001
T7	104.75 - 84.75 (568)	C8x13.75	3.63	3.51	68.4	21.600	4.0400	210.75	87264.00	0.002
T7	104.75 - 84.75 (571)	C8x13.75	3.63	3.51	68.4	21.600	4.0400	19.33	87264.00	0.000
T7	104.75 - 84.75 (572)	C8x13.75	3.63	3.51	68.4	21.600	4.0400	1818.36	87264.00	0.021
T7	104.75 - 84.75 (575)	C8x13.75	3.63	3.51	68.4	21.600	4.0400	371.69	87264.00	0.004
T7	104.75 - 84.75 (576)	C8x13.75	3.63	3.51	68.4	21.600	4.0400	120.52	87264.00	0.001

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	224.75 - 204.75 (546)	P2.5x.203	0.06	0.685	23.100	0.030	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (547)	P2.5x.203	0.06	0.685	23.100	0.030	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (552)	P2.5x.203	0.06	0.685	23.100	0.030	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (553)	P2.5x.203	0.06	0.685	23.100	0.030	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (558)	P2.5x.203	0.06	0.685	23.100	0.030	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (559)	P2.5x.203	0.06	0.685	23.100	0.030	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (528)	P2.5x.203	0.06	0.685	23.100	0.030	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (529)	P2.5x.203	0.06	0.685	23.100	0.030	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (534)	P2.5x.203	0.06	0.685	23.100	0.030	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (535)	P2.5x.203	0.06	0.685	23.100	0.030	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (540)	P2.5x.203	0.06	0.685	23.100	0.030	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (541)	P2.5x.203	0.06	0.685	23.100	0.030	0.00	0.000	23.100	0.000
T7	104.75 - 84.75 (567)	C8x13.75	-9.92	13.179	21.600	0.610	0.00	0.000	27.000	0.000
T7	104.75 - 84.75 (568)	C8x13.75	-10.25	13.621	21.600	0.631	0.00	0.000	27.000	0.000
T7	104.75 - 84.75 (571)	C8x13.75	-8.81	11.708	21.600	0.542	-0.00	0.000	27.000	0.000
T7	104.75 - 84.75 (572)	C8x13.75	-8.10	10.770	21.600	0.499	-0.00	0.000	27.000	0.000
T7	104.75 - 84.75 (575)	C8x13.75	-8.77	11.650	21.600	0.539	0.00	0.000	27.000	0.000
T7	104.75 - 84.75 (576)	C8x13.75	-10.18	13.526	21.600	0.626	-0.00	0.000	27.000	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 $\frac{f_{bv}}{F_{bv}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	224.75 - 204.75 (546)	P2.5x.203	0.335	0.030	0.000	0.365 ✔	1.333	H2-1 ✔
T1	224.75 - 204.75 (547)	P2.5x.203	0.333	0.030	0.000	0.363 ✔	1.333	H2-1 ✔
T1	224.75 - 204.75 (552)	P2.5x.203	0.309	0.030	0.000	0.339 ✔	1.333	H2-1 ✔
T1	224.75 - 204.75 (553)	P2.5x.203	0.325	0.030	0.000	0.355 ✔	1.333	H2-1 ✔
T1	224.75 - 204.75 (558)	P2.5x.203	0.312	0.030	0.000	0.342 ✔	1.333	H2-1 ✔
T1	224.75 - 204.75 (559)	P2.5x.203	0.329	0.030	0.000	0.359 ✔	1.333	H2-1 ✔

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
T4	164.75 - 144.75 (528)	P2.5x.203	0.398	0.030	0.000	0.428 ✔	1.333	H2-1 ✔
T4	164.75 - 144.75 (529)	P2.5x.203	0.384	0.030	0.000	0.413 ✔	1.333	H2-1 ✔
T4	164.75 - 144.75 (534)	P2.5x.203	0.375	0.030	0.000	0.404 ✔	1.333	H2-1 ✔
T4	164.75 - 144.75 (535)	P2.5x.203	0.379	0.030	0.000	0.408 ✔	1.333	H2-1 ✔
T4	164.75 - 144.75 (540)	P2.5x.203	0.388	0.030	0.000	0.418 ✔	1.333	H2-1 ✔
T4	164.75 - 144.75 (541)	P2.5x.203	0.378	0.030	0.000	0.408 ✔	1.333	H2-1 ✔
T7	104.75 - 84.75 (567)	C8x13.75	0.001	0.610	0.000	0.611 ✔	1.333	H2-1 ✔
T7	104.75 - 84.75 (568)	C8x13.75	0.002	0.631	0.000	0.633 ✔	1.333	H2-1 ✔
T7	104.75 - 84.75 (571)	C8x13.75	0.000	0.542	0.000	0.542 ✔	1.333	H2-1 ✔
T7	104.75 - 84.75 (572)	C8x13.75	0.021	0.499	0.000	0.519 ✔	1.333	H2-1 ✔
T7	104.75 - 84.75 (575)	C8x13.75	0.004	0.539	0.000	0.544 ✔	1.333	H2-1 ✔
T7	104.75 - 84.75 (576)	C8x13.75	0.001	0.626	0.000	0.628 ✔	1.333	H2-1 ✔

Torque-Arm Bottom 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 $\frac{P}{P_a}$
T1	224.75 - 204.75 (548)	P2.5x.203	10.71	10.54	133.6	21.000	1.7040	1353.61	35785.10	0.038
T1	224.75 - 204.75 (549)	P2.5x.203	10.71	10.54	133.6	21.000	1.7040	1552.05	35785.10	0.043
T1	224.75 - 204.75 (554)	P2.5x.203	10.71	10.54	133.6	21.000	1.7040	1706.21	35785.10	0.048
T1	224.75 - 204.75 (555)	P2.5x.203	10.71	10.54	133.6	21.000	1.7040	1647.77	35785.10	0.046
T1	224.75 - 204.75 (560)	P2.5x.203	10.71	10.54	133.6	21.000	1.7040	1622.48	35785.10	0.045
T1	224.75 - 204.75 (561)	P2.5x.203	10.71	10.54	133.6	21.000	1.7040	1898.78	35785.10	0.053
T4	164.75 - 144.75 (530)	P2.5x.203	10.71	10.54	133.6	21.000	1.7040	1762.59	35785.10	0.049
T4	164.75 - 144.75 (531)	P2.5x.203	10.71	10.54	133.6	21.000	1.7040	2008.12	35785.10	0.056
T4	164.75 - 144.75 (536)	P2.5x.203	10.71	10.54	133.6	21.000	1.7040	2631.68	35785.10	0.074
T4	164.75 - 144.75 (537)	P2.5x.203	10.71	10.54	133.6	21.000	1.7040	2552.68	35785.10	0.071
T4	164.75 - 144.75 (542)	P2.5x.203	10.71	10.54	133.6	21.000	1.7040	1953.78	35785.10	0.055
T4	164.75 - 144.75	P2.5x.203	10.71	10.54	133.6	21.000	1.7040	2257.87	35785.10	0.063

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 $\frac{P}{P_a}$
	(543)									

Torque-Arm Bottom Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_v kip-ft	Actual f_{bv} ksi	Allow. F_{bv} ksi	Ratio $\frac{f_{bv}}{F_{bv}}$
T1	224.75 - 204.75 (548)	P2.5x.203	0.06	0.689	23.100	0.030	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (549)	P2.5x.203	0.06	0.689	23.100	0.030	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (554)	P2.5x.203	0.06	0.689	23.100	0.030	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (555)	P2.5x.203	0.06	0.689	23.100	0.030	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (560)	P2.5x.203	0.06	0.689	23.100	0.030	0.00	0.000	23.100	0.000
T1	224.75 - 204.75 (561)	P2.5x.203	0.06	0.689	23.100	0.030	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (530)	P2.5x.203	0.08	0.935	23.100	0.040	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (531)	P2.5x.203	0.08	0.935	23.100	0.040	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (536)	P2.5x.203	0.08	0.936	23.100	0.041	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (537)	P2.5x.203	0.08	0.936	23.100	0.041	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (542)	P2.5x.203	0.08	0.935	23.100	0.040	0.00	0.000	23.100	0.000
T4	164.75 - 144.75 (543)	P2.5x.203	0.08	0.935	23.100	0.040	0.00	0.000	23.100	0.000

Torque-Arm Bottom Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{bv}}{F_{bv}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	224.75 - 204.75 (548)	P2.5x.203	0.038	0.030	0.000	0.068 ✔	1.333	H2-1 ✔
T1	224.75 - 204.75 (549)	P2.5x.203	0.043	0.030	0.000	0.073 ✔	1.333	H2-1 ✔
T1	224.75 - 204.75 (554)	P2.5x.203	0.048	0.030	0.000	0.078 ✔	1.333	H2-1 ✔
T1	224.75 - 204.75 (555)	P2.5x.203	0.046	0.030	0.000	0.076 ✔	1.333	H2-1 ✔
T1	224.75 - 204.75 (560)	P2.5x.203	0.045	0.030	0.000	0.075 ✔	1.333	H2-1 ✔
T1	224.75 - 204.75 (561)	P2.5x.203	0.053	0.030	0.000	0.083 ✔	1.333	H2-1 ✔
T4	164.75 - 144.75 (530)	P2.5x.203	0.049	0.040	0.000	0.090	1.333	H2-1 ✔

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
T4	164.75 - 144.75 (531)	P2.5x.203	0.056	0.040	0.000	0.097 ✔	1.333	H2-1 ✔
T4	164.75 - 144.75 (536)	P2.5x.203	0.074	0.041	0.000	0.114 ✔	1.333	H2-1 ✔
T4	164.75 - 144.75 (537)	P2.5x.203	0.071	0.041	0.000	0.112 ✔	1.333	H2-1 ✔
T4	164.75 - 144.75 (542)	P2.5x.203	0.055	0.040	0.000	0.095 ✔	1.333	H2-1 ✔
T4	164.75 - 144.75 (543)	P2.5x.203	0.063	0.040	0.000	0.104 ✔	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	224.75 - 204.75	Leg	ROHN 2.5 EH	3	-14926.50	81015.34	18.4	Pass
T2	204.75 - 184.75	Leg	ROHN 2.5 STD	60	-31923.60	60209.87	53.0	Pass
T3	184.75 - 164.75	Leg	ROHN 2.5 STD	117	-31261.00	60193.48	51.9	Pass
T4	164.75 - 144.75	Leg	ROHN 2.5 EH	172	-43865.00	79557.57	55.1	Pass
T5	144.75 - 124.75	Leg	ROHN 2.5 STD	229	-36782.00	61482.22	59.8	Pass
T6	124.75 - 104.75	Leg	ROHN 2.5 STD	286	-45065.70	61482.22	73.3	Pass
T7	104.75 - 84.75	Leg	ROHN 2.5 EH	343	-40586.40	66860.21	60.7	Pass
T8	84.75 - 64.75	Leg	ROHN 2.5 EH	376	-54506.00	66860.21	81.5	Pass
T9	64.75 - 44.75	Leg	ROHN 2.5 EH	409	-56654.10	66860.21	84.7	Pass
T10	44.75 - 24.75	Leg	ROHN 2.5 EH	442	-57545.80	66860.21	86.1	Pass
T11	24.75 - 4.75	Leg	ROHN 2.5 EH	475	-56269.40	66860.21	84.2	Pass
T12	4.75 - 0	Leg	ROHN 2.5 EH	510	-47402.10	81259.68	58.3	Pass
T1	224.75 - 204.75	Diagonal	L1 3/4x1 3/4x3/16	23	5189.96	13930.12	37.3 76.4 (b)	Pass
T2	204.75 - 184.75	Diagonal	ROHN TS1.5x16 ga	110	-1291.67	5357.37	24.1 28.8 (b)	Pass
T3	184.75 - 164.75	Diagonal	ROHN TS1.5x16 ga	129	-2069.47	5357.37	38.6 48.0 (b)	Pass
T4	164.75 - 144.75	Diagonal	L2x2x1/4	199	7203.01	21759.09	33.1 79.5 (b)	Pass
T5	144.75 - 124.75	Diagonal	ROHN TS1.5x16 ga	243	-1577.69	5357.37	29.4 31.5 (b)	Pass
T6	124.75 - 104.75	Diagonal	ROHN TS1.5x16 ga	330	-1814.72	5357.37	33.9 45.2 (b)	Pass
T7	104.75 - 84.75	Diagonal	ROHN TS1.5x16 ga	352	-3522.30	5364.67	65.7 86.7 (b)	Pass
T8	84.75 - 64.75	Diagonal	ROHN TS1.5x16 ga	406	-4721.76	5364.67	88.0 95.3 (b)	Pass
T9	64.75 - 44.75	Diagonal	ROHN TS1.5x16 ga	418	-1445.09	5364.67	26.9 35.7 (b)	Pass
T10	44.75 - 24.75	Diagonal	ROHN TS1.5x16 ga	473	-1755.45	5364.67	32.7 37.8 (b)	Pass
T11	24.75 - 4.75	Diagonal	ROHN TS1.5x16 ga	484	-2736.08	5364.67	51.0 72.3 (b)	Pass
T1	224.75 - 204.75	Top Girt	L1 3/4x1 3/4x3/16	4	-269.85	9515.77	2.8 3.1 (b)	Pass
T2	204.75 - 184.75	Top Girt	ROHN TS1.5x16 ga	61	-459.80	6242.21	7.4 8.4 (b)	Pass
T3	184.75 - 164.75	Top Girt	ROHN TS1.5x16 ga	120	353.33	8826.21	4.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
							9.7 (b)	
T4	164.75 - 144.75	Top Girt	L1 3/4x1 3/4x3/16	175	-842.92	9515.77	8.9	Pass
							17.3 (b)	
T5	144.75 - 124.75	Top Girt	ROHN TS1.5x16 ga	234	197.81	8826.21	2.2	Pass
							5.4 (b)	
T6	124.75 - 104.75	Top Girt	ROHN TS1.5x16 ga	291	409.18	8826.21	4.6	Pass
							11.2 (b)	
T7	104.75 - 84.75	Top Girt	ROHN TS1.5x16 ga	346	-415.29	6242.21	6.7	Pass
							14.1 (b)	
T8	84.75 - 64.75	Top Girt	ROHN TS1.5x16 ga	379	-2596.31	6242.21	41.6	Pass
							71.0 (b)	
T9	64.75 - 44.75	Top Girt	ROHN TS1.5x16 ga	412	413.97	8826.21	4.7	Pass
							11.3 (b)	
T10	44.75 - 24.75	Top Girt	ROHN TS1.5x16 ga	446	774.08	8826.21	8.8	Pass
							21.2 (b)	
T11	24.75 - 4.75	Top Girt	ROHN TS1.5x16 ga	478	561.61	8826.21	6.4	Pass
							15.4 (b)	
T12	4.75 - 0	Top Girt	C14x2x3/16	512	9614.47	95151.26	10.1	Pass
T1	224.75 - 204.75	Bottom Girt	L1 3/4x1 3/4x3/16	7	-3517.99	9515.77	37.0	Pass
							41.0 (b)	
T2	204.75 - 184.75	Bottom Girt	ROHN TS1.5x16 ga	64	266.49	8826.21	3.0	Pass
							7.3 (b)	
T3	184.75 - 164.75	Bottom Girt	ROHN TS1.5x16 ga	121	202.57	8826.21	2.3	Pass
							5.5 (b)	
T4	164.75 - 144.75	Bottom Girt	L1 3/4x1 3/4x3/16	180	-2742.76	9515.77	28.8	Pass
							31.9 (b)	
T5	144.75 - 124.75	Bottom Girt	ROHN TS1.5x16 ga	235	552.85	8826.21	6.3	Pass
							15.1 (b)	
T6	124.75 - 104.75	Bottom Girt	ROHN TS1.5x16 ga	292	423.70	8826.21	4.8	Pass
							11.6 (b)	
T7	104.75 - 84.75	Bottom Girt	ROHN TS1.5x16 ga	350	-2659.69	6242.21	42.6	Pass
							75.5 (b)	
T8	84.75 - 64.75	Bottom Girt	ROHN TS1.5x16 ga	384	575.53	8826.21	6.5	Pass
							15.8 (b)	
T10	44.75 - 24.75	Bottom Girt	ROHN TS1.5x16 ga	448	378.34	8826.21	4.3	Pass
							10.4 (b)	
T11	24.75 - 4.75	Bottom Girt	ROHN TS1.5x16 ga	482	843.07	8826.21	9.6	Pass
							23.1 (b)	
T12	4.75 - 0	Bottom Girt	C14x2x3/16	514	-832.31	91482.45	17.5	Pass
T12	4.75 - 0	Mid Girt	C14x2x3/16	519	36.64	71381.30	0.1	Pass
T1	224.75 - 204.75	Guy A@212.02	1/2	557	11506.40	13450.00	85.5	Pass
T4	164.75 - 144.75	Guy A@152.02	1/2	539	11389.00	13450.00	84.7	Pass
T6	124.75 - 104.75	Guy A@116.866	1/2	525	10541.00	13450.00	78.4	Pass
T7	104.75 - 84.75	Guy A@87.2461	3/8	574	5813.74	7700.00	75.5	Pass
T9	64.75 - 44.75	Guy A@44.8333	3/8	564	5786.90	7700.00	75.2	Pass
T1	224.75 - 204.75	Guy B@212.02	1/2	551	10562.50	13450.00	78.5	Pass
T4	164.75 - 144.75	Guy B@152.02	1/2	532	10504.90	13450.00	78.1	Pass
T6	124.75 - 104.75	Guy B@116.866	1/2	524	9840.99	13450.00	73.2	Pass
T7	104.75 - 84.75	Guy B@87.2461	3/8	569	5717.08	7700.00	74.2	Pass
T9	64.75 - 44.75	Guy B@44.8333	3/8	563	5502.85	7700.00	71.5	Pass
T1	224.75 - 204.75	Guy C@212.02	1/2	544	10788.40	13450.00	80.2	Pass
T4	164.75 - 144.75	Guy C@152.02	1/2	527	10650.20	13450.00	79.2	Pass
T6	124.75 - 104.75	Guy C@116.866	1/2	520	10123.60	13450.00	75.3	Pass
T7	104.75 - 84.75	Guy C@87.2461	3/8	566	5893.60	7700.00	76.5	Pass
T9	64.75 - 44.75	Guy C@44.8333	3/8	562	5708.25	7700.00	74.1	Pass
T6	124.75 - 104.75	Top Guy Pull-Off@116.866	4 1/2x3/8	523	4263.75	48587.85	9.1	Pass
T9	64.75 - 44.75	Top Guy Pull-Off@44.8333	4 1/2x3/8	417	2912.69	48587.85	6.3	Pass
T1	224.75 - 204.75	Torque Arm Top@212.02	P2.5x.203	546	12004.40	47701.54	27.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T4	164.75 - 144.75	Torque Arm Top@152.02	P2.5x.203	528	14246.10	47701.54	32.1	Pass
T7	104.75 - 84.75	Torque Arm Top@87.2461	C8x13.75	576	-1208.93	71048.76	51.3	Pass
T1	224.75 - 204.75	Torque Arm Bottom@212.02	P2.5x.203	561	-15920.90	32508.80	52.0	Pass
T4	164.75 - 144.75	Torque Arm Bottom@152.02	P2.5x.203	531	-14450.50	32508.80	47.5	Pass
							Summary	
						Leg (T10)	86.1	Pass
						Diagonal (T8)	95.3	Pass
						Top Girt (T8)	71.0	Pass
						Bottom Girt (T7)	75.5	Pass
						Mid Girt (T12)	0.1	Pass
						Guy A (T1)	85.5	Pass
						Guy B (T1)	78.5	Pass
						Guy C (T1)	80.2	Pass
						Top Guy Pull-Off (T6)	9.1	Pass
						Torque Arm Top (T7)	51.3	Pass
						Torque Arm Bottom (T1)	52.0	Pass
						Bolt Checks	95.3	Pass
						RATING =	**95.3**	**Pass**

FOUNDATION ANALYSIS

AECOM

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Job	225' Guyed Tower - Glastonbury, CT	Project No.	VZ5-194 Rev.1	Sheet 1	of 2
Description	Spread Footing w/ Pier Analysis - TIA Req	Computed by	MCD	Date	08/04/15
		Checked by		Date	

FOUNDATION ANALYSIS

TOWER FORCES:

Moment Caused by Tower	$M_t := 0 \cdot ft \cdot kips$
Shear at Base of Tower	$S_t := 2.192 kip$
Max Compressive Force	$C_t := 118.891 \cdot kip$
Height of Tower	$H_t := 225 \cdot ft$

FOOTING DIMENSIONS:

Overall Depth of Footing	$D_f := 5 ft$
Length of Pier	$L_p := 0.5 \cdot ft$
Extension of Pier Above Grade	$L_{pag} := 0.5 \cdot ft$
Diameter of Pier	$d_p := 3 \cdot ft$
Thickness of Footing	$T_f := 1.5 \cdot ft$
Width of Footing:	$W_f := 5 ft + 0 ft$

PROPERTIES:

Internal Friction Angle of Soil	$\phi_s := 34 \cdot deg$
Allowable Bearing Capacity	$q_s := 6000 \cdot psf$
Unit Weight of Soil	$\gamma_s := 125 \cdot pcf$
Unit Weight of Concrete	$\gamma_c := 150 \cdot pcf$
Depth to Neglect	$n := 0 ft$
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:	$\mu := 0.6$

STABILITY OF FOOTING

Coefficient of Lateral Soil Pressure:

$$K_p := \frac{1 + \sin(\phi_s)}{1 - \sin(\phi_s)} \qquad K_p = 3.5371$$

Passive Pressure:

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

$$P_{pt} := K_p \cdot \gamma_s \cdot (D_f - T_f) + c \cdot 2 \cdot \sqrt{K_p} \qquad P_{pt} = 1.5475 ksf$$

$$P_{top} := if[n < (D_f - T_f), P_{pt}, P_{pn}] \qquad P_{top} = 1.5475 ksf$$

$$P_{bot} := K_p \cdot \gamma_s \cdot D_f + c \cdot 2 \cdot \sqrt{K_p} \qquad P_{bot} = 2.2107 ksf$$

$$P_{ave} := \frac{P_{top} + P_{bot}}{2} \qquad P_{ave} = 1.8791 \cdot ksf$$

$$T_p := if[n < (D_f - T_f), T_f, (D_f - n)] \qquad T_p = 1.5 \cdot ft$$

$$A_p := W_f \cdot T_p \qquad A_p = 7.5 \cdot ft^2$$

Ultimate Shear:

$$S_u := P_{ave} \cdot A_p \qquad S_u = 14.0933 kip$$

AECOM

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Job	225' Guyed Tower - Glastonbury, CT	Project No.	VZ5-194 Rev.1	Sheet 2	of 2
Description	Spread Footing w/ Pier Analysis - TIA Req	Computed by	MCD	Date	08/04/15
		Checked by		Date	

Weight of Concrete Pad: $WT_c := \left[\left(W_f^2 \cdot T_f\right) + d_p^2 L_p\right] \cdot \gamma_c$ $WT_c = 6.3 \cdot kip$

Weight of Soil: above Footing: $WT_{s1} := \left[W_f^2 \cdot \left(\left|L_p - L_{pag}\right|\right) - \frac{d_p^2 \cdot \pi}{4} \cdot \left(\left|L_p - L_{pag}\right|\right)\right] \cdot \gamma_s$ $WT_{s1} = 0 \cdot kip$

Weight of Soil Wedge at back face: $WT_{s2} := \left(\frac{D_f^2 \cdot \tan(\phi_s)}{2} \cdot W_f\right) \cdot \gamma_s$ $WT_{s2} = 5.2696 \cdot kip$

Total Weight: $WT_{tot} := WT_c + WT_{s1} + C_t$ $WT_{tot} = 125.191 \cdot kip$

Resisting Moment: $M_r := \left(WT_{tot}\right) \cdot \frac{W_f}{2} + S_u \cdot \frac{T_f}{3} + WT_{s2} \cdot \left(W_f + \frac{D_f \cdot \tan(\phi_s)}{3}\right)$ $M_r = 352.2961 \cdot kip \cdot ft$

Overturning Moment: $M_{ot} := M_t + S_t \cdot \left(L_p + T_f\right)$ $M_{ot} = 4.384 \cdot kip \cdot ft$

Factor of Safety: $FS := \frac{M_r}{M_{ot}}$ $FS_{req} := 2$ $FS = 80.36$

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

BEARING PRESSURE CAUSED BY FOOTING

$A_{mat} := W_f^2$ $A_{mat} = 25 \cdot ft^2$

$S := \frac{W_f^3}{6}$ $S = 20.8333 \cdot ft^3$

$P_{max} := \frac{WT_{tot}}{A_{mat}} + \frac{M_{ot}}{S}$ $P_{max} = 5.2181 \cdot ksf$

$P_{min} := \frac{WT_{tot}}{A_{mat}} - \frac{M_{ot}}{S}$ $P_{min} = 4.7972 \cdot ksf$

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

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

GUY ANCHOR ANALYSIS

AECOM

Job :	225' Guyed Lattice Tower Glastonbury, CT	Project No.:	VZ5-194 Rev. 1	Page	___ of ___
Description:	Anchor Block Evaluation	Computed by:	MCD	Sheet	1 of 2
	Typical Anchor Block	Checked by:		Date	8/4/15
				Date	

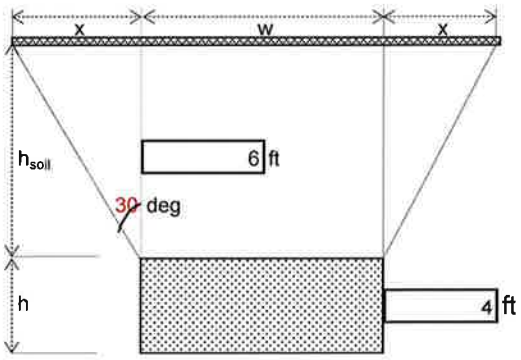
CHECK UPLIFT RESISTANCE

RESULTS FROM COMPUTER ANALYSIS:

Uplift =	46.211	kips
Sliding =	53.705	kips

CONCRETE PARAMETERS:

γ_{conc} =	150	pcf
w =	8	ft
h =	4	ft
d =	10	ft
Vol. =	*320*	ft^3
Wc =	*48.00*	kips



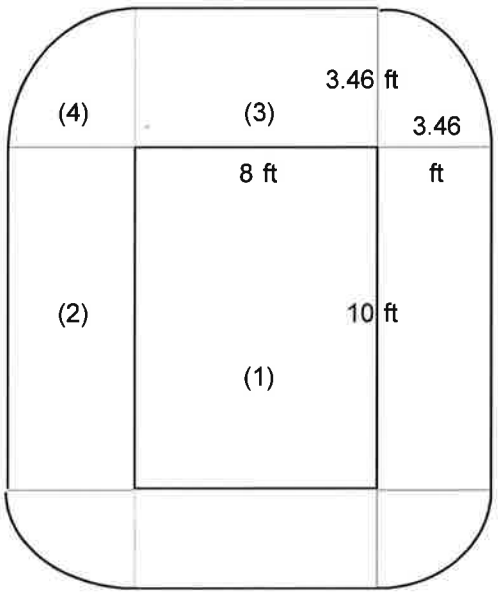
Foundation Section

SOIL PARAMETERS:

γ_{soil} =	110	pcf
h_{soil} =	6	ft
x =	*3.46*	ft

Soil Weight (Wr):

(1) =	52.80	kips
(2) =	22.86	kips
(3) =	18.29	kips
(4) =	8.29	kips
*(5) Anchor Reinf. =	0	kips
Total =	102.25	kips



Foundation Plan View

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

Wr / 2.0 + Wc / 1.25 > UPLIFT				(Wr + Wc) / 1.5 > UPLIFT		
89.52	>	*46.211*	***OK***	*100.16*	>	*46.211*	***OK***

CHECK UPLIFT (PER 2005 CT BLDG CODE 3108.4):

(Wr + Wc) / 2.0 > UPLIFT *75.12* > *46.211* ***OK***

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

61.5%

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Job :	225' Guyed Lattice Tower Glastonbury, CT	Project No.:	VZ5-194 Rev. 1	Page	of
Description:	Anchor Block Evaluation	Computed by:	MCD	Sheet	2 of 2
	Typical Anchor Block	Checked by:		Date	8/4/15
				Date	

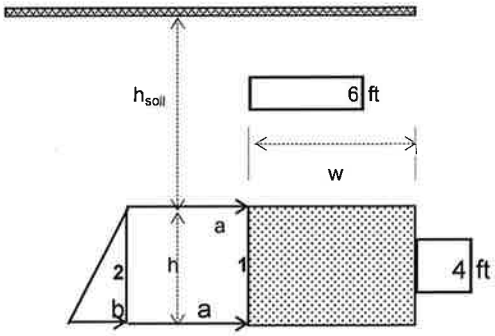
CHECK SLIDING RESISTANCE

SOIL PARAMETERS

$\gamma soil$ =	110	pcf
h_{soil} =	6	ft
h =	4	ft
ϕ =	34	degrees

ANCHOR PARAMETERS

w =	8.0	ft
h =	4.0	ft
d =	10.0	ft



Foundation Elevation View

K_a = 0.28

K_p = 3.54

Δ = 3.25

HORIZONTAL FORCES

1 =	85.92	k
2 =	17.18	k
RESIST TO SLIDING =	103.10	k

SOIL & CONCRETE WEIGHT =	Wr + Wc =	150.25	k
UPLIFT REACTIONS =		-46.211	k
SUM =		104.04	k

COEF. OF FRICTION, (0.5) =	52.02	k
RESIST TO SLIDING =	103.10	k
SUM =	155.12	k

SF AGAINST SLIDING

SF = 2.89 > 2.0 OK

→ ***GUY ANCHORS AGAINST SLIDING ARE ADEQUATE***

About AECOM

AECOM (NYSE: ACM) is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. With approximately 45,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation, and collaborative technical excellence in delivering solutions that enhance and sustain the world's built, natural, and social environments. A Fortune 500 company, AECOM serves clients in more than 100 countries and has annual revenue in excess of $6 billion.

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